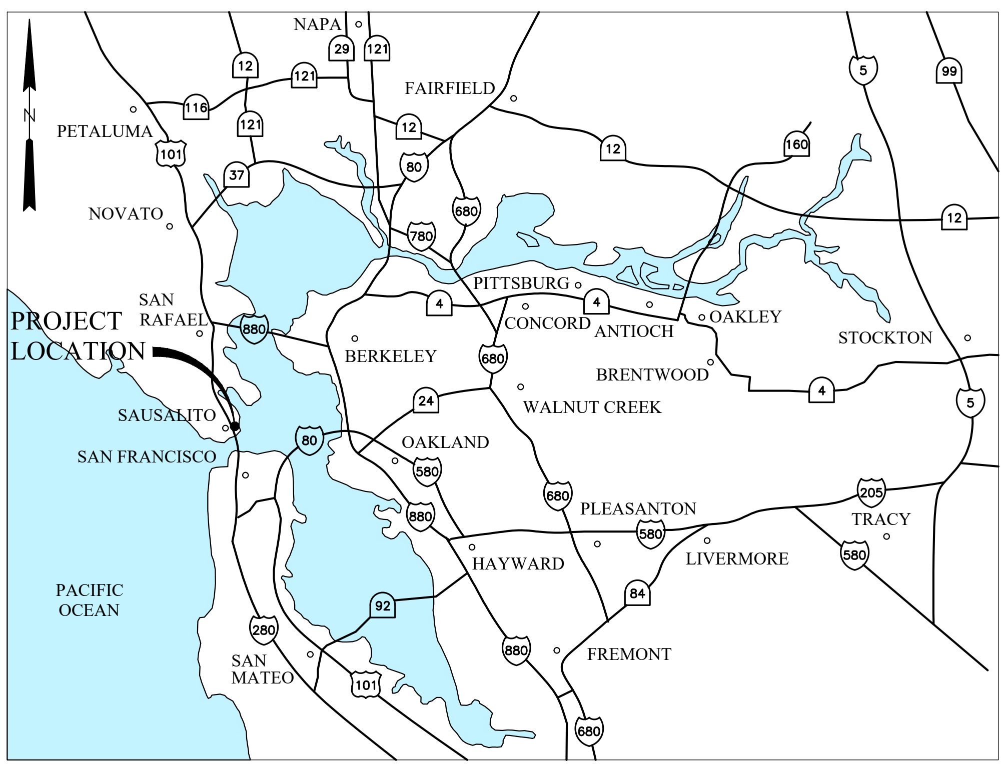
SAUSALITO - MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION

PROJECT NO. 0012002.00

100% ISSUED FOR BID

AUGUST 2023



VICINITY MAP

NTS

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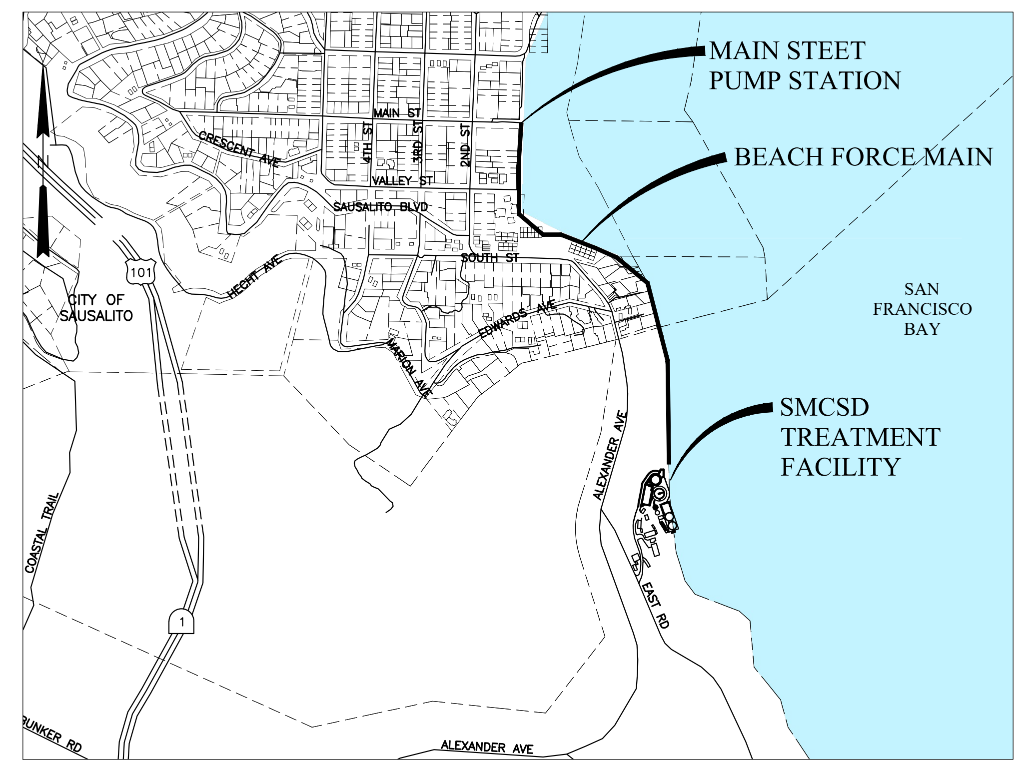

LOCATION MAP

SCALE: 1"=2000'

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COMMITMENT & INTEGRITY DRIVE RESULTS

REGISTERED PROFESSIONAL ENGINEER MIRKO MAHER No. 64645 Exp. 06-30-25 CIVIL STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER
CHECKED BY: XXX
DRAWN BY: S. JUNG
0012002.00-G-0.dwg

COVER SHEET, LOCATION MAP, INDEX SHEET

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: ---
SHEET: 1 OF 30

G-0

22x34 SHEET 1:2

\\woodardcurran.net\shared\Projects\0012002.00 smcsd - beach force main rehabilitation\wip\b. design\4. plans\100% design\General\0012002.00-G-0.dwg, Aug 02, 2023 - 5:36pm SJUNG

ABBREVIATIONS

@	AT
AB	ANCHOR BOLT, AGGREGATE BASE
ABC	AGGREGATE BASE COURSE (CALTRANS CLASS 2 AGGREGATE BASE)
ABS	ACRYLONITRILE–BUTADIENE– STYRENE
AC	ASBESTOS CEMENT, ASPHALTIC CONCRETE
AC/HR	AIR CHANGES PER HOUR
ACI	AMERICAN CONCRETE INSTITUTE
ADH AB	ADHESIVE ANCHOR BOLT
ADJ	ADJACENT, ADJUSTABLE
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AL	ALUMINUM
ALT	ALTERNATE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
APPROX	APPROXIMATE
ARCH.	ARCHITECTURAL
ARV	AIR RELEASE VALVE
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
AWT	ADVANCED WASTE TREATMENT
BC	BOLT CIRCLE, BEGIN CURVE
BD	BOARD
BF	BLIND FLANGE, BOTTOM FLAT
BFV	BUTTERFLY VALVE
BGS	BELOW GROUND SURFACE
BLDG	BUILDING
BM	BENCH MARK, BEAM
BO	BLOWOFF
BOT	BOTTOM
BRG	BEARING
BS	BUTT STRAP
BV	BALL VALVE
BVC	BEGINNING OF VERTICAL CURVE
C	CHANNEL (BEAM)
CAV	COMBINATION AIR AND VACUUM VALVE
CB	CATCH BASIN
CDF	CONTROLLED DENSITY FILL
CFM	CUBIC FEET PER MINUTE
CFS	CUBIC FEET PER SECOND
CHEM	CHEMICAL
CIP	CAST IRON PIPE
CIRC	CIRCUMFERENTIAL
CJ	CONSTRUCTION JOINT
CLR	CLEAR
CLS	CHLORINE SOLUTION HYPOCHLORITE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
℄	CENTERLINE
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
COL	COLUMN
COMP	COMPRESSOR(S)
CONC	CONCRETE, CONCENTRIC
COND	CONDUIT
CONN	CONNECTION
CONT	CONTINUOUS
COORD	COORDINATE
CPLG	COUPLING
CPVC	CHLORINATED POLYVINYL CHLORIDE
CT	CERAMIC TILE
CTD	CENTERED
CTJ	CONTROL JOINT
CTR	CENTER
CTS	CORROSION TEST STATION
C TO C	CENTER TO CENTER
CU	CUBIC
CU FT	CUBIC FOOT
CU IN.	CUBIC INCH
CU YD	CUBIC YARD
CV	CHECK VALVE
°C	DEGREE CELSIUS
d	PENNY (NAIL SIZE)
D	DRAIN
DBL	DOUBLE
DET	DETAIL
DFT	DRY FILM THICKNESS
DI	DROP INLET, DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DN	DOWN
DWG	DRAWING
E	EAST
EA	EACH
EC	END CURVE
ECB	EROSION CONTROL BLANKET
ECC	ECCENTRIC
EF	EACH FACE, EXHAUST FAN
EL, ELEV	ELEVATION
ELEC	ELECTRIC, ELECTRICAL
ELL	ELBOW
ENGR	ENGINEER
EO	EMERGENCY OVERFLOW
EP	EDGE OF PAVEMENT
EQ	EQUAL
EQPT	EQUIPMENT
EQ SP	EQUALLY SPACED, EQUAL SPACES
ESMT	EASEMENT
EVC	END OF VERTICAL CURVE
EW	EACH WAY
EWEF	EACH WAY, EACH FACE
EXC	EXCAVATE
EXH	EXHAUST
EXP	EXPOSED
EXP JT	EXPANSION JOINT
EXST	EXISTING

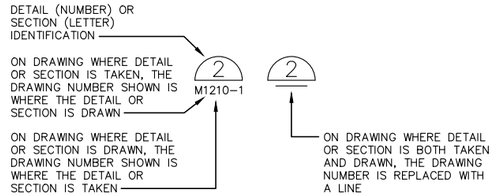
FA	FOUL AIR
FAB	FABRICATION
FC	FLEXIBLE COUPLING
FCA	FLANGED COUPLING ADAPTER
FCO	FLOOR CLEAN OUT
FD	FLOOR DRAIN
FDS	FINAL DIGESTED SLUDGE
FDN	FOUNDATION
FE	FLANGED END, FINAL EFFLUENT
FEXT	FIRE EXTINGUISHER
FF	FINISH FLOOR
FG	FINISH GRADE
FHY	FIRE HYDRANT
FI	FILTER INFLUENT
FIG.	FIGURE
FL	FLOOR
℄	FLOW LINE
FLG	FLANGE
FLH	FLAT HEAD
FLTR	FILTER
FM	FORCE MAIN
FO	FIBER OPTIC
FOC	FACE OF CONCRETE, FIBER OPTIC CABLE
FOCC	FIBER OPTIC CABLE CONDUIT
FOR	FUEL OIL RETURN
FOS	FUEL OIL SUPPLY
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT OR FEET
FTG	FOOTING
FUT	FUTURE
FWD	FORWARD
°F	DEGREE FAHRENHEIT
GA	GAGE
GAL	GALLON
GALV	GALVANIZED
GC	GROOVED COUPLING
GCO	GRADE CLEAN OUT
GE	GROOVED END
GL	GLASS
GPD	GALLONS PER DAY
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GSP	GALVANIZED STEEL PIPE
GV	GATE VALVE
GVL	GRAVEL
HD	HUB DRAIN
HDG	HOT DIP GALVANIZED
HDPE	HIGH DENSITY POLYETHYLENE, HDPE PIPE
HDR	HEADER
HDW	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HP	HORSEPOWER
HR	HOSE RACK, HANDRAIL, HOUR
HV	HOSE VALVE
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
H2E	HOOK TWO ENDS
ID	INSIDE DIAMETER
IF.	INSIDE FACE
IJTS	INSULATING JOINT TEST STATION
IN.	INCH
INFL	INFLUENT
INSTM	INSTRUMENTATION
INSUL	INSULATE
INVT	INVERT
IRR, IRRIG	IRRIGATION
IE	INVERT ELEVATION
JT	JOINT
KIP	THOUSAND POUNDS
KW	KILOWATT
L	ANGLE, LENGTH
LAB	LABORATORY
LAV	LAVATORY
LB	POUNDS
LB/CU FT	POUNDS PER CUBIC FOOT
LF	LINEAR FEET
LONG.	LONGITUDINAL
LP	LOW PRESSURE
LR	LONG RADIUS
LT	LEFT
MAG	MAGNETIC
MATL	MATERIAL
MAX	MAXIMUM
MCC	MOTOR CONTROL CENTER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLCSP	MORTAR LINED AND COATED STEEL PIPE
MSNRY	MASONRY
MO	MASONRY OPENING
MT	MITER
MTR	METER
MTS	MILL TYPE STEEL PIPE
MWS	MAXIMUM WATER SURFACE
N	NORTH
NIC	NOT IN CONTRACT
NO.	NUMBER
NPT	NATIONAL PIPE THREAD
NTS	NOT TO SCALE

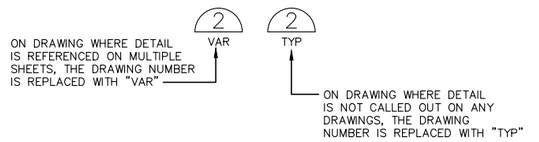
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF.	OUTSIDE FACE, OVERFLOW
OSD	OPEN SITE DRAIN
OPNG	OPENING
OZ	OUNCE
PC	POINT OF CURVE
PCC	PORTLAND CEMENT CONCRETE, POINT OF COMPOUND CURVATURE
PCO	PRESSURE CLEANOUT
PD	PUMPED DRAIN
PE	PLAIN END
PH	POTHOLE
PI	PRIMARY INFLUENT
PL	PLASTIC, PROPERTY LINE, PLATE
℄	PLATE (STEEL)
PLYWD	PLYWOOD
PRC	POINT OF REVERSE CURVE
PREFAB	PREFABRICATED
PRESS.	PRESSURE
PRI	PRIMARY
PROP	PROPERTY
PSF	POUNDS PER SQUARE FOOT
PS	PUMP STATION
PSI	POUNDS PER SQUARE INCH
PSIG	POUNDS PER SQUARE INCH, GAUGE
PT	POINT, POINT OF TANGENCY
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE PLASTIC, PVC PIPE
PVMT	PAVEMENT
R	RADIUS
RAS	RETURN ACTIVATED SLUDGE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN, ROAD
RDCR	REDUCER
RDW	REDWOOD
RECIRC	RECIRCULATION
REF	REFER OR REFERENCE
REINF	REINFORCED, REINFORCING, REINFORCE
REQD	REQUIRED
RM	ROOM
RO	ROUGH OPENING
RPVC	REINFORCED POLYVINYL CHLORIDE
RSFM	RAW SEWAGE FORCE MAIN
RSU	RETURN SUPERNATANT
RT	RIGHT
RTN	RETURN
RV	ROOF VENT
RW	RECYCLED WATER
R/W	RIGHT–OF–WAY
SCFM	STANDARD CUBIC FEET PER MINUTE
SCH	SCHEDULE
SD	STORM DRAIN, SOAP DISPENSER
SE	SECONDARY EFFLUENT
SEC	SECONDARY
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SL, SLP	SLOPE
SMP	SAMPLE
SOLN	SOLUTION
SP	SPACE OR SPACES
SPEC	SPECIFICATIONS
SPLY	SUPPLY
SQ	SQUARE
SQ FT	SQUARE FOOT
SQ IN	SQUARE INCH
SS	SANITARY SEWER
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STL	STEEL, STEEL PIPE
STR	STRAIGHT
STRL	STRUCTURAL
STRUCT	STRUCTURE
SUSP	SUSPEND
SWD	STORM WATER DRAIN
SYMM	SYMMETRICAL
T	TANGENT LENGTH
TAN.	TANGENT
TBG	TUBING
TBM	TEMPORARY BENCH MARK
T&B	TOP AND BOTTOM
TC	TOP OF CURB
TDH	TOTAL DYNAMIC HEAD
TECH	TECHNICAL
TEL	TELEPHONE
TEMP	TEMPERATURE
TF	TOP FACE, TOP FLAT
T&G	TONGUE AND GROOVE
THD	THREAD
THK	THICK
THRU	THROUGH
TOS	TOP OF SLOPE, TOP OF STEEL
TP	TURNING POINT
TRANSF	TRANSFORMER
TRANSV	TRANSVERSE
TW	TOP OF WALL
TYP	TYPICAL
UBC	UNIFORM BUILDING CODE
UD	UNDERDRAIN
UNO	UNLESS NOTED OTHERWISE
USA	UNDERGROUND SERVICES ALERT
UW	UTILITY WATER
V	VENT, VOLT, VALVE
VAC	VACUUM
VAR	VARIOUS
VC	VERTICAL CURVE
VERT	VERTICAL
VPI	VERTICAL POINT OF INTERSECTION
VTR	VENT THRU ROOF
W	WIDE FLANGE (BEAM), WEST, WATER
W/	WITH
WAS	WASTE ACTIVATED SLUDGE
WC	WATER CLOSET
WH	WATER HEATER
WM	WATER METER
WP	WORK POINT
WS	WATER SURFACE, WATER STOP
W SH ST	WEATHERING SHEET STEEL
WSP	WELDED STEEL PIPE
WT	WEIGHT
WTR	WATER
WW	WASHWATER
WWF	WELDED WIRE FABRIC
YD	YARD

NOTES:

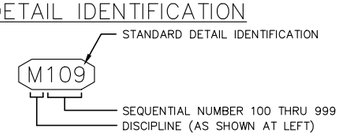
1. THIS IS A STANDARD ABBREVIATION SHEET. SOME ABBREVIATIONS THAT APPEAR ON THIS SHEET ARE NOT USED ON THIS PROJECT.

SECTION AND DETAIL IDENTIFICATION





STANDARD DETAIL IDENTIFICATION



DISCIPLINES:

C	CIVIL
M	MECHANICAL
E	ELECTRICAL
I	INSTRUMENTATION AND CONTROL
S	STRUCTURAL

NOTE:

STANDARD DETAIL IDENTIFICATIONS ARE SHOWN ON THE PLANS AND ON THE STANDARD DETAIL DRAWINGS. THERE IS NO SPECIFIC CROSS REFERENCING OF DRAWINGS. STANDARD DETAILS ARE INTENDED TO BE TYPICAL AND SHALL APPLY TO ALL SIMILAR SITUATIONS OCCURRING ON THIS PROJECT, WHETHER OR NOT THEY ARE REFERENCED TO IN EACH APPLICABLE LOCATION.

100% - ISSUED FOR BID

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COMMITMENT & INTEGRITY DRIVE RESULTS

REGISTERED PROFESSIONAL ENGINEER
MIRKO MAHER
No. 64645
Exp. 06-30-25
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
	DESIGNED BY: M MAHER	CHECKED BY: XXX
	DRAWN BY: S. JUNG	10/20/2045-1.dwg

ABBREVIATIONS AND SYMBOLS

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	---
SHEET:	2 OF 30

G-1

PIPING SCHEDULE									
ABBR.	SERVICE	DIAMETER (INCHES)	MATERIALS	CLASS, SCHEDULE, OR THICKNESS	JOINTS/FITTINGS	TEST PRESSURE/METHOD	LINING	COATING	COMMENTS
FM	FORCE MAIN								
	SUBMERGED	6	DIP	CLASS 53	FLANGED OR GROOVED END	120 PSIG/HIGH HEAD	CEMENT MORTAR	EPOXY AND POLYURETHANE COATING SYSTEM	
	UNDERGROUND	6 - 12	DIP	CLASS 51	RESTRAINED MECHANICAL JOINT OR RESTRAINED PUSH ON	121 PSIG/HIGH HEAD	CEMENT MORTAR	EPOXY AND POLYURETHANE COATING SYSTEM	
	UNDERGROUND	10 - 16	HDPE, SOLID WALL, C-906, DIPS (OD)	DR-13.5	BUTT FUSION	PER SPEC SECTION 02620	NONE	NONE	
INFL	INFLUENT (AT WWTP)								
	UNDERGROUND	20	HDPE, SOLID WALL, C-906, DIPS (OD)	DR-11	BUTT FUSION	PER SPEC SECTION 02620	NONE	NONE	FIELD VERIFY TO MATCH EXISTING SIZE AND DR.
V	VENT	1.5	HDPE, PVC	SCH 40	PRIMER + SOLVENT CEMENT	120 PSI/AIR METHOD	NONE	NONE	
	ALL	0.5 - 2	SST, TYPE 304	SCH 40S	SCREWED	121 PSI/AIR METHOD	NONE	NONE	

NOTES:

(1) A PIPE MATERIAL SPECIFICALLY DESIGNATED ON THE DRAWINGS SHALL TAKE PRECEDENCE OVER OPTIONAL MATERIALS SHOWN IN THE TABLE.
THIS SYMBOL ◆— INDICATES A PIPE MATERIAL CHANGE.

(2) REFER TO SPECIFICATION SECTION 02640 – PIPELINE TESTING AND DISINFECTION FOR HYDRAULIC TESTING REQUIREMENTS AND LEAKAGE ALLOWANCES.

(3) INSPECTION AND TESTING SHALL BE IN ACCORDANCE WITH APPLICABLE PLUMBING CODE.

CIVIL LEGEND

- B-11 — SOIL BORING
- 18 — BENCHMARK/CONTROL POINT
- PH10 — POTHOLE
- RIGHT OF WAY LINE
- 105 — CONTOUR LINE
- STREET LIGHT (SINGLE ARM)
- STREET LIGHT (DOUBLE ARM)
- STREET SIGN
- + 101.3 — SPOT ELEVATION
- SLOPE DIRECTION
- X — X — FENCE
- FLOW LINE
- EXISTING ABANDONED
- ABANDONED
- X X X X X X X X — TO BE REMOVED
- STAGING AREA
- GRAVEL
- AC PAVING (SECTION)
- CONCRETE PAVING (PLAN)
- NATIVE FILL OR GROUT IN STRUCTURES
- GRIND AND OVERLAY PAVING OR SLURRY SEAL
- GRASS OR LANDSCAPING AREA (TOP SOIL)
- EARTH
- CATCH BASIN
- E C — ELECTRICAL OR CONTROL DUCT BANK, JUNCTION BOX
- MH — MANHOLE (MH)
- REMOVAL GUARD POST C142
- 1 — PHOTO DETAIL POINT OF REFERENCE
- FUTURE (BY OTHERS)

GENERAL NOTES

1. THESE CONTRACT DOCUMENTS ARE INTENDED TO BE USED WITH THE SAUSALITO-MARIN CITY SANITARY DISTRICT STANDARD SPECIFICATIONS, EXCEPT AS MODIFIED HEREIN.
2. THE PLAN ON DRAWING C-4 FOR THIS PROJECT IS BASED ON A SURVEY AND GROUND CONTROL BY TOWILL INC. CONDUCTED FOR THE 1997 BEACH FORCE MAIN REPLACEMENT PROJECT. UNLESS NOTED OTHERWISE, THE PLAN REFLECTS THE GROUND CONDITIONS EXISTING AT THE TIME OF THE SURVEY. THE CONTRACTOR SHALL REPORT ANY DIFFERENCES TO THE ENGINEER DURING THE BIDDING PERIOD. HORIZONTAL COORDINATES ARE BASED ON HPGN PT. JPL 13 MN 1981 N=2121588.38 E=5996885.16 WITH A HORIZONTAL DATUM OF CCS83 ZONE 3. ELEVATIONS ARE REFERENCED TO NAVD00 BASED ON U.S.C. AND G.S. PT. M108 1932 ELEVATION = 11.97 NAVD88.
3. ALL NATURAL AND EXISTING GROUND ELEVATIONS ARE APPROXIMATE ONLY. CONTRACTOR SHALL FIELD VERIFY AS NEEDED PRIOR TO BID.
4. CONTRACTOR SHALL CONTACT UTILITIES WITH SERVICES IN THE AREA FOR LOCATING UNDERGROUND LINES AND CABLES, AND SHALL COORDINATE WITH THE UTILITY FOR FACILITIES AFFECTED BY THE CONSTRUCTION PRIOR TO ANY CONSTRUCTION. CONTRACTOR SHALL CONTACT UNDERGROUND SERVICES ALERT (USA).
5. THE INDICATED LOCATIONS OF EXISTING UNDERGROUND FACILITIES ARE APPROXIMATE. LIMITED POTHOLING WAS CONDUCTED DURING DESIGN AND NO GUARANTEE IS MADE THAT ALL THE EXISTING UTILITIES ARE SHOWN. CONTRACTOR SHALL EXERCISE CAUTION WHILE EXCAVATING AND SHALL PROTECT ALL EXISTING UTILITIES FROM DAMAGE, HAND DIGGING AND/OR VACUUM EXCAVATION SHALL BE USED TO EXPOSED EXISTING UTILITIES. CONTRACTOR SHALL EXPOSE AND VERIFY THE LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES WHICH MAY CONFLICT WITH THE WORK AND ALL TIE-IN LOCATIONS PRIOR TO BEGINNING CONSTRUCTION.
6. MINIMUM VERTICAL CLEARANCE BETWEEN NEW PIPING AND EXISTING UTILITIES SHALL BE 12-INCHES UNLESS OTHERWISE APPROVED. CONTRACTOR SHALL PROPERLY SUPPORT ALL EXISTING UTILITIES WHERE UTILITIES ARE CROSSED. NEW PIPE ALIGNMENT, INCLUDING ANGLE POINTS AND OTHER FITTINGS, MAY BE ADJUSTED TO MEET FIELD CONDITIONS WITH THE APPROVAL OF THE ENGINEER.
7. MINIMUM DEPTH OF COVER FOR NEW PIPING SHALL BE 3 FEET UNLESS OTHERWISE NOTED ON THE DRAWING.
8. ALL OPEN TRENCHES SHALL BE BACKFILLED PER TYP P002 AND TO MEET THE DISTRICT STANDARD SPECIFICATIONS. IF A TRENCH IS TO BE LEFT OPEN TEMPORARILY, STEEL PLATES SHALL BE USED TO COVER THE TRENCH, ANY OPEN TRENCH SHALL BE LESS THAN 10 FEET LONG AND 5 FEET WIDE.
9. DO NOT MAKE A CONNECTION BETWEEN THE NEW PIPING OR ELECTRICAL LINES TO ANY EXISTING UTILITY UNLESS IT IS SPECIFICALLY CALLED FOR ON THE DRAWINGS, OR BY THE ENGINEER IN THE FIELD. COORDINATE WITH THE OWNER PRIOR TO MAKING ANY CONNECTIONS TO EXISTING UTILITIES CALLED FOR ON THE DRAWINGS.
10. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF ALL FEDERAL, STATE, AND LOCAL CODES AND APPLICABLE PERMITS.
11. THE WORK BY THE CONTRACTOR SHALL BE RESTRICTED TO DESIGNATED LANDS OWNED BY THE OWNER, OR IDENTIFIED EASEMENTS OBTAINED FOR CONSTRUCTION OF THIS PROJECT.
12. SIDE CASTING OF EXCAVATED MATERIAL SHALL BE KEPT WITHIN THE DISTRICT RIGHT-OF-WAY. PLACEMENT AND RETRIEVAL OF SUCH MATERIAL SHALL NOT INFRINGE UPON ADJACENT LANDOWNERS OR SENSITIVE ENVIRONMENTAL AREAS. CONTRACTOR SHALL APPLY METHODS OF CONSTRUCTION THAT OPERATE WITHIN THESE CONSTRAINTS.
13. CONTRACTOR SHALL PHOTOGRAPH WORK SITE PRIOR TO PERFORMING WORK AND UPON COMPLETION AT EACH WORK LOCATION. PHOTOS AND CONTRACTOR AS-BUILT MARKUPS SHALL BE PROVIDED TO OWNER ON A MONTHLY BASIS THROUGHOUT CONSTRUCTION.
14. ALL SS BOLTING TO DUCTILE IRON FLANGES AND FITTINGS SHALL BE PROVIDED WITH INSULATED FLANGE SET.

SPECIAL NOTES

1. WORK IN OR NEAR THE BAY WILL REQUIRE COORDINATION WITH LOW TIDES AND PERMITTED WORKING HOURS. CONTRACTOR SHALL SCHEDULE WORK ACCORDINGLY AND PROVIDE NECESSARY SHORING, DEWATERING OR OTHER ITEMS REQUIREED TO COMPLETE WORK AT NO ADDITIONAL COST.

PIPING

DOUBLE LINE — SINGLE LINE

- EXISTING PIPE (FUTURE PIPE IF DESIGNATED AS FUTURE)
- EXISTING PIPE TO BE ABANDONED
- EXISTING PIPE TO BE REMOVED
- FM — EXISTING PIPE TO BE LINED
- NEW PIPE
- BUTT WELDED JOINT
- FLANGED JOINT
- GROOVED END JOINT
- HUB & SPIGOT JOINT
- FLEXIBLE COUPLING
- FLANGED COUPLING ADAPTER
- MECHANICAL JOINT
- ELASTOMER BELLOWS EXP JOINT
- ELBOW DOWN
- ELBOW UP
- TEE DOWN
- TEE UP
- LATERAL DOWN
- LATERAL UP
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- UNION
- CAP (BUTT WELDED)
- CAP (SCREWED OR SOCKET WELDED)
- ELBOW, 90 DEGREE
- CROSS
- TEE
- ELBOW, 45 DEGREE
- LATERAL
- CHANGE IN PIPE MATERIAL (COUPLING MAY VARY)
- BLIND FLANGE

PIPING DESIGNATION

12" BD — 12" BD

FLOW STREAM IDENTIFICATION LEGEND

NOMINAL PIPE SIZE

NOTE:
FLOW STREAM IDENTIFICATION LEGEND SHALL BE USED FOR PIPING SCHEDULE SELECTION. ADDITIONAL DESCRIPTION IS USED ONLY TO DESCRIBE THE PROCESS FUNCTION OF THE PIPE. ADDITIONAL DESCRIPTIONS ARE FROM THE STANDARD ABBREVIATIONS DRAWING.

YARD PIPING LEGEND

- FM — FORCEMAIN
- BO — BLOWOFF (PLAN)
- AIR RELEASE VALVE
- 12" SD — STORM DRAIN MAIN
- 8" SS — SANITARY SEWER MAIN
- 8" W — WATER MAIN
- E — ELEC CONDUIT (UNDERGROUND)
- E (O/H) — ELEC CABLES (OVERHEAD)
- T — TELECOM (POSSIBLY FIBRE OPTIC) CONDUIT
- FO — TELECOM/FIBRE OPTIC CONDUIT
- 8" GAS — GAS PIPELINE
- 18" SD?? — EXISTENCE OR SIZE OF UTILITY NOT CONFIRMED (??)
- STORM DRAIN INLET
- MANHOLE
- WATER METER
- FIRE HYDRANT
- WATER VALVE

VALVES

- GATE
- KNIFE GATE
- BALL
- GLOBE
- BUTTERFLY
- VEE BALL
- ECCENTRIC PLUG
- NEEDLE
- PLUG OR COCK
- BALL CHECK
- SWING OR SILENT CHECK
- DOUBLE DOOR CHECK
- PINCH
- DIAPHRAGM
- HOSE VALVE
- PRESSURE RELIEF
- REGULATED SIDE
- PRESSURE CONTROL
- AIR RELIEF VALVE
- AIR AND VACUUM RELIEF VALVE

MISCELLANEOUS PIPING COMPONENTS

- BALANCING DAMPER
- FLEXIBLE (ELASTOMER) PIPE CONNECTION
- WYE-STRAINER
- BASKET STRAINER
- QUICK DISCONNECT COUPLING
- HOSE RACK
- SAFETY SHOWER/EYEWASH
- CO — CLEANOUT
- HD — HUB DRAIN
- FD — FLOOR DRAIN
- F — FLUSHING CONNECTION
- FE BD-1-2 — TYPICAL INSTRUMENT BUBBLE (SEE I&C LEGEND)

GENERAL PIPING NOTES

1. SYMBOLS SHOWN HERE FOR SINGLE LINE FITTINGS ARE SHOWN WITH SOCKET TYPE ENDS. END CONNECTIONS SHALL BE PER SPECIFICATIONS.
2. THIS IS A STANDARD LEGEND SHEET. NOT ALL ITEMS SHOWN ARE USED ON THIS PROJECT.
3. SOME SYMBOLS MAY BE SHOWN DIFFERENTLY ON DRAWINGS AND LABELED ACCORDINGLY.
4. NOT ALL PIPING AND VALVES ARE SHOWN ON THE MECHANICAL DRAWINGS. SEE INSTRUMENTATION AND CONTROL DRAWINGS FOR ADDITIONAL PIPING AND VALVES.

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REGISTERED PROFESSIONAL ENGINEER
MIRKO MAHER
No. 64645
Exp. 06-30-25
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER
DRAWN BY: S. JUNG
CHECKED BY: XXX
0012002.00-G-2.dwg

PIPE SCHEDULE AND LEGENDS

SAUSALITO MARIN CITY SANITARY DISTRICT

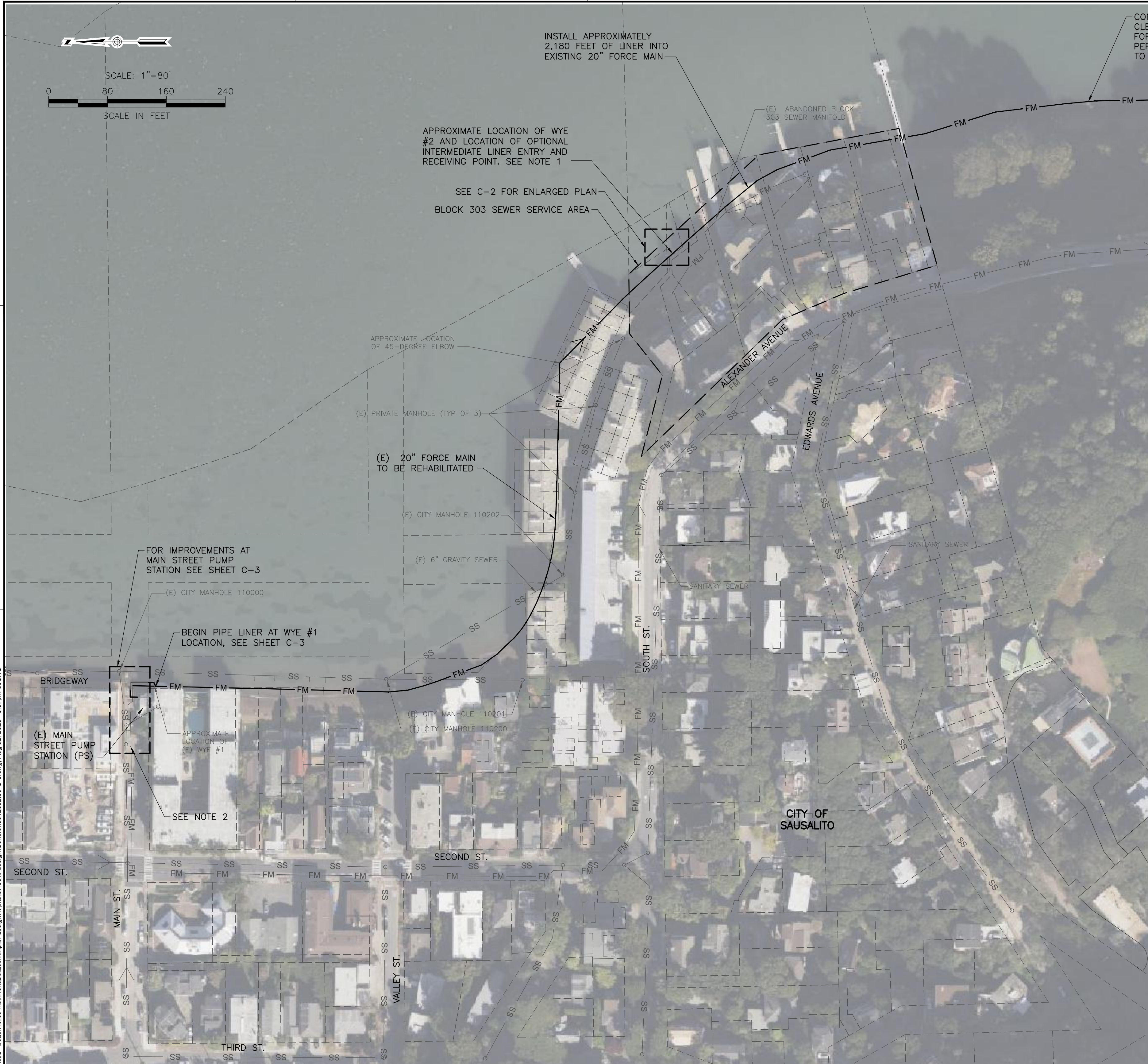
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: —
SHEET: 3 OF 30

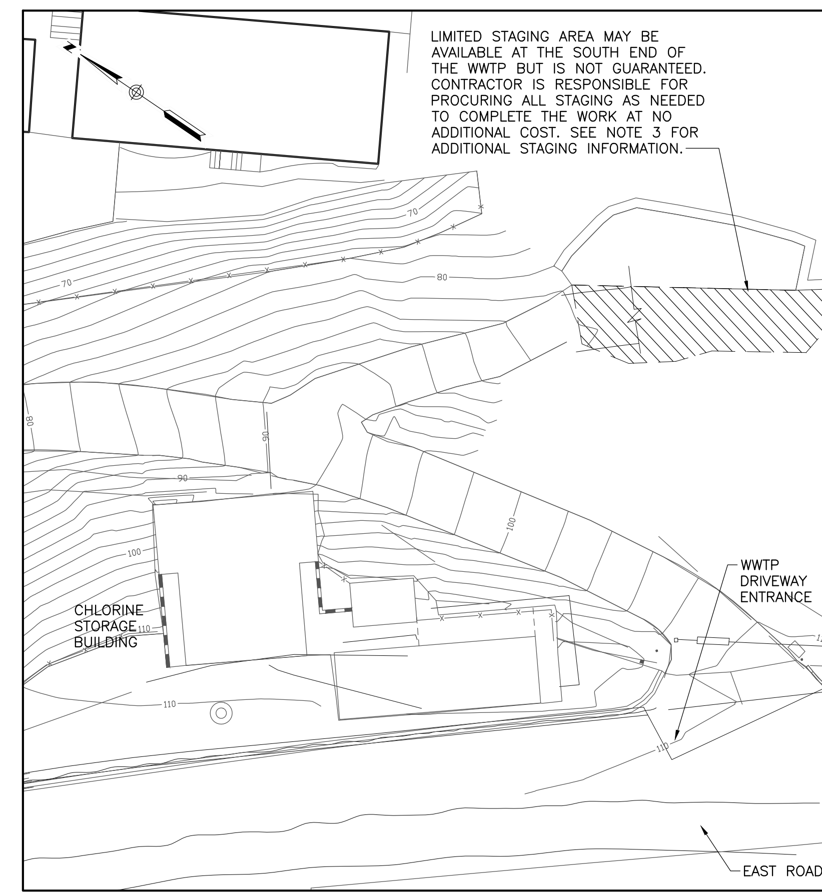
G-2

22x34 SHEET 1:2

22x34 SHEET
1:2



PLAN
1" = 80'



POTENTIAL WWTP STAGING AREA
DETAIL 1
1" = 20'

NOTES:

1. CONTRACTOR MAY UTILIZE WYE #2 LOCATION IF LINER INSTALLATION CANNOT BE ACCOMPLISHED IN A SINGLE PULL FROM PS TO WWTP. CONTRACTOR TO ACCESS VIA BOAT. THE USE OF WYE #2 IS NOT ANTICIPATED.
2. LIMITED STAGING IS AVAILABLE AT MAINS ST. PUMP STATION SITE. CONTRACTOR SHALL NOT BLOCK VAULTS OR ACCESS. STAGING SHALL BE APPROVED BY THE DISTRICT IN ADVANCE. PUBLIC ACCESS TO THE BOARDWALK AND BEACH SHALL BE MAINTAINED OUTSIDE OF WORKING HOURS.
3. STAGING AND/OR PARKING IS AVAILABLE AT THE NORTH END OF THE WWTP PLANT IN THE "TURN-AROUND" AREA. CONTRACTOR SHALL NOT BLOCK ACCESS ROAD.

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REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER | CHECKED BY: XXX
DRAWN BY: S. JUNG | 0012002.00-G-3.dwg

PROJECT OVERVIEW MAP, FORCE MAIN LINING LIMITS, STAGING AREAS AND ACCESS ROUTES

SAUSALITO MARIN CITY SANITARY DISTRICT

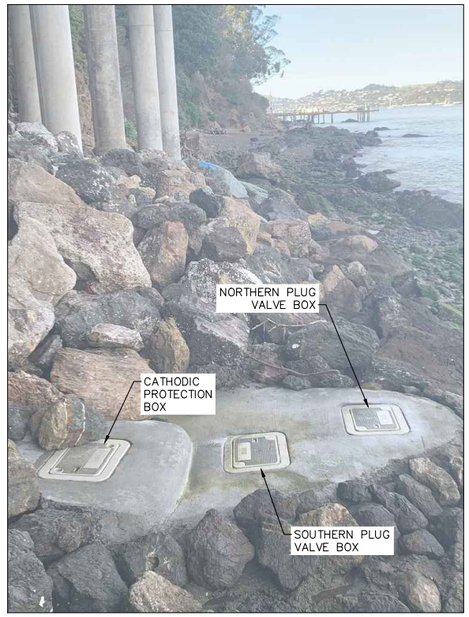
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: —
SHEET: 4 OF 30

G-3

OVERVIEW OF BEACH BELOW VIEWING AREA
PHOTO 1
NTS

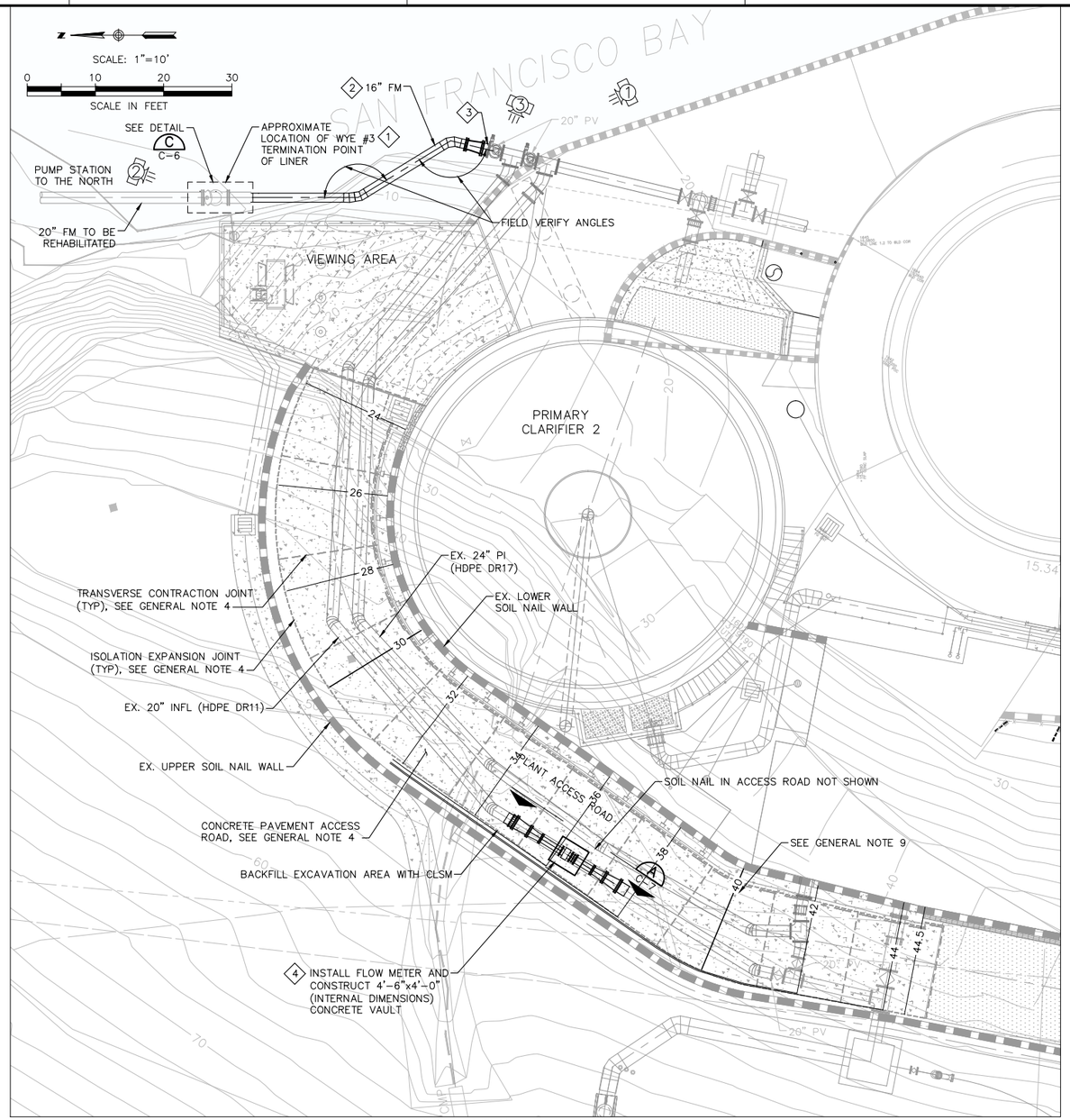
WYE #3 AT WWTP
PHOTO 2
NTS



VALVE/CATHODIC PROTECTION BOXES AT WWTP
PHOTO 3
NTS

KEY NOTES:

1. CONTRACTOR SHALL FIELD VERIFY LOCATION OF WYE #3.
2. CONSTRUCT NEW 16" HDPE DR13.5 FM. REMOVE AND REPLACE EXISTING FM SOUTH OF WYE #3 AS NEEDED TO COMPLETE CONNECTION TO WWTP. EXISTING PIPE FM IS COVERED IN RIP RAP AND ENCASED IN CLSM. REMOVE EXISTING CLSM AND REMOVE AND REPLACE RIP RAP AS NECESSARY FOR CONSTRUCTION.
3. REMOVE EXISTING 20" BF ON EXISTING 20" PV AND CONNECT NEW 16" FM (HDPE DR13.5) WITH A 16"x20" ECC REDUCER AND 20" HDPE FLANGE ADAPTOR.
4. SOIL NAILS ARE PRESENT IN VICINITY OF PROPOSED VAULT. CONTRACTOR SHALL VERIFY LOCATION OF SOIL NAILS AND FIELD LOCATE VAULT TO AVOID CONFLICT WITH SOIL NAILS. CONTRACTOR SHALL PROTECT EXISTING SOIL NAILS IN PLACE.



IMPROVEMENTS AT WWTP
ENLARGED PLAN
1" = 10'

GENERAL NOTES:

1. FIELD VERIFY ALL EXISTING STRUCTURE, PIPING, AND EQUIPMENT DIMENSIONS PRIOR TO BEGINNING WORK. SUBMIT DETAILED PIPE FABRICATION SHOP DRAWINGS FOR ENGINEER'S REVIEW THAT REFLECT FIELD VERIFIED DIMENSIONS. COORDINATE WITH PUMP MANUFACTURER.
2. NOT ALL EXISTING EQUIPMENT, PIPING, CONDUITS, ETC. ARE SHOWN. TEMPORARILY REMOVE ALL ITEM NECESSARY TO COMPLETE WORK AND REINSTALL FOLLOWING CONSTRUCTION.
3. TEMPORARILY REMOVE RIP RAP AS NEEDED TO COMPLETE WORK. REINSTALL RIP RAP AFTER COMPLETION OF WORK.
4. DEMOLISH TO NEAREST JOINT AND REPLACE EXISTING CONCRETE PAVEMENT ACCESS ROAD IN-KIND AS REQUIRED FOR CONSTRUCTION. CONCRETE PAVEMENT ACCESS ROAD CONSTRUCTED OF JOINT PLAIN CONCRETE PAVEMENT (MIN. 7" THICKNESS) PER CALTRANS STD PLAN P1 WITH 12" AGGREGATE BASE UNDER PAVEMENT. TRANSVERSE CONTRACTION JOINTS WITH DOWEL BUCKETS SPACED 10'-14' PER CALTRANS STD PLANS P1, P10, AND P15. LONGITUDINAL EXPANSION JOINTS PER CALTRANS STD PLAN P18.
5. ACCESS TO SITE SHALL BE THROUGH PLANT DRIVEWAY OR BY BOAT. FORMAL PEDESTRIAN ACCESS TO THE BEACH DOES NOT EXIST AT PLANT. THERE IS NO VEHICLE ACCESS TO THE BEACH.
6. CONTRACTOR SHALL COORDINATE WITH DISTRICT TO FIELD VERIFY LOCATION OF WYE #3.
7. POTABLE WATER IS AVAILABLE AT THE WWTP BY HOSE BIBB ONLY. OWNER CAN PROVIDE TREATED WASTEWATER TO CONTRACTOR AT THE WWTP. THE USE OF TREATED WASTEWATER WILL REQUIRE PUMPING BY THE CONTRACTOR.
8. EXISTING BEACH IS ROCKY IN THE VICINITY OF THE FORCE MAIN. IN ADDITION, THERE IS EXISTING RIP RAP ON TOP OF THE EXISTING FORCE MAIN THAT WILL NEED TO BE REMOVED PRIOR TO EXCAVATION AND REPLACED AFTER EXCAVATION, INSTALLATION OF LINER, CONNECTION PIPING, AND BACKFILL AND COMPACTION HAS BEEN COMPLETED.
9. EXISTING CAUSEWAY HAS A WEIGHT LIMITATION OF 250 PSF MAX. IN ADDITION, CAUSEWAY MAY ONLY BE BLOCKED FOR LOADING/UNLOADING FOR LIMITED TIMES WITH PRE-APPROVAL FROM THE DISTRICT.

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STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
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DRAWN BY:	S. JUNG	00'2002.00\C-1.dwg

IMPROVEMENTS AT WWTP

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	---
SHEET:	5 OF 30

C-1

(OPTIONAL) INTERMEDIATE LINER INSTALLATION ENTRY/RECEIVING PIT, NEAR BLOCK 303

DETAIL 2 — NTS — G-3

NOTES:

1. CONTRACTOR SHALL UTILIZE WYE #2 LOCATION FOR INTERMEDIATE ENTRY AND RECEIVING POINT IF REHABILITATION LINER INSTALLATION CANNOT BE ACHIEVED IN SINGLE PULL FROM MAIN STREET PS TO WWTP.
   THE USE OF WYE #2 IS NOT ANTICIPATED.
2. CONTRACTOR ACCESS TO SITE SHALL BE BY BOAT. CONTRACTOR SHALL NOT STORE EQUIPMENT ON SHORE. UTILIZE BARGE OR MAIN STREET PUMP STATION INSTEAD.
3. CONTRACTOR SHALL COORDINATE WITH DISTRICT TO FIELD VERIFY LOCATION OF WYE #2.
4. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB RESIDENTS OR THEIR PROPERTY IN THE VICINITY OF THE WORK.
5. EXISTING BEACH IS ROCKY IN THE VICINITY OF THE FORCE MAIN. IN ADDITION, THERE IS EXISTING RIP RAP ON TOP OF THE EXISTING FORCE MAIN THAT WILL NEED TO BE REMOVED PRIOR TO EXCAVATION AND REPLACED AFTER EXCAVATION, INSTALLATION OF LINER, AND BACKFILL AND COMPACTION HAS BEEN COMPLETED.

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REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER — CHECKED BY: XXX
DRAWN BY: S. JUNG — 0012002.00-C-2.dwg

OPTIONAL INTERMEDIATE LINER INSTALLATION ENTRY/RECEIVING PIT NEAR BLOCK 303

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: NTS
SHEET: 6 OF 30

C-2

22x34 SHEET 1:2

MAIN STREET PUMP STATION
DETAIL 3 / G-3
NTS

NOTES:

1. ACCESS TO LINER ENTRY PIT SHALL BE VIA MAIN STREET OR BY BOAT. PEDESTRIAN ACCESS TO BEACH SHALL BE MAINTAINED DURING CONSTRUCTION.
2. CONTRACTOR SHALL TAKE CARE NOT TO DISTURB RESIDENTS OR THEIR PROPERTY IN THE VICINITY OF THE WORK. SEE SPECIFICATION FOR WORK HOURS AND NOISE LIMITS.
3. THE EXISTING SEWERS IN THIS AREA HAVE BEEN SCREENED FOR CLARITY.
4. LIMITED STAGING IS AVAILABLE AT MAIN ST. CONTRACTOR SHALL NOT BLOCK VAULTS OR ACCESS. CONTRACTOR IS RESPONSIBLE FOR SECURING THEIR OWN STAGING AT NO ADDITIONAL COST TO OWNER. PUBLIC ACCESS TO THE BOARDWALK AND BEACH SHALL BE MAINTAINED.
5. PUBLIC ACCESS TO THE BEACH SHALL BE MAINTAINED AT ALL TIMES. ALL WORK AREAS SHALL BE FENCED, PLATED OR OTHERWISE PROTECTED TO ENSURE PUBLIC SAFETY.

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STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

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IMPROVEMENTS AT PUMP STATION

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: NTS
SHEET: 7 OF 30

C-3

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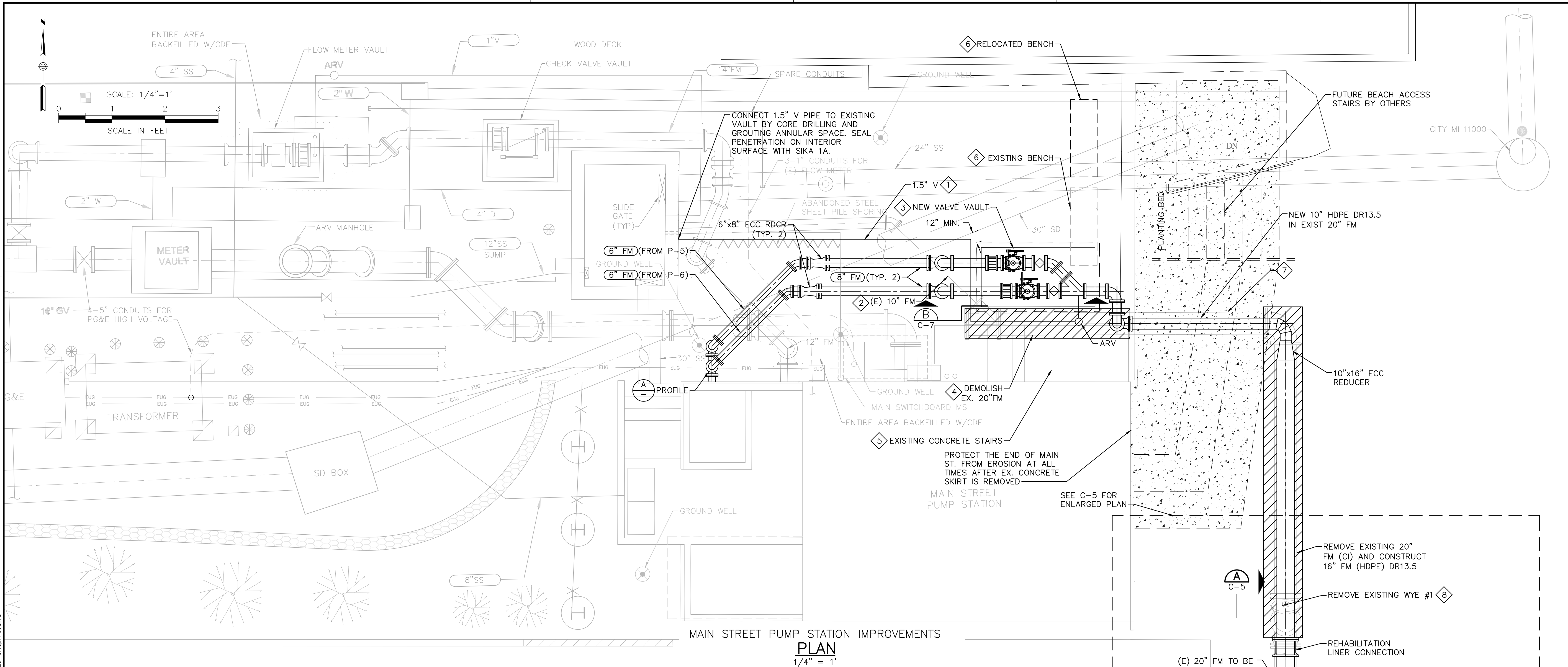
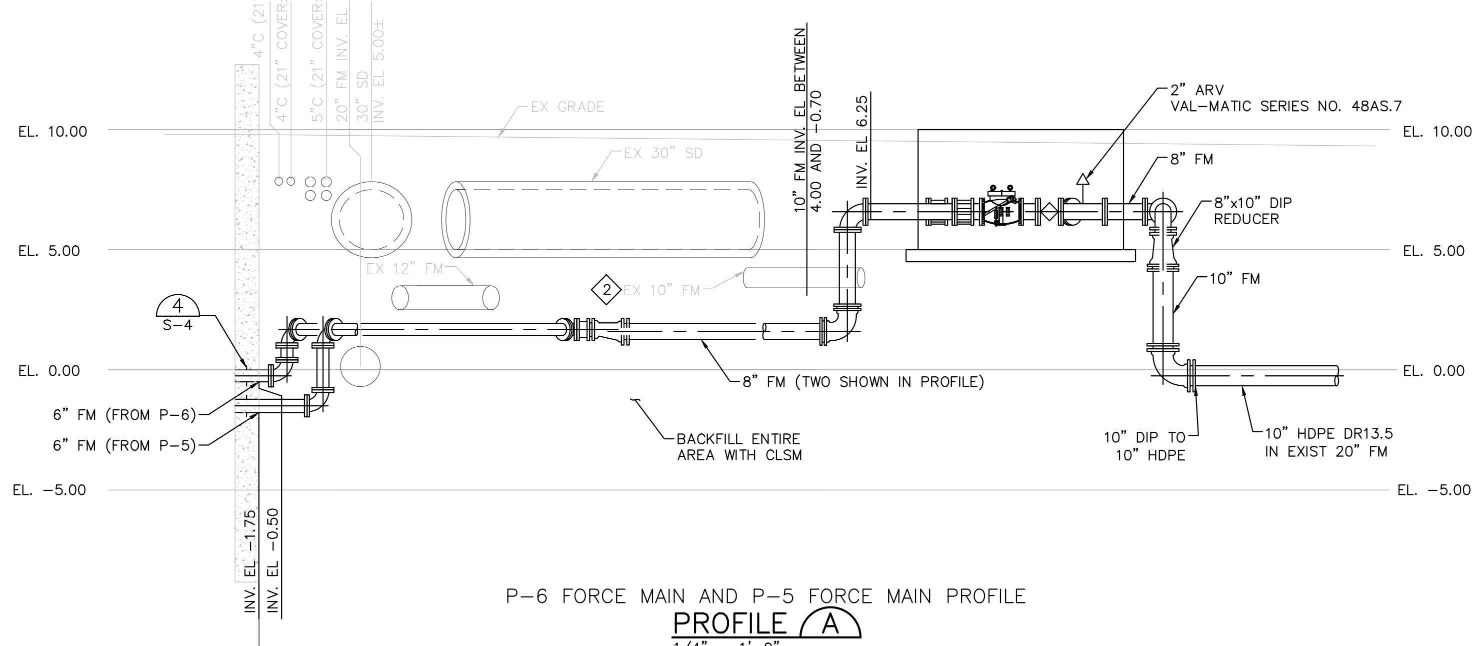


MAIN STREET PUMP STATION IMPROVEMENTS

PLAN

1/4" = 1'



P-6 FORCE MAIN AND P-5 FORCE MAIN PROFILE

PROFILE A

1/4" = 1'-0"

KEY NOTES:

1. ROUTE 1.5" VENT FROM VALVE VAULT TO ROCK CATCHER. PROVIDE MIN 2'-0" COVER.
2. DEMOLISH EX. 10" FM AS REQUIRED TO INSTALL NEW PIPING. PLUG CUT ENDS OF FM WITH BRICK AND MORTAR PLUG WITH A MINIMUM LENGTH OF ONE FOOT.
3. INSTALL NEW PRECAST VALVE VAULT PER SECTION B ON C-7.
4. DEMOLISH EXISTING 20" FM (CI), 20"x10" REDUCING WYE, AND 10" FM AS-NEEDED TO CONSTRUCT NEW 8" FM AND VALVE VAULT.
5. CONTRACTOR SHALL DEMOLISH EXISTING CONCRETE STAIRS FOR CONSTRUCTION OF PIPING AND VALVE VAULT. STAIRS SHALL BE REPLACED IN-KIND.
6. CONTRACTOR SHALL TEMPORARILY REMOVE AND STORE EXISTING BENCH DURING CONSTRUCTION. BENCH SHALL BE REINSTALLED AT LOCATION SHOWN ON PLANS AFTER CONSTRUCTION IS COMPLETE. BENCH SHALL BE MOUNTED ON 4 REINFORCED CONCRETE PADS WITH 316 SS ANCHORS. BENCH MAY BE STORED AT THE SMCSD TREATMENT PLANT.
7. INSTALL 10" HDPE FM THROUGH ±11LF SEGMENT OF EX. 20" FM. 20" FM SEGMENT SHALL BE CLEANED TO REMOVE DEPOSITS PER SPECIFICATIONS PRIOR TO INSTALL.
8. CLEAN & INSPECT BEACH FORCE MAIN VIA WYE #1 PRIOR TO REMOVAL.

GENERAL NOTES:

1. SEE DWG G-02 FOR GENERAL NOTES.
2. REPLACE ASPHALT PAVING DAMAGED DURING CONSTRUCTION WITH 4" OR EXISTING THICKNESS (WHICH EVER IS GREATEST) OVER 12" AB SECTION. RESTORE DRAINAGE PATHS TO MATCH EXISTING. PAVEMENT TIE-IN PER DETAIL C109 ON DWG C-8.
3. INDICATED LOCATION OF UNDERGROUND FACILITIES IS APPROXIMATE. PRIOR TO CONSTRUCTION OF ANY NEW PIPELINE OR DUCTBANK, EXPOSE AND VERIFY LOCATIONS, ELEVATIONS AND MATERIAL OF EXISTING UTILITIES SHOWN ON THE DRAWINGS CROSSING THE ALIGNMENT AND ANY TIE-IN POINTS. SURVEY AND ACCURATELY RECORD LOCATION, ELEVATIONS AND MATERIALS OF THE EXISTING UTILITIES ON THE RECORD DRAWINGS.

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REV	DESCRIPTION	DATE

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PUMP STATION YARD PIPING PLAN AND PROFILE

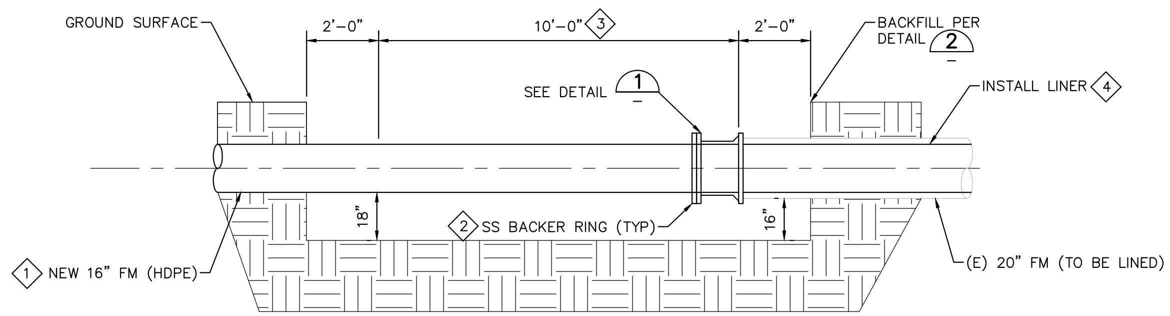
SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	1/4"=1'-0"
SHEET:	8 OF 30

C-4

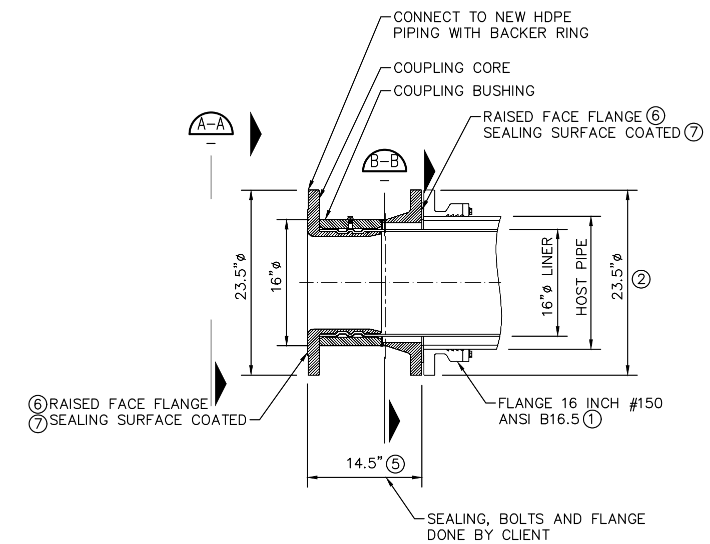
22x34 SHEET 1:2

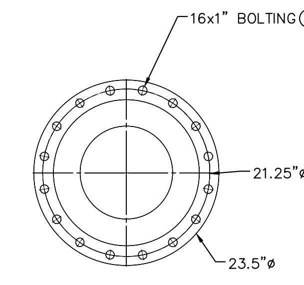


LINER ENTRY PIT
SECTION A
3/8" = 1'-0" C-4

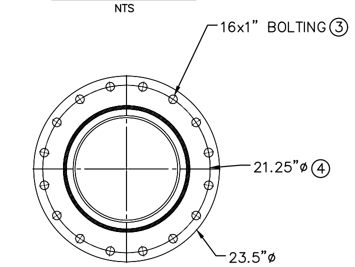
KEY NOTES:

1. REMOVE PORTIONS OF EXISTING 20" DI FM AND WYES AS SHOWN ON PLAN VIEW C-4. INSTALL NEW 16" HDPE DR13.5 FM.
2. CONNECT NEW HDPE PIPE TO LINER SYSTEM. CONNECT HDPE PIPE TO FLANGE WITH SS BACKER RING. ALL SS BOLTING TO DUCTILE IRON FLANGES AND FITTINGS SHALL BE PROVIDED WITH INSULATED FLANGE SET.
3. BACKFILL EXCAVATION IN ACCORDANCE WITH TRENCH SECTION SHOWN ON DETAIL 2, SHEET C-5.
4. INSTALL 16" LINER SYSTEM IN EXISTING 20" DI FORCEMAIN FROM PUMP STATION CONNECTION TO WWTP AT LIMITS SHOWN ON THE PLANS IN ACCORDANCE WITH SPECIFICATION SECTION 02900.





CORE BOLTS
SECTION A–A
NTS



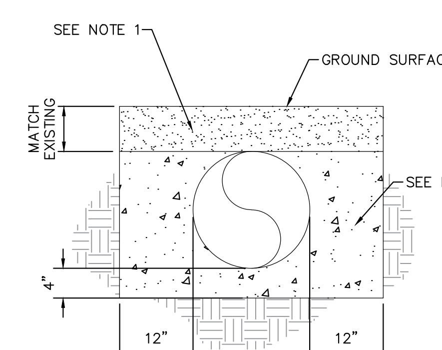
BUSHING BOLTS
SECTION B–B
NTS

NOTES:

1. FLANGE 16-INCH #150 ACCORDING ANSI B16.5
2. OUTER DIAMETER (CONTRACTOR TO VERIFY)
3. BOLTS
4. BOLT CIRCLE DIAMETER
5. INSTALLATION LENGTH
6. SEALING SURFACE (RAISED FACE)
7. SEALING SURFACE COATED
8. WELDING PROCEDURE

WPQR DIN EN ISO 15614-1/15613
CERTIFICATE WELDING COMPANY ISO 3834-2
WPQ ISO 9606-1N
NDT: VISUAL TEST EN ISO 17637
WP: ISO 4063 135/141
(WP) WELDING PROCESS
(WPQR) WELDING PROCEDURE QUALIFICATION RECORD
(WPQ) WELDER PERFORMANCE QUALIFICATION
NDT: NON-DESTRUCTIVE TESTING

REHABILITATION LINER CONNECTION
DETAIL 1
NTS



NOTES:

1. BACKFILL NATIVE BEACH SAND TO 85% RELATIVE COMPACTION.
2. BACKFILL WITH CLSM OR CONCRETE SLURRY WITH A MIX DESIGN TESTED TO ACHIEVE 150-PSI.
3. ANCHOR PIPE AS NEEDED TO PREVENT FLOATATION.

PIPE BACKFILL FOR LINER INSTALLATION EXCAVATIONS
BETWEEN THE MAIN STREET PUMP STATION AND THE WWTP
DETAIL 2
NTS

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22x34 SHEET
1:2

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REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER
CHECKED BY: XXX
DRAWN BY: S. JUNG
0012002.00-C-4.dwg

FORCE MAIN LINING DETAILS - 1

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

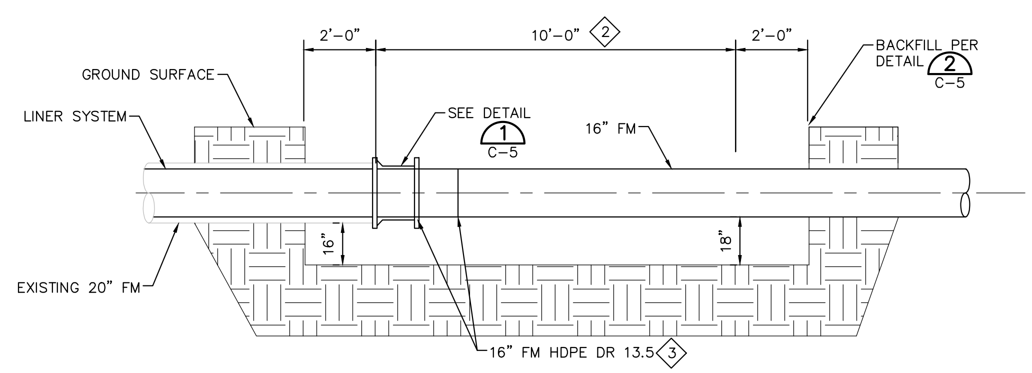
JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: ---
SHEET: 9 OF 30

C-5

22x34 SHEET
1:2

KEY NOTES:

1. Not Used
2. REMOVE EXISTING SINGLE WYE AND GATE VALVE, AND PORTIONS OF EXISTING 20–INCH PIPING TO PROVIDE 10' CLEARANCE FOR LINER INSTALLATION. CONSTRUCT NEW 16–INCH HDPE FORCE MAIN FROM LINER SYSTEM TO VALVE CONNECTION AT WWTP.
3. CONNECT NEW HDPE PIPE LINER SYSTEM. CONNECT HDPE PIPE TO FLANGE WITH FUSION COUPLING AND SS BACKER RING. ALL SS BOLTING TO DUCTILE IRON FLANGES AND FITTINGS SHALL BE PROVIDED WITH INSULATED FLANGE SET.



WYE #3 LINER ENTRY/RECEIVING PIT
DETAIL C C–1
3/8" = 1'–0"

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REGISTERED PROFESSIONAL ENGINEER MIRKO MAHER No. 64645 Exp. 06-30-25 CIVIL STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: M. MAHER CHECKED BY: XXX
DRAWN BY: S. JUNG 0012002.00-C-6.dwg

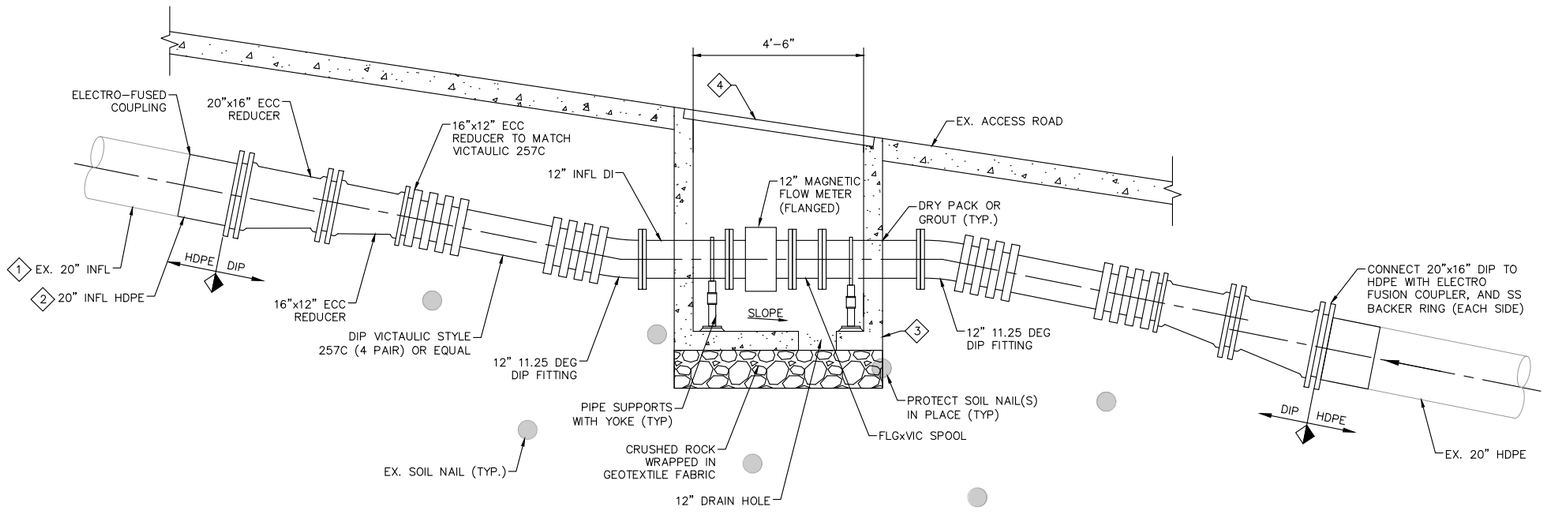
FORCE MAIN LINING DETAILS - 2

SAUSALITO MARIN CITY SANITARY DISTRICT

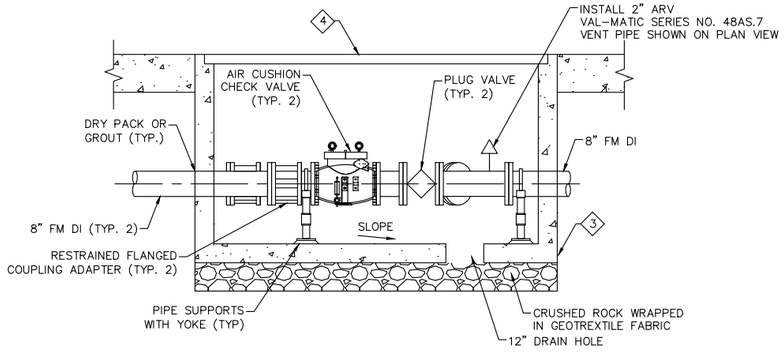
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: 3/8"=1'-0"
SHEET: 10 OF 30

C-6



SECTION A
1/2" = 1'-0" C-1



SECTION B
1/2" = 1'-0" C-4

GENERAL NOTES:

1. SEE DRAWING G-2 FOR GENERAL NOTES.
2. LOCATIONS OF EXISTING SOIL NAILS ARE APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY SOIL NAIL LOCATIONS AND LOCATE VAULT BETWEEN ADJACENT SOIL NAILS. PROTECT SOIL NAILS IN PLACE. CONTRACTOR SHALL USE CAUTION WHEN EXPOSING EXISTING SOIL NAILS. ANY DAMAGE TO EXISTING RETAINING WALL SOIL NAILS SHALL BE FIXED AT THE CONTRACTORS EXPENSE.

KEY NOTES:

1. CUT AND DISPOSE OF EXISTING PIPE AS NEEDED FOR NEW PIPE CONNECTOR SEGMENT.
2. DR 11 (MATCH EXISTING DR, FIELD VERIFY) FUSED PLAIN END X FLANGED END CONNECTOR PIECE. CONNECT HDPE TO DIP WITH FLANGED BACKER RING.
3. PRE-CAST CONCRETE VAULT.
4. PRECAST UTILITY BOX, H-20 TRAFFIC RATED, 1 PIECE HINGED, TORSION, GALVANIZED STEEL CHECKER PLATE, WATER TIGHT COVER. ADD EXTENSIONS TO MATCH PIPE ELEVATIONS WITH CUSTOM BLOCK OUTS TO ACCOMMODATE PIPE DIAMETER. COAT COVER IN FIELD WITH HIGH SOLIDS EPOXY AND POLYURETHANE COATING PER SECTION 09960. COLOR SHALL BE GRAY TO MATCH OTHER HATCHES ON SITE. USE GRIT ADDITIVE FOR NON-SLIP SURFACE.

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REV	DESCRIPTION	DATE
DESIGNED BY:	M. MAHER	
DRAWN BY:	S. JUNG	
CHECKED BY:	XXX	
00120020C7.dwg		

DETAILS

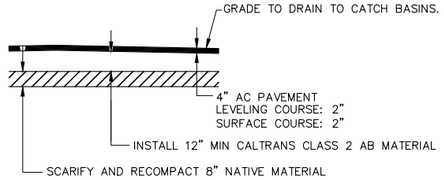
SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	00120020.00
DATE:	AUGUST 2023
SCALE:	1/2"=1'-0"
SHEET:	11 OF 30

C-7

100% - ISSUED FOR BID

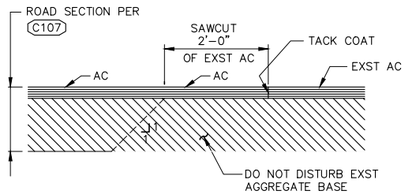


NOTES:

1. EXISTING GRADES SHALL BE CUT OR FILLED AS REQUIRED.
2. EXISTING PAVED AREAS SHALL BE SAW CUT AND PAVEMENT AND UNSUITABLE MATERIAL SHALL BE REMOVED.

TYPICAL PAVED AREA C107

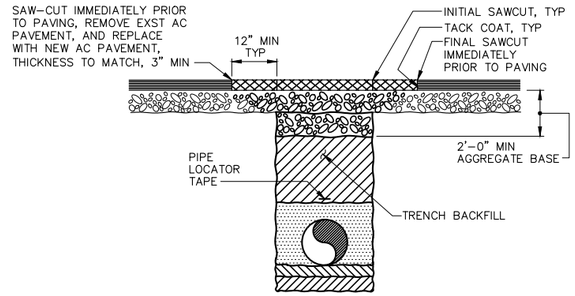
NTS



ELEVATION

NEW/ EXST AC ROAD TRANSITION C109

NTS



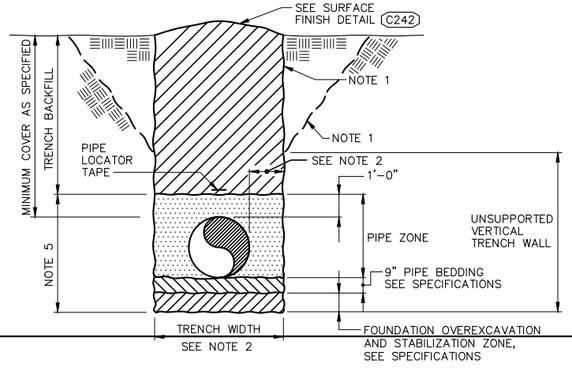
EXISTING AC PAVEMENT

NOTES:

1. VERTICAL WALL TRENCH IS SHOWN. COMBINED SLOPING AND VERTICAL WALL TRENCH IS SIMILAR. ADJUST SURFACE WIDTHS AND SAW-CUT LINES FROM EDGE OF SLOPING WALLS.
2. SEE SPECIFICATIONS FOR BACKFILL MATERIAL AND COMPACTION REQUIREMENTS.
3. PIPE LOCATOR TAPE OR TRACING WIRE SHALL BE BROUGHT TO SURFACE AT STRUCTURE CONNECTIONS. PRECAST CONCRETE HANDHOLE SHALL BE PROVIDED TO TERMINATE LOCATOR TAPE OR TRACING WIRE.

TRENCH SURFACE FINISH C242

NTS

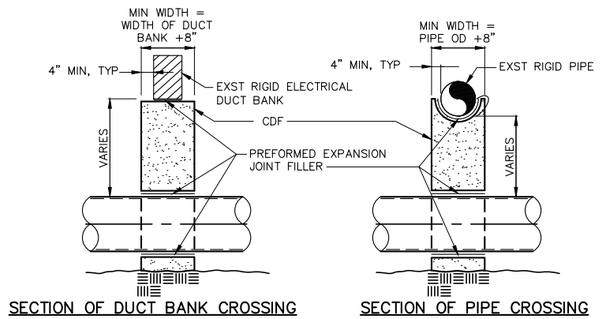


NOTES:

1. ALTERNATE TRENCH SECTIONS SHOWN ARE FOR USE WHERE COMPACT, STABLE SOIL CONDITIONS EXIST. WHERE LARGE ROCKS OR STRUCTURES ARE ENCOUNTERED, TRENCH SECTIONS MAY BE DEEPER AND WIDER THAN THOSE SHOWN. COMBINATION OF SLOPING AND VERTICAL TRENCH WALLS:
   a. TRENCH DEPTHS NOT EXCEEDING 5'-0" SHALL HAVE VERTICAL WALLS IN PIPE ZONE UNLESS NOTED OTHERWISE.
   b. FOR TRENCH DEPTHS EXCEEDING 5'-0" SEE SPECIFICATION 2200.
2. TRENCH WIDTH SHALL BE A MINIMUM OF THE PIPE OD PLUS 24". THE MAXIMUM SHALL BE THE PIPE OD PLUS 36".
3. WHERE WET AND UNSTABLE SOIL IS ENCOUNTERED, SOLID SHEATHING IS REQUIRED FOR ALL VERTICAL TRENCH WALLS.
4. SEE SPECIFICATION 02200 FOR BACKFILL REQUIREMENTS.
5. PIPE ZONE BACKFILL SHALL BE CLSM AT AREAS IDENTIFIED IN PLANS.

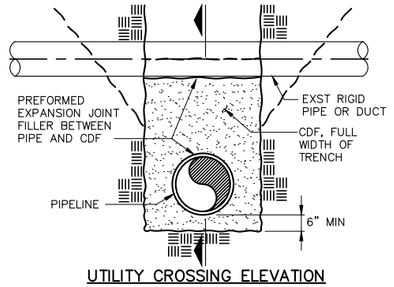
PIPE TRENCH SECTION C240

NTS



SECTION OF DUCT BANK CROSSING

SECTION OF PIPE CROSSING



UTILITY CROSSING ELEVATION

NOTES:

1. SUBMIT SHOP DRAWING ON EXPANSION JOINT FILLER MATERIAL.
2. BACKFILL TO BE BROUGHT UP UNIFORMLY ON BOTH SIDES OF UTILITY SUPPORT.
3. EXISTING PIPE OR DUCT SHALL BE FIRMLY SUPPORTED DURING INSTALLATION OF NEW PIPE AND UTILITY SUPPORT.
4. FORM THE SIDES OF UTILITY SUPPORT WHICH CROSS TRENCH.
5. RIGID PIPE SHALL BE DEFINED AS CONCRETE PIPE OR OTHER RIGID MATERIAL.

UNDERGROUND UTILITY SUPPORT DETAILS C248

NTS

101 Montgomery Street, Suite 1850
San Francisco, California 94104
415.321.3400 | www.woodardcurran.com

Woodard & Curran COMMITMENT & INTEGRITY DRIVE RESULTS

REGISTERED PROFESSIONAL ENGINEER
MIKO MAHER
No. 64845
Exp. 06-30-25
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	M. MAHER	CHECKED BY: XXX
DRAWN BY:	S. JUNG	07/20/20xx CA-8.dwg

STANDARD DETAILS

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	00122002.00
DATE:	AUGUST 2023
SCALE:	NTS
SHEET:	12 OF 30

C-8

100% - ISSUED FOR BID

STRUCTURAL GENERAL NOTES

A. GENERAL STRUCTURAL NOTES:

1. DESIGN IS IN ACCORDANCE WITH THE 2022 CALIFORNIA BUILDING CODE (CBC 2022); AMERICAN CONCRETE INSTITUTE (ACI) 318–19; AMERICAN SOCIETY OF CIVIL ENGINEERS (ASCE) 7–16; AND AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) STEEL CONSTRUCTION 15th ED.
2. THESE NOTES SHALL APPLY TO ALL WORK, EXCEPT AS NOTED OTHERWISE.
3. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE DRAWINGS AND SPECIFICATIONS OF ALL DISCIPLINES WHICH SHALL BE REFERRED TO FOR SIZES AND LOCATIONS OF ALL OPENINGS, PENETRATIONS, DRAINS, PADS, CONDUIT, EQUIPMENT, AND PIPE SUPPORTS, ETC.
4. PLANS AND ELEVATIONS ARE BASED ON RECORD DRAWINGS TITLED "SAUSALITO–MARIN CITY SANITARY DISTRICT; MAIN STREET PUMP STATION REHABILITATION PROJECT – JOB NO. 8231B.10" BY CAROLLO, DATED MARCH 2013.

B. DESIGN LOADS AND BUILDING CODES:

1. BASIC DESIGN PARAMETERS

PROJECT LOCATION	MAIN STREET PUMP STATION SAUSALITO, CA LAT 37.848896° LONG –122.479949°
GENERAL ELEVATION	21 ft
RISK CATEGORY	IV
TERRAIN CATEGORY	C

2. DEAD LOADS:
ACTUAL
3. LIVE LOADS:

INDUSTRIAL	250 PSF

4. WIND LOADS – FOR ELECTRICAL CABINET:

DESIGN WIND SPEED, V	102 MPH
EXPOSURE CATEGORY	C
DIRECTIONALITY FACTOR, Kd	0.85
EXPOSURE COEFFICIENT, Kz	0.85
TOPOGRAPHIC FACTOR, Kzt	1.0

5. SEISMIC LOAD – FOR ELECTRICAL CABINET:

SHORT SPECTRAL RESP ACC, Ss	1.50
1–SEC SPECTRAL RESP ACC, S1	0.60
SITE CLASS	D (ASSUMED)
SEISMIC IMPORTANCE FACTOR, Ie	1.50
SPECTRAL RESP COEF, Sds	1.20
SPECTRAL RESP COEF, Sd1	1.02
SEISMIC DESIGN CATEGORY, SDC	D (AS PER ASCE SEC 11.4.8)

C. GENERAL REINFORCED CONCRETE REQUIREMENTS:

1. PROVIDE 4,500 PSI COMPRESSIVE STRENGTH AT 28 DAYS; 3/4" NOMINAL MAXIMUM AGGREGATE SIZE; AIR CONTENT 6% ± 1.5%; W/C RATIO 0.45 MAXIMUM; SLUMP 3" TO 5" MAXIMUM W/ NO REDUCER, 6" MAXIMUM W/ MID–RANGE WATER REDUCER, OR 8" MAXIMUM W/ HIGH–RANGE WATER REDUCER AFTER ALL WATER HAS BEEN ADDED. SUBMIT TEST RESULTS TO THE ENGINEER.
2. PRIOR TO ORDERING A CONCRETE MIX, SUBMIT A CONCRETE MIX DESIGN TO BE REVIEWED AND APPROVED BY THE ENGINEER. MIX DESIGN SHALL INCLUDE TARGET COMPRESSIVE STRENGTH, TARGET SLUMP, TARGET AIR CONTENT, SIEVE ANALYSIS, WATER REDUCER PRODUCTS (MEETING ASTM C494), AIR ADMIXTURE PRODUCTS (MEETING ASTM C260), AND A CEMENT MILL REPORT NOT OLDER THAN 90 DAYS. CEMENT SHALL BE PER ASTM C150, TYPE II AND SHALL CONTAIN LESS THAN 0.60% EQUIVALENT ALKALIS. IF THE CEMENT CONTAINS 0.60% OR GREATER EQUIVALENT ALKALIS, PROVIDE AGGREGATE ALKALI REACTIVITY TESTING PER ASTM C1260, C1293, OR C1567.
3. ALL DESIGN IN ACCORDANCE WITH ACI 318–19 CONCRETE BUILDING CODE. ALL CONCRETE SHALL BE PROVIDED, PLACED, AND MOIST CURED (MIN 7 DAYS) AS PER ALL APPLICABLE SECTIONS OF ACI, AS APPROVED BY THE ENGINEER.
4. REINFORCEMENT: ASTM A615 GRADE 60 – ALL SPLICES CLASS B (UNO). REINFORCEMENT SHALL BE DETAILED, FABRICATED, AND PLACED AS PER ACI 315 DETAILING MANUAL.
5. CONCRETE SHALL BE TESTED PER SPECIFICATION 03390.
6. GROUT: PROVIDE MINIMUM 3/4" THICK NON–SHRINK NON–METALLIC CONFORMING TO ASTM C1107 CLASS C GROUT BELOW SUPPORT/EQUIPMENT BASE PLATES, SKID, ETC. GROUT PAD SHALL BE PLACED BELOW ENTIRE PLATE/SKID FOR ALL EQUIPMENT. MINIMUM WIDTH OF GROUT PADS SHALL BE THE WIDTH OF THE PLATE/SKID CHANNELS THAT WILL BARE ON THE GROUT PADS. SLOPE THE GROUT PADS DOWN TO THE CONCRETE PAD AT A 1H:1V SLOPE.
7. CONCRETE CURING/SEALING COMPOUND: PROVIDE THE FOLLOWING FOR HORIZONTAL AND VERTICAL EXPOSED TO VIEW CONCRETE SURFACES OF THE SLAB: CLEAR EPOXY COATING EQUAL TO "CERTI–VEX GUARD CLEAR" BY VEXCON CHEMICALS, A ONE–STEP CURE AND PENETRATING WATER REPELLENT SEALER MEETING ASTM C1315, TYPE 1, CLASS B, NCHRP–244. APPLY (2) COATS IN STRICT ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. PRIOR TO APPLICATION, SUBMIT PRODUCT TO BE USED TO THE ENGINEER FOR APPROVAL.
8. EPOXY–BONDING COMPOUND: PROVIDE CONFORMING TO ASTM C881, CONTAIN 100 PERCENT SOLIDS, AND BE MOISTURE TOLERANT. SIKADUR 32 HI–MOD OR SIKADUR 32 HI–MOD LPL, BY SIKA CORPORATION; SURE–BOND (J–58, OR J–58 LPL), BY DAYTON SUPERIOR; OR APPROVED EQUAL SHALL BE PROVIDED.
9. SURFACE FINISH: PROVIDE CONCRETE SURFACE FINISH PER SPECIFICATION 03390.

D. CONCRETE ANCHORS

1. POST INSTALLED – MECHANICAL ANCHOR: 316 SS HILTI KWIK BOLT TZ, SIMPSON STRONG TIE STRONG BOLT 2, OR APPROVED EQUAL
2. POST–INSTALLED ANCHORS: EXPANSIONS BOLTS ARE PERMITTED WHERE SPECIFICALLY INDICATED ON DRAWINGS AND IN COMPLIANCE WITH PROJECT SPECIFICATION.

E. STRUCTURAL STEEL:

1. STEEL SHALL COMPLY WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION AISC 360–16 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC 303–16 CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES AND THE 15TH EDITION OF STEEL CONSTRUCTION MANUAL. ALL STEEL MEMBERS, BOLTS, AND CONNECTIONS SHALL BE DESIGNED TO LOAD AND RESISTANCE FACTOR DESIGN (LRFD).
2. STRUCTURAL STAINLESS STEEL
   2.1. STEEL SHALL BE NEW 316 STAINLESS STEEL AND SHALL CONFORM TO ASTM A276 FOR ALL ROLLED WIDE FLANGE SHAPE, OTHER ROLLED SHAPES, AND PLATE.
3. CONNECTIONS: SNUG–TIGHT AND CAPACITY ASSUMING TYPE (N) WITH THREADS INCLUDED IN THE SHEAR PLANE.
4. ALL ASSEMBLY, TIGHTENING AND INSPECTION FOR HIGH–STRENGTH BOLTING SHALL BE IN ACCORDANCE WITH THE AISC SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM F593G BOLTS.
5. WELDS: ELECTRODES FOR ALL FIELD AND SHOP WELDING SHALL CONFORM TO AWS E70 SERIES LOW HYDROGEN. ALL STAINLESS STEEL WELDING SHALL BE PERFORMED PER AWS D1.6 – LATEST EDITION, AND SHALL BE PASSIVATED, EITHER BY NITRIC ACID FOR SHOP WELDS, OR BY CITRIC ACID FOR FIELD WELDING. ALL WELDERS SHALL BE AWS–CERTIFIED. WELDING SHALL ALSO COMPLY WITH LOCAL LAWS AND ORDINANCES. WHERE THERE MAY BE CONFLICTING REQUIREMENTS, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
6. TEMPORARY BRACING IS THE RESPONSIBILITY OF THE CONTRACTOR.
7. FIELD CUTTING OR DRILLING IN STRUCTURAL MEMBERS IS PROHIBITED, UNLESS PREVIOUSLY APPROVED BY THE STRUCTURAL ENGINEER OF RECORD.

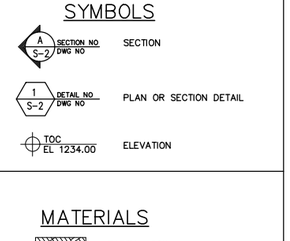
F. ALUMINUM HATCH COVERS

1. MANUFACTURERS: BILCO COMPANY, HALLIDAY PRODUCTS, INC., BABCOCK–DAVIS, OR EQUAL.
2. STYLES, TYPES AND SIZES: PER DRAWINGS, AND OF SINGLE MANUFACTURER. SIZES INDICATED ON DRAWINGS IS THE REQUIRED CLEAR OPENING. CONTRACTOR SHALL BOX–OUT OPENINGS PER MANUFACTURER INSTRUCTIONS TO ACCOUNT FOR HATCH FRAME THICKNESS.
3. DOUBLE LEAF HATCH:
   3.1. HATCH SHALL BE SIMILAR TO BILCO "JD–AL DOUBLE LEAF ACCESS DOOR" OR EQUAL.
   3.2. DOOR LEAF: 1/4–INCH THICK ALUMINUM DIAMOND PATTERN PLATE REINFORCED WITH ALUMINUM STIFFENERS, CAPABLE OF WITHSTANDING LIVE LOAD OF 300 POUNDS PER SQUARE FOOT.
   3.3. PROVIDE AUTOMATIC HOLD–OPEN ARM AT 90–DEGREE OPEN POSITION.
   3.4. EQUIP WITH SLAM LOCK AND REMOVABLE HANDLE.
   3.5. CHANNEL FRAME: 1/4–INCH THICK EXTRUDED ALUMINUM WITH RECESSED ANCHORS AND BUILT–IN NEOPRENE CUSHION ALL AROUND.
   3.6. HARDWARE: STAINLESS STEEL WITH FACTORY MILL FINISH.
   3.7. BITUMINOUS COATING APPLIED TO AREAS TO BE EMBEDDED IN CONCRETE.
   3.8. COVER SHALL AUTOMATICALLY LOCK IN THE OPEN POSITION WITH A RIGID HOLD OPEN ARM EQUIPPED WITH A 1"DIAMETER RED VINYL GRIP HANDLE TO PERMIT EASY RELEASE FOR CLOSING.
   3.9. COMPRESSION SPRING TUBES SHALL BE AN ANTI–CORROSIVE COMPOSITE MATERIAL AND ALL OTHER HARDWARE SHALL BE 316 STAINLESS STEEL.
   3.10. COVER HARDWARE SHALL BE BOLTED INTO HEAVY GAUGE CHANNEL REINFORCING WELDED TO THE UNDERSIDE OF THE COVER AND CONCEALED WITHIN THE INSULATION SPACE.
   3.11. FINISHES: FACTORY FINISH SHALL BE MILL FINISH ALUMINUM.
4. FALL PROTECTION:
   4.1. EQUIP HATCH COVERS WITH FALL PROTECTION GRATING SYSTEM OF FIBERGLASS OR ALUMINUM CONSTRUCTION AND 316 STAINLESS STEEL HARDWARE, WITH LIVE LOAD CAPACITY OF 300 PSF.
   4.2. SAFETY COLOR: ORANGE OR YELLOW
   4.3. PROVIDE WITH SPRING–LOADED LIFTING HANDLE AND ALUMINUM OR STAINLESS STEEL HOLD OPEN ARM AND RELEASE HANDLE, AND AUTOMATIC LOCK AT 90–DEGREE OPEN POSITION.
   4.4. PROVIDE CAPABILITY FOR LOCKING WITH PADLOCK IN THE CLOSED POSITION

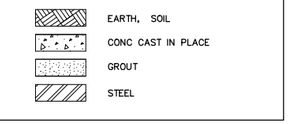
G. EXISTING CONDITIONS:

1. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND LAYOUT BEFORE BIDDING AND CONSTRUCTION. WHERE ELEVATIONS OF EXISTING STRUCTURES ARE GIVEN, CONTRACTOR SHALL FIELD VERIFY THOSE RECORD DRAWING ELEVATIONS BEFORE CONSTRUCTION. IF EXISTING CONDITIONS DIFFER FROM THAT SHOWN ON THE ATTACHED DRAWINGS, NOTIFY ENGINEER BEFORE PROCEEDING WITH THE WORK.
2. FIELD VERIFY LOCATION OF ALL UTILITIES. UTILITY RELOCATION AND/OR REROUTING MAY BE REQUIRED. LOCATIONS OF ALL UTILITIES ARE NOT SHOWN ON THE DRAWINGS.
3. CONTRACTOR SHALL COORDINATE ALL WORK WITH OWNER WITH RESPECT TO WORK HOURS, AVAILABLE WORK AREAS, DEMOLITION DISTURBANCE, ETC.
4. DURING DEMOLITION AND SURFACE PREPARATION, CONTRACTOR SHALL MINIMIZE DISTURBANCE TO OWNER'S DAILY OPERATIONS DUE TO DUST, DEBRIS, EXCESSIVE NOISE, ETC. PROVIDE TEMPORARY BARRICADES AND OTHER FORMS OF PROTECTION AS NECESSARY TO PROTECT THE OWNER'S PERSONNEL, PROPERTY AND THE GENERAL PUBLIC FROM INJURY.
5. ALL MATERIAL SHALL BE FURNISHED BY THE CONTRACTOR AND ALL DEMOLITION, SURFACE PREPARATION, AND OTHER WASTE DEBRIS SHALL BE REMOVED AND DISPOSED OF AT AN APPROVED FACILITY BY THE CONTRACTOR, UNLESS NOTED OTHERWISE. COSTS ASSOCIATED WITH TESTING AND/OR CHARACTERIZATION OF WASTE DEBRIS, AS MAY BE REQUIRED TO PERMIT DISPOSAL AT THE APPROPRIATE WASTE FACILITY, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
6. CARE SHALL BE TAKEN WHEN WORKING WITH OR AROUND ALL EXISTING MATERIALS. DAMAGE TO EXISTING MATERIALS SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE OWNER. RESTORE ALL AREAS DISTURBED BY THE WORK TO MATCH EXISTING CONSTRUCTION/FINISH.
7. THE CONTRACTOR SHALL OBTAIN ALL STATE, LOCAL, UTILITY, AND OTHER MISCELLANEOUS PERMITS REQUIRED FOR COMPLETION OF WORK. ANY AND ALL FEES ASSOCIATED WITH THIS WORK ARE THE RESPONSIBILITY OF THE CONTRACTOR.
8. ANY WORK DETERMINED TO DE DEFECTIVE/INCOMPLETE BY THE ENGINEER SHALL BE REPAIRED, REWORKED AND/OR COMPLETED AS PER THE APPROVAL OF THE ENGINEER.
9. PRODUCT INSTALLATION: ALL PRODUCTS SPECIFIED SHALL BE APPLIED IN STRICT ACCORDANCE WITH MANUFACTURER'S WRITTEN RECOMMENDATIONS, INCLUDING SURFACE PREPARATION, MATERIAL COMPATIBILITY, APPLICATION, AND CURING. SHOULD ANY FIELD CONDITIONS OR COMPATIBILITY ISSUES EXIST THAT MAY PREVENT INSTALLATION OF ANY ONE OF THESE ITEMS PER MANUFACTURER'S RECOMMENDATIONS, THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY.
10. TEMPERATURE MAINTENANCE, HEATING, DEHUMIDIFICATION, AND WEATHER PROTECTION: CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE AS PART OF BASE BID ALL LABOR, EQUIPMENT, AND TEMPORARY ENCLOSURES FOR WEATHER PROTECTION, HEATING, DEHUMIDIFICATION, AND TEMPERATURE MAINTENANCE DURING THE WORK, IN ACCORDANCE WITH ALL RELATED OSHA AND OTHER REGULATIONS FOR HEATING PROCEDURES. WEATHER PROTECTION AND TEMPERATURE CONTROL DURING SURFACE PREPARATION, INSTALLATION, AND CURING SHALL BE MAINTAINED WITHIN THE SPECIFIED TEMPERATURE RESTRICTIONS AS RECOMMENDED BY EACH PRODUCT MANUFACTURER.
11. SURFACE CLEANING: THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING A DETAILS CLEANING AND SURFACE PREPARATION AS REQUIRED TO COMPLY WITH THE SPECIFIC MANUFACTURER'S RECOMMENDATIONS FOR PROPOSED REPAIR PRODUCTS.
12. POTABLE WATER: POTABLE WATER SHALL BE USED FOR ALL CONCRETE & SURFACE CLEANING. ON–SITE WATER SOURCE(S) SUCH AS HYDRANTS SHALL BE COORDINATED AND APPROVED BY THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXTENSION HOSE AND CONNECTION DEVICES NECESSARY TO CONNECT TO SITE WATER SOURCES. IF USE OF HYDRANTS IS NOT PRACTICAL, CONTRACTOR SHALL PROVIDE OTHER MEANS OF POTABLE WATER SUPPLY AS REQUIRED TO COMPLETE THE WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH PAYMENT FOR WATER AS PART OF BASE BID.
13. CONTRACTOR SHALL PHOTOGRAPH ALL WORK SITES PRIOR TO PERFORMING ANY WORK AND UPON COMPLETION OF EACH WORK LOCATION. ALL PHOTOS AND AS BUILT MARKUPS SHALL BE PROVIDED TO THE OWNER ON A MONTHLY BASIS THROUGHOUT CONSTRUCTION.

SYMBOLS



MATERIALS



ABBREVIATIONS

&	AND
@	AT
%	PERCENT(AGE)
±	PLUS OR MINUS
ACI	AMERICAN CONCRETE INSTITUTE
ASTM	AMERICAN SOCIETY OF TESTING MATERIALS
BOT	BOTTOM
CLR	CLEAR
CL	CENTERLINE
CJ	CONTROL JOINT
CONC	CONCRETE
CONN	CONNECTION
CORD	CORDINATE
DBL	DOUBLE
DEMO	DEMOLISH
DIA	DIAMETER
DWGS	DRAWINGS
EL	ELEVATION
ELEC	ELECTRICAL
EMBED	EMBEDMENT
EQUIP	EQUIPMENT
EXG	EXISTING
FT	FOOT / FEET
FV	FIELD VERIFY
FL	FIELD LOCATE
IN	INCHE(S)
MAX	MAXIMUM
MECH	MECHANICAL
MIN	MINIMUM
MFR	MANUFACTURER
OC	ON CENTER
OD	OUTSIDE DIAMETER
OCEW	ON CENTER EACH WAY
PCF	POUND(S) PER CUBIC FOOT
PL	PLATE
PLF	POUND(S) PER LINEAR FOOT
PSF	POUND(S) PER SQUARE FOOT
PSI	POUND(S) PER SQUARE INCH
REF	REFERENCE
SS	STAINLESS STEEL
TYP	TYPICAL
UNO	UNLESS NOTIFIED OTHERWISE
W/	WITH

100% - ISSUED FOR BID

Woodard & Curran
COMMITMENT & INTEGRITY DRIVE RESULTS
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San Francisco, California 94104
415.321.3400 | www.woodardcurran.com

REV	DESCRIPTION	DATE
	DESIGNED BY: CSB	CHECKED BY: TJS
	DRAWN BY: CSB	00\2002.00\S-1.dwg

STRUCTURAL GENERAL NOTES & DESIGN CRITERIA

SAUSALITO MARIN CITY SANITARY DISTRICT

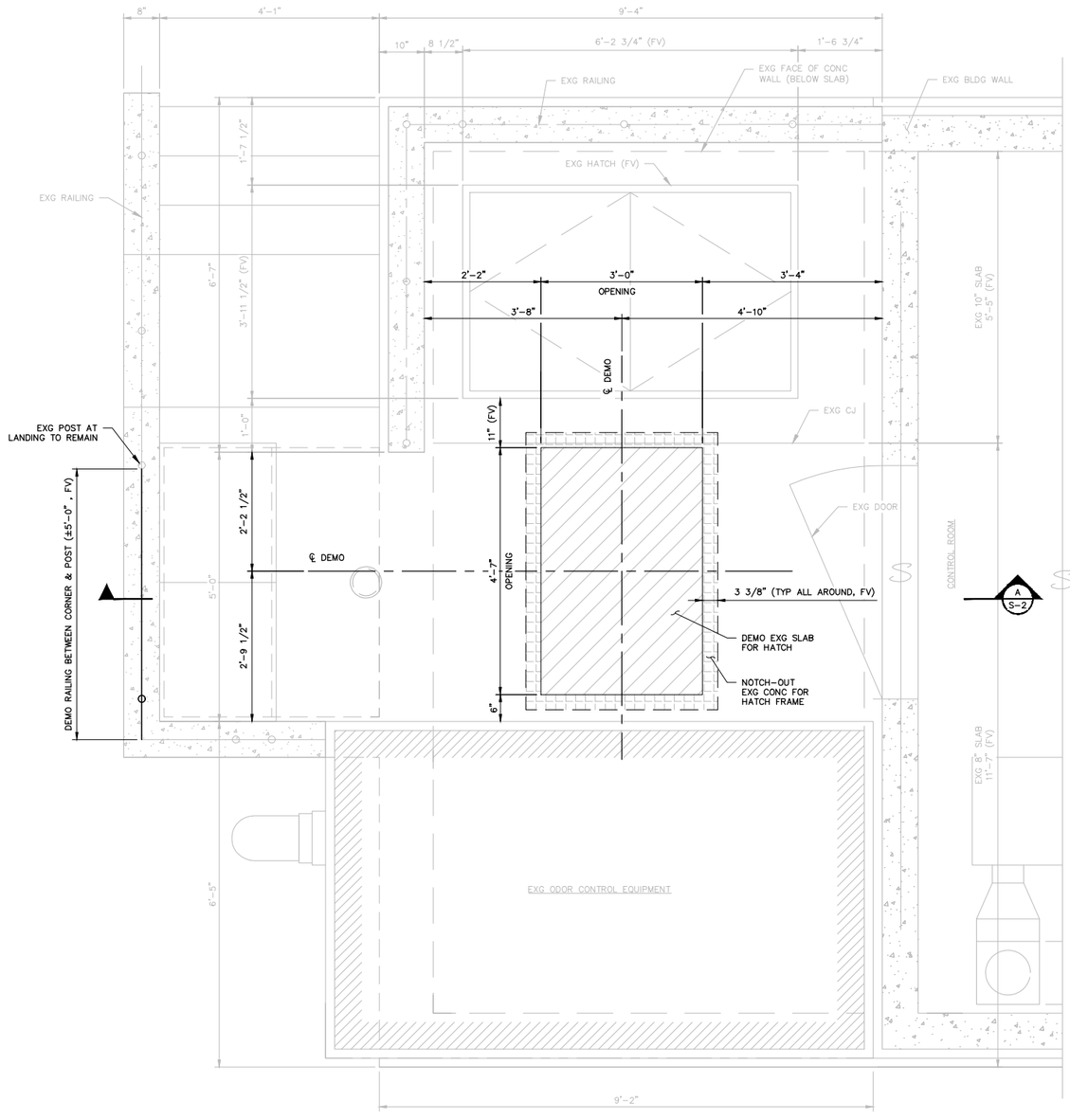
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	AS NOTED
SHEET:	13 OF 30

S-1

STRUCTURAL NOTES

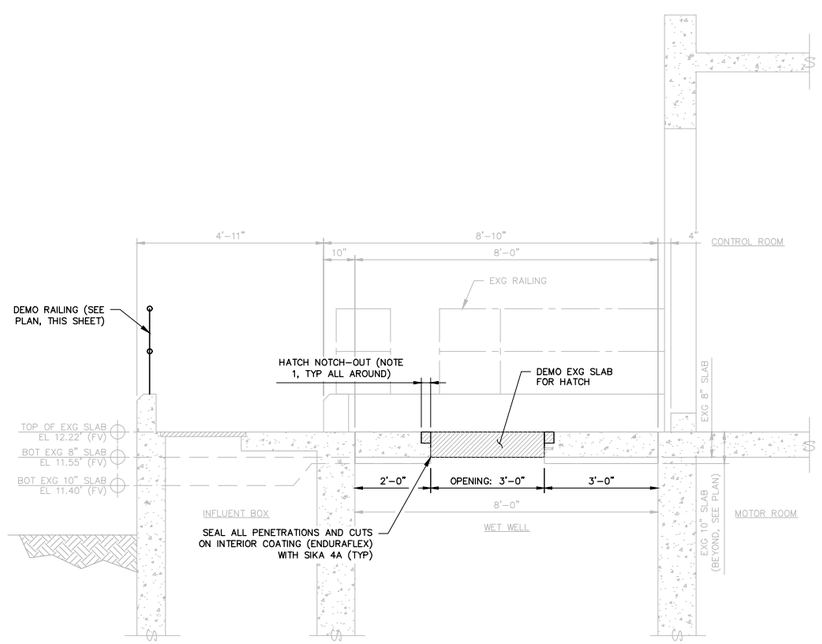
1. CONTRACTOR SHALL ENSURE THAT NO DEBRIS ENTERS THE ACTIVE WET WELL DURING CONSTRUCTION. A PLATFORM OR SIMILAR SHALL BE CONSTRUCTION UNDER WORK LOCATION TO PROTECT PUMPS.
2. ACCESS TO ALL PUMP STATION CONTROLS MUST BE MAINTAINED AT ALL TIMES. DURING CONSTRUCTION OF THE ACCESS HATCH, THE CONTRACTOR SHALL ENSURE THAT ACCESS CAN BE PROVIDED AT SHORT NOTICE. ACCESS PLANS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.
3. RELOCATE ULTRASONIC LEVEL INDICATOR PRIOR TO DEMOLISHING HATCH LOCATION. WORK IN WET WELL REQUIRES CONFINED ENTRY.
4. CONTRACTOR SHALL PROTEC WET WELL AND PUMPS FROM ALL DEBRIS.



PUMP STATION DEMO PLAN – TOP OF EXG SLAB EL 12.22' (FV)
SCALE: 3/4" = 1'-0"

NOTES:

1. FIELD VERIFY SURROUNDING NOTCH-OUT FOR SUPPORTING HATCH FRAME W/ MFR INSTRUCTIONS.



SECTION A / S-2
SCALE: 1/2" = 1'-0"

NOTES:

1. FIELD VERIFY SURROUNDING NOTCH-OUT FOR SUPPORTING HATCH FRAME W/ MFR INSTRUCTIONS.

3' 2' 1' 0 2' 4'

BAR SCALE
1/2" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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San Francisco, California 94104
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Woodard & Curran COMMITMENT & INTEGRITY DRIVE RESULTS

REGISTERED PROFESSIONAL ENGINEER
Thomas J. Sabatini
89977
07/28/2023
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
	DESIGNED BY: CSB	
	DRAWN BY: CSB	
	CHECKED BY: TJS	
	0012002.00-S-2.dwg	

PUMP STATION STRUCTURAL DEMO PLAN & SECTION

SAUSALITO MARIN CITY SANITARY DISTRICT

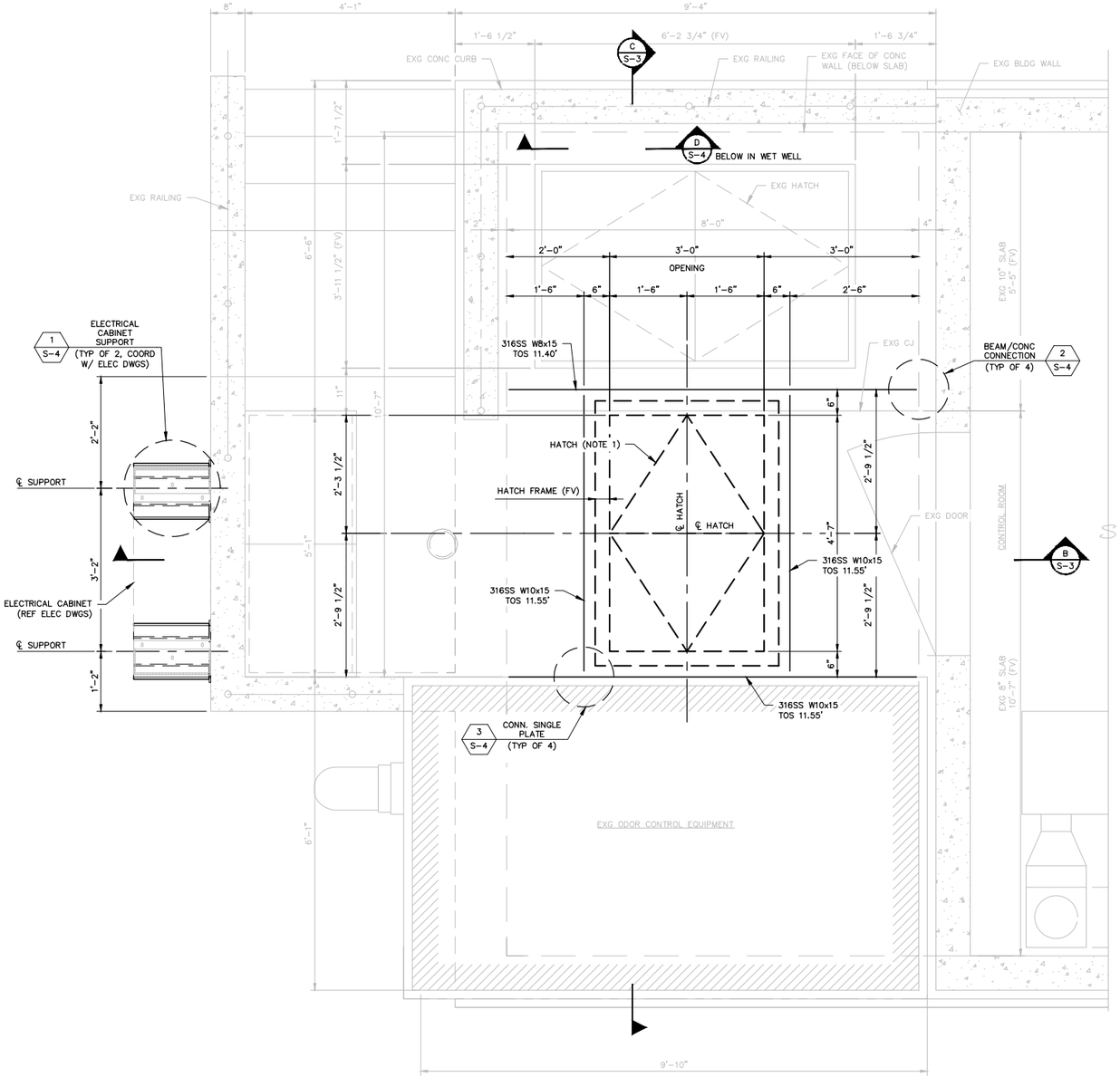
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	AS NOTED
SHEET:	14 OF 30

S-2

STRUCTURAL NOTES

1. CONTRACTOR SHALL ENSURE THAT NO DEBRIS ENTERS THE ACTIVE WET WELL DURING CONSTRUCTION. A PLATFORM OR SIMILAR SHALL BE CONSTRUCTION UNDER WORK LOCATION TO PROTECT PUMPS.
2. ACCESS TO ALL PUMP STATION CONTROLS MUST BE MAINTAINED AT ALL TIMES. DURING CONSTRUCTION OF THE ACCESS HATCH, THE CONTRACTOR SHALL ENSURE THAT ACCESS CAN BE PROVIDED AT SHORT NOTICE. ACCESS PLANS SHALL BE SUBMITTED FOR APPROVAL PRIOR TO CONSTRUCTION.

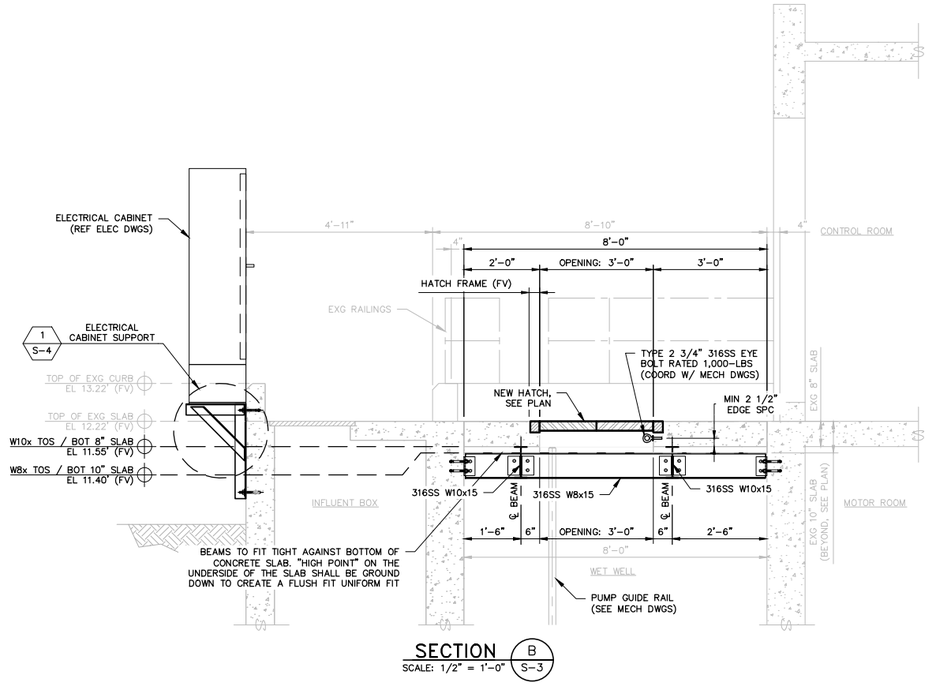


PUMP STATION PLAN – TOP OF EXG SLAB EL 12.22' (FV)

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

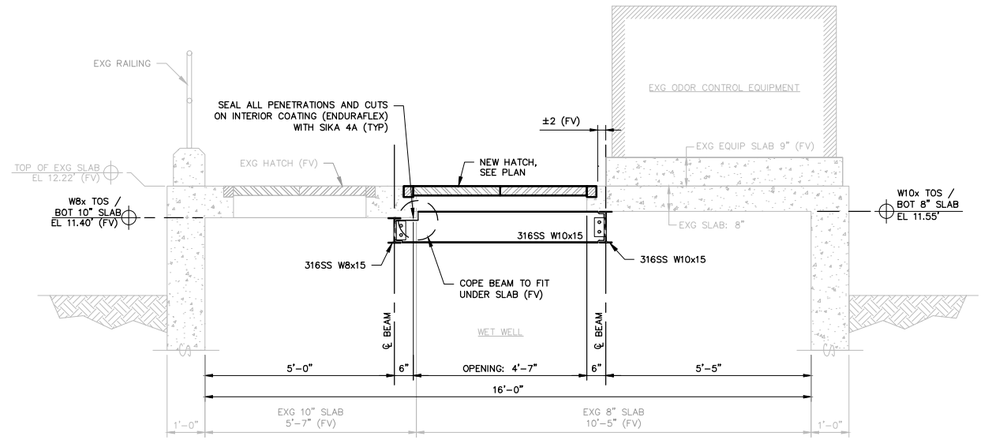
NOTES:

1. SEE SHEET S-1 FOR NOTES AND SPECIFICATIONS FOR ACCESS HATCH.
2. ALL DIMENSION SHOWN ARE APPROXIMATE AND MAY DIFFER DUE TO ACTUAL FIELD CONDITIONS AND CONCRETE SLAB OPENING. FIELD VERIFY ALL DIMENSIONS PRIOR TO STARTING CONSTRUCTION.



SECTION

SCALE: 1/2" = 1'-0" (B S-3)



SECTION

SCALE: 1/2" = 1'-0" (C S-3)

3' 2' 1' 0 2' 4'

BAR SCALE
1/2" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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REGISTERED PROFESSIONAL ENGINEER Thomas J. Sabatini 89977 07/28/2023 CIVIL STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
	DESIGNED BY: CSB	TJS
	DRAWN BY: CSB	CHECKED BY: 07/2023/DSA-3.dwg

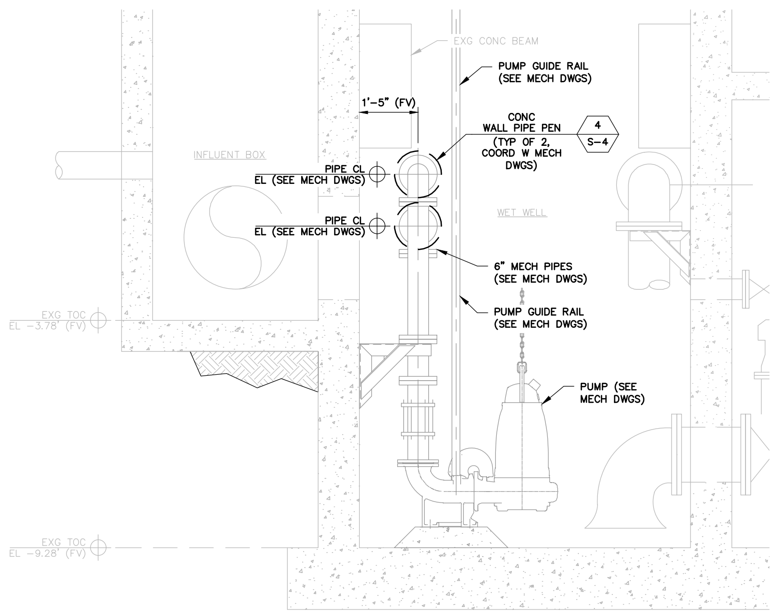
PUMP STATION STRUCTURAL PLAN & SECTIONS

SAUSALITO MARIN CITY SANITARY DISTRICT

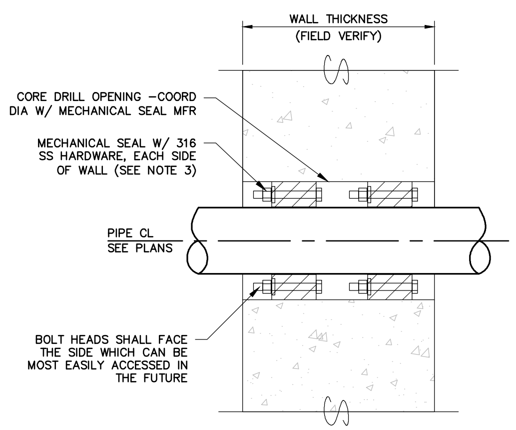
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	AS NOTED
SHEET:	15 OF 30

S-3



SECTION D S-3
SCALE: 1/2" = 1'-0"

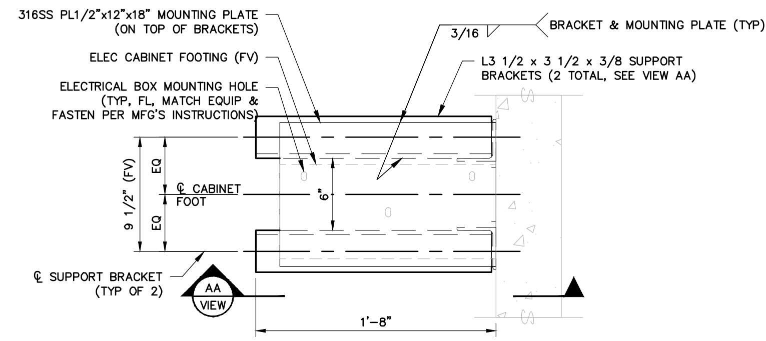


4 S-4 EXISTING WALL PENETRATION – MECH SEAL

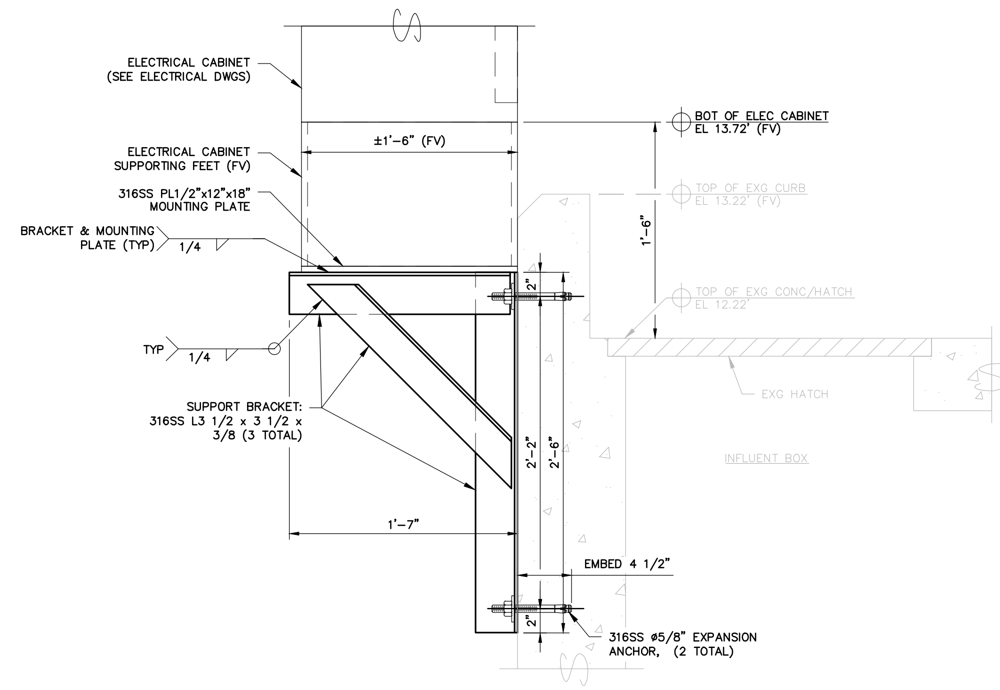
SCALE: NONE

NOTES:

1. REFER TO DRAWINGS FOR PIPE PENETRATION LOCATIONS, TYPES, AND SIZES
2. MECHANICAL SEAL AND WALL SLEEVE SIZE SHALL BE SIZED AS RECOMMENDED BY MANUFACTURER FOR EACH APPLICATION
3. SINGLE MECHANICAL SEAL MAY BE USED FOR PENETRATIONS WHERE BOTH SIDES OF WALL ARE DRY
4. PROVIDE SCH 10S, 304L STAINLESS STEEL WALL SLEEVES FOR FIRE-RATED WALL PENETRATIONS
5. REFER TO SPECIFICATION 40 05 13 "PROCESS PIPE SLEEVES AND SEALS" FOR ADDITIONAL DETAILS AND REQUIREMENTS



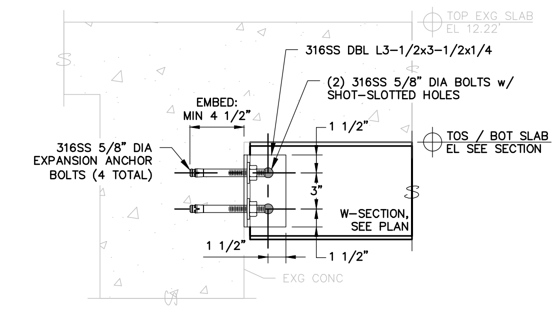
PLAN



VIEW AA

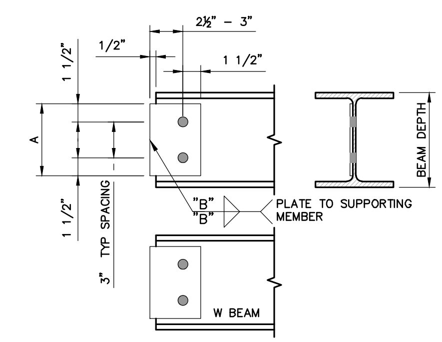
1 S-3 ELECTRICAL CABINET SUPPORT

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



2 S-3 BEAM/CONC CONNECTION

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



TYPICAL SINGLE PLATE CONNECTIONS – UNLESS NOTED				
BEAM	PLATE THICKNESS	No. BOLTS	PLATE LENGTH "A"	WELD SIZE "B"
W8xALL W10xALL	⅜"	2	0'–6"	¼"

3 S-3 CONN. SINGLE PLATE

SCALE: NONE

NOTES:

1. CONNECTION USES ASTM F3125 GR A325 HIGH STRENGTH BOLTS, 5/8"ø, WITH THREADS NOT EXCLUDED FROM SHEAR PLANE.
2. IF REQUIRED FOR FIT UP – COPE TOP AND BOTTOM FLANGES ½" CLEAR OF BEAM GIRDER.
3. W BEAM SUPPORTED MEMBER SHOWN, OTHER SHAPES AND GUSSET PLATES SIMILAR.
4. BOLTS SHALL BE PRE-TENSIONED.

1 1/2' 1' 1/2' 0 1' 3'
BAR SCALE
1 1/2" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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Thomas J Scalese
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07/28/2023
CIVIL
STATE OF CALIFORNIA

REV | DESCRIPTION | DATE
DESIGNED BY: CSB | CHECKED BY: TJS
DRAWN BY: CSB | 0012002.00-S-4.dwg

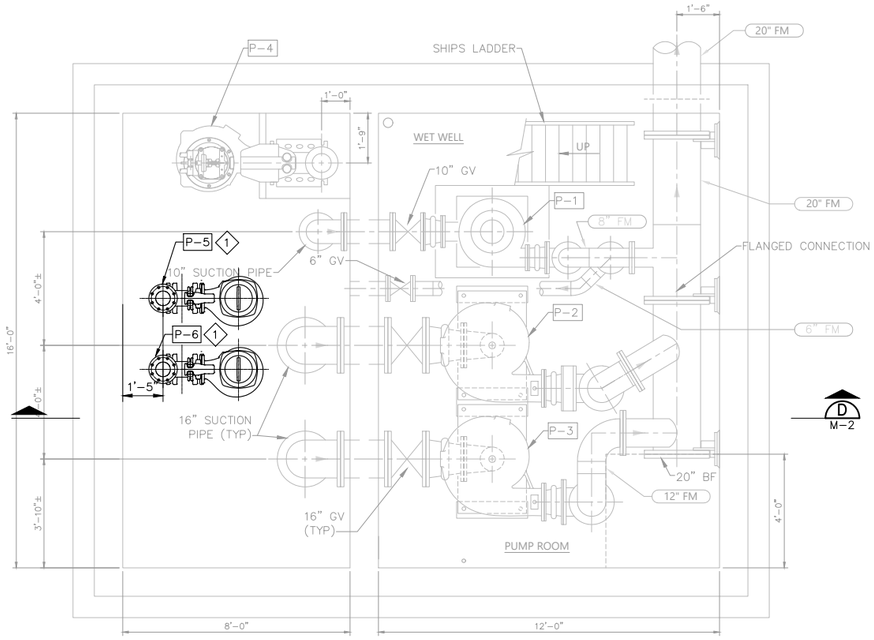
PUMP STATION STRUCTURAL SECTION & DETAILS

SAUSALITO MARIN CITY SANITARY DISTRICT

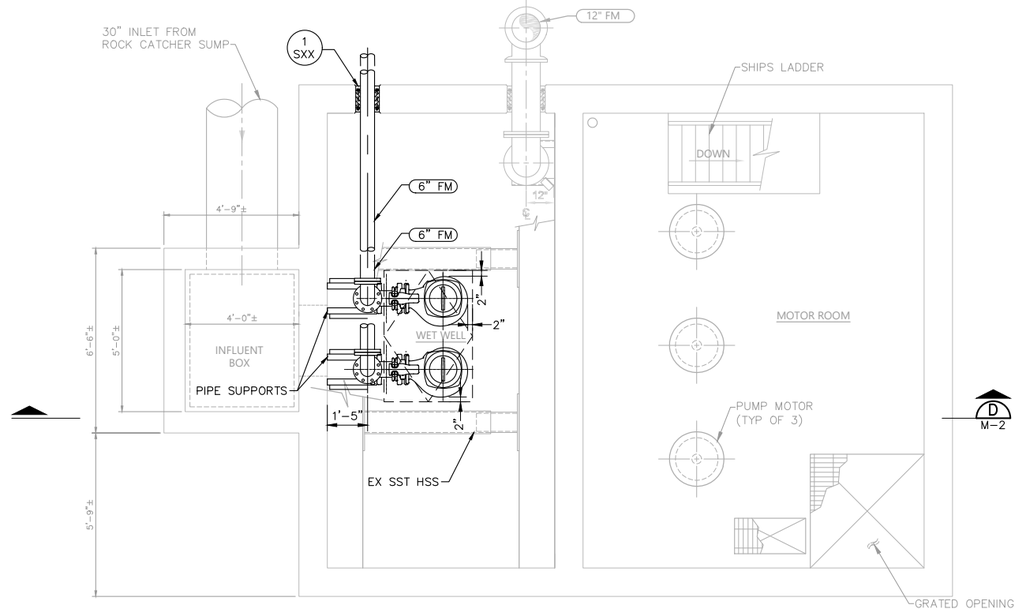
BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: AS NOTED
SHEET: 16 OF 30

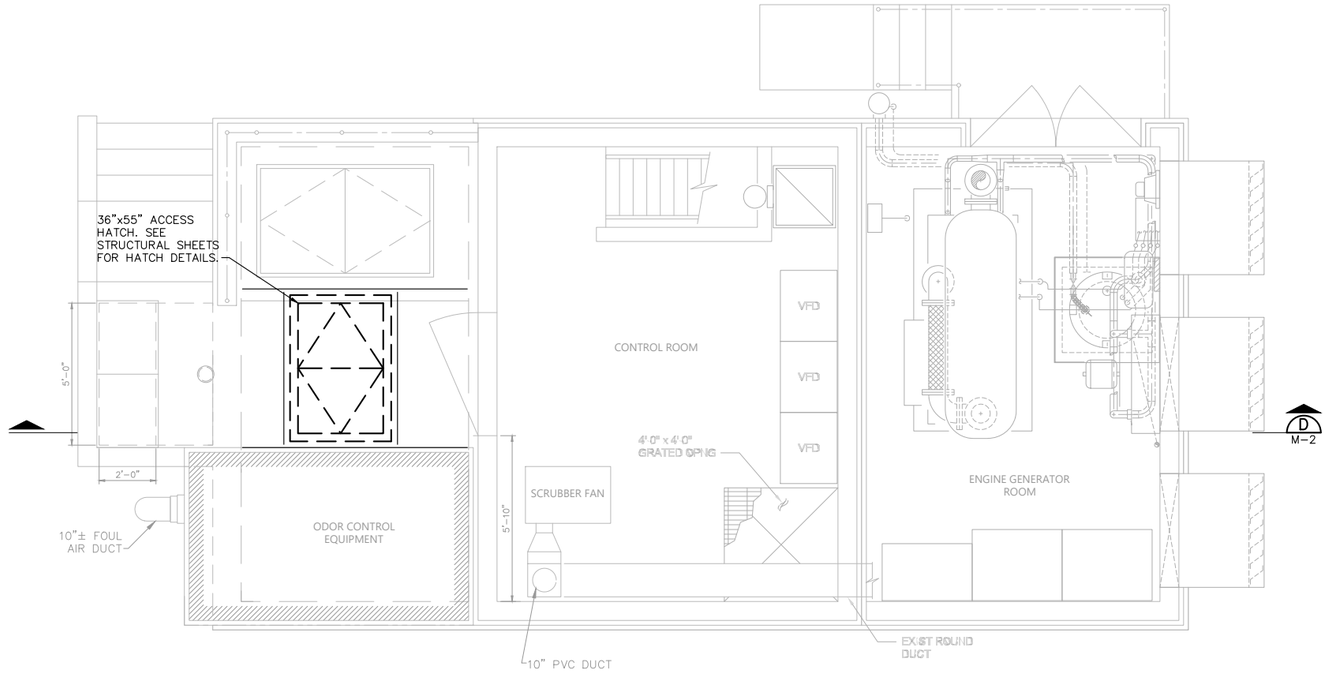
S-4



WET WELL BOTTOM
PLAN A
3/8" = 1'-0"



WET WELL MIDDLE
PLAN B
3/8" = 1'-0"



WET WELL TOP
PLAN C
3/8" = 1'-0"

GENERAL NOTES:

1. BASE MAP FROM MAIN STREET PUMP STATION REHABILITATION PROJECT RECORD DRAWING BY CAROLLO (DECEMBER 2014).
2. SEE DWG G-02 AND S-01 FOR GENERAL NOTES.
3. FIELD VERIFY ALL EXISTING STRUCTURE, PIPING, AND EQUIPMENT DIMENSIONS PRIOR TO BEGINNING WORK. SUBMIT DETAILED PIPE FABRICATION SHOP DRAWING FOR ENGINEER'S REVIEW THAT REFLECT FIELD VERIFIED DIMENSIONS. COORDINATE WITH PUMP MANUFACTURERS.
4. SEE SECTION 02145 FOR BYPASS PUMPING REQUIREMENTS FOR WORK IN THE WETWELL.
5. SEE SECTION 01030 SPECIAL CONSTRAINTS.
6. NOT ALL EXISTING EQUIPMENT, PIPING, CONDUITS, ETC. ARE SHOWN. TEMPORARILY REMOVE ALL ITEMS NECESSARY TO COMPLETE WORK AND REINSTALL FOLLOWING CONSTRUCTION.
7. PRIOR TO BEGINNING WORK IN THE WET WELL, THE CONTRACTOR SHALL IMPLEMENT A FULL BYPASS IN ACCORDANCE WITH SPECIFICATION SECTION 02145.

KEY NOTES:

1 SEE SPECIFICATION SECTION 11148 FOR PUMPS P-5 AND P-6.

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REGISTERED PROFESSIONAL ENGINEER
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No. 64545
Exp. 06-30-25
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	M. MAHER	CHECKED BY: XXX
DRAWN BY:	S. JUNG	07/20/2023AM-1.dwg

PUMP STATION PLAN AND SECTION

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	3/8"=1'-0"
SHEET:	17 OF 30

M-1

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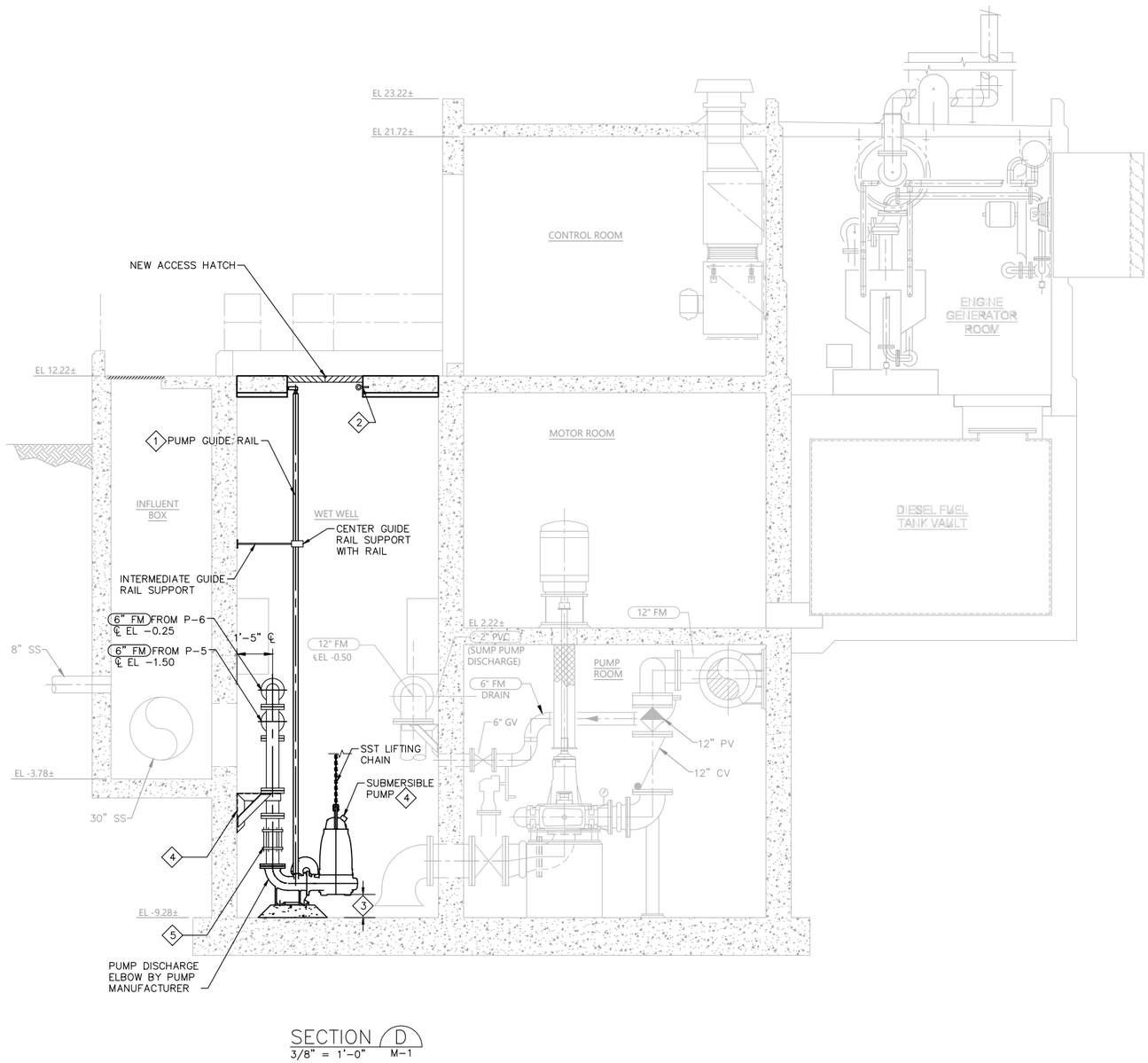

SECTION D
3/8" = 1'-0" M-1

GENERAL NOTES:

1. BASE MAP FROM MAIN STREET PUMP STATION REHABILITATION PROJECT RECORD DRAWING BY CAROLLO (DECEMBER 2014).
2. SEE DWG G-02 FOR GENERAL NOTES.
3. FIELD VERIFY ALL EXISTING STRUCTURE, PIPING, AND EQUIPMENT DIMENSIONS PRIOR TO BEGINNING WORK. SUBMIT DETAILED PIPE FABRICATION SHOP DRAWING FOR ENGINEER'S REVIEW THAT REFLECT FIELD VERIFIED DIMENSIONS. COORDINATE WITH PUMP MANUFACTURERS.
4. SEE SECTION 02145 FOR BYPASS PUMPING REQUIREMENTS FOR WORK IN THE WETWELL.
5. SEE SECTION 01030 SPECIAL CONSTRAINTS.
6. NOT ALL EXISTING EQUIPMENT, PIPING, CONDUITS, ETC. ARE SHOWN. TEMPORARILY REMOVE ALL ITEMS NECESSARY TO COMPLETE WORK AND REINSTALL FOLLOWING CONSTRUCTION.
7. PROVIDE KEVLAR CABLE GRIPS FOR PUMP CABLES.
8. Seal all penetrations, cuts and anchor holes in polyurethane coating with Sika-1A caulking.

KEY NOTES:

1. PROVIDE 316 SST LIFTING GUIDE RAIL ASSEMBLY FOR EACH NEW PUMP. LOCATE PER MANUFACTURER'S RECOMMENDATION.
2. AT HATCH, PROVIDE 2 TYPE 316 SST EYE BOLTS TO SUPPORT LIFTING CHAIN AND SUBMERSIBLE CABLE FOR NEW GUIDE RAIL ASSEMBLY (QTY. 4 TOTAL). LOCATE PER MANUFACTURER'S RECOMMENDATION.
3. PUMP INTAKE ELEVATION PER MANUFACTURER RECOMMENDATION.
4. ONLY P-6 (SOUTHERN PUMP) AND APPURTENANCES SHOWN. MATCH P-5 (NORTHERN PUMP) AND APPURTENANCES WITH THOSE OF P-6.
5. ONLY P-6 (SOUTHERN PUMP) RESTRAINED FLEXIBLE COUPLING SHOWN. ALSO INSTALL FLEXIBLE COUPLING ON P-5 DISCHARGE PIPING. MATCH ELEVATIONS.
6. PIPE SUPPORTS FOR LATERAL RUNS OF PIPE NOT SHOWN FOR CLARITY. SEE M-01 FOR LOCATION OF LATERAL PIPE SUPPORTS.

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REGISTERED PROFESSIONAL ENGINEER
MIKO MAHER
No. 64545
Exp. 06-30-25
CIVIL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	M. MAHER	CHECKED BY: XXX
DRAWN BY:	S. JUNG	07/20/2023 AM-1.dwg

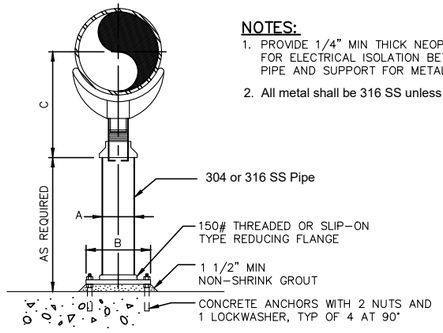
PUMP STATION SECTION AND DETAILS

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	3/8"=1'-0"
SHEET:	18 OF 30

M-2

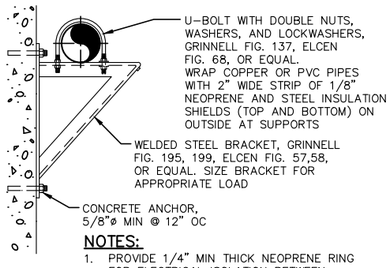


NOTES:

1. PROVIDE 1/4" MIN THICK NEOPRENE RING FOR ELECTRICAL ISOLATION BETWEEN PIPE AND SUPPORT FOR METALLIC PIPE.
2. All metal shall be 316 SS unless otherwise specified.

DIMENSIONS IN INCHES				
PIPE SIZE	A	B	C MIN	C MAX
2 1/2	2 7/8	9	8	13
3	2 7/8	9	8 1/4	13 1/4
3 1/2	2 7/8	9	8 1/2	13 1/2
4	3 1/2	9	9 1/4	14
5	3 1/2	9	10	14 3/4
6	3 1/2	9	10 1/2	15 1/4
8	3 1/2	9	11 3/4	16 1/2
10	3 1/2	9	13 1/2	18 1/4
12	3 1/2	9	15	19 3/4
14	4 1/2	11	16 1/4	20 3/4
16	4 1/2	11	17 3/4	22 1/4

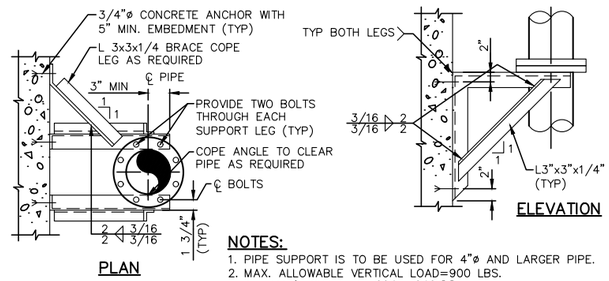
ADJUSTABLE PIPE SUPPORT M100
NTS



NOTES:

1. PROVIDE 1/4" MIN THICK NEOPRENE RING FOR ELECTRICAL ISOLATION BETWEEN PIPE AND SUPPORT FOR METALLIC PIPE.
2. All bracket material shall be 304 or 316 SS. Hardware shall be 316 SS.

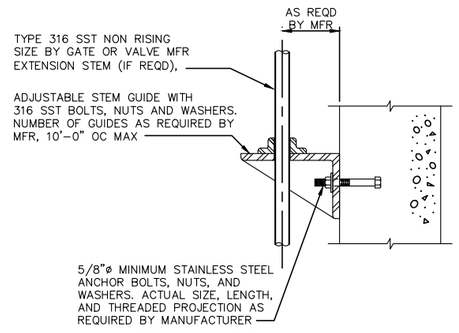
PIPE BRACKET M110
NTS



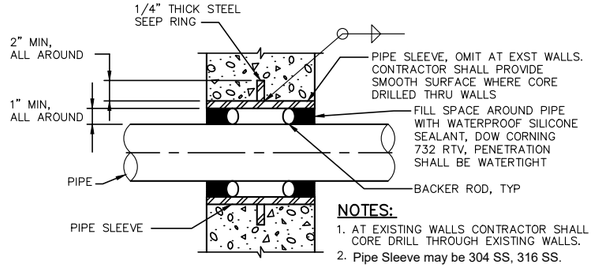
NOTES:

1. PIPE SUPPORT IS TO BE USED FOR 4"ø AND LARGER PIPE.
2. MAX. ALLOWABLE VERTICAL LOAD=900 LBS.
3. ALL MAT'L SHALL BE 304 or 316 SS

PIPE SUPPORT M115
NTS



STEM GUIDE M101
NTS



NOTES:

1. AT EXISTING WALLS CONTRACTOR SHALL CORE DRILL THROUGH EXISTING WALLS.
2. Pipe Sleeve may be 304 SS, 316 SS.
3. DO NOT USE WHERE ASSEMBLY IS SUBJECT TO HYDROSTATIC PRESSURES.

PIPE SLEEVE M134
NTS

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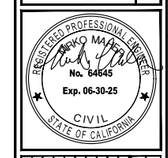

REV	DESCRIPTION	DATE
DESIGNED BY:	M. MAHER	CHECKED BY: XXX
DRAWN BY:	S. JUNG	07/20/20AA3.dwg

STANDARD DETAILS - 1

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	00120002.00
DATE:	AUGUST 2023
SCALE:	NTS
SHEET:	19 OF 30

M-3

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GENERAL

- HOME RUN. ARROWS INDICATE NUMBER OF CIRCUITS, CROSS LINES INDICATE NUMBER OF WIRES, OTHER THAN TWO (2) PLUS BOND, WIRE SIZE NOT SHOWN INDICATES #12AWG MIN.
- INDICATES CIRCUIT NUMBER
- PANEL DESIGNATION
- WIRING IN RACEWAY
- WIRING IN RACEWAY CONCEALED UNDERGROUND OR UNDERSLAB, MINIMUM 3/4"C
- 3/C #nn W/GND — EquipNo–P — CONDUIT AND CABLE ID TAG
- CONDUIT TURNING UP
- CONDUIT TURNING DOWN
- CONDUIT STUB
- EY CONDUIT SEAL
- FLEXIBLE NON–METALLIC CONDUIT
- PANELBOARD
- CP — CONTROL PANEL
- ATC — AUTOMATIC TRANSFER CONTROLLER
- ISBP — INTRINSIC SAFETY BARRIER PANEL
- POWER COMPANY METER
- HS / H/O/A — LOCAL SELECTOR SWITCH H/O/A – HAND/OFF/AUTO H/O/R – HAND/OFF/REMOTE L/O/R – LOCAL/OFF/REMOTE S/S – START/STOP
- PUSHBUTTON STATION, WITH "EM" EMERGENCY
- J — JUNCTION BOX
- MD — MOTORIZED DAMPER
- T — THERMOSTAT
- R — RELAY
- BT — DOOR BELL/BUZZER AND TRANSFORMER – MTD CL UP 7'–0" AFF
- X–# / EQUIP# — EQUIPMENT TAGS
- X — KEYED NOTE TAG
- X — REVISION TRIANGLE
- BRACKET

POWER

- NON–FUSED SAFETY SWITCH
- F — FUSED SAFETY SWITCH
- NON–FUSED DISCONNECT/MAGNETIC MOTOR STARTER
- M — MANUAL MOTOR SWITCH (MOTOR RATED SWITCH), TOGGLE OPERATED, SINGLE PHASE. 1 OR 2 POLE AS REQUIRED
- CB 100A — ENCLOSED CIRCUIT BREAKER W/AMPERE RATING
- (M) — ELECTRIC MOTOR, NUMBER INDICATES HORSEPOWER RATING, "F" INDICATES FRACTIONAL LESS THAN 1/20HP OR 100W
- T — TRANSFORMER
- UTILITY POLE
- DUPLEX RECEPTACLE, NEMA 5–20R – MTD CL UP 24" OR AS NOTED."WP" WEATHER PROOF, "G" PROTECTED BY GFCI RECEPTACLE OR BREAKER UPSTREAM, "H" MOUNTED 0'–6" BELOW CEILING, "TV" MOUNT 7'–6" UP
- DOUBLE DUPLEX RECEPTACLE, NEMA 5–20R – MTD CL UP 24" OR AS NOTED
- SINGLE RECEPTACLE, NEMA 5–20R – MTD CL UP 24" OR AS NOTED
- GFCI DUPLEX RECEPTACLE, NEMA 5–20R – MOUNTED CL UP 48" OR 6" ABOVE COUNTER
- DOUBLE DUPLEX GFCI RECEPTACLE, NEMA 5–20R – MOUNTED CL UP 48" OR 6" ABOVE COUNTER
- FLUSH FLOOR OUTLET, DUPLEX RECEPTACLE, NEMA 5–20R
- MULTI SERVICE FLUSH FLOOR BOX WITH DUPLEX RECEPTACLE AND PROVISIONS FOR DATA
- POWER RECEPTACLE, NEMA CONFIGURATION AS NOTED OR AS REQUIRED FOR EQUIPMENT SERVED.
- FLUSH CEILING MTD DEVICE BOXES, ONE W/ DUPLEX RCPT FOR PROJECTOR POWER AND ONE FOR DATA TO SERVE OH PROJECTOR. RUN ONE 1 1/2"C TO JBOX LOCATED AT FRONT OF ROOM FOR PROJECTOR CABLE PATHWAY. VERIFY FINAL LOCATION W/ OWNER PRIOR TO ROUGH IN.
- MULTI–OUTLET POWER STRIP, MOUNT 0'–6" ABOVE COUNTERTOP, RECEPTACLE SPACING AS NOTED.

MISCELLANEOUS

- B / 50.01 — SECTION LETTER, SECTION CALL OUT, SHEET #
- DETAIL TITLE, X, X–0X — DETAIL CALL OUT
- PHOTO DETAIL CALL OUT

LIGHTING

- 2x4 LIGHT FIXTURE
- ab — ASSOCIATED CONTROL DEVICE; FIXTURE TYPE (SEE LIGHT FIXTURE SCHEDULE)
- 1x4 LIGHT FIXTURE
- 2x2 LIGHT FIXTURE
- FIXTURE WITH INTEGRAL EMERGENCY BATTERY PACK
- FIXTURE WIRED TO UNSWITCHED EMERGENCY CIRCUIT
- DOWN LIGHT
- WALL MOUNTED FIXTURES
- POLE MOUNTED SITE LIGHTING FIXTURE; ab — FIXTURE TYPE (SEE LIGHT FIXTURE SCHEDULE)
- FLOOD LIGHT
- EXIT SIGN, CEILING MOUNTED. ARROW INDICATES EGRESS DIRECTION. SHADING INDICATES SIGN FACE. NUMERAL INDICATES BATTERY UNIT CONNECTED
- EXIT SIGN, WALL MOUNTED 7'–6" AFF OR 0'–6" ABOVE DOOR. SHADING INDICATES SIGN FACE. NUMERAL INDICATES BATTERY UNIT CONNECTED TO.
- BATT — DUAL HEAD EMERGENCY LIGHT BATTERY PACK WITH NUMBER OF HEADS AS INDICATED – WALL MOUNTED MTD 7'–6" AFF. NUMERAL INDICATES BATTERY ID NUMBER.
- TANDEM EMERGENCY LIGHT BATTERY PACK & EXIT SIGN – WALL MOUNTED MTD 7'–6" AFF OR 0,–6" ABOVE DOOR. NUMERAL INDICATES BATTERY ID NUMBER.
- REMOTE EMERGENCY LIGHTING HEAD – WALL MOUNTED MTD 7'–6" AFF. NUMERAL INDICATES BATTERY UNIT CONNECTED TO.
- S — SINGLE POLE TOGGLE SWITCH – MTD CL UP 4'–0" AFF
- S_2 — DOUBLE POLE TOGGLE SWITCH – MTD CL UP 4'–0" AFF
- S_3 — 3–WAY TOGGLE SWITCH – MTD CL UP 4'–0" AFF
- S_4 — 4–WAY TOGGLE SWITCH – MTD CL UP 4'–0" AFF
- S_M — WALL MOUNTED OCCUPANCY SENSOR – MTD CL UP 4'–0" AFF
- S_P — TOGGLE SWITCH WITH PILOT LIGHT – MTD CL UP 4'–0" AFF
- S_D — DIMMER SWITCH – MTD CL UP 4'–0" AFF
- S_{LV} — LOW VOLTAGE SWITCH – MTD CL UP 4'–0" AFF
- a — OCCUPANCY SENSOR; a. INDICATES CONTROLLED FIXTURE
- PC — PHOTOCELL
- LC — LIGHTING CONTACTOR
- MS — MOTION SENSOR

FIRE ALARM DIAGRAM SYMBOLS

- FACP — FIRE ALARM CONTROL PANEL
- FAA — FIRE ALARM ANNUNCIATOR
- FCPS — FIELD CHARGER POWER SUPPLY
- M — FIRE ALARM MASTER BOX
- K — KNOX BOX
- F — FIRE ALARM MANUAL PULL STATION – WALL MTD CL UP 4'–0"
- HL — FIRE ALARM AUDIBLE/VISIBLE NOTIFICATION APPLIANCE CANDELA (CD) POWER PER NFPA 72 OR AS NOTED – WALL MTD BOTTOM UP 80" AFF. "H" HORN, "V" VOICE.
- L — FIRE ALARM VISUAL NOTIFICATION APPLIANCE CANDELA (CD) POWER PER NFPA 72 OR AS NOTED – WALL MTD BOTTOM UP 80" AFF
- CEILING MOUNTED SMOKE DETECTOR
- CEILING MOUNTED HEAT DETECTOR
- DUCT SMOKE DETECTOR S=SUPPLY, R=RETURN
- FS — SPRINKLER SYSTEM FLOW SWITCH
- TS — SPRINKLER SYSTEM TAMPER SWITCH
- PS — SPRINKLER SYSTEM PRESSURE SWITCH
- DH — FIRE ALARM SYSTEM MAGNETIC DOOR HOLDER
- Z — MONITOR MODULE
- C — CONTROL MODULE
- R — RELAY MODULE

COMMUNICATIONS

- TEL — TELEPHONE BACKBOARD
- WX — PROVISIONS FOR TELEPHONE OUTLET. TWO–GANG WALL BOX WITH ONE 1"C STUB TO ABOVE ACCESSIBLE CEILING – MTD CL UP SAME AS ASSOCIATED RECEPTACLE W–INDICATES WALL MOUNTED AT 60" AFF P–INDICATES PAYPHONE MOUNTED AT 4'–0" AFF X–INDICATES NUMBER OF JACKS, SINGLE BOX
- PROVISIONS FOR DATA OUTLET. TWO–GANG WALL BOX WITH ONE 1"C STUB TO ABOVE ACCESSIBLE CEILING – MTD CL UP SAME AS ASSOCIATED RECEPTACLE. SUBSCRIPTS AS NOTED ABOVE.
- 2D2T — PROVISIONS FOR TELEPHONE & DATA OUTLET. TWO–GANG WALL BOX WITH ONE 1"C STUB TO ABOVE ACCESSIBLE CEILING – MTD CL UP SAME AS ASSOCIATED RECEPTACLE. SUBSCRIPTS AS NOTED ABOVE.
- PROVISIONS FOR SCADA SYSTEM OUTLET. TWO–GANG WALL BOX WITH ONE 1"C STUB TO ABOVE ACCESSIBLE CEILING – MTD CL UP SAME AS ASSOCIATED RECEPTACLE
- CEILING MOUNTED TELEPHONE SYSTEM OUTLET
- CEILING MOUNTED DATA SYSTEM OUTLET
- CEILING MOUNTED VOICE & DATA OUTLET
- FLUSH TELEPHONE FLOOR OUTLET
- FLUSH DATA FLOOR OUTLET
- FLUSH VOICE & DATA FLOOR OUTLET
- TV — TELEVISION COAXIAL OUTLET. MOUNTED UP SAME AS ASSOCIATED RECEPTACLE

SECURITY

- SEC — SECURITY PANEL
- DS — DOOR INTRUSION SWITCH
- DE — ELECTRIC DOOR STRIKE
- CR — CARD READER
- KP — KEY PAD
- MOTION DETECTOR
- CAM — SECURITY CAMERA PTZ = PAN/TILT/ZOOM

INTERCOM & PAGING SYSTEM

- S — CEILING MOUNTED SPEAKER
- PA — PAGING SYSTEM CONTROL PANEL
- HS — PAGING SYSTEM HANDSET

INSTRUMENTATION

- LS / XX — FIELD MOUNTED INSTRUMENT; INSTRUMENT IDENTIFICATION TYPE; INSTRUMENT LOOP #
- FS / XX — VENDOR SUPPLIED INSTRUMENT

INSTRUMENT IDENTIFIER:

AE	ANALYSIS ELEMENT
AIT	ANALYSIS INDICATING TRANSMITTER
AT	ANALYSIS TRANSMITTER
DPS	DIFFERENTIAL PRESSURE SWITCH
FCV	FLOW CONTROL VALVE
FE	FLOW ELEMENT
FIT	FLOW INDICATING TRANSMITTER
FT	FLOW TRANSMITTER
FS	FLOW SWITCH
LE	LEVEL ELEMENT
LIT	LEVEL INDICATING TRANSMITTER
LT	LEVEL TRANSMITTER
LS	LEVEL SWITCH
LSH	LEVEL SWITCH HIGH
LSL	LEVEL SWITCH LOW
MOV	MOTOR OPERATED VALVE
MS	MOISTURE SENSOR
PE	PRESSURE ELEMENT
PIT	PRESSURE INDICATING TRANSMITTER
PT	PRESSURE TRANSMITTER
PS	PRESSURE SWITCH
SV	SOLENOID VALVE
TE	TEMPERATURE ELEMENT
TIT	TEMPERATURE INDICATING TRANSMITTER
TS	TEMPERATURE SENSOR
TT	TEMPERATURE TRANSMITTER
ZS	PROXIMITY SWITCH

MISC TERMINALS

	ARROW, SMALL		POLARITY SQUARE
	ARROW, LARGE		SCREW TERMINAL
	ARROW, TRIANGULAR		TERMINAL POINT, SMALL
	CONTINUE, SMALL		TERMINAL POINT, LARGE
	CONTINUE, LARGE		TERMINAL POINT, SQUARE
	DOT, SMALL		SHIELD
	DOT, MEDIUM		SHIELD W/TERMINAL POINT
	DOT, LARGE		

ONE–LINE DIAGRAM SYMBOLS

- 52 / GCB1 — CB 800A E.O — 52 — HV VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER ELECTRICALLY OPERATED
- MV VOLTAGE DRAWOUT TYPE POWER CIRCUIT BREAKER WITH MANUAL CONTROL SWITCH
- AT / AF / EO — LOW VOLTAGE CIRCUIT BREAKER AF – AMP FRAME AT – AMP TRIP EO – ELECTRICALLY OPERATED
- ST — ST – SHUNT TRIP GF – GROUND FAULT EO – ELECTRICALLY OPERATED
- DISCONNECT, ISOLATION OR SAFETY SWITCH
- FUSED DISCONNECT SWITCH
- 1 — MAGNETIC MOTOR STARTER. NUMERAL INDICATES NEMA SIZE FVNR UNLESS OTHERWISE NOTED. FVR – FULL VOLTAGE REVERSING RVAT – REDUCING VOLTAGE AUTO TRANSFORMER 2S – TWO SPEED YD – WYE DELTA REDUCED VOLTAGE STARTER
- CAPACITOR
- VFD / 11 — VFD = VARIABLE FREQUENCY DRIVE SS = SOLID STATE STARTER DC = DC VARIABLE DRIVE NUMERAL INDICATES AMP RATING
- OA — POWER TRANSFORMER OA – LIQUID TYPE SELF COOLED AA – DRY TYPE SELF COOLED FA – FAN COOLED; CONNECTION
- 2 / 480/120 — POTENTIAL TRANSFORMER RATIO NUMBER REQUIRED
- 2 / 600/5 — CURRENT TRANSFORMER RATIO PHASE
- 5 — MOTOR, NUMERAL INDICATES HORSEPOWER
- X — GENERAL LOAD, NUMERAL INDICATES LOAD IN KVA
- GENERATOR
- N / E / L / ATS — ATS – AUTOMATIC TRANSFER SWITCH MTS – MANUAL TRANSFER SWITCH
- A — METER A – AMMETER V – VOLTMETER W – WATTMETER KWH – KILOWATT HOUR KVAR – KILOVAR METER VAR – VAR METER HZ – FREQUENCY METER PF – POWER FACTOR METER
- 3 — LINE OR LOAD REACTOR NUMERAL INDICATES % IMPEDANCE
- DPM — DIGITAL POWER MONITOR
- AS — METER TRANSFER SWITCH AS – AMMETER SWITCH VS – VOLTMETER SWITCH
- SPD — SPD = SURGE PROTECTION DEVICE ENDN = ETHERNET TO DEVICENET LINKING DEVICE DPS = DEVICENET POWER SUPPLY
- MEDIUM VOLTAGE CABLE TERMINATION
- DRAWOUT DEVICE
- LA — LIGHTNING ARRESTOR
- K — KEY INTERLOCK

GROUNDING

- BARE COPPER GROUND CABLE. (SIZE 4/0 UNLESS OTHERWISE NOTED)
- 3/4ø X 10'–0" LONG GROUND ROD. (10'–0" MINIMUM LENGTH)
- EQUIPMENT BOLTED CONNECTION OR APPROVED EQUAL.
- CADWELD EXOTHERMIC CONNECTION
- GROUND

CONTROL DIAGRAM SYMBOLS

NOTE: ALL CONTROL SYMBOLS ARE DRAWN ASSUMING DE–ENERGIZED CIRCUITS, EMPTY TANKS, UNPRESSURIZED LINES, ETC.

OPEN ON INCREASE	CLOSE ON INCREASE	
		PRESSURE SWITCH
		LEVEL SWITCH
		FLOW SWITCH
		TEMPERATURE SWITCH
NORMALLY CLOSED	NORMALLY OPEN	
		PUSH BUTTON
		INSTANTANEOUS CONTACT
		TIMED CLOSE CONTACT
		TIMED OPEN CONTACT
		LIMIT SWITCH

- H / O / A / XOO / OOX — SELECTOR SWITCH: QUANTITY OF ARROWS INDICATES NUMBER OF POSITIONS. XOO INDICATES UPPER CONTACT CLOSED IN LEFT POSITION AND OPEN IN CENTER AND RIGHT POSITIONS
- INTERNAL WIRING
- FIELD WIRING
- RELAY COIL
- EXTERNAL CONNECTION TO PLC CABINET

ABBREVIATIONS

A,AMP	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AHJ	AUTHORITY HAVING JURISDICTION
AIC	AMPERE INTERRUPT CAPACITY
AWG	AMERICAN WIRE GAUGE
BFG	BELOW FINISHED GRADE
CATV	CABLE TELEVISION
CB	CIRCUIT BREAKER
CCTV	CLOSED CIRCUIT TELEVISION
CL	CENTER LINE
CKT	CIRCUIT
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CT	CURRENT TRANSFORMER
CU	COPPER
E.C.	ELECTRICAL CONTRACTOR
EMT	ELECTRIC METALLIC TUBING
FAA	FIRE ALARM ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
FBO	FURNISHED BY OTHERS
FWE	FURNISHED WITH EQUIPMENT
G.C.	GENERAL CONTRACTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
G,GND	GROUND
HP	HORSEPOWER
HZ	FREQUENCY IN CYCLES/SECOND
IG	ISOLATED GROUND
IMT	INTERMEDIATE METALLIC CONDUIT
JBOX	JUNCTION BOX
K	KILO
KCMIL	1000 CIRCULAR MILS
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
KW	KILOWATT
KWH	KILOWATT HOUR
MCC	MOTOR CONTROL CENTER
MCB	MAIN CIRCUIT BREAKER
MFG	MANUFACTURER
MH	MANHOLE
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTR	MOTOR
MV	MEDIUM VOLTAGE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRIC CODE
NEUT	NEUTRAL
NO	NORMALLY OPEN
OL	OVERLOAD ELEMENT
PF	POWER FACTOR
PH	PHASE
PRI	PRIMARY
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RGS	RIGID STEEL CONDUIT
RTD	RESISTANCE TEMPERATURE DETECTOR
SEC	SECONDARY
SS	STAINLESS STEEL
SV	SOLENOID VALVE
TEMP	TEMPERATURE
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UG	UNDERGROUND
UPS	UNINTERRUPTED POWER SUPPLY
V	VOLTS
VA	VOLT–AMPERES
VAR	VOLT–AMPERE REACTIVE
W	WATT
WM	WATT METER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

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REGISTERED PROFESSIONAL ENGINEER — DONNA LYNN RAMMER — No. 16928 Exp. 06-30-25 — ELECTRICAL — STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	D.R	CHECKED BY: NTHB
DRAWN BY:	SPB	10/20/2023

ELECTRICAL LEGEND

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	3/8" = 1'
SHEET:	20 OF 30

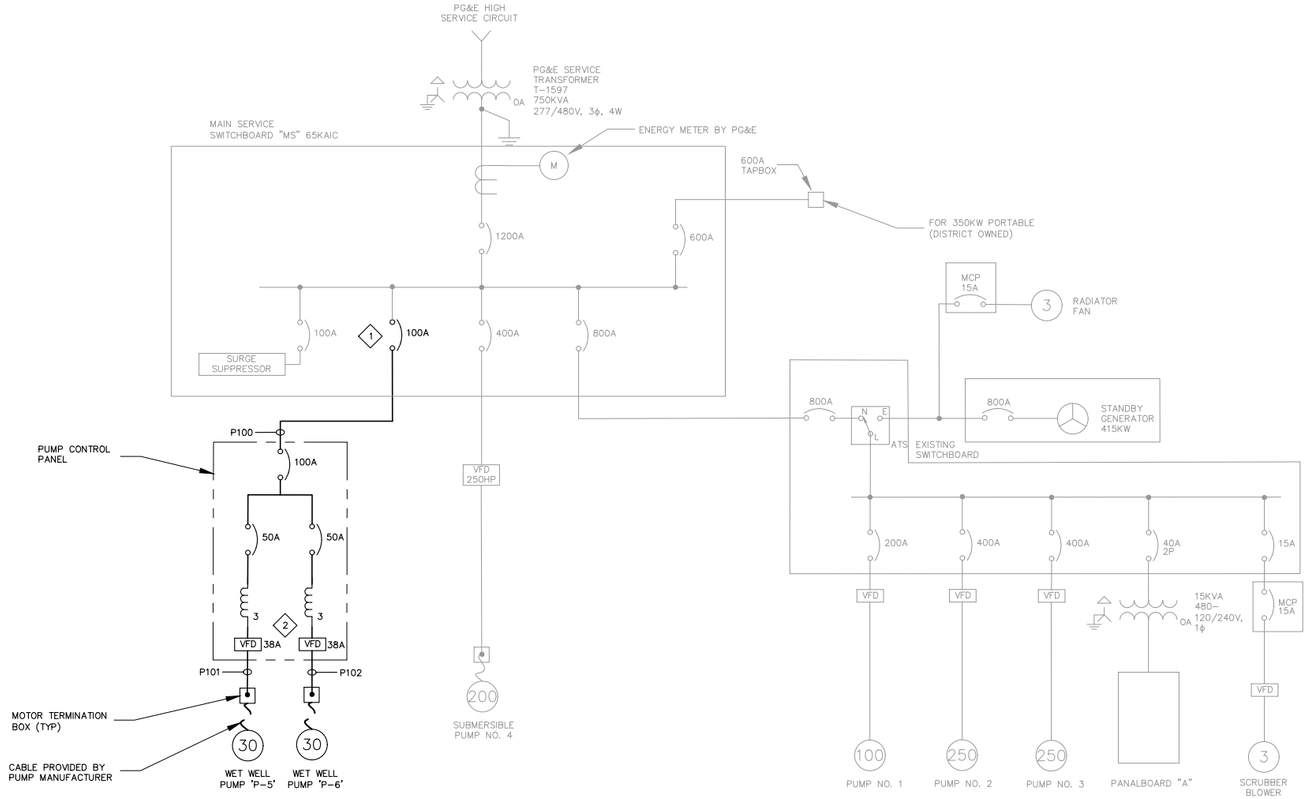
E-1

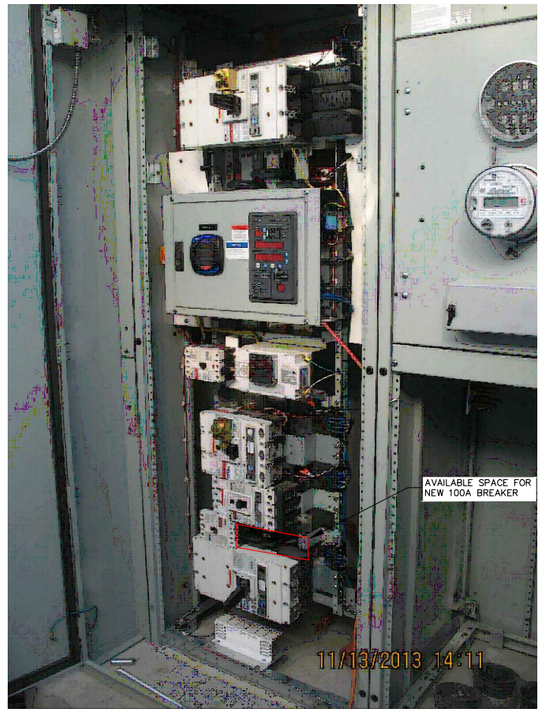
GENERAL NOTES:

1. ALL ITEMS SHOWN WITH LIGHT DESIGNATION INDICATE EXISTING. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATE NEW WORK, UNLESS OTHERWISE NOTED.
2. ANY POWER SHUTDOWN MUST BE PRE-APPROVED AND COORDINATED WITH THE DISTRICT.

KEYED NOTES:

1. INSTALL NEW CIRCUIT BREAKERS IN AVAILABLE SPACE. COORDINATE SHUTDOWN WITH THE DISTRICT PRIOR TO INSTALLATION.
2. RATING OF THE VFD SHOULD BE A MINIMUM OF 38A OR GREATER, WHICH IS BASED ON THE PUMP MANUFACTURERS MOTOR DATA SHEET PROVIDED DURING DESIGN. PUMP MOTOR FLA COULD VARY BASED ON THE ACTUAL MOTOR FLA DATA PROVIDED. VFD RATING SHALL MATCH OR BE GREATER THAN THE PUMP MOTOR FLA RATING.





MAIN SERVICE SWITCHBOARD "MS" INTERIOR

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REGISTERED PROFESSIONAL ENGINEER
DONNA LYNN RAMMER
No. 16928
Exp. 06-30-25
ELECTRICAL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	D.R.	
DRAWN BY:	SPB	
CHECKED BY:	NTHB	
00'2002.00-E2.dwg		

SINGLE-LINE DIAGRAM

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	3/8" = 1'
SHEET:	21 OF 30

E-2

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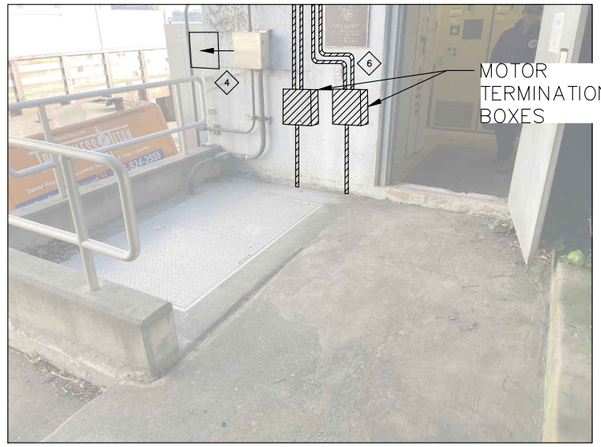


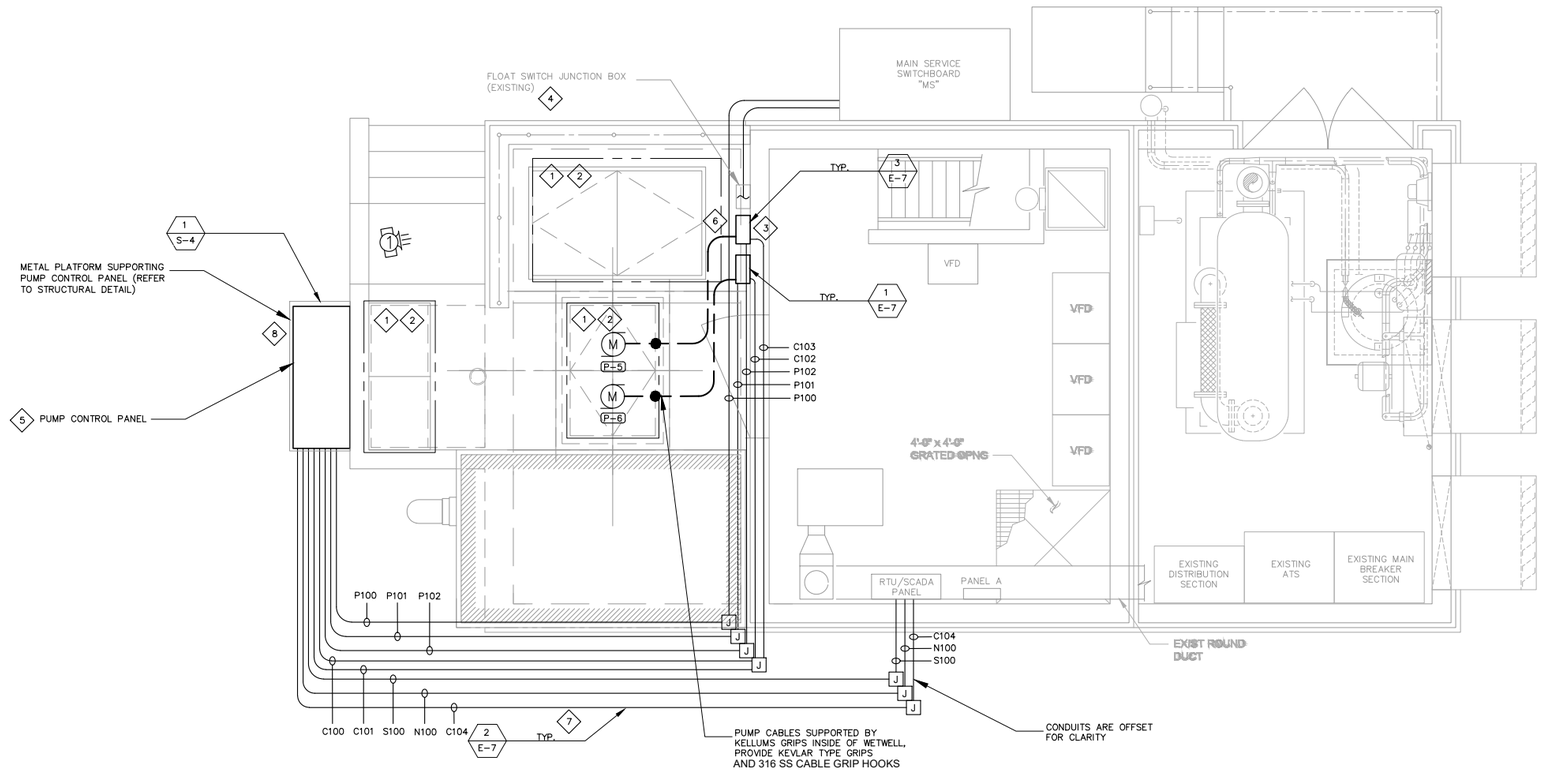
OVERVIEW OF PUMP STATION EXTERIOR WALL
PHOTO 1
NTS

GENERAL NOTES:

1. ALL ITEMS SHOWN WITH LIGHT DESIGNATION INDICATE EXISTING. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATE NEW WORK, UNLESS OTHERWISE NOTED.
2. EQUIPMENT SHOWN IS DIAGRAMMATIC. CONTRACTOR SHALL COORDINATE AND FIELD VERIFY EXACT LOCATIONS PRIOR TO EXECUTION OF WORK.

KEYED NOTES:

1. THE INTERIOR OF THE WET WELL AREA IS A CLASSIFIED HAZARDOUS AREA PER NFPA 820. ALL NEW EQUIPMENT LOCATED WITHIN THE WET WELL SHALL BE LISTED AND RATED FOR CLASS 1, DIVISION 1 PER THE CEC.
2. THE HATCH AREA AND EXTERIOR WET WELL AREA IS A CLASSIFIED HAZARDOUS AREA PER THE NFPA 820 AND EXTENDS VERTICALLY FROM THE TOP OF THE HATCH 18" AND HORIZONTALLY FROM THE EDGE OF THE HATCH 36". ALL NEW EQUIPMENT LOCATED WITHIN THE BOUNDARY SHALL BE LISTED AND ROTATED FOR CLASS 1, DIVISION 2 PER THE NEC.
3. CORE DRILL THROUGH EXISTING CONCRETE SLAB FOR CABLE EXIT OUT OF WETWELL (TYP 2). AVOID EXISTING REBAR IN SLAB WHEN CORE DRILLING.
4. RELOCATE FLOAT SWITCH BOX TO ACCOMMODATE NEW MOTOR TERMINATION BOXES.
5. CONDUITS ENTER BOTTOM OF ENCLOSURE.
6. EXISTING BRONZE WALL PLAQUE AND RECEPTACLE ARE LOCATED IN THIS AREA, AVOID LOCATING NEW TERMINATION BOX IN THIS AREA. IF PLAQUE AND RECEPTACLE REQUIRE RELOCATION, COORDINATE WITH DISTRICT NEW LOCATION AND PROVIDE NEW RECEPTACLE AND CONDUIT AND WIRE AS NEEDED. REFER TO DETAIL WITH PICTURE FOR LOCATION OF RECEPTACLE AND PLAQUE.
7. CONDUIT ROUTING IS DIAGRAMMATIC. ROUTE CONDUITS AS CLOSE TO STRUCTURE/BUILDING WALL AS POSSIBLE OR ATTACHED TO WALL PER REFERENCED DETAIL.
8. BOND PLATFORM TO GROUND BUS INSIDE OF PUMP CONTROL PANEL. BOND WITH #2 INSULATED COPPER WIRE.



POWER AND SIGNAL PLAN
3/8" = 1'-0"

4' 3' 2' 1' 0 3' 6'
BAR SCALE
3/8" = 1'-0"
CHECK GRAPHIC SCALE BEFORE USING

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No. 16928
Exp. 06-30-25
ELECTRICAL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
	DESIGNED BY: D.R	CHECKED BY: NTHB
	DRAWN BY: SPB	00\2002.00\E3.dwg

POWER AND SIGNAL PLAN

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	3/8" = 1'
SHEET:	22 OF 30

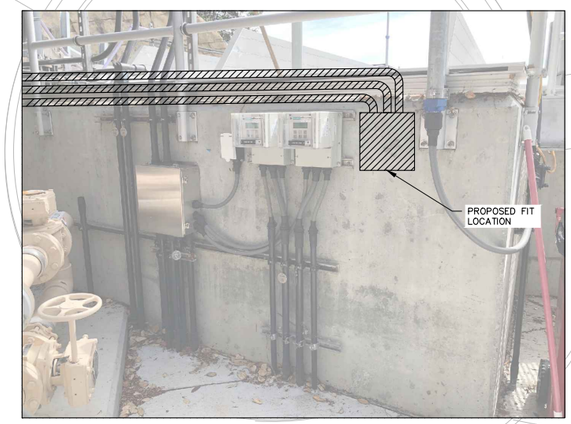
E-3

GENERAL NOTES:

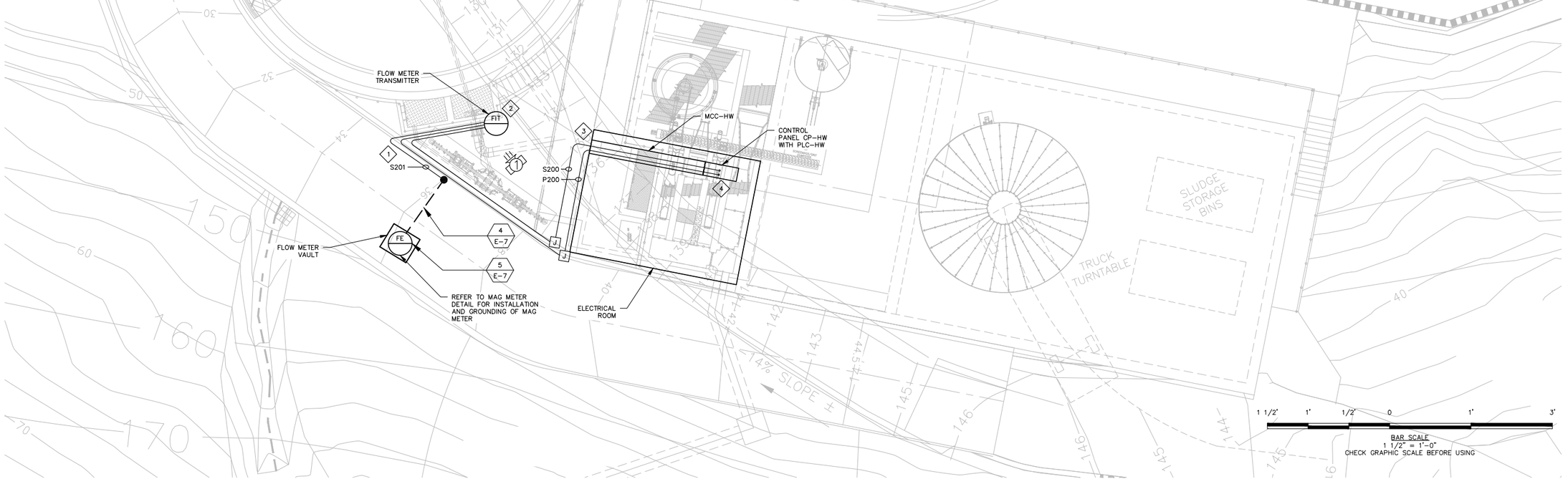
1. EQUIPMENT LOCATIONS SHOWN THIS SHEET ARE DIAGRAMMATIC. FIELD VERIFY EXACT LOCATIONS PRIOR TO EXECUTION OF WORK. REFER TO CIVIL DRAWING OF THIS AREA FOR EXISTING UNDERGROUND UTILITIES.
2. ALL ITEMS SHOWN IN LIGHT DESIGNATION INDICATE EXISTING EQUIPMENT TO REMAIN. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATE NEW OR MODIFIED EQUIPMENT.

KEYED NOTES

1. EXIT CONCRETE RETAINING WALL IN APPROXIMATE LOCATION SHOWN. ROUTE CONDUIT ALONG WALL UTILIZING PIPE SUPPORTS WHERE POSSIBLE.
2. MOUNT FIT NEXT TO EXISTING INSTRUMENTS. REFER TO DETAIL 5 FOR LOCATION.
3. CORE DRILL OPENING FOR NEW CONDUITS TO ENTER BUILDING. SEAL AROUND CONDUITS PER SPECIFICATION REQUIREMENTS.
4. COORDINATE WITH THE DISTRICT 120V POWER SOURCE FOR THE FIT IN CONTROL PANEL CP-HW. SOURCE OF POWER WILL COME FROM THE PANEL VIA AN AVAILABLE FUSED TERMINAL SPACE. ALSO COORDINATE AVAILABLE SPARE ANALOG INPUT FOR THE FIT SIGNAL.



OVERVIEW OF TRANSMITTER MOUNTING
PHOTO 1
NTS



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No. 16928
Exp. 06-30-25
ELECTRICAL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	D.R.	CHECKED BY: AJF
DRAWN BY:	SPB	07/20/23/E-4.dwg

TREATMENT PLANT HEADWORKS ELECTRICAL ROOM POWER AND SIGNAL PLAN

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

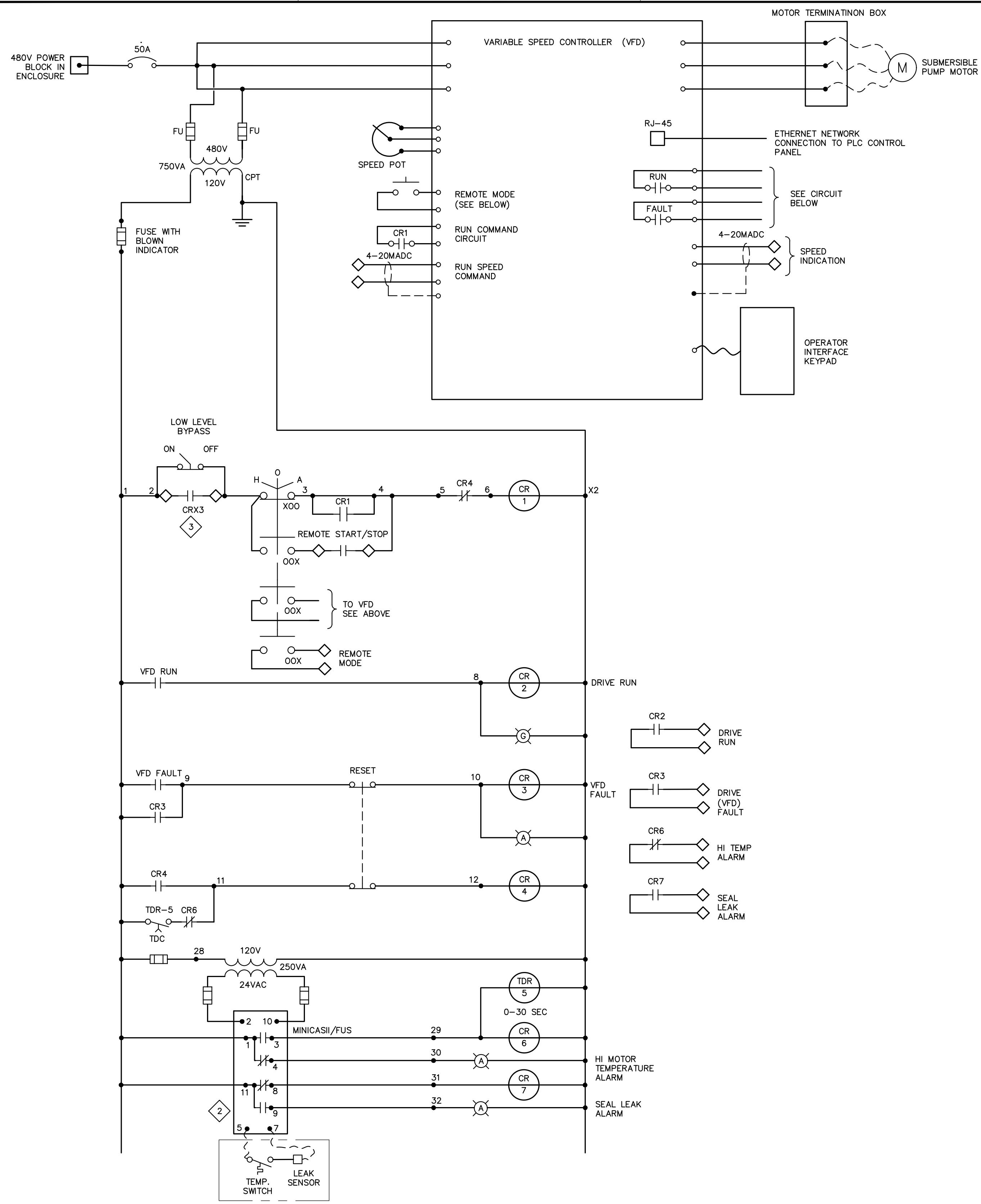
JOB NO:	00120002.00
DATE:	MAY 2023
SCALE:	1/2" = 1'-0"
SHEET:	23 OF 30

E-4

22x34 SHEET
1:2

KEYED NOTES:

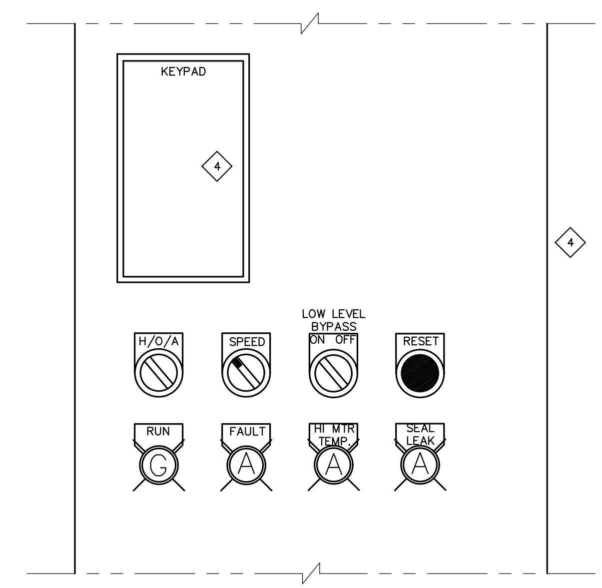
1. ALL PILOT DEVICES ARE LOCATED ON THE INNER PANEL DOOR.
2. THE MINICASII/FUS MOTORLEAK/TEMPERATURE PROTECTION MODULE SHALL BE PROVIDED BY THE PUMP MANUFACTURER/SUPPLIER AND SHALL BE INSTALLED IN THE MCC AS SHOWN. MODULES WITH DIRECT 120VAC POWER INPUT SHALL BE ACCEPTABLE.
3. LSLL-200 CONTACT LOCATED IN SCADA PANEL.
4. LOCATED ON SWING OUT DOOR OF VFD CONTROL PANEL.
5. THE DISTRICT/ENGINEER RESERVE THE RIGHT TO REARRANGE THE ORDER OF THE DEVICES DURING SHOP DRAWING REVIEW.
6. PROVIDE NEW RELAY CR3 IN RTU/SCADA CONTROL PANEL. RELAY CONTACTS SHOULD BE WIRED IN PARALLEL WITH THE VFD LOW LEVEL BYPASS SWITCH.



SUBMERSIBLE PUMP CONTROL SCHEMATIC

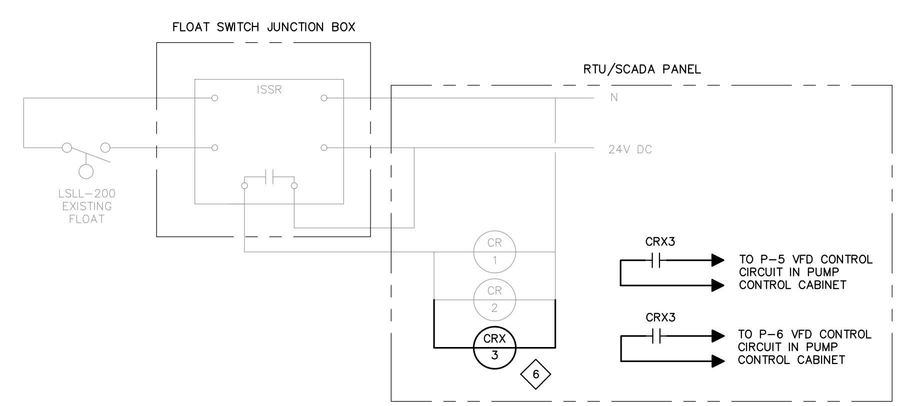
SCALE: N.T.S.

EQUIP NO.	DESCRIPTION
P-5	SUBMERSIBLE PUMP
P-6	SUBMERSIBLE PUMP



PUMP CONTROL DEVICES

SCALE: N.T.S.



LSLL-200 FLOAT SWITCH WIRING MODIFICATIONS

SCALE: N.T.S.

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REGISTERED PROFESSIONAL ENGINEER DONNA LYNN RAMMELL No. 16928 Exp. 06-30-25 ELECTRICAL STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: DLR CHECKED BY: AJF
DRAWN BY: SPB 0012002.00-E-5.dwg

ELECTRICAL WIRING DIAGRAMS

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: NO SCALE
SHEET: 24 OF 30

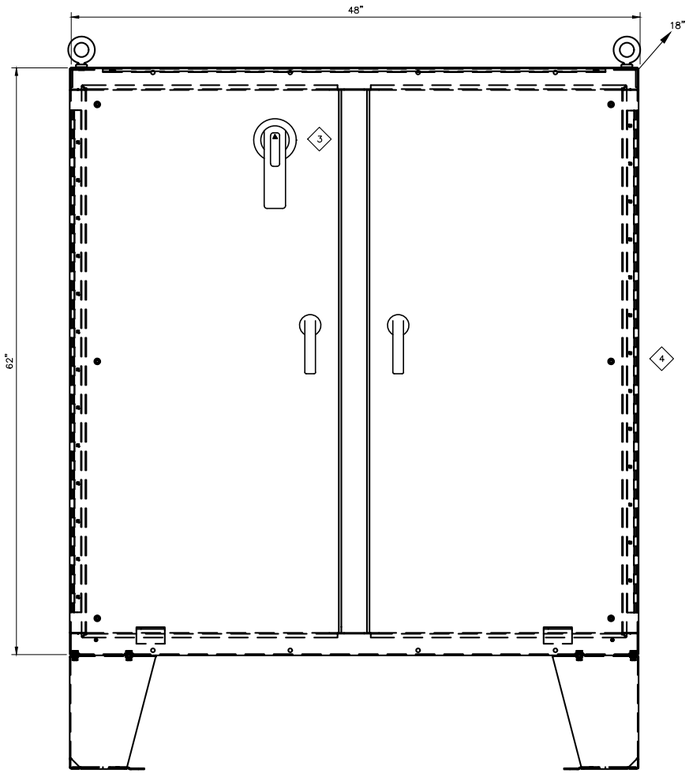
E-5

GENERAL NOTES:

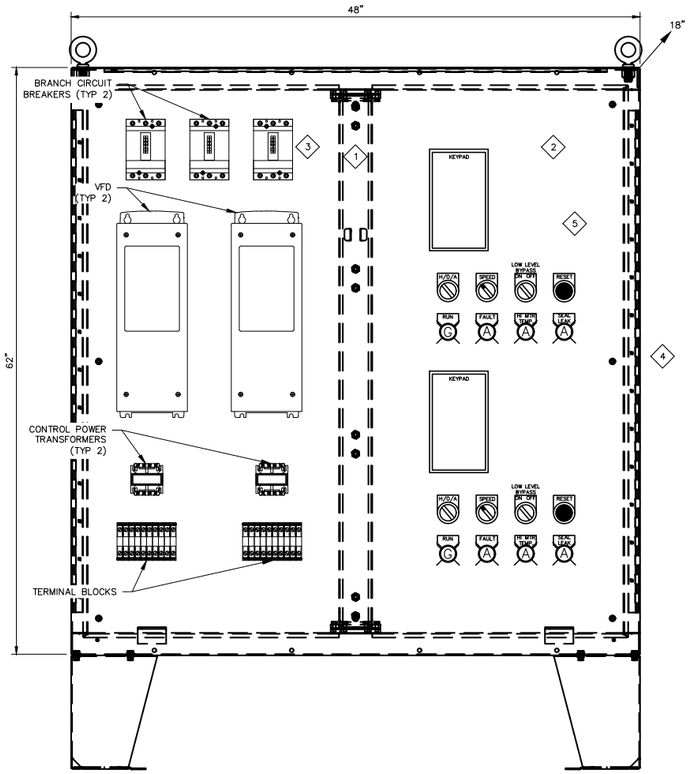
1. COMPONENTS SHOWN WITHIN THE CONTROL PANEL ARE INTENDED TO BE A GUIDE ONLY TO HELP DETERMINE ESTIMATED SIZE OF CONTROL PANEL. CONTRACTOR TO SUBMIT PROPOSED LAYOUT AND DIMENSIONS AS REQUIRED BY THE SPECIFICATIONS.
2. ALL ITEMS SHOWN IN LIGHT DESIGNATION INDICATE EXISTING EQUIPMENT TO REMAIN. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATE NEW OR MODIFIED EQUIPMENT.

KEYED NOTES:

1. PROVIDE BARRIER BETWEEN THE 480V SIDE AND THE 120V SIDE FOR CONTROLS.
2. PROVIDE SWINGOUT PANEL FOR MOUNTING CONTROLS AND VFD HMI DEVICE.
3. MAIN BREAKER. PROVIDE EXTENSION ROD FROM BREAKER TO DOOR HANDLE SUCH THAT WHEN OPENED, POWER WILL BE DISCONNECTED TO THE PANEL.
4. SIZE OF PANEL MUST NOT EXCEED DIMENSIONS INDICATED UNLESS APPROVED BY THE ENGINEER. COMPONENTS (NOT ALL ARE SHOWN) INDICATED ON THE INTERIOR ARE AN ESTIMATE ONLY. SUBMITTAL DRAWINGS SHALL INDICATE PROPOSED LOCATION OF COMPONENTS.
5. SIZE OF CONTROL DEVICES ARE NOT TO SCALE AND SHOWN LARGER FOR CLARITY.



FRONT VIEW OF PANEL
SCALE: N.T.S.



INTERIOR VIEW OF PANEL
SCALE: N.T.S.

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REGISTERED PROFESSIONAL ENGINEER
DONNA LYNN RAMMER
No. 16928
Exp. 06-30-25
ELECTRICAL
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	D.R	CHECKED BY: AJF
DRAWN BY:	SPB	10/20/2023 E-6.dwg

ELECTRICAL ENCLOSURE ELEVATION

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

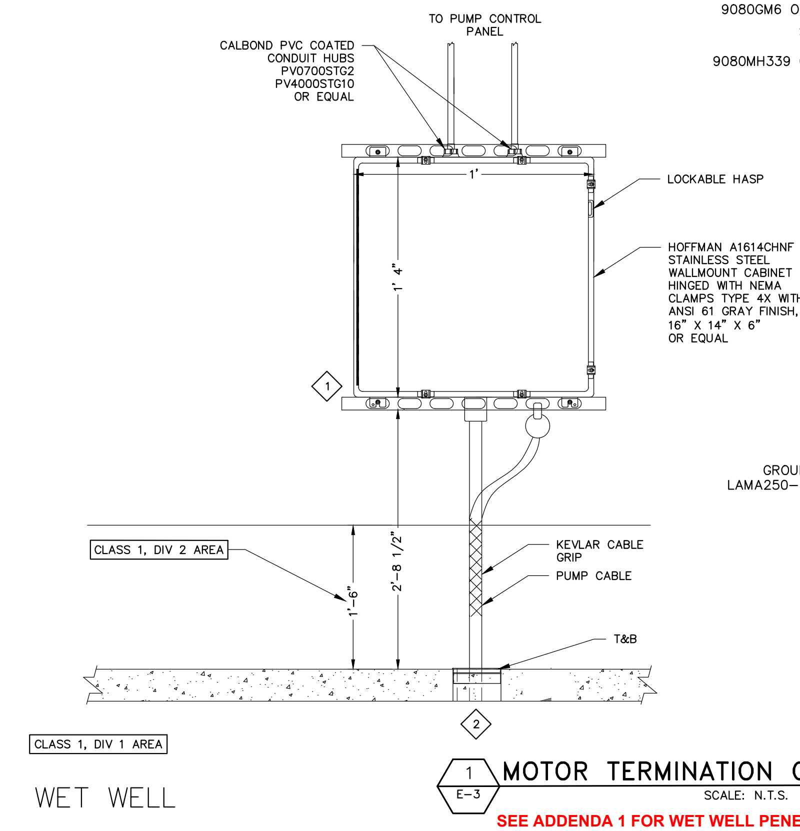
JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	NO SCALE
SHEET:	25 OF 30

E-6

100% - ISSUED FOR BID

22x34 SHEET
1:2

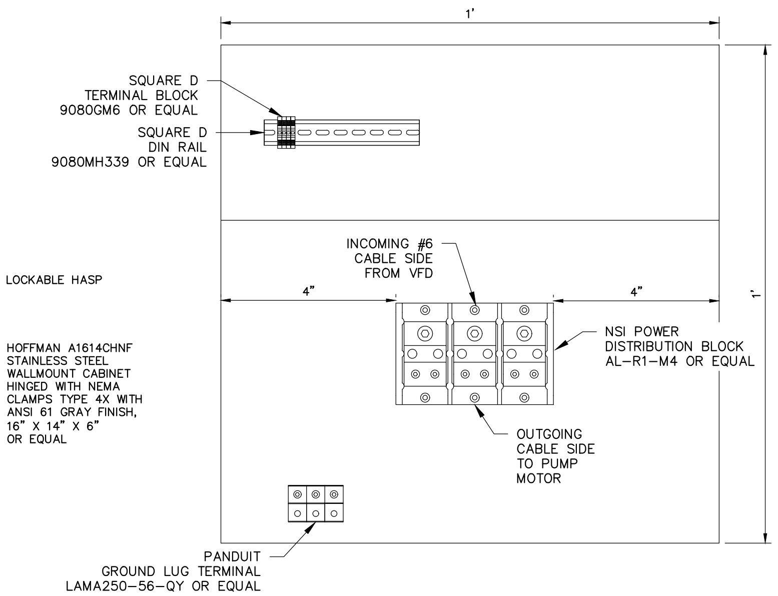
DETAIL KEYED NOTES:
1. ATTACH BOX TO UNISTRUT, REFER TO DETAIL 3.
2. CORE DRILL SLAB



1 E-3 MOTOR TERMINATION CABINET DETAIL

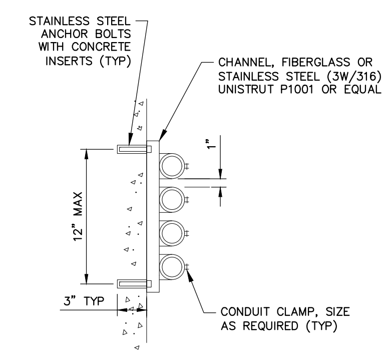
SCALE: N.T.S.

SEE ADDENDA 1 FOR WET WELL PENETRATIONS.
KEVLAR CABLE GRIPS ARE TO BE LOCATED INSIDE WET WELL.



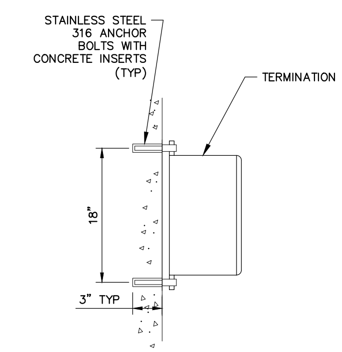
ENLARGED DETAIL OF INTERIOR

SCALE: N.T.S.



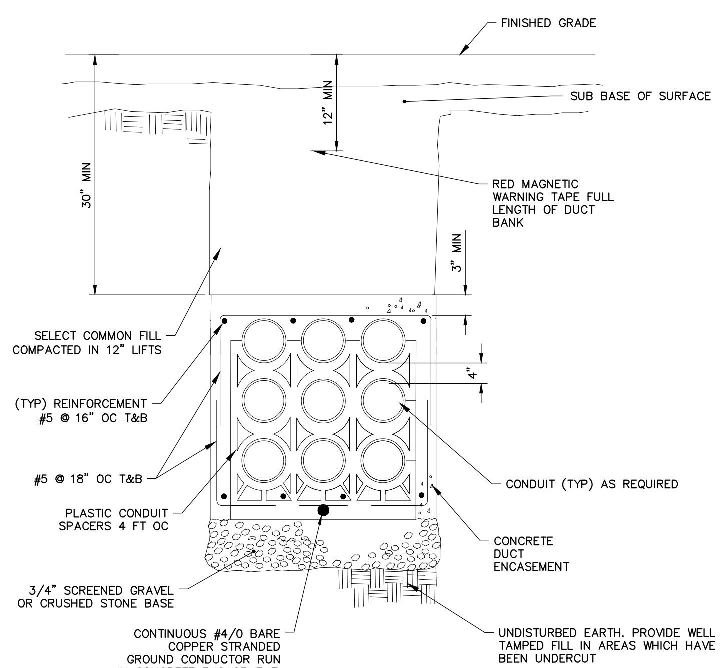
2 E-3 CONDUIT MOUNTING DETAIL

SCALE: N.T.S.



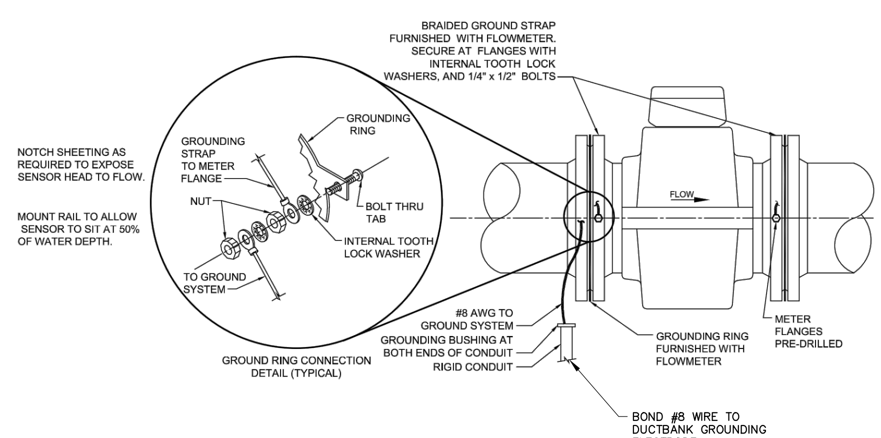
3 E-3 TERMINATION BOX MOUNTING DETAIL

SCALE: N.T.S.



4 E-4 TYPICAL REINFORCED CONCRETE ENCASED UNDERGROUND DUCT BANK (FOR COMMUNICATIONS AND SIGNAL CONDUITS) DETAIL

SCALE: N.T.S.



5 E-4 MAGNETIC FLOWMETER GROUNDING DETAIL

SCALE: N.T.S.

\\woodardcurran.net\shared\Projects\0012002.00 smcsd - beach force main rehabilitation\wp\b. design\b. plans\100% design\Electrical\0012002.00-E-7.dwg, Aug 02, 2023 - 6:13pm SJUNG

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REGISTERED PROFESSIONAL ENGINEER DONNA LYNN RAMIREZ No. 16928 Exp. 06-30-25 ELECTRICAL STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: DLR CHECKED BY: AJF
DRAWN BY: SPB 0012002.00-E-7.dwg

STANDARD DETAILS - 1

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	NTS
SHEET:	26 OF 30

E-7

CONDUIT AND CABLE SCHEDULE

CONDUIT NUMBER	CONDUIT SIZE	CONDUCTOR QTY AND SIZE	FROM	TO	COMMENTS
P100	1 1/2"	(3)#3, (1)#8GND	MAIN SWITCHBOARD 'MS'	PUMP CONTROL PANEL	
P101	1"C	(3)#8, (1)#10GND	PUMP CONTROL PANEL	"P-6" MOTOR TERM BOX	
P102	1"C	(3)#8, (1)#10GND	PUMP CONTROL PANEL	"P-5" MOTOR TERM BOX	
P200	3/4"C	(2)#12, (1)#12GND	PLC-HW	FIT	
N100	3/4"C	(2)CAT6	PUMP CONTROL PANEL	RTU/SCADA PNAEL	VFD COMMUNICATION
C100	3/4"C	(2)#14	PUMP CONTROL PANEL	J-BOX	MOISTURE SENSOR
C101	3/4"C	(2)#14	PUMP CONTROL PANEL	J-BOX	LEAK SENSOR
C102	3/4"C	(2)#14	J-BOX	"P-6" MS & TS	MOISTURE SENSOR
C103	3/4"C	(2)#14	J-BOX	"P-5" MS & TS	LEAK SENSOR
C104	1"C	(28)#14, (1)#14GND	PUMP CONTROL PANEL	RTU/SCADA PNAEL	
S100	3/4"C	(4)TSP	PUMP CONTROL PANEL	RTU/SCADA PANEL	SPEED SIGNAL
S200	3/4"C	(1)TSP	PLC-HW	FIT	
S201	3/4"C	VENDOR SUPPLIED	FIT	FLOW METER VAULT	

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No. 16928
Exp. 06-30-25
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STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
DESIGNED BY:	D.R.	
DRAWN BY:	SPB	
CHECKED BY:	AJF	
07/20/23/AE-8.dwg		

ELECTRICAL SCHEDULES

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 00120020.00
DATE: MAY 2023
SCALE: NO SCALE
SHEET: 27 OF 30

E-8

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INSTRUMENT IDENTIFICATION

EXAMPLE SYMBOLS

T RC
W-X-V-Z (A) (B)

- FIRST LETTER (S)
- SUCCEEDING LETTERS
- THE TOTAL NUMBER OF SETS OF UNITS (Y VARIES FROM 1 TO A)
- THE TOTAL NUMBER OF SETS OF UNITS (Z VARIES FROM 1 TO B)
- SET NUMBER (USED WHEN THERE ARE MULTIPLE SETS OF UNITS WITH THE SAME W-X-Y DESIGNATIONS)
- UNIT NUMBER (USED WHEN THERE ARE MULTIPLE UNITS WITH THE SAME W-X DESIGNATIONS)
- LOOP NUMBER
- UNIT PROCESS NUMBER

TT W-X-V-Z — FIELD MOUNTED INSTRUMENT

FY I/P W-X-V-Z — REAR-OF-PANEL MOUNTED INSTRUMENT

FIC W-X-V-Z — PANEL MOUNTED INSTRUMENT

PI — SHARED DISPLAY, SHARED CONTROL (DCS) PRIMARY LOCATION, NORMALLY ACCESSIBLE TO OPERATOR

SPECIAL CASES

QL OO — ON AND OFF EVENT LIGHTS

ZL OC — OPENED AND CLOSED POSITION LIGHTS

ZS OC — OPENED AND CLOSED POSITION SWITCHES

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

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

HS E OSC — ELECTRIC ACTUATOR WITH INTEGRAL OPEN-STOP-CLOSE MOMENTARY CONTACT CONTROL SWITCH

FIHK CM — FLOW INDICATING, COMPUTER/MANUAL CONTROL STATION

FIC CAM — FLOW INDICATING, COMPUTER/AUTO/MANUAL CONTROL STATION

HS LOS — LOCK OUT STOP

INSTRUMENT SOCIETY OF AMERICA TABLE

	FIRST LETTER (S)		SUCCEEDING LETTERS		
LETTER	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS (+)		ALARM		
B	BURNER FLAME		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
C	CONDUCTIVITY			CONTROL	
D	DENSITY (S.G)	DIFFERENTIAL			
E	VOLTAGE		PRIMARY ELEMENT		
F	FLOW RATE	RATIO			
G	GAUGE		GLASS	GATE	
H	HAND (MANUAL)				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE			CONTROL STATION	
L	LEVEL		LIGHT (PILOT)		LOW
M	MOTION				MIDDLE
N	USERS CHOICE (+)		USERS CHOICE (+)	USERS CHOICE (+)	USERS CHOICE (+)
O	USERS CHOICE (+)		ORIFICE		
P	PRESSURE (OR VACUUM)		POINT (TEST CONNECTION)		
Q	QUANTITY OR EVENT(+)	INTEGRATE	INTEGRATE		
R			RECORD OR PRINT		
S	SPEED OR FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE (+)		MULTIFUNCTION (+)	MULTIFUNCTION (+)	MULTIFUNCTION (+)
V	VISCOSITY			VALVE OR DAMPER	
W	WEIGHT OR FORCE		WELL		
X	UNCLASSIFIED (+)		UNCLASSIFIED (+)	UNCLASSIFIED (+)	UNCLASSIFIED (+)
Y	USERS CHOICE (+)			RELAY OR COMPUTE (+)	
Z	POSITION			DRIVE, ACTUATE OR UNCLASSIFIED FINAL CONTROL ELEMENT	

(+) WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

TRANSDUCERS

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

EXAMPLE:

FY I/P — CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

SELF CONTAINED VALVE & EQUIPMENT TAG NUMBERS

PAWDX-Y

PA: PLANT ABBREVIATION
W: UNIT PROCESS NUMBER
D: ARV = AIR RELEASE VALVE
AVRV = AIR AND VACUUM RELEASE VALVE
E = EJECTOR
FCV = FLOW CONTROL VALVE
G = GATE
LCV = LEVEL CONTROL VALVE
M = MECHANICAL EQUIPMENT
P = PUMP
PCV = PRESSURE CONTROL VALVE
VRV = VACUUM RELIEF VALVE
PSV = PRESSURE RELIEF VALVE
T = TANK
TCV = TEMPERATURE CONTROL VALVE
AHU = AIR HANDLING UNIT
X: LOOP NUMBER
Y: UNIT NUMBER

LINE LEGEND

- PROCESS (CLOSED CONDUIT, DASHED LINE INDICATES ALTERNATE FLOW STREAM)
- PROCESS (OPEN CHANNEL)
- STOP LOGS
- DISCRETE SIGNAL OR ANALOG
- PNEUMATIC SIGNAL
- FIELD SYSTEM SIGNAL
- HYDRAULIC SYSTEM SIGNAL
- BUILDING OR FACILITY BOUNDARY
- EXISTING BUILDING OR FACILITIES
- DATA LINK
- (4) (8) (3) PARALLELING LINES (PARENTHETICAL NUMBER INDICATES THE NUMBER OF SIGNALS REPRESENTED)
- CONNECTING LINES
- NON-CONNECTING LINES

INTERFACE SYMBOLS

S WA — WA D

= PROCESS INTERFACE

= SIGNAL INTERFACE

W = LETTER COORDINATE

A = NUMBER COORDINATE

D = DESTINATION DRAWING NO.

S = SOURCE DRAWING NO.

(N) PROCESS OR SIGNAL LINE CONTINUATION N=1,2,3,ETC

INTERFACE TO OR FROM PROCESS EXTERNAL TO PROJECT

GENERAL NOTES

1. P & ID'S ARE FOR INFORMATION ON CONTROL CONCEPTS AND INSTRUMENTATION ONLY. REFER TO PLANS AND SPECIFICATIONS FOR DETAILS: PIPING: VALVING: PACKAGED EQUIPMENT CONTROLS AND MISCELLANEOUS ITEMS.
2. THIS IS A STANDARD LEGEND. THEREFORE, NOT ALL OF THE SYMBOLS ARE USED IN THIS PROJECT.

ABBREVIATIONS & LETTER SYMBOLS

AI	ANALOG INPUT
AM	AUTO-MANUAL
AO	ANALOG OUTPUT
CAM	COMPUTER-AUTO-MANUAL
CM	
CP-X	
CG	
CO	C
CTEL	
CP/DCS	
DSRSD	DUBLIN SAN RAMON SERVICES DISTRICT
DCS	
DCU	
DI	DISCRETE INPUT
DO	
(E)	
ES	
FLP	
FBM	
FM	
FOR	FORWARD-OFF-REVERSE
FP-W-X	FIELD PANEL NO. WX WHERE W = UNIT PROCESS NUMBER X = PANEL NUMBER)
FR	)-REVERSE
FS	
GBT	GRAVITY BELT THICKENER
H_2S	
HOA	HAND-OFF-AUTO
HOR	HAND-OFF-REMOTE
LA	LOCAL-AUTO
LP/DCS	LOCAL PANEL-DISTRIBUTED CONTROL SYSTEM
LOC	LOCAL (AT FIELD DEVICE)
LOS	LOCKOUT STOP
LP	LOCAL PANEL
L/S	LEAD-STANDBY
LR	LOCAL-REMOTE
MA	MANUAL-AUTO
MCC-X	MOTOR CONTROL CENTER NO. X
MW	MOTOR WINDINGS
NS	NORTH-SOUTH
O_2	OXYGEN
OC	OPEN-CLOSE (D)
OCA	OPEN-CLOSE-AUTO
OCR	OPEN-CLOSE-REMOTE
OCU	ODOR CONTROL UNIT
OO	ON-OFF - RTU REMOTE TERMINAL UNIT
OOA	ON-OFF-AUTO
OOR	ON-OFF-REMOTE
ORP	OXIDATION REDUCTION POTENTIAL
OSC	OPEN-STOP-CLOSE
REV	REVERSE
RS	RAW SEWAGE
SBD	SODIUM BISULFITE DRAIN
SHD	SODIUM HYPOCHLORITE DRAIN
SLOS	START-LOCKOUT-STOP
S/D	SEDIMENTATION-DEWATERING
S/D/C	SEDIMENTATION-DEWATERING-CLOSED
SS	START-STOP
SSC	SUPERVISORY SET POINT CONTROL
VFD	VARIABLE FREQUENCY DRIVE
VHC	VOLATILE HYDROCARBON
*	PROVIDED AS PACKAGED EQUIPMENT

RTU TERMINATIONS

- △ DISCRETE INPUT
- ▽ DISCRETE OUTPUT
- ▲ ANALOG INPUT
- ▼ ANALOG OUTPUT

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LICENSED PROFESSIONAL ENGINEER KYLE EVAN TRACY CS. 7556 CONTROL SYSTEM STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: RSS
DRAWN BY: RSS
CHECKED BY: KT
0012002.00-I01.dwg

INSTRUMENTATION LEGEND AND NOTES

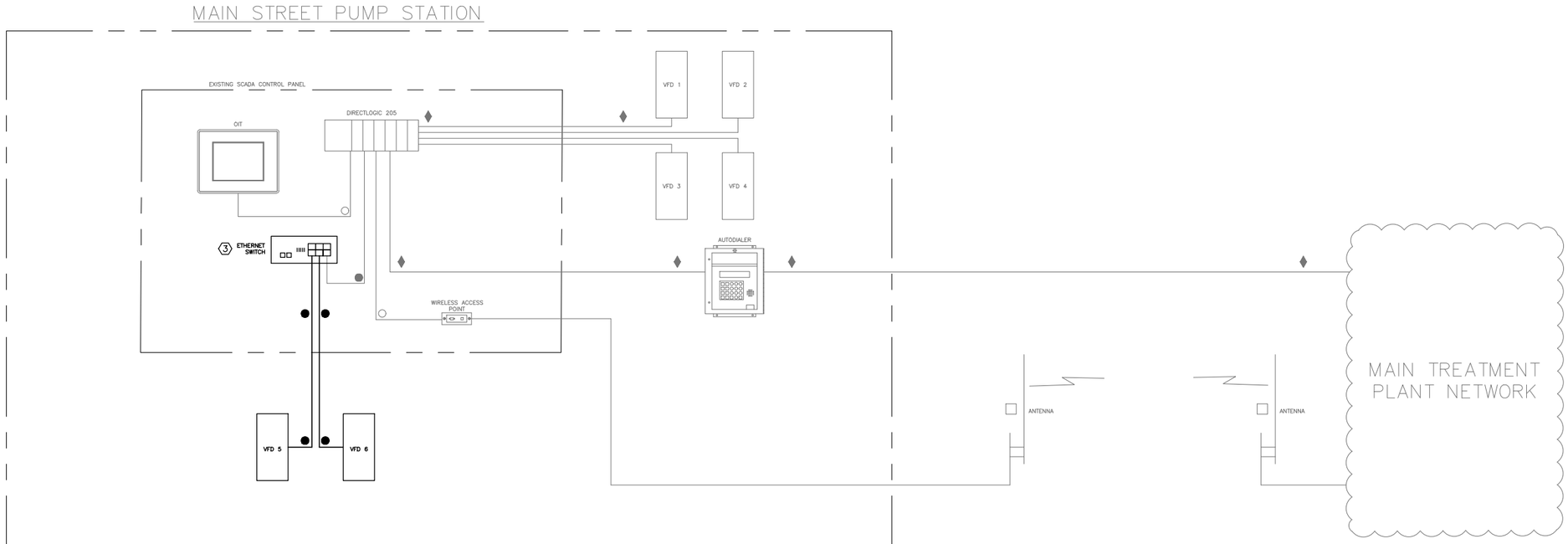
SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO: 0012002.00
DATE: JULY 2023
SCALE: NTS
SHEET: 28 OF 30

I01

22x34 SHEET 1:2



LEGEND

- ♦ COPPER
- ● CAT6 STP 10/100MBPS ETHERNET
- □ WIRELESS COMMUNICATIONS
- ▲ FIBER OPTIC COMMUNICATIONS
- ○ RS 232 SERIAL COMMUNICATIONS

GENERAL NOTES:

1. ALL ITEMS SHOWN WITH LIGHT DESIGNATION INDICATES EXISTING ITEMS TO REMAIN. ALL ITEMS SHOWN WITH BOLD DESIGNATION INDICATES NEW WORK, UNLESS OTHERWISE NOTED.
2. REFER TO SITE LAYOUT DRAWING FOR EXISTING WELL AND PANEL LOCATIONS.
3. PROVIDE AND INSTALL NEW NTRON ETHERNET SWITCH MODEL NO. 306TX

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LICENSED PROFESSIONAL ENGINEER
KYLE EVAN TRACY
CS. 7556
CONTROL SYSTEM
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE
	DESIGNED BY: RSS	CHECKED BY: LW
	DRAWN BY: RSS	QA/QC BY: KT

NETWORK COMMUNICATION BLOCK DIAGRAM

SAUSALITO MARIN CITY SANITARY DISTRICT

BEACH FORCE MAIN REHABILITATION PROJECT

JOB NO:	0012002.00
DATE:	AUGUST 2023
SCALE:	NTS
SHEET:	29 OF 30

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SCADA

LOCAL HMI

FIELD

SHEET NOTES:

1. NOT USED.
2. ALL PLC/SCADA SOFTWARE WORK SHALL BE PERFORMED BY CALCON, A THIRD PARTY INSTRUMENT CONTRACTOR.
3. ALL SIGNALS AND DISPLAYS AT EXISTING LOCAL HMI SHALL BE DUPLICATED IN SCADA SYSTEM VIA WIRELESS (RADIO) LINK.
4. THIS PUMP SHALL BE PROVIDED WITH MINICAS II MODULE FOR TEMPERATURE AND LEAKAGE PROTECTION. THIS MODULE SHALL BE INSTALLED IN THE VFD AS PER WIRING DIAGRAM SHOWN ON DRAWING E03.
5. FURNISH AND INSTALL NEW LOW LOW LEVEL BYPASS SWITCH ON THE VFD AND CONNECT TO EXISTING CONTROL CIRCUIT.
6. REWIRE EXISTING LOW LOW LEVEL SWITCH TO BYPASS NEW LOW LEVEL SHUT OFF HARD WIRED RELAY CONTACT.
7. FURNISH AND INSTALL IN EXISTING SCADA PANEL AND INTRINSICALLY SAFE RELAY FOR THIS FLOAT SIGNAL.
8. TYPICAL FOR PUMPS 4, 5, AND 6.
9. I/O FOR PUMPS 5 & 6 ARE VIA MODBUS TCP/IP COMMUNICATIONS.

U 501

LEAD LAG1
LAG2 STANDBY
HS 501
UC 501
START/STOP

SPEED COMMAND
RUN REM SI SIC HS YA YA YA
VFD FAULT HI TEMP SEAL LEAK
YL 01 YL 01 SI 01 SIC 01 HS 01 YA 01 YA 01 YA 01

HOA VFD SS ALARM RESET LOW LEVEL BYPASS
HS 01 SIC 01 HS 01A HS 01B HS 01C
RUN FAULT HITEMP SEAL LEAK
YL 01 YA 01A YA 01B YA 01C
VFD #

MOISTURE HI
TEMPERATURE HI

RUN VFD FAULT
YL SI SIC HS YA
101 101 101 101 101
HOA VFD LOW LEVEL BYPASS
HS SIC HS HS
101 101 101A
(E) VFD 1

201 201 201 201 201
HS 201 SIC 201 HS 201A HS 201B
(E) VFD 2

301 301 301 301 301
HS 301 SIC 301 HS 301A HS 301B
(E) VFD 3

FI 90
FI 95
LAH 96
FI 98
FIT 95
FIT 98

NOTE 8

LIT 501 (E)
LOS HS 101 (E)
LOS HS 201 (E)
LOS HS 301 (E)
FE 95
LSH 96
FE 98

SEWAGE FROM ROCK CATCHER 30" SS

WET WELL

DRY WELL

12" FM
14" FM
6" FM
8" FM
16" FM
SEWAGE TO MAIN SEWAGE TREATMENT PLANT VIA BEACH FORCE MAIN

LSHH 200 (E)
LSH 200 (E)
LSL 200 (E)
LSLL 200 (E)

P-6
P-5
P-4
P-3
P-2
P-1
10" FM
20" FM
FIT 90
FE 90
14" GV
SEWAGE TO MAIN SEWAGE TREATMENT PLANT VIA ALEXANDER FORCE MAIN

PUMP 6
PUMP 5
PUMP 4
PUMP 1
PUMP 2
PUMP 3
6" FM (DRAIN)

MAIN STREET PUMP STATION

MAIN STREET PUMP STATION

MAIN SEWAGE TREATMENT PLANT

HARD WIRED INTERLOCK TO SHUT OFF PUMP AT LOW LOW LEVEL. SEE LSLL-200 FLOAT SWITCH WIRING MODIFICATIONS DIAGRAM ON SHEET E-7.

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LICENSED PROFESSIONAL ENGINEER
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CS. 7556
CONTROL SYSTEM
STATE OF CALIFORNIA

REV	DESCRIPTION	DATE

DESIGNED BY: RSS
DRAWN BY: RSS
CHECKED BY: LW
00120021A01.dwg

PUMP STATION P&ID

SAUSALITO MARIN CITY SANITARY DISTRICT

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JOB NO: 0012002.00
DATE: AUGUST 2023
SCALE: NTS
SHEET: 30 OF 30

I-3