Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk
County of: Sacramento

From: (Public Agency): City of Folsom
50 Natoma Street
Folsom, CA 95630
(Address)

Project Title: Water Treatment Plant Caustic Soda Storage and Feed System Project

Project Applicant: City of Folsom

Project Location - Specific:
194 Randall Drive, Foslom CA 95630

Project Location - City: Folsom Project Location - County: Sacramento

Description of Nature, Purpose and Beneficiaries of Project:
The project is generally described as the removal of existing, decommissioned steel tanks and associated piping, modifications to the existing tank containment wall, installation of new caustic feed tank and new caustic containment area, installation of new caustic feed pumps and caustic feed pipeline, removal of existing lime feed piping and abandoned aqua ammonia tank, miscellaneous civil sitework including AC pavement and concrete replacement associated with the Work, and associated electrical, instrumentation, and controls.

Name of Public Agency Approving Project: City of Folsom

Name of Person or Agency Carrying Out Project: City of Folsom

Exempt Status: **(check one):**

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☑ Categorical Exemption. State type and section number: Class 2: 15302 (c)
- ☐ Statutory Exemptions. State code number:

Reasons why project is exempt:
The project consists of upgrading existing water treatment processes at the city's existing water treatment plant. The project will not significantly change the purpose or footprint of the previous infrastructure. See attached project plans for additional details.

Lead Agency Contact Person: Nathan Stites Area Code/Telephone/Extension: 916-461-6167

If filed by applicant:
1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? Yes ▪ No

Signature: [signature] Date: 1/12/2026 Title: Utilities Director

▪ Signed by Lead Agency Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

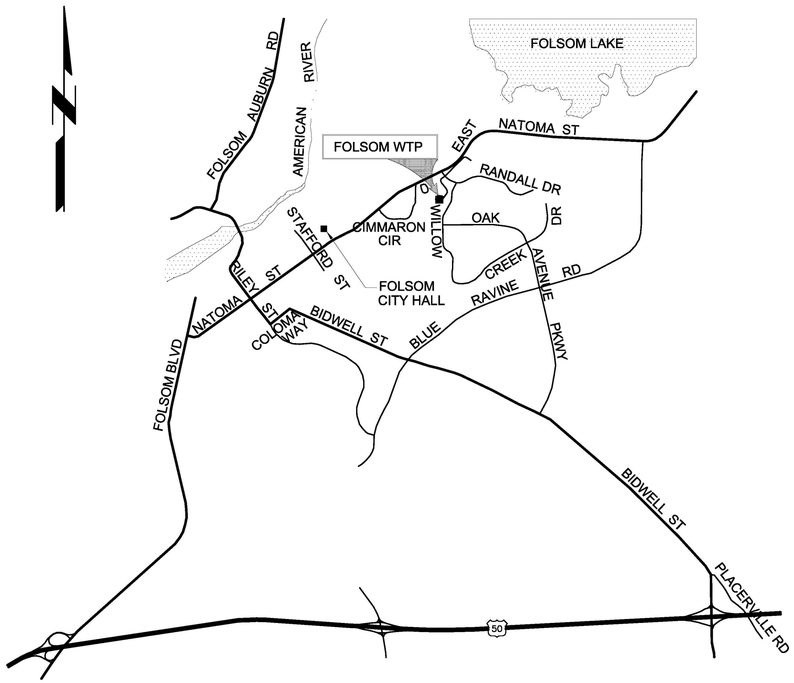
Date Received for filing at OPR:

CITY OF FOLSOM
WATER TREATMENT PLANT
CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

PROJECT NO. WA 2401 CONTRACT NO. 173-21 23-037

B&V PROJECT NO. 416929

JUNE 2025



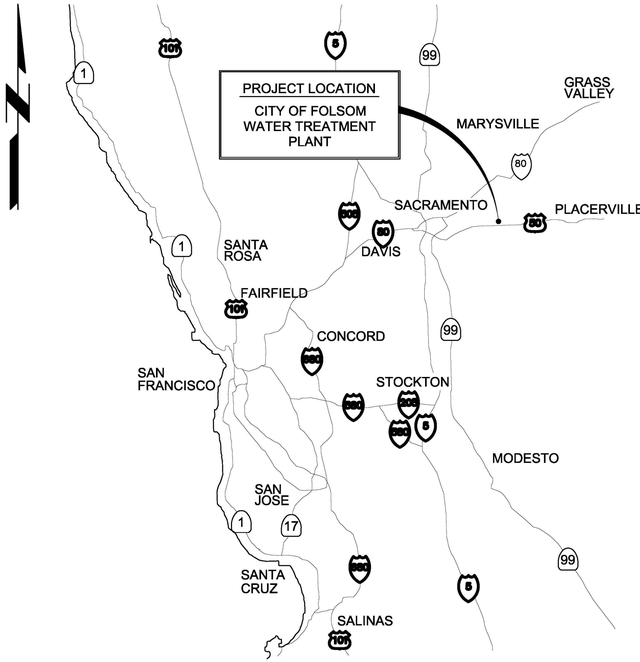
LOCATION MAP
NO SCALE

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REBECCA NEVES, CITY ENGINEER

MARCUS YASUTAKE, EWR DIRECTOR



VICINITY MAP
NO SCALE

BLACK & VEATCH

Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
ASUTOSH S. SRIDHARAN
C 69603
CIVIL
STATE OF CALIFORNIA
06/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DC
DETAILED:	JAD
CHECKED:	RT
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

GENERAL

COVER SHEET AND DRAWING LIST

G-001

1 OF 43

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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FILE: C:\PW_WORKING\BVW_AMERICAS\D1728883\G-001.DWG
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A	ACID, AMBER INDICATING LIGHT,AMP
AB	ANCHOR BOLT
ABW	AUTO BACKWASH
AC	ALTERNATING CURRENT
A/C	AIR CONDITIONER, (ING)
ACP	ASBESTOS CEMENT PIPE
ACH	ALUMINUM CHLORIDE HYDROXIDE
AD	ACCESS DOOR, AREA DRAIN, AIR DAMPER, ANODE
ADD	ADDITIONAL
ADH	ADHESIVE
ADJ	ADJUSTABLE, ADJACENT
ADMIN	ADMINISTRATION
AF	AIR FLOW
AFF	ABOVE FINISH FLOOR
AH	AHEAD
AHU	AIR HANDLING UNIT
AL	ACTIVE LEAF
ALT	ALTERNATE, (IVE)
ALUM	ALUMINUM
ANOD	ANODIZED
AP	ACCESS PANEL
APPR	APPROACH
APPROX	APPROXIMATE, (LY)
AR	ALARM RELAY
ARCH	ARCHITECTURAL
AS	AMMETER SWITCH
ASSY	ASSEMBLY
AUTO	AUTOMATIC
AUX	AUXILIARY
AVS	AUTOMATIC VALVE STATION
AWG	AMERICAN WIRE GAGE
B	BEAM
B TO B	BACK TO BACK
BA	BACKWASH AIR SUPPLY
BA	BEARING AREA
BAL	BALANCE
BAT	BATTERY
BD	BOARD, ACTIFLOW BLOW DOWN
BEJ	BRICK EXPANSION JOINT
BF	BLIND FLANGE
BHP	BRAKE HORSEPOWER
BITUM	BITUMINOUS
BKR	BREAKER
BLDG	BUILDING
BLK	BLOCK
BM	BENCHMARK
BOF	BOTTOM OF FOOTING
BOT	BOTTOM
BP	BACK PRESSURE
BPMK NO	BASEPLATE MARK NUMBER
BRG	BEARING
BRK	BRICK
BS	BOTH SIDES
B&S	BELL AND SPIGOT
BSMT	BASEMENT
BTU	BRITISH THERMAL UNIT
BTUH	BRITISH THERMAL UNIT-HOUR
BU	BELL-UP
BUR	BUILT UP ROOFING
BVC	BEGIN VERTICAL CURVE
BW	BACKWASH WATER SUPPLY
BWD	BACKWASH WATER DRAIN
C	COUNTER
C TO C	CENTER TO CENTER
CB	CATCH BASIN
CCT	CHLORINE CONTACT TANK
CD	CEILING DIFFUSER
C/EJ	CONTRACTION/EXPANSION JOINT
CFM	CUBIC FEET PER MINUTE
C&G	CURB AND GUTTER
CHKD	CHECKERED
CI	CAST IRON
CIMH	CAST IRON MANHOLE
CIMHS	CAST IRON MANHOLE STEPS
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CITY	CITY OF FOLSOM
CJT	CONTROL JOINT
CKT	CIRCUIT
CL	CLASS
CL	CENTERLINE
CLG	CEILING
CLO	CLOSET
CLR	CLEAR, (ANCE)
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEAN OUT, COMPANY
COD	CHEMICAL OXYGEN DEMAND
COL	COLUMN
COMB	COMBINATION
COMB SWR	COMBINED SEWER
COMP	COMPRESSOR, (ED)
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUATION, CONTROL
CONTR	CONTRACTOR
COR	CORNER
CORR	CORRIDOR, CORRUGATED
CP	CONTROL PANEL
CPLG	COUPLING
CPT	CONTROL POWER TRANSFORMER
CRS	COURSES, (ING)
CS	CONTROL SWITCH, CONTROL STATION, CUP SINK, CARBON STEEL
CSK	COUNTERSUNK, (INK)
CT	CERAMIC TILE, CYCLE TIME
CT	CURRENT TRANSFORMER
CTR(S)	CENTER(S)
CU	CUBIC
CU YD	CUBIC YARD
CW	COLD WATER
D	DOOR
DBL	DOUBLE
DC	DIRECT CURRENT
DEG	DEGREE
DEPT	DEPARTMENT
DET	DETAIL
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIFF	DIFFUSER
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DISCH	DISCHARGE
DISP	DISPENSER
DIST	DISTRIBUTION
DIV	DIVISION
DL	DEAD LOAD
DMJ	DOUBLE MECHANICAL JOINT
DN	DOWN
DO	DOOR OPENING, DISSOLVED OXYGEN
DR	DRAIN
DS	DOWNSPOUT
DV	DRAIN VALVE
DWG(S)	DRAWING(S)
DWL(S)	DOWEL(S)
E	EAST, ELECTRICAL
EA	EACH
EAT	ENTERING AIR TEMPERATURE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
EEW	EMERGENCY EYEWASH
EF	EACH FACE
EFF	EFFLUENT
EJ	EXPANSION JOINT
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRIC, (AL)
EMER	EMERGENCY
ENC	ENCASEMENT
ENCL	ENCLOSURE
ENT	ENTRANCE
EOL	END OF LINE
EQ	EQUAL
EQUIP	EQUIPMENT
EW	EACH WAY
EW	EMERGENCY EYEWASH
EWEF	EACH WAY EACH FACE
EXCH	EXCHANGER
EXH	EXHAUST
EXIST	EXISTING
EXP	EXPANSION, EXPOSED
EXP JT	EXPANSION JOINT
EXT	EXTENSION, EXTERIOR, EXTERNAL
F	FAN
F TO F	FACE TO FACE
FB	FACE BRICK
FC	FLEXIBLE CONNECTION, FLOW CONTROL
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FDN	FOUNDATION
FDPR	FIRE DAMPER
FH	FLAT HEAD, FIRE HYDRANT
FIG	FIGURE
FIN	FINISH
FIN GR	FINISH GRADE
FL	FLOOR, FLOW LINE
FLEX	FLEXIBLE
FLG	FLANGE, FLASHING
FM	FLOW METER
FO	FUEL OIL
FOB	FLAT ON BOTTOM
FOM	FACE OF MASONRY
FOS	FACE OF STUDS
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PLASTIC
FS	FAR SIDE, FLOOR SLEEVE, FLOAT SWITCH
FT	FOOT
FTG	FOOTING
FTW	FILTER TO WASTE WATER
FURN	FURNISH, FURNISHED
FV	FLAP VALVE
FW	FILTERED WATER
FWD	FORWARD
G	GAS
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GEN	GENERAL, GENERATOR
GPM	GALLONS PER MINUTE
GR	GRADE
H	HIGH, HOUR, HYDROGEN
HB	HOSE BIBB
HC	HOLLOW CORE
HDR	HEADER
HE	HEAT EXCHANGER
HEX	HEXAGONAL
HF	HOSE FAUCET
HGT	HEIGHT
HH	HANDHOLE
HLS	HIGH LEVEL SWITCH
HMC	HARNESSED MECHANICAL COUPLING
HMD	HOLLOW METAL DOOR
HMJ	HARNESSED MECHANICAL JOINT
HORIZ	HORIZONTAL
HP	HIGH POINT, HORSEPOWER
HR	HOUR, HANDRAIL
HS	HIGH STRENGTH
HV	HOSE VALVE
HVAC	HEATING,VENTILATING AND AIR CONDITIONING
HW	HOT WATER
HWY	HIGHWAY
HYDRO	HYDROPNEUMATIC
I	INDICATOR
ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCHES
INC	INCORPORATED
INCL	INCLUDING
INCR	INCREASE
INST	INSTRUMENT, (ATION)
INSUL	INSULATE, (ED), (ING)
INT	INTERIOR, INTERNAL
INV	INVERT
IPS	IRON PIPE SIZE
JB	JUNCTION BOX
JF	JOINT FILLER
JT	JOINT
K	KIPS
KO	KNOCK OUT
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
L	LOUVER
LAB	LABORATORY
LAT	LEAVING AIR TEMPERATURE
LAT	LATERAL
LB(S)	POUNDS
LG	LENGTH, LONG
LH	LEFT HAND
LIN	LINEAL, LINEAR
LL	LIVE LOAD
LS	LEVEL SWITCH
LT	LEFT, LAB TABLE
MACH	MACHINE
MAINT	MAINTENANCE
MAN	MANUAL
MAS	MASONRY
MAX	MAXIMUM
MB	MACHINE BOLT
MC	MECHANICAL COUPLING
MECH	MECHANICAL
MED	MEDIUM
MET	METAL
MFM	MAGNETIC FLOWMETER
MFR(S)	MANUFACTURER(S)
MG	MILLION GALLONS
MGD	MILLION GALLONS PER DAY
MIN	MINIMUM, MINUTE
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MJRG	MECHANICAL JOINT RETAINER GLAND
MJTR	MECHANICAL JOINT WITH TIE ROD
MO	MASONRY OPENING, MOTOR OPERATED
MS	MACHINE SCREW, MICRO SAND
MTD	MOUNTED
MTL	MATERIAL
MTR	MOTOR
N	NORTH
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NEUT	NEUTRAL
NF	NEAR FACE
N.O.	NORMALLY OPEN
NO.(S)	NUMBER(S)
NOM	NOMINAL
NORM	NORMAL
NPT	NATIONAL PIPE THREAD
NPW	NONPOTABLE WATER
NS	NEAR SIDE
NTS	NOT TO SCALE
OC	ON CENTER, ODOR CONTROL
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE, OVERFLOW
OH	OVERHEAD
OL	OVERLOAD
OPER	OPERATING
OPNG	OPENING
OPP	OPPOSITE
OZ	OUNCE
PD	PLAN DIMENSION
PE	PLAIN END
PG	PRESSURE GAUGE
PH	PIPE HANGER, PENTHOUSE
PI	POINT OF INTERSECTION
PIVC	POINT OF INTERSECTION ON VERTICAL CURVE
PL	PLATE
PNL(S)	PANEL(S)
POLY	POLYMER
PR	PAIR
PROJ	PROJECTION
PRS	PRESSURE REDUCING STATION
PRV	POWER ROOF VENTILATOR
PS	PIPE SUPPORT
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT, POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE, POINT ON VERTICAL CURVE
PVCP	POLYVINYL CHLORIDE PIPE
PVMT	PAVEMENT
PW	POTABLE WATER
PLC	PROGRAMMABLE LOGIC CONTROLLER
R	RADIUS, RISER
RBW	RECLAIMED BACKWASH WATER
RC	SAND RECIRCULATION
RCP	REINFORCED CONCRETE PIPE
RCCP	REINFORCED CONCRETE CYLINDER PIPE
RCHEP	REINFORCED CONCRETE HORIZONTAL ELLIPTICAL PIPE
RECEP	RECEPTION
RECIRC	RECIRCULATING
RECP	RECEPTACLE
RED	REDUCER, REDUCING
REG	REGULATOR, REGULATING
REF	REFERENCE
REFR	REFRIGERATION, REFRIGERATOR
REINF	REINFORCING
REM	REMOVABLE
REQD	REQUIRED
RET	RETURN
REV	REVISION, REVISED, REVERSED
RFG	ROOFING
RG	RETAINER GLAND
RH	ROOF HOOD, RIGHT HAND, ROUND HEAD, RED HEAD
RHMS	ROUND HEAD MACHINE SCREW
RHWS	ROUND HEAD WOOD SCREW
RM	ROOM
RO	ROUGH OPENING
RPM	REVOLUTIONS PER MINUTE
RR	RAILROAD
RS	RAW SLUDGE, RAW SEWAGE, ROLLED STEEL
RT	RIGHT
R/W	RIGHT OF WAY
RW	RAW WATER
S	SOUTH, SPEAKER
SAN SWR	SANITARY SEWER
SCHED	SCHEDULE
SD	STORM DRAIN
SEC	SECOND
SECT	SECTION
SG	SLUICE GATE, SUPPLY GRILLE
SH	SHEET
SIM	SIMILAR
SL	SLUDGE
SM	SHEET METAL
SPA	SPACING, SPACES
SPEC(S)	SPECIFICATION(S)
SPLY	SUPPLY
SQ	SQUARE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SS	SANITARY SEWER
ST	SELF TAPPING
ST SWR	STORM SEWER
STA	STATION
STD	STANDARD
STL	STEEL
STOR	STORAGE
STR	STRUCTURAL
SUP	SUPPLY
SUSP	SUSPENDED
SV	SHUTOFF VALVE
SW	SOCKET WELD
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SWS	SEAL WATER SOLENOID, SETTLED WASTE STREAM
SYM	SYMMETRICAL
SYS	SYSTEM
T	THERMOSTAT, TREAD, TOTALIZER
T	TRANSFORMER, TELEPHONE, TOP
TAN	TANGENT
TB	TERMINAL BOX
T&B	TOP AND BOTTOM
TBE	THREAD BOTH ENDS
TBM	TEMPORARY BENCHMARK
TC	TOP OF CURB
TC	TERMINAL CABINET
TD	TANK DRAIN
TEL	TELESCOPING
TEMP	TEMPERATURE, TEMPORARY
TERM	TERMINAL
T&G	TONGUE & GROOVE
TH	TEST HOLE
THK	THICK, THICKNESS
THR	THRESHOLD
TI	TOTALIZING INDICATOR, TEMPERATURE INDICATOR
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TRANS	TRANSFORMER, TRANSMITTER, TRANSFER
TS	TEMPERATURE SWITCH
TYP	TYPICAL
UDM	ULTRASONIC DENSITY METER
UGND	UNDERGROUND
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
USGS	UNITED STATES GEOLOGICAL SURVEY
V	VALVE, VOLT, VENT
VAC	VACUUM
VBF	VALVE, AWWA BUTTERFLY
VBI	VALVE, INDUSTRIAL BUTTERFLY
VBL	VALVE, BALL
VBM	VALVE, BALL MISCELLANEOUS
VC	VERTICAL CURVE, VICTAULIC COUPLING
VCD	VERTICAL CONTROL DAMPER
VCK	VALVE, CHECK
VCN	VALVE, CONE
VCP	VITRIFIED CLAY PIPE
VG	VALVE, GATE
VGD	VALVE, DOUBLE DISC GATE
VGL	VALVE, GLOBE
VERT	VERTICAL
VF	VACUUM FILTER
VIB	VIBRATION
VKG	VALVE, KNIFE GATE
VM	VOLT METER
VNR	VENEER
VPC	VALVE, PRESSURE REGULATING
VPG	VALVE, PLUG
VPL	VALVE, ECCENTRIC PLUG
VPR	VALVE, PRESSURE REDUCING
VSP	VALVE, PRESSURE RELIEF
VSPV	VALVE, PRESSURE/VACUUM RELIEF
VSV	VALVE, VACUUM RELIEF
VV	VENT VALVE
VVB	VACUUM BREAKER
W	WEST, WIDE, WINDOW, WATT, WATER
W/	WITH
WB	WALLBOARD
WD	WOOD, WIDTH
WF	WALL FITTING
WL	WATER LEVEL
WM	WATER METER, WATTMETER
W/O	WITHOUT
WP	WATERPROOF, WORKING POINT
WR	WASTE RECEPTACLE
WS	WATERSTOP
WT	WEIGHT
WTP	WATER TREATMENT PLANT
WW	WETWELL
WWF	WELDED WIRE FABRIC
x	BY,TIMES
YH	YARD HYDRANT
&	AND
@	AT
<	DEFLECTION ANGLE
#	NUMBER
%	PER CENT

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FD1:1000

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

BLACK & VEATCH

Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
ASHUTOSH S. SRIPATHAK
C 69603
CIVIL
STATE OF CALIFORNIA
06/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DC
DETAILED:	JAD
CHECKED:	RT
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

GENERAL

ABBREVIATIONS

G-002

2 OF 43

GENERAL LEGEND

- SURFACED STREET, ROAD OR DRIVE
- SURFACED STREET, ROAD OR DRIVE WITH CURBS
- NON-SURFACED STREET, ROAD OR DRIVE
- CONCRETE WALK
- CB — CATCH BASIN
- MANHOLE
- DRAINAGE COURSE OR FLOW LINE
- 326 — EXISTING GROUND CONTOUR
- 326 — FINISH GRADE CONTOUR
- BANK OR SLOPE LINES
- #3 OR B3 — T.H.#3 — TEST HOLE AND NUMBER
- SURVEY LINE WITH PI, PT, OR POT
- CONCRETE ENCASEMENT-PLAN
- CONCRETE REACTION BLOCKING AT BEND, PLUG OR TEE
- DRAINS OR CULVERTS
- TUNNEL CASING - PLAN
- SMALLER THAN 24" / 24" AND LARGER — EXISTING
- GENERAL LAYOUT YARD PIPING
- SMALLER THAN 24" / 24" AND LARGER — NEW
- NEW WATER LINE OR SEWER IN PROFILE
- NON-CONNECTING PIPING
- CE/L — CONSTRUCTION EASEMENT LINE
- E/L — EASEMENT LINE
- R/W — RIGHT-OF-WAY LINE
- PL — PROPERTY LINE
- PE/L — PERMANENT EASEMENT LINE
- TE/L — TEMPORARY EASEMENT LINE
- UE/L — UTILITY EASEMENT LINE
- S/L — SURVEY LINE / SECTION LINE
- W — WATER LINE
- G — GAS LINE
- T — TELEPHONE (UNDERGROUND)
- E — ELECTRICAL (UNDERGROUND)
- P — T — POWER OR TELEPHONE LINES (OVERHEAD)
- (G)/(W) — WATER OR GAS VALVE
- (WM)/(GM) — WATER OR GAS METER
- TELEPHONE OR POWER POLE WITH GUY ANCHOR
- FIRE HYDRANT
- YARD HYDRANT
- STREET LIGHT POLE
- BENCHMARK
- TRAFFIC SIGNAL
- TRAFFIC SIGN
- STOPSIGN
- HEDGE, BRUSH, SHRUBS, WOODS
- 10" — DECIDUOUS TREE AND TRUNK DIAMETER
- 4" — CONIFEROUS TREE AND TRUNK DIAMETER
- SWAMP

- BUILDINGS, STRUCTURES
- STRUCTURES UNDERGROUND
- FUTURE BUILDINGS, STRUCTURES
- CLOTHES LINE
- SWING SET
- FENCE
- FENCE, WOOD
- RAILROAD, EACH TRACK
- CENTERLINE
- 1 / AC45 — SECTION NUMBER OR DETAIL LETTER; DRAWING NUMBER ON WHICH SECTION OR DETAIL APPEARS; OR WHERE SECTION IS CUT OR DETAIL IS NOTED
- 1 / A045 — DOOR, WINDOW AND LOUVER SCHEDULE REFERENCE; WALL ELEVATION
- ABBREVIATION
- D / 4 — SCHEDULE NUMBER
- F102 — ROOM NUMBER; AREA DESIGNATION
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- PV-10 — EQUIPMENT OR VALVE IDENTIFICATION CODE; EQUIPMENT NUMBER
- EQUIP CALLOUT — EQUIPMENT REPRESENTATION WITH CALLOUT
- EXISTING FACILITY TO BE DEMOLISHED OR REMOVED
- SALVAGE AND REUSED
- SLUICE/SLIDE GATE
- SA — SAMPLE LINE
- E — EXISTING ELECTRICAL RISER
- EXISTING EYEWASH STATION
- STAGING AREA

PIPING SYSTEMS

	NEW PIPING	NPW	WATER, NON-POTABLE
	UNDERGROUND PIPING	NPHW	WATER, NON-POTABLE HOT
	EXISTING PIPING	OX	OXYGEN
	FUTURE PIPING	OZ	OZONE
CL(L)	CHLORINE LIQUID	OF	OVERFLOW
CL(S)	CHLORINE SOLUTION	POLY	POLYMER SOLUTION
LIME	LIME	RF	REFRIGERANT
PG	LP GAS (PROPANE)	ST	STORM DRAIN
N	NITROGEN	SG	SLUDGE GAS
SA	SODA ASH	SI	SILICA
NaOH	SODIUM HYDROXIDE	PD	SUMP PUMP DISCHARGE
SP	SODIUM HEXAMETAPHOSPHATE (PHOSPHATE)	SAN	SANITARY SEWER
		V	VENT
NaOCL	SODIUM HYPOCHLORITE	VAC	VACUUM
AMM(G)	AMMONIA GAS	W	WATER
AMM(S)	AMMONIA SOLUTION		
NO	NITROUS OXIDE		

PIPING ACCESSORIES LEGEND

	BLIND FLANGE		UNION
	CAP OR PLUG		WALL SLEEVE
CO	CLEANOUT		ELECTROMAGNETIC/ULTRASONIC FLOWMETER
	CROSS		PITOT TUBE
	DIAPHRAGM SEAL		
	ELBOW		ROTAMETER
	ELBOW DOWN		TURBINE OR PROPELLOR FLOWMETER
	ELBOW TURNING UP		
SIZE	HOSE CONNECTION	M	SET STOP METER
Q	QUICK COUPLING		VENTURI
	REDUCER	FM	FLOW METER
	RUPTURE DISK		
	TEE		
	TEE LINE DOWN		
	TEE LINE UP		
	WYE		
S	WYE STRAINER		
S	WYE STRAINER WITH BLOWOFF		
	DRAIN OR BELL-UP		

MISCELLANEOUS EQUIPMENT

- SLUICE GATE

ACTUATOR LEGEND

- E — ELECTRIC
- FLOAT
- DIAPHRAGM
- S — SOLENOID
- A — AIR

VALVE LEGEND

	PINCH VALVE		BACKWATER VALVE
	PLUG VALVE, ECCENTRIC		INLINE PRESSURE RELIEF VALVE
	PLUG VALVE, NON-ECCENTRIC		PRESSURE REGULATING VALVE
	BUTTERFLY VALVE		PRESSURE SUSTAINING OR MAINTAINING VALVE
	GATE VALVE		VACUUM BREAKER
	BALL VALVE		THERMAL SHUTOFF VALVE
	GLOBE VALVE		EXPLOSION RELIEF VALVE
	CHECK VALVE		HOSE FAUCET
	3 WAY VALVE		HOSE FAUCET W/VACUUM BREAKER
	4 WAY VALVE		PRESSURE VACUUM RELIEF VALVE
	HOSE VALVE W/HOSE NIPPLE		
	BACKFLOW PREVENTER		
	SAFETY RELIEF VALVE		
V	VACUUM RELIEF CHECK VALVE		

MATERIALS LEGEND

- EARTH OR GRADE
- GRANULAR FILL (CRUSHED ROCK OR GRAVEL)
- ROCK
- NEW CONCRETE
- EXISTING CONCRETE, PRECAST OR PRESTRESSED CONCRETE
- BRICK, FACE
- BRICK, COMMON
- CONCRETE MASONRY UNITS (CMU)
- CUT STONE OR SAND FILL, GROUT, MORTAR, AND PLASTER
- WOOD, SHEATHING, PANELING, DECKING, ETC.
- WOOD, STUDS, BEAMS, JOISTS, ETC.
- RIPRAP
- CHECKERED PLATE
- STEEL (FOR 1"SCALE & LARGER)
- STEEL OR ALUMINUM (FOR 3/4" SCALE & SMALLER)
- BAR GRATING (LINES IN DIRECTION OF SPAN)
- ALUMINUM
- INSULATION (BATT)
- INSULATION (RIGID)
- ASPHALT

NOTE :
SYMBOLS ON THIS SHEET WHICH ARE TO BE SHOWN AS EXISTING SHALL BE DELINEATED AS SCREENED
THOSE SYMBOLS WHICH ARE TO BE SHOWN AS NEW SHALL BE DELINEATED AS SOLID (HEAVY)

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

BLACK & VEATCH
Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER — ASUTOSH S. SRIDHARAN — C 69603 — CIVIL — STATE OF CALIFORNIA — 05/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DC
DETAILED:	JAD
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APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

GENERAL

GENERAL LEGEND

G-003

3 OF 43

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GENERAL NOTES

1. CONTRACTOR AGREES THAT IN ACCORDANCE WITH GENERALLY ACCEPTED CONSTRUCTION PRACTICES, CONTRACTOR WILL BE REQUIRED TO ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THE PROJECT INCLUDING SAFETY OF ALL PERSONS AND PROPERTY; THAT THIS REQUIREMENT SHALL BE MADE TO APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

2. EXISTING UTILITIES AND STRUCTURES (UNDERGROUND, SURFACE, OR OVERHEAD) ARE INDICATED ONLY TO THE EXTENT THAT SUCH INFORMATION WAS KNOWN, OR MADE AVAILABLE TO, OR DISCOVERED BY THE ENGINEER IN PREPARING THE DRAWINGS. THE LOCATIONS, CONFIGURATIONS, AND ELEVATIONS OF SUBSURFACE FACILITIES AND UTILITIES ARE APPROXIMATE, AND NOT ALL UTILITIES AND FACILITIES MAY BE INDICATED.

3. "SCREENED" (LIGHT) DELINEATION INDICATED ON THE DRAWINGS DENOTES EXISTING FACILITIES. "SCREENED" INFORMATION WAS TAKEN FROM EXISTING CONSTRUCTION DRAWINGS AND DATA, IS FOR REFERENCE ONLY, AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO THE ORDERING OF MATERIALS AND BEGINNING OF CONSTRUCTION. "BOLD" DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.

4. CONTRACTOR'S STAGING, PARKING AND MATERIAL STORAGE SHALL BE DISCUSSED WITH THE OWNER PRIOR TO START OF CONSTRUCTION.

5. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY PRECISE LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STRUCTURES, WHETHER INDICATED ON THE DRAWINGS OR NOT, IN THE FIELD IN ADVANCE OF EXCAVATING, BY CONTACTING ALL UTILITIES AND OTHER AGENCIES, AND BY PROSPECTING. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL, DEMOLITION, RECONSTRUCTION, AND RECONNECTION OF EXISTING FACILITIES AS REQUIRED TO COMPLETE THE WORK. IF REQUIRED AFTER FIELD VERIFICATION, CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO DETERMINE ANY NECESSARY MODIFICATIONS TO PROPOSED NEW WORK.

6. BEFORE CONSTRUCTION IS STARTED, CONTRACTOR SHALL COORDINATE WITH THE OWNER OF EACH UTILITY AND DEFINE THE REQUIREMENTS AND METHODS TO ACCOMMODATE THE PROTECTION, TEMPORARY SUPPORT, ADJUSTMENT, OR RELOCATION OF ANY UTILITIES AFFECTED BY THE PROPOSED NEW WORK.

7. THE CONTRACTOR'S OPERATIONS SHALL CONFORM TO THE RULES AND REGULATIONS OF THE STATE CONSTRUCTION SAFETY ORDERS PERTAINING TO EXCAVATION AND TRENCHING.

8. ALL SURPLUS AND UNSUITABLE MATERIAL SHALL BE REMOVED AND DISPOSED OF IN ACCORDANCE WITH ALL PERTINENT LAWS.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR RESTORING ALL TRAFFIC STRIPING AND ROAD MARKINGS INCLUDING, BUT NOT LIMITED TO, TURN ARROWS, STOP BARS, BIKE LANES, CENTER LINES, ETC.

10. NO FACILITY IS TO BE BACKFILLED UNTIL INSPECTED BY THE OWNER.

11. NO REFUELING, LUBRICATION OR MAINTENANCE OF CONSTRUCTION VEHICLES SHALL BE DONE ANYWHERE ON THE SITE EXCEPT WITHIN APPROVED CONSTRUCTION STAGING AREAS. STAGING AREAS, SHALL BE SET UP TO THE SATISFACTION OF THE CONSTRUCTION INSPECTOR AND THE FIRE DEPARTMENT.

12. SHUTDOWN OF EXISTING FACILITIES WILL BE PERFORMED BY CITY PERSONNEL OR BY THE CONTRACTOR ONLY UNDER CITY PERSONNEL'S SUPERVISION AND WITH PRIOR APPROVAL.

13. THE CONTRACTOR IS ADVISED THAT ANY SHUTDOWN OF FACILITIES WILL PLACE A CONSIDERABLE BURDEN ON THE CITY'S STAFF BEFORE, DURING, AND AFTER THE SHUTDOWN. IF THROUGH INADEQUATE PLANNING, LACK OF PREPAREDNESS, FAULTY OR INEFFICIENT WORKMANSHIP OR OTHER CAUSES CONTROLLABLE BY THE CONTRACTOR, DELAYS, EXCESSIVE TIME, OR ADDITIONAL SHUTDOWNS ARE REQUIRED THAT CAUSE THE CITY TO INCUR EXTRA COST, SAID EXTRA COST WILL BE ASSESSED AGAINST THE CONTRACTOR.

14. PLANNED SHUTDOWNS SHALL BE PER SPECIFICATION SECTION 01104.

15. DEMOLITION SHALL INCLUDE REMOVAL AND DISPOSAL OFF SITE ALL ITEMS.

16. FOR ALL SITE GRADING, SMOOTH PARABOLIC TRANSITIONS SHALL BE MADE BETWEEN CHANGES IN SLOPE. PARABOLIC TRANSITION SHALL APPLY TO ALL CUT AND FILL SECTIONS.

17. STRUCTURES SUCH AS CURBS AND GUTTERS, CONCRETE AND ASPHALT DRIVES AND WALKWAYS, PAVING BRICKS, FENCING, RETAINING WALLS, ETC., CROSSED BY THE PIPELINE ARE NOT ALL INDICATED IN THE DRAWINGS. CONTRACTOR SHALL RESTORE ANY EXISTING STRUCTURES THAT ARE DISTURBED, DAMAGED OR REMOVED BY CONSTRUCTION.

WATER POLLUTION AND SEDIMENT CONTROL PLAN

1. A STORMWATER POLLUTION PREVENTION PLAN (SWPPP) IS NOT REQUIRED FOR THIS PROJECT, HOWEVER, A WATER POLLUTION CONTROL PLAN & COMPLIANCE WITH THE CITY STANDARDS SHALL BE EMPLOYED TO PREVENT UNAUTHORIZED DISCHARGES DUE TO CONSTRUCTION ACTIVITIES OFF THE PROJECT SITE.

2. CONTRACTOR IS RESPONSIBLE FOR PREPARING A SITE-SPECIFIC WATER POLLUTION CONTROL PLAN PRIOR TO CONSTRUCTION MOBILIZATION AND FOR IMPLEMENTING AND MAINTAINING THE CONSTRUCTION SITE UNTIL THE WATER POLLUTION CONTROL MEASURES ARE NO LONGER REQUIRED AT THE COMPLETION OF CONSTRUCTION. CONTRACTOR SHALL CONDUCT ONGOING MAINTENANCE AND REPAIR OF WATER POLLUTION/SEDIMENT CONTROL MEASURES THROUGHOUT CONSTRUCTION AND SHALL IMPLEMENT CORRECTIVE ACTIONS AT THE REQUEST OF THE OWNER/OWNER'S CONSTRUCTION MANAGER TO ADDRESS NONCOMPLIANCE. THE CONTRACTOR SHALL KEEP A COPY OF THE WATER POLLUTION CONTROL PLAN AT THE CONSTRUCTION SITE AT ALL TIMES SO THAT IT CAN BE REFERENCED BY CONSTRUCTION WORKERS AND THE OWNER. AT THE COMPLETION OF WORK, ALL TEMPORARY WATER POLLUTION CONTROL DEVICES SHALL BE REMOVED.

3. THE WATER POLLUTION CONTROL PLAN MUST PROVIDE: A DETAILED MAP OF EXISTING AND NEW CONTOUR LINES; A DRAINAGE PLAN THAT DETAILS THE DRAINAGE CONTROL DEVICES AND WATER POLLUTION/SEDIMENT CONTROL MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION; A REVEGETATION PLAN THAT INCLUDES ALL DISTURBED AREAS; AND A CONSTRUCTION SCHEDULE THAT OUTLINES THE SEQUENCE OF CONSTRUCTION ACTIVITIES AND PROVIDES TARGET DATES FOR STABILIZATION OF DISTURBED AREAS. AT A MINIMUM, THE WATER POLLUTION CONTROL PLAN SHALL SPECIFY THE FOLLOWING WATER POLLUTION/SEDIMENT CONTROL MEASURES FOR IMPLEMENTATION DURING CONSTRUCTION ACTIVITIES.

-PROVIDE ROCKED CONSTRUCTION ENTRANCE OR MEASURES TO MAKE SURE MUD/SOIL IS NOT EXCAVATED ON THE STREET. SITE AND THE PUBLIC ROADS THAT WILL BE USED BY THE CONTRACTOR SHALL BE KEPT CLEAN AT ALL TIMES.
-PROVIDE A CONCRETE WASHOUT CONTAINER
-PROVIDE SECONDARY CONTAINMENT FOR ANY PORTABLE SANITARY FACILITIES OR LIQUID STORAGE
-PROTECT DRAINAGE INLETS ADJOINING THE SITE
-PLACE WATTLES AROUND THE WORK AREA PERIMETER
-REVEGETATE ANY DISTURBED AREAS.

-WATER POLLUTION CONTROL DEVICES TO BE UTILIZED THROUGHOUT THE PROJECT MAY INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:
INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- VEGETATIVE BUFFER STRIPS
- SILT/SEDIMENT FENCING
- TEMPORARY SEEDING
- MULCHING
- STRAW BALE AND STRAW WADDLE WATER POLLUTION/SEDIMENT CONTROL
- SAND BAGS
- TARP COVERS
- AREA/CURB INLET SEDIMENT FILTERS
- CHANNEL/SLOPE RIPRAP
- PERMANENT SEEDING
- DRAINAGE SWALES
- PROTECTION OF TREES

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06/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

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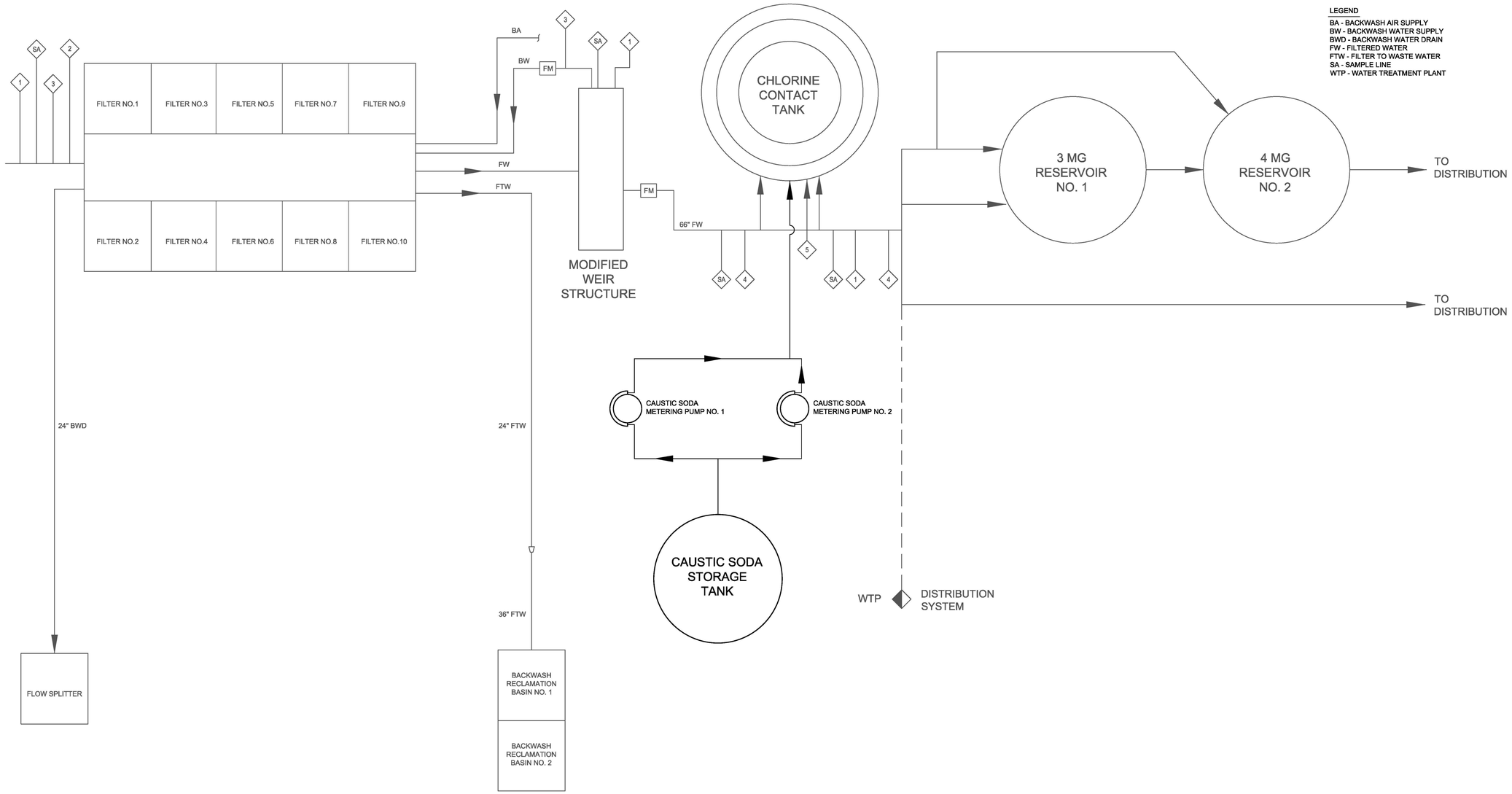
GENERAL

GENERAL NOTES

G-004

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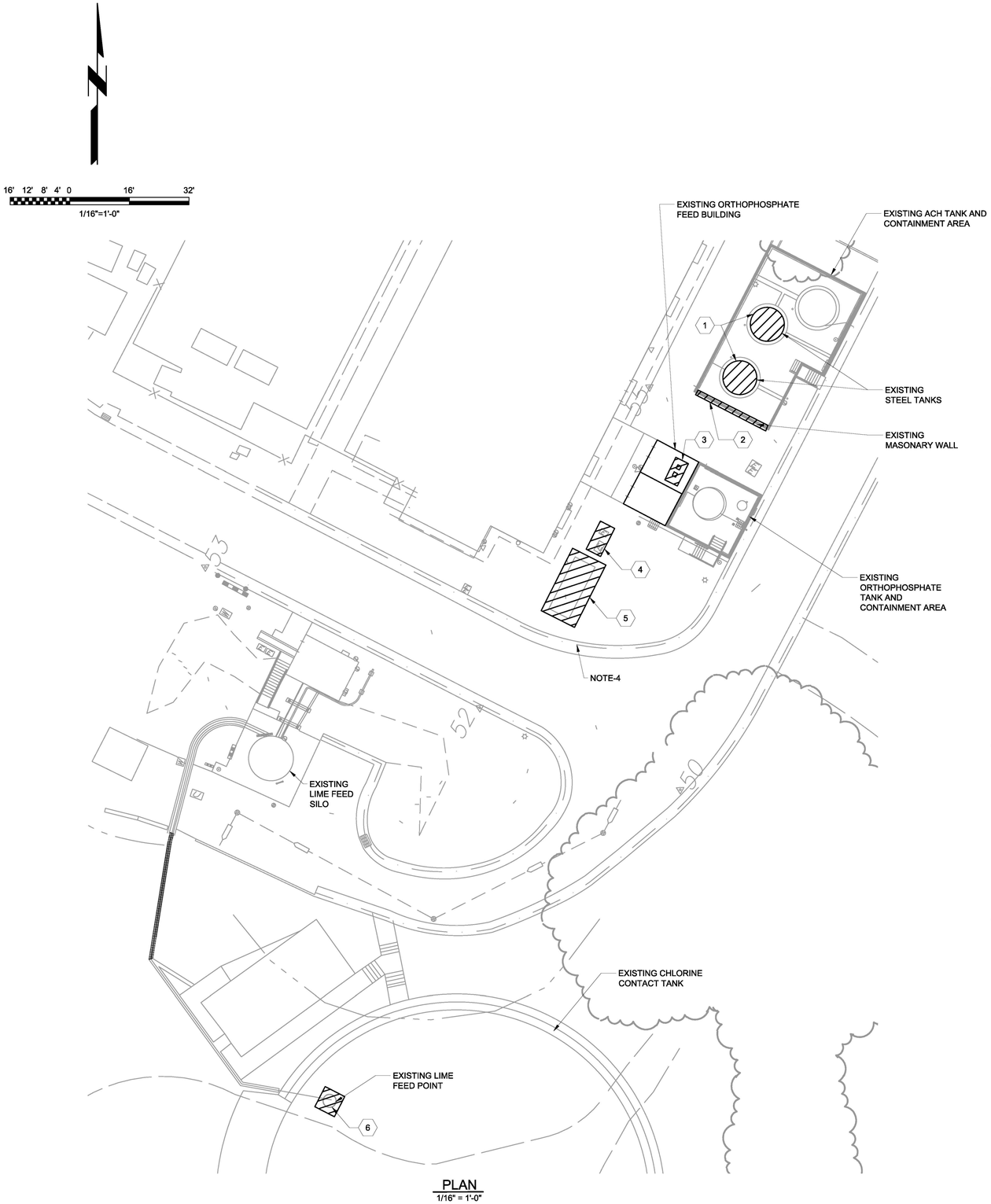
GENERAL

PROCESS FLOW DIAGRAM

G-701

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D1:1020



PLAN
1/16" = 1'-0"

5





4



6

GENERAL NOTES

1. THIS DRAWING IS TO AID THE CONTRACTOR TO UNDERSTAND THE DEMOLITION SCOPE AND CONTENT. REFER DRAWING D-102 AND D-103 FOR DETAILS.
2. CONTRACTOR SHALL FIELD VERIFY THE CURRENT ARRANGEMENT AND PRICE THE EFFORT ASSOCIATED WITH THE DEMOLITION AND NEW WORK AS REQUIRED TO PERFORM THE WORK.
3. DEMOLITION SHALL INCLUDE REMOVAL AND DISPOSAL OFF SITE ALL ITEMS.
4. CONTRACTOR SHALL RESTORE THE ROAD AND DRAIN TO EXISTING CONDITION WHEN THE EXISTING DRAINS ARE DEMOLISHED FOR CONSTRUCTION OF THE CONTAINMENT WALL AND SUMPS.

SHEET KEYNOTE

1. DEMOLISH THE EXISTING TWO (2) STEEL TANKS AND ASSOCIATED PIPING, SUPPORTS AND CONDUITS. DEMOLISH THE TANK PAD OF THE NORTH SIDE TANK. REFER DRAWING D-102 FOR DETAILS.
2. DEMOLISH EXISTING MASONARY WALL OF THE EXISTING ACH CONTAINMENT AREA. THE WALL IS APPROXIMATELY 8" WIDE AND 22" IN HEIGHT FROM THE CONTAINMENT FLOOR. CONTRACTOR SHALL FIELD VERIFY THE MEASUREMENTS. REFER DRAWING D-102 FOR DETAILS.
3. DEMOLISH THE TWO PUMP PADS IN THE ORTHOPHOSPHATE PUMP BUILDING. THE PADS ARE APPROXIMATELY 12" WIDE (SQUARE) AND 24" IN HEIGHT FROM THE FLOOR. REFER DRAWING D-103 FOR DETAILS.
4. DEMOLISH THE TWO EXISTING ELECTRICAL PULL BOXES. REMOVE THE CABLES FROM THE PULL BOXES PRIOR TO DEMOLITION. CONTRACTOR SHALL DOCUMENT THE EXISTING DESIGN IN CONSULTATION WITH THE OWNER PRIOR TO REMOVAL OF THE ELECTRICAL CABLES. CONTRACTOR TO BACKFILL THE TWO PULL BOXES AFTER CABLES ARE REMOVED.
5. DEMOLISH THE EXISTING AQUA AMMONIA TANK (LESS THAN 3000 GALLONS).
6. DEMOLISH THE EXISTING DIFFUSER ASSEMBLY (PVC MATERIAL) AND REPLACE WITH STAINLESS STEEL DIFFUSER ASSEMBLY.

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CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

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DEMOLITION

DEMOLITION PLAN

D-101

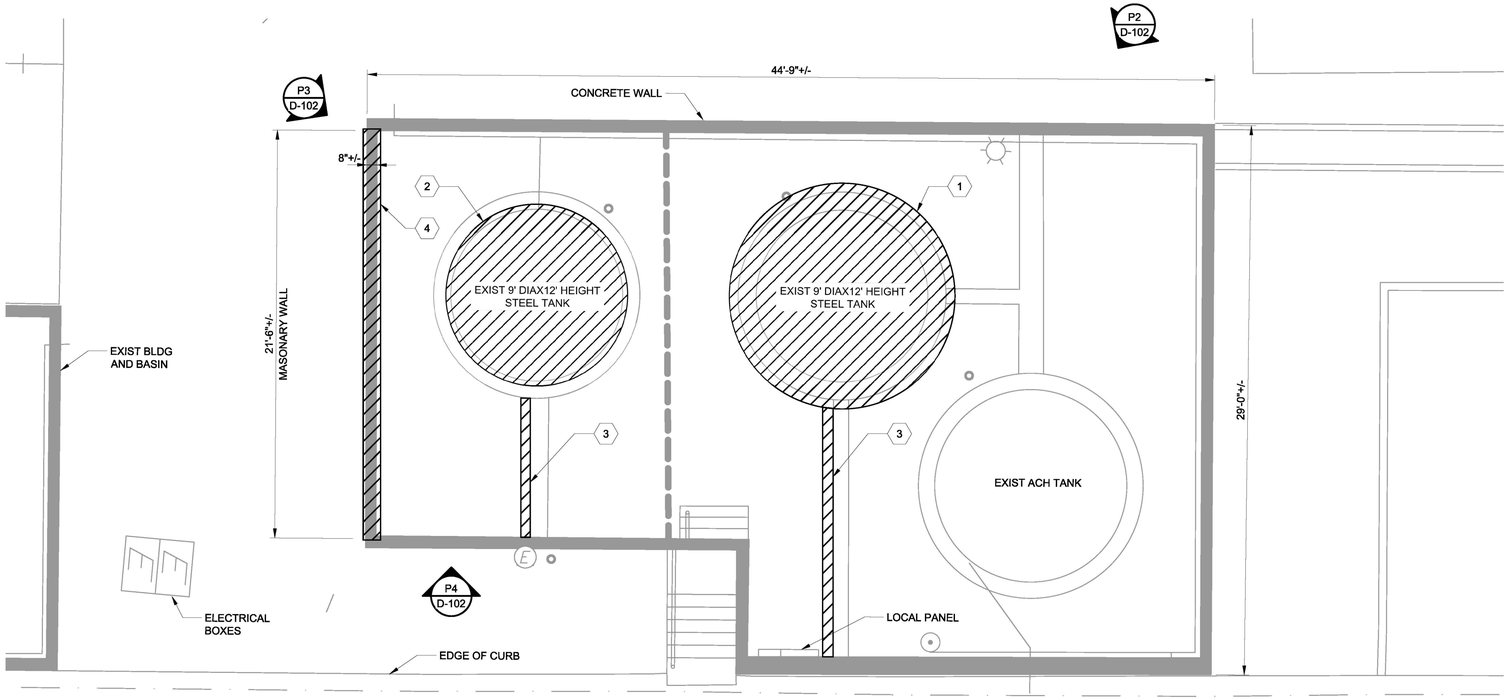
6 OF 43

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4' 2' 0 4' 8'

1/4"=1'-0"



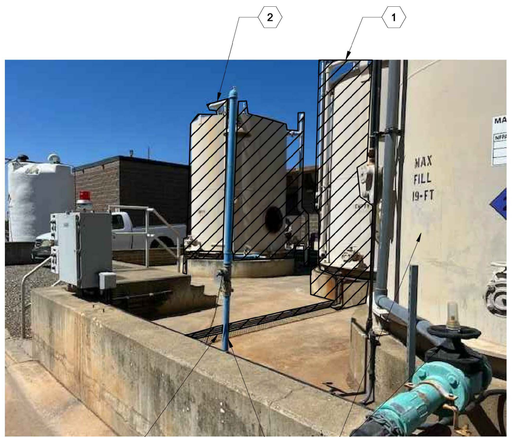
PLAN
1/4" = 1'-0"

GENERAL NOTES

1. THIS DRAWING IS TO AID THE CONTRACTOR TO UNDERSTAND THE DEMOLITION SCOPE AND CONTENT.
2. CONTRACTOR SHALL FIELD VERIFY THE CURRENT ARRANGEMENT AND PRICE THE EFFORT ASSOCIATED WITH THE DEMOLITION AND NEW WORK AS REQUIRED TO PERFORM THE WORK.
3. DEMOLITION SHALL INCLUDE REMOVAL AND DISPOSAL OF ALL ITEMS OFF SITE.
4. PROTECT IN-PLACE EXISTING TANK, PIPING,VALVES, APPURTENANCES, INSTRUMENTS, EYEWASH AND SHOWER STATIONS, AND PANELS NOT BEING REMOVED.
5. POST DEMOLITION AND CONSTRUCTION OF CONCRETE WALL, CONTRACTOR SHALL APPLY CORROSION PROTECTION LINING FOR THE ACH CONTAINMENT AREA, PER SPECIFICATION 09880.

SHEET KEYNOTE

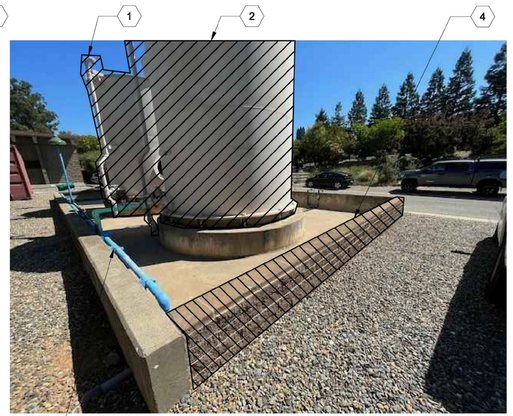
1. DEMOLISH THE EXISTING STEEL TANK, ALONG WITH ASSOCIATED PIPING, PIPE SUPPORT, AND CONDUITS, INCLUDING ALL INSTRUMENTS ON THE TANK. THE TANK CONCRETE PAD SHALL ALSO BE DEMOLISHED AND SMOOTHENED TO THE CONTAINMENT FLOOR. CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS PRIOR TO REMOVAL. CONTRACTOR SHALL REMOVE ALL ABANDONED PIPELINES ASSOCIATED WITH THE TANK WITHIN THE CONTAINMENT AREA AND CAP THEM.
2. DEMOLISH THE EXISTING STEEL TANK, ALONG WITH ASSOCIATED PIPING, PIPE SUPPORT, AND CONDUITS, INCLUDING ALL INSTRUMENTS ON THE TANK. PROTECT-IN-PLACE THE CONCRETE PAD OF THIS TANK. CONTRACTOR SHALL FILL THE ANCHOR BOLTS POCKETS OF THE CONCRETE PAD AND LEVEL IT UP.CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS. CONTRACTOR SHALL REMOVE ALL ABANDONED PIPELINES ASSOCIATED WITH THE TANK WITHIN THE CONTAINMENT AREA AND CAP THEM.
3. CONTRACTOR SHALL DEMOLISH ALL ABOVE GROUND CONDUIT AND CABLES ASSOCIATED WITH THE DEMOLISHED TANKS WITHIN THE BASIN AND UP TO THE LOCAL PANEL.
4. DEMOLISH THE EXISTING MASONRY WALL OF THE EXISTING ACH CONTAINMENT AREA. THE WALL IS APPROXIMATELY 8" WIDE AND 22" IN HEIGHT FROM THE CONTAINMENT FLOOR. CONTRACTOR SHALL FIELD VERIFY THE MEASUREMENTS. NEW CONCRETE WALL SHALL BE CONSTRUCTED.



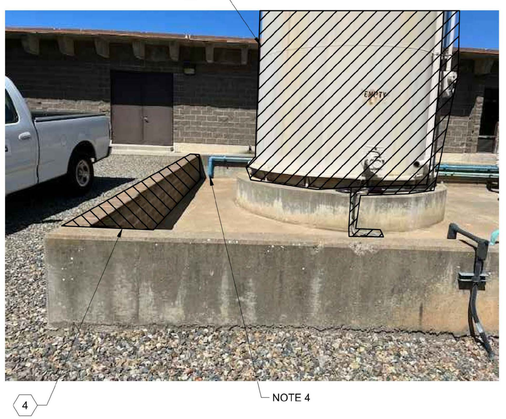
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P2 PHOTO
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P3 PHOTO
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P4 PHOTO
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D-102

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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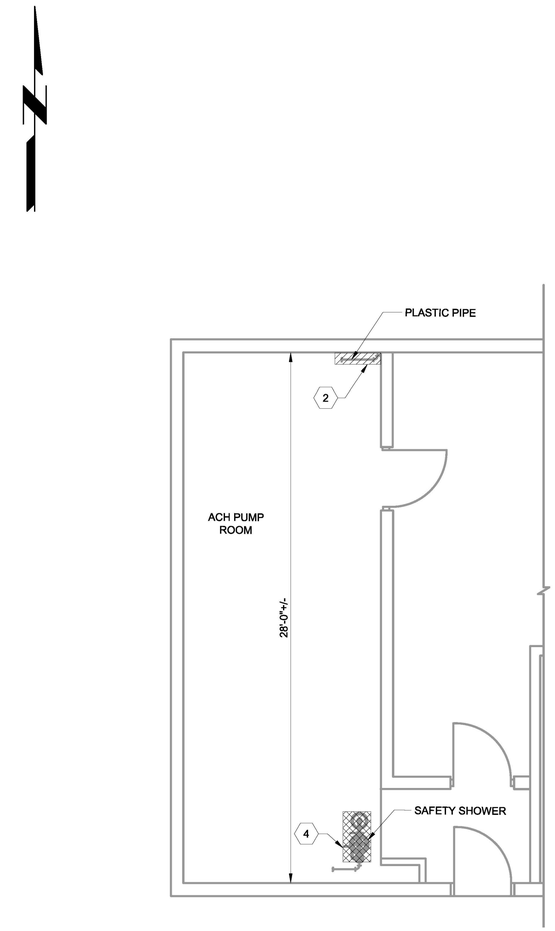
DEMOLITION

ACH CONTAINMENT AREA DEMOLITION PLAN

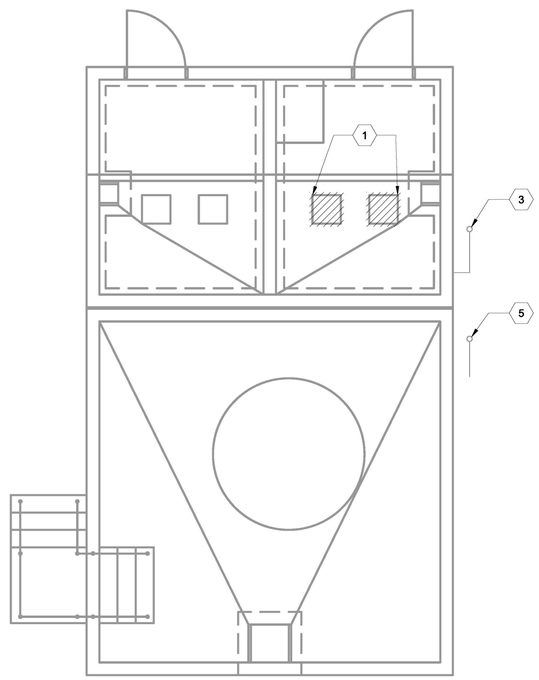
D-102

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4' 2' 0 4' 8'
1/4"=1'-0"



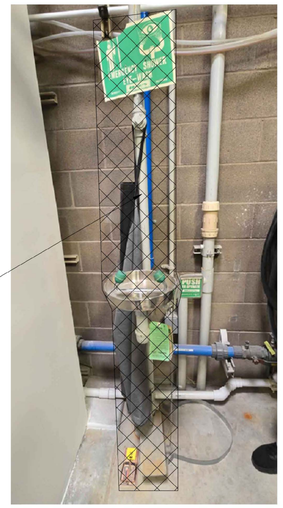
ACH PUMP ROOM PLAN
1/4" = 1'-0"

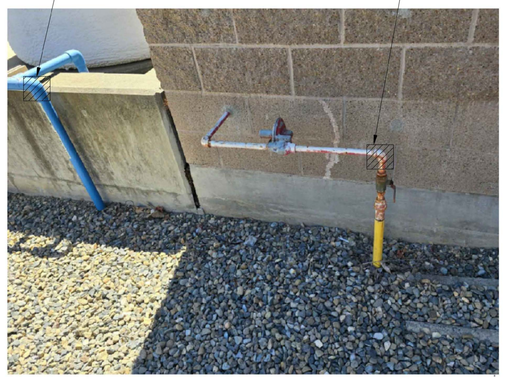


ORTHOPHOSPHATE FEED BUILDING PLAN
1/4" = 1'-0"









GENERAL NOTES

1. THIS DRAWING IS TO AID THE CONTRACTOR TO UNDERSTAND THE DEMOLITION SCOPE AND CONTENT.
2. CONTRACTOR SHALL FIELD VERIFY THE CURRENT ARRANGEMENT AND PRICE THE EFFORT ASSOCIATED WITH THE DEMOLITION AND NEW WORK AS REQUIRED TO PERFORM THE WORK.
3. DEMOLITION SHALL INCLUDE REMOVAL AND DISPOSAL OFF SITE ALL ITEMS.

SHEET KEYNOTE

1. DEMOLISH THE EXISTING TWO CONCRETE PUMP PADS IN THE EXISTING ORTHOPHOSPHATE PUMP BUILDING TO LEVEL WITH THE FLOOR. THE EXISTING CONCRETE PADS ARE APPROXIMATELY 12" WIDE (SQUARE) AND 24" IN HEIGHT FROM THE FLOOR. CONTRACTOR SHALL FIELD VERIFY THE DIMENSIONS.
2. REMOVE THE EMERGENCY ACH CONNECTION PIPE, LOCATED IN THE ACH PUMP ROOM. CAP THE PIPE AT THE VALVE. CLOSE THE WALL OPENING.
3. DEMOLISH ELBOW ON 1/2" NATURAL GAS CONNECTION. SEE SHEET P-102 FOR NEW GAS LINE ROUTING.
4. DISCONNECT THE UTILITY WATER CONNECTION TO THE EYEWASH AND SAFETY SHOWER LOCATED IN ACH PUMP ROOM. REINSTALL THE EYEWASH AND SAFTEY SHOWER PER THE LOCATION SHOWN IN C-102. RECONNECT THE UTILITY WATER LINE TO THE EYEWASH AND SAFTEY SHOWER. CONTRACTOR SHALL CONSIDER ADDITIONAL FITTINGS AND SPOOL FOR THIS RECONNECTION.
5. DEMOLISH THE 2" BEND AT UTILITY WATER LINE. REPLACE THIS WITH 2" TEE CONNECTION.

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PROJECT NO.:	416929

DEMOLITION

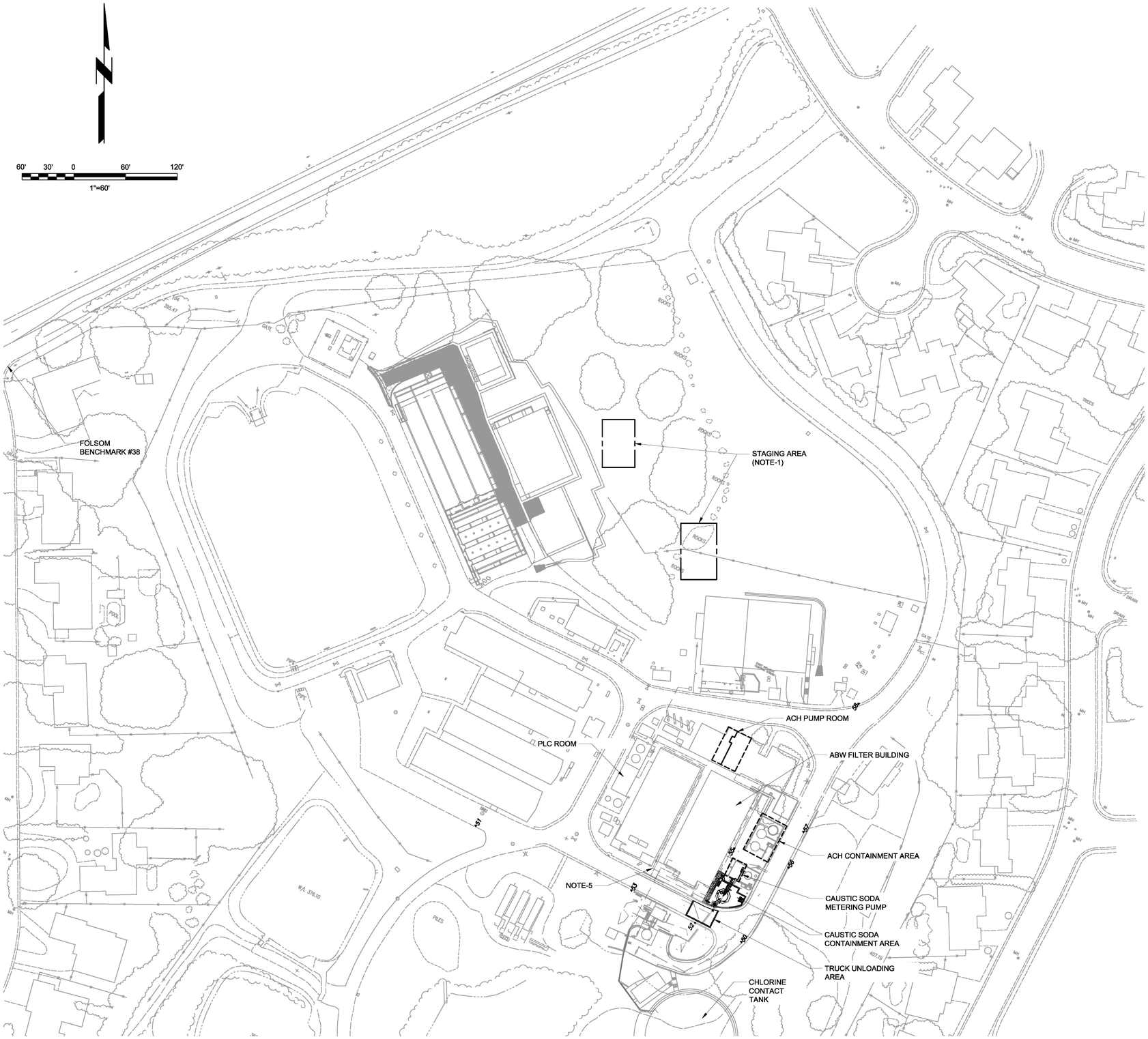
ACH AND ORTHOPHOSPHATE FEED BUILDING DEMOLITION PLAN

D-103

8 OF 43

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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OVERALL SITE PLAN
1" = 60'-0"

GENERAL NOTES

1. THE CONTRACTOR STAGING AREA SHOWN IS PER INFORMATION RECEIVED FROM THE OWNER. CONTRACTOR SHALL COORDINATE WITH THE OWNER TO IDENTIFY THE CORRECT LOCATION OF STAGING AREA.
2. VERTICAL DATUM: VERTICAL DATUM IS BASED ON CITY OF FOLSOM BENCHMARK #38, NGVD29 ELEVATION: 397.42'. BENCHMARK IS A BRASS DISK STAMPED "CITY OF FOLSOM B.M. 38" AT THE MIDPOINT OF THE EASTERLY CURB RETURN IN FRONT OF STREETLIGHT AT THE INTERSECTION OF NATOMA STREET AND CIMMARON CIRCLE.
3. HORIZONTAL CONTROL POINT TABLE.

POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
50	2012487.09	6804256.78	372.47	MAG NAIL
51	2012621.74	6803948.58	371.62	MAG NAIL
52	2012509.10	6804202.95	373.42	CUT X
53	2012546.88	6804129.26	372.79	CUT X
55	2012595.16	6804248.54	375.40	CUT X
56	2012573.07	6804311.49	373.53	CUT X
57	2012614.55	6804328.85	373.80	MAG NAIL
58	2012763.24	6804392.80	374.79	MAG NAIL

4. THE BASIS OF BEARING OF THE CONTROL POINTS IS NAD83 CALIFORNIA ZONE 2 COORDINATES BASED ON THE LINE BETWEEN NGS MONUMENT "DK2881" AND "DH6481" CALCULATED AS SOUTH 28°46'45" EAST.
5. THIS IS THE PROPOSED CAUSTIC SODA FEED DOSING LINE TO HEADWORKS. THE 2" HDPE PIPE WITH 6" OUTER FOAM JACKET IS APPROX. 400 FT AND IS ROUTED THROUGH THE EXISTING TRENCH AND PARTIALLY BURIED. CONTRACTOR SHALL LAY AND CAP THIS HDPE PIPE AT BOTH ENDS.CAPPING THE HDPE PIPE AND SEALING THE INSULATION JACKET SHALL BE PER PIPE MANUFACTURER RECOMMENDATION. CONTRACTOR SHALL FIELD VERIFY THE CAUSTIC SODA DOSING PIPE ROUTING IN CONSULTATION WITH THE OWNER.

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
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06/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	DC
DETAILED:	JAD
CHECKED:	RT
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

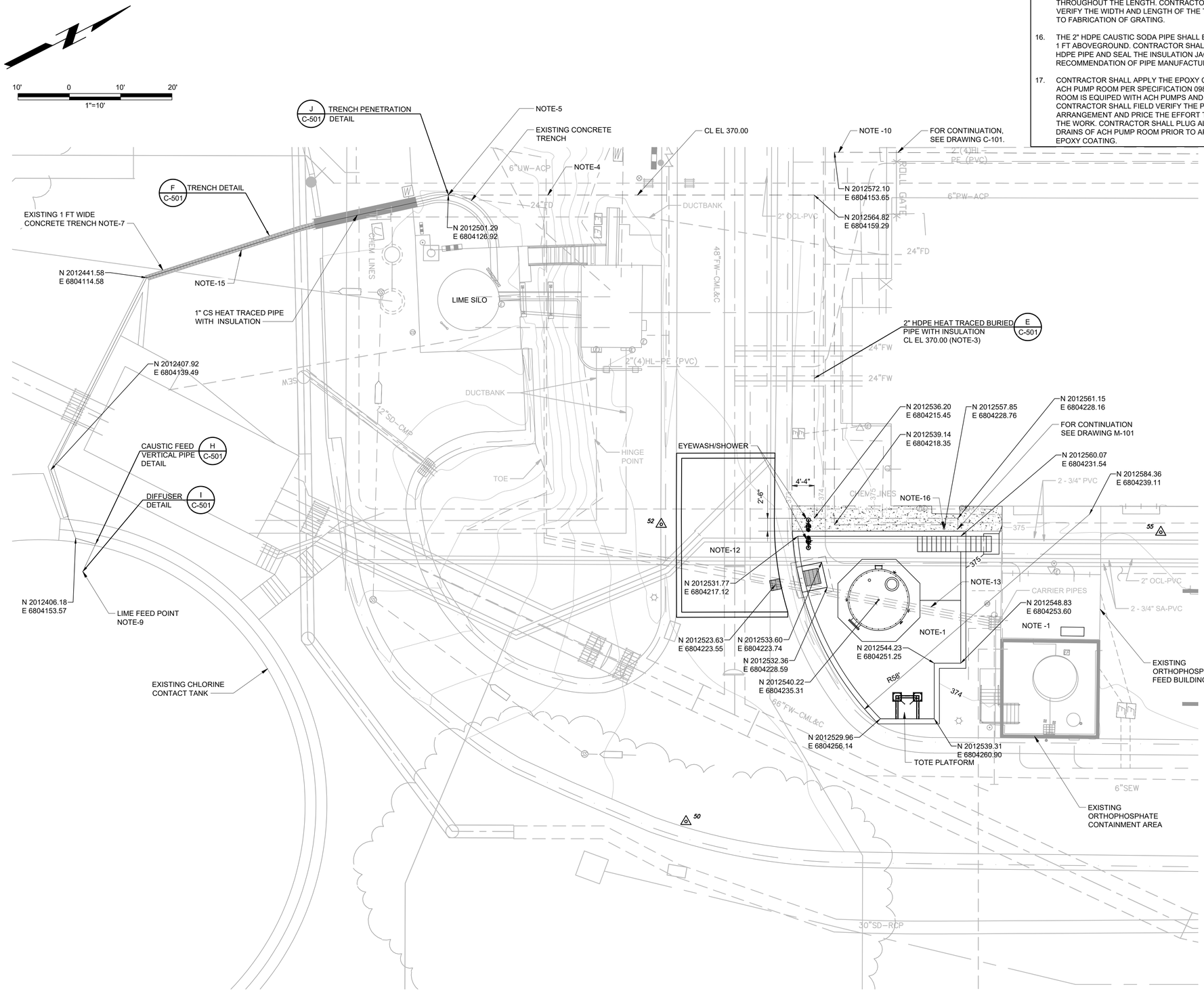
CIVIL

OVERALL SITE PLAN

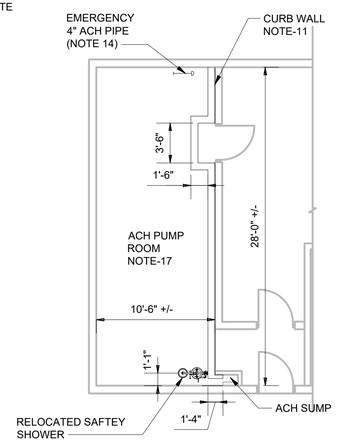
C-101

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PLAN
1" = 10'-0"



ACH PUMP ROOM PLAN
NO SCALE

GENERAL NOTES

1. THIS DRAWING COVERS THE YARD PIPING DETAILS. SEE M-101 AND M-102 FOR PIPING IN CAUSTIC CONTAINMENT AREA AND CAUSTIC SODA METERING PUMP ROOM.
2. CONTRACTOR SHALL FIELD VERIFY THE PIPE COORDINATES AND ADJUST THE VARIATIONS, PER SITE CONDITIONS.
3. THE 2" HDPE CAUSTIC SODA FEED PIPE SHALL BE DIRECTLY BURIED, AT MINIMUM 3 FEET BELOW THE GRADE.
4. THE 2" HDPE PIPE IN THIS AREA SHALL BE SLOPED TOWARDS SOUTH. CONTRACTOR SHALL INSTALL THE PIPE FOLLOWING THE SLOPED GRADE LEVEL.
5. THE 2" HDPE CAUSTIC SODA FEED PIPE SHALL PENETRATE THE EXISTING TRENCH AS SHOWN PER DETAIL I ON C-501 AND SHALL TRANSITION TO 1" STEEL PIPE WITH HEAT TRACING INSULATION.
6. CONTRACTOR SHALL INSTALL THE UNISTRUT SUPPORT FOR THE CAUSTIC SODA FEED PIPE AND EXISTING LIME FEED PIPE IN THE EXISTING TRENCH. THE PIPE SUPPORT SPAN SPACING SHOULD NOT BE MORE THAN 7 FT FOR STEEL PIPE AND 5.5 FT FOR PLASTIC PIPE.
7. THE TRENCH DIMENSION MENTIONED IS PER INFORMATION GATHERED FROM THE SITE. IT WAS OBSERVED THE TRENCH WIDTH CHANGES IN DIFFERENT SECTIONS. CONTRACTOR SHALL FIELD VERIFY THE TRENCH DIMENSIONS PRIOR TO FABRICATION AND INSTALLATION OF UNISTRUT SUPPORT.
8. CONTRACTOR TO PROTECT IN PLACE THE EXISTING FLEXIBLE LIME DOSING PIPE. CONTRACTOR SHALL PLACE THE EXISTING LIME DOSING PIPE ON THE NEW UNISTRUT SUPPORT IN THE TRENCH. THE LIME DOSING PIPE SHALL STAY OPERATIONAL DURING AND AFTER CONSTRUCTION.
9. THE EXISTING LIME DOSING DIFFUSER ASSEMBLY SHALL BE REPLACED WITH THE NEW STAINLESS STEEL DIFFUSER ASSEMBLY, INCLUDING ADDITION OF ISOLATION VALVES AT LIME DOSING AND CAUSTIC SODA DOSING PIPE.
10. THIS IS THE PROPOSED 2" HDPE HEAT TRACED CAUSTIC SODA FEED DOSING LINE TO HEADWORKS. THE PIPE IS BURIED 3 FT BELOW GROUND CONTRACTOR SHALL FIELD VERIFY THE ROUTE SHOWN IN DRAWING C-101.
11. THE ARRANGEMENT OF THE CURB WALL IN ACH PUMP ROOM IS SHOWN TO THE BEST OF INFORMATION COLLECTED FROM SITE. CONTRACTOR SHALL FIELD VERIFY THE ARRANGEMENT IN CONSULTATION WITH THE OWNER. SEE DETAIL-D OF S-003 FOR CURB WALL.
12. THE AREA MARKED IS FOR CHEMICAL TRUCK UNLOADING AREA. SEE DRAWING C-103 FOR DETAILS.
13. THERE ARE FOUR BURIED CARRIER PLASTIC PIPE CARRYING ORTHOPHOSPHATE CHEMICAL TUBING. CONTRACTOR SHALL DETERMINE THE DEPTH OF THESE BURIED CARRIER PIPES PRIOR TO EXCAVATION FOR THE CAUSTIC SODA STORAGE TANK CONTAINMENT AREA. IF THE ORTHOPHOSPHATE CARRIER PIPES INTERFERE WITH THE CONSTRUCTION OF CAUSTIC SODA CONTAINMENT AREA, CONTRACTOR SHALL RE-ROUTE THE ORTHOPHOSPHATE TUBING, IN CONSULTATION WITH THE OWNER.
14. CONTRACTOR SHALL CAP THE EMERGENCY ACH PIPE AT THE ISOLATION VALVE..
15. GRATING SHALL BE INSTALLED FOR THIS TRENCH PORTION. THE TRENCH IS APPROX. 35 FT IN LENGTH. THE WIDTH OF THE TRENCH IS 1 FT BUT VARIES THROUGHOUT THE LENGTH. CONTRACTOR SHALL FIELD VERIFY THE WIDTH AND LENGTH OF THE TRENCH PRIOR TO FABRICATION OF GRATING.
16. THE 2" HDPE CAUSTIC SODA PIPE SHALL BE TERMINATED 1 FT ABOVEGROUND. CONTRACTOR SHALL CAP THE HDPE PIPE AND SEAL THE INSULATION JACKET PER RECOMMENDATION OF PIPE MANUFACTURER.
17. CONTRACTOR SHALL APPLY THE EPOXY COATING IN THE ACH PUMP ROOM PER SPECIFICATION 09880. THE PUMP ROOM IS EQUIPED WITH ACH PUMPS AND PIPING. CONTRACTOR SHALL FIELD VERIFY THE PUMP ROOM ARRANGEMENT AND PRICE THE EFFORT TO PERFORM THE WORK. CONTRACTOR SHALL PLUG ALL FLOOR DRAINS OF ACH PUMP ROOM PRIOR TO APPLICATION OF EPOXY COATING.

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06/30/26

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

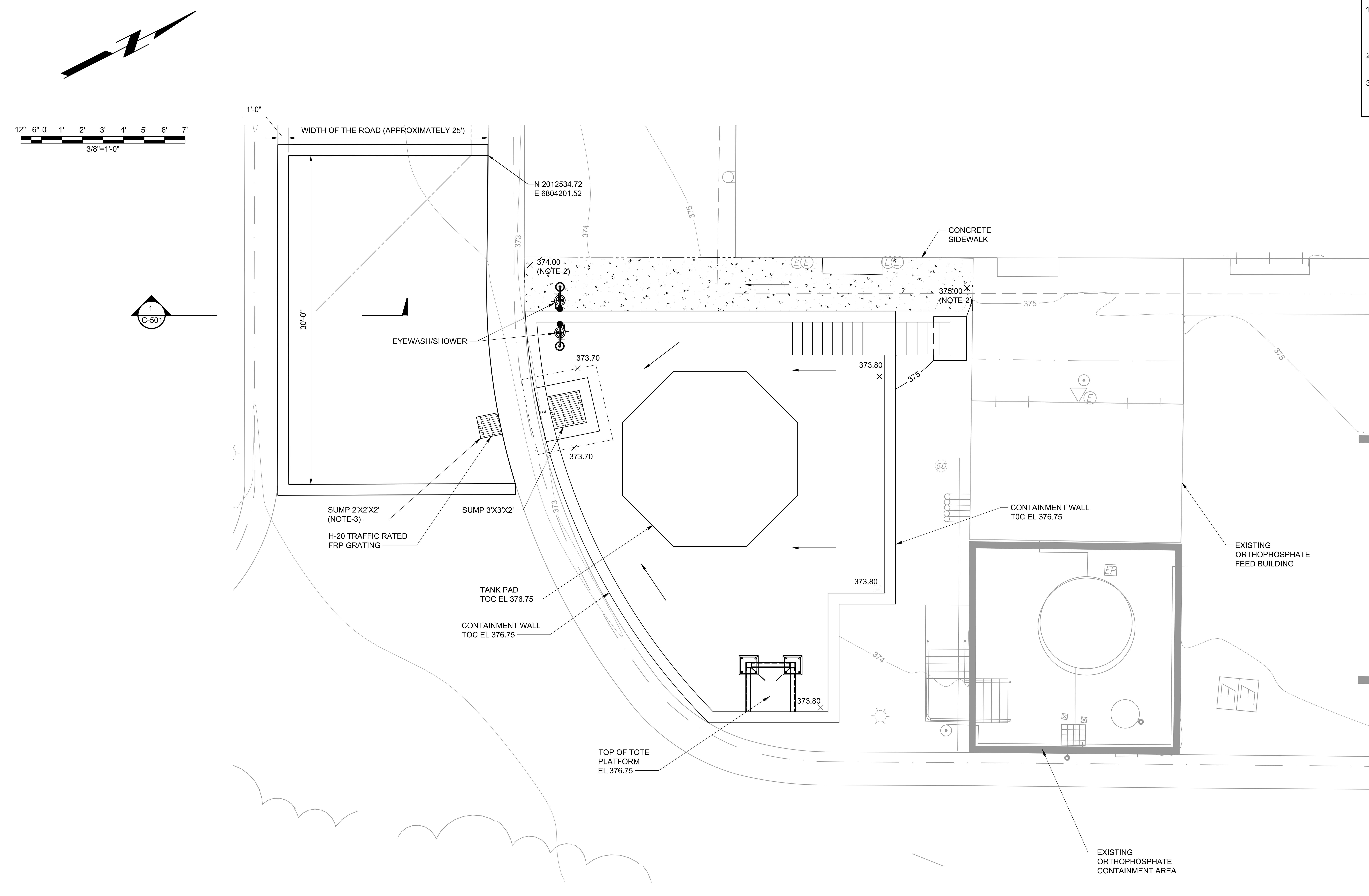
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APPROVED:	AS
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CAUSTIC SODA CONTAINMENT AREA PLAN AND YARD PIPING

C-102

10 OF 43



PLAN
1" = 5'-0"

GENERAL NOTES

1. CONTRACTOR SHALL SCREED CONCRETE AS INDICATED BY SLOPE ARROWS IN THE CAUSTIC SODA CONTAINMENT AREA FOR DRAINAGE TOWARDS SUMP.
2. CONTRACTOR SHALL MATCH THE GRADE FOR THE NEW SIDEWALK WITH THE EXISTING GRADE.
3. EXTERNAL SUMP SHALL BE PRECAST AND SHALL BE DESIGNED BY VENDOR THE FRP GRATING SHALL BE DESIGNED FOR HS-20 LOADING..

LEGEND

x CAUSTIC STORAGE CONTAINMENT AREA FINISHED FLOOR ELEVATION

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CITY OF FOLSOM

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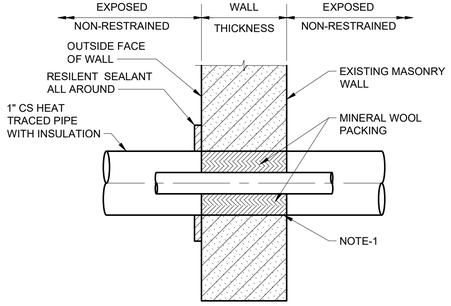
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GRADING AND PAVING

C-103

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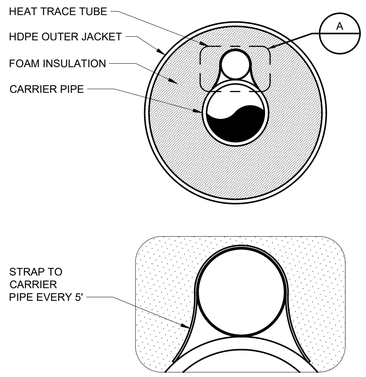
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NOTE:

1. CORE DRILL THE EXISTING MASONARY WALL TO SMOOTH.

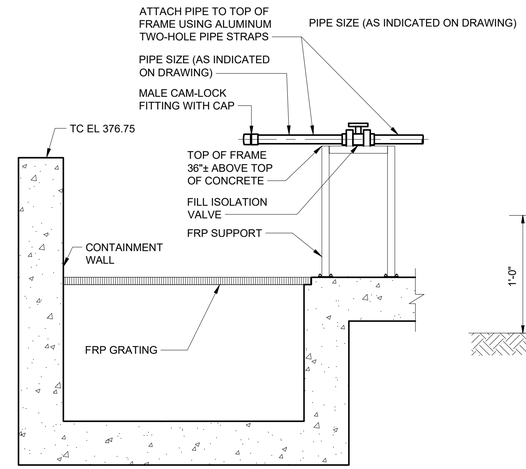
A M-301 WALL PIPE PENETRATION
NO SCALE



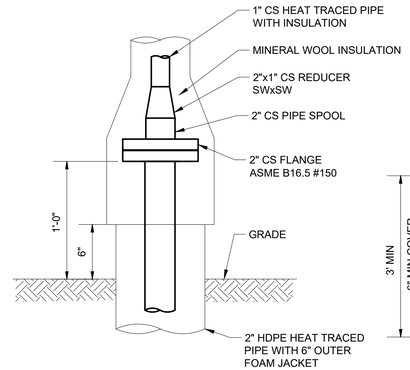
DETAIL A

TAPE DOWN BOTH SIDES TO KEEP HEAT TRACE TUBE TIGHT TO CARRIER PIPE AND FOAM INSULATION AWAY FROM BOTTOM OF HEAT TRACE TUBE

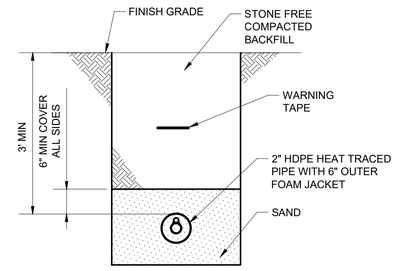
B - FOAM INSULATED AND HEAT TRACED HDPE CARRIER PIPE DETAIL
NO SCALE



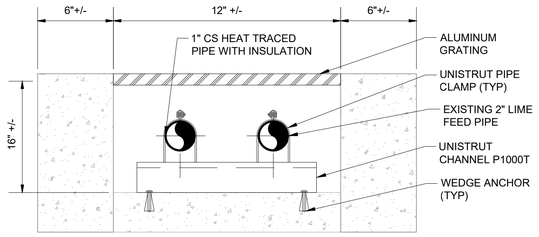
C M-101 TRUCK UNLOADING STATION DETAIL
NO SCALE



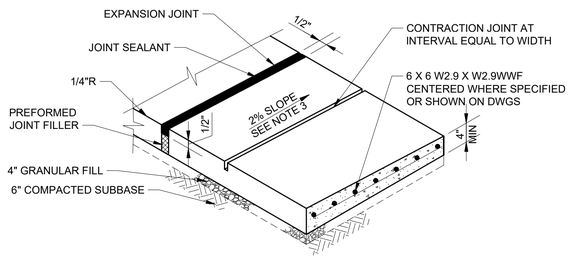
D M-301 ABOVE GROUND AND UNDERGROUND PIPE JOINT DETAIL
NO SCALE



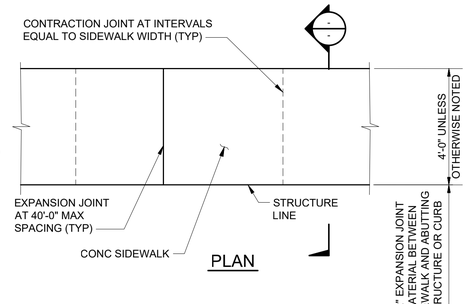
E C-102 BURIED CAUSTIC SODA FEED PIPE DETAIL
NO SCALE



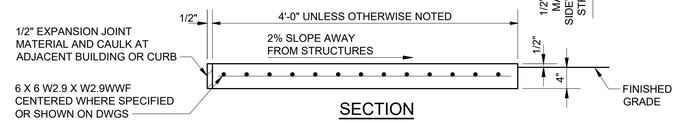
F C-102 TRENCH DETAIL
NO SCALE



ISOMETRIC



PLAN

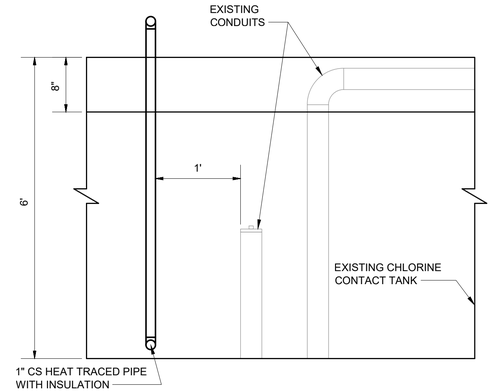


SECTION

G - REINFORCED CONCRETE SIDEWALK DETAIL
NO SCALE

NOTES:

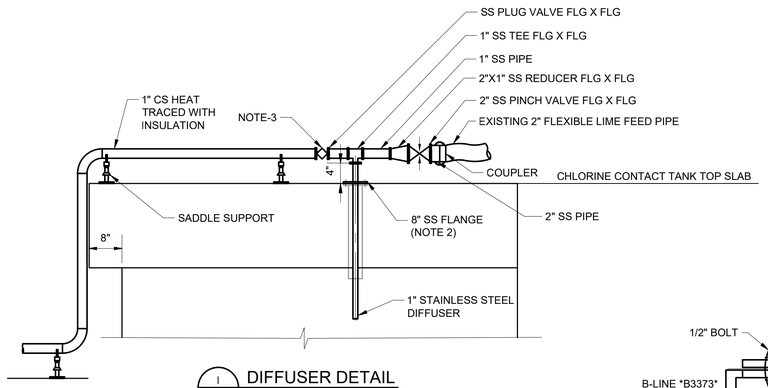
1. USE 1/2-INCH EXPANSION JOINT MATERIAL BETWEEN CONCRETE SIDEWALK AND ABUTTING STRUCTURES.
2. CONCRETE SIDEWALK IS TO BE SLOPED TO DRAIN AT 2% UNLESS NOTED OTHERWISE ON THE SITE GRADING DRAWINGS.
3. CONTRACTION JOINTS SHALL BE PLACED BETWEEN ADJACENT POURS.
4. ALL REBAR SHALL BE EPOXY COATED.
5. PROVIDE FULL DEPTH 1/2-INCH PREFORMED JOINT FILLER ALL AROUND AT ALL UTILITY POLES, METER BOXES, ETC.
6. PLACE PREFORMED JOINT FILLER FULL DEPTH THROUGH JOINTS AT POINT OF TANGENCY AND AT MINIMUM 25 FOOT INTERVALS.



H C-102 CAUSTIC SODA FEED VERTICAL PIPE DETAIL
NO SCALE

NOTE:

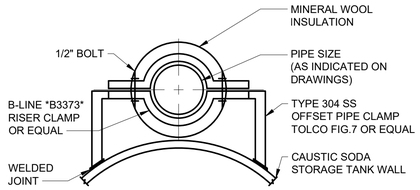
THE CAUSTIC SODA FEED PIPE SHALL BE SUPPORTED AT THE BOTTOM CONCRETE SLAB AND ON TOP SLAB OF CHLORINE CONTACT TANK. NO SUPPORT SHALL BE PROVIDED FROM THE SIDE WALL OF THE TANK.



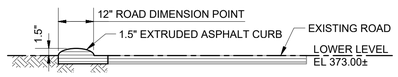
I C-102 DIFFUSER DETAIL
NO SCALE

NOTES:

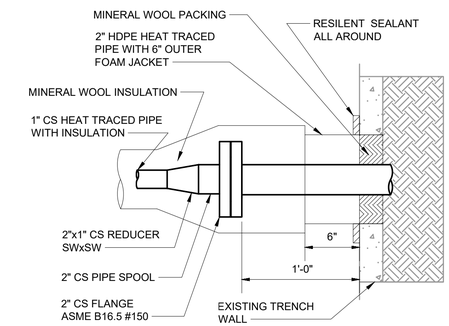
1. THE EXISTING DIFFUSER ASSEMBLY IS OF PVC MATERIAL AND SHALL BE REPLACED WITH SS ASSEMBLY.
2. THE 8" FLANGE IS SHOWN PER INFORMATION OF THE EXISTING PVC DIFFUSER ASSEMBLY. CONTRACTOR SHALL FIELD VERIFY THE FLANGE SIZE EMBEDDED IN THE TOP SLAB OF THE CHLORINE CONTACT TANK AND PROVIDE SUITABLE SIZE SS FLANGE.
3. CONTRACTOR SHALL NOTE THAT THIS IS A DISSIMILAR MATERIAL FLANGE CONNECTION AND SHALL PROVIDE MEANS TO AVOID DIRECT CONTACT BETWEEN THE DISSIMILAR MATERIALS.



K M-301 VERTICAL PIPE SUPPORT
NO SCALE



1 C-103 SECTION
NO SCALE



J C-102 TRENCH PENETRATION DETAIL
NO SCALE

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MISCELLANEOUS DETAILS

C-501

12 OF 43

GENERAL

1. THE APPLICABLE BUILDING CODE IS THE 2022 CALIFORNIA BUILDING CODE (CBC).
2. THE REQUIREMENTS INDICATED ON THIS SHEET ARE INTENDED AS A BASIC SUMMARY OF THE MATERIAL AND CONSTRUCTION REQUIREMENTS FOR THE PROJECT. ADDITIONAL, MORE STRINGENT REQUIREMENTS ARE GIVEN IN THE PROJECT DETAIL DRAWINGS AND SPECIFICATIONS.
3. ALL STRUCTURAL RELATED SHOP DRAWINGS SHALL BE REVIEWED BY THE ENGINEER PRIOR TO CONSTRUCTION.
4. STRUCTURES MAY BE BUOYANT WHEN EMPTY DURING CONSTRUCTION. CONTRACTOR SHALL PROTECT STRUCTURES AGAINST FLOTATION UNTIL CONSTRUCTION IS COMPLETE.
5. CONTRACTOR TO LOCATE ALL EMBEDDED CONDUITS AND INSERTS BEFORE DRILLING ANY HOLES OR OPENINGS IN THE EXISTING BASIN WALL IN ORDER TO AVOID ANY DAMAGE TO THE EXISTING STRUCTURE.

CAST-IN-PLACE CONCRETE

1. A MINIMUM 28 DAY COMPRESSIVE STRENGTH (f'_c) OF 4,000 PSI WAS UTILIZED IN THE DESIGN OF STRUCTURAL REINFORCED CONCRETE. SEE SPECIFICATIONS FOR CONSTRUCTION STRENGTH REQUIREMENTS.
2. THE LOCATION OF ALL CONSTRUCTION JOINTS AND OTHER TYPES OF JOINTS, OTHER THAN THOSE SPECIFIED OR SHOWN ON THE PLANS, SHALL BE ACCEPTABLE TO THE ENGINEER PRIOR TO PLACING CONCRETE.
3. ALL EXPOSED CORNERS OF CONCRETE SHALL HAVE 3/4" MINIMUM CHAMFER, UNLESS SHOWN OR NOTED OTHERWISE.

REINFORCING STEEL

1. ALL REINFORCING BAR SHALL BE GRADE 60, DEFORMED, ASTM A615, UNLESS NOTED OTHERWISE.
2. DIMENSIONS TO REINFORCING BARS ARE TO BAR CENTERLINES, UNLESS NOTED OTHERWISE. BAR COVER IS THE CLEAR DISTANCE BETWEEN THE BAR AND THE CONCRETE SURFACE.
3. NO WELDING OF REINFORCING BARS SHALL BE PERMITTED UNLESS APPROVAL IS OBTAINED FROM THE ENGINEER PRIOR TO CONSTRUCTION.

POST-INSTALLED ANCHORS

1. POST-INSTALLED ANCHORS SHALL INCLUDE ADHESIVE ANCHORS (THREADED RODS, BOLTS OR REINFORCING BARS), EXPANSION ANCHORS, AND UNDERCUT ANCHORS INSTALLED INTO HARDENED CONCRETE OR MASONRY. SEE THE ANCHORAGE IN CONCRETE AND MASONRY SPECIFICATION SECTION FOR ADDITIONAL REQUIREMENTS.
2. POST-INSTALLED ANCHORS SHALL ONLY BE USED WHERE INDICATED ON THE DRAWINGS. CONTRACTOR SHALL OBTAIN APPROVAL FROM ENGINEER PRIOR TO USING POST-INSTALLED ANCHORS FOR MISSING OR MISPLACED CAST-IN-PLACE ANCHORS.
3. CARE SHALL BE TAKEN TO AVOID CONFLICTS WITH EXISTING REINFORCING STEEL AND OTHER EMBEDDED ITEMS WHEN DRILLING HOLES. REINFORCING BARS SHALL NOT BE DAMAGED DURING DRILLING OR ANCHOR INSTALLATION. HOLES SHALL BE DRILLED AND CLEANED PER THE PRODUCT MANUFACTURER'S INSTRUCTIONS. ANCHORS SHALL BE INSTALLED PER THE PRODUCT MANUFACTURER'S INSTRUCTIONS AT NOT LESS THAN MINIMUM EDGE DISTANCES AND/OR SPACINGS INDICATED IN THE MANUFACTURER'S LITERATURE.
4. SUBSTITUTION REQUESTS FOR PRODUCTS OTHER THAN THOSE LISTED IN THE SPECIFICATION OR INDICATED ON THE DRAWINGS SHALL BE SUBMITTED TO ENGINEER FOR REVIEW AND APPROVAL. PRODUCT ICC-ESR EVALUATION REPORTS SHALL BE INCLUDED WITH THE SUBMITTAL PACKAGE. IF REQUESTED, CALCULATIONS PREPARED BY A REGISTERED PROFESSIONAL ENGINEER USING METHODS AND PROCEDURES REQUIRED BY THE BUILDING CODE MAY BE REQUIRED AS PART OF THE SUBMITTAL PACKAGE.
5. UNLESS NOTED OTHERWISE, THE MINIMUM EMBEDMENT PROVIDED FOR ADHESIVE ANCHORED REINFORCING BARS SHALL DEVELOP THE FULL TENSILE STRENGTH OF THE BAR.
6. SPECIAL INSPECTION WILL BE PROVIDED FOR ALL POST-INSTALLED ANCHORS.

STAINLESS STEEL

1. STAINLESS STEEL BOLTS SHALL CONFORM TO ASTM F593, ALLOY GROUP 1 OR 2, UNLESS NOTED OTHERWISE. MINIMUM YIELD STRENGTH SHALL BE 45 KSI.
2. STAINLESS STEEL PLATES SHALL CONFORM TO ASTM A240, TYPE 316L.
3. STAINLESS STEEL STRUCTURAL SHAPES SHALL CONFORM TO ASTM A1069 OR ASTM A276, TYPE 316L.

ALUMINUM

1. UNLESS NOTED OTHERWISE, ALUMINUM ALLOY IN ALL ALUMINUM STRUCTURAL MATERIALS SHALL BE 6061-T6. PIPE AND TUBING FOR GUARDRAIL AND HANDRAIL SHALL BE ALLOY 6061-T6.
2. ALL ALUMINUM SURFACES IN CONTACT WITH CONCRETE OR DISSIMILAR METALS SHALL BE COATED OR COVERED WITH A HEAVY COAT OF EPOXY ENAMEL TO PREVENT ALUMINUM-CONCRETE REACTION OR ELECTROLYTIC ACTION.

STRUCTURAL STEEL

1. ROLLED WIDE FLANGE SHAPES SHALL HAVE A MINIMUM YIELD STRENGTH OF 50 KSI;
   CHANNELS, PLATES AND ANGLES A MINIMUM OF 50 KSI;
   STRUCTURAL PIPES SHALL HAVE A MINIMUM OF 35 KSI;
   ROUND STRUCTURAL TUBES A MINIMUM OF SECTIONS OF 50 KSI;
2. WELDING SHALL BE DONE WITH A FILLER MATERIAL HAVING A MINIMUM TENSILE STRENGTH OF 70 KSI.
3. BOLTED CONNECTIONS SHALL USE 3/4" DIA ASTM F3125, GRADE A325 BOLTS OR GRADE F1852 TWIST-OFF BOLTS, WITH THE THREADS EXCLUDED FROM THE SHEAR PLANE, UNLESS NOTED OTHERWISE.
4. CARBON STEEL OR GALVANIZED STEEL ANCHOR RODS AND ANCHOR BOLTS SHALL CONFORM TO ASTM F1554 GRADE 36.
5. HOLES FOR ANCHOR RODS AND ANCHOR BOLTS IN COLUMN BASE PLATES USING ASTM F844 OR F436 FLAT CIRCULAR WASHERS SHALL BE AS FOLLOWS:

   BOLTS/RODS 3/4" TO 1" - 5/16" OVERSIZE
   BOLTS/RODS 1" TO 2" - 1/2" OVERSIZE
   BOLTS/RODS OVER 2" - 1" OVERSIZE

   AT THE CONTRACTORS OPTION, OVERSIZED HOLES LARGER THAN THOSE LISTED ABOVE MAY BE USED, PROVIDED THAT 3/8" PLATE WASHERS ARE USED WITH STANDARD HOLES AND FIELD WELDED WITH A 5/16" FILLET WELD TO THE BASE PLATE ALONG A MIN OF 3 SIDES.
6. STEEL LEGEND


INDICATES TWO BOLT ATTACHMENT OF HORIZONTAL BRACING TO UNDERSIDE OF BEAM. SHIM AS REQUIRED


INDICATES ANGLE OR PLATE TO BE WELDED ON THREE SIDES


INDICATES FOUR BOLT ATTACHMENT OF MONORAIL TO UNDERSIDE OF SUPPORT BEAM. SPACER OR STANDOFF DETAIL AS REQUIRED



INDICATES NONSTANDARD FRAMING CONNECTION



INDICATES HORIZONTAL OR VERTICAL BRACING CONNECTION DETAIL


INDICATES MOMENT CONNECTION

VERTICAL BRACING IS SHOWN ON PLAN THUS:


EXTENDING UP FROM THE ELEVATION INDICATED

EXTENDING DOWN FROM THE ELEVATION INDICATED


EXTENDING UP AND DOWN FROM THE ELEVATION INDICATED

EXCAVATION, BACKFILL, AND FOUNDATIONS

1. FOUNDATION CONSTRUCTION SHALL NOT BEGIN UNTIL ANY REQUIRED SPECIAL INSPECTION HAS BEEN COMPLETED AND THE CONTRACTOR NOTIFIED TO PROCEED.
2. TO FACILITATE SCHEDULING, AT LEAST 48 HOURS ADVANCE NOTICE SHALL BE GIVEN TO THE ENGINEER PRIOR TO THE REQUIRED INSPECTIONS.
3. UNLESS NOTED OTHERWISE, BACKFILL SHALL NOT BE PLACED AGAINST WALLS WHICH SUPPORT A CONCRETE SLAB OR WALKWAY UNTIL THE TOP SLAB OR WALKWAY HAS BEEN PLACED IN ITS ENTIRETY AND ALL CONCRETE HAS REACHED THE SPECIFIED DESIGN STRENGTH.
4. OVER-EXCAVATION OF SOIL, OR OVER-BREAKING OF ROCK, THAT WOULD RESULT IN A STRUCTURAL CONCRETE THICKNESS GREATER THAN INDICATED ON THE DRAWINGS SHALL BE CLASSIFIED AS UNAUTHORIZED EXCAVATION. CONTRACTOR SHALL SELECT ONE OF TWO METHODS TO ADDRESS UNAUTHORIZED EXCAVATION.
   - REPLACE UNAUTHORIZED EXCAVATION MATERIAL WITH LEAN CONCRETE THAT IS PLACED SEPARATELY FROM THE STRUCTURAL CONCRETE INDICATED ON THE DRAWINGS. CONTRACTOR WILL RECEIVE NO ADDITIONAL PAYMENT FOR THE LEAN CONCRETE.
   - REPLACE UNAUTHORIZED EXCAVATION MATERIAL WITH STRUCTURAL CONCRETE THAT IS PLACED MONOLITHICALLY WITH THE STRUCTURAL CONCRETE INDICATED ON THE DRAWINGS, CREATING AN ENLARGED SECTION. CONTRACTOR SHALL NOTIFY ENGINEER FOR DIRECTION PRIOR TO PERFORMING THIS WORK. THE INCREASED CONCRETE THICKNESS MAY REQUIRE ADDITIONAL REINFORCEMENT AND/OR OTHER DESIGN MODIFICATIONS. IF THE INCREASED CONCRETE THICKNESS EXCEEDS 36 INCHES, ENGINEER MAY REQUIRE CONTRACTOR TO IMPLEMENT MASS CONCRETE HEAT MITIGATION PROCEDURES. CONTRACTOR WILL RECEIVE NO ADDITIONAL PAYMENT FOR EXTRA STRUCTURAL CONCRETE, ADDITIONAL REINFORCEMENT, OTHER DESIGN MODIFICATIONS, OR MASS CONCRETING PROCEDURES.
5. THE FOLLOWING NET ALLOWABLE BEARING PRESSURES WERE UTILIZED IN THE DESIGN OF THE FOUNDATIONS.

   ALLOWABLE BEARING PRESSURE
   DEAD PLUS LIVE.....5000 PSF (PER GEOTECHNICAL REPORT)
   ALL LOADS (W/ WIND & SEISMIC).....6600 PSF (PER GEOTECHNICAL REPORT)
   COEFFICIENT AGAINST SLIDING (ULTIMATE).....0.4

SPECIAL INSPECTIONS

1. CODE REQUIRED SPECIAL INSPECTIONS AND TESTS WILL BE CONDUCTED BY APPROVED AGENCIES EMPLOYED BY THE OWNER IN ACCORDANCE WITH THE APPLICABLE BUILDING CODE.
2. THE STATEMENT OF SPECIAL INSPECTIONS WILL BE PREPARED BY THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE DURING CONSTRUCTION.
3. EACH CONTRACTOR RESPONSIBLE FOR THE CONSTRUCTION OF A MAIN WIND OR SEISMIC FORCE RESISTING SYSTEM, DESIGNATED SEISMIC SYSTEM OR A WIND OR SEISMIC RESISTING COMPONENT LISTED IN THE STATEMENT OF SPECIAL INSPECTIONS SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK ON THE SYSTEM OR COMPONENT.
4. SEE THE QUALITY CONTROL SECTION AND THE CODE REQUIRED SPECIAL INSPECTIONS AND PROCEDURES SECTION OF THE SPECIFICATIONS FOR FURTHER CLARIFICATION OF RESPONSIBILITIES.

DELEGATED DESIGN

1. THE FOLLOWING ITEMS ARE IDENTIFIED IN THE DRAWINGS AND SPECIFICATIONS AS BEING DESIGNED AND SEALED BY THE CONTRACTOR OR THE CONTRACTOR'S SUPPLIER IN ACCORDANCE WITH THE SPECIFICATIONS INDICATED BELOW. SUBMITTALS FOR THESE ITEMS SHALL BE PREPARED BY THE SUPPLIERS AND SUBMITTED TO ENGINEER AND CODE OFFICIAL FOR REVIEW.

   SECTION 05550 – EQUIPMENT ANCHORAGE
   SECTION 06710 – FIBERGLASS REINFORCED STRUCTURAL MEMBERS
   SECTION 06530 – FIBERGLASS REINFORCED GRATINGS

EXISTING STRUCTURES

1. THE DRAWINGS DEPICT WORK AT EXISTING STRUCTURES. ALL DIMENSIONS AND ALL DEPICTIONS SHALL BE FIELD VERIFIED BY THE CONTRACTOR PRIOR TO ORDERING MATERIALS, STARTING FABRICATION, OR STARTING CONSTRUCTION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE, REPAIRS OR STRUCTURAL MODIFICATIONS THAT ARE REQUIRED DUE TO DEMOLITION BEYOND THE LIMITS IDENTIFIED IN THE DRAWINGS.
3. REINFORCEMENT FOR ANY EXISTING CONCRETE OR MASONRY ELEMENT SHALL NOT BE DAMAGED UNLESS THE ELEMENT IS TO BE DEMOLISHED. WHEN LOCATING EXISTING REINFORCEMENT IS REQUIRED, IT SHALL BE LOCATED USING NON-DESTRUCTIVE METHODS. REINFORCING STRANDS IN EXISTING PRESTRESSED CONCRETE SHALL NOT BE CUT UNLESS INDICATED ON THE DRAWINGS OR OTHERWISE AUTHORIZED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE, REPAIRS OR STRUCTURAL MODIFICATIONS THAT ARE REQUIRED DUE TO DAMAGE OF CONCRETE, MASONRY OR REINFORCEMENT THAT HAS BEEN IDENTIFIED ON THE DRAWINGS TO REQUIRE FIELD VERIFICATION.
4. CORE DRILLING AND SAW CUTTING SHALL NOT BE PERFORMED UNLESS INDICATED ON THE DRAWINGS OR APPROVED BY ENGINEER.
5. EXPOSED CONCRETE SURFACES THAT REMAIN AFTER DEMOLITION SHALL BE REPAIRED TO MATCH ADJACENT CONCRETE SURFACES.
6. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, EXPOSED CONCRETE SURFACES WITH REINFORCEMENT, ANCHOR BOLTS, HANGER RODS, OR OTHER EXPOSED METAL EMBEDMENTS SHALL BE REPAIRED BY CUTTING OFF THE METAL AT THE FACE OF THE CONCRETE, GRINDING SMOOTH, AND COATING. COATING SHALL EXTEND A MINIMUM OF 1" BEYOND THE EDGE OF ANY EXPOSED METAL.

BASIC LOADING CRITERIA

THE APPLICABLE BUILDING CODE IS THE CALIFORNIA BUILDING CODE 2022.

1. DEAD LOAD	CALCULATED
2. LIVE LOADS:	
OPERATING AND PROCESS FLOORS	150 PSF
STAIRS, SERVICE PLATFORMS & LANDINGS	100 PSF
ALL FLOORS NOT INDICATED	100 PSF
ROOF	20 PSF(UNREDUCED)
3. LATERAL EARTH PRESSURE (EQUIVALENT FLUID PRESSURE) (PER GEOTECHNICAL REPORT)	55 PSF .....RESTRAINED
4. LATERAL SURCHARGE	EQUIVALENT TO 2 FEET OF SOIL WHERE ADJACENT TO A ROADWAY
5. COMPACTIVE SURCHARGE LOAD	400 PSF AT FINISH GRADE ELEVATION DECREASING LINEARLY AT SAME RATE AS BACKFILL LOAD INCREASES. FOR WALLS 8 FEET OR LESS IN HEIGHT, USE CRITERIA 4 ABOVE AS COMPACTIVE SURCHARGE.
6. HYDROSTATIC FLUID PRESSURE	63 PSF/FT
7. SEISMIC LOAD:	
MAPPED MCE SHORT PERIOD SPECTRAL RESPONSE ACCELERATION (S_s)	0.412 g
MAPPED MCE ONE SECOND PERIOD SPECTRAL RESPONSE ACCELERATION (S_1)	0.211 g
DESIGN SPECTRAL RESPONSE ACCELERATION AT SHORT PERIODS (S_{DS})	0.404 g
DESIGN SPECTRAL RESPONSE ACCELERATION AT ONE SECOND PERIOD (S_{D1})	0.211 g
SITE CLASS	D
8. WIND LOAD:	
BASIC (ULTIMATE) DESIGN WIND SPEED	100 MPH
ALLOWABLE STRESS (NOMINAL) DESIGN WIND SPEED	78 MPH
GROUND ELEVATION FACTOR (K_E)	1.0
EXPOSURE	C



(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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D1000

BLACK & VEATCH
Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
LUANA SHAREEN SUBSTMAN
C66299
CIVIL
STATE OF CALIFORNIA
06/11/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	LK
DETAILED:	UBS
CHECKED:	GSS
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

STRUCTURAL

STRUCTURAL NOTES AND LOADING CRITERIA

S-001

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STRUCTURAL ABBREVIATIONS

A

ADDL	ADDITIONAL
AFF	ABOVE FINISH FLOOR
AHR	ANCHOR
ALT	ALTERNATE
ALUM	ALUMINUM
APPROX	APPROXIMATE
ARCH	ARCHITECTURAL
AROD	ANCHOR ROD
ASSY	ASSEMBLY
AWG	AMERICAN WIRE GAUGE

B

BLDG	BUILDING
BM	BENCHMARK, BEAM
BO	BOTTOM OF
BOT	BOTTOM
BRDG	BRIDGING
BRG	BEARING
BTWN	BETWEEN

C

C	CAMBER
CANTIL	CANTILEVER
CHKD	CHECKERED
CHKDPL	CHECKERED PLATE
CIP	CAST-IN-PLACE
CJ	CONTRACTION JOINT
CJP	COMPLETE JOINT PENETRATION
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONSTR	CONSTRUCTION
CONT	CONTINUOUS,CONTINUATION, CONTROL
COORD	COORDINATE
COV	COVER
CRNR	CORNER
CSJ	CONSTRUCTION JOINT
CTRD	CENTERED
CTRS	CENTERS

D

db	BAR DIAMETER
DBA	DEFORMED BAR ANCHOR
DET	DETAIL
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DN	DOWN
DWA	DEFORMED WIRE ANCHOR
DWG(S)	DRAWING, DRAWINGS
DWL(S)	DOWEL, DOWELS

E

E	EAST
EA	EACH
EE	EACH END
EF	EACH FACE
EJ	EXPANSION JOINT
EL	ELEVATION
EMBED	EMBEDMENT
EMER	EMERGENCY
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
EQUIV	EQUIVALENT
EW	EACH WAY
EXIST	EXISTING
EXP	EXPANSION
EXT	EXTERIOR

F

FAB	FABRICATE
f'c	28 DAY CONCRETE STRENGTH =
FD	FLOOR DRAIN
FDN	FOUNDATION
FIN	FINISH(ED)
FLR	FLOOR
FS	FAR SIDE
FT	FOOT
FTG	FOOTING
FUT	FUTURE
FV	FIELD VERIFY
Fy	STRUCTURAL STEEL YIELD STRENGTH =
fy	REINFORCING STEEL YIELD STRENGTH =

G

GA	GAUGE
GALV	GALVANIZED
GEN	GENERAL
GR	GRADE

H

H	HORIZONTAL REACTION
HC	HOLLOW CORE
HCA	HEADED CONCRETE ANCHOR
HEX	HEXAGONAL
HGR	HANGER
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SECTION

I

ID	INSIDE DIAMETER
IF	INSIDE FACE
IN	INCHES
INT	INTERIOR, INTERNAL
INV	INVERT

J

JT	JOINT

K

K	KIPS (1000 LBS)
KSF	KIPS PER SQUARE FOOT
KSI	KIPS PER SQUARE INCH

L

L	LENGTH, ANGLE
LAB	LABORATORY
LB(S)	POUND, POUNDS
ld	DEVELOPMENT LENGTH
LE	LEFT END
LIN	LINES
LLBB	LONG LEG BACK TO BACK
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LONG	LONGITUDINAL
LP	LOW POINT
LSH	LONG SIDE HORIZONTAL
LSHP	LONG SLOTTED HOLE PARALLEL
LSLT	LONG SLOTTED HOLE TRANSVERSE
LSV	LONG SIDE VERTICAL
LWC	LIGHTWEIGHT CONCRETE

M

M	MOMENT
MAS	MASONRY
MATL	MATERIAL
MAX	MAXIMUM
MC	MOMENT CONNECTION, MECHANICAL COUPLING
MECH	MECHANICAL
MEZZ	MEZZANINE
MFR	MANUFACTURE(R)
MIN	MINIMUM
MISC	MISCELLANEOUS
MTL	METAL

N

N	NORTH
N/A	NOT APPLICABLE
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
NWC	NORMAL WEIGHT CONCRETE

O

OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OPER	OPERATING
OPH	OPPOSITE HAND
OPNG	OPENING
OPP	OPPOSITE
OVS	OVERSIZED HOLE
OZ	OUNCE

P

P	AXIAL LOAD
PAF	POWDER ACTUATED FASTENER
PAR	PARALLEL
PCC	PRECAST CONCRETE
PCF	POUNDS PER CUBIC FOOT
PEMB	PRE-ENGINEERED METAL BUILDING
PERP	PERPENDICULAR
PJP	PARTIAL JOINT PENETRATION
PL	PLATE
PLCS	PLACES
PLF	POUNDS PER LINEAR FOOT
PR	PAIR
PRELIM	PRELIMINARY
PROJ	PROJECTION
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POST TENSIONED

Q

QTY	QUANTITY

R

R	RADIUS, RISER, REMAINDER
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RECT	RECTANGULAR
REF	REFERENCE
REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVISION
RO	ROUGH OPENING

S

S	SOUTH
SC	SLIP CRITICAL, SHEAR CONNECTOR
SCHED	SCHEDULE
SECT	SECTION
SH	SHEET
SIM	SIMILAR
SJ	SAW JOINT
SLBB	SHORT LEG BACK TO BACK
SPA	SPACING
SPEC	SPECIFICATION
SPRT	SUPPORT
SQ	SQUARE
SS	STAINLESS STEEL
SSHP	SHORT SLOTTED HOLE PARALLEL
SSHT	SHORT SLOTTED HOLE TRANSVERSE
STD	STANDARD
STIF	STIFFENER
STIR	STIRRUP
STL	STEEL
STR	STRUCTURE, STRUCTURAL
SYM	SYMMETRICAL

T

T	TREAD, SCHEDULED PLATE THICKNESS, TOP
T&B	TOP & BOTTOM
TAN	TANGENT
TEMP	TEMPERATURE
THD	THREADED
THK	THICK, THICKNESS
TO	TOP OF
TOC	TOP OF CONCRETE
TOF	TOP OF FOOTING
TOM	TOP OF MASONRY
TOS	TOP OF STEEL
TOW	TOP OF WALL
TYP	TYPICAL

U

UNO	UNLESS NOTED OTHERWISE
USGS	UNITED STATES GEOLOGICAL SURVEY

V

VERT	VERTICAL
VNR	VENEER

W

W	WEST
W/	WITH
W/O	WITHOUT
WF	WIDE FLANGE
WP	WORK POINT
WT	WEIGHT
WWR	WELDED WIRE REINFORCEMENT

X

x	BY, TIMES
XS	EXTRA STRONG
XXS	DOUBLE EXTRA STRONG

Y

	NOT USED

Z

	NOT USED

SPECIAL CHARACTERS

@	AT
&	AND
ø	DIAMETER
#	NUMBER
%	PERCENT

BLACK & VEATCH

Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
GUNA SAKARAN SUBRAMANIAN
C66299
CIVIL
STATE OF CALIFORNIA

06/11/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	LK
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DATE:	JUNE 2025
PROJECT NO.:	416929

STRUCTURAL

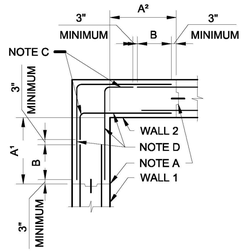
ABBREVIATIONS AND LEGEND

S-002

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(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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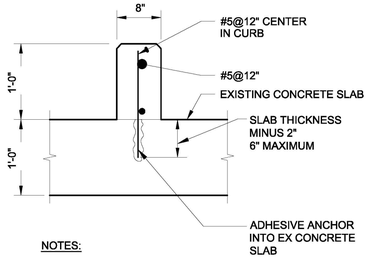
A = VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER.

A (ALTERNATE) = ALTERNATE VERTICAL CONSTRUCTION JOINT NEAREST TO WALL CORNER IN T WALL JOINT WHICH DOES NOT REQUIRE WATERSTOP.

A^X = DISTANCE FROM INSIDE CORNER FACE TO NEAREST VERTICAL CONSTRUCTION JOINT IN SIMILARLY NUMBERED WALL. A^X SHALL NOT BE LESS THAN DIMENSIONS INDICATED BY THESE DETAILS; NOR GREATER THAN INDICATED ON PLAN DRAWINGS; BUT IN ANY CASE SHALL NOT EXCEED 30 FEET IN LIQUID CONTAINMENT STRUCTURES OR 40 FEET IN OTHER STRUCTURES. IN T WALL JOINTS WHICH DO NOT REQUIRE WATERSTOP, A1 MAY BE ZERO.

MAIN REINFORCEMENT FOR ALL STRUCTURES

A TYPICAL HORIZONTAL CORNER REINFORCEMENT DETAIL
NO SCALE

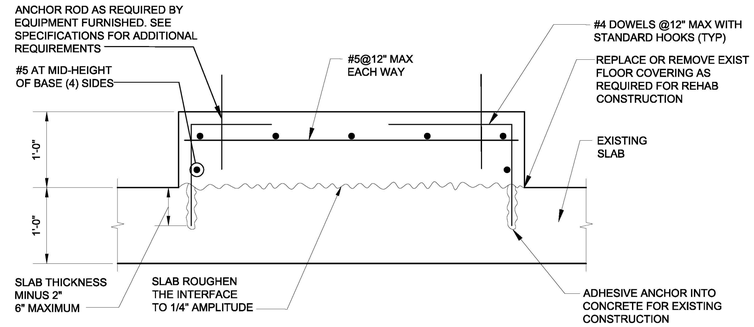


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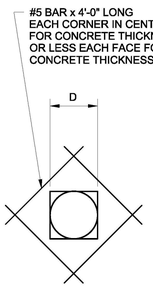
1. WHEN CURB WIDTH EXCEEDS 8", PROVIDE ABOVE REINFORCEMENT IN EACH FACE OF CURB.
2. THE DEPTH OF THE EXISTING CONCRETE SLAB SHALL BE VERIFIED BY THE CONTRACTOR.
3. APPLICABLE ONLY TO THE ACH PUMP ROOM CONTAINMENT WALL.

D TYPICAL CONCRETE CURB DETAIL
NO SCALE

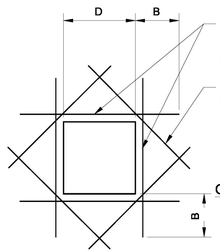
NOTES
1. DETAILS ON THIS DRAWING APPLY TO ALL DRAWINGS UNLESS OTHERWISE NOTED.
2. WORK THIS DRAWING WITH THE STANDARD CONCRETE JOINT DETAILS.



EQUIPMENT BASE DETAIL
NO SCALE



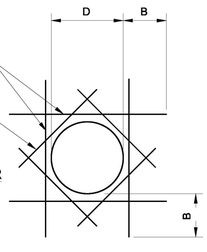
FOR OPENINGS
12" < = D < = 21"



DIAGONAL BAR LENGTH

THICKNESS OF CONCRETE	DIAGONAL BAR SIZE	RECTANGULAR OPENING	CIRCULAR OPENING
< 12"	#4	3'-0"	D+12"
12" TO 18"	#5	3'-0"	D+12"
> 18"	#6	3'-0"	D+12"

FOR RECTANGULAR OPENINGS
21" < D < = 54"

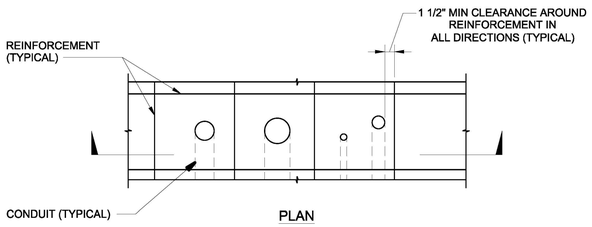


FOR CIRCULAR OPENINGS
21" < D < = 54"

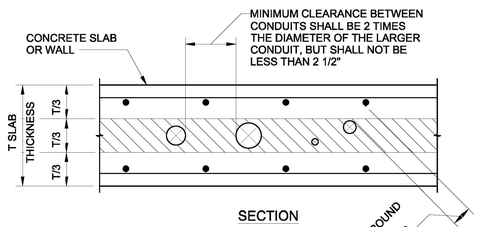
B = THE REQUIRED LENGTH FOR LAPPED SPLICE FOR TOP BARS AS SHOWN ON THIS SHEET

TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS

B TYPICAL EXTRA REINFORCEMENT AT OPENINGS 12" TO < 54"
NO SCALE



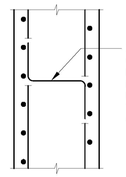
PLAN



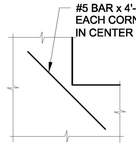
SECTION

NOTES:
1. PLACE CONDUIT ONLY IN SHADED AREA.
2. FOR CONDUIT REQUIREMENTS SEE THE ELECTRICAL DRAWINGS AND SPECIFICATIONS.
3. CONDUIT THAT IS TOO LARGE OR CONGESTED TO FIT WITHIN THE SLAB AND REINFORCEMENT AS INDICATED SHALL BE ROUTED BELOW THE SLAB AS INDICATED IN THE ELECTRICAL SPECIFICATIONS OR ON THE DRAWINGS.

CONDUIT PLACING DETAIL
1" = 1'-0"

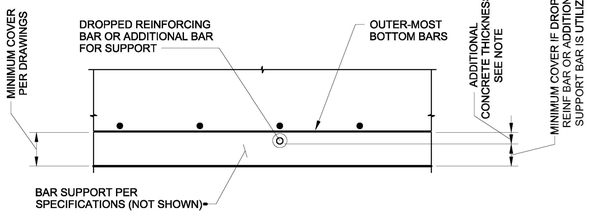


SPACERS FOR WALL REINFORCEMENT
NO SCALE



TYPICAL EXTRA REINFORCEMENT AT ISOLATED RE-ENTRANT CORNERS
NO SCALE

NOTE:
TYPICAL REQUIRED UNLESS ADDITIONAL REINFORCEMENT SPECIFICALLY INDICATED AT OPENINGS ON DRAWINGS



NOTE:
WHERE DROPPED REINFORCING BARS OR ADDITIONAL BARS ARE UTILIZED AS SUPPORT BARS IN THE PLACEMENT OF THE BOTTOM MAT REINFORCING, CONCRETE COVER TO THE SUPPORT BARS SHALL NOT BE LESS THAN REQUIRED PER THE DRAWINGS AND THE CONCRETE THICKNESS OF THE SLAB OR FOOTING SHALL BE INCREASED, EQUAL TO THE DIAMETER OF THE SUPPORT BAR, AT NO ADDITIONAL COST. ALTERNATIVELY, UPON THE APPROVAL OF THE ENGINEER, A SHALLOWER BOLSTER MADE BE USED TO MAINTAIN THE MINIMUM CLEAR COVER FOR THE BOTTOM MAT REINFORCING.

REINFORCING SUPPORT DETAIL
1" = 1'-0"

LENGTH OF LAPPED SPLICES FOR REINFORCEMENT (INCHES)

UNLESS NOTED OTHERWISE ON THE DRAWINGS

BAR SIZE *	BEAMS & COLUMNS		WALLS & SLABS		BAR SIZE *
	**TOP BARS	OTHERS	**TOP BARS	OTHERS	
#3	16	16	16	16	#3
#4	19	16	19	16	#4
#5	24	18	24	18	#5
#6	33	26	29	22	#6
#7	55	42	48	37	#7
#8	69	53	60	46	#8
#9	84	65	74	57	#9
#10	103	79	91	70	#10
#11	122	94	108	83	#11

* LAP SPLICE LENGTH FOR BARS OF DIFFERENT SIZES SHALL BE THE GREATER OF THE SMALL BAR LAP LENGTH OR 0.75x THE LARGER BAR LAP LENGTH.

** TOP BARS ARE HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR. HORIZONTAL BARS IN WALLS ARE TO BE PROVIDED WITH LAP LENGTHS AS REQUIRED FOR TOP BARS. VERTICAL BARS MAY BE CONSIDERED AS OTHER BARS.

CONCRETE COVER FOR REINFORCEMENT

UNLESS NOTED OTHERWISE ON THE DRAWINGS

LOCATION	SPECIFIED COVER
UNFORMED SURFACES ADJACENT TO EXCAVATION	3"
SURFACES INSIDE OF OZONE CONTACTORS EXPOSED TO OZONE IN WATER OR AIR	3"
TOP SURFACES OF SLABS THAT ARE SUBMERGED	3"
FORMED SURFACES THAT ARE SUBMERGED, AND FORMED OR TOP SURFACES EXPOSED TO WEATHER, SATURATED AIR, OR EARTH	2"
OTHER LOCATIONS:	
BEAMS AND GIRDERS	1 1/2"
SLABS, WALLS AND JOISTS: #6 AND LARGER	1 1/2"
#5 AND SMALLER	1"

NOTES:

1. COVER IS MEASURED TO NEAREST BAR, STIRRUP, TIE, OR SPIRAL, AS APPLICABLE.
2. TOLERANCES FOR CONCRETE COVER AND THE FABRICATION AND PLACING OF REINFORCEMENT SHALL CONFORM TO ACI 117.

C STANDARD CONCRETE REINFORCEMENT DETAILS
NO SCALE

12" 9" 6" 3" 0" 1' 2'
1" = 1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
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CIVIL
STATE OF CALIFORNIA
06/11/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

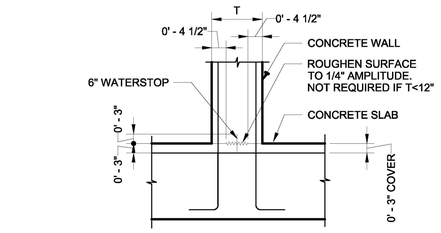
DESIGNED:	LK
DETAILED:	UBS
CHECKED:	GSS
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

STRUCTURAL

STANDARD CONCRETE AND REINFORCEMENT DETAILS

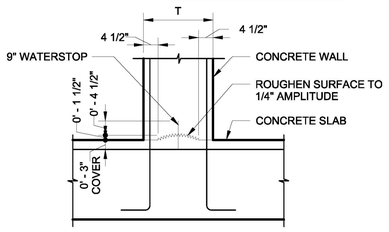
S-003

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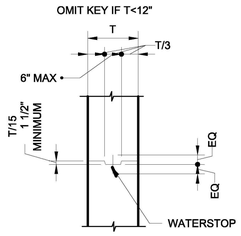
FOR T < 18"

SLAB TO BOTTOM OF WALL

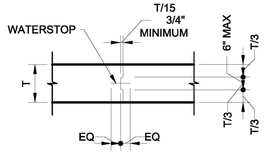


FOR T >= 18"

SLAB TO BOTTOM OF WALL

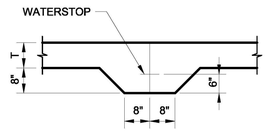


WALL TO WALL



OMIT KEY IF T<12"

SLAB TO SLAB (T>=12")



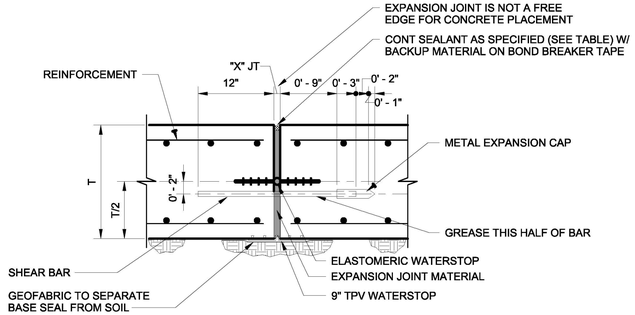
SLAB TO SLAB (T<12")

JOINTS WITH WATERSTOPS

NOTES:
1. REINFORCEMENT STEEL IS CONTINUOUS THROUGH ALL CONSTRUCTION JOINTS.
2. "CSJ W/ WS" - CONSTRUCTION JOINT WITH WATERSTOP.
3. "CSJ" - CONSTRUCTION JOINT WITHOUT WATERSTOP.
4. UNLESS NOTED OTHERWISE, WATERSTOPS MAY BE STEEL OR PVC.
5. WATERSTOP SIZE SHALL BE 6" FOR WALLS AND SLABS LESS THAN 18" THICKNESS AND SHALL BE 9" FOR WALLS AND SLABS 18" OR GREATER IN THICKNESS.

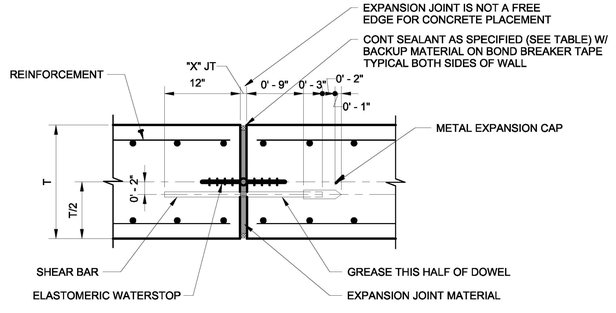
A TYPICAL CONSTRUCTION JOINT DETAILS

NO SCALE



SLAB EXPANSION JOINT - TYPE A

SEALANT TYPE	EJ SPACING	EJ SIZE "X"	SEALANT DEPTH
POLYURETHANE OR POLYSULFIDE	<100 FT	3/4"	3/8"
	101 FT - 150 FT	1"	1/2"



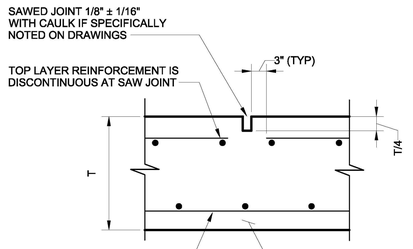
WALL EXPANSION JOINT - TYPE A

SEALANT TYPE	EJ SPACING	EJ SIZE "X"	SEALANT DEPTH
POLYURETHANE OR POLYSULFIDE	<100 FT	3/4"	3/8"
	101 FT - 150 FT	1"	1/2"

NOTES:
1. PROVIDE 3/4" DIAMETER SHEAR BARS @ 1'-6" CENTERS ACROSS JOINT UNLESS NOTED OTHERWISE.
2. REINFORCING STEEL SHALL NOT BE EXTENDED ACROSS JOINT UNLESS NOTED OTHERWISE. SHEAR BARS SHALL BE SMOOTH FREE FROM RUST OR SCALE, AND GREASED TO PREVENT BOND (ONE HALF BAR ONLY).
3. WATERSTOP SIZE SHALL BE 6"FOR WALLS AND SLABS LESS THAN 18" IN THICKNESS, AND SHALL BE 9" FOR WALLS AND SLABS THICKER THAN 18.
4. "EJ W/ WS" - EXPANSION JOINT WITH ELASTOMERIC WATERSTOP
"EJ" - EXPANSION JOINT WITHOUT WATERSTOP

B TYPICAL EXPANSION JOINT DETAILS

NO SCALE



DOUBLY REINFORCED SLABS

NOTES:
1. TYPICAL CONTROL JOINT NOTES NOT APPLICABLE FOR SAWED CONTRACTION JOINT.
2. "SJ" SAWED JOINT WITH NO WATERSTOP.
3. JOINT FORMED WITH TOOL OR INSERT STRIP MAY BE SUBSTITUTED FOR SAWED TYPE ONLY WITH PRIOR ACCEPTANCE BY THE ENGINEER.
4. SAWED CONTRACTION JOINTS TO BE USED AS INDICATED ON DRAWINGS.

C SAWED CONTRACTION JOINT - SLAB ON GRADE

NO SCALE

NOTES

1. DETAILS ON THIS DRAWING APPLY TO ALL DRAWINGS UNLESS NOTED OTHERWISE.
2. WORK THIS DRAWING WITH THE STANDARD CONCRETE REINFORCEMENT DETAILS.
3. AT WALL JOINTS AND AT WALL BASE JOINTS, SECURE ALL ELASTOMERIC WATERSTOPS IN THE CORRECT POSITION USING HOG RINGS OR GROMMETS SPACED AT 12 INCHES ALONG THE LENGTH OF THE WATERSTOP AND WIRE TIE TO ADJACENT REINFORCING STEEL.
4. AT SLAB JOINTS AND FOOTING JOINTS, ENSURE SPACE BENEATH AND AROUND WATERSTOP IS COMPLETELY FILLED WITH CONSOLIDATED CONCRETE. DURING OPERATION, MAKE VISUAL INSPECTION OF ENTIRE WATERSTOP AREA. LIMIT CONCRETE PLACEMENT TO ELEVATION OF WATERSTOP IN FIRST LIFT. RAISE ELASTOMERIC WATERSTOPS TO CONFIRM FULL CONSOLIDATION WITHOUT VOIDS. PLACE REMAINING CONCRETE TO FULL DEPTH OF SLAB.

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STRUCTURAL

STANDARD CONCRETE JOINT DETAILS

S-004

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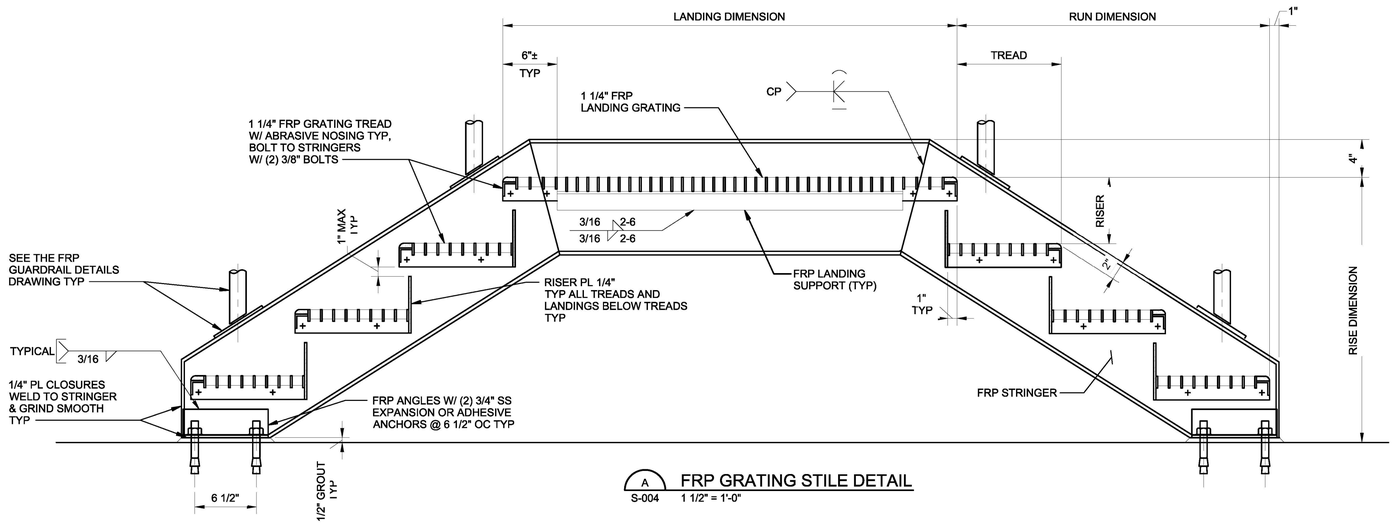
(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

12" 9" 6" 3" 0' 1'
1 1/2" = 1'-0"

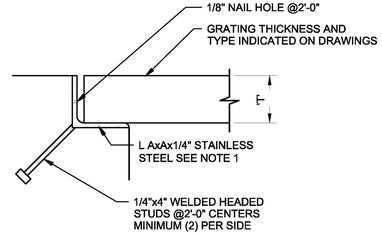
12" 9" 6" 3" 0' 1' 2'
1" = 1'-0"

12' 6' 0' 1' 2' 3' 4' 5'
1/2" = 1'-0"

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A S-004 FRP GRATING STILE DETAIL
1 1/2" = 1'-0"



GRATING THICKNESS 'T'	L SIZE AxAx1/4 INCHES
1"	1 3/4 x 1 3/4*
1 1/4"	1 3/4 x 1 3/4*
1 1/2"	1 3/4 x 1 3/4
1 3/4"	2x2
2"	2 1/2x2 1/2*
2 1/4"	2 1/2x2 1/2
2 1/2"	3x3*

* TRIM AND BEVEL UPSTANDING LEG TO FIT

NOTE:

1. ALL GRATING SUPPORTED ON CONCRETE SHALL HAVE AN EMBEDDED ANGLE RECESSED AS SHOWN UNLESS NOTED OTHERWISE.

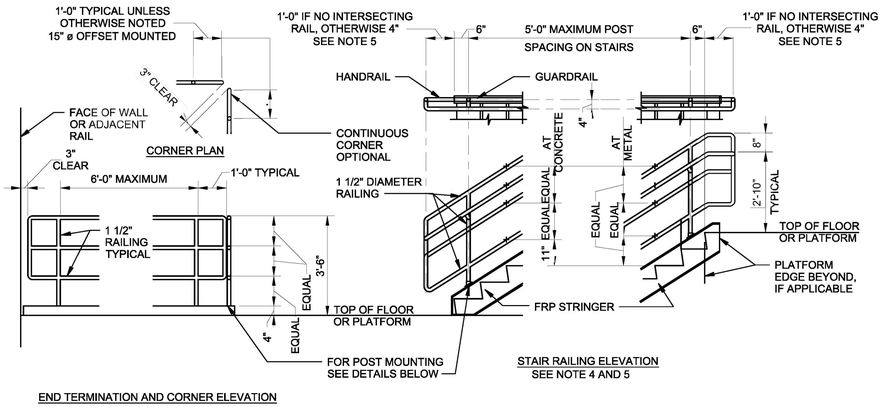
B S-004 FRP GRATING SUPPORT
3" = 1'-0"

FRP GRATING STAIR NOTES:

1. WELDS NOT DIMENSIONED ON THE DRAWINGS SHALL BE SIZED TO DEVELOP THE FULL STRENGTH OF THE LEAST STRENGTH COMPONENT OF THE CONNECTION.

STAIR DESIGN NOTES:

1. STAIRS AND PLATFORM SHALL BE DESIGNED BY THE SUPPLIER IN GENERAL ACCORDANCE WITH DETAILS INDICATED ON THESE DESIGN DRAWINGS. THE DESIGN SHALL COMPLY WITH ALL APPLICABLE PROVISIONS OF THE LOCAL BUILDING CODE, ANSI A117.1 AND OSHA.
2. THE DESIGN SHALL BE SEALED BY AN ENGINEER REGISTERED IN THE STATE OF THE PROJECT. IF REQUESTED, SEALED CALCULATIONS SHALL BE SUBMITTED FOR REVIEW.
3. THE COMPLETED FABRICATIONS SHALL SUPPORT THE LOADS AND DEFLECTION CRITERIA INDICATED IN THE STRUCTURAL METALS SPECIFICATION.
4. THE STAIR DESIGN AND DETAILS SHALL BE COORDINATED WITH THE HANDRAILING AND GUARDRAILING SUPPLIED. STAIR MEMBERS SHALL BE ADEQUATE TO ACCEPT LOADS FROM THE RAIL POSTS BASED UPON THE CRITERIA INDICATED IN THE RAILING SPECIFICATIONS.
5. CONNECTIONS TO THE SUPPORTING STRUCTURE SHALL BE ADEQUATE TO TRANSFER ALL LOADINGS, AND SHALL BE DESIGNED IN ACCORDANCE WITH ALL APPLICABLE PROVISIONS OF ACI 318. THE NUMBER AND TYPE OF CONNECTIONS SHALL COMPLY AT A MINIMUM, WITH THESE DESIGN DRAWINGS. ALL NECESSARY BRACKETS, BOLTS, AND ANCHORS SHALL BE PROVIDED.

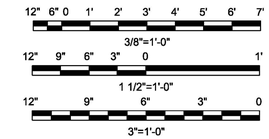


END TERMINATION AND CORNER ELEVATION

C S-004 THREE RAIL GUARDRAIL
3/8" = 1'-0"

NOTES:

1. RAILING MATERIAL AND FABRICATION SHALL BE AS INDICATED ON THE DESIGN DRAWINGS AND IN THE PROJECT SPECIFICATIONS FOR HANDRAILING AND GUARDRAILING.
2. ALL RAILING AND MOUNTINGS SHALL BE DESIGNED AND FABRICATED IN COMPLIANCE WITH THE MOST STRINGENT REQUIREMENTS OF THE RAILING SPECIFICATIONS, THE APPLICABLE LOCAL BUILDING CODE AND ALL PERTINENT OSHA AND LOCAL SAFETY REGULATIONS.
3. GUARDRAIL AND HANDRAIL SHALL BE DESIGNED AND FABRICATED IN CONFIGURATIONS REQUIRED TO FIT THE LOCATIONS INDICATED ON THE DESIGN DRAWINGS. CONTRACTOR SHALL VERIFY FINAL DIMENSIONS BEFORE FABRICATION.
4. GUARDRAIL MAY BE REPLACED WITH WALL MOUNTED HANDRAIL AT STAIR EDGES AND STRINGERS LOCATED ADJACENT TO WALLS. IF THE OUTSIDE EDGE OF THE STAIR STRINGER IS MORE THAN 3" FROM THE WALL FACE, GUARDRAIL SHALL BE USED.
5. THE INBOARD HANDRAILING AT SWITCHBACK STAIR LANDINGS MUST BE CONTINUOUS FROM ONE STAIR RUN TO THE NEXT. ADJUST INDICATED DIMENSION AS REQUIRED TO ALIGN AND CONNECT RAILINGS OVER THE LANDING EDGE.
6. THE GUARDRAIL AND HANDRAIL CONFIGURATIONS ON THIS SHEET WILL NOT SATISFY ADA REQUIREMENTS FOR HANDICAPPED ACCESSIBILITY. AT LOCATIONS ON THE DESIGN DRAWINGS WHERE CONFORMANCE WITH ADA REQUIREMENTS IS SPECIFICALLY NOTED, THE RAILING SUPPLIER SHALL MODIFY THE CONFIGURATIONS TO COMPLY WITH THE MOST STRINGENT REQUIREMENTS OF ANSI 117.1 UNIFORM FEDERAL ACCESSIBILITY STANDARDS AND THE ACCESSIBILITY STANDARDS OF THE AMERICANS WITH DISABILITIES ACT (ADA).
7. AT LOCATIONS SPECIFICALLY INDICATED AS REMOVABLE RAILING, GUARDRAILING AND MOUNTING DETAILS SHALL BE MODIFIED AS FOLLOWS:
   - * RAILING SHALL BE DETAILED IN SHORT LENGTHS THAT WEIGH NO MORE THAN 50 LBS. EACH PIECE SHALL INCLUDE AT LEAST 2, BUT NOT MORE THAN 3 POSTS. RAIL ENDS SHALL BE TERMINATED SIMILAR TO THE END TERMINATION DETAILS THIS SHEET.
   - * MOUNTING DETAILS SHALL BE MODIFIED TO PERMIT RAILING PIECES TO BE REMOVED AND REINSTALLED WITHOUT USE OF TOOLS.



(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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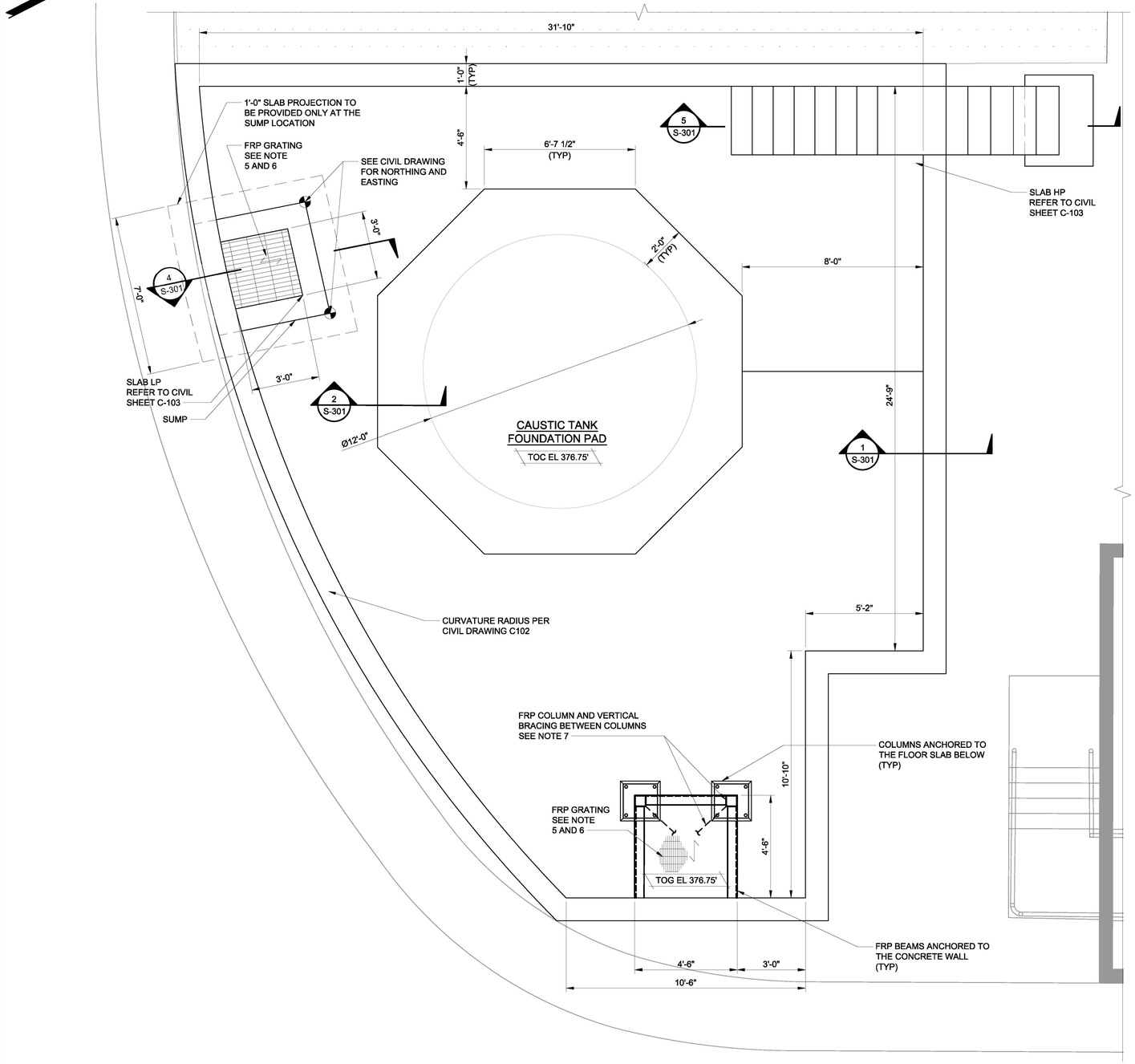
STRUCTURAL

MISCELLANEOUS STANDARD DETAILS

S-005

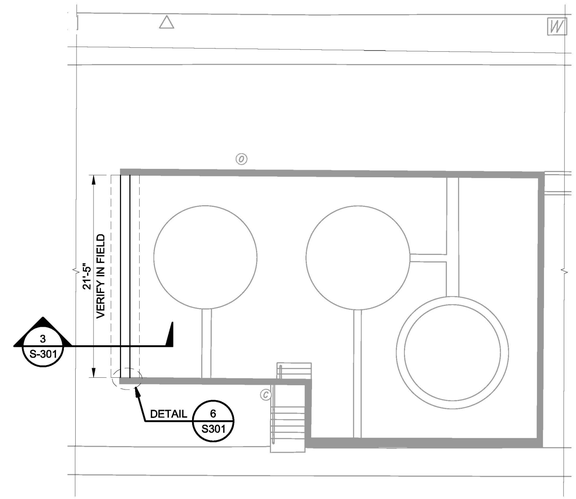
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CAUSTIC SODA STORAGE CONTAINMENT BASIN PLAN

3/8" = 1'-0"



NOTE: REFER TO SHEET D-102 FOR ADDITIONAL DETAILS.

PARTIAL PLAN AT EXISTING ACH CONTAINMENT WALL

1/8" = 1'-0"

GENERAL NOTES:

1. SEE S-001 FOR STRUCTURAL NOTES AND DESIGN CRITERIA
2. CONTRACTOR TO COORDINATE CONCRETE PAD SIZE AND LOCATION WITH EQUIPMENT MANUFACTURER PRIOR TO CONSTRUCTION.
3. TANK PAD IS DESIGNED AND SIZED FOR A TOTAL OPERATING WEIGHT OF 160KIPS, DEVIATION FROM CAUSTIC TANK CAPACITY OR SIZE SHALL BE NOTIFIED TO THE EOR PRIOR TO CONSTRUCTION.
4. CONTRACTOR TO FIELD VERIFY EXISTING CONDITIONS, DIMENSIONS, ELEVATION, ETC. AS REQUIRED PRIOR TO CONSTRUCTION.
5. SPAN DIRECTION OF 2" THICK FRP BAR GRATING SUPPORTED BY FRP MEMBERS, DESIGNED BY MANUFACTURER.
6. DESIGN FRP MEMBERS FOR 100PSF LIVE LOAD, 1/4" MAX. DEFLECTION AND 4'-6" SPAN (MAX)
7. FRP SUPPORT BEAMS AND COLUMN LAYOUT CAN BE MODIFIED TO MEET THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO COORDINATE THE CHANGES WITH EOR BEFORE FABRICATION.
8. FRP MANUFACTURER TO DESIGN AND PROVIDE SIGNED AND SEALED CALCULATIONS FOR APPROVAL. MANUFACTURER TO DESIGN PER SPECS 06710 AND 06530.
9. ALL STAINLESS STEEL MATERIAL SHALL BE GRADE 316 (U,N.O.)

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STRUCTURAL

CAUSTIC SODA CONTAINMENT AREA STRUCTURAL PLAN

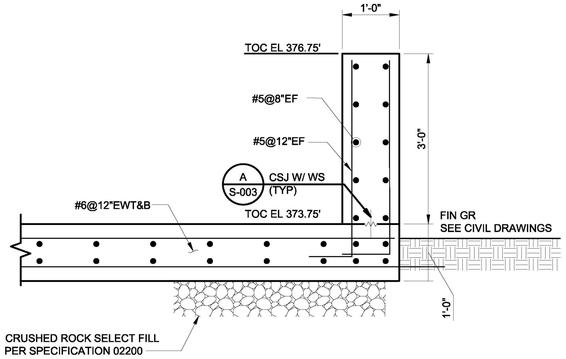
S-101

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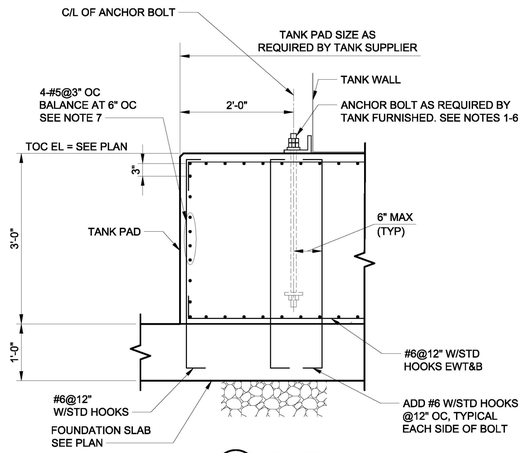
12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"
8' 4' 0 8' 16'
1/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

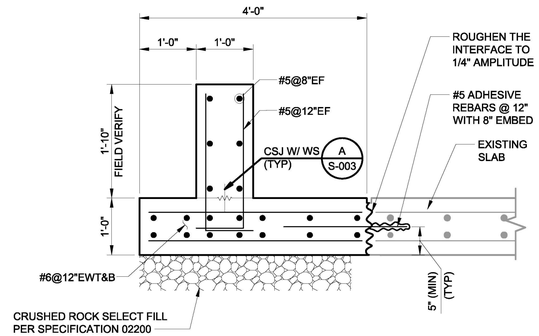
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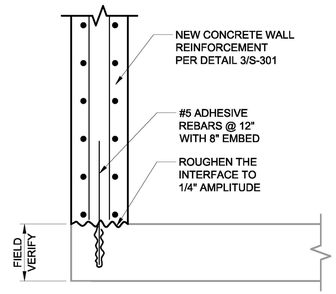
1 SECTION
S-101 3/4" = 1'-0"



2 SECTION
S-101 3/4" = 1'-0"



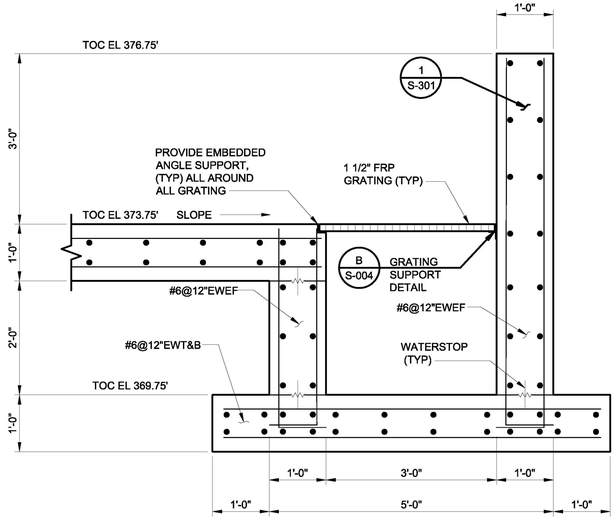
3 SECTION
S-101 3/4" = 1'-0"



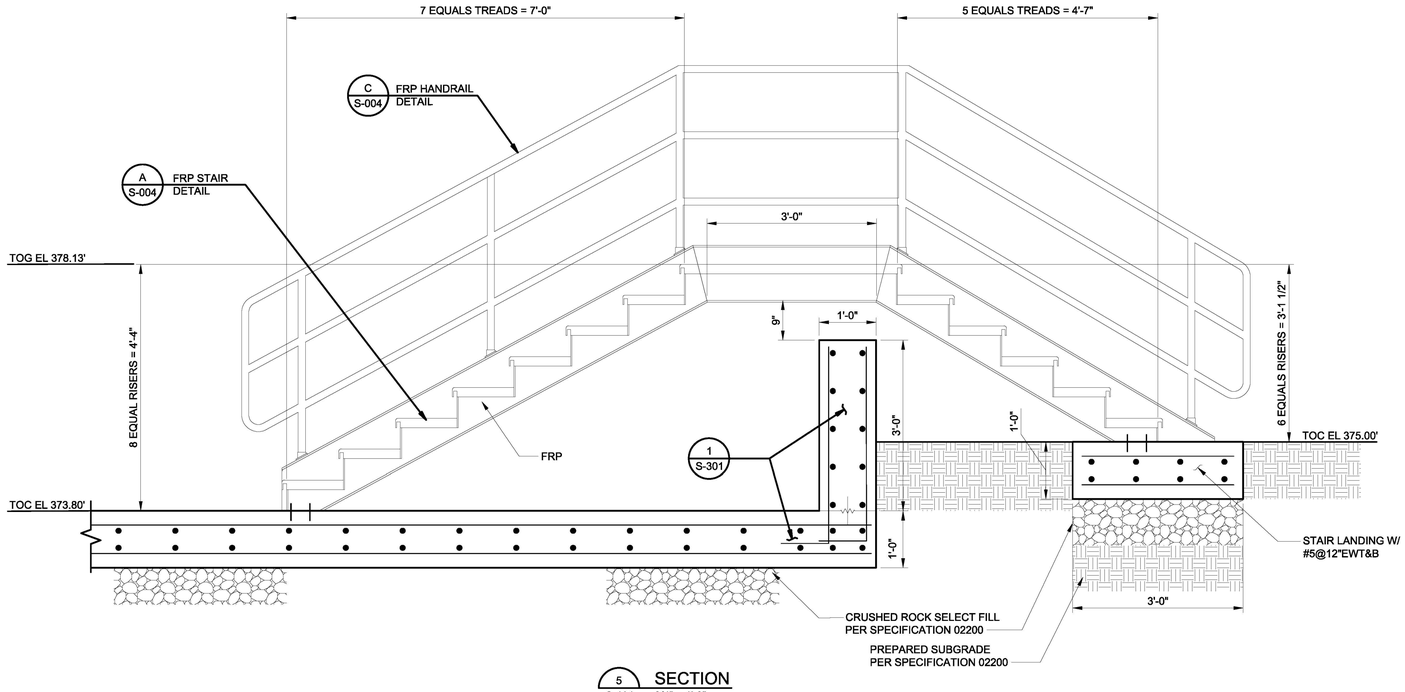
6 DETAIL @ ACH PUMP AREA WALL CONNECTION PLAN
S-101 3/4" = 1'-0"

NOTES:

1. SEE TANK SPECIFICATION FOR MINIMUM NUMBER OF ANCHOR BOLTS. SEE THE ANCHORAGE IN CONCRETE AND MASONRY SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR AND TANK SUPPLIER SHALL DETERMINE FINAL PLAN DIMENSIONS OF PADS BASED ON THE NEEDED CONCRETE EDGE DISTANCE BEYOND THE ANCHOR BOLT. COORDINATE ANCHOR BOLT REQUIREMENTS FOR REQUIRED EMBEDMENT DEPTH AND CONCRETE EDGE DISTANCES WITH MINIMUM OF 12" AS INDICATED IN DETAIL.
3. TANK SHALL BE PROVIDED WITH A QUANTITY OF ANCHOR BOLTS THAT PERMITS CODE-COMPLIANT EMBEDMENT IN THE PAD WITHOUT EXTENDING ANCHOR BOLTS INTO THE FOUNDATION SLAB BELOW.
4. ANCHORAGE CALCULATIONS PROVIDED BY CONTRACTOR OR TANK SUPPLIER SHALL BE SIGNED AND SEALED BY QUALIFIED PROFESSIONAL ENGINEER LICENSED IN THE STATE OF THE PROJECT. DESIGN SHALL BE IN ACCORDANCE WITH THE CURRENT ASCE 7, ACI 318 AND ANY APPLICABLE TANK STANDARDS. ANCHORAGE TYPES THAT DIFFERS SIGNIFICANTLY FROM WHAT IS SHOWN SHALL BE SUBMITTED FOR ENGINEER APPROVAL BEFORE FABRICATION OF TANK.
5. GROUT SHALL BE PROVIDED BELOW THE TANK WHEN INDICATED BY TANK SUPPLIER. WHEN NO GROUT IS USED, FLATNESS TOLERANCE SHALL BE AS REQUIRED BY THE TANK SUPPLIER. REMEDIAL WORK NEEDED TO ADJUST FLATNESS SHALL BE ACCEPTABLE TO ENGINEER AND TANK MANUFACTURER.
6. EQUIPMENT BASE SHALL USE STRUCTURAL CONCRETE AS INDICATED IN THE CAST-IN-PLACE CONCRETE SPECIFICATION.
7. HORIZONTAL REINFORCEMENT TO BE LAP SPLICED AT CIRCULAR PADS. PROVIDE CORNER/BENT BARS AT RECTANGULAR, SQUARE OR OCTAGON FOOTINGS.



4 SECTION
S-101 3/4" = 1'-0"



5 SECTION
S-101 3/4" = 1'-0"

12" 6" 0 1' 2' 3'
3/4"=1'-0"
(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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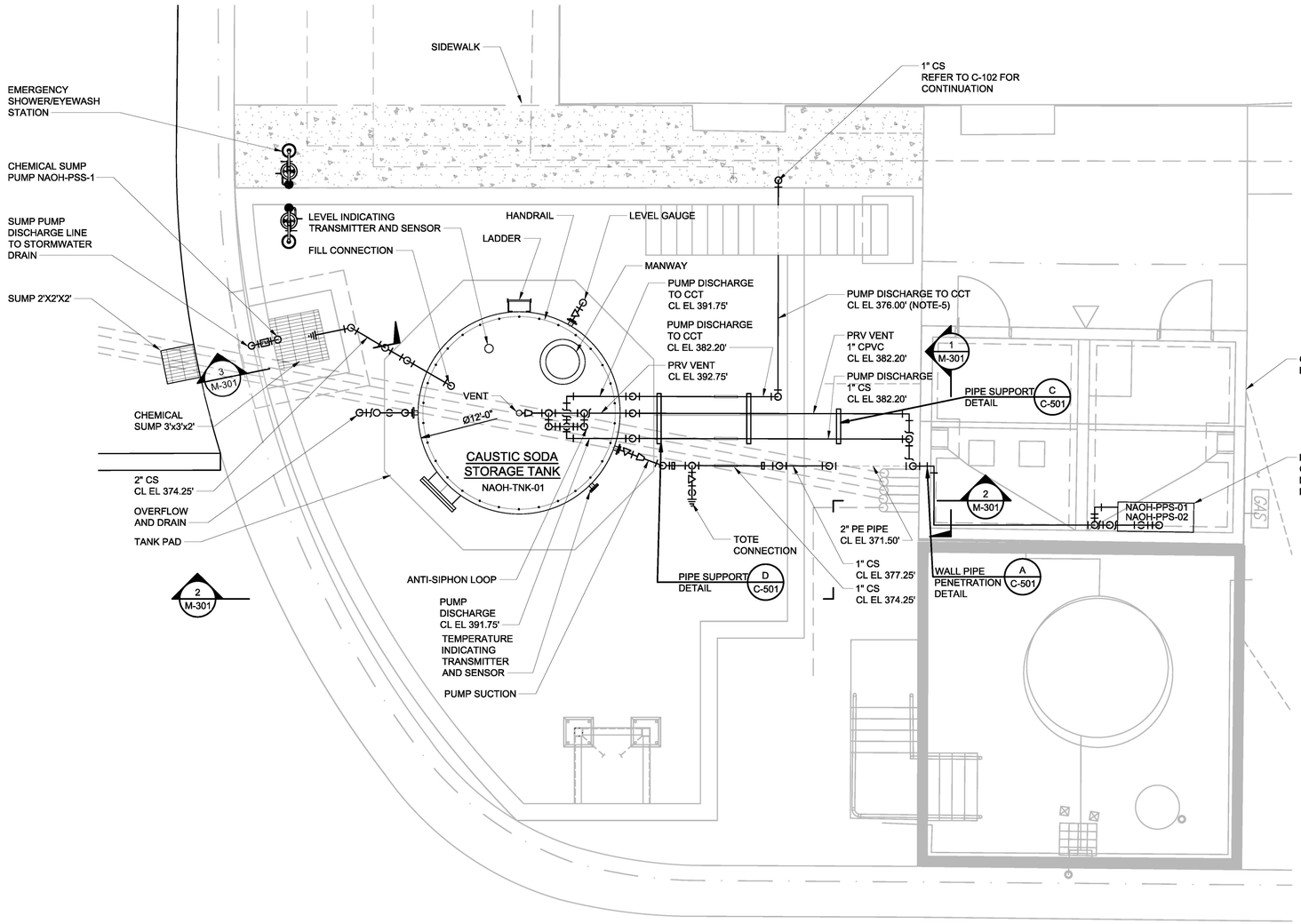
STRUCTURAL

CAUSTIC SODA
CONTAINMENT AREA
STRUCTURAL SECTIONS

S-301

GENERAL NOTES

1. CONTAINMENT WALL HEIGHT IS 36 IN.
2. REFER P&ID DRAWGINS I-101, I-102, AND I-501 FOR PIPE SIZES, VALVES AND APPUERTENANCES.
3. CAUSTIC SODA STORAGE TANK WILL BE HEAT TRACED AND INSULATED.
4. SEE DRAWING P-102 FOR PLUMBING DETAILS IN CAUSTIC SODA FEED PUMP ROOM.
5. CONTRACTOR SHALL ROUTE THE PUMP DISCHARGE ALONG THE INNER FACE OF THE CONCRETE WALL OF CONTAINMENT AREA USING UNISTRUT CHANNELS.



PLAN
1/4" = 1'-0"

4' 2' 0 4' 8'
1/4"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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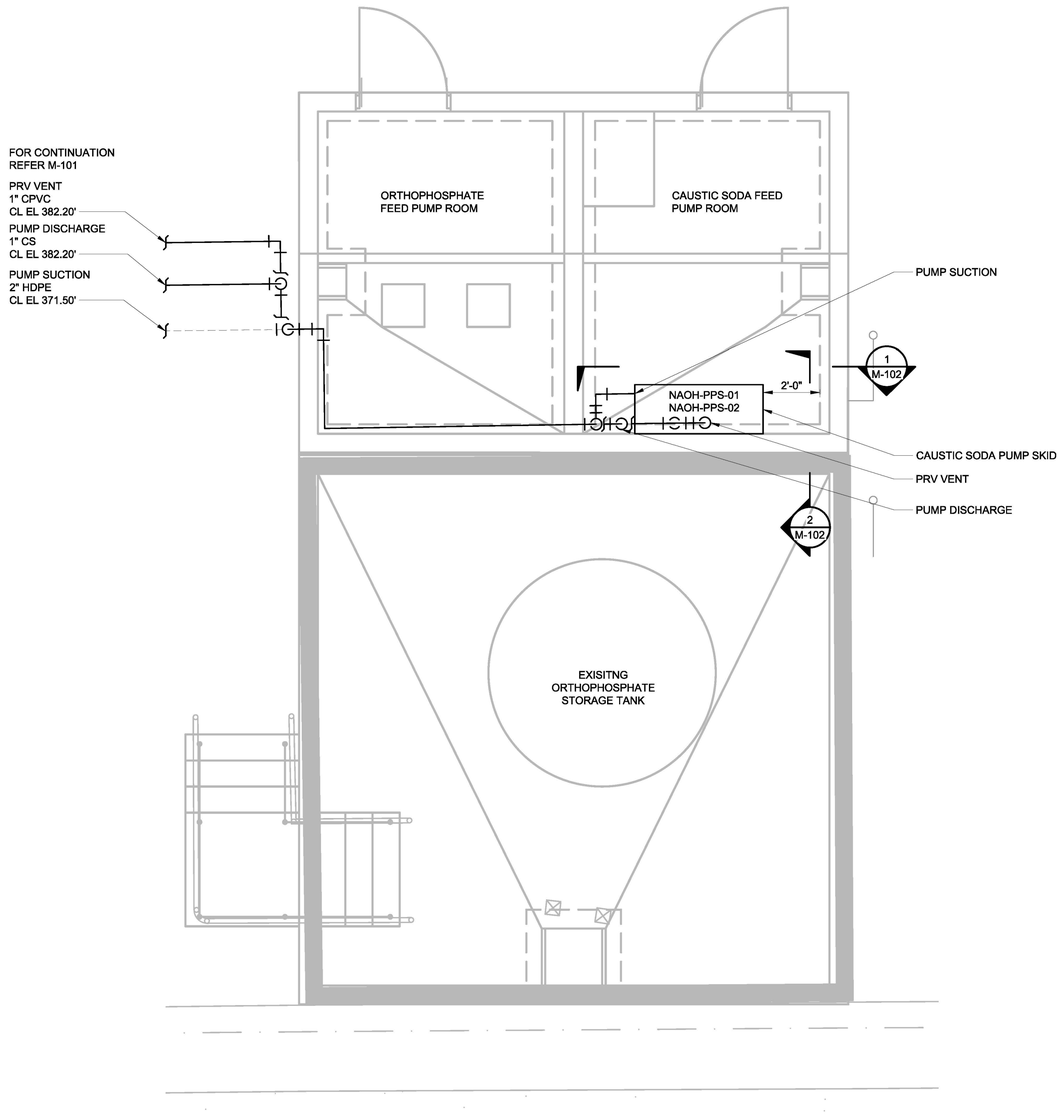
CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE	
DESIGNED:	VL, EJP
DETAILED:	PY
CHECKED:	ERB
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

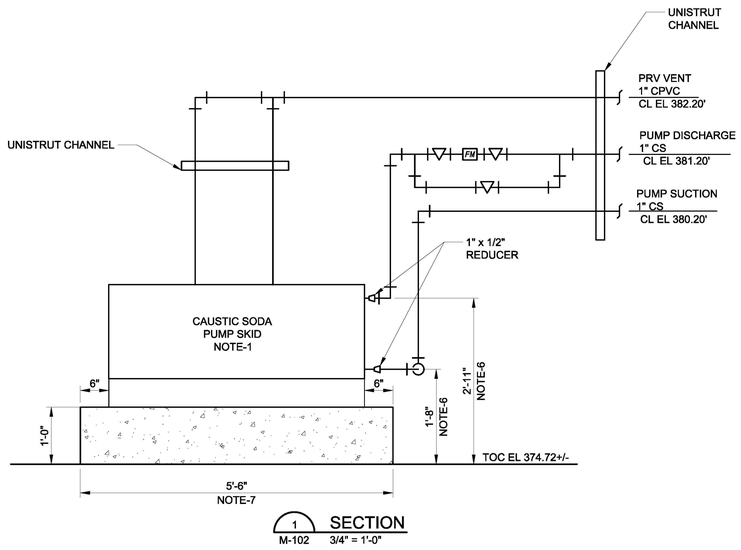
MECHANICAL

CAUSTIC SODA CONTAINMENT AREA MECHANICAL PLAN

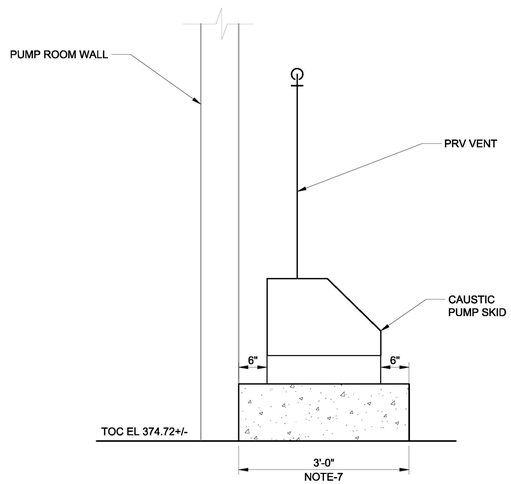
M-101



MECHANICAL PLAN TOC EL 374.72 +/-
3/8" = 1'-0"



1 M-102 SECTION 3/4" = 1'-0"



2 M-102 SECTION 3/4" = 1'-0"

GENERAL NOTES

1. THE CAUSTIC SODA FEED METERING PUMP SKID LAYOUT IS BASED ON WATSON-MARLOW QDOS MODEL. THE SKID INCLUDES TWO PUMPS (1 WORKING + 1 STANDBY).
2. THE UNISTRUT SUPPORT SHOWN IN THIS DRAWING IS FOR REPRESENTATION PURPOSE ONLY. CONTRACTOR SHALL ESTABLISH THE LOCATION OF UNISTRUT SUPPORT PER SUPPORT SPAN REQUIREMENT. THE SUPPORT SPAN SHALL NOT BE MORE THAN 5.5' FOR PLASTIC PIPE AND NOT MORE THAN 7' FOR STEEL PIPE.
3. SEE P&I D FOR ALL PIPING, VALVES AND PIPING DEVICES REQUIRED.
4. SEE DRAWING P-102 FOR PLUMBING EQUIPMENT AND PIPING DETAILS.
5. THE PUMP SKID SHALL BE FIXED TO THE CONCRETE PAD PER PUMP MANUFACTURER'S RECOMMENDATION. SEE S-003 FOR EQUIPMENT PAD DESIGN.
6. THE DIMENSIONS SPECIFIED ARE PER INFORMATION RECEIVED FROM WATSON-MARLOW PUMP. CONTRACTOR SHALL VERIFY THESE DIMENSIONS FROM PUMP VENDOR DURING EXECUTION.
7. THE DIMENSIONS OF CONCRETE PAD FOR PUMP SKID IS BASED ON THE PUMP SKID DIMENSION RECEIVED FROM WATSON-MARLOW. CONTRACTOR SHALL VERIFY THESE FROM PUMP VENDOR DURING EXECUTION.

12" 6" 0 1' 2' 3'
3/4"=1'-0"

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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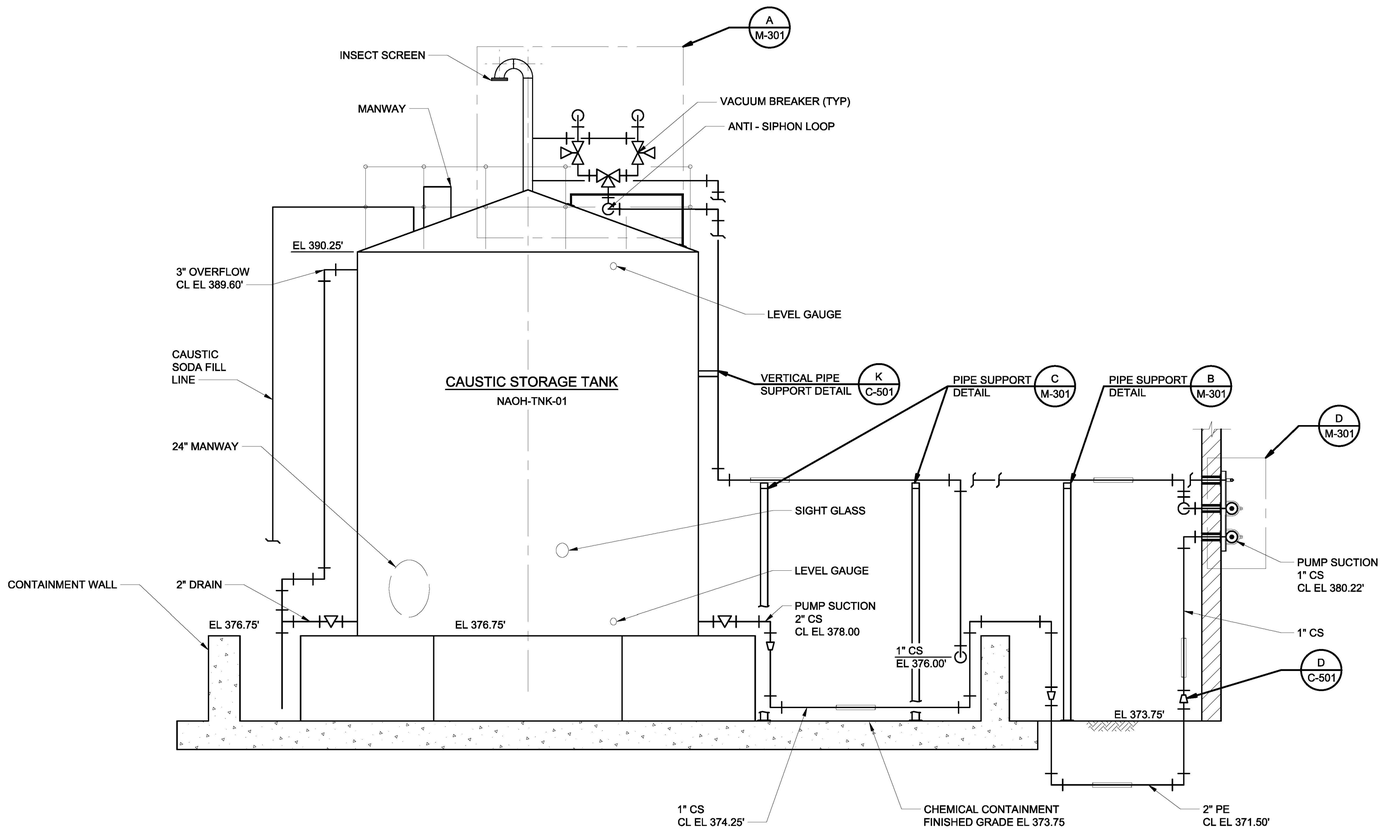
MECHANICAL

CAUSTIC SODA METERING PUMP PLAN AND SECTIONS

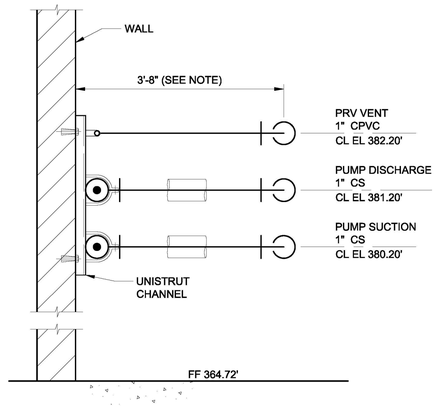
M-102

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2 SECTION
M-101 3/8" = 1'-0"

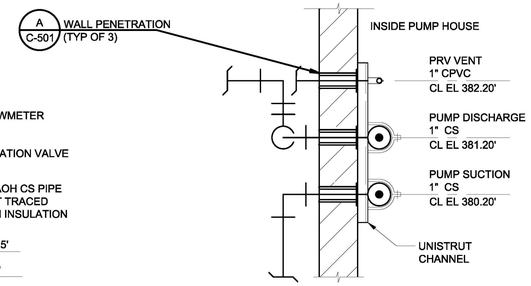


ORTHOPHOSPHATE PUMP WALL

1 SECTION
M-101 3/8" = 1'-0"

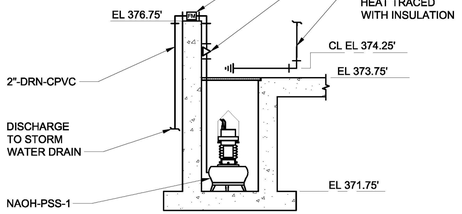
NOTES:

1. CONTRACTOR SHALL FIELD VERIFY THE LENGTH TO AVOID CLASH WITH THE EXISTING VENTILATION PIPING (NOT SHOWN IN THIS DRAWING).



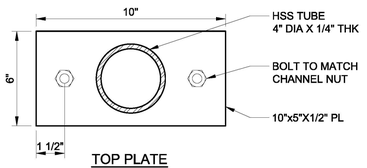
ORTHOPHOSPHATE PUMP SOUTH WALL

D DETAIL
M-301 3/4" = 1'-0"

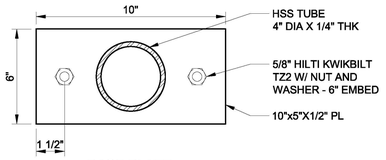


TRUCK UNLOADING AND SUMP DETAIL

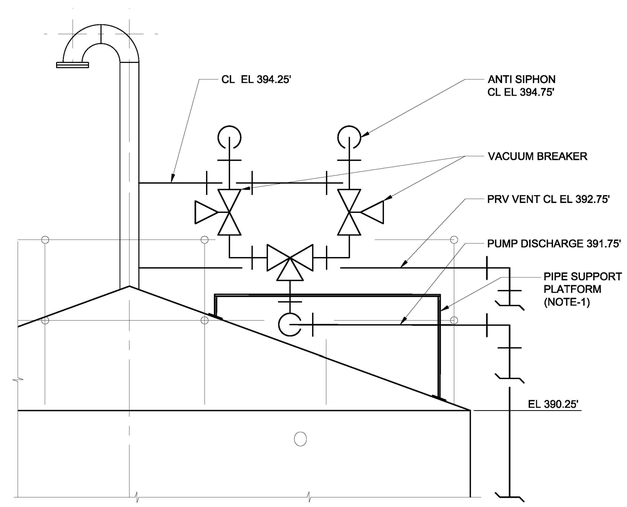
3 SECTION
M-101 1/4" = 1'-0"



TOP PLATE



BASE PLATE

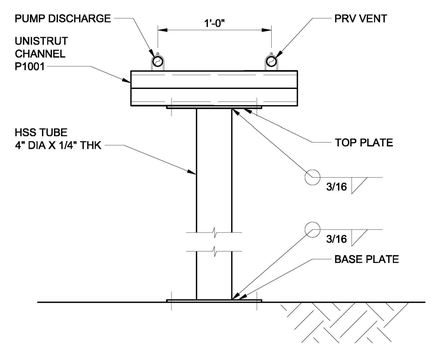


ANTI SIPHON ARRANGEMENT

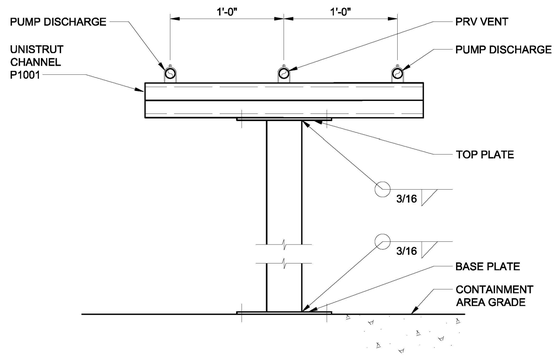
A DETAIL
M-301 3/4" = 1'-0"

NOTES:

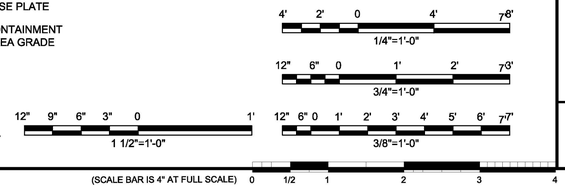
1. THE PIPE SUPPORT PLATFORM FOR THE ANTI-SIPHON ARRANGEMENT IS SHOWN FOR REPRESENTATION PURPOSE. CONTRACTOR SHALL DESIGN THE SUPPORTING PLATFORM AND PIPE SUPPORTS TO MEET THE PIPE SUPPORT REQUIREMENTS.



B PIPE SUPPORT PS-1 LOOKING SOUTH
M-301 1-1/2" = 1'-0"



C PIPE SUPPORT PS-2 LOOKING SOUTH
M-301 1-1/2" = 1'-0"



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MECHANICAL

CAUSTIC SODA CONTAINMENT AREA MECHANICAL SECTIONS

M-301

22 OF 43

ABBREVIATIONS

A	ALARM, COMPRESSED AIR OUTLET	CH	CONVECTION HEATER	EVS	EMERGENCY VENTILATION SWITCH	HR	HEAT RECOVERY UNIT, HOUR,	OCSD	ODOR CONTROL SHUTOFF DAMPER
AC	AIR COMPRESSOR	C/L	CENTERLINE	EWC	ELECTRIC WATER COOLER		HOSE REEL	OD	OUTSIDE DIAMETER
AD	ACCESS DOOR, AIR DRYER	CO	CLEANOUT	EWH	ELECTRIC WATER HEATER	HUH	HEATING WATER UNIT HEATER	ORD	OVERFLOW ROOF DRAIN
AF	AIR FLOW, AIRFOIL	CONC	CONCRETE	EWT	ENTERING WATER TEMPERATURE	HUM	HUMIDIFIER	ORP	OXIDATION REDUCTION POTENTIAL
AFD	ADJUSTABLE FREQUENCY DRIVE	CONN	CONNECTION	EXIST	EXISTING	HV	HOSE VALVE	P	PNEUMATIC
AFF	ABOVE FINISH FLOOR	CONT	CONTINUATION	F	DEGREES FAHRENHEIT	HWB	HEATING WATER BOILER	PD	PRESSURE DROP (INCHES OF WATER FOR AIR, FEET OF WATER FOR FLUIDS)
AFM	AIR FLOW MONITOR	CP	CIRCULATING PUMP	FA	FOUL AIR	HWP	HEATING WATER PUMP		
AHU	AIR HANDLING UNIT	CS	CUP SINK	FBD	FACE AND BYPASS DAMPER	HZ	HERTZ		
ALUM	ALUMINUM	CT	COOLING TOWER	FC	FORWARD CURVE, FAN COIL	I	INTAKE	PAC	PACKAGED AIR CONDITIONING UNIT
AP	ACCESS PANEL	CU	CONDENSING UNIT	FCO	FLOOR CLEANOUT	ID	INSIDE DIAMETER	PAH	PACKAGED AIR HANDLING UNIT
APPROX	APPROXIMATE	CV	CHECK VALVE, CONTROL VALVE	FD	FIRE DAMPER, FLOOR DRAIN	IN	INCHES	PDI	PLUMBING AND DRAINAGE INSTITUTE
AR	AIR RECEIVER	CWP	CHILLED WATER PUMP	FDB	DEGREES FAHRENHEIT DRY BULB	INV	INVERT	PDS	PRESSURE DIFFERENTIAL SWITCH
AS	AIR SEPARATOR	CWW	CLEAR WATER WASTE	FEF	FUME EXHAUST FAN	JS	JANITOR'S SINK	PE	PROPELLER FAN
ATU	AIR TERMINAL UNIT	D	DIRECT DRIVE, DRAW-THRU	FLEX	FLEXIBLE	KS	KITCHEN SINK	PHP	PACKAGED HEAT PUMP
AUTO	AUTOMATIC	DB	DRY BULB	FM	FLOW METER	KW	KILOWATT	PL	PLATE
AVG	AVERAGE	DDC	DIRECT DIGITAL CONTROL	FPM	FEET PER MINUTE	L	LINED DUCT, LOUVER	POS	POSITION
AVS	AUTOMATIC VALVE STATION	DEH	DEHUMIDIFIER	FR	FUNNEL RECEPTOR	LAT	LEAVING AIR TEMPERATURE	PPM	PARTS PER MILLION
B	BELT DRIVE, BLOW THROUGH	DF	DRINKING FOUNTAIN, DUCT FAN	FRP	FIBERGLASS REINFORCED PLASTIC PIPE	LAV	LAVATORY	PROP	PROPELLER
BDD	BACKDRAFT DAMPER	DIA	DIAMETER			LBS	POUNDS	PRS	PRESSURE REDUCING STATION
BF	BLIND FLANGE	DM	DUCT MOUNTED	FS	FLOOR SINK, FLOW SWITCH	LD	COMBINATION LOUVER/DAMPER	PRV	POWER ROOF VENTILATOR, PRESSURE REDUCING VALVE
BFF	BELOW FINISH FLOOR	DN	DOWN	FSD	COMBINATION FIRE/SMOKE DAMPER	LI	LEVEL INDICATOR		
BFP	BACKFLOW PREVENTER	DSN	DOWNSPOUT NOZZLE	FSW	FILTER SURFACE WASH	LS	LABORATORY SINK, LEVEL SWITCH	PS	PRESSURE SWITCH
BH	BASEBOARD HEATER	DX	DIRECT EXPANSION	FT	FEET, FIN TUBE HEATER, FLOW	LWT	LEAVING WATER TEMPERATURE	PSI	POUNDS PER SQUARE INCH
BI	BACKWARD INCLINED, BUILT-IN THERMOSTAT	E	ELECTRIC, ELECTRIC OPERATOR, EXHAUST		TUBE	MAU	MAKEUP AIR UNIT	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
				FUR	FURNACE	MAX	MAXIMUM	PSIG	POUNDS PER SQUARE INCH GAUGE
BL	BOTTOM LEVEL	EA	EACH, EXHAUST AIR	FWB	DEGREES FAHRENHEIT WET BULB	MCA	MINIMUM CIRCUIT AMPS	PTAC	PACKAGED TERMINAL AIR CONDITIONER
BLDG	BUILDING	EAT	ENTERING AIR TEMPERATURE	G	GAS OUTLET	ME	MIST ELIMINATOR		
BLR	BLOWER	EC	ECONOMIZER, EVAPORATIVE COOLER	GA	GAUGE	MFR	MANUFACTURER	RA	REACTIVATION AIR, RETURN AIR
BOD	BOTTOM OF DUCT ELEVATION	ECH	ELECTRIC CABINET HEATER	GALV	GALVANIZED	MOCP	MAXIMUM OVERCURRENT PROTECTION	RAC	ROOM AIR CONDITIONER
BOT	BOTTOM	ECP	EQUIPMENT CONTROL PANEL	GD	GARBAGE DISPOSER	MIN	MINIMUM	RCS	REMOTE CONTROL STATION
BTF	BIOTRICKLING FILTER	EDH	ELECTRIC DUCT HEATER	GIH	GAS INFRARED HEATER	MOD	MODULATING	RD	ROOF DRAIN
BTUH	BRITISH THERMAL UNITS PER HOUR	EEW	EMERGENCY EYE WASH	GPM	GALLONS PER MINUTE	MS	MOP SINK	REQD	REQUIRED
BU	BELL-UP	EF	EXHAUST FAN	GUH	GAS UNIT HEATER	NC	NORMALLY CLOSED	RH	RELATIVE HUMIDITY, ROOF HOOD
BV	BALL VALVE	EFF	EFFICIENCY	GV	GATE VALVE	NO	NORMALLY OPEN, NUMBER	RSF	ROOF SUPPLY FAN
C	CHANNEL, CONVECTOR, COOLING, COOLING (MAKE ON RISE)	EGS	EMERGENCY GAS SCRUBBER	GW	GLASS WASHER	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED	SA	SUPPLY AIR
		EIH	ELECTRIC INFRARED HEATER	GWH	GAS WATER HEATER			SCD	SMOKE CONTROL DAMPER
CAU	CARBON ADSORPTION UNIT	EL	ELEVATION	H	HAND OPERATOR, HEATING, HEATING (MAKE ON FALL), HEIGHT, HORIZONTAL, HUMIDISTAT	NT	NEUTRALIZATION TANK	SCFM	STANDARD CUBIC FEET PER MINUTE
CB	CENTRIFUGAL BLOWER	EP	EXPLOSION PROOF			OA	OUTSIDE AIR		
CBD	COUNTERBALANCE BACKDRAFT DAMPER	EQUIP	EQUIPMENT			OC	ODOR CONTROL	SCP	SCRUBBER CONTROL PANEL
CC	COOLING COIL	ES	EMERGENCY SHOWER, EMERGENCY SWITCH	HC	HEATING COIL	OCBD	ODOR CONTROL BALANCE DAMPER	SF	SQUARE FEET, SUPPLY FAN
CCU	CARBON CANISTER UNIT			HCH	HEATING WATER CABINET HEATER	OCF	ODOR CONTROL FAN	SH	SHEET, SHOWER
CD	CONTROL DAMPER	ES/EEW	EMERGENCY SHOWER AND EYEWASH	HE	HEAT EXCHANGER, HELIUM	OCFS	ODOR CONTROL FLOW SWITCH	SIM	SIMILAR
CDWP	CONDENSER WATER PUMP	ESP	EXTERNAL STATIC PRESSURE	HF	HOSE FAUCET	OCLS	ODOR CONTROL LEVEL SWITCH	SMD	SMOKE DETECTOR
CENTR	CENTRIFUGAL	ET	EXPANSION TANK	HO	HAND-OFF	OCP	ODOR CONTROL PANEL	SP	STATIC PRESSURE (INCHES OF WATER)
CF	CABINET FAN	EUH	ELECTRIC UNIT HEATER	HOA	HAND-OFF-AUTO	OCPS	ODOR CONTROL PRESSURE SWITCH		
CFM	CUBIC FEET PER MINUTE	EV	EXHAUST VALVE	HP	HEAT PUMP, HORSEPOWER	OCS	ODOR CONTROL SCRUBBER	SPS	STATIC PRESSURE SENSOR

SRP	SCRUBBER RECIRCULATION PUMP		
SS	STAINLESS STEEL		
SSK	SERVICE SINK		
SSP	SUBMERSIBLE SUMP PUMP		
STD	STANDARD		
SV	SERVICE VALVE, SHUTOFF VALVE, SUPPLY VALVE, SOLENOID VALVE		
T	THERMOSTAT		
TCP	TEMPERATURE CONTROL PANEL		
TCV	TEMPERATURE CONTROL VALVE		
TD	TRENCH DRAIN		
TE	TEMPERATURE ELEMENT		
TL	TOP LEVEL		
TP	TRAP PRIMER		
TS	TIP SPEED, TAMPER SWITCH		
TYP	TYPICAL		
UR	URINAL		
V	VERTICAL		
VAC	VACUUM OUTLET		
VANE	VANEAXIAL		
VAV	VARIABLE AIR VOLUME		
VB	VACUUM BREAKER		
VCD	VOLUME CONTROL DAMPER		
VF	VANEAXIAL FAN		
VP	VACUUM PUMP		
VSP	VERTICAL COLUMN SUMP PUMP		
VTR	VENT THRU ROOF		
W	WIDE FLANGE, WIDTH		
WB	WET BULB		
WBP	WATER BOOSTER PUMP		
WC	WATER CHILLER, WATER CLOSET WATER COLUMN		
WCO	WALL CLEANOUT		
WF	WALL FAN		
WG	WATER GAUGE		
WH	WALL HEATER, WALL HYDRANT		
WHA	WATER HAMMER ARRESTOR		
WM	WALL MOUNTED		
WST	WATER STORAGE TANK		
WT	WEIGHT		
WV	WATER CONTROL VALVE		
ZD	ZONE DAMPER		

LEGEND

GENERAL

- PIPING ABOVE FLOOR OR GRADE
- PIPING BELOW FLOOR OR GRADE
- PIPE TURNING UP
- PIPE TURNING DOWN

WATER

- NPW — COLD WATER (NONPOTABLE)
- CW — COLD WATER (POTABLE)
- DE — DEIONIZED WATER
- DW — DISTILLED WATER
- F — FIRE PROTECTION WATER
- HWC — HOT WATER CIRCULATING (POTABLE)
- NPHW — HOT WATER (NONPOTABLE)
- HW — HOT WATER (POTABLE)
- PEW — PLANT EFFLUENT WATER
- SVW — SERVICE WATER
- SW — SOFTENED WATER
- TW — TEMPERED OR BLENDED WATER
- TNPW — TEMPERED NONPOTABLE WATER

WASTE

- CRW — CHEMICAL RESISTANT WASTE
- CRV — CHEMICAL RESISTANT VENT
- CWW — CLEAR WATER WASTE
- D — INDIRECT DRAIN
- SAN — SANITARY DRAIN
- ST — STORM DRAIN
- PD — SUMP PUMP DISCHARGE
- V — VENT

SPECIAL

- ACET — ACETYLENE
- AR — ARGON
- A — COMPRESSED AIR
- HE — HELIUM
- H — HYDROGEN
- ME — METHANE
- N — NITROGEN
- NO — NITROUS OXIDE
- OX — OXYGEN
- VAC — VACUUM

PIPE FITTINGS

- BLIND FLANGE
- CAP
- REDUCER
- SLEEVE
- TP — TEST PLUG
- UNION
- P-TRAP
- VENT THROUGH ROOF (VTR)

FUEL GAS

- G — NATURAL GAS
- PG — PROPANE GAS

HVAC/ODOR CONTROL

- CWR — CHILLED WATER RETURN
- CWS — CHILLED WATER SUPPLY
- C — CONDENSATE DRAIN
- CDWR — CONDENSER WATER RETURN
- CDWS — CONDENSER WATER SUPPLY
- FA — FOUL AIR
- HWR — HEATING WATER RETURN
- HWS — HEATING WATER SUPPLY
- LPC — LOW PRESSURE CONDENSATE
- LPS — LOW PRESSURE STEAM (<15 PSIG)
- R — REFRIGERANT
- SR — SCRUBBER RECIRCULATION

VALVES

- ANGLE VALVE
- BACKFLOW PREVENTER W/STRAINER (2" & SMALLER)
- BACKFLOW PREVENTER
- BACKWATER VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CHECK VALVE
- GATE VALVE
- GLOBE VALVE
- PLUG VALVE
- PRESSURE REDUCING VALVE
- THREE WAY VALVE

PIPING SPECIALTIES

- AUTOMATIC VALVE STATION
- S — BASKET STRAINER
- COMBINATION PUMP DISCHARGE VALVE
- FLEXIBLE CONNECTION
- FLOW CONTROL VALVE
- FLOW SENSOR METER
- HF — HOSE FAUCET
- HF — HOSE FAUCET W/ VACUUM BREAKER
- HOSE VALVE W/ HOSE NIPPLE
- AIR VENT
- PRS — PRESSURE REDUCING STATION
- PRESSURE RELIEF VALVE
- PRESSURE/TEMPERATURE RELIEF VALVE
- Q — QUICK COUPLING
- ROTAMETER
- SIGHT FLOW INDICATOR
- SUCTION DIFFUSER (SCHEMATIC)
- TP — TRAP PRIMER
- WH — WALL HYDRANT W/ VACUUM BREAKER
- M — METER
- S — WYE STRAINER
- S — WYE STRAINER W/ BLOWOFF
- VACUUM BREAKER

PLUMBING

- BELL-UP DRAIN OR FUNNEL RECEPTOR W/ TRAP
- FCO — CLEANOUT (FLOOR)
- CO — CLEANOUT (PIPE)
- HW / CW — BLENDING VALVE
- DOWNSPOUT NOZZLE OR SHOWER
- EMERGENCY SHOWER/EYEWASH
- FLOOR DRAIN
- HOSE RACK
- HOSE REEL
- P-TRAP
- ROOF DRAIN
- SPLASHBLOCK
- A — WATER HAMMER ARRESTOR W/ PDI SIZE DESIGNATION

PLUMBING (SCHEMATIC)

- AIR-GAP FITTING
- BELL-UP DRAIN OR FUNNEL RECEPTOR
- FLOOR CLEANOUT
- FLOOR DRAIN
- FLOOR DRAIN W/ FUNNEL

FIRE PROTECTION

- ALARM CHECK VALVE - WET SYSTEM
- DRY PIPE VALVE
- FIRE DEPARTMENT CONNECTION
- TS — SUPERVISORY (TAMPER) SWITCH

GENERAL MECHANICAL NOTES

1. THIS IS GENERAL LEGEND AND ABBREVIATION SHEET FOR PLUMBING, HVAC AND ODOR CONTROL DRAWINGS. SOME ITEMS CONTAINED ON THIS SHEET MAY NOT BE USED ON THIS SPECIFIC PROJECT.
2. ALL MECHANICAL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE FOLLOWING APPLICABLE CODES:
   CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 5, 2022 CALIFORNIA PLUMBING CODE (CPC).
   CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 4, 2022 CALIFORNIA MECHANICAL CODE (CMC).
   NATIONAL FIRE PROTECTION ASSOCIATION RECOMMENDED PRACTICES (NFPA) AND MANUALS.
3. FOR ROOFTOP EQUIPMENT CURBS, FLUES, AND FLASHING DETAILS, SEE ARCHITECTURAL DRAWINGS.
4. SEE ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR ALL EQUIPMENT BASE DETAILS.
5. "SCREENED" DELINEATION DENOTES EXISTING AND NEW FACILITIES AND IS FOR REFERENCE ONLY. "LIGHT" LINE DELINEATION DENOTES EXISTING MECHANICAL EQUIPMENT AND SYSTEMS. EXISTING FACILITY AND MECHANICAL SYSTEMS INFORMATION WAS TAKEN FROM PREVIOUS DRAWINGS, CONSTRUCTION RECORDS, DATA, AND FIELD SURVEY INFORMATION. ACTUAL LOCATION, ARRANGEMENT, AND DIMENSIONS SHALL BE FIELD VERIFIED AND WORK INSTALLED TO MEET ACTUAL CONDITIONS AND LOCATIONS ENCOUNTERED. "BOLD" (DARK) DELINEATION IS NEW WORK TO BE CONSTRUCTED UNDER THIS CONTRACT.
6. ALL MATERIALS, FITTINGS, COVERS, AND EQUIPMENT INSTALLED IN RETURN AIR PLENUMS SHALL BE NONCOMBUSTIBLE AND UL LISTED FOR USE IN RETURN AIR PLENUMS.
7. ALL PIPE AND DUCT PENETRATIONS THROUGH FIRE RESISTANCE RATED ASSEMBLIES SHALL BE PROVIDED WITH FIRESTOP SYSTEMS, EQUIPMENT AND ACCESSORIES TO RESIST THE PASSAGE OF FIRE, SMOKE AND OTHER GASES. THE ORIGINAL FIRE RESISTANCE RATING OF THE ASSEMBLY PENETRATED SHALL BE MAINTAINED FOR ALL TYPES OF PENETRATIONS. SEE ARCHITECTURAL DRAWINGS FOR RATED ASSEMBLY LOCATIONS.
8. METAL ROOF DECKING OR BOTTOM CHORD OF BAR JOISTS SHALL NOT BE USED FOR THE SUPPORT OF EQUIPMENT, PIPING, OR DUCTWORK.
9. ALL HANGERS, BRACKETS, OR BRACES FOR DUCTWORK, EQUIPMENT, AND PIPING ARE NOT INDICATED ON THE DRAWINGS. REFER TO THE SPECIFICATIONS FOR SUPPORT REQUIREMENTS NOT SHOWN ON THE PLANS.
10. OUTSIDE AIR INLETS SHALL BE LOCATED A MINIMUM OF 10' AWAY FROM ANY EXHAUST AIR OR PLUMBING VENT OUTLET.
11. ALL EQUIPMENT, PIPING, AND DUCTWORK FINAL LOCATIONS SHALL BE COORDINATED TO AVOID INTERFERENCES WITH STRUCTURE, OTHER PIPING, EQUIPMENT, DUCTWORK, AND CONDUIT. UNLESS SPECIFICALLY DIMENSIONED, THE PIPE AND DUCTWORK ROUTING SHOWN IS INTENDED TO INDICATE GENERAL LOCATION ONLY. INSTALL DUCTWORK TO ALLOW FOR PIPING TO BE ROUTED AGAINST WALLS.
12. ALL PIPING AND DUCTWORK SHALL BE ROUTED AS HIGH AS POSSIBLE WITH A MINIMUM HEIGHT OF 8'-0" ABOVE THE WALKING SURFACE UNLESS OTHERWISE INDICATED BY A CENTERLINE, INVERT, OR BOTTOM OF DUCT ELEVATION.
13. ALL HOSE FAUCETS AND HOSE VALVES SHALL BE INSTALLED 3'-0" ABOVE FINISHED FLOOR UNLESS OTHERWISE NOTED. WALL HYDRANTS SHALL BE INSTALLED 2'-0" ABOVE GRADE UNLESS OTHERWISE NOTED.
14. ALL HOSE FAUCETS AND WALL HYDRANTS SHALL BE NOMINAL 3/4" PIPE SIZE UNLESS OTHERWISE NOTED. ALL HOSE VALVES SHALL BE 1 1/2" NOMINAL PIPE SIZE UNLESS OTHERWISE NOTED.
15. ALL HOSE FAUCETS, WALL HYDRANTS, AND OTHER OUTLETS ON NONPOTABLE WATER LINES WHICH COULD BE USED FOR DRINKING OR DOMESTIC USE SHALL BE POSTED AS REQUIRED BY THE APPLICABLE CODES. IN ABSENCE OF A CODE REQUIREMENT, THE OUTLETS SHALL BE POSTED WITH A TAG IN THE SHAPE OF A 4" EQUILATERAL TRIANGLE BEARING THE LEGEND "DANGER: UNSAFE WATER" IN LETTERS NOT LESS THAN 1/2" IN HEIGHT. THIS TAG SHALL BE SECURELY ATTACHED IN A VISIBLE LOCATION DIRECTLY ABOVE OUTLET. THE TAG SHALL BE PAINTED ORANGE AND THE LETTERS BLACK.
16. ALL RELIEF VALVES SHALL BE PIPED TO FLOOR OR BELL-UP DRAINS.
17. SEISMIC RESTRAINTS/BRACING SHALL BE PROVIDED FOR ALL EQUIPMENT, DUCTWORK, PIPING AND ACCESSORIES IN ACCORDANCE WITH THE LATEST SMACNA SEISMIC RESTRAINT MANUAL AND LOCAL BUILDING CODES. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SEISMIC SUPPORTS AND ADDITIONAL/MISCELLANEOUS STEEL REQUIRED FOR PROPER INSTALLATION OF SUPPORTS. SUPPORTS AND SEISMIC RESTRAINTS DESIGN SUBMITTALS SHALL BEAR THE STAMP AND SIGNATURE OF A LICENSED ENGINEER.
18. INSULATION SHALL BE PROVIDED FOR EQUIPMENT, PIPING, AND DUCT SYSTEMS AS INDICATED IN THE SPECIFICATIONS.
19. PLUMBING VENTS OUTLETS SHALL BE LOCATED A MINIMUM OF 10'-0" AWAY FROM ANY OUTSIDE AIR INLET.
20. PIPING SIZES TO EQUIPMENT AND EQUIPMENT SUPPORTS SHALL BE VERIFIED AND ADJUSTED TO MATCH ACTUAL EQUIPMENT FURNISHED.

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Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER — TIMOTHY W. CANTRELL — M36207 — MECHANICAL — STATE OF CALIFORNIA
05/29/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	APC
DETAILED:	RKS
CHECKED:	EJK
APPROVED:	RWC
DATE:	JUNE 2025
PROJECT NO.:	416929

GENERAL

PLUMBING

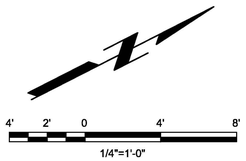
LEGENDS, ABBREVIATIONS, AND GENERAL NOTES

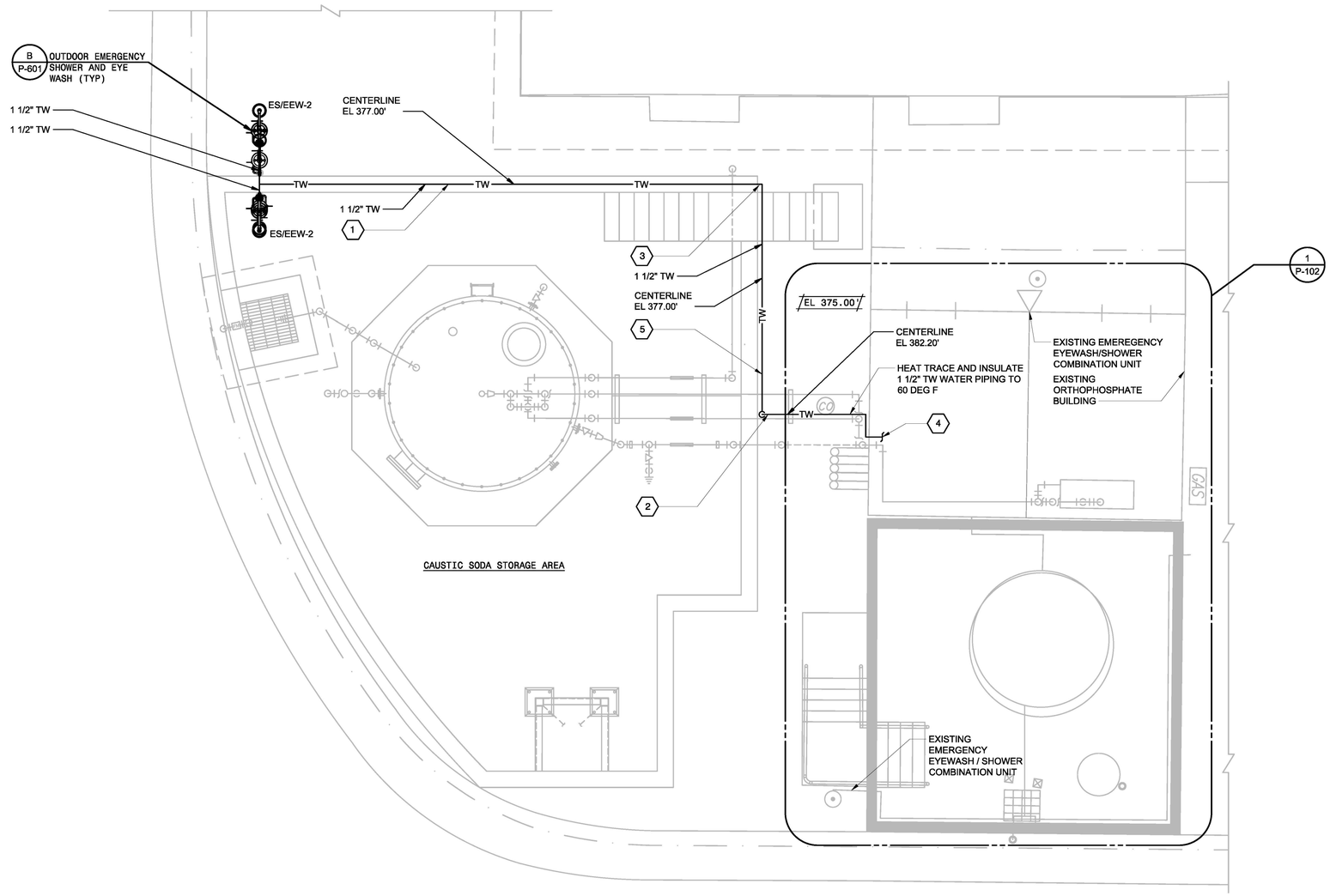
P-001

23 OF 43

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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PLAN
1/4" = 1'-0"

GENERAL NOTES:

1. SEE SHEET P-001 FOR LEGENDS, ABBREVIATIONS, AND GENERAL NOTES.
2. CONTRACTOR TO VERIFY ALL FIELD ELEVATIONS.

SHEET KEYNOTES

1. CONTRACTOR TO PROVIDE SUPPORTS AND FIELD ROUTE PIPING ALONG THE TOP VERTICAL FACE OF THE INSIDE WALL OF THE CONTAINMENT AREA PER GENERAL PLUMBING NOTES 8,9, AND OTHERS AS APPLICABLE.
2. CONTRACTOR TO VERIFY ALL PIPING HAS INSULATION AS PER SPECIFICATION 15250. FOR HEAT TRACE REFER TO SPECIFICATION 16050.
3. RUN 1 1/2" TW ABOVE GROUND IN CONTAINMENT AREA, ALONG THE TOP OF THE CONCRETE CURB. CONTRACTOR TO COORDINATE WITH CHEMICAL PIPING ROUTING AS SEEN ON SHEET M-101. CONTRACTOR TO ROUTE AND CONFIRM ELEVATION OF 1 1/2" TW UNDERNEATH THE SPACE BELOW THE STAIR/RAMP INTO THE CAUSTIC SODA STORAGE AREA.
4. 1 1/2" TW PIPING FROM CAUSTIC SODA METERING AND PUMP PLUMBING PLAN AT CENTERLINE ELEVATION 376.22'. SEE SHEET P-102 FOR CONT.
5. CONTRACTOR TO PROVIDE SUPPORTS AND FIELD ROUTE PIPING ALONG THE TOP VERTICAL FACE OF THE OUTSIDE WALL OF THE CONTAINMENT AREA PER GENERAL PLUMBING NOTES 8,9, AND OTHERS AS APPLICABLE.

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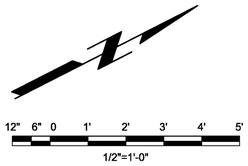
CAUSTIC SODA CONTAINMENT AREA PLUMBING PLAN

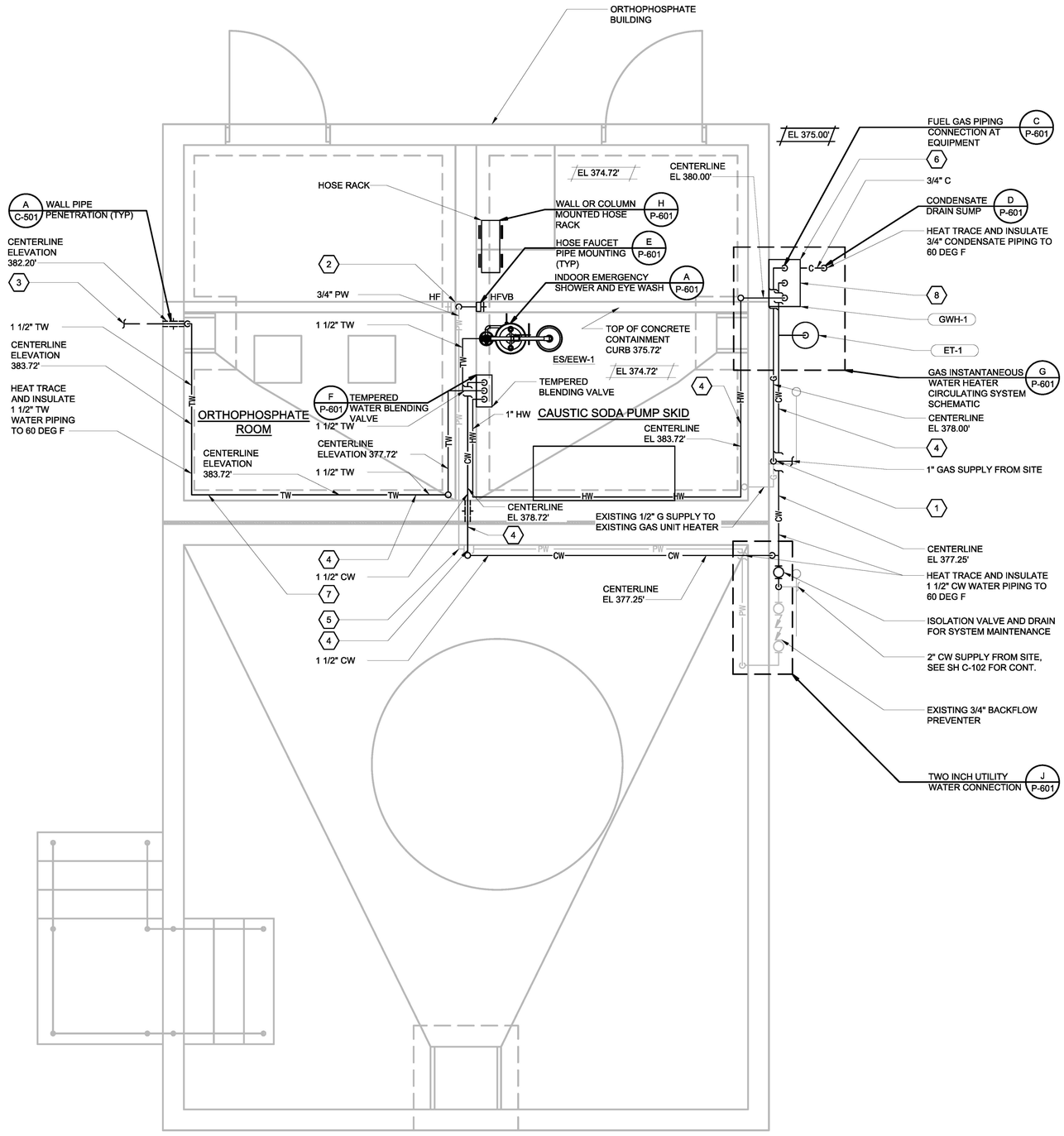
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(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4





1 P-101 ENLARGED PLUMBING PLAN
1/2" = 1'-0"

GENERAL SHEET NOTES

1. SEE SHEET P-001 FOR LEGENDS, ABBREVIATIONS, AND GENERAL NOTES.
2. CONTRACTOR TO VERIFY ALL FIELD ELEVATIONS.

SHEET KEYNOTES

1. EXISTING 1/2" NATURAL GAS PIPING TO EXISTING GAS UNIT HEATER SHALL REMAIN. CONTRACTOR TO CONNECT EXISTING PIPING TO NEW 1" NATURAL GAS PIPING. SEE DEMO SHEET D-103 FOR EXISTING 1/2" NATURAL GAS CONNECTION.
2. CONTRACTOR TO VERIFY EXISTING HOSE FAUCET LOCATION AND REPLACE WITH NEW HOSE FAUCET WITH VACUUM BREAKER.
3. 1 1/2" TW PIPING TO CAUSTIC SODA STORAGE AREA. SEE SHEET P-101 FOR CONT.
4. CONTRACTOR TO VERIFY ALL PIPING HAS INSULATION AS PER SPECIFICATION 15250. FOR HEAT TRACE REFER TO SPECIFICATION 16050.
5. EXISTING 3/4" PW ENTRY TO SERVE NEW HFVBs & EXISTING ORTHOPHOSPHATE PUMP PW FLUSHING.
6. MAINTAIN 36" OF CLEARANCE FOR THE FLUE ON THE TOP PART OF GWH-1. MAINTAIN 24" ON THE FRONT FOR MAINTENANCE SERVICE. MOUNTING HEIGHT FOR GWH-1 TO BE 5 FEET ABOVE GROUND.
7. CONTRACTOR TO COORDINATE WITH CHEMICAL PIPING ROUTING AS SEEN ON SHEET M-102. 1 1/2" TW LINE TO BE ROUTED ABOVE CHEMICAL CONTAINMENT LEVEL. CONTRACTOR TO CONFIRM CENTER LINE ELEVATION.
8. WATER HEATER FLUE VENT TO BE INSTALLED PER MANUFACTURER SPECIFICATIONS.

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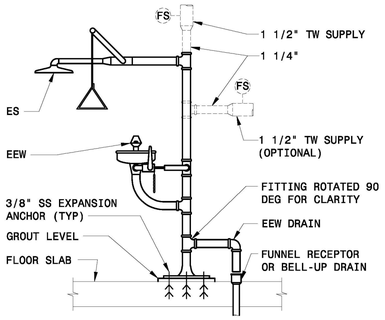
CAUSTIC SODA ENLARGED METERING PUMP PLUMBING PLAN

P-102

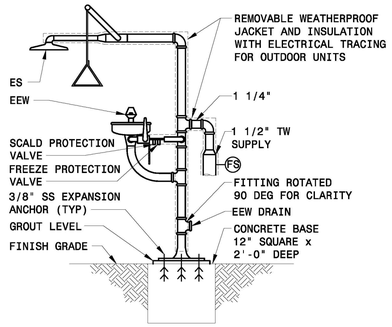
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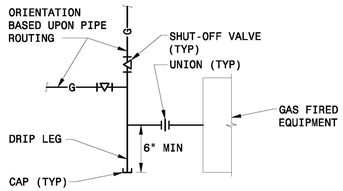
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A INDOOR EMERGENCY SHOWER AND EYE WASH
NO SCALE

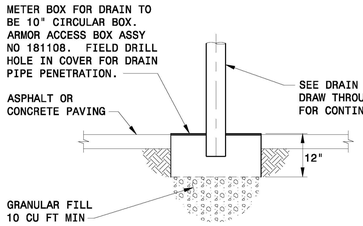


B OUTDOOR EMERGENCY SHOWER AND EYE WASH
NO SCALE

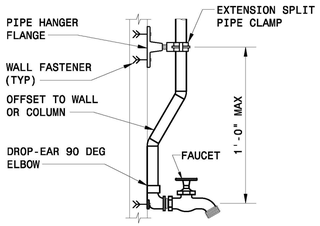


STANDARD

C FUEL GAS PIPING CONNECTION AT EQUIPMENT
NO SCALE

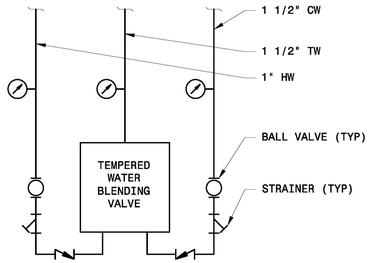


D CONDENSATE DRAIN SUMP
NO SCALE

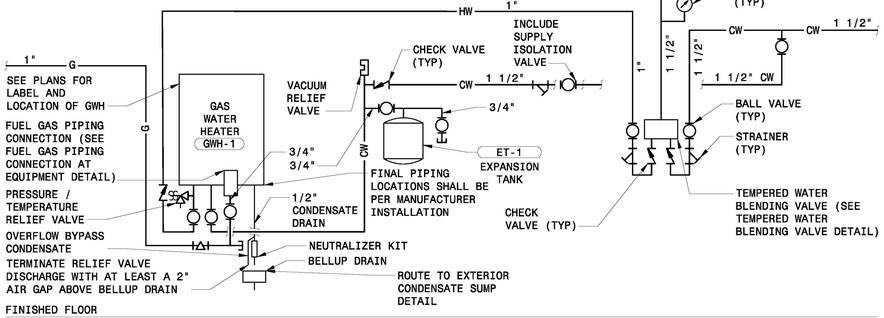


NOTES:
1. PROVIDE VACUUM BREAKER ON HOSE FAUCETS WHERE INDICATED ON THE PLANS.
2. SEE PLANS AND SPECIFICATIONS FOR PIPE DIAMETERS.

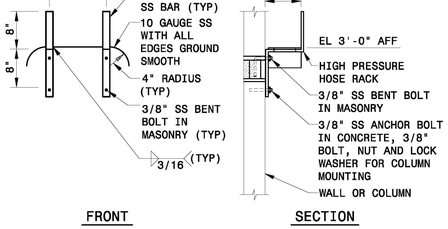
E HOSE FAUCET PIPE MOUNTING
NO SCALE



F TEMPERED WATER BLENDING VALVE
NO SCALE



G GAS INSTANTANEOUS WATER HEATER CIRCULATING SYSTEM SCHEMATIC
NO SCALE



FRONT SECTION

H WALL OR COLUMN MOUNTED HOSE RACK
NO SCALE



J TWO INCH UTILITY WATER CONNECTION
NO SCALE

PLUMBING EQUIPMENT SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL	DESCRIPTION	APPROX WEIGHT (LBS)	NOTES
ET-1	AMTROL THERM-X-TROL	ST-C-SERIES	EXPANSION TANK, PIPELINE MOUNTED, 0.84 GALLONS ACCEPTANCE VOLUME, 2.1 GALLONS TANK VOLUME, PRECHARGE TO 60 PSIG.	25	4
GWH-1	AO SMITH	ACT-199O-N	NATURAL GAS FIRED CONDENSING WATER HEATER, TANKLESS. 199,000 BTUH INPUT, 120 VOLT, PHASE 1, 60 HZ, 191 GPH RECOVERY AT 100 F RISE, 4.0-10.5 IN WC GAS SUPPLY PRESSURE MIN/MAX RANGE. ULTRA LOW NOx. MIN UEF 0.95.	75	1,2,3,4

PLUMBING FIXTURE SCHEDULE

UNIT NUMBER	MANUFACTURER	MODEL	DESCRIPTION	WATER (IN)		SANITARY (IN)		APPROX WEIGHT (LBS)	NOTES
				HOT	COLD	WASTE	VENT		
ES/EEW-1	HAWS	8336	EMERGENCY SHOWER/EYE WASH COMBINATION, PEDESTAL MOUNTED, CORROSION RESISTANT, 1 1/4" IPS SUPPLY, 120 VOLT. FLOW SWITCH.	---	1 1/2"	---	---	---	1,2
ES/EEW-2	HAWS	8317 CTFP	EMERGENCY SHOWER/EYE/FACE WASH COMBINATION, FROST-PROOF TO -30 F, PEDESTAL MOUNTED, 1 1/4" IPS SUPPLY, 120 VOLT. FLOW SWITCH.	---	1 1/2"	---	---	---	1,2

GENERAL NOTES

1. SEE SHEET P-001 FOR PLUMBING LEGEND, ABBREVIATIONS, AND GENERAL NOTES.

SCHEDULE NOTES

PLUMBING EQUIPMENT SCHEDULE:

NOTES:
1. PIPE COVER.
2. INTEGRAL NEUTRALIZER KIT FOR CONDENSATE DRAINAGE.
3. OUTDOOR FREEZE-PROOF MODEL.
4. UNIT IS SUBJECT TO CORROSION FROM A HYDROGEN SULFIDE LADEN ATMOSPHERE. ALL EXPOSED COPPER PIPING COMPONENTS SHALL BE GIVEN A PROTECTIVE SPECIAL COATING OF HERESITE OR APPROVED EQUAL. CONTROL PANELS, WIRING CONNECTIONS, AND OTHER SENSITIVE ELECTRONICS SHALL HAVE A CONFORMAL COATING APPLIED.

PLUMBING FIXTURE SCHEDULE:

NOTES:
1. TEMPERED WATER SUPPLY.
2. ALARM SYSTEM.

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CITY OF FOLSOM

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GENERAL

PLUMBING

DETAILS AND SCHEDULE

P-601

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(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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ONE-LINE DIAGRAM LEGEND

1500KVA
2.4KV Δ - 480Y/277V
3-PH, 60HZ
TRANSFORMER WITH PRIMARY AND SECONDARY VOLTAGE, AND KVA RATING AS NOTED

CS
4#14,3/4"
20
3P-60
22:3#8,#10G, 4#14,2"
CIRCUIT NO.22 WITH 3#8 INSULATED CONDUCTORS AND 1#10 GROUND WIRE FOR A 20HP MOTOR WITH 3 POLE, 60A, MOTOR DISCONNECT SWITCH AND 4#14 INSULATED CONDUCTORS FOR AUXILIARY ITEM, AS FOR EXAMPLE A CONTROL STATION, ALL IN 2" CONDUIT.

AUXILIARY ITEMS MAY NOT BE COMPLETELY SHOWN
HS
20
3P-60
22:3#8,#10G, 4#14,2"
CONDUCTORS FOR AUXILIARY ITEM SHALL NOT PASS THROUGH MOTOR DISCONNECT SWITCH.

AUXILIARY ITEMS MAY NOT BE COMPLETELY SHOWN
15
ONE-LINE SHOWING POWER AND CONTROL TO A PACKAGE UNIT, AS FOR EXAMPLE A STEAM GENERATOR OR AN AIR HANDLING UNIT, SHALL IMPLY THAT ANY AND ALL ASSOCIATED EQUIPMENT SHALL ALSO BE INSTALLED AND WIRED AS REQUIRED BY THE EQUIPMENT FURNISHED.

INDICATES THAT ALL OR PART OF CIRCUIT MAY BE ROUTED IN DUCT BANK OR UNDERGROUND. CONDUIT SIZE SHOWN ON ONE-LINE IS ABOVE GROUND AND/OR INSIDE OF STRUCTURE. SEE DUCT BANK SCHEDULE AND SECTIONS FOR CONDUIT SIZE OF UNDERGROUND PORTION OF CIRCUIT.

HIGH VOLTAGE DRAWOUT AIR OR VACUUM CIRCUIT BREAKER

3P - 20
LOW VOLTAGE AIR CIRCUIT BREAKER, 3 POLE, 20 AMPERE

S4
SIZE 4 COMBINATION MAGNETIC MOTOR STARTER

LOW VOLTAGE DRAWOUT AIR CIRCUIT BREAKER

HIGH VOLTAGE DRAWOUT CONTACTOR

FUSE AND DISCONNECT SWITCH

S2
SIZE 2 COMBINATION MAGNETIC MOTOR STARTER, REVERSING OR 2 SPEED

S1
SIZE 1 COMBINATION REDUCED VOLTAGE AUTOTRANSFORMER

POTENTIAL TRANSFORMER

CURRENT TRANSFORMER

CURRENT OR POTENTIAL TEST SWITCH

G
GENERATOR

K
KIRK KEY INTERLOCK

E
ELECTRICAL INTERLOCK

R
RESISTOR

59G
PROTECTION RELAY WITH IEEE DEVICE FUNCTION AS SHOWN

V
SINGLE-FUNCTION METER

SURGE OR LIGHTNING ARRESTER

SURGE ARRESTER WITH SURGE CAPACITOR

GROUND CONNECTION

SCHEMATIC SYMBOLS

- WIRE CONNECTION POINT
- EXTERNAL CONNECTION POINT
- NORMALLY OPEN CONTACT
- NORMALLY CLOSED CONTACT
- STARTER, CONTACTOR OR RELAY COIL
- NORMALLY OPEN PUSH BUTTON
- NORMALLY CLOSED PUSH BUTTON
- MAINTAINED PUSH BUTTON
- NORMALLY CLOSED GEARED LIMIT SWITCH
- NORMALLY OPEN GEARED LIMIT SWITCH
- INDICATING LIGHT
- FUSE
- POTENTIOMETER
- CAPACITOR
- DIODE
- RESISTOR
- CONTROL POWER TRANSFORMER
- SWITCH
- MS MANUAL STARTER
- OL OVERLOAD
- OVERLOAD
- ELECTRODE
- FLOAT SWITCH (CLOSING ON RISING LEVEL)
- FLOAT SWITCH (OPENING ON RISING LEVEL)
- PRESSURE SWITCH (CLOSING ON RISING PRESSURE)
- PRESSURE SWITCH (OPENING ON RISING PRESSURE)
- VACUUM SWITCH (CLOSING ON INCREASING VACUUM)
- VACUUM SWITCH (OPENING ON INCREASING VACUUM)
- TEMPERATURE SWITCH (CLOSING ON RISING TEMPERATURE)
- TEMPERATURE SWITCH (OPENING ON RISING TEMPERATURE)
- FLOW ACTUATED SWITCH (CLOSING ON INCREASE IN FLOW)
- FLOW ACTUATED SWITCH (OPENING ON INCREASE IN FLOW)
- ON TIME DELAY CONTACT (NORMALLY OPEN, WHEN THE COIL IS ENERGIZED THE CONTACT WILL CLOSE AFTER A TIME DELAY)
- ON TIME DELAY CONTACT (NORMALLY CLOSED, WHEN THE COIL IS ENERGIZED THE CONTACT WILL OPEN AFTER A TIME DELAY)
- OFF TIME DELAY CONTACT (NORMALLY OPEN, WHEN THE COIL IS DE-ENERGIZED THE CONTACT WILL OPEN AFTER A TIME DELAY)
- OFF TIME DELAY CONTACT (NORMALLY CLOSED, WHEN THE COIL IS DE-ENERGIZED THE CONTACT WILL CLOSE AFTER A TIME DELAY)
- TORQUE SWITCH (NORMALLY OPEN)
- TORQUE SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY OPEN)
- LIMIT SWITCH (NORMALLY OPEN, HELD CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED)
- LIMIT SWITCH (NORMALLY CLOSED, HELD OPEN)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY OPEN, CLOSING ON INCREASING DIFF.)
- DIFFERENTIAL PRESSURE SWITCH (NORMALLY CLOSED, OPENING ON INCREASING DIFF.)

SWITCH & OUTLET SYMBOLS

- S SINGLE POLE SWITCH
- S_2 TWO POLE SWITCH
- S_{3A} THREE-WAY SWITCH CONTROLLING LIGHTS WITH "A" DESIGNATION
- S_4 FOUR-WAY SWITCH
- S^{C1}_{M} MOMENTARY SWITCH CONTROLLING CONTACTOR C1
- S^{DM}_{A} DIMMING WALL SWITCH CONTROLLING LIGHTS WITH "A" DESIGNATION
- S^{OS}_{A} WALL SWITCH WITH OCCUPANCY SENSOR CONTROLLING LIGHTS WITH "A" DESIGNATION
- DUPLEX RECEPTACLE 120 VOLT
- SIMPLEX RECEPTACLE
- RANGE RECEPTACLE
- TWISTLOCK RECEPTACLE
- 30 240V, 1Ø RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 60 480V, 3Ø WELDING RECEPTACLE, TYPICAL AMPERE RATING NOTED
- 120 VOLT DUPLEX RECEPTACLE (UPS)
- DUPLEX FLOOR OUTLET
- TELEPHONE OUTLET
- TELEPHONE FLOOR OUTLET
- CX COAXIAL CABLE OUTLET
- DATA NETWORK OUTLET

MISCELLANEOUS SYMBOLS

- STROBE
- HORN & STROBE
- HORN
- T THERMOSTAT
- J JUNCTION BOX
- GROUND ROD
- GROUND ROD WITH TEST WELL
- GROUND CONNECTION
- DISCONNECT SWITCH
- COMBINATION STARTER
- POWER PANEL
- LIGHTING PANEL
- MISCELLANEOUS PANEL
- LIGHTING CONTACTOR
- CAMERA
- PE PHOTOELECTRIC SENSOR, PHOTOCELL
- OS CEILING MOUNTED OCCUPANCY SENSOR
- OS WALL MOUNTED OCCUPANCY SENSOR

BREAKER DETAILS

DETAIL A

52
5KV
1200A
49KA
A 5KV CLASS MEDIUM-VOLTAGE, DRAWOUT, VACUUM OR AIR INSULATED CIRCUIT BREAKER WITH A 1,200 AMPERE FRAME. BREAKER HAS A 49,000 AMPERE MAXIMUM FAULT CURRENT INTERRUPTING RATING.

DETAIL B

3P - 50
A LOW VOLTAGE FIXED MOUNTED MOLDED CASE CIRCUIT BREAKER WITH A 50 AMPERE TRIP RATING.
TRIP UNIT IS NON-ADJUSTABLE THERMAL-MAGNETIC TYPE.

1000AT
1200AF
SST
LSIG
AFRD
A LOW VOLTAGE FIXED MOUNTED MOLDED CASE CIRCUIT BREAKER WITH A 1200 AMPERE FRAME AND A 1000 AMPERE TRIP RATING.
TRIP UNIT IS ADJUSTABLE SOLID-STATE TYPE WITH LONG-TIME, SHORT-TIME, INSTANTANEOUS, GROUND FAULT AND ARC-FLASH REDUCTION PROTECTION FEATURES.

DETAIL C

800AT
1000AS
1600AF
AFRD
A LOW VOLTAGE, DRAWOUT, POWER OR INSULATED CASE CIRCUIT BREAKER WITH A 1600A FRAME AND SOLID-STATE TRIP UNIT.
TRIP UNIT HAS A SENSOR MODULE RATED FOR 1000 AMPERES AND WITH A TRIP RATING OF 800 AMPERES AND ARC-FLASH REDUCTION PROTECTION FEATURES.

CONDUIT & WIRING INSTALLATION LEGEND

- CONDUIT EXPOSED
- CONDUIT CONCEALED
- CONDUIT TURNING UP. CONDUIT TURNING DOWN.
- CONDUIT PLUGGED FLUSH. CONDUIT CAPPED.
- L2 - 5 TYPICAL FOR HOME RUN TO BE ROUTED TO LIGHTING PANEL L2 & CONNECTED TO CIRCUIT #5 (MINIMUM NO. 12 AWG CONDUCTORS AND 3/4" CONDUIT)
- 1 LP1-1 A POLE OR STANCHION MOUNTED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA SWITCH A
- 1 LP1-1 A WALL MOUNTED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA SWITCH A
- 1 LP1-1 A CEILING, PENDANT, OR RECESSED LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA SWITCH A
- LP1-3 RECEPTACLE POWERED FROM LIGHTING PANEL LP1, CIRCUIT 3
- LP1-1 A / 11 LINEAR LIGHTING FIXTURE. REFER TO NUMBER OR LETTER IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1. CONTROLLED VIA SWITCH A.
- LP1-1 / EX EXIT LIGHTING FIXTURE. REFER TO FIXTURE NUMBER OR LETTERS IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1.
- LP1-1 / EM EMERGENCY LIGHTING FIXTURE. REFER TO FIXTURE NUMBER OR LETTERS IN FIXTURE SCHEDULE. POWERED FROM LIGHTING PANEL LP1, CIRCUIT 1.
- E E UNDERGROUND CONCRETE ENCASED ELECTRICAL DUCT BANK
- UNDERGROUND CONCRETE ENCASED ELECTRICAL BANK ROUTED BENEATH SLAB-ON-GRADE
- EE EE DIRECT BURIED CONDUIT
- GROUND CONDUCTOR
- UE UE UNDERGROUND ELECTRIC
- OH OH OVERHEAD CIRCUIT

COMMUNICATION SYMBOLS

- HORN SPEAKER
- DUAL HORN SPEAKER
- WALL MOUNTED CONE SPEAKER
- SK CEILING MOUNTED CONE SPEAKER

PROTECTION/RELAY DEVICE NUMBERS

25 - SYNCHRONIZING OR SYNCHRONISM-CHECK DEVICE
27 - UNDERVOLTAGE RELAY
32 - DIRECTIONAL POWER RELAY
37 - UNDERCURRENT OR UNDERPOWER RELAY
46 - REV. PHASE OR PHASE-BAL. CURRENT RELAY
47 - PHASE SEQ. OR PHASE BAL. VOLTAGE RELAY
49 - MACHINE OR TRANSFORMER THERMAL RELAY
50 - INSTANTANEOUS OVERCURRENT
51 - AC TIME OVERCURRENT RELAY
52 - AC CIRCUIT BREAKER
59 - OVERVOLTAGE RELAY
63 - PRESSURE SWITCH
64 - GROUND DETECTOR RELAY
67 - AC DIRECTIONAL OVERCURRENT RELAY
71 - LIQUID OR GAS LEVEL RELAY
81 - FREQUENCY RELAY
83 - AUTOMATIC SELECTIVE CONTROL OR TRANSFER RELAY
86 - LOCKOUT RELAY
87 - DIFFERENTIAL PROTECTIVE RELAY

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	CG
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CHECKED:	PV
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PROJECT NO.:	416929

ELECTRICAL

ELECTRICAL LEGEND

E-001

27 OF 43

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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ELECTRICAL GENERAL NOTES

1. SOLID LINES (————————) INDICATE NEW WORK OR EQUIPMENT.
2. SCREENED LINES (————————) INDICATE EXISTING WORK OR EQUIPMENT.
3. DASHED LINES (– – – – – – – –) INDICATE FUTURE WORK OR EQUIPMENT.
4. REFER TO INDIVIDUAL DISCIPLINE CONTRACT DRAWINGS FOR ADDITIONAL ABBREVIATIONS, DETAILS, AND GENERAL DESIGN NOTES.
5. LEGEND SHEETS ARE GENERAL. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.
6. INFORMATION RELATED TO CIRCUIT IDENTIFICATION, WIRE & CONDUIT SIZES, AND ROUTING, IS ON THE FOLLOWING DRAWING TYPES.
   - A. ONE-LINE DIAGRAMS SHOW CIRCUIT IDENTIFICATION, WIRE QUANTITY AND SIZES, AND CONDUIT SIZE WITHIN STRUCTURES. ONE-LINE DIAGRAMS ALSO INDICATE ORIGIN AND DESTINATION OF CIRCUITS, AND IDENTIFY CIRCUITS ROUTED UNDERGROUND.
   - B. FOR CIRCUITS WITHOUT UNDERGROUND PORTIONS, BUILDING FLOOR PLANS SHOW LOCATION OF EQUIPMENT FOR DETERMINING CIRCUIT LENGTH WITHIN THE STRUCTURE. FOR CIRCUITS WITH UNDERGROUND PORTIONS, ANTICIPATED PENETRATION OF UNDERGROUND CONDUITS ARE SHOWN ON STRUCTURE PLANS FOR DETERMINING THE LENGTH OF THE IN-STRUCTURE PORTIONS OF CIRCUITS. BUILDING FLOOR PLANS MAY ALSO SHOW HOME RUNS FOR LIGHTING, RECEPTACLE, AND OTHER MISCELLANEOUS EQUIPMENT CIRCUITS.
   - C. SITE PLANS INDICATE THE GENERAL ROUTING OF UNDERGROUND CONDUITS AND DUCT BANKS. CIRCUITS ROUTED IN UNDERGROUND CONDUITS OR DUCT BANKS ARE INDICATED IN DUCT BANK SECTIONS REFERENCED ON THE SITE PLAN.
   - D. DUCT BANK SECTIONS AND SCHEDULES IDENTIFY CONDUIT SIZE, CONDUIT MATERIAL, ARRANGEMENT OF THE UNDERGROUND CONDUITS, AND CIRCUITS ROUTED IN EACH UNDERGROUND CONDUIT.

AREA DESIGNATIONS

THE SPECIAL AREA DESIGNATION BOXES, AS DEFINED BELOW, ARE LOCATED ON THE PLAN DRAWINGS TO DEFINE ELECTRICAL INSTALLATION REQUIREMENTS. DESIGNATION BOXES ARE LOCATED WITHIN ROOM OR BELOW ROOM NUMBER. ALL INDOOR AREAS NOT INDICATED OTHERWISE ARE AREA TYPE 1 AND MINIMUM NEMA TYPE 1 ENCLOSURES.

AREA TYPE 1A	CORROSIVE CHEMICAL FEED AND STORAGE ROOMS. CONDUIT SYSTEM SHALL BE EXPOSED PVC RIGID GALVANIZED STEEL CONDUIT WITH PVC COATED FITTINGS, BOXES AND ACCESSORIES.
AREA TYPE 4	INDOOR WET LOCATIONS SUCH AS VAULTS, HOSEDOWN AREAS, BASEMENTS, ETC. MINIMUM NEMA TYPE 4 ENCLOSURE FOR EQUIPMENT AND GASKETED FITTINGS IN A CONDUIT SYSTEM.
AREA TYPE 7A	CLASS I, DIVISION 1 AREA AS DEFINED BY NEC. ALL EQUIPMENT AND CONDUIT SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 7B	CLASS I, DIVISION 2, GROUP C AND D (METHANE, GASOLINE) AS DEFINED BY NEC. EQUIPMENT AND CONDUITS SYSTEMS SHALL BE RATED FOR USE IN THIS AREA.
AREA TYPE 12	INDOOR, DRY, DIRTY AREA. REQUIRES MINIMUM NEMA TYPE 12 GASKETED ENCLOSURES FOR ALL EQUIPMENT AND GASKETED FITTINGS IN CONDUIT SYSTEMS.

GENERAL REQUIREMENTS

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ROUTING ALL CONDUITS NOT SHOWN ON THE PLANS. THIS SHALL INCLUDE ALL CONDUITS SHOWN ON THE ONE-LINES AND HOME-RUNS SHOWN ON THE PLAN DRAWINGS. CONDUITS SHALL BE ROUTED AS DEFINED IN THE SPECIFICATIONS.
2. SPARE WIRES SHALL BE TAPED AND COILED AND LABELED TO INDICATE WHERE OTHER END OF SPARE WIRE IS LOCATED.
3. IF EQUIPMENT SUPPLIED BY MANUFACTURER HAS A LARGER LOAD THAN VALUE SHOWN, THE CABLE CONDUIT AND ELECTRICAL EQUIPMENT SHALL BE ENLARGED, AS REQUIRED, TO ACCOMMODATE THE HIGHER VALUE.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING PROPERLY SIZED STARTER OVERLOADS FOR EQUIPMENT FURNISHED.
5. LIGHTING AND RECEPTACLE CIRCUITS DESIGNATED ON THE FLOOR PLANS ARE NOT SHOWN ON THE ONE-LINES. CONDUCTORS FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM NO. 12 AWG. CONDUIT FOR LIGHTING, RECEPTACLES, AND MISCELLANEOUS 120VAC CIRCUITS SHALL BE MINIMUM 3/4".
6. IN AREAS WHERE THERE ARE OVERHEAD BRIDGE CRANES, HOISTS, ETC. NO CONDUITS SHALL BE RUN OVERHEAD THAT WILL INTERFERE WITH THE OPERATION OF THE EQUIPMENT.

ELECTRICAL ABBREVIATIONS

A	
A	AMBER, AMPERE, ALARM
AC	ALTERNATING CURRENT
ACB	AIR CIRCUIT BREAKER
ACR	ACCESS CARD READER
AF	AMPERE FRAME
AFD	ADJUSTABLE FREQUENCY DRIVE
AFRD	ARC-FLASH REDUCTION DEVICE
AM	AMMETER
ANN	ANNUNCIATOR
AR	ALARM RELAY
AS	AMMETER SWITCH, AMPERE SENSOR
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUX	AUXILIARY
AWG	AMERICAN WIRE GAUGE
B	
B	BUS
BC	BATTERY CHARGER
BKR	BREAKER
BR	BRAKE
BT	BEARING TEMPERATURE
C	
C	CLOSE, COUNTER, CONTACTOR, CONTROL, CCTV CAMERA
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CB"A"	CIRCUIT BREAKER AUXILIARY CONTACT (OPEN WHEN BREAKER IS OPEN)
CB"B"	CIRCUIT BREAKER AUXILIARY CONTACT (CLOSED WHEN BREAKER IS OPEN)
CD	CONTROL DAMPER
CI	CELL INTERLOCK
CKT	CIRCUIT
CL2	CHLORINE
COS	CABLE OPERATED SWITCH
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CURRENT OF CONTROL RELAY, CARD READER
CS	CONTROL STATION
CT	CYCLE TIMER OR CURRENT TRANSFORMER
CTC	CYCLE TIMER CLUTCH
CTM	CYCLE TIMER MONITOR
2/C	2 CONDUCTOR
4"C	4" CONDUIT
D	
DC	DIRECT CURRENT, DOOR CONTACT
DI	DOOR INTERLOCK
DM	DAMPER MOTOR, DEMAND METER, DIMMER SWITCH
DPDT	DOUBLE POLE DOUBLE THROW
DPST	DOUBLE POLE SINGLE THROW
DPR	DIFFERENTIAL PRESSURE REGULATOR
DPS	DIFFERENTIAL PRESSURE SWITCH
DS	DISCONNECT SWITCH, DOOR SWITCH, DESKTOP STATION
DVLS	DISCHARGE VALVE LIMIT SWITCH
E	
E	ELECTRIC OPERATOR FOR CONTROL DAMPER OR VALVE
EC	EMPTY CONDUIT
EDS	ELECTRICAL DOOR STRIKE
EL	ELEVATION, EMERGENCY LIGHT
EMH	ELECTRICAL MANHOLE
ER	ELECTRODE RELAY
ES	END SWITCH, REQUEST TO EXIT SENSOR
E-STOP	EMERGENCY STOP
ETM	ELAPSED TIME METER
EX	EXISTING
EXP	EXPLOSION PROOF
F	
F	FORWARD, FIELD
FO	FIBER OPTIC
FPR	FEEDER PROTECTION RELAY
FS	FLOW SWITCH
G	
G	GREEN, GROUND, GENERATOR, GROUND FAULT
GD	GROUND DETECTOR
GEN	GENERATOR
GFCI,GFI	GROUND FAULT CURRENT INTERRUPTOR, GROUND FAULT INTERRUPTOR
GLS	GEARED LIMIT SWITCH
GPR	GENERATOR PROTECTION RELAY
GND	GROUND
#8G	#8 GROUND WIRE
H	
H	HIGH, HUMIDISTAT
HH	HANDHOLE
HMT	HIGH MOTOR TEMPERATURE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
HP	HORSEPOWER
HS	HAND STATION
HTE	HEAT TRACE CONTROLLER ENCLOSURE
HWCO	HIGH WATER CUTOFF
HZ	HERTZ (CYCLE)

I	
I/O	INPUT/OUTPUT
I	INSTANTANEOUS
IJB	INTERCOM JUNCTION BOX
J	
J, JB	JUNCTION BOX
K	
K	KEY INTERLOCK
KAIC	THOUSAND AMPERES INTERRUPTING CURRENT
KCMIL	THOUSAND CIRCULAR MIL
KO	KEY OPERATED
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVAR
KW	KILOWATT
KWH	KILOWATT HOUR
L	
L	LOW, LEVEL, LONG-TIME
LA	LIGHTNING ARRESTER
LAN	LOCAL AREA NETWORK
LC	LIGHTING CONTRACTOR
LCE	LIGHTING CONTACTOR ENCLOSURE
	LIGHTING CONTROL ENCLOSURE
LCP	LOCAL CONTROL PANEL
LCS	LOCAL CONTROL STATION
LOA	LOCAL-OFF-AUTO
LOR	LOCAL-OFF-REMOTE
LOS	LOCK OUT STOP
LP	LIGHTING PANEL
LS	LIMIT OR LEVEL SWITCH
LTG	LIGHTING
LWCO	LOW WATER CUTOFF
M	
M	MAGNETIC MOTOR STARTER
MA	MILLIAMPERE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCLU	MOTOR CONTROL LINEUP
MD	MOISTURE DETECTOR, MOTION DETECTOR
MDL	MAGNETIC DOOR LOCK
MFR	MANUFACTURER
MH	MANHOLE, MOUNTING HEIGHT
MOV	MOTOR OPERATED VALVE
MPR	MOTOR PROTECTION RELAY
MS	MANUAL MOTOR STARTER
MSH	MOTOR SPACE HEATER
MTS	MANUAL TRANSFER SWITCH
MV	MILLIVOLT, MEDIUM VOLTAGE
MVA	MEGAVOLT AMPERE
N	
N	NEUTRAL
NGR	NEUTRAL GROUNDING RESISTOR
NGT	NEUTRAL GROUNDING TRANSFORMER
NC	NORMALLY CLOSED
NO	NORMALLY OPEN, NUMBER
O	
O	OPEN
OL	OVERLOAD
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OS	OCCUPANCY SENSOR
O/U	OVER/UNDER
P	
P	PRIMARY, POWER, POLE
PCS	PLANT CONTROL SYSTEM
PB	PUSH BUTTON, PULL BOX
PE	PHOTOELECTRIC SENSOR, PHOTOCELL
PF	POWER FACTOR
PFCC	POWER FACTOR CORRECTION CAPACITOR
PH	PHASE
PL	PILOT LIGHT
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER PANEL
PR	PAIR
PRS	PROXIMITY SWITCH
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER, PROGRAM TIMER
Q	
	NOT USED
R	
R	RED, RAISE, RELAY, REVERSE
RECP	RECEPTACLE
RES	RESISTOR
RH	REMOTE HANDSET
RT	REPEATING TIMER
RTD	RESISTANCE TEMPERATURE DETECTOR
RTU	REMOTE TERMINAL UNIT
RVSS	REDUCED VOLTAGE SOLID STATE STARTER

S	
S	SHORT-TIME, SHIELDED, STARTER
SA	SURGE ARRESTER, SPEAKER AMPLIFIER
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SF6	SULFUR HEXAFLOURIDE
SH	SPACE HEATER
SN	SOLID NEUTRAL
SO	SOLENOID OILER
SP	SINGLE POLE
SPD	SURGE PROTECTION DEVICE
SPDT	SINGLE POLE DOUBLE THROW
SPST	SINGLE POLE SINGLE THROW
SS	SELECTOR SWITCH, START/STOP, STAINLESS STEEL
SSM	SOLID-STATE METERING
SSS	SOLID STATE STARTER
SST	SOLID-STATE TRIP
SUPV	SUPERVISORY CONTROL
SV	SOLENOID VALVE
SWB,SWBD	SWITCHBOARD
SWG,SWGR	SWITCHGEAR
T	
T	THERMOSTAT, TIMER, TOTALIZER, TRANSFORMER
TACH	TACHOMETER
TB	TERMINAL BLOCK
TC	TIMER CLUTCH
TD	TIME DELAY RELAY
TEMP	TEMPERATURE
TM	TIMER MOTOR
TQ	TORQUE
TR	TIMER RELAY, TRIAD
TS	TEMPERATURE SWITCH
TTB	TELEPHONE TERMINAL BOARD
U	
UG	UNDERGROUND
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	
V	VOLTS, VOLTAGE RESTRAINED
VA	VOLT AMPERE
VAR	VARMETER
VFD	VARIABLE FREQUENCY DRIVE
VI	VACUUM INTERRUPTER
VLS	VALVE LIMIT SWITCH
VM	VOLTMETER
VPI	VALVE POSITION INDICATOR
VS	VOLTMETER SWITCH
W	
W	WHITE, WATTS
WH	WATTHOUR METER
WM	WATT METER
WP	WEATHERPROOF
WPI	WEATHERPROOF IN-USE
WS	WALL STATION
X	
X	AUXILIARY RELAY
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
Y	
Y	YELLOW
Z	
Z	AUXILIARY RELAY, IMPEDANCE
ZS	POSITION SWITCH
ZSS	ZERO SPEED SWITCH
1-1PR#16S	ONE, SINGLE PAIR, TWISTED SHIELDED #16 CABLE
3-7/C#14	THREE, SINGLE, SEVEN CONDUCTOR #14 MULTICONDUCTOR CONTROL CABLES

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

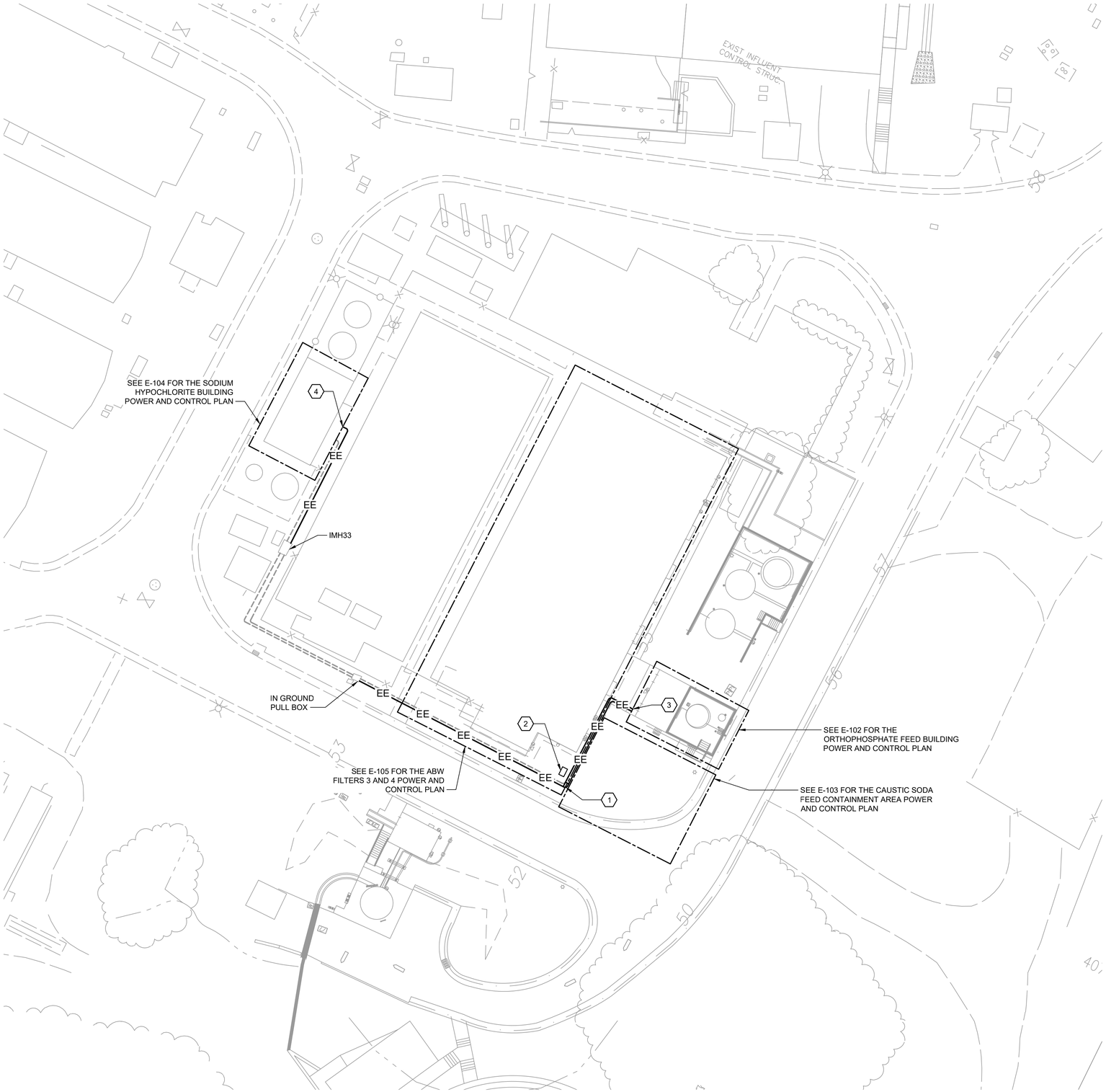
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ELECTRICAL

ELECTRICAL ABBREVIATIONS AND NOTES

E-002

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OVERALL SITE PLAN
1"=20'

20' 10' 0 20' 40'
1"=20'

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL. CONTRACTOR TO ROUTE CONDUIT BASED ON FIELD CONDITIONS.

SHEET KEYNOTE

1. ROUTE CONDUITS J1950 AND I1950 LISTED IN DRAWING GE-8 IN RECORD DRAWING SET DATED APRIL 1998 TO NEW UNDERGROUND CONTROL PULLBOX.
2. ROUTE CONDUITS MDB2-10A AND MDB2-10B LISTED IN DRAWING GE-8 IN RECORD DRAWING SET DATED APRIL 1998 TO NEW UNDERGROUND POWER PULLBOX. ONE CONDUIT IS CURRENTLY IN USE AND ENERGIZED, CONTRACTOR WILL NEED TO PROVIDE TEMPORARY POWER.
3. SEE DRAWING E-102 FOR CONDUIT CONTINUATION.
4. SEE DRAWING E-104 FOR CONDUIT CONTINUATION.

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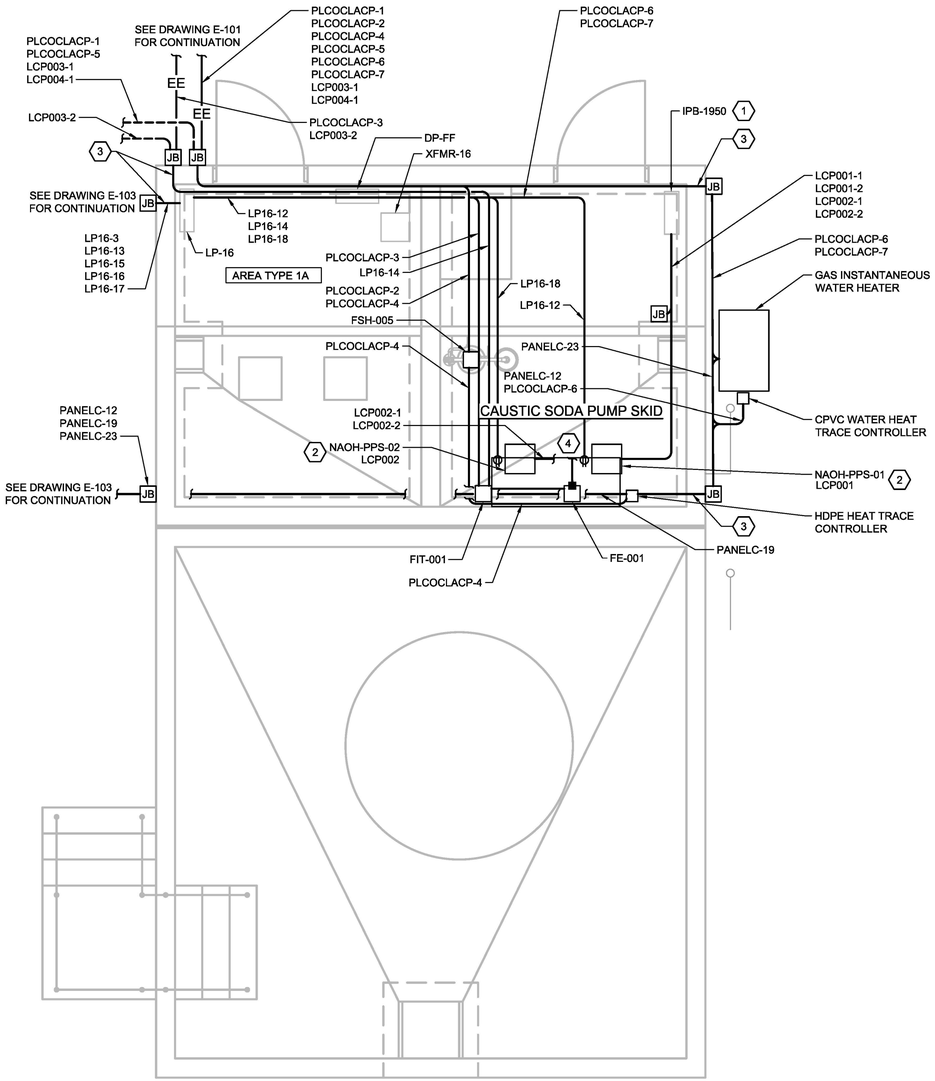
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ELECTRICAL

OVERALL SITE PLAN

E-101

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ORTHOPHOSPHATE FEED BUILDING POWER AND CONTROL PLAN
3/8"=1'-0"

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL. CONTRACTOR TO ROUTE CONDUIT BASED ON FIELD CONDITIONS.

SHEET KEYNOTE

1. IPB-1950 HAS 10 SPARE DIGITAL SIGNAL AND 4 SPARE ANALOG SIGNAL CONDUCTORS FROM PANEL PLC-OCLACP AND CONNECTED TO TERMINAL BLOCKS. INSTALL AND CONNECT NEW CAUSTIC SODA METERING PUMP CONTROL AND SIGNAL CONDUCTORS TO TERMINAL BLOCKS WITH SPARE DIGITAL AND ANALOG SIGNALS.
2. CONTROL PANEL IS INTEGRAL TO PUMP.
3. CONTRACTOR SHALL CORE DRILL EXISTING WALL AND INSTALL A CONDUIT SLEEVE AS REQUIRED TO ALLOW THE INSTALLATION OF CONDUITS. THE CONTRACTOR SHALL COMPLETELY SEAL THE CONDUIT PENETRATION USING NON-SHRINK, WATER-TIGHT GROUT TO PREVENT WATER LEAKS INTO THE BUILDING. X-RAY CONCRETE WALL PRIOR TO CORE DRILLING.
4. BOND MAGNETIC FLOWMETER TO BUILDING GROUND GRID. UTILIZE #4/0 BARE COPPER CONDUCTOR. IF BUILDING GROUND GRID CANNOT BE LOCATED, INSTALL NEW GROUND ROD.

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ELECTRICAL

CAUSTIC SODA METERING PUMP POWER, GROUNDING AND CONTROL PLAN

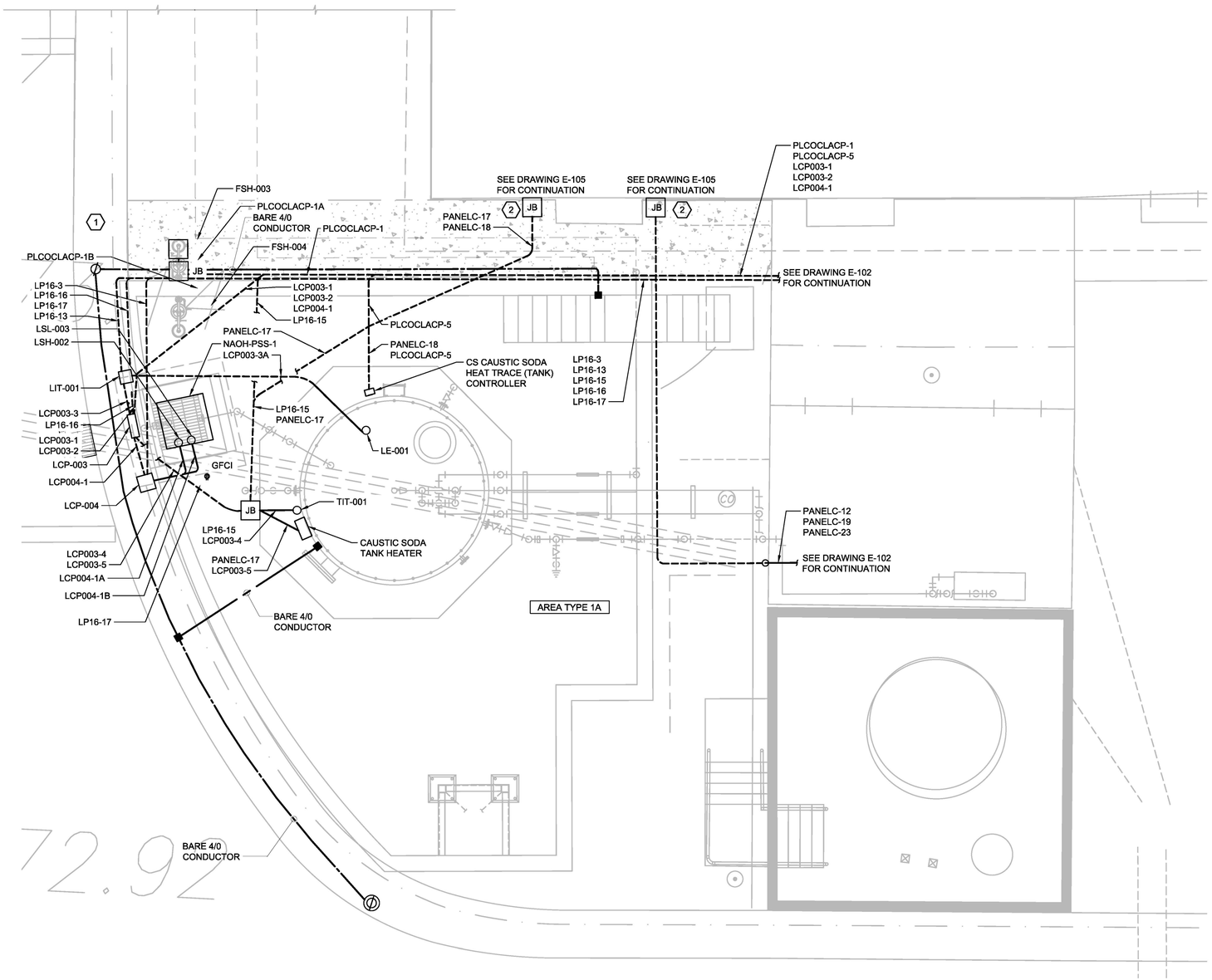
E-102

30 OF 43

12" 6" 0 1' 2' 3' 4' 5' 6' 7'
3/8"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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CAUSTIC SODA STORAGE AREA POWER, GROUNDING AND CONTROL PLAN

1/4" = 1'-0"

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL. CONTRACTOR TO ROUTE CONDUIT BASED ON FIELD CONDITIONS.

SHEET KEYNOTE

1. CONTRACTOR TO VERIFY IF NEARBY ABW FILTERS 3 & 4 BUILDING HAS GROUND GRID INSTALLED AND TIE NEW GROUND CONDUCTORS INTO EXISTING IF INSTALLED. CONNECT STAINLESS STEEL TANK AND STAIRCASE RAILING TO GROUND GRID.
2. REPLACE EXISTING CONDULETS ON THE EXTERIOR WALL OF THE ABW FILTERS 3 AND 4 BUILDING WITH JUNCTION BOXES. FOR CONDULET LOCATIONS SEE D-101.

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CAUSTIC SODA CONTAINMENT AREA POWER, GROUNDING AND CONTROL PLAN

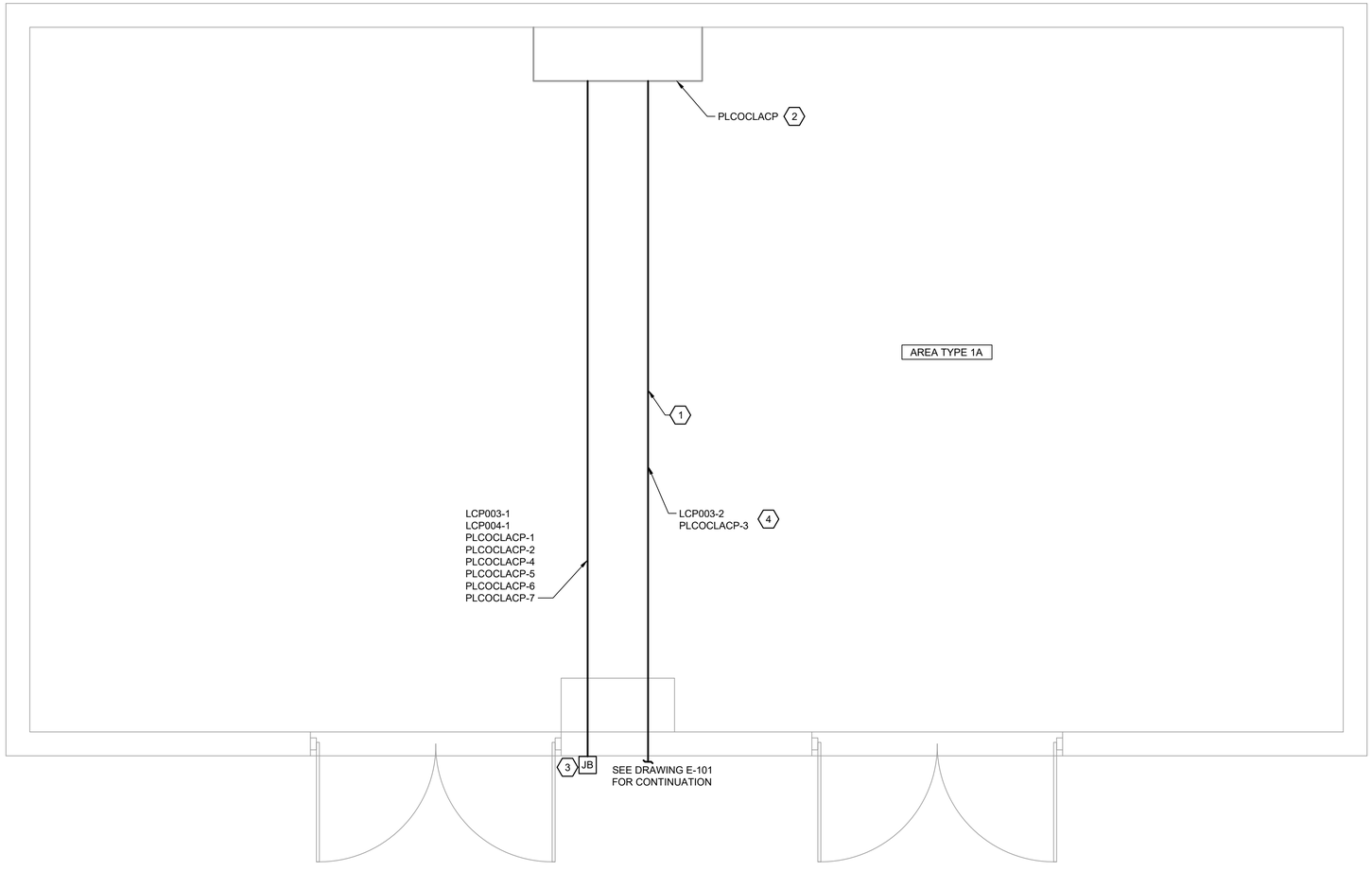
E-103

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4' 2' 0 4' 8'
1/4"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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SODIUM HYPOCHLORITE BUILDING FLOOR PLAN
1/2"=1'-0"

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL. CONTRACTOR TO ROUTE CONDUIT BASED ON FIELD CONDITIONS.

SHEET KEYNOTES

1. CONTROL CONDUCTORS TO BE ROUTED IN EXISTING CONDUIT. EXISTING CONDUIT ROUTED UNDERGROUND FROM IMH33 AND CONNECTED TO PLCOCLACP. SEE SHEET E-101 FOR MORE DETAILS.
2. CAUSTIC SODA METERING PUMP SIGNALS ROUTED TO PLC OCLACP THROUGH EXISTING CONDUCTORS CONNECTED TO TERMINAL BOX IPB-1950 IN ORTHOPHOSPHATE BUILDING. SEE SHEET E-102 FOR MORE DETAILS.
3. NEW CONDUIT ROUTED TO JUNCTION BOX INSTALLED ON SODIUM HYPOCHLORITE BUILDING. CONTRACTOR SHALL CORE DRILL EXISTING WALL BEHIND JUNCTION BOX AND INSTALL A CONDUIT SLEEVE AS REQUIRED TO ALLOW THE INSTALLATIONS OF CONDUITS. THE CONTRACTOR SHALL COMPLETELY SEAL THE CONDUIT PENETRATION USING NON-SHRINK, WATER-TIGHT GROUT TO PREVENT WATER LAKES INTO THE BUILDING.
4. CONDUIT COMING FROM JUNCTION BOX TO BE FIELD ROUTED OVERHEAD TO PLCOCLACP.

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	CG
DETAILED:	JAD
CHECKED:	PV
APPROVED:	AS
DATE:	JUNE 2025
PROJECT NO.:	416929

ELECTRICAL

SODIUM HYPOCHLORITE BUILDING POWER AND CONTROL PLAN

E-104

12" 6" 0 1' 2' 3' 4' 5'
1/2"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 11/10/2025 3:51:34 PM
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FSTI 1000
D1 1000

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. CONDUIT ROUTING SHOWN ON PLAN IS DIAGRAMMATICAL. CONTRACTOR TO ROUTE CONDUIT BASED ON FIELD CONDITIONS.

SHEET KEYNOTES

1. INSTALL NEW CONDUIT FROM PANEL AND INTERCEPT EXISTING CEILING ROUTED CONDUITS.
2. INTERCEPT EXISTING CEILING ROUTED CONDUITS AND ROUTE DOWN TO EXISTING WALL PENETRATIONS.
3. NEW JUNCTION BOXES TO BE INSTALLED ON OUTSIDE WALL OF ABW FILTERS 3 & 4 BUILDING. UTILIZE EXISTING WALL PENETRATIONS TO ROUTE CONDUITS TO JUNCTION BOX.



ABW FILTERS 3 AND 4 FLOOR PLAN
3/16"=1'-0"

6' 4' 2' 0 5' 10'
3/16"=1'-0"

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

BLACK & VEATCH
Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER
PERO VRCELJ
No. E25226
ELECTRICAL
STATE OF CALIFORNIA
06/10/2025

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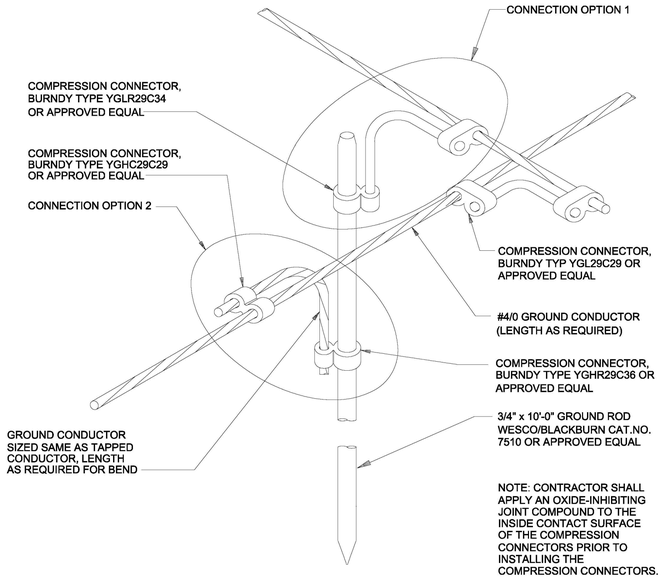
ELECTRICAL

ABW FILTERS 3 AND 4 POWER AND CONTROL PLAN

E-105

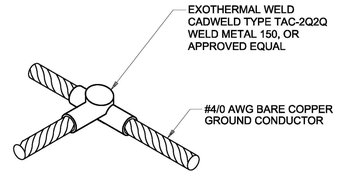
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FD11000
D11000



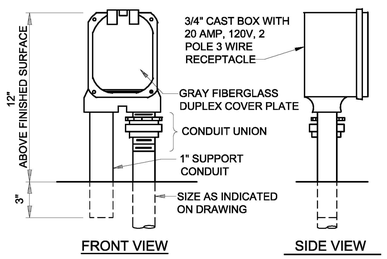
TYPICAL COMPRESSION FITTING GROUND ROD TO CONNECTION AT CROSS OR TEE

(TWO CONNECTION OPTIONS SHOWN)
NO SCALE



TYPICAL EXOTHERMAL WELD TEE CONNECTION

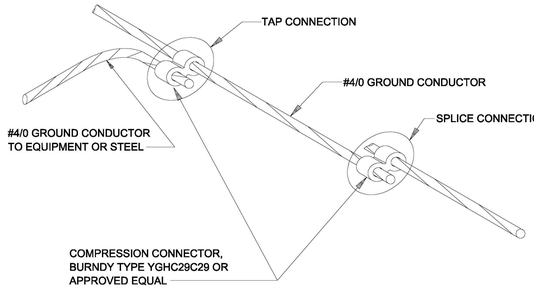
NO SCALE



NOTE: ALL EXPOSED CONDUIT SHALL BE PVC COATED RIGID STEEL.

TYPICAL WEATHERPROOF RECEPTACLE MOUNTING DETAIL

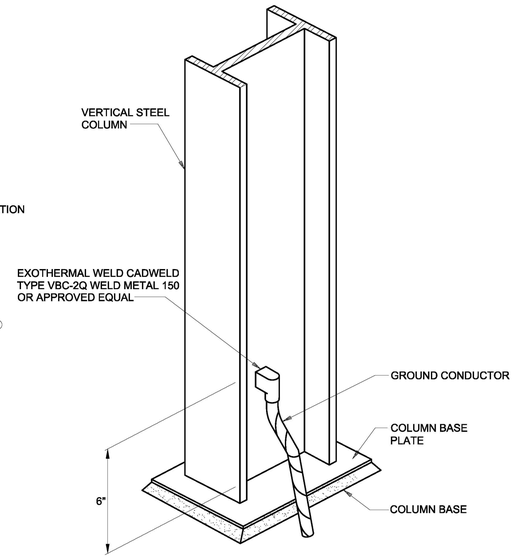
NO SCALE



NOTE: CONTRACTOR SHALL APPLY AN OXIDE-INHIBITING JOINT COMPOUND TO THE INSIDE CONTACT SURFACE OF THE COMPRESSION CONNECTOR PRIOR TO INSTALLING THE COMPRESSION CONNECTOR.

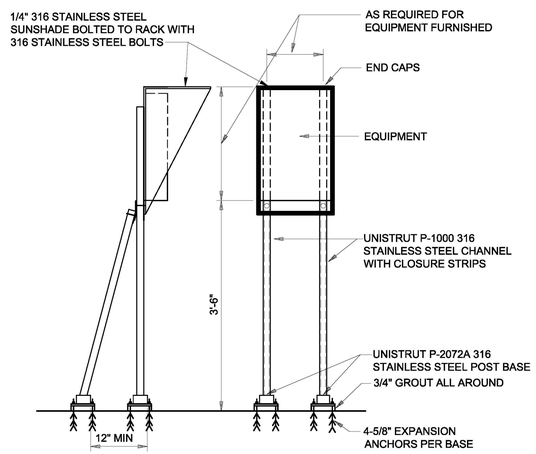
TYPICAL COMPRESSION FITTING TEE CONNECTION

NO SCALE



TYPICAL EXOTHERMAL WELD STRUCTURE COLUMN GROUNDING

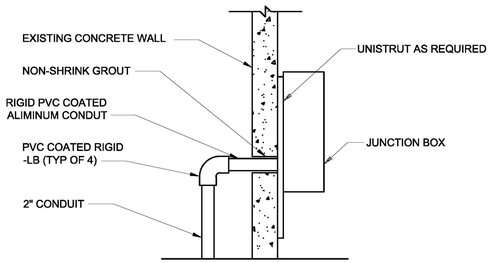
NO SCALE



TYPICAL EQUIPMENT MOUNTING DETAIL

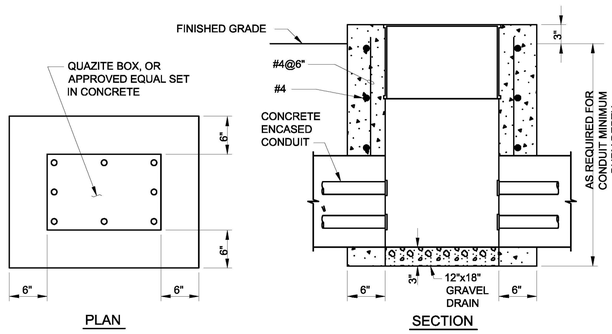
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NOTE: IN OUTDOOR LOCATIONS, USE STAINLESS STEEL BOLTS, NUTS, WASHERS, ANCHOR BOLTS, AND SUNSHADE.



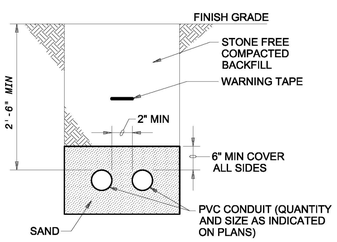
TYPICAL WALL PENETRATION CONDUIT ENTRANCE DETAIL

NO SCALE



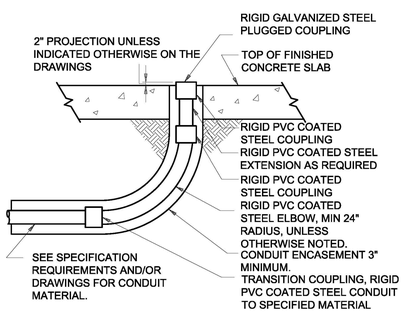
TYPICAL UNDERGROUND (UG) PULL BOX DETAIL

NO SCALE



TYPICAL DIRECT BURIED CONDUIT SECTION

NO SCALE



TYPICAL CONDUIT RISER TERMINATING IN CONCRETE SLAB

NO SCALE

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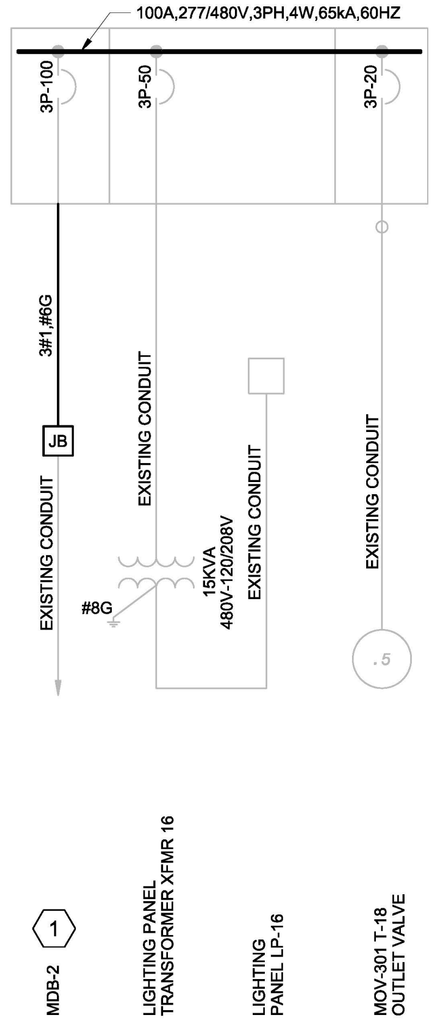
ELECTRICAL

MISCELLANEOUS DETAILS AND SCHEDULES

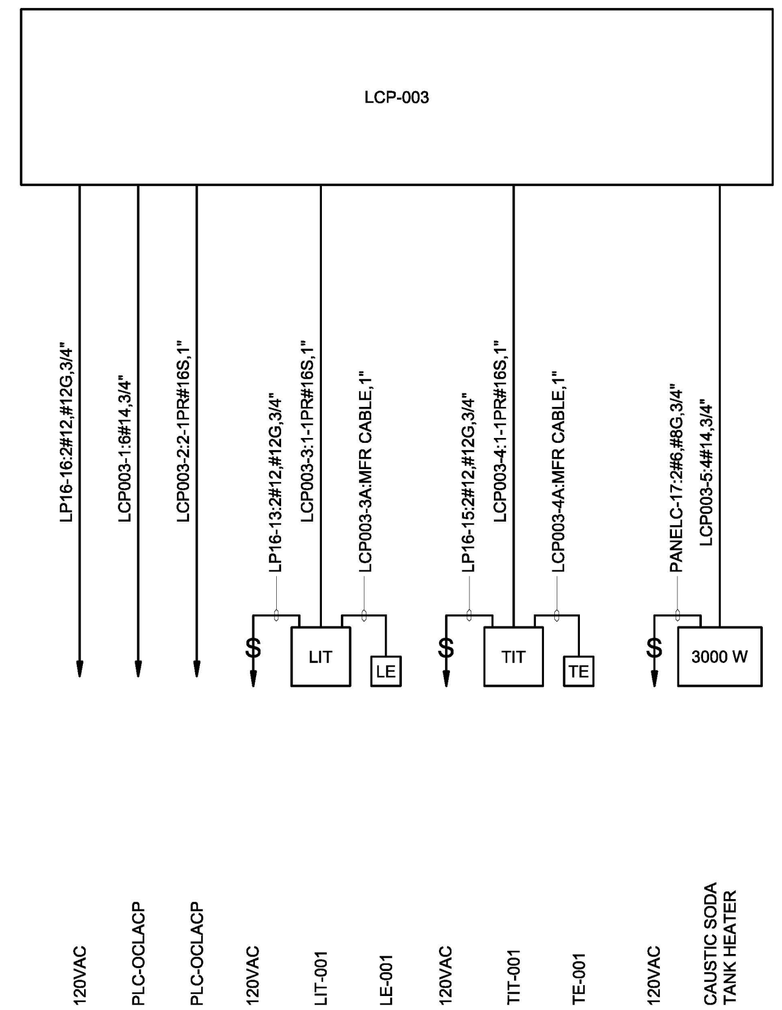
E-501

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PDT-1000
D1-1000

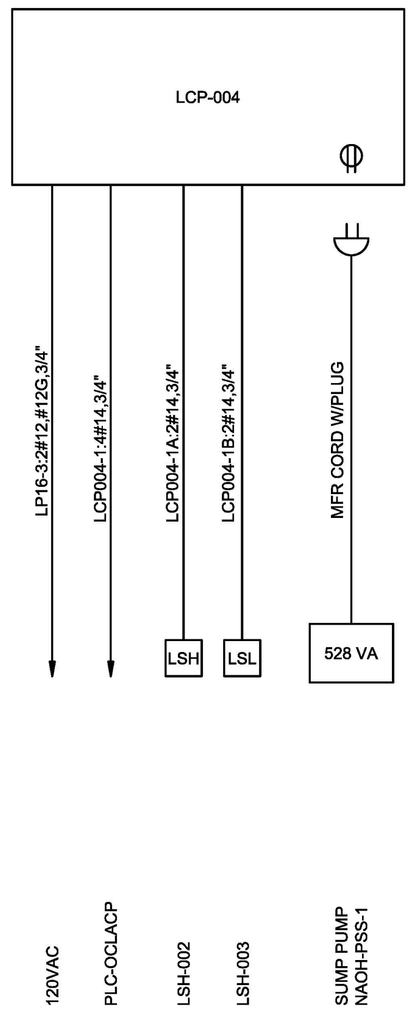
(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4



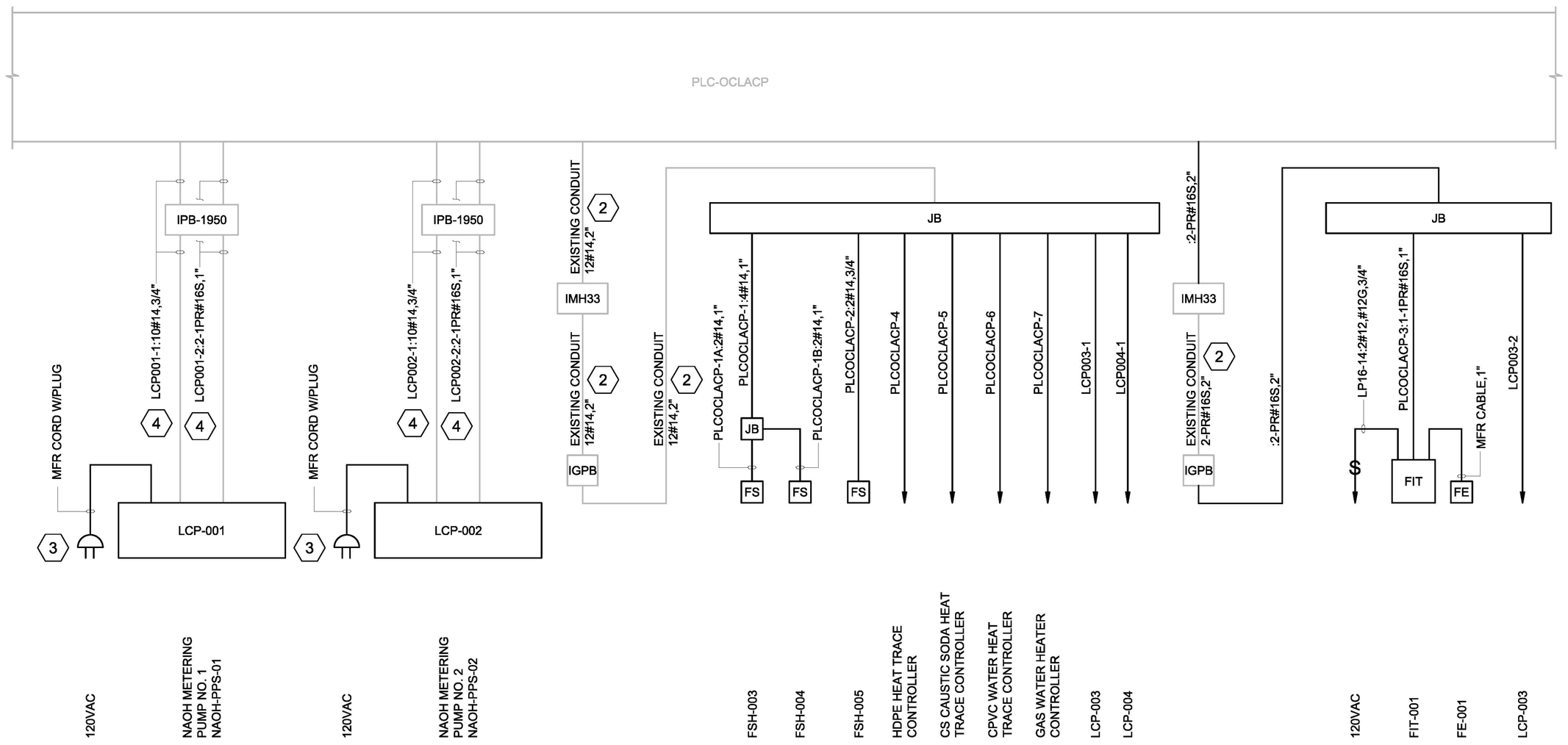
DISTRIBUTION PANEL DP-FF ONE-LINE DIAGRAM
NO SCALE



TRUCK UNLOADING PANEL ONE-LINE DIAGRAM
NO SCALE



LCP-004 ONE-LINE DIAGRAM
NO SCALE



PLC-OCLACP PARTIAL ONE-LINE DIAGRAM
NO SCALE

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.

SHEET KEYNOTE

1. CONTRACTOR SHALL INSTALL NEW CONDUITS SHOWN ON DRAWING E-101. NEW CONDUCTOR SHALL BE PULLED FROM MDB-2. FOR THE LOCATION OF THE SOURCE OF THE FEEDER BREAKER, REFER TO DRAWING 5E-1 IN RECORD DRAWING SET DATED APRIL 1998. FOR THE OVERALL ROUTING SCHEME, REFER TO DRAWING GE-8 IN RECORD DRAWING SET DATED APRIL 1998. FOR THE ONE LINE, SEE DRAWING GE04 IN RECORD DRAWING SET DATED APRIL 1998.
2. EXISTING CONDUIT SIZE VERIFIED FROM AUGUST 2024 SITE VISIT.
3. DEDICATED OUTLET FOR CHEMICAL METERING PUMP.
4. METERING PUMP SIGNALS UTILIZE EXISTING SPARES IN IPB-1950.

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ELECTRICAL

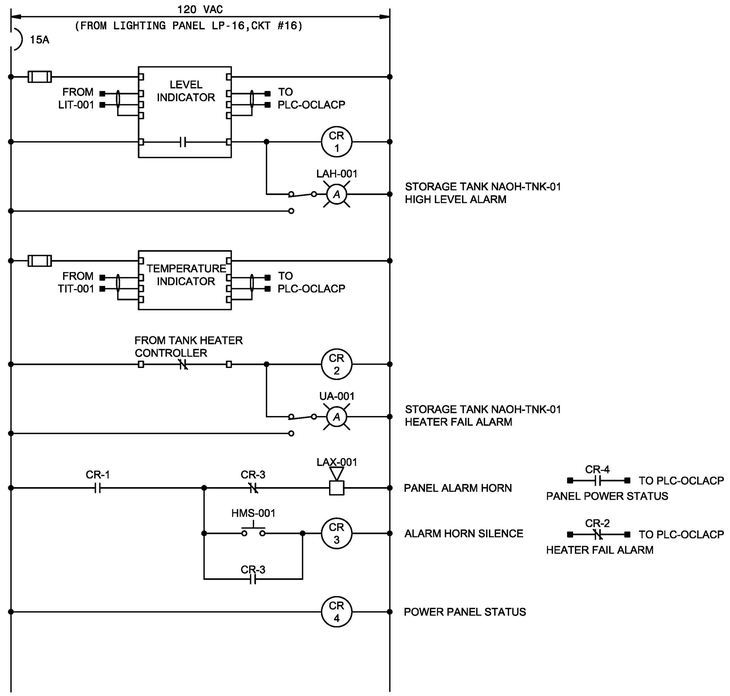
ELECTRICAL ONE-LINE DIAGRAMS

E-701

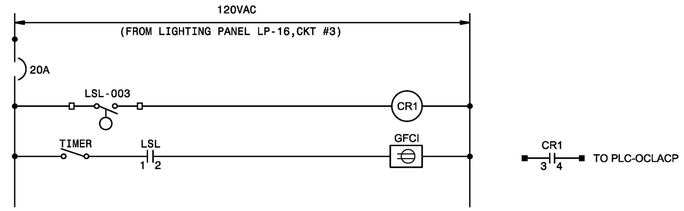
35 OF 43

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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FDT1000
D1000

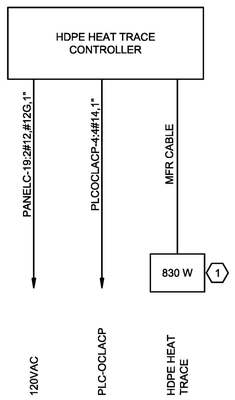


CHEMICAL TRUCK UNLOADING PANEL LCP-003

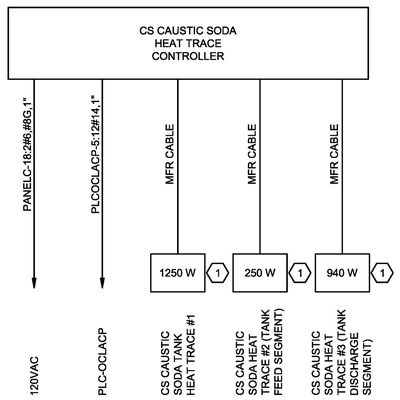


NOTE: RELAY CR-1 AND TIMER TO BE HP RATED FOR SUMP PUMP REQUIRED.

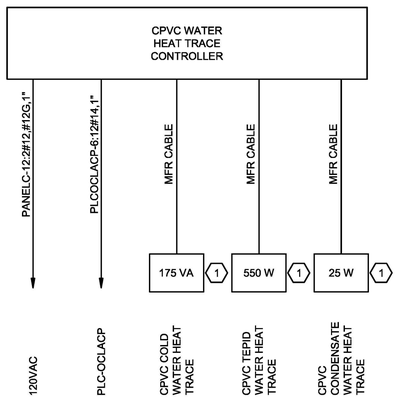
SUMP PUMP PANEL LCP-004



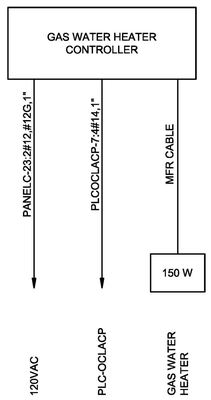
HDPE HEAT TRACE ONE-LINE DIAGRAM
NO SCALE



CS CAUSTIC SODA HEAT TRACE ONE-LINE DIAGRAM
NO SCALE



CPVC WATER HEAT TRACE ONE-LINE DIAGRAM
NO SCALE



GAS WATER HEATER ONE-LINE DIAGRAM
NO SCALE

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.

SHEET KEYNOTE

1. HEAT TRACE WATTAGE WILL BE DETERMINED BY PIPE RUN LENGTH. CONTRACTOR TO DETERMINE FINAL RUN LENGTH AND HEAT TRACE WATTAGE.

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ELECTRICAL

ELECTRICAL ONE-LINE DIAGRAMS AND SCHEMATICS

E-702

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

PLOTTED: 6/10/2025 4:55:58 PM
FILE: C:\PW_WORKING\BVW_AMERICAS\D1728987E-702.DWG
ED1000
D1000

PHASE "A" V.A.	PHASE "B" V.A.	PHASE "C" V.A.	PANELBOARD: LP-16 SERVICE: 120/208V, 3PH, 4W, S/N MOUNTING: SURFACE LOAD	P	BKR	CKT #		BKR	P	MAINS: 3P-50A MAIN BREAKER LOCATION: AQUA AMMONIA BUILDING LOAD	PHASE "A" V.A.	PHASE "B" V.A.	PHASE "C" V.A.
500			AAMTUP	1	20	1	2	20	1	SSFCP	1500		
	528		LCP-004 SUMP PUMP*	1	20	3	4	20	1	SSFCP		1500	
		240	LIGHTING	1	20	5	6	20	1	UH-1			50
360			RECEPTACLES	1	20	7	8	20	1	LATUP	500		
	700		EF-3	1	20	9	10	20	1	P-310-SUMP PUMP		900	
		900	P-303-SUMP PUMP	1	20	11	12	20	1	NAOH-PPS-01*			790
60			LEVEL TRANSMITTER LIT001*	1	20	13	14	20	1	FLOW TRANSMITTER FIT001*	60		
	60		TEMPERATURE TRANSMITTER TIT001*	1	20	15	16	20	1	TRUCK UNLOADING PANEL LCP-003*		500	
		180	GFCI CONVENIENCE RECEPTACLE*	1	20	17	18	20	1	NAOH-PPS-02*			790
				1		19	20		1				
				1		21	22		1				
				1		23	24		1				
				1		25	26		1				
				1		27	28		1				
				1		29	30		1				
				1		31	32		1				
				1		33	34		1				
				1		35	36		1				
				1		37	38		1				
				1		39	40		1				
				1		41	42		1				
920			TOTAL "A"			2980				TOTAL "A"	2060		
	1288		TOTAL "B"			4188				TOTAL "B"		2900	
		1320	TOTAL "C"			2950				TOTAL "C"			1630
			TOTAL =			10118							

*NEW WORK

LP-16 PANELBOARD SCHEDULE

PHASE "A" V.A.	PHASE "B" V.A.	PHASE "C" V.A.	PANELBOARD: PANEL C SERVICE: 120/208V, 3PH, 4W, S/N MOUNTING: SURFACE LOAD	P	BKR	CKT #		BKR	P	MAINS: 3P-150A MAIN BREAKER LOCATION: ABW FILTERS 3 AND 4 LOAD	PHASE "A" V.A.	PHASE "B" V.A.	PHASE "C" V.A.	
500			FILTER LTS EAST	1	20	1	2	20	1	FILTER LTS WEST	500			
	500		FILTER LTS EAST	1	20	3	4	20	1	FILTER LTS WEST		500		
		500	FILTER LTS EAST	1	20	5	6	20	1	FILTER LTS WEST			500	
500			FILTER LTS EAST	1	20	7	8	20	1	FILTER LTS WEST	500			
	500		CONVEX LUTES LUGS	1	20	9	10	20	1	LTS CONTACTOR & TIME SWITCH		500		
		500	OUTSIDE LIGHTS	1	20	11	12	20	1	CPVC WATER HEAT TRACE CONT.*			750	(1)
360			RECEPTACLES	1	20	13	14	20	1	SPARE*				
	360		RECEPTACLES	1	20	15	16	20	1	SPARE*				
		3000	CAUSTIC SODA TANK HEATER*	1	35	17	18	30	1	CS CAUSTIC SODA HEAT TRACE CONT.*			2440	(1)
(1) 830			HDPE HEAT TRACE CONTROLLER*	1	20	19	20	20	1	EXHAUST FAN F-8	1920			
	1920		EYEWASH HEATER	1	20	21	22	20	1	EXHAUST FAN F-9		1920		
		150	GAS WATER HEATER*	1	20	23	24	20	1	EXHAUST FAN F-10			1920	
2400			CONNEX AC	1	25	25	26		1	SPACE				
			SPACE	1		27	28		1	SPACE				
			SPACE	1		29	30		1	SPACE				
4590			TOTAL "A"			7510				TOTAL "A"	2920			
	3280		TOTAL "B"			6200				TOTAL "B"		2920		
		4150	TOTAL "C"			9760				TOTAL "C"			5610	
			TOTAL =			23470								

*NEW WORK

PANEL C PANELBOARD SCHEDULE

GENERAL NOTE

1. SEE DRAWINGS E-001 AND E-002 FOR ELECTRICAL LEGENDS AND ABBREVIATIONS.
2. LP-16 PANEL SCHEDULE INFORMATION GATHERED FROM DRAWING ED-15 IN RECORD DRAWING SET DATED APRIL 1998. PANEL-C PANEL SCHEDULE INFORMATION ESTIMATED. CONTRACTOR TO CONFIRM AND UPDATE IF REQUIRED.

SHEET KEYNOTE

1. PROVICE GFCI CIRCUIT BREAKER WITH 30mA PROTECTION FOR HEAT TRACE CIRCUITRY.

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ELECTRICAL

ELECTRICAL PANEL SCHEDULES

E-703

37 OF 43

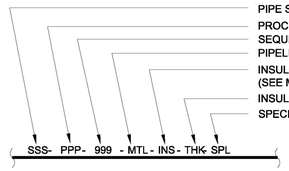
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ED 11000
D 11000

EQUIPMENT IDENTIFICATION DESCRIPTION



PIPELINE IDENTIFICATION DESCRIPTION



LINE SYMBOLS

- MAJOR PROCESS PIPING OR FLOW CHANNEL
- SECONDARY PROCESS PIPING
- MISCELLANEOUS PIPING
- SCREENED LINE DENOTES EXISTING PIPE OR EQUIPMENT
- DASHED LINE DENOTES FUTURE PIPE AND EQUIPMENT
- ELECTRIC SIGNAL
- HYDRAULIC SIGNAL
- PNEUMATIC SIGNAL
- SIGNAL CONNECTION POINT
- CONTROL SYSTEM BACKBONE NETWORK SIGNAL (ETHERNET)
- FIELD DEVICE NETWORK SIGNAL (ETHERNET)
- NON-STANDARD OR INDEPENDENT CONTROL SYSTEM NETWORK SIGNAL (AS NOTED ON DRAWINGS)
- B I-XX — SIGNAL LINE COMING/GOING TO/FROM SHEET (MATCH LETTERS)
- B I-XX — PROCESS LINE COMING/GOING TO/FROM ANOTHER (MATCH LETTERS)
- MATCH SHEET NO. IDENTIFIER MATCH LINE NO.
- B — SIGNAL CONNECTION WITHIN THE SAME SHEET
- FLOW ARROW FOR PROCESS PIPING
- PROCESS LINES CROSSING (NOT CONNECTED)
- ELECTRICAL HEAT TRACE LINE

MISCELLANEOUS MECHANICAL EQUIPMENT SYMBOLS

- AFTERCOOLER
- BOILER
- FILTER, AIR
- FILTER, WATER CARTRIDGE TYPE
- FILTER, WATER MEMBRANE TYPE
- FILTER SEPARATOR
- HEAT EXCHANGER, AIR
- HEAT EXCHANGER, DOUBLE PIPE
- HEAT EXCHANGER, FINNED TUBE
- HEAT EXCHANGER, PLATE & FRAME
- HEAT EXCHANGER, SHELL & TUBE
- HEAT EXCHANGER, SPIRAL
- HEAT EXCHANGER, TYPE 1
- HEAT EXCHANGER, TYPE 2
- HYDROCYCLONE
- MIXER, MECHANICAL
- MIXER, STATIC
- PARTICULATE FILTER
- REGULATOR, AIR
- S — SILENCER
- VALVE, MATERIAL HANDLING ROTARY
- VAPORIZER, AMBIENT

PUMP & BLOWER SYMBOLS

- BLOWER, CENTRIFUGAL
- BLOWER, POSITIVE DISPLACEMENT
- COMPRESSOR
- COMPRESSOR, LIQUID RING
- COMPRESSOR, RECIPROCATING
- COMPRESSOR, ROTARY SCREW
- COMPRESSOR, ROTARY SCROLL
- FAN, CENTRIFUGAL
- MOTOR, ELECTRIC
- PUMP, CENTRIFUGAL OR OTHER TYPE NOT SPECIFIED
- PUMP, CENTRIFUGAL SUBMERGED
- PUMP, DIAPHRAGM METERING, MOTOR DRIVEN
- S — PUMP, DIAPHRAGM METERING, SOLENOID DRIVEN
- PUMP, DOUBLE DIAPHRAGM
- PUMP, DRUM
- PUMP, PERISTALTIC
- PUMP, PLUNGER
- PUMP, POSITIVE DISPLACEMENT
- PUMP, PROGRESSING CAVITY
- PUMP, ROTARY
- PUMP, SCREW (LIFT)
- PUMP, SUBMERSIBLE
- PUMP, VERTICAL

WATER & WASTEWATER MECHANICAL EQUIPMENT SYMBOLS

- BAR SCREEN, MANUAL
- BAR SCREEN, MECHANICAL
- BASIN, RECTANGULAR
- BELT FILTER PRESS
- CENTRIFUGE
- DISSOLVED AIR FLOTATION (DAF) THICKENER
- FLARE, GAS; WASTE GAS BURNER
- GRAVITY BELT THICKENER
- GRAVITY FILTER
- GRIT BASIN
- GRIT CLASSIFIER
- GRIT COLLECTOR, VORTEX TYPE
- GRIT CONCENTRATOR
- GRIT CONCENTRATOR & DEWATERING SCREW
- OZONE GENERATOR
- OZONE GENERATOR WITH POWER SUPPLY
- SEDIMENTATION BASIN, CIRCULAR
- SEDIMENTATION BASIN, RECTANGULAR W/SETTLING PLATES AND SOLIDS COLLECTOR
- SEDIMENTATION BASIN, RECTANGULAR W/ SOLIDS COLLECTOR
- SLUDGE GRINDER, CHANNEL MOUNTED
- SLUDGE GRINDER, INLINE
- SOLIDS COLLECTOR
- THICKENER, GRAVITY
- UV, W/HORIZONTAL BULBS

PRIMARY ELEMENT & FITTING SYMBOLS

- CAP
- COUPLING
- DIAPHRAGM SEAL
- DIAPHRAGM SEAL, ANNULAR TYPE
- D — DRAIN, BELL-UP TYPE
- D — DRAIN, FUNNEL TYPE
- EXPANSION LOOP
- FLAME ARRESTER
- FLAME CHECK
- FLANGE
- FLEXIBLE CONNECTION
- FLOW CONDITIONER
- HORN OR SIREN
- HOSE CONNECTION
- IN-LINE TYPE ULTRASONIC FLOWMETER (SINGLE OR MULTI-PATH)
- P — INSTRUMENT PURGE OR FLUSHING DEVICE
- LE CON — LEVEL SENSOR, CONDUCTANCE TYPE
- LE GWR — LEVEL SENSOR, GUIDED WAVE RADAR TYPE
- LE DP — LEVEL SENSOR, PRESSURE SENSING TYPE
- LIT RAD — LEVEL SENSOR, RADAR TYPE
- LE US — LEVEL SENSOR, ULTRASONIC TYPE
- MOISTURE SEPARATOR
- PLUG
- PRIMARY FLOW ELEMENT, AVERAGING PITOT TYPE
- PRIMARY FLOW ELEMENT, CORIOLIS MASS FLOWMETER
- PRIMARY FLOW ELEMENT, FLUME
- M — PRIMARY FLOW ELEMENT, MAGNETIC
- PRIMARY FLOW ELEMENT, ORIFICE PLATE
- PRIMARY FLOW ELEMENT, THERMAL DISPERSION FLOWMETER
- PRIMARY FLOW ELEMENT, TURBINE OR PROPELLER-TYPE
- PRIMARY FLOW ELEMENT, VENTURI TUBE, FLOW NOZZLE, OR FLOW TUBE. * SEE MEASUREMENT SYMBOL NOTATIONS LIST
- PRIMARY FLOW ELEMENT, WEIR
- Q — QUICK CONNECT
- REDUCER - CONCENTRIC
- REDUCER - ECCENTRIC
- FG — ROTAMETER
- SEDIMENT TRAP
- LG — SIGHTGLASS
- STRAINER, BASKET TYPE
- STRAINER, Y TYPE
- SUCTION DIFFUSER
- SURGE CHAMBER
- T — TRAP
- UNION
- VENT
- VENT, SCREENED

CHEMICAL FEED EQUIPMENT SYMBOLS

- AS — AUTOMATIC SWITCHOVER
- CALIBRATION COLUMN
- CHLORINE DIOXIDE (CO2) VAPORIZER
- CYLINDER, GAS
- DIFFUSER, CHANNEL
- DIFFUSER, INLINE
- DIFFUSER, POLYMER INJECTION RING
- DIFFUSER, TANK
- DOUBLE CONTAINED PIPING
- DRIP LEG HEATER
- DRY CHEMICAL FEEDER
- EMERGENCY COMBINATION SHOWER AND EYEWASH FOUNTAIN
- EMERGENCY EYEWASH FOUNTAIN
- EMERGENCY SHOWER
- EVAPORATOR
- EXPANSION TANK OR FUNNEL
- GAS FEEDER
- INJECTOR/EDUCTOR
- LIME SLAKER, PASTE TYPE
- PRESSURE BUILDING COIL
- PULSATION DAMPENER
- RUPTURE DISK
- SPECTACLE FLANGE, BLIND, CLOSED
- SPECTACLE FLANGE, BLIND, OPEN
- TON CONTAINER
- TOTE
- VAPOR SUPERHEATER
- WEIGH SCALE

VALVE & GATE SYMBOLS

- BACKFLOW PREVENTER
- M — CHLORINE VACUUM REGULATOR ASSEMBLY
- EXPLOSION RELIEF
- GATE, SLUICE OR SLIDE
- VALVE, AIR RELEASE
- VALVE, AIR VACUUM BREAK
- VALVE, ANGLE
- VALVE, BALL
- VALVE, BUTTERFLY
- VALVE, CHECK
- VALVE, CHECK W/STOP
- VALVE, CHLORINE WITH YOKE
- VALVE, COMBINATION AIR RELEASE AND VACUUM BREAK
- VALVE, DIAPHRAGM
- VALVE, DIVERTER
- VALVE, DIVERTER ASSEMBLY
- VALVE, ECCENTRIC PLUG
- VALVE, FLAP GATE
- VALVE, FOUR FUNCTION
- VALVE, FOUR WAY
- VALVE, GATE OR OTHER TWO-WAY TYPE NOT OTHERWISE IDENTIFIED
- VALVE, GLOBE
- VALVE, KNIFE GATE
- VALVE, MUD
- VALVE, NEEDLE
- VALVE, NON-ECCENTRIC PLUG
- VALVE, PINCH
- VALVE, PRESSURE AND VACUUM RELIEF
- VALVE, PRESSURE REDUCING
- VALVE, PRESSURE REDUCING (SELF ACTUATING TYPE)
- VALVE, PRESSURE RELIEF
- VALVE, PRESSURE SUSTAINING
- VALVE, PRESSURE SUSTAINING (SELF ACTUATING TYPE)
- P — VALVE, RELIEF, PILOT ACTUATED
- VALVE, ROTARY, GENERIC
- VALVE, SET STOP
- VALVE, SLEEVE
- VALVE, TELESCOPING
- VALVE, THERMAL SHUTOFF
- VALVE, THREE WAY
- V — VALVE, V-PORT BALL
- VALVE, VACUUM RELIEF
- VALVE, VENTED BALL

VALVE AND GATE ACTUATOR SYMBOLS

- P — AIR CYLINDER ACTUATOR
- P DA — AIR CYLINDER ACTUATOR - DOUBLE ACTING
- P SC — AIR CYLINDER ACTUATOR - SPRING CLOSE
- P SO — AIR CYLINDER ACTUATOR - SPRING OPEN
- P/O — AIR-OIL CYLINDER ACTUATOR
- DIAPHRAGM, PRESSURE BALANCED
- DIAPHRAGM, SPRING, OR OTHERWISE UNSPECIFIED
- E/H — ELECTRIC-HYDRAULIC
- FLOAT OPERATED FOR VALVE
- H — HYDRAULIC CYLINDER ACTUATOR
- M — INTELLIGENT ELECTRIC ACTUATOR
- LOADING/BACK PRESSURE FOR VALVE
- MANUAL
- QUICK CLOSING FOR VALVE
- QUICK OPENING FOR VALVE
- S — SOLENOID
- S R — SOLENOID - MANUAL RESET
- S R R — SOLENOID - REMOTE RESET
- SPRING OR WEIGHT FOR RELIEF VALVE OR LOADED FOR SAFETY VALVE
- M SM — STANDARD ELECTRIC ACTUATOR
- P V — VANE TYPE PNEUMATIC ACTUATOR

MATERIAL HANDLING EQUIPMENT SYMBOLS

- BIN, LIVE BOTTOM
- BIN, SLIDING FRAME
- BIN ACTIVATOR
- BIN/HOPPER, CLOSED TOP
- BIN/HOPPER, OPEN TOP
- CONVEYOR, BELT
- CONVEYOR, SCREW
- CONVEYOR, VIBRATORY
- CYCLONE SEPARATOR
- DUMPSTER
- DUST COLLECTOR
- GRINDER
- HORIZONTAL BAR SCREEN
- INSULATION
- INSULATION, W/ HEAT TRACING
- MIXER, BLENDER
- MIXER, PUGMILL
- H — PISTON CAKE PUMP, DOUBLE
- H — PISTON CAKE PUMP, SINGLE
- SCREEN, DOUBLE VIBRATORY
- SCREEN, SINGLE VIBRATORY
- TARGET BOX

GENERAL NOTES

1. IN GENERAL, THE P&ID SYMBOLS AND DEVICE IDENTIFICATIONS ARE BASED ON INTERNATIONAL SOCIETY OF AUTOMATION, STANDARD PRACTICE ANSI/ISA-5.1 (2024). SOME MODIFICATIONS, ADDITIONS, AND ALTERATIONS HAVE BEEN MADE AS NEEDED TO ACCOMMODATE THE PROJECT REQUIREMENTS.
2. SOME CONTROL AND INTERLOCK REQUIREMENTS WHICH CAN BE MORE CLEARLY ILLUSTRATED ON SCHEMATIC DRAWINGS HAVE BEEN OMITTED FROM THE P&ID DRAWINGS.
3. THIS IS A GENERAL LEGEND SHEET. SOME SYMBOLS AND ABBREVIATIONS MAY NOT BE UTILIZED ON THIS SPECIFIC PROJECT.

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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BLACK & VEATCH
Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER — RICHARD T. ANDERSON — No. CS7469 Exp. 03/31/26 — CONTROL SYSTEMS — STATE OF CALIFORNIA
06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	EJP
DETAILED:	SKD
CHECKED:	MCZ
APPROVED:	RT
DATE:	JUNE 2025
PROJECT NO.:	416929

INSTRUMENTATION

P&ID - LEGEND AND ABBREVIATIONS SHEET 1 OF 3

I-001

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INSTRUMENT AND I/O ABBREVIATIONS
MEANINGS OF IDENTIFICATION LETTERS

LETTER	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	VARIABLE MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT OR ACTIVE FUNCTION	FUNCTION MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE			CONTROL	CLOSE
D	USER'S CHOICE	DIFFERENTIAL			DEVIATION
E	VOLTAGE (EMF)		SENSOR, PRIMARY ELEMENT		
F	FLOW, FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE		GLASS, GAUGE, VIEWING DEVICE		
H	HAND (MANUALLY INITIATED)				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER		SCAN		
K	TIME OR TIME-SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE	MOMENTARY			MIDDLE OR INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE (RESTRICTION)		OPEN
P	PRESSURE OR VACUUM		POINT (TEST CONNECTION)		
Q	QUANTITY	INTEGRATE OR TOTALIZE	INTEGRATE OR TOTALIZE		
R	RADIATION		RECORD		RUN
S	SPEED OR FREQUENCY	SAFETY		SWITCH	STOP
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	
V	VIBRATION OR MECHANICAL ANALYSIS			VALVE, DAMPER OR LOUVER	
W	WEIGHT OR FORCE		WELL, PROBE		
X	UNCLASSIFIED	X-AXIS	ACCESSORY DEVICES OR UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE, OR PRESENCE	Y-AXIS		AUXILIARY DEVICES	
Z	POSITION, DIMENSION	Z-AXIS		DRIVE, ACTUATOR OR FINAL CTRL ELEMENT	

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PIPELINE MATERIAL CODE ABBREVIATIONS [1]

	PIPE MATERIAL	SPECIFICATION NO.
CPVC	CPVC	15067
CS	MISCELLANEOUS STEEL PIPE	15065
CU	COPPER TUBING	15070
PE	POLYETHYLENE	15067
PE-4	PRE-INSULATED HIGH DENSITY POLYETHYLENE (HDPE)*	15067

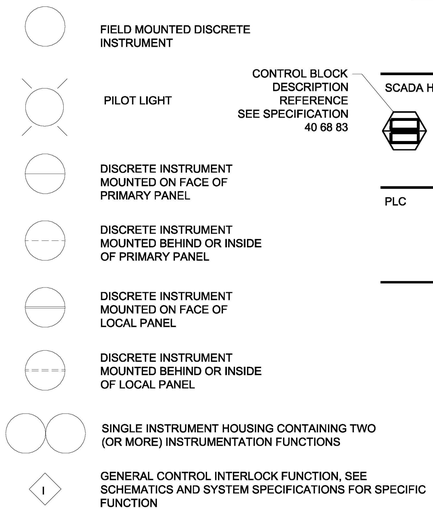
1. ABBREVIATION EXTENSIONS ARE ADDED AS NEEDED TO IDENTIFY THE MATERIAL SUB-CLASSIFICATION IN THE SPECIFICATION, SUCH AS "SS-1" FOR DIGESTER GAS PIPING.

* HEAT-TRACED PIPE WHEREVER DENOTED ON THE P&ID.

INSTRUMENT AND I/O ABBREVIATION DEFINITIONS

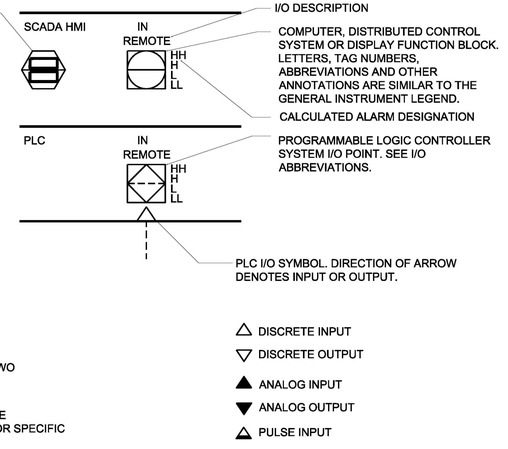
AAH	ANALYZER ALARM HIGH
AAHH	ANALYZER ALARM HIGH-HIGH
AAL	ANALYZER ALARM LOW OR STROBE ALARM LIGHT
AALL	ANALYZER ALARM LOW-LOW
AAX	ALARM HORN
AE	ANALYZER SENSOR
AI	ANALYZER INDICATION
AIT	ANALYZER INDICATING TRANSMITTER
ASH	ANALYZER SWITCH HIGH
ASHH	ANALYZER SWITCH HIGH-HIGH
CB	CONTROL BLOCK REFERENCE (SCADA LEVEL)
FAH	FLOW ALARM HIGH
FAL	FLOW ALARM LOW
FC	FLOW CONTROLLER
FE	PRIMARY FLOW ELEMENT/SENSOR
FG	FLOW SIGHT GAUGE
FI	FLOW DIGITAL INDICATOR (LED OR SCREEN)
FIC	FLOW INDICATING CONTROLLER
FIT	FLOW INDICATING TRANSMITTER
FQG	FLOW TOTALIZING GAUGE
FQIT	FLOW TOTALIZING INDICATING TRANSMITTER
FSH	FLOW SWITCH HIGH
FSL	FLOW SWITCH LOW
FY	FLOW SIGNAL CONVERTER, REPEATER, OR ISOLATOR
HIC	HAND INDICATING CONTROLLER
HMS	MOMENTARY PUSHBUTTON OR SELECTOR SWITCH
HS	HAND SWITCH
IAH	CURRENT ALARM HIGH (MOTOR OVERLOAD)
IE	CURRENT ELEMENT/SENSOR
ISH	CURRENT SWITCH HIGH USED TO DETECT HIGH TORQUE
JA	POWER FAILURE ALARM
JI	POWER INDICATOR
JIT	POWER INDICATING TRANSMITTER
JL	POWER INDICATING LIGHT
KQI	TIME TOTALIZING INDICATOR
LAH	LEVEL ALARM HIGH
LAHH	LEVEL ALARM HIGH-HIGH
LAL	LEVEL ALARM LOW
LALL	LEVEL ALARM LOW-LOW
LE	PRIMARY LEVEL ELEMENT/SENSOR
LG	LEVEL SIGHT GAUGE
LI	LEVEL INDICATOR (LED OR SCREEN)
LIT	LEVEL INDICATING TRANSMITTER
LSH	LEVEL SWITCH HIGH
LSHH	LEVEL SWITCH HIGH-HIGH
LSL	LEVEL SWITCH LOW
LSLL	LEVEL SWITCH LOW LOW
LY	LEVEL SIGNAL CONVERTER, ISOLATOR, OR REPEATER
OAH	TORQUE ALARM HIGH
OAHH	TORQUE ALARM HIGH HIGH
OSH	TORQUE SWITCH HIGH
OSHH	TORQUE SWITCH HIGH-HIGH
PAH	PRESSURE ALARM HIGH
PAHH	PRESSURE ALARM HIGH-HIGH
PAL	PRESSURE ALARM LOW
PALL	PRESSURE ALARM LOW-LOW
PDAH	DIFFERENTIAL PRESSURE ALARM HIGH
PDAHH	DIFFERENTIAL PRESSURE ALARM HIGH-HIGH
PDG	DIFFERENTIAL PRESSURE GAUGE
PDI	DIFFERENTIAL PRESSURE INDICATOR (LED OR SCREEN)
PDIT	DIFFERENTIAL PRESSURE INDICATING TRANSMITTER
PDSH	DIFFERENTIAL PRESSURE SWITCH HIGH
PDSHH	DIFFERENTIAL PRESSURE SWITCH HIGH-HIGH
PDSL	DIFFERENTIAL PRESSURE SWITCH LOW
PDSLL	DIFFERENTIAL PRESSURE SWITCH LOW-LOW
PE	PRESSURE SENSOR
PG	PRESSURE GAUGE
PI	PRESSURE INDICATOR (LED OR SCREEN)
PIT	PRESSURE INDICATING TRANSMITTER
PSH	PRESSURE SWITCH HIGH
PSL	PRESSURE SWITCH LOW
SC	SPEED CONTROL
SI	SPEED INDICATION (LED OR SCREEN)
SIT	SPEED INDICATING TRANSMITTER
SSL	SPEED SWITCH LOW
TAH	TEMPERATURE ALARM HIGH
TAHH	TEMPERATURE ALARM HIGH-HIGH
TAL	TEMPERATURE ALARM LOW
TDI	DIFFERENTIAL TEMPERATURE INDICATOR (LED OR SCREEN)
TDIT	DIFFERENTIAL TEMPERATURE TRANSMITTER
TE	TEMPERATURE SENSOR/RESISTANCE TEMPERATURE DETECTOR
TG	TEMPERATURE GAUGE
TI	TEMPERATURE INDICATOR (LED OR SCREEN)
TIT	TEMPERATURE INDICATING TRANSMITTER
TSH	TEMPERATURE SWITCH HIGH
TSHH	TEMPERATURE SWITCH HIGH HIGH
TSL	TEMPERATURE SWITCH LOW
UA	MULTIVARIABLE/COMMON ALARM/COMMON FAULT
UCR	RUN COMMAND
UCS	STOP COMMAND
VAH	VIBRATION ALARM HIGH
WE	PRIMARY WEIGHT SENSOR/LOAD CELL
WG	WEIGHT GAUGE
WIT	WEIGHT INDICATING TRANSMITTER
YA	GENERAL ALARM EVENT
YI	EVENT INDICATION (LED OR SCREEN)
YIR	RUNNING INDICATION
YIS	STOPPED INDICATION
YL	EVENT INDICATING LIGHT
YLR	RUNNING INDICATING LIGHT
YLS	STOPPED INDICATING LIGHT
ZCC	CLOSED COMMAND
ZCO	OPEN COMMAND
ZI	POSITION INDICATOR
ZIC	CLOSED INDICATION
ZIO	OPEN INDICATION
ZIT	POSITION INDICATING TRANSMITTER
ZLC	CLOSED INDICATING LIGHT
ZLO	OPEN INDICATING LIGHT
ZSC	CLOSED POSITION SWITCH
ZSO	OPEN POSITION SWITCH
ZT	POSITION TRANSMITTER

GENERAL INSTRUMENT SYMBOLS



DIGITAL SYSTEMS INTERFACE SYMBOLS

NOTE: REFER TO DETAILED SYSTEM SPECIFICATIONS FOR FUNCTIONAL DESCRIPTION. ALSO SEE I/O SCHEDULES FOR COMPLETE INPUT AND OUTPUT LISTINGS.



INSTRUMENTATION SYMBOLOGY AND DESIGNATIONS

FUNCTION DESIGNATIONS AND ABBREVIATIONS

MEASUREMENT PRINCIPLE NOTATIONS

CON	CONDUCTANCE
DP	DIFFERENTIAL PRESSURE SENSING
FLN	FLOW NOZZLE
FLT	FLOW TUBE
GWR	GUIDED WAVE RADAR
RAD	RADAR
US	ULTRASONIC
VENT	VENTURI TUBE

CALCULATED ALARM DESIGNATIONS

H	HIGH
HH	HIGH-HIGH
L	LOW
LL	LOW-LOW

INDICATING LIGHT/ALARM DESIGNATIONS

OVRLD	OVERLOAD
TRQ HI	TORQUE HIGH
TRQ HI-HI	TORQUE HIGH HIGH

INSTRUMENT FUNCTIONS

Δ	SUBTRACT (DIFFERENCE)
Σ	ADD OR SUM (ADD AND SUBTRACT)
√‾	EXTRACT SQUARE ROOT
÷	DIVIDE
>	HIGH-SELECT
<	LOW-SELECT
×	MULTIPLY
∫	INTEGRATE (TIME INTEGRAL)
CH4	METHANE
CL2	CHLORINE RESIDUAL
CO2	CARBON DIOXIDE
COND	CONDUCTIVITY
DO	DISSOLVED OXYGEN
DWPT	DEWPOINT
F(X)	CHARACTERIZE SIGNAL
H2S	HYDROGEN SULFIDE
K	GAIN OR ATTENUATE (INPUT:OUTPUT)
-K	GAIN AND REVERSE
LEL	LOWER EXPLOSIVE LIMIT
MCC	MOTOR CONTROL CENTER
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
O2	OXYGEN (PURITY)
O3	OZONE
pH	pH

HAND SWITCH DESIGNATIONS

FR	FORWARD-REVERSE
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
LOA	LOCAL-OFF-AUTO
LOR	LOCAL-OFF-REMOTE
LR	LOCAL REMOTE
OC	OPEN-CLOSE
OCA	OPEN-CLOSE-AUTO
OO	ON-OFF
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
OSC	OPEN-STOP-CLOSE

TRANSDUCER & CONVERTER DESIGNATION

E	VOLTAGE
FSK	FREQUENCY SHIFT KEYING
H	HYDRAULIC
I	CURRENT
P	PNEUMATIC PULSE
PD	PULSE DURATION
PF	PULSE FREQUENCY
R	RESISTANCE (ELECTRICAL)

EXAMPLE: I/P = CURRENT TO PNEUMATIC TRANSDUCER

POWER SUPPLY ABBREVIATIONS

120V — POWER SUPPLY SOURCE LABEL. USED ONLY WHERE NECESSARY TO HELP CLARIFY AN INSTRUMENT OR SYSTEM FUNCTION.

120V	120VAC
AS	AIR SUPPLY
ES	ELECTRIC SUPPLY
GS	GAS SUPPLY
HS	HYDRAULIC SUPPLY
NS	NITROGEN SUPPLY
SS	STEAM SUPPLY
WS	WATER SUPPLY

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

DESIGNED:	EJP
DETAILED:	SKD
CHECKED:	MCZ
APPROVED:	RT
DATE:	JUNE 2025
PROJECT NO.:	416929

INSTRUMENTATION

P&ID - LEGEND AND ABBREVIATIONS SHEET 2 OF 3

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SYSTEM / PROCESS CODE ABBREVIATIONS

AER	AERATION SYSTEM
AIR	AIR, AERATION OR PROCESS
ARW	AIR WASH
BIO	BIOSOLIDS
BIT	BIOTOWER
BNR	BNR
BWH	BACKWASH FOR FILTER
CAI	COMPRESSED AIR, INSTRUMENT
CDW	CONDENSATE WATER
CE	CHLORINATED EFFLUENT
CMS	COMPRESSED AIR, SERVICE
DCB	DISINFECTION CONTACT BASIN
DGA	DIGESTION, AEROBIC
DGD	DIGESTER DECANT
DGS	DIGESTER SLUDGE
DRN	DRAIN
DWT	DEWATERING
EFP	EFFLUENT PUMPING
EXH	ENGINE EXHAUST
FE	FILTER EFFLUENT
FO	FUEL OIL
FUE	DIESEL FUEL
FW	FIRE WATER
GRT	GRIT
GSL	GASOLINE
HW	HOT OR HEATING WATER
INFP	INFLUENT PUMPING
LAG	LAGOON STORAGE
MXL	MIXED LIQUOR
NAOH	CAUSTIC SODA
NOCL	SODIUM HYPOCHLORITE
NPW	NON-POTABLE WATER
ODC	ODOR CONTROL
PAR	PRE-AERATION
PD	PROCESS DRAIN
PEW	POND EFFLUENT WATER
POF	POND OVERFLOW
POLY	POLYMER
POT	POTABLE WATER
RCS	RECIRCULATED SLUDGE
RCW	RECLAIMED WATER
RES	RESIDUALS
RS	RAW SEWAGE
RW	RAW WATER
RWP	RAW WATER PUMPING
RWS	RAW WATER STORAGE
RWW	RAW WASTEWATER
SBRE	SBR EFFLUENT
SCL	SECONDARY CLARIFICATION
SCR	SCREENINGS
SDWW	SCREENED & DEGRITTED WASTEWATER
SE	SECONDARY EFFLUENT
SEP	SEPTAGE
SEW	SEWAGE
SLG	SLUDGE
STS	STORM SEWER
STW	STORM WATER
SW	SURFACE WASH
SWT	SEAL WATER
TF	TRICKLING FILTER
THCK	THICKENING
TPRS	THICKENED PRIMARY SLUDGE
TW	TREATED WATER
TWAS	THICKENED WASTE ACTIVATED SLUDGE
WAS	WASTE ACTIVATED SLUDGE
WW	WASH WATER
WWP	RAW WASTEWATER PUMPING
WWW	WASTE WASH WATER

FUNCTION CODE ABBREVIATIONS

ACD	AERATOR, COARSE BUBBLE DIFFUSED
ACMB	ACTIVATION CHAMBER
AD	AIR DRYER
AEFD	AERATOR, FINE PORE DIFFUSED
AES	AERATOR, SURFACE
AF	AIR FILTER
AFC	AFTERCOOLER
AFD	ADJUSTABLE FREQUENCY DRIVE
AFS	AERATOR, FLOATING SURFACE
AR	AIR RECEIVER OR REGULATOR
AS	AIR SEPARATOR
AST	AIR STRIPPER
B	BIN (STORAGE - ALL TYPES)
BA	BIN ACTIVATOR
BDZ	BULLDOZER
BFP	BACKFLOW PREVENTER
BFPS	BELT FILTER PRESS
BL	BLOWER, POSITIVE DISPLACEMENT
BLC	BLOWER, CENTRIFUGAL
BLR	BOILER
BNR	BASIN, BNR
BSNA	BASIN, AERATION
BSNC	BASIN, CHLORINE CONTACT
BSNO	BASIN, OXIC
BSNS	BASIN, SEDIMENTATION
BSNX	BASIN, ANOXIC/OXIC
CAB	COVER, ALUMINUM DOME BASIN
CCLM	CALIBRATION COLUMN
CDG	COVER, GAS HOLDER
CFD	COVER, FIXED DIGESTER
CFG	CENTRIFUGE
CFL	COVER, FLOATING DIGESTER
CGR	CLASSIFIER, GRIT
CGS	CHLORINE GAS SCRUBBER
CHF	CHEMICAL FEEDER
CMB	COVER, MEMBRANE
CML	COMPRESSOR, LIQUID RING
CMP	COMPRESSOR
CMPS	COMPRESSOR, STEAM
CMR	COMPRESSOR, ROTARY SCREW
COB	CONVEYOR, BELT
COS	CONVEYOR, SCREW
CRG	CRANE, GANTRY
CRJ	CRANE, JIB
CRN	CRANE
CRP	CRANE, PORTABLE GANTRY
CRT	CRANE, TRAVELING BRIDGE
CTR	CONTAINER, PROCESS
CW	CLEARWELL
CYG	CYLINDER, GAS
CYLC	CYLINDER, CHLORINE
DAF	DISSOLVED AIR FLOTATION THICKENER
DFB	DIFFUSER BANK
DFP	DIFFUSER, PIPELINE
DFT	DIFFUSER, TANK
DGAP	DIGESTER, ANAEROBIC PRIMARY
DGAS	DIGESTER, ANAEROBIC SECONDARY
DGE	DIGESTER, AEROBIC
DIF	DIFFUSER, CHANNEL
DMP	DAMPER
DPS	DIAPHRAGM SEAL
DSUV	DISINFECTION UNIT, UV
DUC	DUST COLLECTOR
DWS	DEWATERING SCREW
EDC	EDUCTOR
EEWF	EMERGENCY EYE WASH FOUNTAIN
EQPB	EQUIPMENT, BUILDING SERVICES
EQPE	ELECTRICAL EQUIPMENT, GENERAL
EQPG	EQUIPMENT, GENERAL OR UNSPECIFIED
ESEW	EMERGENCY SHOWER AND EYEWASH
ESHR	EMERGENCY SHOWER
EXC	EXPANSION CHAMBER
EV	EVAPORATOR
FAN	FAN, CENTRIFUGAL
FAR	FLAME ARRESTER
FAX	FAN, AXIAL FLOW
FC	FLAME CHECK
FD	FLOOR DRAIN
FGP	FILTER, GAS PARTICULATE
FL	FORKLIFT
FLC	FILTER, CARTRIDGE TYPE
FLCH	FLOCCULATOR, HORIZONTAL
FLCV	FLOCCULATOR, VERTICAL
FLD	FILTER, DISK
FLG	FLARE, GAS
FLM	FLUME, PARSHALL
FLT	FILTER, UNDERDRAINS OR PRESSURE
FMSP	FOAM SEPARATOR
FS	FLOW SPLITTER
FST	FENCE STIRRER
FSW	FILTER, SURFACE WASH EQUIPMENT
FTNG	FITTING, MISCELLANEOUS
GBT	GRAVITY BELT THICKENER
GEN	GENERATOR, ENGINE (BACKUP POWER)
GFD	GAS FEEDER
GFL	GATE, FLAP
GRB	GRIT BASIN, VORTEX TYPE
GRC	GRIT SCREW CONCENTRATOR
GRD	GRINDER PULVERIZER
GRI	GRINDER, INLINE SEWAGE
GSD	GATE, SLIDE
GSL	GATE, SLUICE
GVT	GRAVITY THICKENER
GWH	GAS WATER HEATER
GWR	GATE, WEIR
HEX	HEAT EXCHANGER HEATER
HSC	HOIST, CHAIN
HST	HOIST
HSW	HOIST, WIRE ROPE
HTC	HEAT TRACING
HYC	HYDROCYCLONE
HYDF	HYDRANT, FIRE
HYDW	HYDRANT, WALL
INJ	INJECTOR, CHEMICAL
LS	LIME SLAKER
M	MOTOR
MBMF	MEMBRANE, MICROFILTRATION
MBNF	MEMBRANE, NANOFILTRATION
MBR	MEMBRANE
MBRO	MEMBRANE, REVERSE OSMOSIS
MBUF	MEMBRANE, ULTRAFILTRATION
MFL	MIXER, FLOCCULATION
MXC	MIXER, CARBON
MXI	MIXER, IN-LINE
MXP	MIXER, SUBMERSIBLE, PROP OR BLENDER
MXPG	MIXER, PUGMILL
MXR	MIXER, RAPID
MXS	MIXER, STATIC
ODU	OZONE DESTRUCT UNIT
OGEN	OZONE GENERATOR
OPSU	OZONE POWER SUPPLY UNIT
ORD	OVERFLOW ROOF DRAIN
P	PUMP, POSITIVE DISPLACEMENT, ROTARY, DRUM OR BELL MOUNTED
PAD	PUMP, AIR DIAPHRAGM
PBC	PRESSURE BUILDING COIL
PCL	PUMP, CENTRIFUGAL
PCLR	PRIMARY CLARIFIER
PCN	PARTICLE COUNTER
PD	PULSATION DAMPENER
PDM	PUMP, DIAPHRAGM METERING
PHE	PUMP, HORIZONTAL END SUCTION
PHW	PUMP, HOT OR HEATING WATER
PINJ	POLYMER INJECTOR RING
PIPE	PIPE
PLT	PELLETIZER
PNS	PENSTOCK
PP	PACKAGED PLANT
PPC	PUMP, PROGRESSING CAVITY
PPL	PUMP, PLUNGER
PPS	PUMP, PERISTALTIC
PSC	PUMP, HORIZONTAL SPLIT CASE
PSCH	PUMP, SUBMERSIBLE CHOPPER
PSE	PUMP, SCREW ENCLOSED
PSL	PUMP, SUBMERSIBLE
PSO	PUMP, SCREW OPEN
PSP	PUMP, SUMP
PSS	PUMP, SUBMERSIBLE SUMP
PST	PLATE SETTLER
PVD	PUMP, VERTICAL DIFFUSION VANE
PVE	PUMP, VERTICAL END SUCTION
PVW	PUMP, VERTICAL WET PIT
RCO	RESIDUAL COLLECTOR
RD	RUPTURE DISK
RFP	ROTARY FAN PRESS
RM	ROTAMETER
RSV	RESERVOIR
SAMP	SAMPLER
SBL	SOLIDS BLENDER, INLINE
SC	SCALE, WEIGHT
SCB	SCRUBBER
SCC	SLUDGE COLLECTOR, CIRCULAR
SCFC	SLUDGE COLLECTOR, FLOC-CLARIFYING
SCL	SCALE
SCLC	SLUDGE COLLECTOR, CROSS
SCLR	SECONDARY CLARIFIER
SCRB	SCREEN, MANUAL OR MECH CLEANED BAR
SCRH	SCREEN, HORIZONTAL
SCRI	SCREEN, INLINE SLUDGE
SCRS	SCREEN, STEP
SCRT	SCREEN, TRAVELING WATER
SCRV	SCREEN, VIBRATORY
SCSC	SLUDGE COLLECTOR, SOLIDS CONTACT
SCSE	SLUDGE COLLECTOR, SEC CLARIFIERS
SCSL	SLUDGE COLLECTOR, STRAIGHT LINE
SCW	SCUM WEIR, ROTATING
SEP	SEPARATOR, MOISTURE OR CYCLONE
SG	SIGHT GAUGE
SGR	SLUDGE GRINDER, INLINE OR CHANNEL
SGT	SIGHT GLASS, TALL
SIL	SILENCER
SMC	SCUM COLLECTOR
SRCH	SURGE CHAMBER
STR	STRAINER
STRB	STRAINER, BASKET TYPE
STRY	STRAINER, Y TYPE
TB	TURBINE
TBC	TURBINE COMPRESSOR
TBE	TURBINE ENGINE
TCC	TANK, CHLORINE CONTACTOR
TCN	TANK, AMMONIA STORAGE
TCP	TANK, METHANOL
TCR	TANK, CRYOGENIC STORAGE
TDW	TANK, DOUBLE WALL
TNK	TANK, GENERAL OR UNSPECIFIED
TNKC	TANK, FRP CHEMICAL STORAGE
TRK	TRUCK
TRP	TRAP, DRIP
TRPS	TRAP, SEDIMENT
TSA	TANK, STORAGE, ABOVE GROUND
TSE	TANK, ELEVATED STORAGE
TSMP	TANK, SAMPLER
TSW	TANK, STEEL WATER
TX	TANK, EXPANSION
UPS	UNINTERRUPTIBLE POWER SUPPLY
UVR	UV REACTOR
V	VALVE, GENERAL OR UNSPECIFIED
VAG	VALVE, ANGLE
VAP	VAPORIZER
VAR	VALVE, AIR RELEASE
VAVB	VALVE, AIR VACUUM BREAK
VBA	VALVE, AWWA BALL
VBF	VALVE, AWWA BUTTERFLY
VBFI	VALVE, INDUSTRIAL BUTTERFLY
VBFP	VALVE, BACKFLOW PREVENTER
VBM	VALVE, BALL MISCELLANEOUS
VCAV	VALVE, COMBINATION AIR RELEASE AND VACUUM BREAK
VCK	VALVE, CHECK
VCN	VALVE, CONE
VDG	VALVE, DIAPHRAGM OPERATED
VER	VALVE, EXPLOSION RELIEF
VFG	VALVE, FLAP GATE
VFW	VALVE, FOUR WAY
VG	VALVE, GATE
VGD	VALVE, DOUBLE DISC GATE
VGL	VALVE, GLOBE
VGR	VALVE, RESILIENT SEATED GATE
VKG	VALVE, KNIFE GATE
VMD	VALVE, MUD
VMR	VALVE, MATERIAL HANDLING ROTARY
VND	VALVE, NEEDLE
VP	VALVE, PROCESS
VPL	VALVE, ECCENTRIC PLUG
VPN	VALVE, PINCH
VPO	VALVE, PISTON OPERATED
VPRD	VALVE, PRESSURE REDUCING
VPRL	VALVE, PRESSURE RELIEF
VPS	VALVE, PRESSURE SUSTAINING
VPT	VALVE, PILOT
VPVR	VALVE, PRESSURE/VACUUM RELIEF
VRG	VACUUM REGULATOR
VS	VALVE, SAFETY
VSL	VALVE, SOLENOID
VSLB	VESSEL, BOOT
VSLV	VALVE, SLEEVE
VTLS	VALVE, TELESCOPING
VTS	VALVE, THERMAL SHUTOFF
VTW	VALVE, THREE WAY
VVB	VALVE, VACUUM BREAKER
VVP	VALVE, V-PORT BALL
VVR	VALVE, VACUUM RELIEF
WC	WEIR, CIPOLLETTI
WLHC	WELL, HORIZONTAL COLLECTOR
WLV	WELL, VERTICAL
WR	WEIR, RECTANGULAR
WV	WEIR, V-NOTCH

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

REVISIONS AND RECORD OF ISSUE

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INSTRUMENTATION

P&ID - LEGEND AND ABBREVIATIONS SHEET 3 OF 3

I-003

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FDT1000
FDT002

SCADA HMI / PLC-OCLACP

SUMP LEVEL LO	SUMP LEVEL HI	TEMP	LEVEL	LEVEL HI	TANK HEATING SYSTEM FAIL	POWER ON	TANK HEATING SYSTEM FAIL	POWER ON	TANK FEED SEGMENT HEATING SYSTEM FAIL	POWER ON	TANK DISCHARGE SEGMENT HEATING SYSTEM FAIL	POWER ON	HDPE LINE SEGMENT HEATING SYSTEM FAIL	POWER ON	CONDENSATE WATER HEATING SYSTEM FAIL	POWER ON	COLD WATER HEATING SYSTEM FAIL	POWER ON	TEPID WATER HEATING SYSTEM FAIL	POWER ON	GAS WATER HEATER SYSTEM FAIL	POWER ON	FLOW DETECTED	FLOW DETECTED
LAL 003	LAH 002	TI 001 L	LI 001 L LL	LAH 001	UA 003	YI 003	UA 011	YI 011	UA 004	YI 004	UA 005	YI 005	UA 006	YI 006	UA 009	YI 009	UA 007	YI 007	UA 008	YI 008	UA 010	YI 010	FAH 003	FAH 004

NAOH TRUCK UNLOADING PANEL LCP-003
120V
LAH 001
HMS 001 SIL
UA 003 FAIL
HEAT CONTROLLER #3 (TANK HEATING SYSTEM)
HORN
LSH 001
LI 001
LAX 001
TI 001
NOTE 5

HEAT TRACE CONTROLLER #1 (TANK FEED PIPE SEGMENT)
HEAT TRACE CONTROLLER #2 (TANK DISCHARGE PIPE SEGMENT)
HEAT TRACE CONTROLLER #9 CAUSTIC TANK HEAT TRACE (SIGHT GLASS)
HTE-001

HEAT TRACE CONTROLLER #4 (HDPE LINE SEGMENT)
HTE-002

HEAT TRACE CONTROLLER #5 (COLD WATER HEAT TRACE)
HEAT TRACE CONTROLLER #6 (TEPID WATER HEAT TRACE)
HEAT TRACE CONTROLLER #7 (CONDENSATE WATER HEAT TRACE)
HTE-003

GAS WATER HEATER CONTROLLER #8
HTE-004

FSH 004
FROM TREATED WATER SUPPLY TO OUTDOOR SAFETY SHOWER (INSIDE CONTAINMENT AREA)
TW-EEWF-004
TW-ESHR-004

FSH 003
FROM TREATED WATER SUPPLY TO OUTDOOR SAFETY SHOWER (OUTSIDE CONTAINMENT AREA)
TW-EEWF-003
TW-ESHR-003

INSECT SCREEN
1"-NAOH-CPVC-1 → B I-102 TO VACUUM BREAKERS
1"-NAOH-CPVC-1 NOTE 7 → I-102 C FROM RELIEF VALVES
4"-NAOH-CPVC-1

120V LIT 001 US
LE 001 US

NAOH-TNK-01
CAUSTIC SODA STORAGE TANK
NOTE 6

SIGHT LEVEL GAUGE (TYP)
LG 001
TIT 001 120V
TE 001
TANK HEATER
120V
NOTE 10
MANWAY

2"-NAOH-CS-2
OVERFLOW EL (TYP)
3"-NAOH-CPVC-1
TOTE CONNECTION
1"-NAOH-CS-2
ABOVE GROUND | UNDER GROUND | UNDER GROUND | ABOVE GROUND
2"-NAOH-CS-2
1"-NAOH-CS-2
2"-NAOH-PE-4
1"-NAOH-CS-2 A I-102 TO METERING PUMPS
2"-NAOH-CPVC-1
NOTE 4 (TYP)
TO CONTAINMENT AREA SUMP

TRUCK UNLOADING CONNECTION WITH LOCKING DUST CAP
THREADED CAP (TYP)

NOTE 9
TIMER
POWER PLUG
120VAC
OFF 60 10 40 30 MINUTES
LCP-004

M NOTE 8
2"-DRN-CPVC-1
TO STORM WATER DRAIN

LSH 002
LSL 003
SUMP PUMP NAOH-PSS-1
CHEMICAL CONTAINMENT SUMP

NOTES :

1. SEE LEGEND AND ABBREVIATIONS ON DRAWINGS I-001, I-002 AND I-003.
2. SYSTEM CODE IS NAOH UNLESS OTHERWISE NOTED.
3. LOCATE P-TRAP FILL VALVE NO MORE THAN 5 FEET ABOVE FINISHED FLOOR.
4. PROVIDE FLANGED VALVE TO CONNECT TO TANK FLANGE FOR ALL VALVES AT TANK.
5. INSTALL LOCAL LEVEL INDICATION SUCH THAT IT CAN BE VIEWED FROM THE TRUCK UNLOADING CONNECTION.
6. TANK WILL BE HEATED AND INSULATED.
7. ROUTE VENT HEADERS 12 INCHES ABOVE STORAGE TANK OVERFLOW ELEVATION.
8. BATTERY OPERATED FLOW METER "DAYTON 32ZN69" OR EQUAL.
9. MECHANICAL TIMER (INTERMATIC SW60MK OR EQUAL) AND DUAL INDUSTRIAL GRADE GFCI RECEPTICLE IN OUTDOOR RATED ENCLOSURE.
10. TANK HEATER IS SHOWN FOR REPRESENTATION ONLY, PREFERRED OPTION IS HEAT ELEMENT WRAPPED AROUND THE TANK.

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FD11000
FD11004

BLACK & VEATCH
Black & Veatch Corporation
Sacramento, California

REGISTERED PROFESSIONAL ENGINEER — ELECTRICAL / INSTRUMENTATION & CONTROL SYSTEMS — No. CS 7469 — Exp. 03/31/26 — STATE OF CALIFORNIA
06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

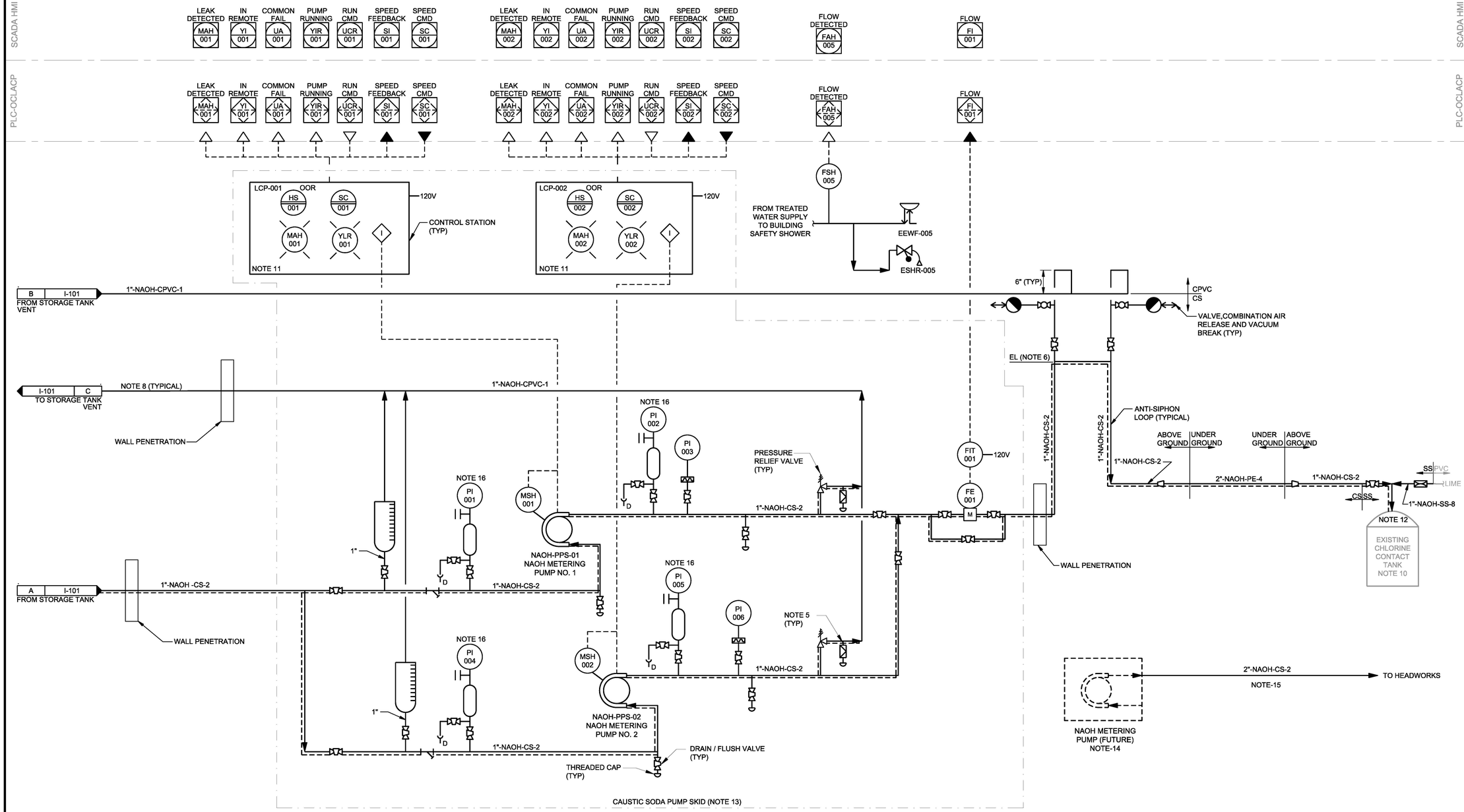
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PROJECT NO.:	416929

INSTRUMENTATION

P&ID
CAUSTIC SODA STORAGE TANK/CONTAINMENT SUMP

I-101



NOTES:

1. SEE LEGEND AND ABBREVIATIONS ON DRAWING I-001, I-002 AND I-003.
2. SYSTEM CODE IS ' NAOH ' UNLESS OTHERWISE NOTED.
3. LOCAL CONTROL DEVICES SUCH AS LIGHTS AND SWITCHES LOCATED ON CONTROL STATION, MAY NOT BE SHOWN ON THIS P&ID.
4. NOT ALL FUNCTIONS ARE SHOWN AT THE SCADA HMI LEVEL. REFER TO SOFTWARE CONTROL BLOCK DESCRIPTION IN SECTION 13550 FOR FURTHER DETAIL ON PLC, SCADA CONTROL, AND MONITORING.
5. CLEAR CPVC PIPE 6 INCHES LONG WITH THREADED CAP.
6. TOP OF ANTI-SIPHON LOOP SHALL BE 2 FEET HIGHER THAN STORAGE TANK OVERFLOW CONNECTION.
7. CONTROL PANEL IS INTEGRAL TO THE PUMP.
8. ROUTE VENT HEADERS 12 INCHES ABOVE STORAGE TANK OVERFLOW ELEVATION.
9. ALL SUCTION AND DISCHARGE PIPING (EXCEPT PVC/CPVC) TO BE HEAT TRACED AND INSULATED.
10. EXISTING CHLORINE CONTACT TANK IS JUST FOR REPRESENTATION AND NOT TO SCALE.
11. CONTROL STATION WILL BE INTEGRAL TO THE PUMP.
12. THE EXISTING PVC DIFFUSER ASSEMBLY WILL BE REPLACED WITH THE STAINLESS STEEL ASSEMBLY. ONCE CAUSTIC LINE IS IN SERVICE, LIME PIPING WILL BE DEMOLISHED.
13. ITEMS IN THE BOX SHALL BE SUPPLIED BY METERING PUMP VENDOR.
14. NAOH METERING PUMP WILL BE INSTALLED BY THE CITY IN FUTURE.
15. THE 2" HDPE PIPE WITH OUTER INSULATION JACKET AND HEAT TRACING TUBE SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR. BOTH ENDS OF THE PIPE SHALL BE CAPPED AND INSULATION JACKET SEALED.
16. PRESSURE GAUGE SHALL BE INTEGRAL TO THE PULSATION DAMPENER. REFER TO SPECIFICATION SECTION 11727.

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RT1000

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06/10/2025

CITY OF FOLSOM

CAUSTIC SODA STORAGE AND FEED SYSTEM DESIGN

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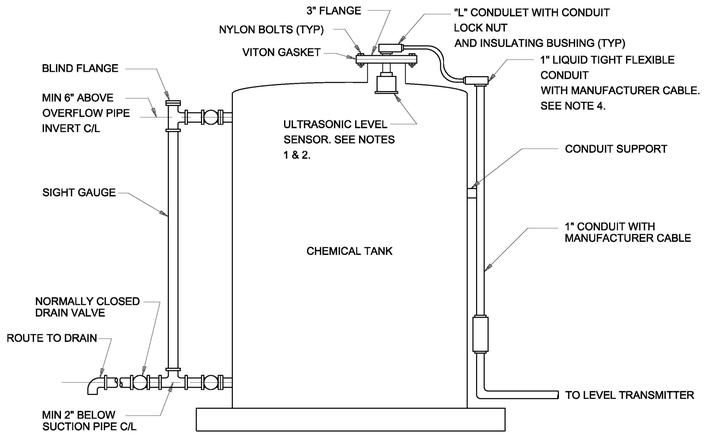
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INSTRUMENTATION

P&ID
CAUSTIC SODA METERING PUMPS

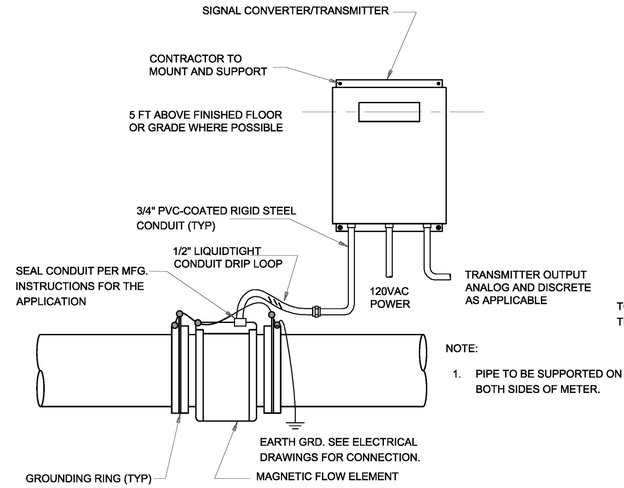
I-102

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CHEMICAL TANK LEVEL GAUGE INSTALLATION DETAIL

NO SCALE

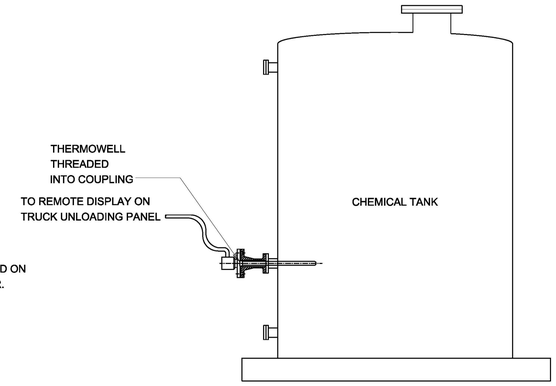


NOTE:

1. PIPE TO BE SUPPORTED ON BOTH SIDES OF METER.

FLOW METER-MAGNETIC

NO SCALE

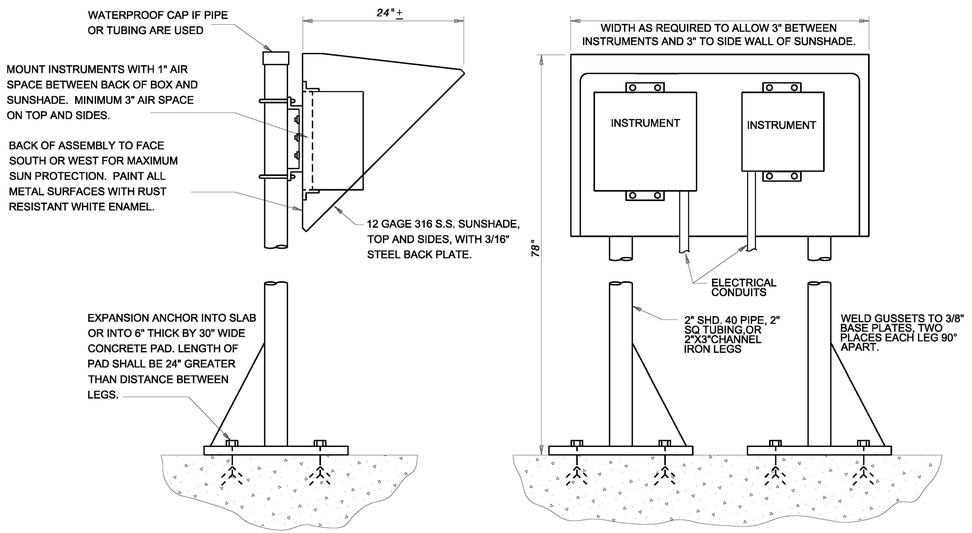


TEMPERATURE TRANSMITTER (TANK MOUNTED)WITH REMOTE DISPLAY

NO SCALE

NOTE:

1. INSTALLATION DETAILS FOR ILLUSTRATION PURPOSE ONLY, ACTUAL INSTALLATION SHALL BE DEPENDENT ON TANK MANUFACTURER'S NOZZLE AND INSTALLATION RECOMMENDATIONS.

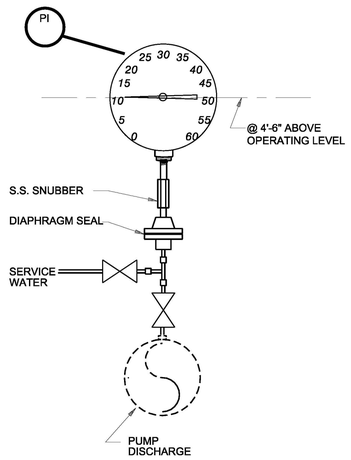


SIDE VIEW

OUTDOOR INSTRUMENT MOUNTING DETAIL

NO SCALE

FRONT VIEW



PRESSURE GAUGE INSTALLATION DETAIL

NO SCALE

NOTES:

1. ISOLATION RING PRESSURE RANGE 260 PSI MAX
2. A TAPPING SADDLE CONFORMING TO THE REQUIREMENT OF THE DUCTILE IRON SPEC PIPE SECTION SHALL BE PROVIDED INSTEAD OF DIRECT TAPPING IF PIPE THICKNESS CLASS DOES NOT EQUAL OR EXCEED THE MINIMUM REQUIRED THICKNESS CLASS SPECIFIED

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INSTRUMENTATION

INSTRUMENT INSTALLATION DETAILS

I-501

(SCALE BAR IS 4" AT FULL SCALE) 0 1/2 1 2 3 4

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FT1000
FT1004