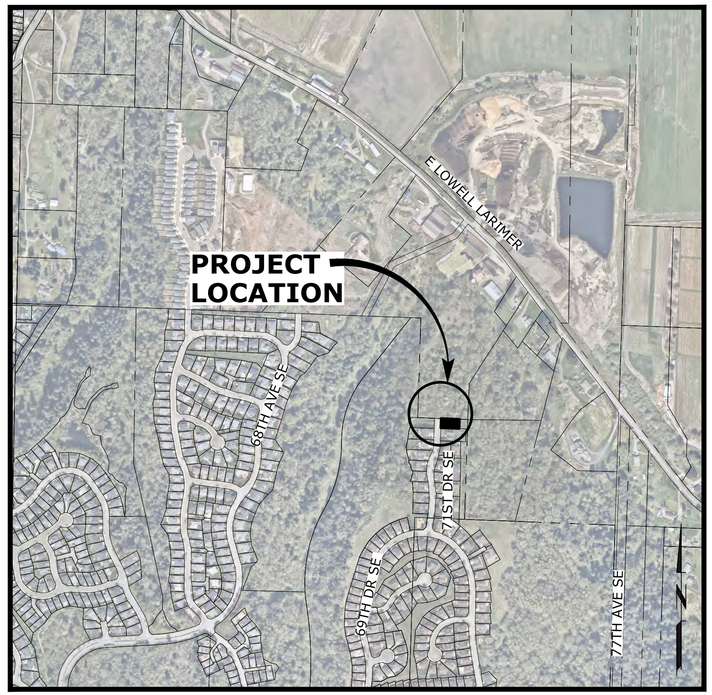
HIGHLANDS EAST LIFT STATION REHABILITATION

NOVEMBER 2024

INDEX OF DRAWINGS



VICINITY MAP

SCALE: 1"=500'

DISTRICT OFFICIALS

COMMISSIONERS:
SHAUNA WILLNER
JOHN WARNER
ANNE BACKSTROM

GENERAL MANAGER:
CURT BREES

DISTRICT ENGINEER:
SCOTT SMITH, P.E.

SLWSD PROJECT NO. 22-0002

PROPERTY (SILVER LAKE WATER AND SEWER DISTRICT):
ADDRESS:
12605 71ST DRIVE SE
SNOHOMISH, WA 98296
EASEMENT RECORDING #: 200111020111
EASEMENT AREA: 4,296 SQFT

consor
1102 BROADWAY PLAZA, SUITE 401
TACOMA, WA 98402
P 253.627.1520

APPLICANT/OWNER/CONTACT PERSON:
SILVER LAKE WATER & SEWER DISTRICT
SCOTT SMITH, P.E., DISTRICT ENGINEER,
15205 41ST AVE SE
BOTHELL,WA 98012
PHONE: 423-659-2302, FAX: 425-337-4399
SSMITH@SLWSD.COM

ENGINEER/CONTACT:
CONSOR
PETER CUNNINGHAM, P.E.
600 UNIVERSITY ST SUITE 300,
SEATTLE, WA 98101
PHONE: 206-462-7030
PETER.CUNNINGHAM@CONSORENG.COM

CESCL CONTACT INFO:
SCOTT SMITH, P.E., DISTRICT ENGINEER,
15205 41ST AVE SE
BOTHELL,WA 98012
PHONE: 423-659-2302,
SSMITH@SLWSD.COM
CESCL ID # ECO-3-2132319

SURVEY CONTACT:
DOUG HARTMAN
16928 WOODINVILLE-REDMOND ROAD,
SUITE B-107
WOODINVILLE, WA 98072
PHONE: 425-483-5355
DAHARTMAN.DHA@FRONTIER.COM

ADJACENT PROPERTY:
VIKAS & NOBEL GUPTA
PARCEL #00934400001600
12619 71ST DRIVE SE

GRADING QUANTITIES:
ESTIMATED CUT: 220 CY
ESTIMATED FILL: 150 CY

IMPERVIOUS SURFACE AREAS:
EXISTING TOTAL: 3,516 SQFT
NEW: 0 SQFT
REPLACED: 3,403 SQFT
PROPOSED TOTAL: 3,403 SQFT

MAX CLEARING EXTENT:
3,353 SQFT

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER
11/21/2024

811 Know what's below. Call before you dig.

PIPE & FITTING SYMBOLS

PLANT	SCHEMATIC	
		FLANGED JOINT
		MECHANICAL JOINT
		PUSH-ON JOINT (RUBBER GASKET)
		FLANGED COUPLING ADAPTER
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		ECCENTRIC REDUCER
		BLIND FLANGE
		CAP
		LONG SLEEVE
		CAPPED END OR PLUGGED END
		FITTING (45°)

VALVE SYMBOLS

PLANT	SCHEMATIC	
		BUTTERFLY VALVE
		GATE VALVE
		GLOBE VALVE
		BALL VALVE
		PLUG VALVE
		SWING CHECK VALVE
		DOUBLE CHECK ASSEMBLY

LEGEND

	EXISTING	PROPOSED
WATERLINE	W	W
ELECTRICITY (UNDERGROUND)	UGP	
GAS	G	
TELEPHONE/TELEMETRY	T	
CABLE TELEVISION	CATV	
OVERHEAD POWER	OVHD	
SANITARY SEWER LINE	SS	SS
SANITARY SEWER FORCE MAIN	SSFM	SSFM
STORM DRAIN	SD	
ABANDON PIPE		
ABANDON PIPE		
DRAINAGE DITCH		
WOOD FENCE		
CHAIN LINK FENCE		
TEMPORARY SILT FENCE		
GUARDRAIL		
ROCK WALL		
TREE/BUSH LINE		
CENTERLINE		
PROPERTY LINE		
EASEMENT		
RIGHT-OF-WAY	R/W	R/W
EDGE OF PAVEMENT/AC		
EDGE OF GRAVEL		
CURB		
CONCRETE SURFACING		
SIDEWALK	S/W	
STRUCTURE OR FACILITY		
CONTOUR MINOR		
CONTOUR MAJOR	200	200
WETLAND BUFFER		
WETLAND BOUNDARY		
MANHOLE		
CLEAN-OUT		
CATCH BASIN/FIELD INLET		
THRUST BLOCK		
VALVE		
BLOW-OFF ASSEMBLY		
FIRE HYDRANT ASSEMBLY		
WATER METER		
HOSE BIB	HB	
RPBA		
PULL BOX/JUNCTION BOX		
UTILITY POLE		
GUY WIRE		
LIGHT POST		
MAIL BOX		
SIGN		
BENCHMARK		
TREE DECIDUOUS		
TREE CONIFEROUS		

ABBREVIATIONS

AC	ASPHALTIC CONCRETE
ABAN	ABANDON(ED)
ADWF	AVERAGE DRY WEATHER FLOW
AL	ALUMINUM
APPROX	APPROXIMATELY
APPVD	APPROVED
ARV	AIR RELEASE VALVE
ASSY	ASSEMBLY
ATS	AUTOMATIC TRANSFER SWITCH
BETW	BETWEEN
BM	BENCHMARK
BMP	BEST MANAGEMENT PRACTICES
BTM	BOTTOM
c	CENTER
℄	CENTERLINE
CI	CAST IRON
CL	CLASS
CLR	CLEARANCE
CO	CLEAN-OUT
CONC	CONCRETE
CONST	CONSTRUCTION
COP	COPPER
CPLG	COUPLING
CR	CRUSHED ROCK
CHKV	CHECK VALVE
CMU	CONCRETE MASONRY UNIT
CSBC	CRUSHED SURFACING BASE COURSE
CT	CURRENT TRANSFORMER
CY	CUBIC YARD
D	DRAIN
DCVA	DOUBLE CHECK VALVE ASSEMBLY
DET	DETAIL
DI	DUCTILE IRON
DIA	DIAMETER
DWG	DRAWING
DWY	DRIVEWAY
EA	EACH
ECC	ECCENTRIC
EL	ELEVATION
ELEC-E	ELECTRICAL
EQ	EQUAL
EQUIP	EQUIPMENT
EXIST	EXISTING
EG	EXISTING GRADE
FAB	FABRICATE
FD	FLOOR DRAIN
FH	FIRE HYDRANT
FIN GR	FINISHED GRADE
FLG	FLANGE(D)
FM	FORCE MAIN
FOM	FACE OF MASONRY
FT	FOOT
FTG	FITTING
G	GAS
GA	GAUGE
GALV	GALVANIZED
GR	GRADE
GS	GAS SERVICE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HORIZ	HORIZONTAL
HWY	HIGHWAY
HP	HIGH PRESSURE
IBC	INTERNATIONAL BUILDING CODE
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
INSTL	INSTALL
LAT	LATERAL
LF	LINEAL FEET
LP	LOW PRESSURE
LPS	LONG-PATTERN SLEEVE
LTF	LENGTH TO FIT

MATL(S)	MATERIAL(S)
MAX	MAXIMUM
ME	MATCH EXISTING
MFR(S)	MANUFACTURER('S)
MH	MANHOLE
MIN	MINIMUM
MJ	MECHANICAL JOINT
NTS	NOT TO SCALE
OC	ON CENTER
OSB	ORIENTED STRAND BOARD
OVHD	OVERHEAD LINE
PWR	POWER
PE	PLAIN END
PL	PLACE
P/L	PROPERTY LINE
POLY	POLYETHYLENE
PRESS	PRESSURE
PROP	PROPOSED
PS	PUMP STATION
PUD	PUBLIC UTILITY DISTRICT
PV	PLUG VALVE
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
R	RADIUS
RPBA	REDUCED PRESSURE BACKFLOW ASSEMBLY
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDCR	REDUCER
REINF	REINFORCE(D)(ING)(MENT)
RESTR	RESTRAIN(ED)
REQ'D	REQUIRED
RFCA	RESTRAINED FLANGE COUPLING ADAPTER
RMJ	RESTRAINED MECHANICAL JOINT
RSGV	RESILIENT SEATED GATE VALVE
R/W	RIGHT OF WAY
SC	SCREW
SCHED	SCHEDULE
SD	STORM DRAIN
SHT(S)	SHEET(S)
SL/SLP	SLOPE
SLV	SLEEVE
SNO CO	SNOHOMISH COUNTY
SPECS	SPECIFICATIONS
SPL	SPOOL
SQ	SQUARE
SQ FT	SQUARE FOOT
SS	SANITARY SEWER
SSFM	SANITARY SEWER FORCE MAIN
SST	STAINLESS STEEL
STA	STATION
STL	STEEL
STD	STANDARD
SVC	SERVICE
S/W	SIDEWALK
T	TELEPHONE
TB	THRUST BLOCK
TDH	TOTAL DYNAMIC HEAD
TEMP	TEMPORARY
TESC	TEMPORARY EROSION AND SEDIMENT CONTROL
THRU	THROUGH
TYP	TYPICAL
UG	UNDERGROUND
UNKN	UNKNOWN
VERT	VERTICAL(LY)
W	WATER
WMN	WATER MAIN
WM	WATER METER
WS	WATER SERVICE
W/	WITH

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

Silver Lake Water & Sewer District

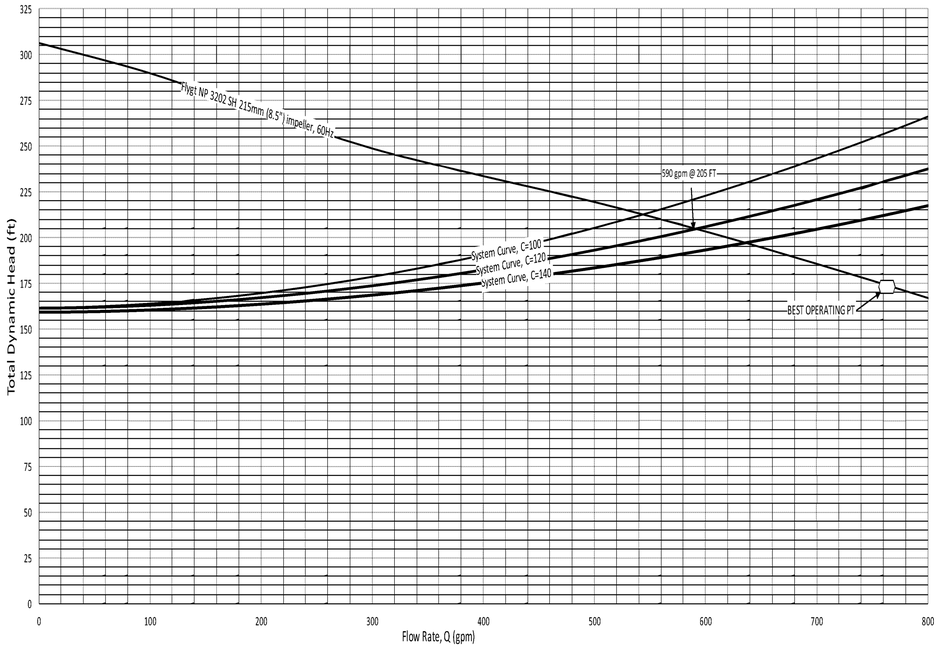
HIGHLANDS EAST LIFT STATION REHABILITATION

SYMBOLS, LEGENDS AND ABBREVIATIONS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET G-2

SYSTEM-HEAD CAPACITY CURVES



DESIGN DATA SUMMARY TABLE

LOCATION	12619 71ST DRIVE SE
PUMP STATION TYPE	DUPLEX SUBMERSIBLE
BASIS OF DESIGN PUMP	FLYGT NP 3202 SH, 215MM IMPELLER
DESIGN PEAK HOURLY INFLUENT FLOW, EXIST	103 GPM
PUMP CAPACITY (PER PUMP) AT 100% OF RATED SPEED	590 GPM @ 205' TDH
MAX ALLOWABLE STARTS PER HOUR, PER PUMP	10
MOTOR HORSEPOWER, HP	72
WET WELL LEVEL CONTROL TYPE	RADAR, FLOAT BACKUP
WET WELL OPERATING VOLUME, PUMPS OFF TO LEAD PUMP ON	1128 GAL
AUXILIARY POWER TYPE (EXISTING)	STATIONARY DIESEL GENERATOR
AUXILIARY POWER LOCATION (EXISTING)	ONSITE
AUXILIARY POWER OUTPUT (EXISTING)	150 KW
AUXILIARY POWER TRANSFER SWITCH	AUTOMATIC
ALARM TELEMETRY TYPE	CELLULAR AND FIBER OPTIC
EPA RELIABILITY CLASS	CLASS 1

GENERAL NOTES:

1. ALL CIVIL SITE WORK, CONSTRUCTION, AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SNOHOMISH COUNTY ENGINEERING DESIGN AND DEVELOPMENT STANDARDS (EDDS), SNOHOMISH COUNTY CODE, WASHINGTON SATE DEPARTMENT OF TRANSPORTATION/AMERICAN PUBLIC WORKS ASSOCIATION STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION, AND THE SNOHOMISH COUNTY DRAINAGE MANUAL.

2. THE PROJECT IS VESTED TO THE SEPTEMBER 17, 2021 EDITION OF THE SNOHOMISH COUNTY ENGINEERING DESIGN AND DEVELOPMENT STANDARDS. THE CONTRACTOR SHALL ALWAYS KEEP A SET OF THE EDDS ON SITE.

3. ALL WORK PERTAINING TO THIS PROJECT SHALL BE SUBJECT TO INSPECTION BY THE COUNTY INSPECTOR OR DESIGNATED REPRESENTATIVE. PRIOR TO ANY SITE WORK, THE CONTRACTOR SHALL CONTACT THE COUNTY INSPECTOR AT 425-388-3338 AND SCHEDULE A PRE-CONSTRUCTION CONFERENCE.

4. IF THE PROJECT SITE AS DEFINED IN SCC 30.63A AND SCC 30.91S.351 IS MORE THAN ONE ACRE, TE CESCL IDENTIFIED IN THE SWPPP NARRATIVE SHALL BE ALWAYS ON SITE OR ON CALL.

5. THE CESCL SHALL NOTIFY THE COUNTY INSPECTOR IN WRITING ANY TIME A BMP PROVES TO BE INADEQUATE RESULTING IN AN ACTUAL DISCHARGE OF OR POSES A POTENTIAL TO DISCHARGE A SIGNIFICANT AMOUNT OF ANY POLLUTANT PURSUANT TO SCC 7.53 TO WATERS OF THE STATE OR THE COUNTY'S MS-4 DRAINAGE SYSTEM. SAID NOTIFICATION SHALL BE MADE WITHIN 24 HOURS OF THE DISCHARGE EVENT OR PROBLEM IDENTIFICATION.

6. IF INDIVIDUALS REVIEWING OR INSPECTING WORK ARE REPLACED DURING CONSTRUCTION, INCLUDING BUT NOT LIMITED TO THE CIVIL ENGINEER, SOILS ENGINEER, CESCL, OR THE ENGINEERING GEOLOGIST, WORK REQUIRING THEIR REVIEW SHALL BE STOPPED UNTIL ANOTHER QUALIFIED PERSON AGREES TO ACCEPT RESPONSIBILITY AND NOTIFIES PLANNING & DEVELOPMENT SERVICES IN WRITING (SCC 30.63A.855 AND SCC 30.63B.640(4)).

7. A R/W USE PERMIT IS REQUIRED FROM THE DPWFOR ANY LANE/ROAD CLOSURES WITHIN THE SNOHOMISH COUNTY R/W. CONTACT DEPARTMENT OF PUBLIC WORKS (DPW) AT LEAST 15 DAYS PRIOR TO CONSTRUCTION ACTIVITY WITHIN THE PUBLIC R/W. SNOHOMISH COUNTY DOES NOT HAVE JURISDICTION ON STATE ROUTES OR ROADWAYS WITHIN INCORPORATED CITIES, PRIVATE ROADS, OR PRIVATE PROPERTY. FOR ANY ACTIVITY ENCROACHING ON SUCH PROPERTY THE APPLICANT SHALL OBTAIN PERMISSION FROM THE APPROPRIATE AUTHORITY.

8. FIELD CHANGES REQUIRING REDESIGN SHALL BE SUBMITTED AND APPROVED PRIOR TO CONSTRUCTION.

9. ENGINEERED RECORD DRAWINGS SHALL BE REQUIRED PRIOR TO SITE APPROVAL (EDDS SECTION 10-05).

10. SURVEY MONUMENTS SHALL BE FOUND AND SET IN ACCORDANCE WITH SNOHOMISH COUNTY EDDS, CHAPTER 4-03, DETAIL 4-130. MONUMENTS AND PROPERTY CORNERS SHALL BE PROTECTED FROM DISTURBANCE DURING CONSTRUCTION. A LICENSED SURVEYOR SHALL OBTAIN A PERMIT FOR REMOVAL OR REPLACEMENT OF ANY R/W MONUMENTS, SURVEY MONUMENTS, OR PROPERTY CORNERS IN ACCORDANCE WITH STATE LAW AND WAC 332-120 PRIOR TO ANY DISTURBANCE TO THE CORNER. THE POINTS TO BE PROTECTED OR REPLACED SHALL BE RELOCATED BY A PROFESSIONAL LAND SURVEYOR AND SHOWN ON THE CONSTRUCTION PLANS.

11. REMOVE ABANDONED PIPES WITHIN THE R/W.

12. ALL PIPES SHALL HAVE A MINIMUM OF 12" COVER AT THE TOP OF THE BELL, OR SHALL HAVE MINIMUM COVER PER THE MANUFACTURER'S SPECIFICATIONS, WHICHEVER IS GREATER. [EDDS 5-05.C].

13. PRIOR TO PLACING ANY SURFACE MATERIALS ON THE ROADWAY, IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER OR UTILITY TO PROVIDE DENSITY TEST REPORTS (AS SPECIFIED IN EDDS) CERTIFIED BY A PROFESSIONAL ENGINEER LICENSED TO PRACTICE IN THE STATE OF WASHINGTON. [EDDS 8-05]

14. APPROVED PERMANENT TRAFFIC CONTROL SIGNS AND MARKINGS WITHIN THE PUBLIC R/W SHALL BE INSTALLED BY COUNTY FORCES. THE DEVELOPER SHALL PAY FOR INSTALLATION OF ALL DEVICES. THE INSPECTOR SHALL NOTIFY THE DPW TRAFFIC OPERATIONS WHEN THE PROJECT IS READY FOR CHANNELIZATION AND SIGNING. IF COUNTY FORCES ARE UNAVAILABLE TO PERFORM THE STRIPING INSTALLATION WITHIN AN APPROPRIATE TIME FRAME, THE PERMIT HOLDER SHALL CONTRACT FOR THE STRIPING INSTALLATION. DPW TRAFFIC OPERATIONS SHALL BE CINTACTED AT LEAST 2 DAYS IN ADVANCE OF INSTALLATION TO VERIFY CHANNELIZATION LAYOUT.

15. DURING PROJECT CONSTRUCTION, THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TEMPORARY CONSTRUCTION SIGNS, TRAFFIC CONTROL SIGNS, DELINEATORS AND TEMPORARY MARKINGS AS REQUIRED. ALL SIGNS, TRAFFIC CONTROL SIGNS, DELINEATORS AND TEMPORARY MARKINGS SHALL BE ACCORDING TO THE CURRENT MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).

16. ACCESS BY EMERGENCY VEHICLES SHALL BE ALWAYS MAINTAINED DURING CONSTRUCTION.

17. AFTER WORK WITHIN THE TRAVELED ROADWAY IS COMPLETED AT THE END OF EACH DAY, THE ROAD SHALL BE CLEARED OF DEBRIS AND EQUIPMENT, AND COMPLETELY OPEN TO TRAFFIC (UNLESS OTHERWISE APPROVED BY THE DPW OF THE COUNTY). LIGHTED BARRICADES OR BARRELS SHALL DELINEATE ALL AREAS WITHIN THE ROADWAY AFFECTED BY SONCTRUCTION (I.E., EDGE OF PAVEMENT, NEW CURB EDGES NOT ILLUMINATED BY STREETLIGHTS).

18. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR INTERIM TRAFFIC CONTROL DURING CONSTRUCTION ON OR ALONG TRAVELED COUNTY ROADWAYS. THE DEVELOPER/CONTRACTOR MUST SUBMIT A TRAFFIC CONTROL PLAN TO PUBLIC WORKS (PERMIT COUNTER) AND RECEIVE APPROVAL PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION.

19. THE WORKMANSHIP AND MATERIALS FOR ALL UNDERGROUND UTILITY INSTALLATIONS WITHIN THE COUNTY R/W SHALL BE IN ACCORDANCE WITH EDDS SECTIONS 8-02, 8-04, 8-05, 8-09 AND THE MOST RECENT COPY OF THE STATE OF WASHINGTON STANDARDS SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION (WSDOT/APWA).

CONSTRUCTION SEQUENCING NOTES:

WORK SEQUENCE SHALL COMPLY WITH SECTION 01 12 16 OF THE TECHNICAL SPECIFICATIONS.

1. INSTALL TEMPORARY EROSION AND SEDIMENTATION CONTROL AND SITE FENCING. NO WORK OUTSIDE OF THE PROPERTY, EASEMENTS, OR RIGHT-OF-WAY WILL BE ALLOWED.

2. INSTALL ROCK CATCH MANHOLE AND INSERTION VALVE PER PIPING PLAN.

3. INSTALL AND TEST BYPASS PUMPING PER PIPING PLAN. TEST AND STARTUP BYPASS PUMPING PLAN. BYPASS PUMPING SHALL BE IN SERVICE UNTIL LIFT STATION REHABILITATION IS COMPLETED AND ACCEPTED BY THE DISTRICT.

4. REMOVE PIPING BETWEEN INSERTION VALVE AND WET WELL. REHABILITATE AND MODIFY WET WELL.

5. INSTALL SUBMERSIBLE PUMPS, VALVE VAULT, SITE PIPING AND APPURTENANCES. CONNECT NEW FORCE MAIN TO EXISTING FORCE MAIN.

6. SALVAGE EXISTING GENERATOR AND FUEL TANK, DISTRICT TO DETERMINE RELOCATION.

7. INSTALL NEW GENERATOR, FUEL TANK, SITE ELECTRICAL BUILDING AND EQUIPMENT.

8. TEST AND STARTUP NEW LIFT STATION.

PERMITTING NOTES:

1. HEARING EXAMINER'S DECISION AND ADMINISTRATIVE DECISION NOT NEEDED AS SITE IS ON AN EXISITNG LIFT STATION.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

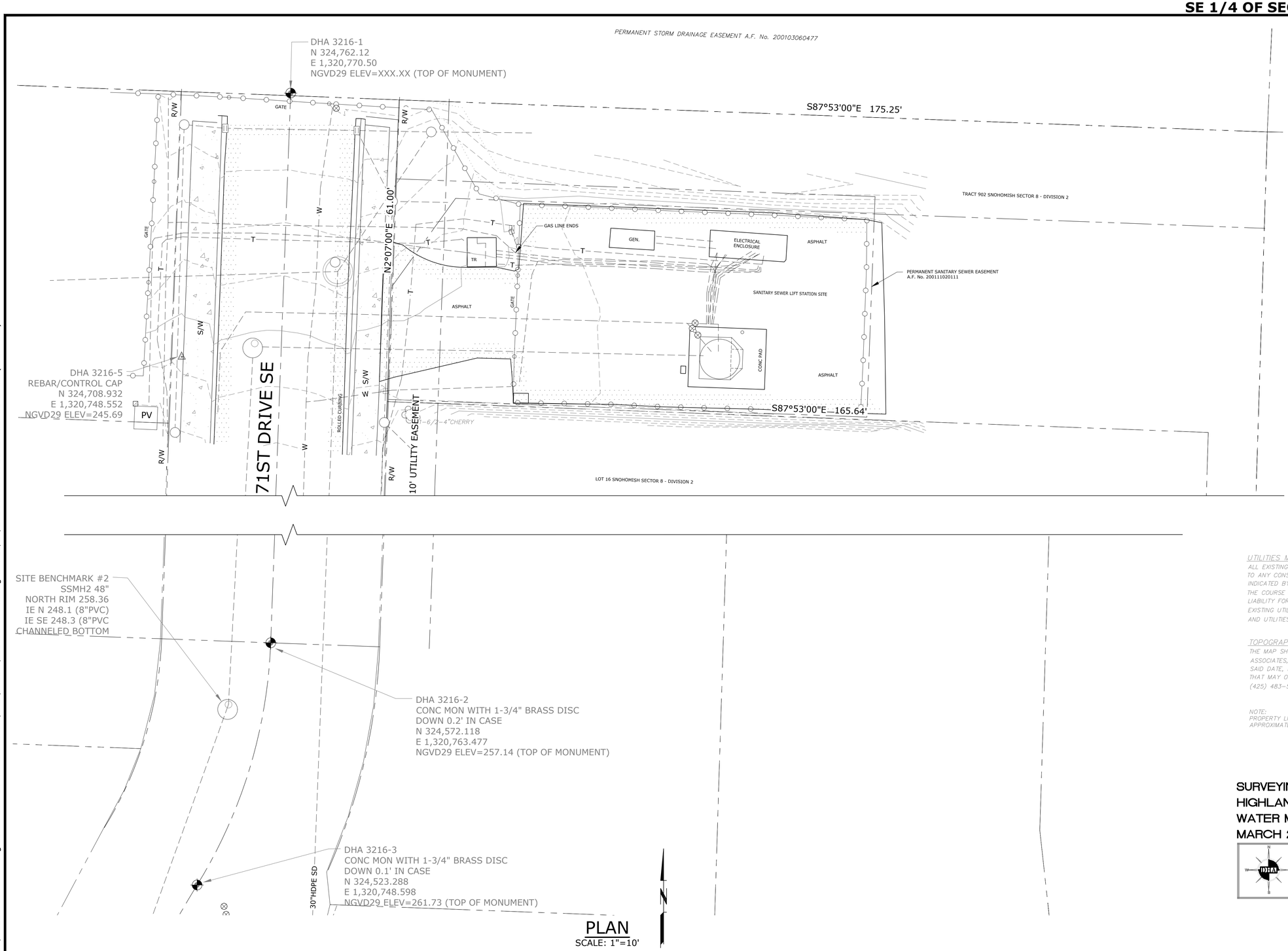
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

GENERAL NOTES AND DESIGN DATA TABLES

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET G-3



PLAN
SCALE: 1"=10'

LEGAL DESCRIPTION

THE PORTION OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SECTION 26, TOWNSHIP 28 NORTH, RANGE 5 EAST, W.M., SNOHOMISH COUNTY, WASHINGTON, MORE PARTICULARLY DESCRIBED AS FOLLOWS.

COMMENCING AT THE NORTHWEST CORNER OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER OF SAID SECTION 26,

THENCE SOUTH 00°53'02" WEST ALONG THE WEST LINE THEREOF A DISTANCE OF 658.30 FEET TO THE NORTH LINE OF THE SOUTH HALF OF SAID NORTHEAST QUARTER OF THE SOUTHWEST QUARTER, THENCE SOUTH 88°44'40" EAST ALONG SAID NORTH LINE A DISTANCE OF 154.76 FEET TO A POINT ON SAID LINE, THENCE LEAVING SAID LINE SOUTH 01°15'20" WEST A DISTANCE OF 16.50 FEET TO THE TRUE POINT OF BEGINNING FOR THIS DESCRIPTION.

THENCE 88°44'40" EAST A DISTANCE OF 96.55 FEET;
THENCE SOUTH 01°15'20" WEST A DISTANCE OF 44.50 FEET;
THENCE NORTH 88°44'40" WEST A DISTANCE OF 96.55 FEET;
THENCE NORTH 01°15'20" EAST A DISTANCE OF 44.50 FEET TO THE POINT OF BEGINNING.

SITUATED IN THE COUNTY OF SNOHOMISH, STATE OF WASHINGTON.

HORIZONTAL DATUM (BASIS OF BEARING):
WASHINGTON STATE COORDINATE SYSTEM, NORTH ZONE NAD83(2011), AS PRESCRIBED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT).

VERTICAL DATUM:
NATIONAL GEODEIC VERTICAL DATUM 1929 (NGVD29), AS SHOWN ON SITE ASBUILT DRAWINGS SHEET S1 OF 11, BY DAVID EVANS AND ASSOCIATES, DATED 24 MARCH 2000.

CONTOUR INTERVAL: *ONE (1) FOOT CONTOURS*

UTILITIES MAPPING:
ALL EXISTING UTILITIES SHOWN HEREIN ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION. ALL EXISTING FEATURES INCLUDING BURIED UTILITIES ARE SHOWN AS INDICATED BY RECORD LOCATION OR FIELD TIED AS A RESULT OF A UTILITY PAINT-OUT DURING THE COURSE OF THE FIELD SURVEY. DUANE HARTMAN & ASSOCIATES, INC. (DHA) ASSUMES NO LIABILITY FOR THE ACCURACY OF THE RECORD INFORMATION. FOR THE FINAL LOCATION OF THE EXISTING UTILITIES IN AREAS CRITICAL TO CONSTRUCTION, CONTACT THE UTILITY OWNER/AGENCY AND UTILITIES UNDERGROUND CENTER (800/424-5555).

TOPOGRAPHIC MAPPING:
THE MAP SHOWN HEREON IS THE RESULT OF A TOPOGRAPHIC SURVEY BY DUANE HARTMAN & ASSOCIATES, INC. (DHA) COMPLETED IN MARCH 2022. DHA ASSUMES NO LIABILITY, BEYOND SAID DATE, FOR ANY FUTURE SURFACE FEATURE MODIFICATIONS OR CONSTRUCTION ACTIVITIES THAT MAY OCCUR WITHIN OR ADJOINING THE PERIMETER OF THIS SURVEY. CONTACT DHA (425) 483-5355 FOR SITE UPDATES AND VERIFICATIONS.

NOTE:
PROPERTY LINES SHOWN HEREON GENERATED FROM KING COUNTY RECORDS, AND ARE CONSIDERED APPROXIMATE IN LOCATION.

SURVEYING AND MAPPING FOR: CONSOR
HIGHLANDS EAST LIFT STATION REPLACEMENT
WATER MAIN IMPROVEMENTS - TOPOGRAPHIC SURVEY
MARCH 2022

SURVEYING AND MAPPING BY:
DUANE HARTMAN & ASSOCIATES, INC.
Surveyors
16928 WOODINVILLE-REDMOND ROAD, B-107
WOODINVILLE, WASHINGTON 98072
(425) 483-5355
FAX (425) 483-4650
DHA JOB No. 22-3216

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

SURVEY CONTROL PLAN

SHEET G-4

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

CB-I
RIM 241.22
IE E 238.1 (12"PVC)
IE S 238.1 (4"PVC)
IE W 238.3 (12"PVC)
WS 237.9
BOTTOM 237.5

CATCH BASIN INSERT TYP

CB-I
RIM 241.17
IE E 237.8 (12"PVC)
IE SE 237.9 (6"PVC)
IE W 237.8)12"PVC)
WS 237.8
BOTTOM 236.4

CB-II 60"
SOLID LID
RIM 242.81
IE E 227.9 (30"CONC)
IE SW 235.3 (30"ADS)
IE W 229.6 (12"PVC)
WA 218.9
BOTTOM 215.9

PERMANENT STORM DRAINAGE EASEMENT A.F. No. 200103060477

CB-II 18"
RIM 241.54
IE E 238.7 (6"PVC)
IE S 238.9 (6"PVC)
WS 237.8
BOTTOM 237.0

CB-II 72"
RIM 243.47
IE NE 237.6 (30"ADS)
IE S 237.3 (30"ADS)
IE SW 237.2 (12"PVC)

CB-2 18" TYPE II
RIM 242.67
IE NW 240.7 (6"PVC)
IE E 240.7 (6"PVC)
IE S 240.6
WS 240.6
BOTTOM 240.3

12" PVC SD
30"CONC SD
6"PVC SD
30"HDPE SD
8"DI FM
8"PVC SS

SITE BENCHMARK #1
SSMH2 48"
NORTH RIM 245.22
IE S 235.6 (8"PVC)
IE E 235.8 (8"CONC)
CHANNELED BOTTOM

GAS LINE ENDS
GEN.
ELECTRICAL ENCLOSURE
ASPHALT
TR
SANITARY SEWER LIFT STATION SITE
CONC PAD
TRACT 902 SNOHOMISH SECTOR 8 - DIVISION 2
PERMANENT SANITARY SEWER EASEMENT
A.F. No. 200111020111

3 ESC-2
1 ESC-2
2 ESC-2

PV
6/4" CHERRY
ROLLED CURBING

CB-II 18"
RIM 246.76
IE N 244.4 (6"PVC)
IE S 244.5 (6"PVC)
IE W 244.5 (6"PVC)
WS - DRY
BOTTOM 244.1

CB-1 18" TYPE II
RIM 246.70
IE N 244.2 (6"PVC)
IE SE 244.2 (6"PVC)
IE S 244.2
WS 244.2
BOTTOM 243.9

LIFT STATION
RIM 246.50
IE W 238.4 (8"PVC)
IE NW AT 90° BEND 239.4 (APPROX)
IE N AT 90° BEND 239.5 (APPROX)
BOTTOM 228.50

LOT 16 SNOHOMISH SECTOR 8 - DIVISION 2

71ST DRIVE SE

10' UTILITY EASEMENT

PLAN
SCALE: 1"=10'

LEGEND

- STORM DRAIN INLET PROTECTION
- HIGH VISIBILITY SILT FENCE
- TEMPORARY CONSTRUCTION ENTRANCE
- LIMITS OF DISTURBANCE

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

Silver Lake Water & Sewer District

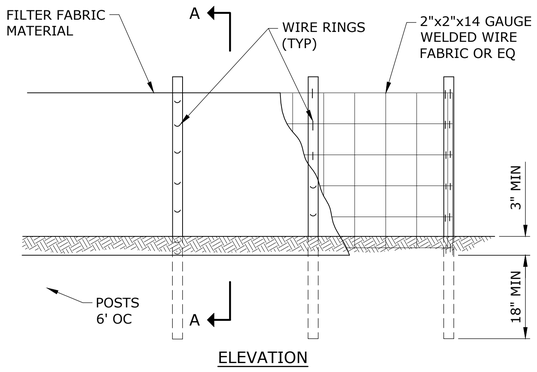
HIGHLANDS EAST LIFT STATION REHABILITATION

EROSION AND SEDIMENT CONTROL PLAN

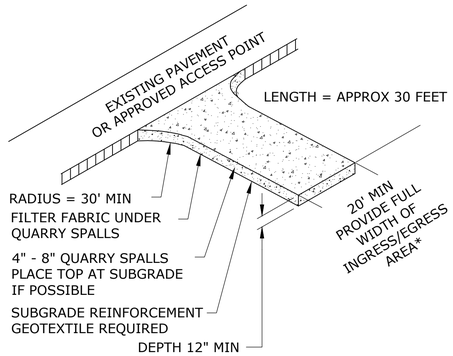
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
ESC-1
5 of 51

N:\Projects\23\Vertical_WW\221070WA.00 - Highlands East LS Rehabilitation\CAD\Sheets\221070-WA-C.dwg ESC-1 11/18/2024 1:49 PM DEREK.CLOUD 24.3s (LMS Tech)



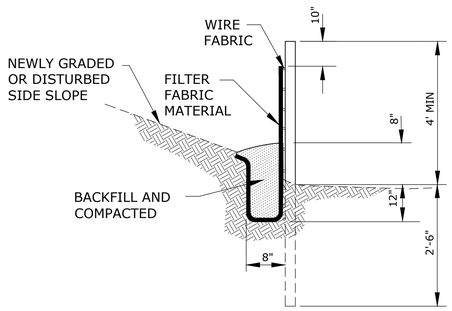
ELEVATION



TEMP CONST ENTRANCE

SCALE: NTS

2 ESC-1



SECTION A-A

NOTES:

1. BURY BOTTOM OF FILTER FABRIC 12" VERTICALLY BELOW FINISHED GRADE

2. 2"x 2" FIR, PINE OR STEEL FENCE POSTS

3. STITCHED LOOPS TO BE INSTALLED DOWNHILL SIDE OF SLOPE

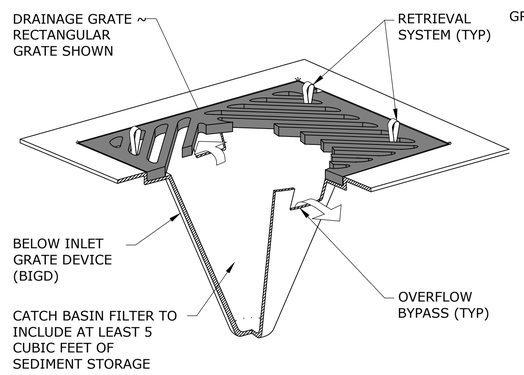
4. COMPACT ALL AREAS OF FILTER FABRIC TRENCH

5. LOCATE SILT FENCING AND SECURITY FENCING IMMEDIATELY NEXT TO ONE ANOTHER TO THE MAXIMUM EXTENT PRACTICAL, AT CONTRACTORS DISCRETION, AND CONTINGENT UPON APPROVAL BY OWNER, SILT AND SECURITY FENCING MAY BE COMBINED INTO A COMMON FENCE

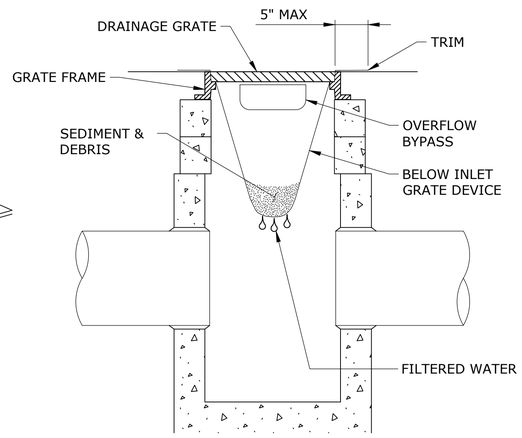
HIGH VISIBILITY SILT FENCE

SCALE: NTS

1 ESC-1



ISOMETRIC VIEW



SECTION VIEW

STORM DRAIN INLET PROTECTION

SCALE: NTS

3 ESC-1

EROSION CONTROL NOTES

1. EROSION CONTROL MEASURES SHALL BE TAKEN BY THE CONTRACTOR DURING CONSTRUCTION TO PREVENT THE MIGRATION OF SILT AND DEBRIS. EROSION CONTROL BEST MANAGEMENT PRACTICES SHALL BE IN COMPLIANCE WITH THESE CONTRACT DOCUMENTS AND WITH THE SNOHOMISH COUNTY 2021 DRAINAGE MANUAL.

2. THE TEMPORARY EROSION CONTROL SYSTEM SHALL BE INSTALLED PRIOR TO ALL OTHER CONSTRUCTION AND SHALL BE MAINTAINED IN A SATISFACTORY CONDITION UNTIL CLEARING AND/OR CONSTRUCTION IS COMPLETED. PERMANENT DRAINAGE FACILITIES ARE OPERATIONAL AND THE POTENTIAL FOR EROSION HAS PASSED.

3. CERTIFIED EROSION & SEDIMENT CONTROL LEAD:

SCOTT SMITH, P.E.

DISTRICT ENGINEER: SILVER LAKE WATER & SEWER DISTRICT

SNOHOMISH COUNTY TESC NOTES

1. APPROVAL OF THIS EROSION/SEDIMENT CONTROL (ESC) PLAN DOES NOT CONSTITUTE AN APPROVAL OF PERMANENT ROAD OR DRAINAGE DESIGN (E.G. SIZE AND LOCATION OF ROADS, PIPES, RESTRICTORS, CHANNELS, RETENTION FACILITIES, UTILITIES, ETC.).

2. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE APPLICANT/CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.

3. THE BOUNDARIES OF THE CLEARING LIMITS SHOWN ON THIS PLAN SHALL BE CLEARLY FLAGGED IN THE FIELD PRIOR TO CONSTRUCTION. DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE APPLICANT/CONTRACTOR FOR THE DURATION OF THE CONSTRUCTION.

4. THE ESC FACILITIES SHOWN ON THIS PLAN MUST BE CONSTRUCTED IN CONJUNCTION WITH ALL CLEARING GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS.

5. THE ESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE ESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.

6. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE APPLICANT/CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.

7. THE ESC FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAINED A MINIMUM OF ONCE A MONTH OR WITHIN THE 48 HOURS FOLLOWING A MAJOR STORM EVENT.

8. AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PAVING. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADEN WATER INTO THE DOWNSTREAM SYSTEM.

9. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO ENSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED

JSD DRAWN

PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

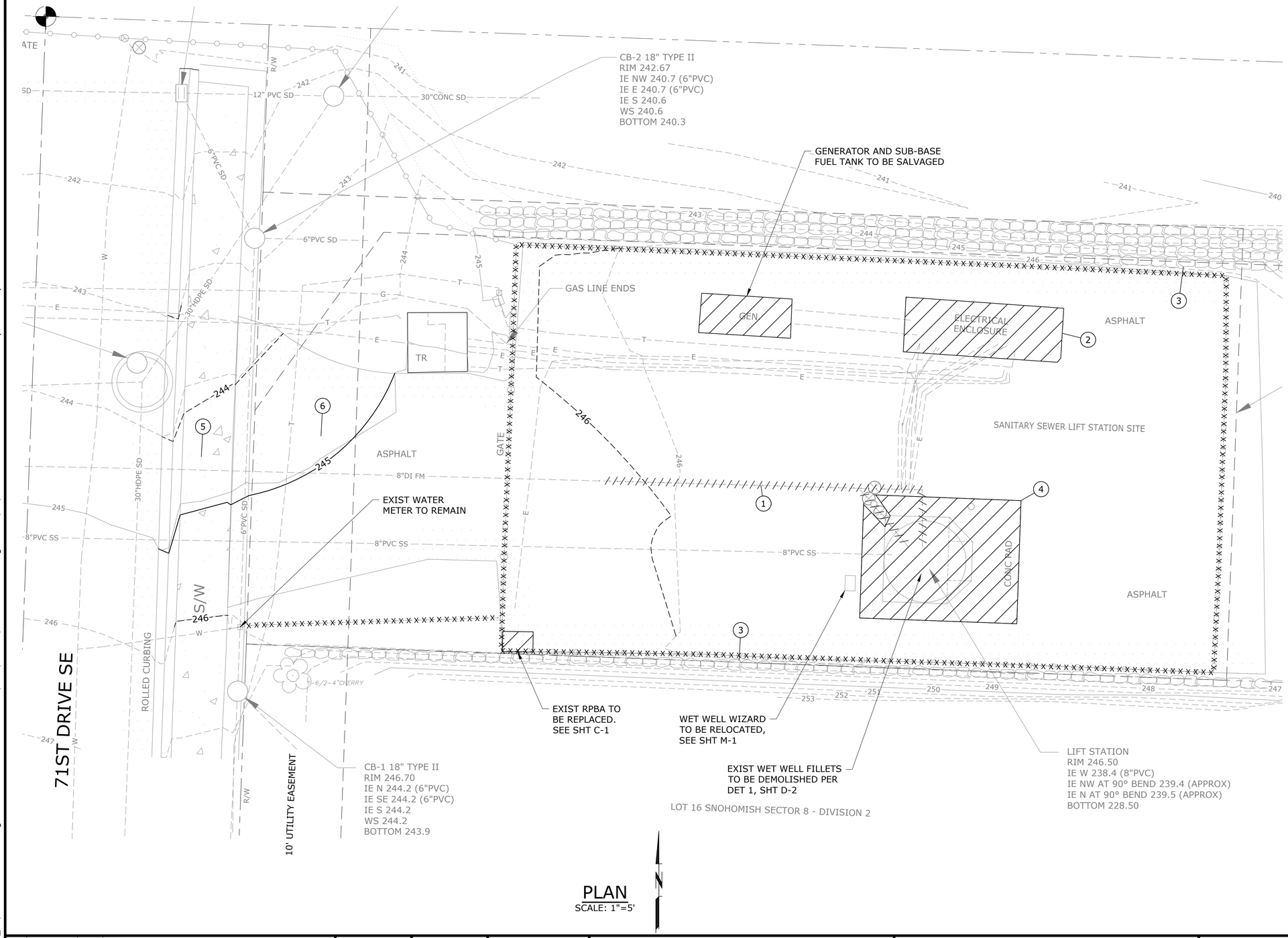
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

EROSION AND SEDIMENT CONTROL DETAILS AND NOTES

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET ESC-2



PLAN
SCALE: 1"=5'

DEMOLITION NOTES

1. ABANDON EXISTING 8" DIA FORCE MAIN AND FILL WITH CDF BETWEEN EXISTING SUCTION PUMPS AND PROPOSED VALVE VAULT CONNECTION POINT.
2. REMOVE ALL EXISTING ELECTRICAL EQUIPMENT AND APPURTENANCES INCLUDING THE POWER CABINET, ELECTRICAL LINES, AND THE ELECTRICAL ENCLOSURE FOLLOWING THE TESTING AND CERTIFICATION OF THE REHABILITATED LIFT STATION. SALVAGE EQUIPMENT LISTED ON THIS SHEET.
3. RETAINING WALLS ON THE NORTH AND SOUTH EDGES OF THE SITE SHALL BE PROTECTED.
4. REMOVE CONC PAD, LID, WET WELL FILLETS, AND MECHANICAL AND ELECTRICAL INSTRUMENTATION PER DET 1, SHT D-2. EXISTING WET WELL STRUCTURE WILL BE MAINTAINED AND REUSED FOR NEW WET WELL.
5. REMOVE AND REPLACE CONCRETE SIDEWALK, SEE SHT C-1
6. REMOVE AND REPLACE DRIVEWAY, SEE SHT C-1

SALVAGE ITEMS:

THE FOLLOWING ITEMS SHALL BE SALVAGED AND RETURNED TO THE DISTRICT SHOP:

SALVAGE:
1. BOTH MOTORS
2. VOLUTE AND SUCTION PLATE FROM PUMP 1
3. GENERATOR AND SUB-BASE FUEL TANK

LEGEND

REMOVE STRUCTURE

DEMO EXISTING FENCE AND WATERLINE

NO.	DATE	BY	REVISION

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JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM 48352 REGISTERED PROFESSIONAL ENGINEER STATE OF WASHINGTON 11/21/2024

consor

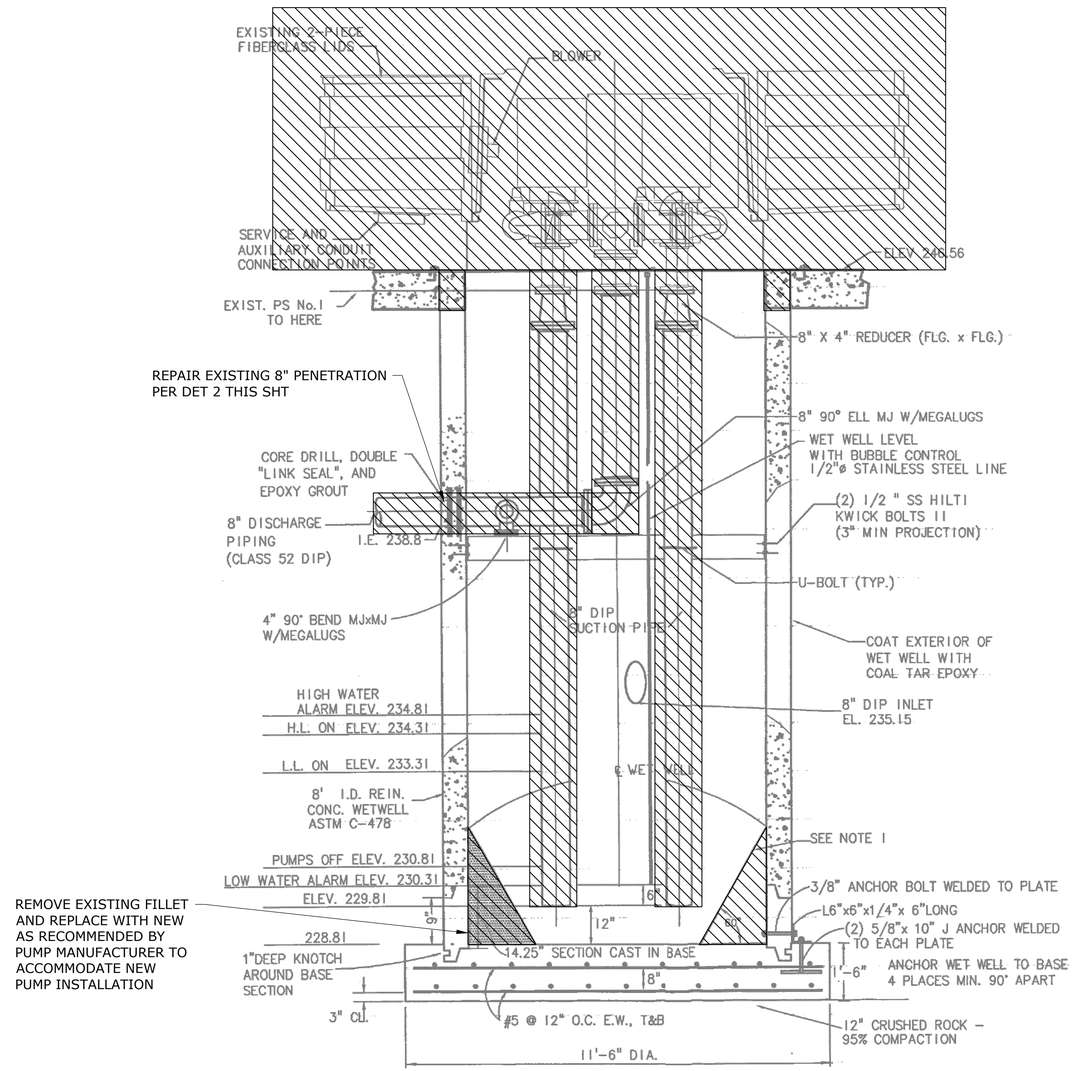
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

EXISTING CONDITIONS AND DEMOLITION PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

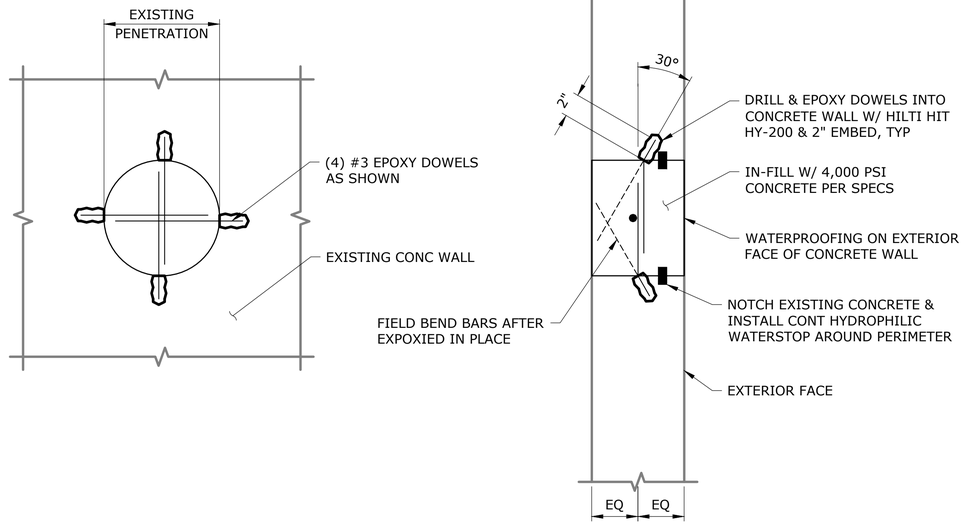
SHEET D-1



EXISTING WET WELL DEMOLITION (1 / D-1)

SCALE: NTS

NOTE: LIGHTLY SHADED CALLOUTS ARE FROM AS-BUILT PLANS AND ARE NOT PART OF THIS CONTRACT WORK.



CONCRETE WALL OPENING INFILL DETAIL (2 / -)

SCALE: NTS

NO.	DATE	BY	REVISION

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JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

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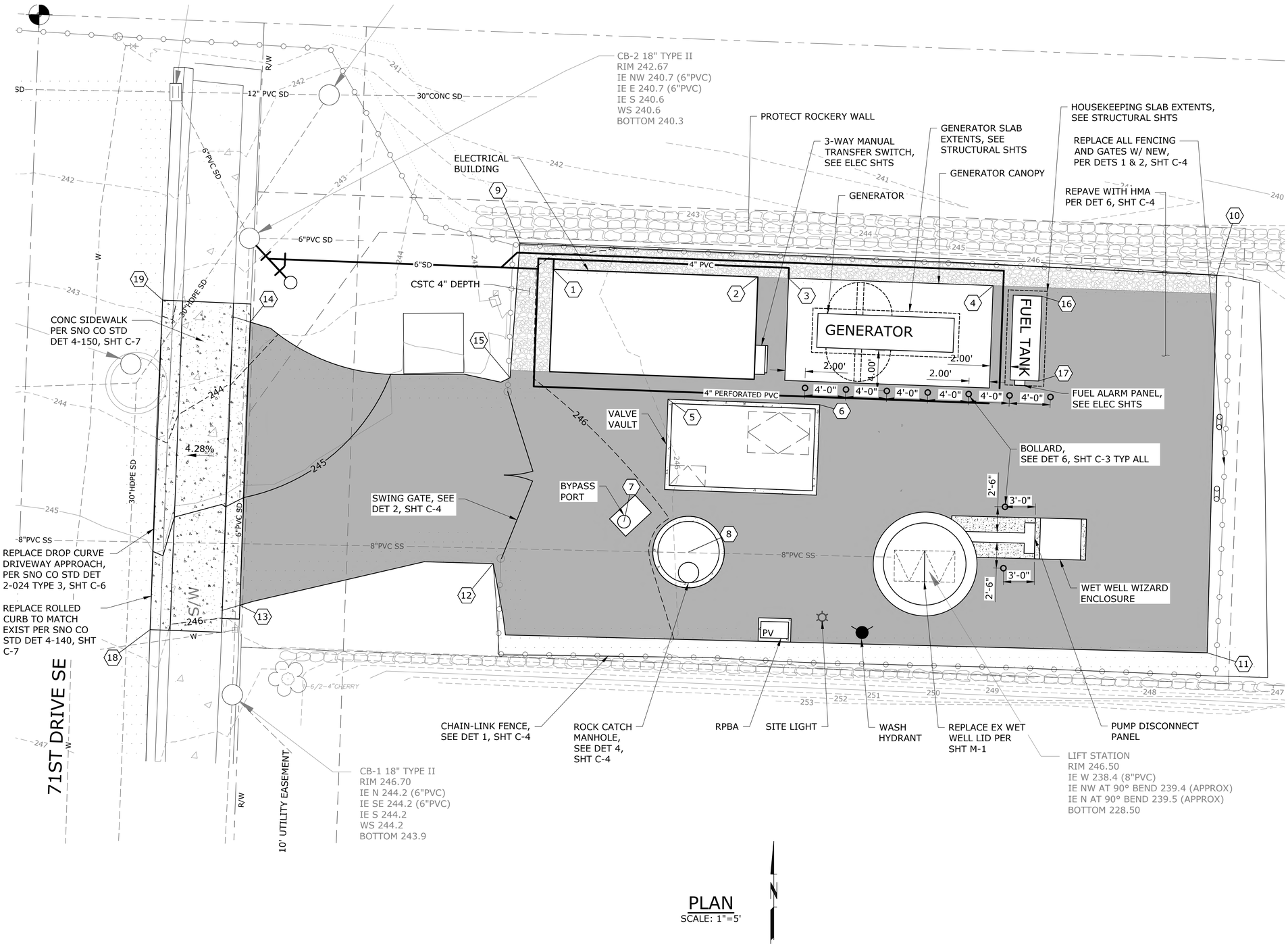
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

DEMOLITION DETAILS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET D-2



PLAN
SCALE: 1"=5'

CONTROL POINTS

PT NO.	DESCRIPTION	NORTHING	EASTING	ELEVATION
1	NW CORNER OF BUILDING	N324737.25	E1320820.75	246.41
2	NE CORNER OF BUILDING	N324736.51	E1320840.73	246.41
3	NW CORNER OF GENERATOR CANOPY	N324736.40	E1320843.73	246.28
4	NE CORNER OF GENERATOR CANOPY	N324735.66	E1320863.72	246.50
5	NW CORNER OF VALVE VAULT	N324724.57	E1320831.95	246.08
6	NE CORNER OF VALVE VAULT	N324724.03	E1320846.78	246.31
7	CENTER OF BYPASS PORT	N324712.60	E1320827.64	245.88
8	CENTER OF ROCK CATCH MANHOLE	N324709.63	E1320833.95	246.03
9	NW CORNER OF SITE	N324739.76	E1320817.48	245.56
10	NE CORNER OF SITE	N324736.67	E1320885.58	246.17
11	SE CORNER OF SITE PAVEMENT	N324699.80	E1320884.64	246.44
12	SE CORNER OF DRIVEWAY	N324708.51	E1320814.86	245.43
13	SW CORNER OF DRIVEWAY	N324704.44	E1320790.11	245.84
14	NW CORNER OF DRIVEWAY	N324732.11	E1320791.11	243.59
15	NE CORNER OF DRIVEWAY	N324726.66	E1320816.52	245.38
16	NE CORNER OF FUEL TANK	N324734.62	E1320868.49	246.49
17	SE CORNER OF FUEL TANK	N324726.35	E1320868.18	246.43
18	SW CORNER OF CONC SIDEWALK	N324702.06	E1320781.34	245.69
19	NW CORNER OF CONC SIDEWALK	N324734.24	E1320782.57	242.87

GENERAL NOTES:

1. GENERAL R/W RESTORATION PER SNO CO STD DET 8-040, SHT C-7.

2. DRIVEWAY VERTICAL PROFILE PER SNO CO STD DET 2-070, SHT C-6.

3. BMP T5.13 PER THE SW REPORT SHALL BE APPLIED TO ALL DISTURBED AREAS WHICH REMAIN PERVIOUS AFTER CONSTRUCTION IS COMPLETE.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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JSD DRAWN
PBC CHECKED

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consor

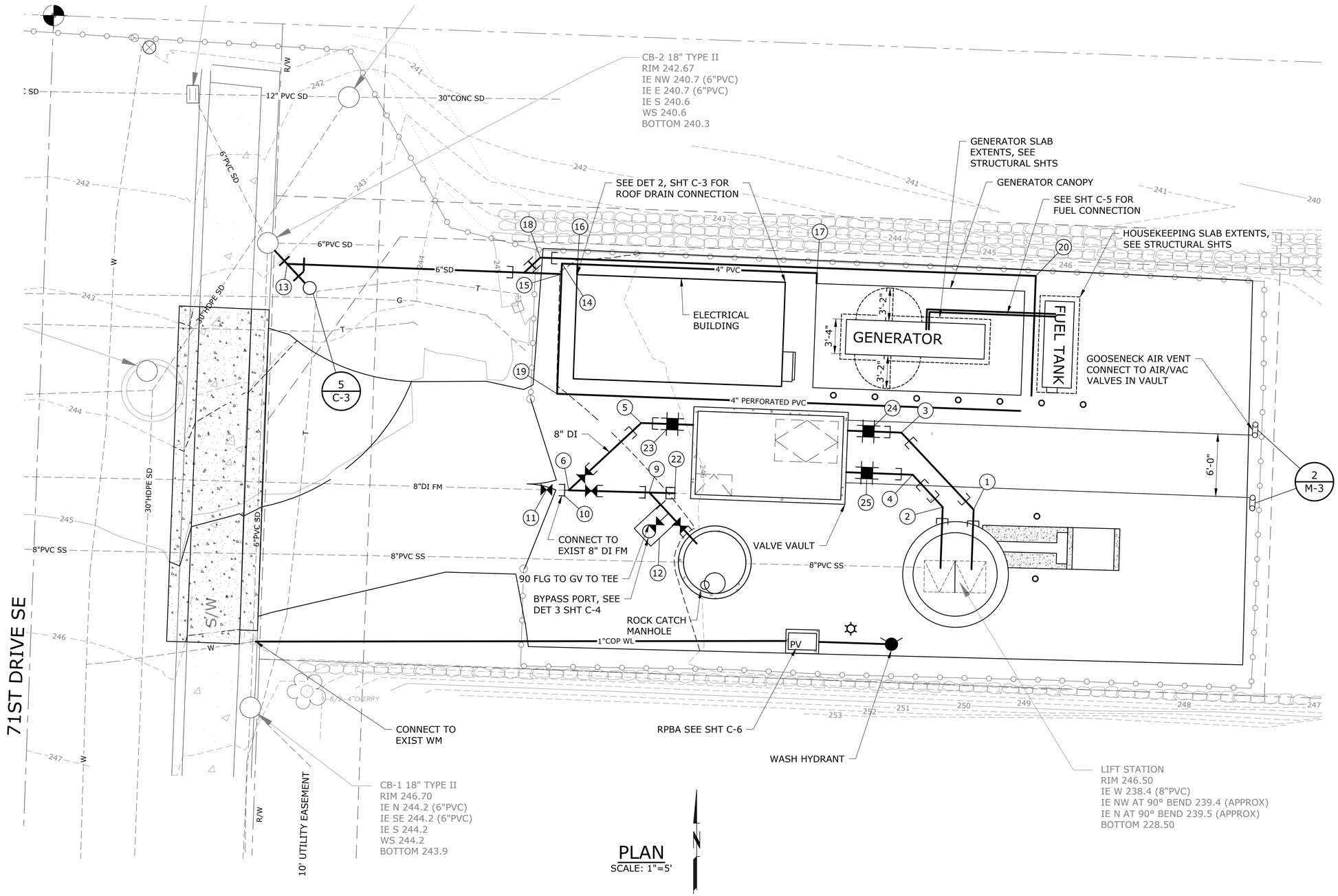
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

SITE PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET C-1



PLAN
SCALE: 1"=5'

PIPE SCHEDULE

1. N324714.69 E1320858.81 FURNISH & INSTALL: 1-8" 45° DI BEND, MJ
2. N324714.93 E1320855.84 FURNISH & INSTALL: 1-8" 45° DI BEND, MJ
3. N324722.09 E1320851.88 FURNISH & INSTALL: 1-8" 45° DI BEND, MJ
4. N324718.04 E1320852.95 FURNISH & INSTALL: 1-8" 45° DI BEND, MJ
5. N324723.01 E1320826.89 FURNISH & INSTALL: 1-8" 45° DI BEND, MJ
6. N324716.55 1320819.94 FURNISH & INSTALL: 1-8" DI WYE, FLG 1-8" COUPLING, FLGxMJ 2-8" DI GV, FLGxMJ
7. NOT USED
8. NOT USED
9. N324716.34 E1320827.67 FURNISH & INSTALL: 1-8" DI WYE, FLG 2-8" COUPLING, FLGxMJ 1-8" DI TEE, FLG 1-8" DI GV, FLG 1-8" DI 90° BEND, FLG 1-8" DI GV, FLGxMJ
10. N324716.56 E1320819.55 FURNISH & INSTALL: 1-8" CPLG ADAPTER, FLG
11. N324716.61 E1320817.81 FURNISH & INSTALL: 1-8" INSERTION VALVE
12. N324712.87 E1320829.47 OLDCASTLE CARSON 1730-18 BCF METER BOX WITH POLYMER LID
13. N324738.27 E1320792.91 FURNISH & INSTALL: 1-6" PVC WYE
14. N324738.30 E1320819.29 FURNISH & INSTALL: 1-4" PVC 90° BEND
15. N324737.30 E1320819.25 FURNISH & INSTALL: 1-4"x6" PVC TEE
16. N324738.25 E1320820.78 FURNISH & INSTALL: 1-4"x4" PVC TEE
17. N324737.40 E1320843.77 FURNISH & INSTALL: 1-4" PVC 90° BEND
18. N324738.88 E1320817.21 FURNISH & INSTALL: 1-4" PVC 45° BEND
19. N324725.81 E1320818.82 FURNISH & INSTALL: 1-4" PVC 90° BEND
20. N324737.12 E1320864.77 FURNISH & INSTALL: 1-4" PVC 90° BEND
21. NOT USED
22. N324716.27 E1320830.13 FURNISH & INSTALL: 1-8" DI CAP, INSTALL AFTER NEW LIFT STATION IS IN SERVICE AND ACCEPTED BY THE DISTRICT
23. N324722.90 E1320829.89 FURNISH & INSTALL: 1-8" ROMAC ALPHA CPLG OR APPROVED EQUIVALENT
24. N324722.20 E1320848.73 FURNISH & INSTALL: 1-8" ROMAC ALPHA CPLG OR APPROVED EQUIVALENT
25. N324718.21 E1320848.51 FURNISH & INSTALL: 1-8" ROMAC ALPHA CPLG OR APPROVED EQUIVALENT

NOTES:

1. ALL PIPING AND FITTINGS SHALL BE MECHANICALLY RESTRAINED.
2. ALL EXCAVATIONS OVER 4 FEET SHALL BE SHORED. EXCAVATIONS SHALL NOT GO BEYOND THE PROPERTY LIMITS. STEPPING OR LAYING BACK EXCAVATION IS NOT ALLOWED.

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

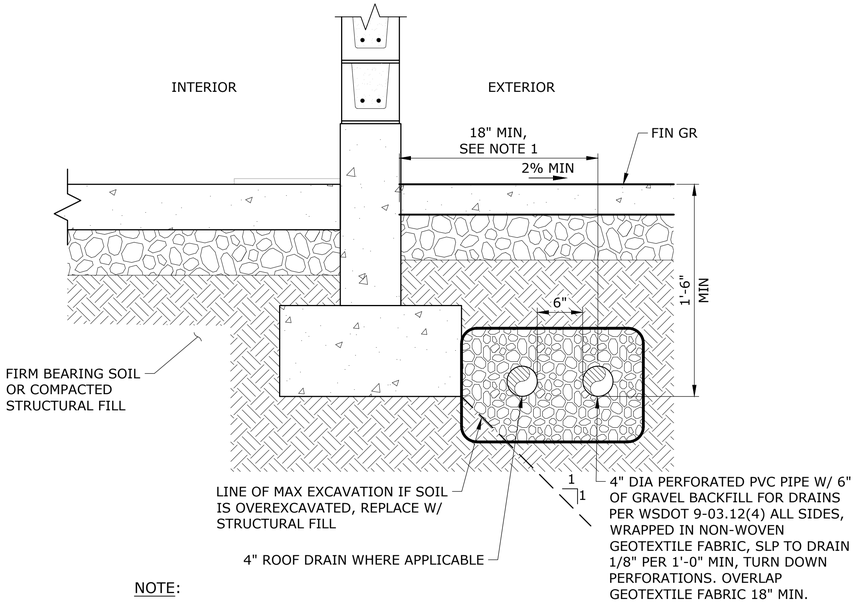
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

PIPING PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

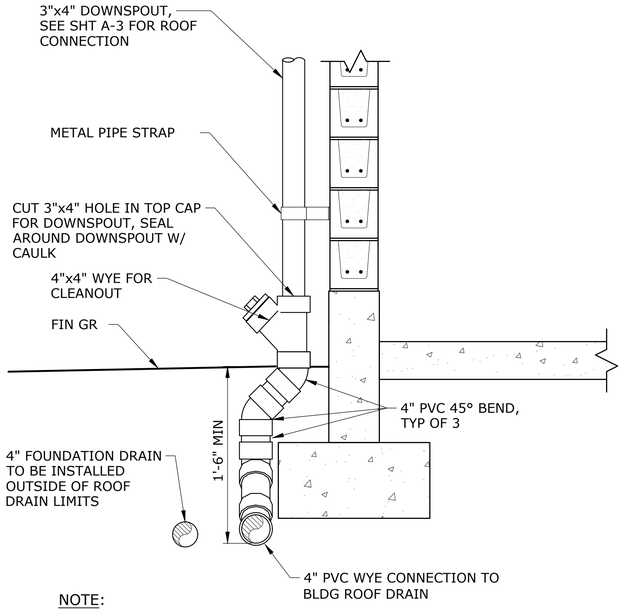
SHEET C-2



NOTE:

1. DISTANCE FROM OUTER WALL TO CENTERLINE OF 4" FOUNDATION DRAIN MAY BE REDUCED TO 12" WHEN NOT IN SAME TRENCH AS ROOF DRAIN.

TYPICAL FOUNDATION DRAIN
SCALE: NTS — 1 / C-2

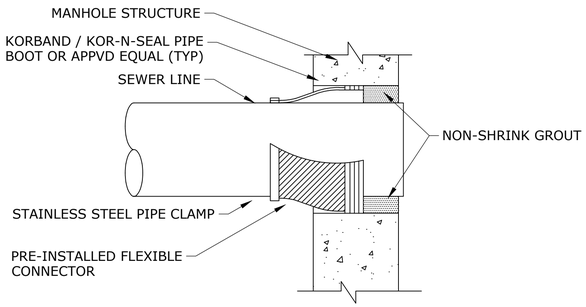


NOTE:

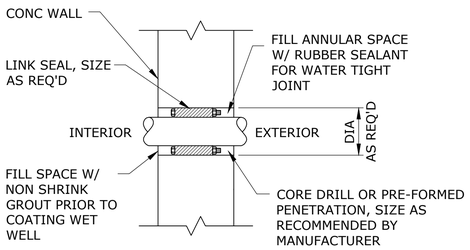
1. ROUTE ROOF AND FOUNDATION DRAIN TO CATCH BASIN PER SHT C-5 W/ 1% MIN SLP.

ROOF DRAIN CONNECTION
SCALE: NTS — 2 / C-2

SILVER LAKE WATER AND SEWER DISTRICT STD DETAIL
VI-W23 (MODIFIED)



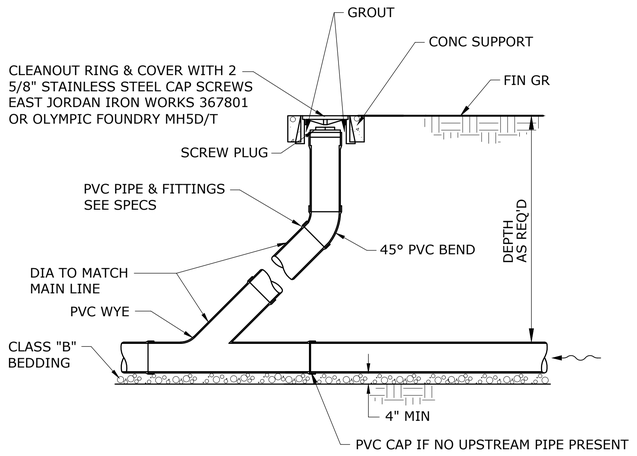
BOOT CONNECTION
SCALE: NTS — 3 / M-1



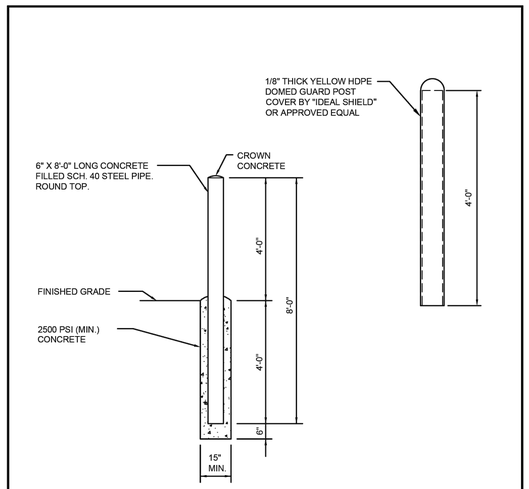
NOTE:

1. SEAL ALL WALL PIPE AND CONDUIT PENETRATIONS WITH LINK SEAL TYPE SEAL.

FORCE MAIN CONNECTION TO CONCRETE STRUCTURES
SCALE: NTS — 4 / M-1



STORM DRAIN CLEANOUT
SCALE: NTS — 5 / C-2



NOTES:

1. BOLLARDS SHALL BE CONSTRUCTED OF STEEL NO LESS THAN 4-INCHES IN DIAMETER AND CONCRETE FILLED.
2. BOLLARDS SHALL BE SPACED NO MORE THAN 4-FEET BETWEEN POSTS ON CENTER.
3. BOLLARDS SHALL BE SET NO LESS THAN 3-FEET DEEP IN CONCRETE FOOTINGS OF NO LESS THAN A 15-INCH DIAMETER.
4. BOLLARDS SHALL BE SET WITH THE TOP OF THE BOLLARDS NO LESS THAN 4-FEET ABOVE GROUND.
5. BOLLARDS TO BE LOCATED NO LESS THAN 3-FEET FROM THE PROTECTED OBJECT.

Silver Lake Water & Sewer District

BOLLARD

DATE: 12-2023 | DWG: G12

BOLLARD DETAIL
SCALE: NTS — 6 / C-1

NO.	DATE	BY	REVISION

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0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

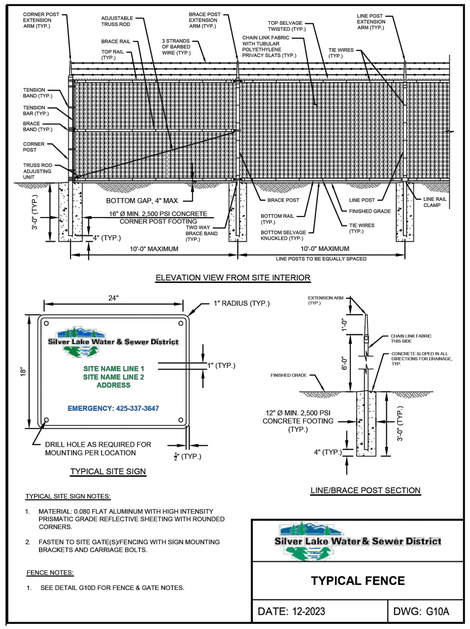
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

CIVIL DETAILS - 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET C-3



ELEVATION VIEW FROM SITE INTERIOR

TYPICAL SITE SIGN

LINE/BRACE POST SECTION

TYPICAL SITE SIGN NOTES:

1. MATERIAL: 0.080 FLAT ALUMINUM WITH HIGH INTENSITY PRISMATIC GRADE REFLECTIVE SHEETING WITH ROUNDED CORNERS.
2. FASTEN TO SITE GATE(S)/FENCING WITH SIGN MOUNTING BRACKETS AND CARRIAGE BOLTS.

FENCE NOTES:

1. SEE DETAIL G10D FOR FENCE & GATE NOTES.

Silver Lake Water & Sewer District

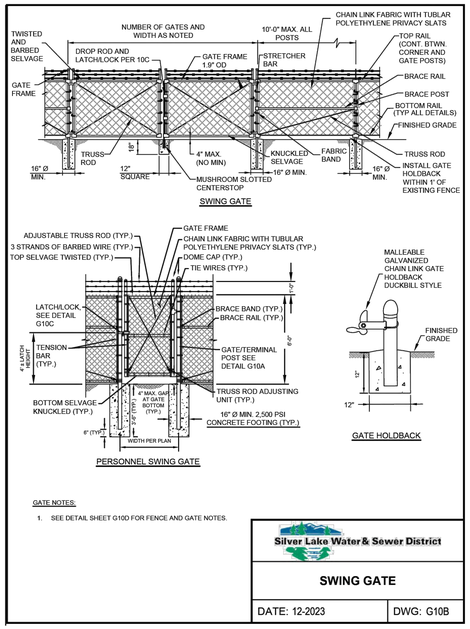
TYPICAL FENCE

DATE: 12-2023 | DWG: G10A

CHAIN LINK FENCE

SCALE: NTS

1 C-1



SWING GATE

PERSONNEL SWING GATE

GATE HOLDBACK

GATE NOTES:

1. SEE DETAIL SHEET G10D FOR FENCE AND GATE NOTES.

Silver Lake Water & Sewer District

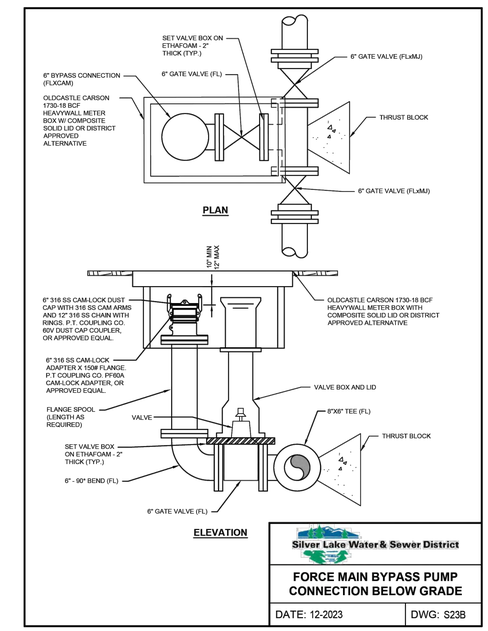
SWING GATE

DATE: 12-2023 | DWG: G10B

SWING GATE DETAIL

SCALE: NTS

2 C-1



Silver Lake Water & Sewer District

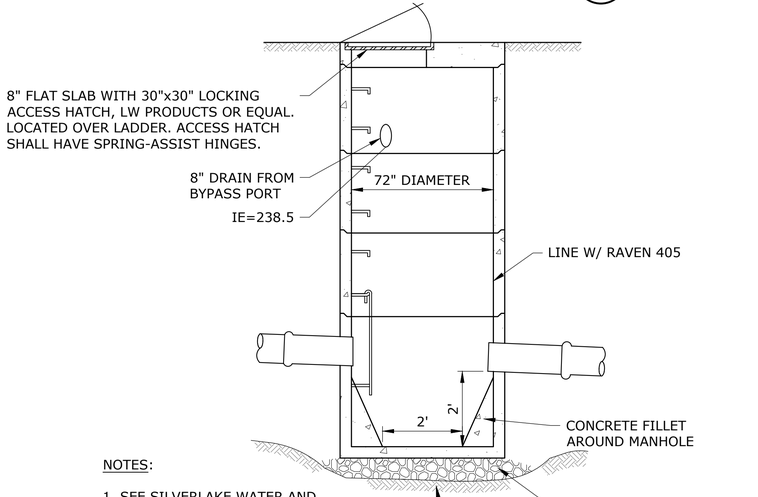
FORCE MAIN BYPASS PUMP CONNECTION BELOW GRADE

DATE: 12-2023 | DWG: S23B

BYPASS PORT DETAIL

SCALE: NTS

3 C-1



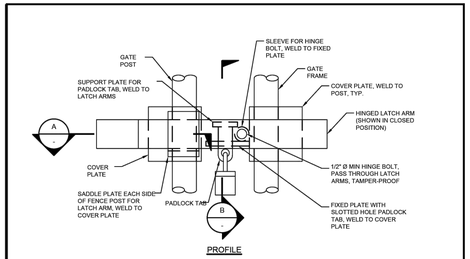
NOTES:

1. SEE SILVERLAKE WATER AND SEWER DISTRICT STD DET S1 FOR STANDARD MANHOLE CALLOUTS
2. ACCESS HATCH AND MANHOLE STEPS LOCATED AT 45° TO THROUGH FLOW
3. SEE DET 3, SHT C-3 FOR PIPE PENETRATION DETAILS

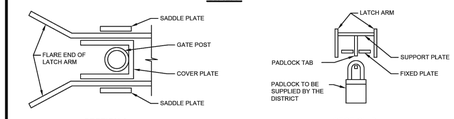
ROCK CATCH MANHOLE

SCALE: NTS

4 C-1 C-2



PROFILE



SECTION A SECTION B

NOTES:

1. USE 1/4" THICK PLATE, MIN, TYP.
2. SWING GATE LATCH SHALL BE STRONG ARM STYLE SUITABLE FOR DOUBLE SWING GATE OR SINGLE SWING GATE AS APPLICABLE.
3. WELDED JOINTS SHALL BE PROTECTED BY APPLYING ZINC-RICH PAINT IN ACCORDANCE WITH ASTM PRACTICE A780.
4. ALL COMPONENTS SHALL BE HOT DIPPED GALVANIZED GALVANIZED AND THEN RECEIVE A MINIMUM OF 3 MILS BLACK TGIC POLYESTER POWDER COAT AS APPLIED BY POWDER COAT NORTHWEST, OR APPROVED EQUAL. FIELD TOUCHUP COATINGS AS REQUIRED.

Silver Lake Water & Sewer District

SWING GATE STRONG ARM HATCH/LOCK

DATE: 12-2023 | DWG: G10C

FENCE GATE LATCH/LOCK DETAIL

SCALE: NTS

5 C-1

FENCE AND GATE NOTES:

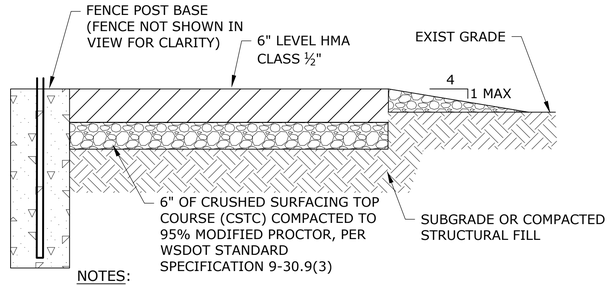
1. ALL POSTS, RAILS, FENCE FABRIC, FITTINGS, FASTENERS, AND FABRIC TIES SHALL BE HOT DIPPED GALVANIZED.
2. INSTALL CORNER POSTS WHERE HORIZONTAL ALIGNMENT CHANGES 30° OR MORE AND ALL OTHER LOCATIONS AS REQUIRED.
3. PROVIDE BRACE RAIL BETWEEN END POSTS AND LINE POSTS, LENGTHS AS REQUIRED.
4. PROVIDE ALL-BLACK FINISH OVER STANDARD GALVANIZED FINISH. POWDER-COATED EPOXY ON POSTS, RAILS, AND FITTINGS; FUSION-BONDED VINYL ON WIRE FABRIC.
5. FENCE FABRIC SHALL BE 3-1/2"x5" MESH, 9 GA GALV. WIRE, WITH FACTORY INSTALLED FLAT TUBULAR POLYETHYLENE SLATS (BLACK), VIEWGUARD BY SECURITY CONTRACTOR SERVICES, INC. OR EQUAL.
6. PROVIDE GALV IRON, MUSHROOM TYPE, SLOTTED CENTERSTOP FOR DOUBLE GATE DROP ROD. EMBED IN 12" DIAM X 18" D CONCRETE FOUNDATION.
7. WIRE TIES, HOG RINGS, RAILS, POSTS, AND BRACES SHALL BE CONSTRUCTED ON THE SECURE SIDE OF FENCE ALIGNMENT. CHAIN LINK FABRIC SHALL BE PLACED ON THE SIDE OPPOSITE THE SECURED AREA.
8. EXTEND ASPHALT PAVEMENT APPROXIMATELY 6" BEYOND FENCE WHERE FENCE IS LOCATED AT EDGE OF PAVEMENT, TYP.
9. UNLESS OTHERWISE APPROVED BY THE DISTRICT, INSTALL FENCE POSTS AFTER SITE PAVING IS COMPLETE.
10. CONCRETE SHALL BE MINIMUM 2500 PSI AT 28 DAYS.
11. UNLESS OTHERWISE APPROVED BY THE DISTRICT, PROVIDE BLACK BARBED WIRE TWISTED STRANDS AND VERTICAL EXTENSION ARMS ON ALL POSTS IF ALLOWED BY THE LAND USE AGENCY. TERMINATE BARBED WIRE AT EXTENDED CORNER AND GATE POSTS.

FENCE & GATE COMPONENT SIZING TABLE	
FENCE/GATE COMPONENT	DIAMETER (INCHES)
PULL POSTS	2 - 7/8
LINE POSTS	2 - 3/8
CORNER POSTS	2 - 7/8
PERSONNEL GATE POSTS	2 - 7/8
VEHICLE GATE POSTS	4
TOP, BOTTOM, INTERMDEIDATE, & BRACE RAILS	1 - 5/8
GATE FRAME	1 - 7/8

Silver Lake Water & Sewer District

FENCE AND GATE NOTES

DATE: 12-2023 | DWG: G10D



NOTES:

1. PROVIDE CRUSHED ROCK TRANSITION TAPERS AT PAVEMENT EDGES.
2. TACK AND SEAL EDGES.
3. ASPHALT THICKNESS WITHIN 125TH PL SE SHALL BE 6" OR THICKNESS OF EXISTING ASPHALT, WHICHEVER IS GREATER.
4. SAWCUT EXISTING ASPHALT AT ALL JOINTS WITH NEW ASPHALT.

TYPICAL AC PAVEMENT SECTION

SCALE: NTS

6 C-1

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED

JSD DRAWN

PBC CHECKED

PETER BENEDICT CUNNINGHAM — 46352 — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

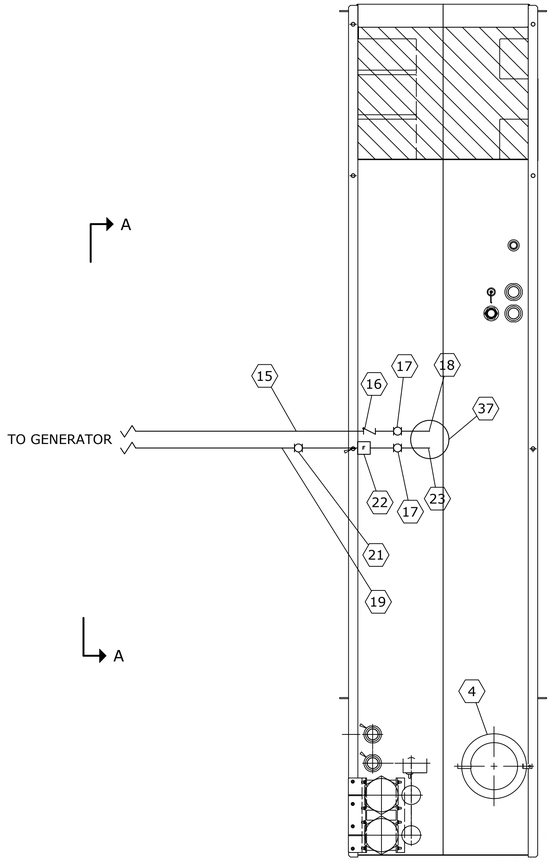
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

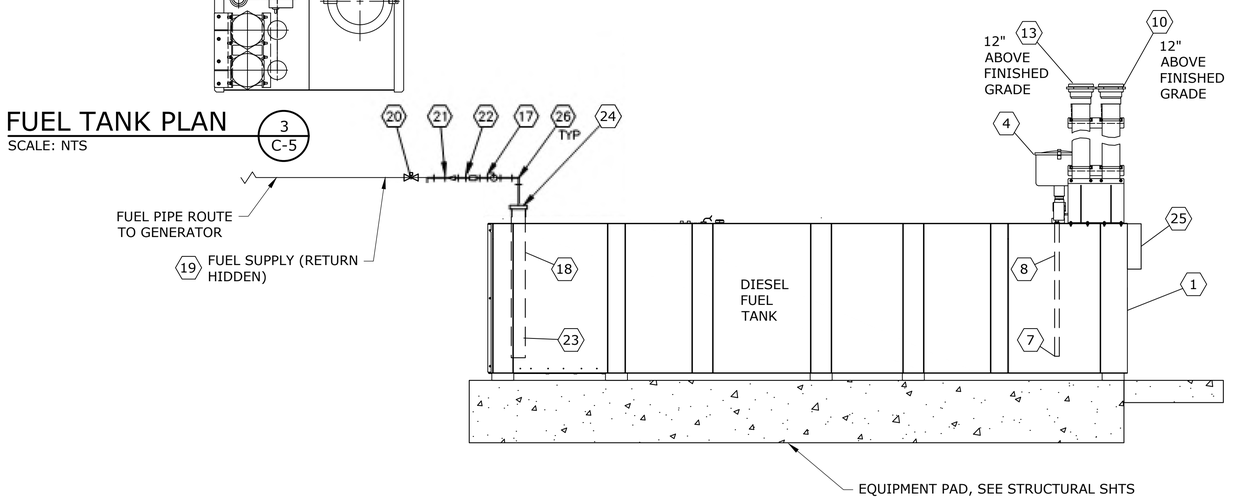
CIVIL DETAILS - 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET C-4



FUEL TANK PLAN
SCALE: NTS
3
C-5



SECTION
SCALE: NTS
A
--

FUEL SYSTEM COMPONENT SCHEDULE	
#	COMPONENT
1	FUEL TANK, DOUBLE WALL
2	STEPS UP TO ACCESS FUEL FILL
3	CLOCK LEVEL GAGE W/ ADJACENT MANUAL GAUGE PORT
4	SPILL CONTAINER
5	FILL PORT
6	OVERFILL PREVENTION VALVE
7	DROP TUBE WITH DIFFUSER
8	FLUID LEVEL ALARM FLOAT, HIGH/LOW
9	LEAK DETECTION, FUEL TANK
10	NORMAL VENT
11	PRIMARY EMERGENCY VENT AND FITTINGS
12	SECONDARY EMERGENCY VENT AND FITTINGS
13	SECONDARY CONTAINMENT TANK VENT
14	DRAIN VALVE
15	1" DOUBLE WALL FUEL LINE, RETURN
16	SWING CHECK VALVE, RETURN
17	ISOLATION VALVE, SUPPLY AND RETURN
18	DROP TUBE W/ PIPE DIFFUSER, RETURN
19	1" DOUBLE WALL FUEL LINE, SUPPLY

FUEL SYSTEM COMPONENT SCHEDULE	
#	COMPONENT
20	SOLENOID VALVE, SUPPLY
21	EMERGENCY VALVE SUPPLY
22	100 MESH FUEL STRAINER, SUPPLY
23	DROP TUBE W/ PIPE STRAINER, SUPPLY
24	DOUBLE TAPPED BUSHING
25	FUEL ALARM PANEL

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 46352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

CIVIL DETAILS - 3

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET C-5

13 of 51

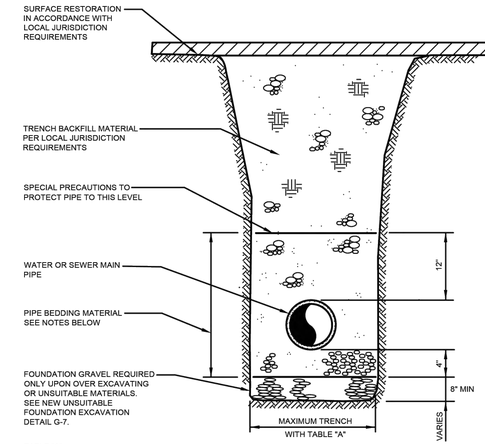


TABLE "A"

6"	PIPE	-2'-6"
8"	PIPE	-2'-6"
10"	PIPE	-3'-0"
12"	PIPE	-3'-0"
16"	PIPE	-3'-6"
18"	PIPE	-4'-0"
24"	PIPE	-4'-0"

SCALE: NTS

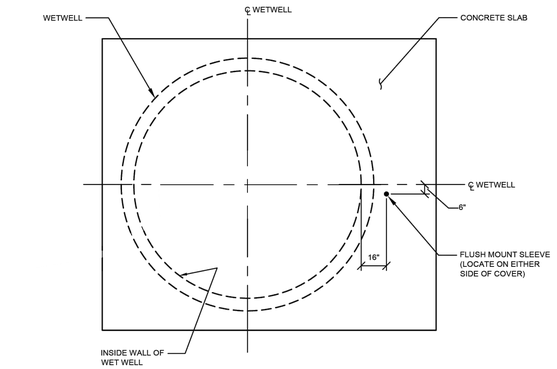
NOTES:

1. ALSO SEE DETAILS G7 AND G9.
2. KEEP TRENCH BOTTOM COMPACTED WITH UNIFORM GRADE. NO TEMPORARY SUPPORTS I.E. BLOCKS, ALLOWED TO SUPPORT PIPE. TRENCH BOTTOM SHALL BE TO GRADE PRIOR TO PIPE INSTALLATION.
3. BEDDING MATERIAL:
   SEWER - PEA GRAVEL
   WATER - PEA GRAVEL OR WSDOT 9-03.12(3)
4. RECYCLED CONCRETE IS NOT ALLOWED FOR USE IN DISTRICT TRENCH SECTIONS, NO EXCEPTIONS.

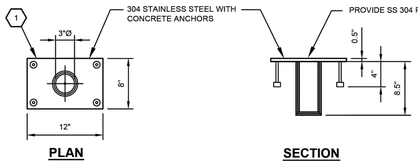
Silver Lake Water & Sewer District

TRENCH SECTION PIPE BEDDING AND TRENCH BACKFILL

DATE: 11-2022 | DWG: G6



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



PLAN **SECTION**

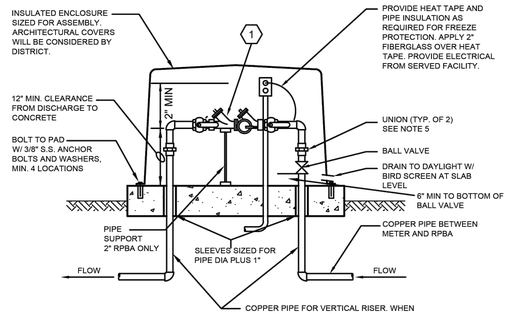
FLUSH MOUNT SLEEVE

1 FLUSH MOUNT SLEEVE MODEL 85-12828 WITH PLUG MODEL 8510827 BY UNIQUE CONCEPTS LTD.

Silver Lake Water & Sewer District

FLUSH MOUNT SLEEVE

DATE: 11-2022 | DWG: G8



1 UNIVERSITY OF SOUTHERN CALIFORNIA APPROVED REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) WITH TEST COCK PROTECTION AND BRONZE BODY BALL VALVE AT EACH END.

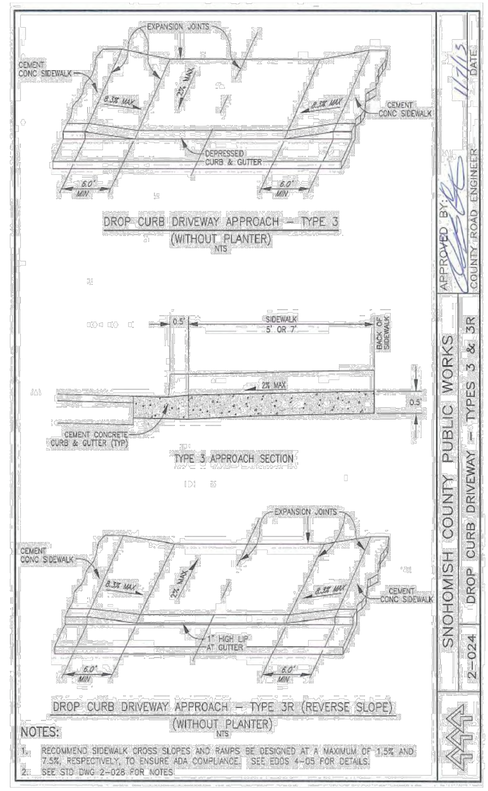
NOTES:

1. CONCRETE TO BE 2500 PSI (MIN.) MIX WITH AIR ENTRAINMENT.
2. COMPLETE ALL WORK IN ACCORDANCE WITH STATE, DISTRICT, AND MANUFACTURER STANDARDS.
3. SYSTEM SHALL NOT BE PUT INTO SERVICE UNTIL RPBA IS APPROVED BY THE DISTRICT AND TESTED/CERTIFIED BY A WASHINGTON STATE LICENSED TESTER.
4. RPBA IS CONSIDERED PART OF THE PRIVATE SYSTEM AND SHALL BE MAINTAINED BY THE PROPERTY OWNER WITH ANNUAL CERTIFICATION REQUIRED.
5. DIELECTRIC UNIONS SHALL BE USED TO SEPARATE DISSIMILAR MATERIALS.
6. NO BRANCH CONNECTIONS ALLOWED BETWEEN METER AND RPBA.
7. RPBA LOCATED IN MECHANICAL ROOM, WHEN APPROVED BY DISTRICT, WILL HAVE ADDITIONAL REQUIREMENTS SUCH AS RECORDED ACCESS AGREEMENT AND ADEQUATE ROOM DRAINAGE PER MANUFACTURER'S RECOMMENDATIONS.

Silver Lake Water & Sewer District

REDUCED PRESSURE BACKFLOW ASSEMBLY 2-INCH AND SMALLER

DATE: 11-2022 | DWG: CC6



APPROVED BY: COUNTY ROAD ENGINEER — DATE: 1/7/13

SNOHOMISH COUNTY PUBLIC WORKS — 2-024 — DROP CURB DRIVEWAY – TYPES 3 & 3R

NOTES:

1. SEE STD DWG 2-010 TO DETERMINE THE APPLICABLE ACCESS POINT DESIGN AND SPECIFICATIONS.
2. SEE EDDS 4-04 AND WSDOT STD PLANS F-10.12 AND F-10.16 FOR CURB DETAILS.
3. SEE EDDS 4-05 AND STD DWG 4-150 FOR SIDEWALK SPECIFICATIONS. NOTE DESIGN GUIDANCE TO ENSURE ADA COMPLIANCE IN CONSTRUCTION.
4. ALL COMMERCIAL OR INDUSTRIAL ACCESS POINTS, INCLUDING THE CURB, GUTTER AND SIDEWALK, SHALL MEET AASHTO HL-93 LOADING REQUIREMENTS.
5. DRIVEWAY CEMENT CONCRETE DEPTH SHALL BE A MINIMUM OF 6 INCHES AND PLACED ON COMPACTED GRADE.
6. THE DROP CURB DRIVEWAY SECTION BETWEEN A SIDEWALK AND THE CURB AND GUTTER SHALL BE CONCRETE.
7. CONCRETE SHALL BE AIR-ENTRAINED CONCRETE CLASS 4000 PER WSDOT STD SPECIFICATION 8-06.3.
8. ALL JOINTS SHALL BE CLEANED AND EDGED.
9. FOR A DRIVEWAY WIDTH EXCEEDING 15 FEET, A FULL DEPTH EXPANSION JOINT WITH 3/8-INCH JOINT FILLER IS REQUIRED ALONG THE DRIVEWAY CENTERLINE. PARALLEL EXPANSION JOINTS ARE REQUIRED AT 15 FT MAXIMUM SPACING FOR DRIVEWAY WIDTHS EXCEEDING 30 FEET. REFER TO WSDOT STANDARD PLAN F-30.10 AND STANDARD SPECIFICATION 5-05.3(8).
10. STANDARD 3/8-INCH EXPANSION JOINTS SHALL BE PLACED AT BACK, FRONT AND SIDES OF DRIVEWAY APPROACHES AS SHOWN ON STD DWGS.
11. AVOID PLACING DRAINAGE STRUCTURES, JUNCTION BOXES OR OTHER OBSTRUCTIONS IN FRONT OF DRIVEWAY ENTRANCES.

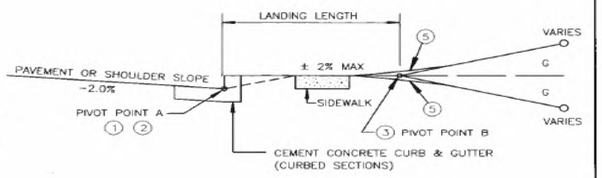
SNOHOMISH COUNTY PUBLIC WORKS — 2-028 — DROP CURB DRIVEWAY NOTES

APPROVED BY: COUNTY ROAD ENGINEER — DATE: 1/7/13

NOTES:

1. SEE STD DWG 4-140 FOR CURB DETAILS.
2. WHEN ACCESSING SHOULDERED ROADWAYS, MAINTAIN SHOULDER SLOPE TO PIVOT POINT A.
3. ACCESS POINT GRADE SHALL BE MEASURED FROM PIVOT POINT B.
4. LANDING LENGTH MAY BE REDUCED SUBJECT TO APPROVAL OF AN EDDS DEVIATION
5. A VERTICAL CURVE SHALL BE CONSTRUCTED TO TRANSITION THE LANDING TO THE ACCESS APPROACH. THE VERTICAL SEPARATION BETWEEN THE CURVE AND A 10-FOOT CHORD OF THE CURVE SHALL NOT EXCEED 3.25 INCHES (WHERE G IS POSITIVE) OR 2.00 INCHES (WHERE G IS NEGATIVE).
6. GRADE ACROSS RURAL LANDING MAY BE ±5%.
7. ACCESS POINTS FOR RESIDENTIAL AND COMMERCIAL OR INDUSTRIAL DEVELOPMENT DETERMINED TO BE A FIRE LANE SHALL HAVE A MINIMUM WIDTH OF 25 FEET FOR A LENGTH OF AT LEAST 30 FEET FROM THE FACE OF CURB LINE (URBAN) OR EDGE OF PAVEMENT (RURAL OR URBAN SECTION WITHOUT CURB) OF THE INTERSECTING ROAD NETWORK ELEMENT.

SEE TEXT SECTION 2-07



TYPE OF ACCESS	ACCESSING	MAX. NO OF DWELLINGS SERVED	LANDING LENGTH ④	ACCESS GRADE G
RESIDENTIAL (URBAN)	NON-ARTERIAL	≤12	15'⑦	± 15% MAX.
		>12	15'⑦	± 7% MAX.
RESIDENTIAL (URBAN)	ARTERIAL	≤6	30'⑦	± 15% MAX.
		>6	30'⑦	± 7% MAX.
RESIDENTIAL (RURAL)	ALL	NA	5' ⑦	± 15% MAX.
COMMERCIAL/INDUSTRIAL (R&U)	NON-ARTERIAL	NA	30'	± 8% MAX.
COMMERCIAL/INDUSTRIAL (R&U)	ARTERIAL	NA	30'	± 5% MAX.

SNOHOMISH COUNTY PUBLIC WORKS — 2-070 — ACCESS POINT GRADES

APPROVED BY: COUNTY ROAD ENGINEER — DATE: 8/6/18

NO.	DATE	BY	REVISION

NOTICE: 0 ½ 1 — IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED | JSD DRAWN | PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/11/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

STANDARD DETAILS - 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

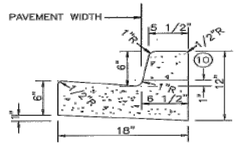
SHEET C-6

N:\Projects\23\Vertical_WW221070WA.00 - Highlands East LS Rehabilitiation\CAD\Sheets\221070-WA-C-DETS.dwg C-6 11/18/2024 1:57 PM DEREK.CLOUD 24.3s (LMS Tech)

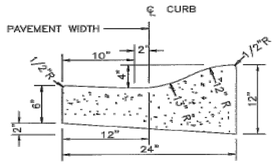
NOTES:

1. VERTICAL CURB WILL BE REQUIRED EXCEPT AS NOTED IN SECTION 4-04.
2. CONSTRUCTION OF CURB DETAILS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AS PUBLISHED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION. (WSDOT/APWA SPECIFICATIONS) UNLESS OTHERWISE MODIFIED BELOW.
3. ALL CONCRETE SHALL BE COMMERCIAL CLASS PER WSDOT/APWA SPECIFICATIONS.
4. FORMS SHALL BE TRUE TO LINE AND GRADE AND SECURELY STAKED. STEEL FORMS ONLY SHALL BE USED ON TANGENT SECTIONS. WOOD FORMS MAY BE USED ON CURVED SECTIONS.
5. FULL DEPTH EXPANSION JOINTS CONSISTING OF 3/8 INCH MINIMUM PREMOLDED JOINT MATERIAL SHALL BE PLACED ADJACENT TO CATCH BASINS, INLETS AND AT POINTS OF TANGENCY ON STREETS AND DRIVEWAY RETURNS. MAXIMUM SPACING SHALL BE 20 FEET.
6. CONTRACTION JOINTS (DUMMY JOINTS) CONSISTING OF 3/8" MIN. X 2" OF PREMOLDED JOINT MATERIAL SHALL BE CONSTRUCTED AT INTERVALS OF 10 FEET.
7. ALL JOINTS SHALL BE CLEAN AND EDGED.
8. FINISH SHALL BE A LIGHT BROOM FINISH.
9. FINISHED CURBS AND GUTTERS SHALL BE SPRAYED WITH A CLEAR CURING COMPOUND.
10. TOP OF CURB AT ACCESS POINT APPROACH.
11. SUBGRADE COMPACTION FOR CURBS AND GUTTERS SHALL MEET A MINIMUM 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH SEC. 2-03.3(14) OF THE WSDOT/APWA SPECIFICATIONS.

SEE TEXT SECTION 4-04



CEMENT CONCRETE
VERTICAL CURB AND GUTTER



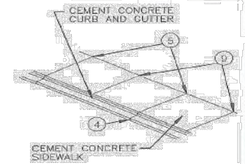
CEMENT CONCRETE
ROLLED CURB AND GUTTER

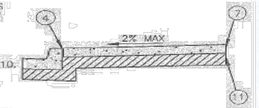
SNOHOMISH COUNTY PUBLIC WORKS
4-140 CURB DETAILS
APPROVED BY: Steven E. Thompson 10-1-024
COUNTY ROAD ENGINEER DATE

NOTES:

1. CONSTRUCTION OF SIDEWALKS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION AS PUBLISHED BY THE WASHINGTON STATE DEPARTMENT OF TRANSPORTATION AND THE AMERICAN PUBLIC WORKS ASSOCIATION (WSDOT/APWA SPECIFICATIONS) UNLESS OTHERWISE MODIFIED BELOW.
2. ALL CONCRETE SHALL BE COMMERCIAL CLASS CONCRETE PER WSDOT/APWA SPECIFICATIONS.
3. FORMS SHALL BE TRUE TO LINE AND GRADE AND SECURELY STAKED. STEEL FORMS ONLY SHALL BE USED ON TANGENT SECTIONS. WOOD FORMS MAY BE USED ON CURVED SECTIONS.
4. EXPANSION JOINTS CONSISTING OF 3/8" FULL DEPTH PREMOLDED JOINT MATERIAL SHALL BE PLACED AROUND FIRE HYDRANTS, POLES, METER BOXES AND OTHER OBSTRUCTIONS AND ALONG WALLS OF STRUCTURES IN PAVED AREAS. EXPANSION JOINTS SHALL ALSO BE PLACED AT THE BEGINNING AND THE END OF EACH CURVE, ON EACH SIDE OF STRUCTURES, DROP CURB DRIVEWAYS AND CURB RAMPS, BETWEEN SIDEWALK AND BACK OF CURB WHEN POURED SEPARATELY, AND AT OTHER LOCATIONS AS DIRECTED BY THE ENGINEER. FULL EXPANSION JOINTS SHALL GENERALLY BE PLACED TO MATCH THOSE PLACED IN ADJACENT CURB WITH A MAXIMUM SPACING OF 20 FEET.
5. CONTRACTION JOINTS (DUMMY JOINTS) CONSISTING OF 3/8" X 2" OF PREMOLDED JOINT MATERIAL SHALL BE CONSTRUCTED AT INTERVALS NOT TO EXCEED 10 FEET. WHEN SIDEWALKS ARE PLACED BY SLIP-FORMING, A PREMOLDED STRIP OF 3/8" THICK AND UP TO FULL DEPTH MAY BE USED. CONTRACTION JOINTS (DUMMY JOINTS) IN SIDEWALKS SHALL BE LOCATED SO AS TO MATCH THE JOINTS IN THE CURB WHETHER SIDEWALK IS ADJACENT TO CURB OR SEPARATED BY A PLANTING STRIP. JOINT SEALANTS FOR SAWED CONSTRUCTION JOINTS SHALL MEET THE REQUIREMENTS OF SECTION 9-04.2 OF THE WSDOT/APWA SPECIFICATIONS.
6. ALL JOINTS SHALL BE CLEAN AND EDGED.
7. CEMENT CONCRETE SIDEWALK THICKNESS IS SPECIFIED IN TEXT SECTION 4-05C. SEE ALSO STANDARD DRAWINGS 2-020 AND 2-025 FOR DRIVEWAY DETAILS.
8. THE WIDTH OF SIDEWALK SHALL BE 5 FEET MIN. FOR SINGLE FAMILY RESIDENTIAL PROPERTY USES AND 7 FEET MIN. FOR COMMERCIAL/INDUSTRIAL AND MULTI-FAMILY RESIDENTIAL PROPERTY USES.
9. SCORE MARKS, 1/4" DEEP, ARE TO BE PLACED ON 5 FOOT CENTERS, AND TO CORRESPOND TO THE MARKINGS IN EXISTING SIDEWALKS. WHEN THE SIDEWALK WIDTH EXCEEDS 8 FEET, A LONGITUDINAL SCORE AT THE CENTER OF THE SIDEWALK SHALL BE PROVIDED.
10. FINISH SHALL BE A LIGHT BROOM FINISH.
11. 6 INCHES OF GRAVEL BORROW OR EQUIVALENT. SEE STANDARD DRAWINGS 3-020, 3-050 AND SECTION 4-10.
12. SUBGRADE COMPACTION FOR SIDEWALKS SHALL MEET A MINIMUM 95% OF MAXIMUM DENSITY IN ACCORDANCE WITH SEC. 2-03.3(14) OF THE WSDOT/APWA SPECIFICATIONS.
13. PLANTER STRIPS REQUIRED BUT NOT SHOWN. SEE STANDARD DRAWINGS 3-020 AND 3-050 FOR LOCATION OF PLANTERS.

SEE TEXT SECTION 4-05.





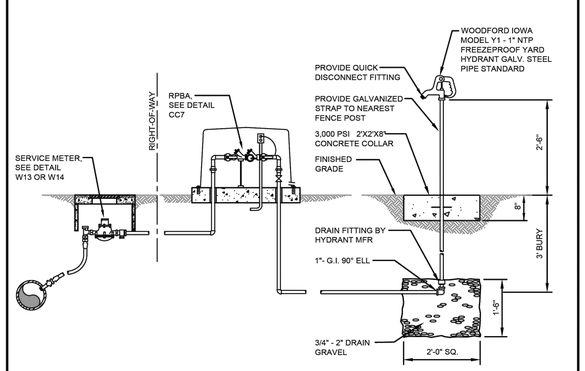
SNOHOMISH COUNTY PUBLIC WORKS
4-150 SIDEWALK DETAILS
APPROVED BY:
COUNTY ROAD ENGINEER DATE

GENERAL R/W USE RESTORATION REQUIREMENTS

1. AT THE ENGINEER'S DISCRETION, PRIOR TO COMMENCING ANY CONSTRUCTION, PHOTOGRAPHS DEPICTING PRE-EXISTING ROADWAY CONDITIONS WILL BE REQUIRED EVERY 50 FEET IN PAVED AREAS OR ANY OTHER LOCATION AS SPECIFIED BY THE ENGINEER.
2. SIGNING, FLAGGING AND TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THESE STANDARDS, THE WSDOT TRAFFIC MANUAL AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.
3. ONE LANE OF TRAFFIC SHALL REMAIN OPEN AT ALL TIMES, ATTENDED BY FLAGMEN AND APPROPRIATE CONSTRUCTION SIGNING PROVIDED. THE ROAD SHALL BE RESTORED TO TWO-WAY TRAFFIC AT THE END OF EACH WORKING DAY. APPLICATIONS FOR TOTAL ROAD CLOSURES MUST BE FILED WITH SNOHOMISH COUNTY PUBLIC WORKS AT LEAST 5 DAYS PRIOR TO THE ANTICIPATED CLOSURE.
4. EXISTING DRAINAGE DITCHES, CULVERTS, ETC., SHALL BE KEPT CLEAN AT ALL TIMES. TEMPORARY DIVERSION OF ANY DRAINAGE SYSTEM WILL NOT BE PERMITTED WITHOUT THE CONSENT OF THE ENGINEER. ANY DRAINAGE CULVERT, CATCHBASIN, MANHOLE OR OTHER DRAINAGE STRUCTURE DISTURBED BY EXCAVATION SHALL BE REPLACED WITH NEW MATERIAL OR REPAIRED TO THE SATISFACTION OF THE ENGINEER. TEMPORARY EROSION/SEDIMENTATION CONTROL MEASURES SHALL BE EMPLOYED TO PROTECT ADJACENT PROPERTY AND STORM DRAINAGE FACILITIES.
5. GRAVEL SHOULDERS DISTURBED BY EXCAVATION SHALL BE SHAPED TO COUNTY STANDARDS AND PROVIDED WITH A MINIMUM OF 6 INCHES COMPACTED CRUSHED SURFACING TOP COURSE.
6. IF IN THE OPINION OF THE ENGINEER, WEATHER CONDITIONS DETERIORATE TO THE POINT WHERE THE TRAVELED ROADWAYS ARE UNSAFE FOR THE PUBLIC OR DETRIMENTAL TO THE RESTORATION OF THE ROADWAY, EXCAVATION SHALL CEASE IMMEDIATELY AND CLEANUP SHALL BE PROMPTLY ACCOMPLISHED.
7. ALL PIPE OR OTHER MATERIAL STORED ALONG COUNTY RIGHT-OF-WAY MUST BE PLACED AT A SAFE DISTANCE FROM THE TRAVELED ROADWAY IN SUCH A MANNER AS TO AVOID FALLING ONTO THE ROADWAY.
8. NO EXCESS OR UNSUITABLE MATERIAL SHALL BE WASTED ON COUNTY RIGHT-OF-WAY. ANY SUCH MATERIAL DUMPED ON PRIVATE PROPERTY MAY REQUIRE A GRADING PERMIT. VERIFICATION WITH SNOHOMISH COUNTY PLANNING & DEVELOPMENT SERVICES IS REQUIRED.
9. STREET SURFACES SHALL BE CLEANED AT THE END OF EACH DAY'S OPERATION WITH A POWER BROOM OR OTHER APPROVED MEANS.
10. NO OPEN CUT CROSSING OF COUNTY ROADS OR STREETS SHALL BE MADE WITHOUT THE APPROVAL OF THE ENGINEER.
11. MAXIMUM AMOUNT OF OPEN TRENCH IN ROADS SHALL BE 400 LINEAL FEET. AT THE END OF EACH DAY, ALL DITCHES MUST BE BACKFILLED OR COVERED WITH STEEL PLATES AND BARRICADED WITH FLASHING WARNING LIGHTS TO PREVENT PEOPLE OR ANIMALS FROM FALLING INTO THE TRENCH.
12. FINAL CLEANUP INCLUDING COMPLETE RESTORATION OF SHOULDERS, CLEANING OF DITCHES, CULVERTS AND CATCHBASINS, AND REMOVAL OF LOOSE MATERIAL FROM BACK SLOPES OF DITCHES SHALL NOT EXCEED 1500 L.F. BEHIND EXCAVATING OPERATIONS OR AS REQUIRED BY THE ENGINEER.

S:\TES\COMMON\EDDS\EDDS DRAWINGS\Ch8\8040.dwg

SNOHOMISH COUNTY PUBLIC WORKS
8-040 GENERAL R/W RESTORATION REQUIREMENTS
APPROVED BY: Steven E. Thompson 2-10-03
COUNTY ROAD ENGINEER DATE



Silver Lake Water & Sewer District

1-INCH NON-FREEZE
YARD HYDRANT

DATE: 11-2022 DWG: W19

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 48352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

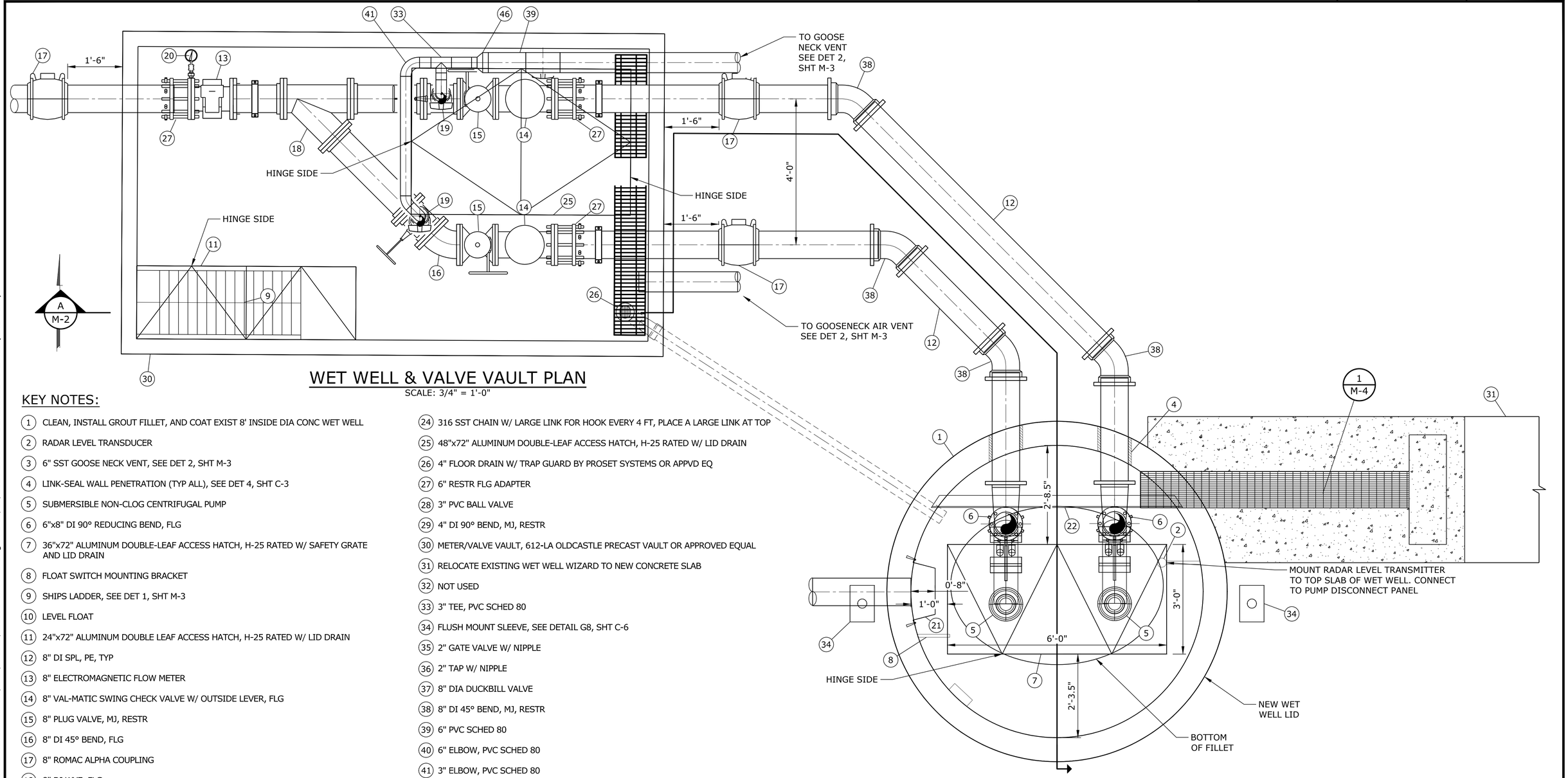
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

STANDARD DETAILS - 2

PROJECT NO.: 22-1070 SCALE: AS SHOWN DATE: NOVEMBER 2024

SHEET C-7



WET WELL & VALVE VAULT PLAN

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

KEY NOTES:

1. CLEAN, INSTALL GROUT FILLET, AND COAT EXIST 8' INSIDE DIA CONC WET WELL
2. RADAR LEVEL TRANSDUCER
3. 6" SST GOOSE NECK VENT, SEE DET 2, SHT M-3
4. LINK-SEAL WALL PENETRATION (TYP ALL), SEE DET 4, SHT C-3
5. SUBMERSIBLE NON-CLOG CENTRIFUGAL PUMP
6. 6"x8" DI 90° REDUCING BEND, FLG
7. 36"x72" ALUMINUM DOUBLE-LEAF ACCESS HATCH, H-25 RATED W/ SAFETY GRATE AND LID DRAIN
8. FLOAT SWITCH MOUNTING BRACKET
9. SHIPS LADDER, SEE DET 1, SHT M-3
10. LEVEL FLOAT
11. 24"x72" ALUMINUM DOUBLE LEAF ACCESS HATCH, H-25 RATED W/ LID DRAIN
12. 8" DI SPL, PE, TYP
13. 8" ELECTROMAGNETIC FLOW METER
14. 8" VAL-MATIC SWING CHECK VALVE W/ OUTSIDE LEVER, FLG
15. 8" PLUG VALVE, MJ, RESTR
16. 8" DI 45° BEND, FLG
17. 8" ROMAC ALPHA COUPLING
18. 8" DI WYE, FLG
19. 2" AIR RELEASE VALVE VENT TO EXTERIOR OF VAULT
20. PRESSURE TRANSMITTER ASSEMBLY, SEE DET 4, SHT M-3
21. STAINLESS STEEL BAFFLE, SEE DET 5, SHT M-3
22. DISCHARGE PIPE SUPPORT, SEE DET 6, SHT M-3
23. PIPE SUPPORT, STANDON MODEL S-92 OR APPROVED EQUAL, SEE DET 7, SHT M-3
24. 316 SST CHAIN W/ LARGE LINK FOR HOOK EVERY 4 FT, PLACE A LARGE LINK AT TOP
25. 48"x72" ALUMINUM DOUBLE-LEAF ACCESS HATCH, H-25 RATED W/ LID DRAIN
26. 4" FLOOR DRAIN W/ TRAP GUARD BY PROSET SYSTEMS OR APPVD EQ
27. 6" RESTR FLG ADAPTER
28. 3" PVC BALL VALVE
29. 4" DI 90° BEND, MJ, RESTR
30. METER/VALVE VAULT, 612-LA OLDCASTLE PRECAST VAULT OR APPROVED EQUAL
31. RELOCATE EXISTING WET WELL WIZARD TO NEW CONCRETE SLAB
32. NOT USED
33. 3" TEE, PVC SCHED 80
34. FLUSH MOUNT SLEEVE, SEE DETAIL G8, SHT C-6
35. 2" GATE VALVE W/ NIPPLE
36. 2" TAP W/ NIPPLE
37. 8" DIA DUCKBILL VALVE
38. 8" DI 45° BEND, MJ, RESTR
39. 6" PVC SCHED 80
40. 6" ELBOW, PVC SCHED 80
41. 3" ELBOW, PVC SCHED 80
42. 3" PVC SCHED 80
43. 3" 45° BEND, PVC SCHED 80
44. 6"x3" TEE, PVC SCHED 80
45. 3" UNION, PVC SCHED 80
46. 3"x6" REDUCER, PVC SCHED 80

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER B. CHRISTOPHER CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

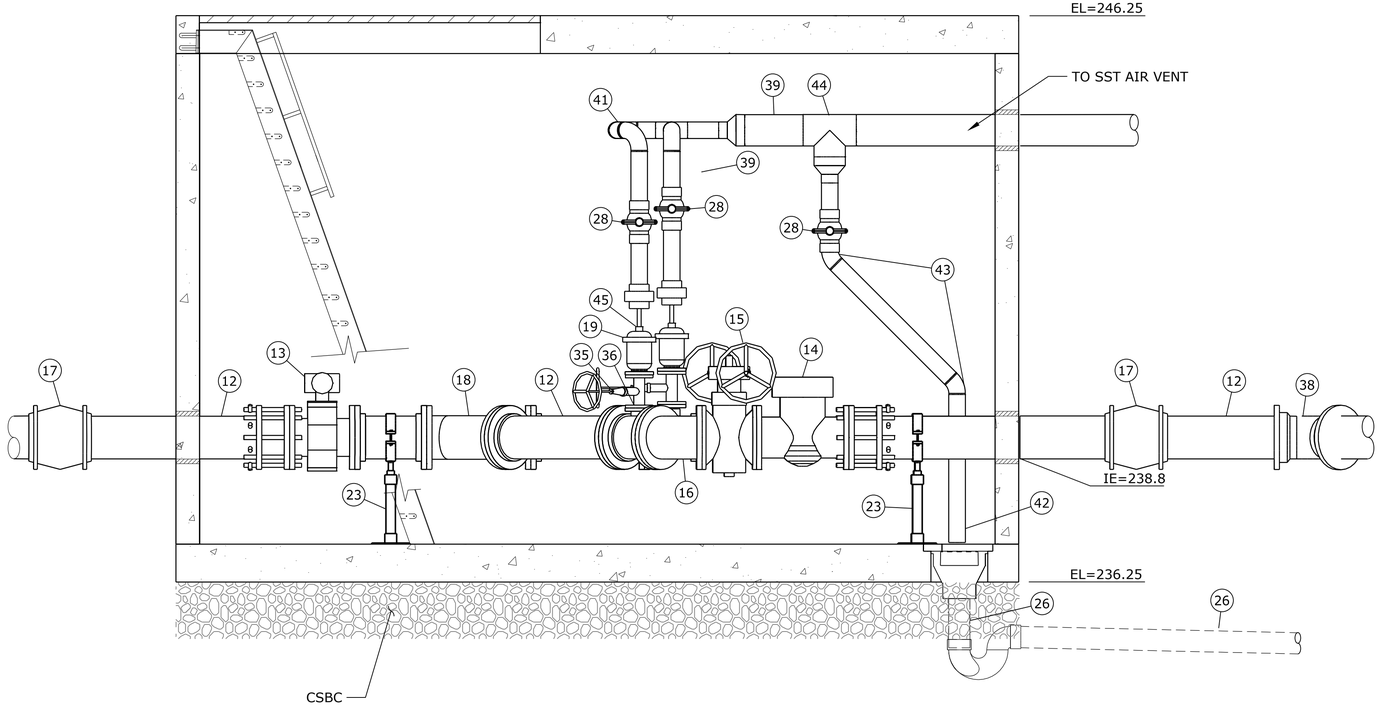
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

WET WELL & VALVE VAULT PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

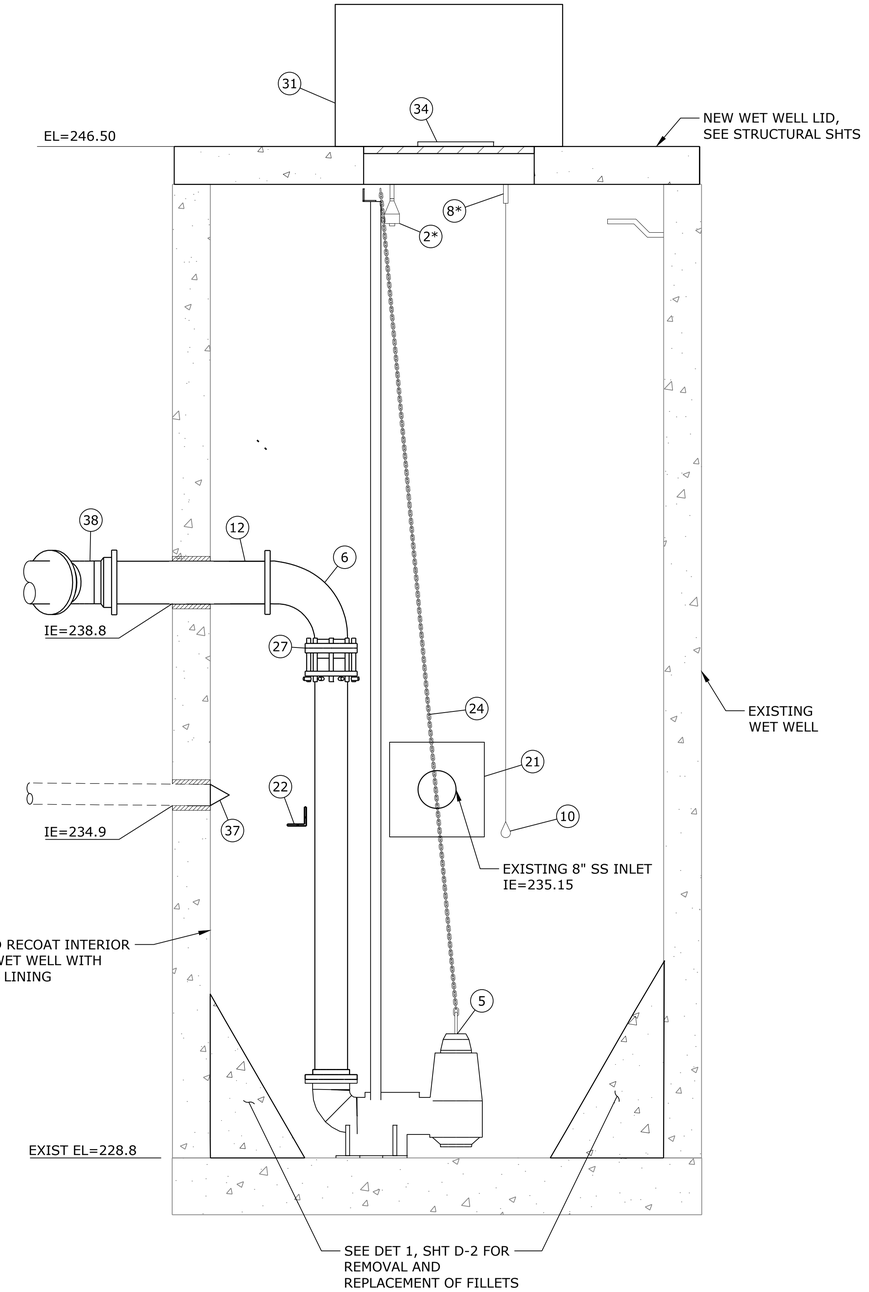
SHEET M-1



WET WELL & VALVE VAULT SECTION

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

A
M-1



* CONTRACTOR TO COORDINATE LOCATION WITH DISTRICT

NOTES:

1. SEE SHEET M-1 FOR KEY NOTE DESCRIPTIONS.
2. SLOPE VAULT FLOOR 2% TOWARD DRAIN.
3. DRAIN VAULT HATCHES TO VAULT FLOOR WITH PVC PIPE AND FITTINGS.

WET WELL LEVELS

DESCRIPTION	WET WELL LEVEL (FT)	ELEVATION (FT)
WET WELL RIM	17.7	246.5
INFLUENT SEWER	6.4	235.2
HIGH LEVEL ALARM	6.2	235.0
LAG PUMP ON	6	234.8
LEAD PUMP ON	5.5	234.3
LAG PUMP OFF	3	231.8
ALL PUMPS OFF	2.5	231.3
LOW LEVEL ALARM	2	230.8
BOTTOM OF WET WELL	0	228.8

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 48352 — REGISTERED PROFESSIONAL ENGINEER — 11.21.2024

consor

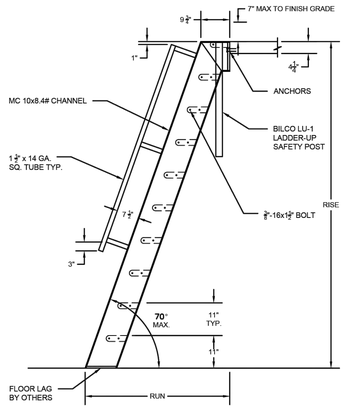
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

WET WELL & VALVE VAULT PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
M-2
17 of 51



NOTES:

1. REQUIRED FOR ACCESS TO FACILITIES PLACED IN VAULTS WHERE DEPTH FROM SURFACE TO FLOOR EXCEEDS 4 FEET.
2. VAULT SELECTION SIZED TO ALLOW CLEARANCE FOR PLACEMENT OF "SHIP LADDER"
3. SHIP LADDER TO BE GALVANIZED STEEL.
4. SHOP DRAWING APPROVAL OF SLWSD REQUIRED PRIOR TO INSTALLATION.
5. SHIPS LADDER MUST, AT A MINIMUM, ABIDE BY OSHA STANDARDS.
6. TREAD WIDTH SHALL BE MIN. 24"AND MIN. DEPTH OF 6".

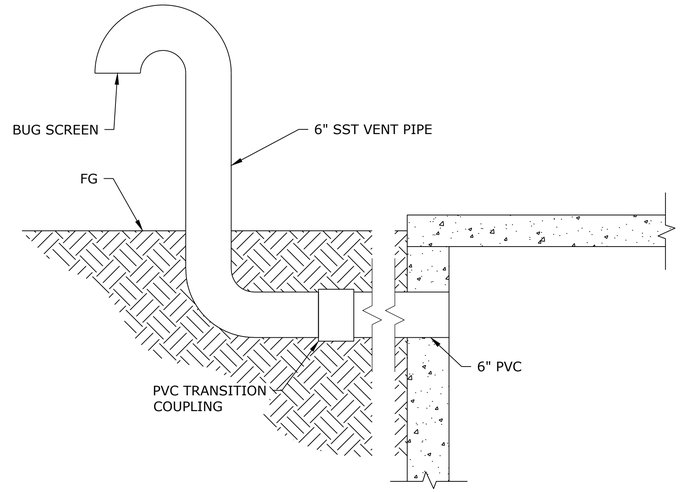
SCALE: NTS

Silver Lake Water & Sewer District

SHIPS LADDER

DATE: 11-2022 | DWG: G4

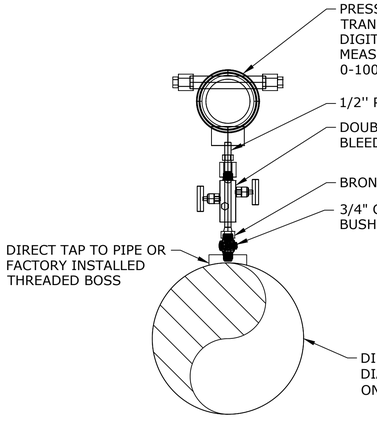
SHIPS LADDER MOUNTING (1 / M-1)
SCALE: NTS



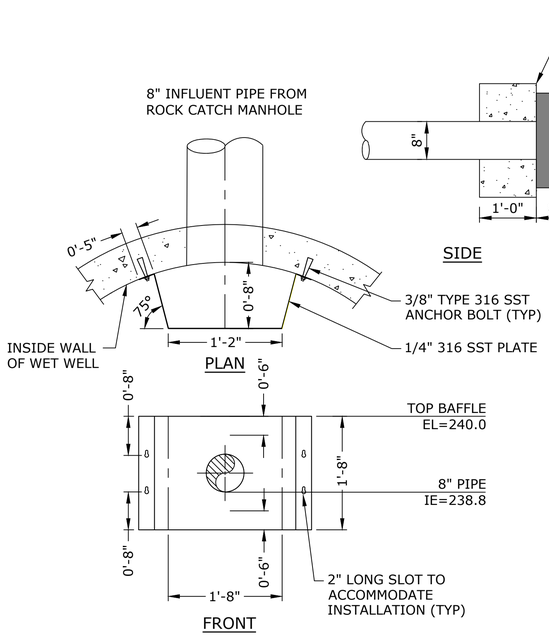
6" SST GOOSE NECK VENT DETAIL (2 / M-1)
SCALE: NTS

<NOT USED>

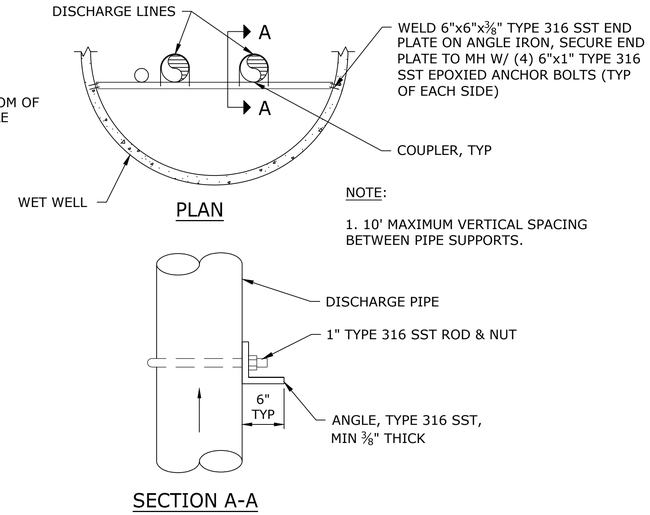
WALL PENETRATION (3 / M-1)
SCALE: NTS



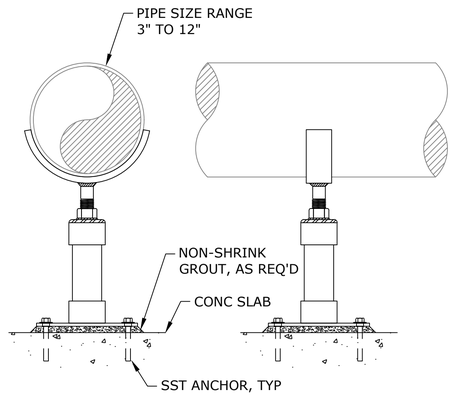
PRESSURE INDICATING TRANSMITTER (4 / M-1)
SCALE: NTS



BAFFLE (5 / M-1)
SCALE: NTS



DISCHARGE PIPE SUPPORT (6 / M-1)
SCALE: NTS



S-92 PIPE SUPPORT (7 / M-1)
SCALE: NTS

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 46352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

consor

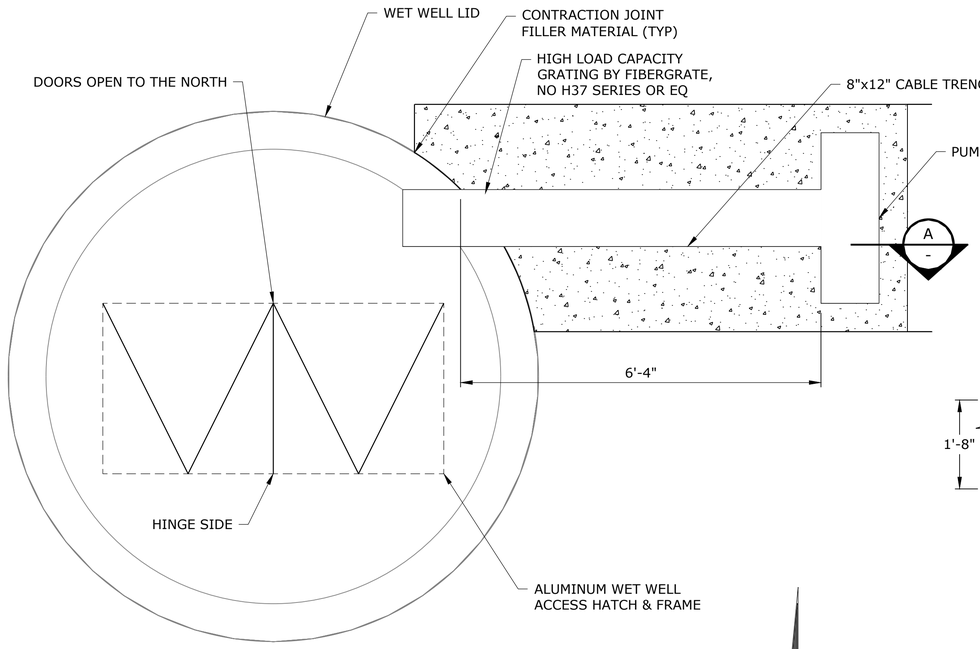
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

MECHANICAL DETAILS - 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

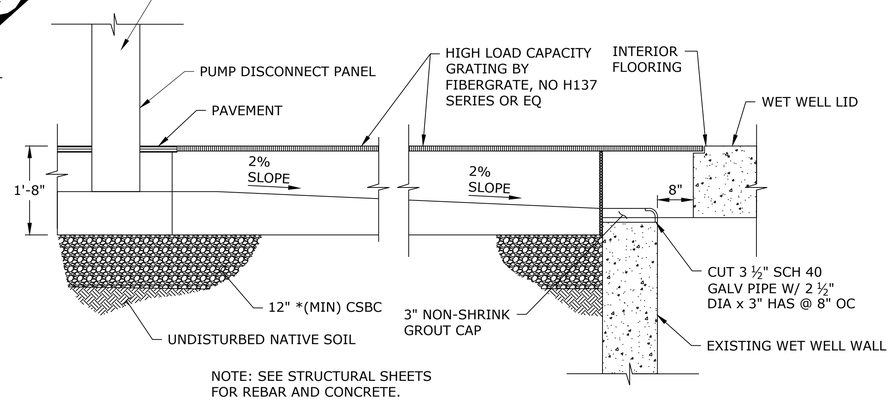
SHEET M-3



TRENCH INSTALLATION PLAN VIEW

1 / C-4

SCALE: ######



NOTE: SEE STRUCTURAL SHEETS
FOR REBAR AND CONCRETE.

ELEC TRENCH SECTION

A / -

SCALE: NTS

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NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED

JSD DRAWN

PBC CHECKED

PETER BENEDICT CUNNINGHAM STATE OF WASHINGTON 48352 REGISTERED PROFESSIONAL ENGINEER 11/21/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

MECHANICAL DETAILS - 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET M-4

STRUCTURAL NOTES

(THESE NOTES ARE TYPICAL UNLESS NOTED OR DETAILED OTHERWISE ON DRAWINGS)

CODE

ALL MATERIALS, WORKMANSHIP, DESIGN, AND CONSTRUCTION SHALL CONFORM TO THE DRAWINGS, SPECIFICATIONS, AND THE INTERNATIONAL BUILDING CODE (IBC), 2021 EDITION. SPECIFICATIONS AND STANDARDS WHERE REFERENCED ON THE DRAWINGS ARE TO BE THE LATEST EDITION.

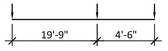
DESIGN LOADS

DEAD LOADS:
- ELECTRIC BUILDING ROOF 15 PSF
- GENERATOR CANOPY ROOF 5 PSF

LIVE LOADS:
- ROOF (SNOW LOAD) 30 PSF (INCLUDES I_S = 1.20)

VACTOR TRUCK (AXLE WIDTH = 6'-0")

20.0k 23.0k 23.0k (AXLE LOAD TYP)



EARTHQUAKE LOADS:

EQUIVALENT LATERAL FORCE PROCEDURE PER ASCE 7-16 SECTION 12.8.

SITE CLASS	C (PER GEOTECH)
SHORT PERIOD SPECTRAL RESPONSE ACCEL (S_s)	1.306
ONE SECOND SPECTRAL RESPONSE ACCEL (S_1)	0.461
SHORT PERIOD DESIGN SPECTRAL RESPONSE ACCEL (S_{DS})	1.045
ONE SECOND DESIGN SPECTRAL RESPONSE ACCEL (S_{D1})	0.461
RISK CATEGORY	IV
SEISMIC IMPORTANCE FACTOR (I_E)	1.5
SEISMIC DESIGN CATEGORY	D
BASIC SEISMIC FORCE-RESISTING-SYSTEM	CMU BEARING WALLS; ORDINARY STEEL CANTILEVER COLUMNS
RESPONSE MODIFICATION FACTOR, (R)	5.0, 1.25
REDUNDANCY FACTOR (ρ)	1.0
SEISMIC RESPONSE COEFFICIENT (C_S)	0.314, 1.254

W = TOTAL SEISMIC DEAD LOAD AS DEFINED PER ASCE 7-16 SECTION 12.7.2.

BASE SHEAR (V), $V = C_S W = \frac{S_{DS}}{R/I} W$

WIND LOADS:

BASIC WIND SPEED (3 SECOND GUST)	109 MPH
EXPOSURE	B
K_{ZT}	1.47

STATEMENT OF SPECIAL INSPECTIONS

SPECIAL INSPECTIONS ARE REQUIRED AS INDICATED IN THE FOLLOWING TABLE. THE CONTRACTOR SHALL SUBMIT A WRITTEN STATEMENT OF RESPONSIBILITY TO THE BUILDING OFFICIAL AND OWNER PRIOR TO COMMENCEMENT OF WORK IN ACCORDANCE WITH SECTION 1704.4 OF THE IBC.

STRUCTURAL OBSERVATION BY THE ENGINEER OF RECORD IS REQUIRED PER IBC SECTION 1704.6 TO VERIFY CONSTRUCTION HAS BEEN PERFORMED IN GENERAL CONFORMANCE TO THE APPROVED CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL NOTIFY THE ENGINEER A MINIMUM OF TWO WEEKS IN ADVANCE OF THE OBSERVATION.

1. OBSERVATION PRIOR TO POURING CONCRETE FOUNDATION
2. OBSERVATION PRIOR TO GROUTING CMU WALLS
3. FINAL OBSERVATION AT SUBSTANTIAL COMPLETION OF STRUCTURE

FREQUENCY AND DISTRIBUTION OF REPORTS - INSPECTION REPORTS SHALL BE PROVIDED FOR EACH DAY ON SITE BY SPECIAL INSPECTOR. STRUCTURAL OBSERVATION REPORTS SHALL BE PROVIDED AFTER EACH OBSERVATION. REPORTS SHALL BE DISTRIBUTED TO THE CONTRACTOR AND ENGINEER AND BUILDING OFFICIAL.

SPECIAL INSPECTION

OPERATION	CONT	PERIODIC	REMARKS
SOILS			
EXCAVATION & COMPACTION & FILL		X	GEOTECH ENGINEER
CONCRETE			
REINFORCING PLACEMENT		X	
CONCRETE TEST SPECIMENS	X		
CONCRETE PLACEMENT	X		
EPOXY ANCHORS		X	
STRUCTURAL STEEL			
FABRICATION & ERECTION		X	
SHOP & FIELD WELDING			
ALL WELDING		X	
MASONRY			
PRISM CONSTRUCTION	X		
UNIT & REINFORCING PLACEMENT		X	
GROUT PLACEMENT	X		

NOTE:
ALL ITEMS MARKED WITH AN "X" SHALL BE INSPECTED IN ACCORDANCE WITH IBC CHAPTER 17. SPECIAL INSPECTION SHALL BE PERFORMED BY A QUALIFIED TESTING AGENCY DESIGNATED BY THE OWNER. THE STRUCTURAL ENGINEER, AND BUILDING OFFICIAL SHALL BE FURNISHED WITH COPIES OF ALL RESULTS. ANY INSPECTION FAILING TO MEET THE PROJECT SPECIFICATIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE DESIGN TEAM.

C G ENGINEERING
250 4TH AVE. S., SUITE 200
EDMONDS, WASHINGTON 98020
PHONE (425) 778-8500
FAX (425) 778-5536

SHOP DRAWINGS

SHOP DRAWINGS FOR THE FOLLOWING ITEMS SHALL BE SUBMITTED TO THE STRUCTURAL ENGINEER FOR REVIEW PRIOR TO FABRICATION:

1. CONCRETE MIX DESIGN
2. CONCRETE REINFORCING
3. CMU UNITS
4. CMU REINFORCING
5. STRUCTURAL STEEL

SHOP DRAWINGS SHALL BE REVIEWED, REVISED AS REQUIRED FOR FIELD CONDITIONS, AND DATE STAMPED BY THE CONTRACTOR PRIOR TO REVIEW BY THE ENGINEER. CONTRACTOR SHALL PROVIDE (3) SETS OF SHOP DRAWINGS FOR ENGINEER'S REVIEW. ALLOW TWO WEEKS FOR SHOP DRAWING APPROVAL BY ENGINEER.

ENGINEER'S SHOP DRAWING REVIEW IS FOR GENERAL CONFORMANCE WITH THE DESIGN CONCEPT AND CONTRACT DOCUMENTS. MARKINGS OR COMMENTS SHALL NOT BE CONSTRUED AS RELIEVING THE CONTRACTOR FROM COMPLIANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. THE CONTRACTOR REMAINS RESPONSIBLE FOR DETAILS AND ACCURACY, FOR CONFORMING AND CORRELATING ALL QUANTITIES AND DIMENSIONS, FOR SELECTING FABRICATION PROCESSES, FOR TECHNIQUES OF ASSEMBLY, AND FOR PERFORMING THE WORK IN A SAFE MANNER.

ENGINEER'S SHOP DRAWING REVIEW OF STRUCTURAL COMPONENTS DESIGNED BY OTHERS IS FOR LOADS IMPOSED ON THE BASIC STRUCTURE. THE COMPONENT DESIGNER IS RESPONSIBLE FOR CODE CONFORMANCE AND ALL CONNECTIONS TO THE BASIC STRUCTURE. SHOP DRAWINGS SHALL INDICATE MAGNITUDE AND DIRECTION OF THE LOADS IMPOSED ON THE BASIC STRUCTURE AND SHALL BE STAMPED & SIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE SAME STATE AS THE PROJECT.

FABRICATION SHALL BEGIN ONLY AFTER SHOP DRAWINGS BEARING THE STAMP AND SIGNATURE OF THE ENGINEER OF RECORD AND CONTRACTOR HAVE BEEN RECEIVED.

FOUNDATIONS: SPREAD FOOTINGS

SOILS REPORT: REPORT NO: 2021-142-21
PREPARED BY: HWA GEOSCIENCES, INC
DATED: 04/21/2023

ALLOWABLE SOIL PRESSURE: 500 PSF (BUILDING FOUNDATIONS)

FOOTINGS SHALL BEAR ON FIRM UNDISTURBED EARTH OR COMPACTED STRUCTURAL FILL AS SPECIFIED IN THE GEOTECHNICAL REPORT. BOTTOM OF FOOTINGS SHALL EXTEND AT LEAST 18" BELOW ADJACENT EXTERIOR GRADE. ANY FOOTING ELEVATIONS SHOWN IN THE DRAWINGS REPRESENT MINIMUM DEPTHS AND ARE FOR BIDDING ONLY. ACTUAL FOOTING ELEVATIONS ARE SUBJECT TO SITE CONDITIONS AND MUST THEREFORE BE ESTABLISHED BY THE CONTRACTOR. FOOTINGS SHALL BE CENTERED BELOW COLUMNS OR WALLS ABOVE, UNLESS NOTED OTHERWISE.

REFER TO GEOTECHNICAL REPORT FOR GROUND IMPROVEMENT REQUIREMENTS, INCLUDING OVER-EXCAVATION AND FILL.

EXCAVATIONS AND DRAINAGE INSTALLATION SHALL BE OBSERVED BY A SOILS ENGINEER. IF EXCAVATION SHOWS SOIL CONDITIONS TO BE OTHER THAN THOSE ASSUMED ABOVE NOTIFY THE STRUCTURAL ENGINEER FOR POSSIBLE FOUNDATION REDESIGN.

CONCRETE

ALL CONCRETE SHALL BE MIXED, PROPORTIONED, CONVEYED, AND PLACED IN ACCORDANCE WITH CHAPTER 26 OF ACI 318 AND THE AMERICAN CONCRETE INSTITUTE'S SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS (ACI 301).

ALL CONCRETE SHALL BE STONE-AGGREGATE CONCRETE HAVING A UNIT WEIGHT OF APPROXIMATELY 150 POUNDS PER CUBIC FOOT.

CONCRETE STRENGTHS AT 28 DAYS (f'c) AND MIX CRITERIA SHALL BE AS FOLLOWS:

TYPE OF CONSTRUCTION	f'c	MAXIMUM WATER/CEMENT RATIO	MIN CEMENT CONTENT PER CUBIC YARD	MAXIMUM SHRINKAGE STRAIN
SLABS ON GRADE	4000 PSI	0.52	5 1/2 SACK	N/A
FOOTINGS	4000 PSI	0.52	5 1/2 SACK	N/A
WALLS	4000 PSI	0.52	5 1/2 SACK	N/A

THE MINIMUM AMOUNT OF CEMENT LISTED ABOVE MAY BE CHANGED IF A CONCRETE PERFORMANCE MIX IS SUBMITTED TO THE ENGINEER AND THE BUILDING DEPARTMENT FOR APPROVAL TWO WEEKS PRIOR TO PLACING ANY CONCRETE. THE PERFORMANCE MIX SHALL INCLUDE THE AMOUNTS OF CEMENT, FINE AND COARSE AGGREGATE, WATER, AND ADMIXTURES AS WELL AS THE WATER-CEMENT RATIO, SLUMP, CONCRETE YIELD, AND SUBSTANTIATING STRENGTH DATA IN ACCORDANCE WITH CHAPTER 26 OF ACI 318.

ALL CONCRETE EXPOSED TO WEATHER OR TO FREEZING TEMPERATURES SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ACI 318 TABLE 19.3.3.1 FOR MODERATE EXPOSURE CLASS F1.

REINFORCING STEEL

REINFORCING STEEL SHALL BE DEFORMED BILLET STEEL CONFORMING TO ASTM A615, AND SHALL BE GRADE 60 (Fy = 60,000 PSI), UNLESS NOTED OTHERWISE. GRADE 60 REINFORCING BARS INDICATED ON DRAWINGS TO BE WELDED SHALL CONFORM TO ASTM A706. REINFORCING COMPLYING WITH ASTM A615 MAY BE WELDED IF MATERIAL PROPERTY REPORTS INDICATING CONFORMANCE WITH WELDING PROCEDURES SPECIFIED IN AWS D1.4 ARE SUBMITTED.

WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. PROVIDE WELDED WIRE FABRIC IN SHEETS NOT ROLLS. LAP WELDED WIRE FABRIC 12" AT SIDES AND ENDS.

REINFORCING STEEL SHALL BE DETAILED INCLUDING HOOKS AND BENDS IN ACCORDANCE WITH ACI SP-66 AND ACI 318, LATEST EDITIONS. UNLESS OTHERWISE NOTED, REINFORCING SPLICE LENGTHS AND DEVELOPMENT LENGTHS SHALL BE PER SCHEDULE.

MECHANICAL SPLICING OF REINFORCING BARS, WHERE INDICATED ON THE DRAWINGS, SHALL BE BY AN ICBO APPROVED SYSTEM, SHALL DEVELOP 125% OF THE SPECIFIED YIELD STRENGTH OF THE BAR, AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

REINFORCING SHALL BE PLACED AND ADEQUATELY SUPPORTED PRIOR TO PLACING CONCRETE. WET-SETTING EMBEDDED ITEMS IS NOT ALLOWED WITHOUT PRIOR ENGINEER APPROVAL. BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL NOT BE FIELD BENT UNLESS SO DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER. REFER TO CHAPTER 25 OF ACI 318 FOR OTHER REINFORCING STEEL REQUIREMENTS.

MINIMUM LAPS AND EMBEDMENT

UNLESS OTHERWISE NOTED, REINFORCING SPLICE LENGTHS AND DEVELOPMENT LENGTHS SHALL BE AS TABULATED BELOW:

f'c = 4000 PSI						
BAR SIZE	DEVELOPMENT LENGTH			LAP SPLICE		
	TENSION		COMPRESSION	TENSION		COMPRESSION
	TOP BARS	OTHER BARS	ALL BARS	TOP BARS	OTHER BARS	ALL BARS
#3	19	15	8	24	19	12
#4	25	19	10	33	25	15
#5	31	24	12	41	31	19
#6	37	29	15	49	37	23
#7	54	42	17	71	54	27
#8	62	48	19	81	62	30

NOTE:
1. ALL LENGTHS ARE IN INCHES.
2. ALL LAP SPLICES ARE CLASS B.
3. "TOP BARS" ARE HORIZONTAL REINFORCEMENT PLACED SUCH THAT MORE THAN 12 INCHES OF CONCRETE IS CAST IN THE MEMBER BELOW THE BAR.

CONCRETE COVER ON REINFORCING

CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3"

CONCRETE EXPOSED TO EARTH AND WEATHER:
- #6 BARS AND LARGER 2"
- #5 BARS AND SMALLER 1 1/2"

CONCRETE NOT EXPOSED TO EARTH OR WEATHER:
- SLABS, WALLS AND JOISTS 3/4"
- COLUMN TIES OR SPIRALS AND BEAM STIRRUPS 1 1/2"

CONCRETE GENERAL NOTES

VERTICAL BARS SHALL START FROM TOP OF FOOTING. HORIZONTAL BARS SHALL START A DISTANCE OF 1/2 THE NORMAL BAR SPACING FROM TOP OF FOOTING AND TOP OF FRAMED SLABS. IN ADDITION, THERE SHALL BE A HORIZONTAL BAR AT A MAXIMUM OF 3" FROM TOP OF WALL AND BOTTOM OF FRAMED SLABS.

PROVIDE CORNER BARS TO MATCH THE HORIZONTAL REINFORCING WITH TENSION LAP SPLICE AT EACH SIDE PER TABLE, OR BEND ONE SIDE OVER TO PROVIDE TENSION LAP.

PROVIDE CONTROL OR CONSTRUCTION JOINTS IN SLABS ON GRADE TO BREAK UP SLAB INTO RECTANGULAR AREAS OF NOT MORE THAN 400 SQUARE FEET EACH. AREAS TO BE AS SQUARE AS PRACTICAL AND HAVE NO ACUTE ANGLES.

ALL CONSTRUCTION JOINTS SHALL BE THOROUGHLY CLEANED AND PROPERLY PREPARED IMMEDIATELY PRIOR TO POURING OF CONCRETE. DOWEL STEEL SHALL BE THE SAME SIZE AND SPACING AS MAIN REINFORCING DETAILED BEYOND JOINT.

BARS PARTIALLY EMBEDDED IN HARDENED CONCRETE SHALL NOT BE FIELD BENT UNLESS SO DETAILED OR APPROVED BY THE STRUCTURAL ENGINEER.

MASONRY

CONCRETE MASONRY UNITS SHALL BE ASTM C90, MEDIUM WT, TYPE I f'm = 2000 PSI. BLOCKS SHALL BE PLACED IN RUNNING BOND. ALL MASONRY CONTAINING REINFORCING AND CELLS BELOW GRADE SHALL BE GROUTED SOLID.

MORTAR SHALL CONFORM TO ASTM C 270 TYPE S.

GROUT SHALL CONFORM TO ASTM C 476 W/ f'c = 2000 PSI

PROVIDE CLEANOUTS IN THE BOTTOM COURSE OF MASONRY FOR EACH GROUT POUR EXCEEDING 5 FEET. IF THE CELLS ARE SOLID GROUTED, CLEANOUTS ARE REQUIRED AT 32" OC MAXIMUM. GROUT FOR EACH POUR SHALL BE STOPPED 1 1/2" BELOW THE TOP OF THE LAST COURSE OF BLOCK. ALL GROUT TO BE THOROUGHLY CONSOLIDATED BY VIBRATING IMMEDIATELY AFTER PLACING.

STRUCTURAL STEEL

STRUCTURAL STEEL DESIGN, FABRICATION AND ERECTION SHALL BE IN ACCORDANCE WITH THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION, AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS", LATEST EDITION.

WIDE FLANGE SHAPES SHALL CONFORM TO ASTM A992, Fy = 50 KSI.

PLATES, ANGLES, CHANNELS, AND RODS SHALL CONFORM TO ASTM A36, Fy = 36 KSI.

STRUCTURAL TUBING SHALL CONFORM TO ASTM A500 GRADE C, RECTANGULAR/SQUARE Fy = 50 KSI, ROUND Fy = 46 KSI.

STEEL PIPE SHALL CONFORM TO ASTM A53 GRADE B, Fy = 35 KSI.

BOLTS CONNECTING STEEL MEMBERS SHALL CONFORM TO ASTM A325-N. BOLTS SHALL BE 3/4"Ø MINIMUM, UNO ANCHOR BOLTS SHALL CONFORM TO ASTM A307.

CONTRACTOR SHALL PROVIDE CONNECTION ADJUSTMENT TOLERANCES TO SATISFY THE REQUIREMENTS OF AISC MANUAL OF STEEL CONSTRUCTION.

UNLESS SPECIFIED AS STAINLESS STEEL, ALL STEEL MEMBERS, SHAPES, BOLTS, AND ACCESSORIES EXPOSED TO WEATHER SHALL BE HOT DIP GALVANIZED.

WELDING

WELDING SHALL CONFORM TO AWS "STRUCTURAL WELDING CODE", LATEST EDITION. ALL WELDING SHALL BE DONE WITH 70 KSI LOW HYDROGEN ELECTRODES. WHERE NOT CALLED OUT, MINIMUM FILLET WELD SIZE SHALL BE PER TABLE 5.8 IN AWS D1.1, LATEST EDITION.

WELDING OF REINFORCING BARS SHALL NOT BE PERMITTED UNLESS SPECIFICALLY CALLED OUT ON DRAWINGS OR APPROVED BY STRUCTURAL ENGINEER. WELDING OF GRADE 60 REINFORCING BARS SHALL BE PERFORMED USING LOW HYDROGEN ELECTRODES. WELDING OF GRADE 40 REINFORCING BARS SHALL BE PERFORMED USING E70XX ELECTRODES. SEE REINFORCING NOTES FOR MATERIAL REQUIREMENTS OF WELDED BARS. WELDING WITHIN 4" OF COLD BENDS IN REINFORCING BARS IS NOT PERMITTED.

ALL WELDING SHALL BE DONE BY WASHINGTON ASSOCIATION OF BUILDING OFFICIALS (WABO) CERTIFIED WELDERS.

LIGHT GAUGE METAL STUDS

NON-LOAD BEARING STEEL SECTIONS SHALL CONFORM TO ASTM A 645. LOAD BEARING STEEL STUDS SHALL CONFORM TO ASTM C 955. DESIGN, MANUFACTURE AND FABRICATION TO BE IN ACCORDANCE WITH AISI SPECIFICATIONS, LATEST EDITION.

NAILS, BOLTS, AND METAL CONNECTORS FOR WOOD

ALL NAILS SHALL CONFORM TO THE STANDARDS SET FORTH BY THE NATIONAL DESIGN STANDARDS (NDS) FOR WOOD CONSTRUCTION, LATEST EDITION. NAILING NOT SPECIFIED SHALL BE PER IBC TABLE 2304.10.1 NAILING SCHEDULE. ALL NAILS CALLED OUT ON PLANS SHALL BE COMMON NAILS UNLESS NOTED OTHERWISE AND SHALL MEET OR EXCEED THE FOLLOWING MINIMUM GUIDELINES:

NAIL	SHANK Ø	MIN LENGTH
8d COMMON	0.131Ø	2 1/2" SHANK
10d COMMON	0.148Ø	3" SHANK
12d COMMON	0.148Ø	3 1/4" SHANK
16d COMMON	0.162Ø	3 1/2" SHANK

10d BOX NAILS MAY BE SUBSTITUTED FOR 8d COMMON NAILS WITH NO CHANGE IN NAIL SPACING. FRAMING MEMBERS MAY BE NAILED WITH 16d SINKERS (0.148"Ø x 3 1/4"), BUT ONLY 16d COMMON NAILS SHALL BE USED WHERE 16d NAILS ARE INDICATED IN THIS DRAWING SET. ENGINEER MAY APPROVE OTHER NAILS IF NAIL LABELS ARE SUBMITTED TO ENGINEER PRIOR TO START OF CONSTRUCTION.

ALL BOLTS IN WOOD MEMBERS SHALL CONFORM TO ASTM A307. PROVIDE WASHERS UNDER THE HEADS AND NUTS OF ALL BOLTS AND LAG SCREWS BEARING ON WOOD. LEAD HOLES FOR LAG BOLTS SHALL BE BORED FOR THE SHANK AND THREADED PORTIONS PER NDS 12.1.4.2.

CONNECTORS CALLED OUT BY LETTERS AND NUMBERS SHALL BE "STRONG-TIE" BY SIMPSON COMPANY, CATALOG TO BE THE LATEST EDITION, OR ENGINEER APPROVED EQUAL. CONNECTORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND WITH THE NUMBER AND SIZE OF FASTENERS AS SPECIFIED BY THE MANUFACTURER. WHERE CONNECTOR STRAPS CONNECT TWO MEMBERS, PLACE ONE-HALF OF THE NAILS, SCREWS, OR BOLTS IN EACH MEMBER.

INSTALL SOLID BLOCKING AT ALL BEARING POINTS. ALL SHIMS SHALL BE SEASONED, DRIED, AND THE SAME GRADE (MINIMUM) AS MEMBERS CONNECTED.

GALVANIZATION

UNLESS NOTED OTHERWISE, STEEL CONNECTORS IN CONTACT WITH TREATED WOOD SHALL BE GALVANIZED ACCORDING TO THE FOLLOWING TABLE:

GALVANIZATION	UNTREATED WOOD	CCA-C	SBX	ACQ-C ACQ-D	CBA-A CA-B	OTHER BORATE	ACZA	OTHER PT WOOD
G90	X	X	X					
G185	X	X	X	X	X	X		
HDG	X	X	X	X	X	X		
STT300	X	X	X	X	X	X	X	X

G90 = 0.90 OZ. OF ZINC PER SQUARE FOOT OF AREA
G185 = 1.85 OZ. OF ZINC PER SQUARE FOOT OF AREA
HDG = HOT DIP GALVANIZED
SST300 = TYPE 316L STAINLESS STEEL

RATED SHEATHING

RATED SHEATHING SHALL BE GRADE C-D INT-APA WITH EXTERIOR GLUE OR OSB SHEATHING WITH EXTERIOR GLUE IN CONFORMANCE WITH IBC STANDARD 2303.1.5.

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Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

STRUCTURAL NOTES - 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
S-1
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STRUCTURAL NOTES

(THESE NOTES ARE TYPICAL UNLESS NOTED OR DETAILED OTHERWISE ON DRAWINGS)

GENERAL

STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH CIVIL, ELECTRICAL, AND MECHANICAL DRAWINGS FOR BIDDING AND CONSTRUCTION. CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND CONDITIONS FOR COMPATIBILITY BEFORE PROCEEDING. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING.

CONTRACTOR TO SEE CIVIL, ELECTRICAL AND MECHANICAL DRAWINGS FOR SIZE AND LOCATION OF PIPE, VENT, DUCT AND OTHER OPENINGS AND DETAILS NOT SHOWN ON THESE DRAWINGS.

CONTRACTOR SHALL BE RESPONSIBLE FOR ERECTION STABILITY AND TEMPORARY SHORING AS NECESSARY UNTIL PERMANENT SUPPORT AND STIFFENING ARE INSTALLED.

CONTRACTOR-INITIATED CHANGES SHALL BE SUBMITTED IN WRITING TO THE STRUCTURAL ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR CONSTRUCTION. CHANGES SHOWN ON SHOP DRAWINGS ONLY WILL NOT SATISFY THIS REQUIREMENT.

DRAWINGS INDICATE GENERAL AND TYPICAL DETAILS OF CONSTRUCTION. WHERE CONDITIONS ARE NOT SPECIFICALLY INDICATED BUT ARE OF A SIMILAR CHARACTER TO DETAILS SHOWN, SIMILAR DETAILS OF CONSTRUCTION SHALL BE USED, SUBJECT TO REVIEW AND APPROVAL BY THE STRUCTURAL ENGINEER.

LEGEND

DEFINITION	SYMBOL	DEFINITION	SYMBOL
DIRECTION OF FRAMING		NATIVE SOIL	
EXTENT OF FRAMING		GRANULAR FILL	
COLUMNS		STRUCTURAL STEEL	
COLUMN BEARING ON BEAM	(A)	RATED SHEATHING	
BEAM CONTINUOUS OVER SUPPORT	(A) (B)	SHEAR WALL (SEE SCHEDULE)	SWX
CONCRETE WALL		COLUMN MARK (SEE SCHEDULE)	C#
BEARING STUD WALL		FOOTING MARK (SEE SCHEDULE)	FX
NON-BEARING STUD WALL		HOLDOWN MARK (SEE SCHEDULE)	HD
BEARING STUD SHEAR WALL		HANGER MARK (SEE SCHEDULE)	X
NON-BEARING STUD SHEAR WALL		FLAG NOTE (SEE PLAN NOTES)	X
CMU WALL		STEEL MOMENT FRAME CONN.	

ABBREVIATIONS

(A)	ABOVE	HORIZ	HORIZONTAL
AB	ANCHOR BOLT	KP	KING POST
ALT	ALTERNATE	KSI	KIPS PER SQUARE INCH
ARCH	ARCHITECT	MECH	MECHANICAL
(B)	BELOW	MF	MOMENT FRAME
BLKG	BLOCKING	NS	NEAR SIDE
BM	BEAM	OC	ON CENTER
BOT	BOTTOM	OPP	OPPOSITE
BTWN	BETWEEN	PL	PLATE
CJP	COMPLETE JOINT PENETRATION	PLCS	PLACES
CLR	CLEAR	PSI	POUNDS PER SQUARE INCH
CMU	CONCRETE MASONRY UNIT	PSF	POUNDS PER SQUARE FOOT
COL	COLUMN	P/T	POST TENSIONED
CONC	CONCRETE	PT	PRESSURE TREATED
CONN	CONNECTION	REINF	REINFORCING
CONT	CONTINUOUS	REQ'D	REQUIRED
DBL	DOUBLE	SCHED	SCHEDULE
DET	DETAIL	SIM	SIMILAR
DIM	DIMENSION	SOG	SLAB ON GRADE
EA	EACH	STD	STANDARD
ELEV	ELEVATION	SW	SHEAR WALL
EXIST	EXISTING	TOC	TOP OF CONCRETE
EXP	EXPANSION	TOS	TOP OF STEEL
FLR	FLOOR	TOW	TOP OF WALL
FDN	FOUNDATION	TYP	TYPICAL
FTG	FOOTING	UNO	UNLESS NOTED OTHERWISE
FS	FAR SIDE	VFY	VERIFY
FH	FULL HEIGHT	VIF	VERIFY IN FIELD
GLB	GLUE-LAMINATED BEAM	VERT	VERTICAL

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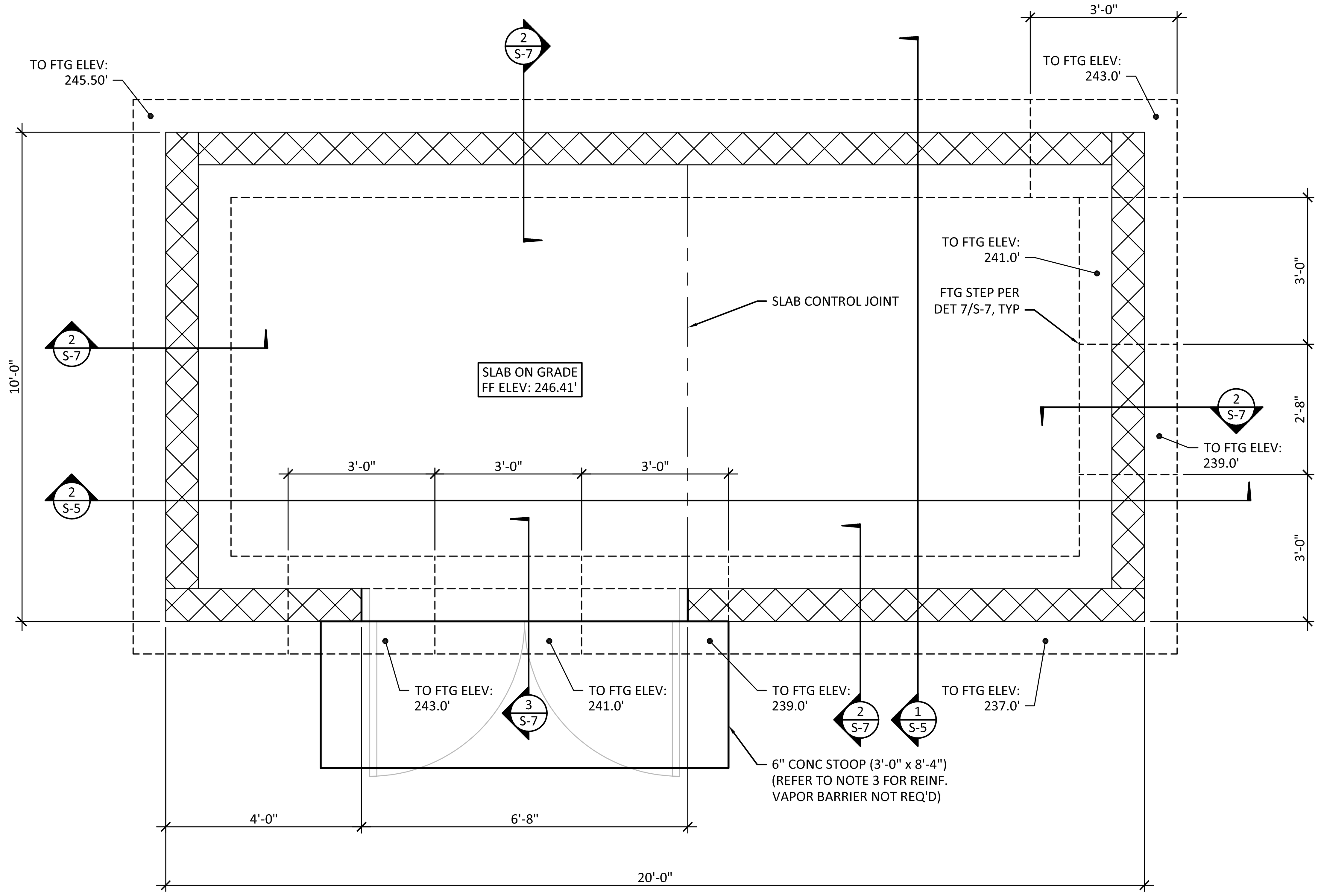
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

STRUCTURAL NOTES - 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET S-2



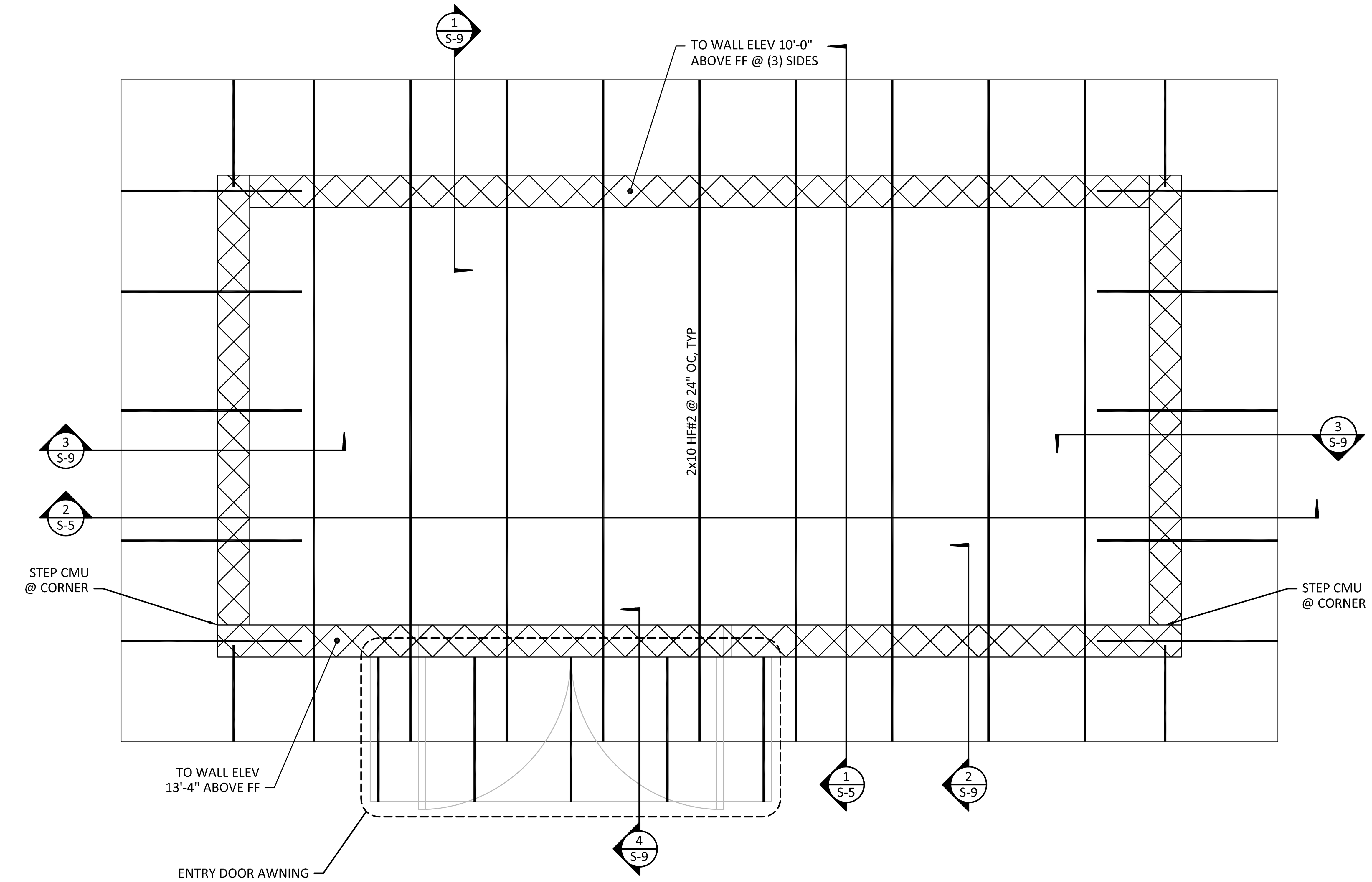
1 CONTROL BUILDING FOUNDATION PLAN

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

1'-0" 0 2'-0" 4'-0"

FOUNDATION PLAN NOTES:

1. EXTERIOR FOOTINGS SHALL BEAR A MIN OF 1'-6" BELOW ADJACENT GRADE.
2. FOOTINGS AND SLAB ON GRADE SHALL BEAR ON FIRM NATIVE SOIL OR COMPACTED STRUCTURAL FILL AS SPECIFIED IN THE SOILS REPORT. REFER TO THE SOILS REPORT FOR THE SPECIFICS REGARDING OVER-EXCAVATION AND THE SUBGRADE REQUIREMENTS BELOW THE FOUNDATION AND SLAB ON GRADE.
3. WHERE SLAB ON GRADE IS INDICATED, SLAB SHALL BE 6" THICK W/ #4 @ 12" OC WA WAY, CENTERED. SLAB SHALL BE POURED OVER A 10 MIL VAPOR BARRIER OVER GRAVEL AND/OR SUBGRADE RECOMMENDED BY THE SOILS ENGINEER.
4. REFER TO PLAN AND "CONCRETE GENERAL NOTES" ON SHEET S-1 FOR CONTROL JOINT PLACEMENT AND DETAIL 1/S-7 FOR CONTROL JOINT CONSTRUCTION.
5. REFER TO SHEET S-7 FOR FOUNDATION DETAILS.
6. PLACE ALL REINFORCEMENT PER THE STRUCTURAL NOTES AND FOUNDATION DETAILS. REFER TO SHEET S-1 FOR ADDITIONAL CONCRETE DETAILING REQUIREMENTS.
7. CONTRACTOR SHALL VERIFY ALL DIMENSIONS, WALL LOCATIONS, AND CONCRETE ROUGH OPENINGS AND NOTIFY ALL PARTIES OF ANY DISCREPANCIES.
8. REFER TO DETAIL 4/S-7 FOR PIPE PENETRATIONS THROUGH THE CONCRETE SLAB.
9. CONTRACTOR SHALL PROVIDE FOOTING AND SLAB SUBSTRATE PREPARATION, WATERPROOFING, AND BACKFILL & DRAINAGE PER GEOTECHNICAL REPORT. GEOTECHNICAL ENGINEER SHALL OBSERVE EXCAVATED SOIL CONDITIONS DURING CONSTRUCTION (AND GROUNDWATER CONDITIONS) AS REQUIRED, AND PROVIDE ADDITIONAL RECOMMENDATIONS IF NECESSARY BASED ON ACTUAL SITE CONDITIONS.



2 CONTROL BUILDING ROOF FRAMING PLAN

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

1'-0" 0 2'-0" 4'-0"

TYPICAL ROOF FRAMING PLAN NOTES:

1. WALLS SHOWN ON ROOF FRAMING PLAN ARE WALLS BELOW ROOF FRAMING.
2. ROOF SHEATHING SHALL BE 5/8" PI 40/20 WITH 8d COMMON NAILS SPACED AT 6" OC AT ALL DIAPHRAGM BOUNDARIES, PANEL EDGES, CMU WALLS AND BLOCKING INDICATED ON PLANS OR DETAILS. NAILING AT INTERMEDIATE FRAMING SHALL BE 8d COMMON NAILS @ 12" OC. REFER TO DETAIL 5/S-9 FOR SHEATHING LAYOUT AND NAILING.
3. REFER TO SHEET S-8 FOR TYPICAL CMU DETAILS AND SHEET S-9 FOR TYPICAL ROOF FRAMING DETAILS.
4. ALL DIAPHRAGMS UNBLOCKED UNO.

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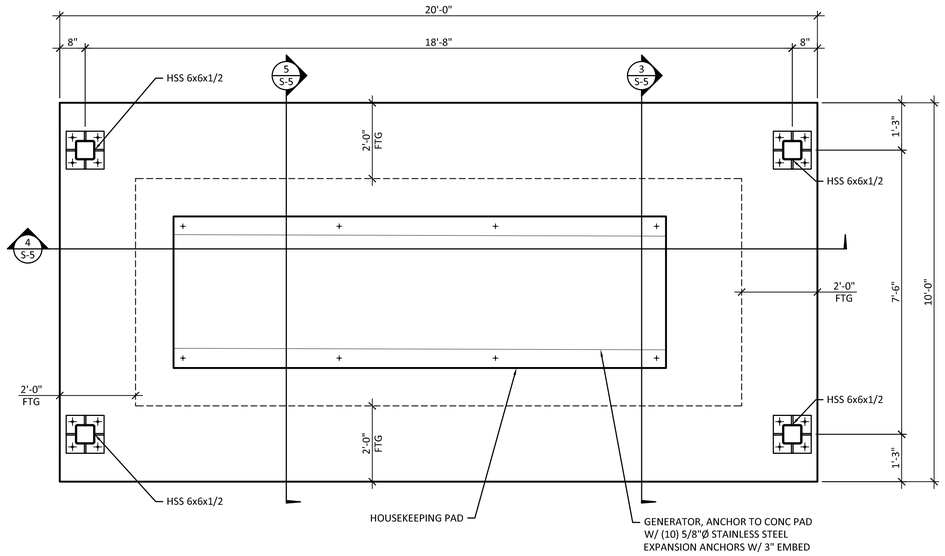
HIGHLANDS EAST LIFT STATION REHABILITATION

STRUCTURAL PLANS

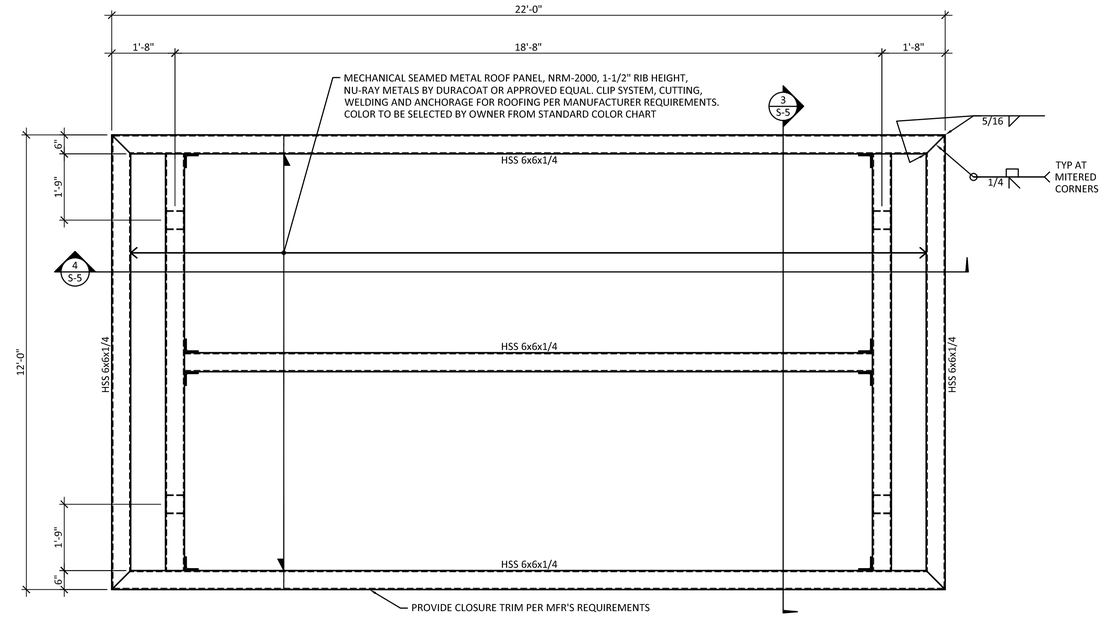
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET S-3



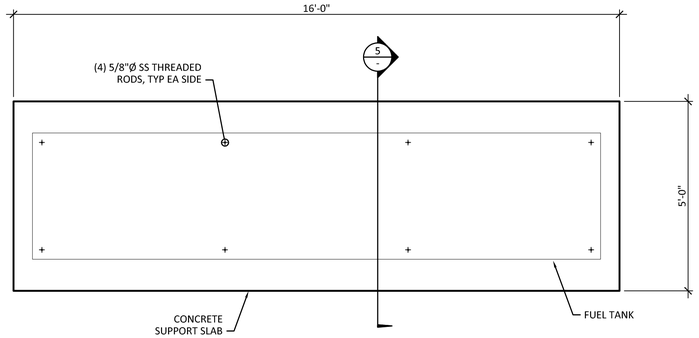
1 GENERATOR SHELTER SUPPORT SLAB PLAN

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



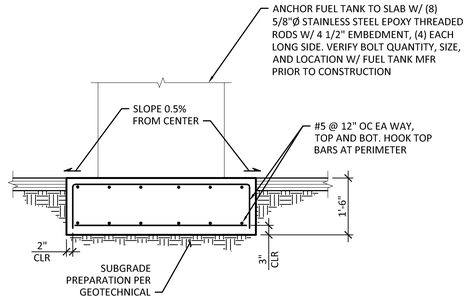
2 GENERATOR SHELTER ROOF FRAMING PLAN

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



3 FUEL TANK SUPPORT SLAB PLAN

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



4 FUEL TANK SUPPORT SLAB

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

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HIGHLANDS EAST LIFT STATION REHABILITATION

STRUCTURAL PLANS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
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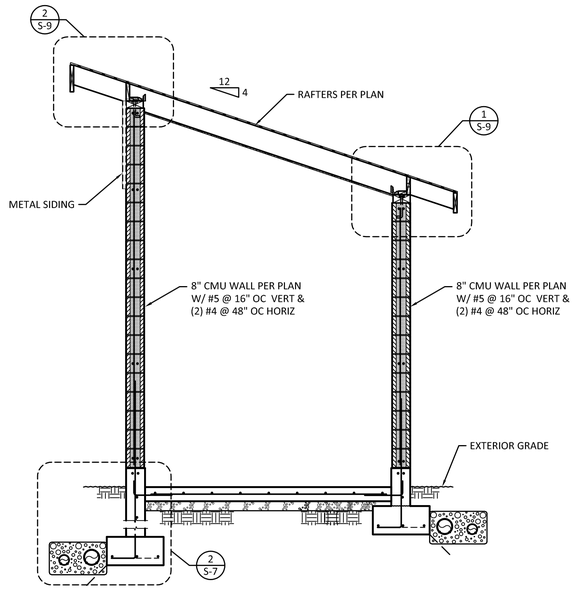
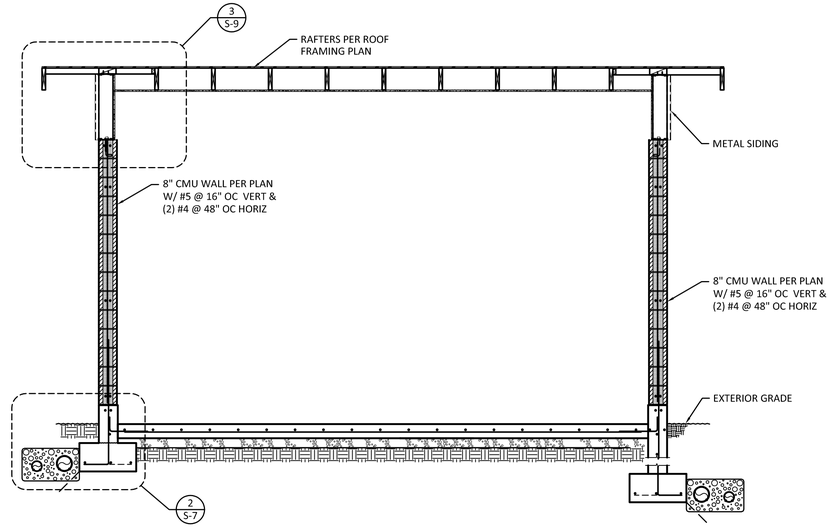
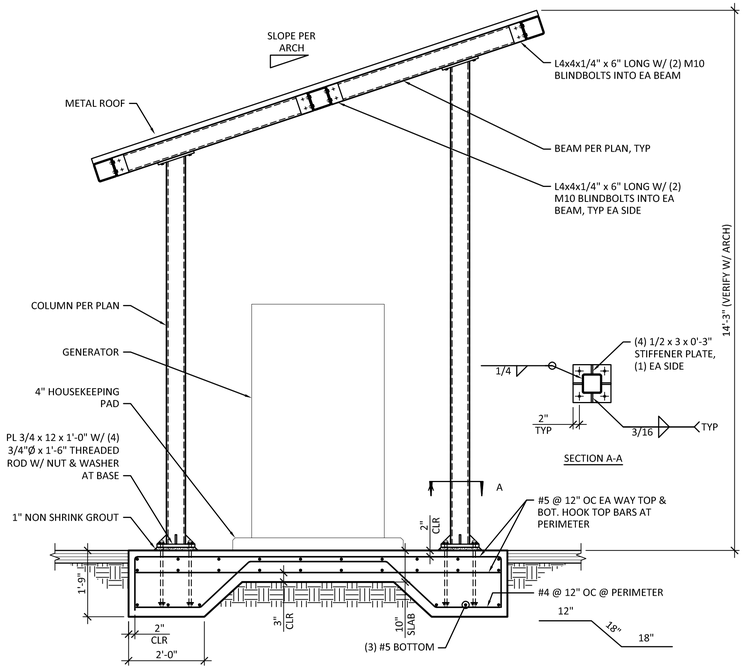


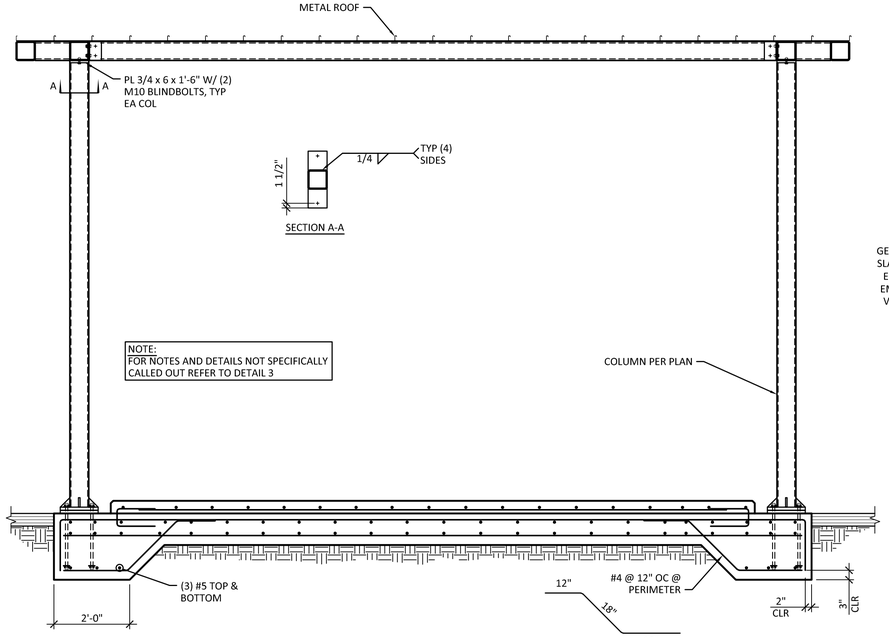
1 CONTROL BUILDING SECTION (TRANSVERSE INTERIOR)
SCALE: 3/8" = 1'-0"



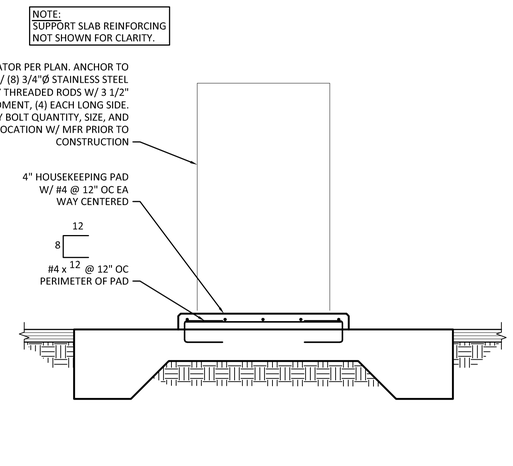
2 CONTROL BUILDING SECTION (LONGITUDINAL)
SCALE: 3/8" = 1'-0"



3 GENERATOR SHELTER SUPPORT SLAB SECTION
SCALE: 1/2" = 1'-0"



4 GENERATOR SHELTER SUPPORT SLAB SECTION
SCALE: 1/2" = 1'-0"



5 HOUSE KEEPING SLAB SECTION
SCALE: 1/2" = 1'-0"

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Silver Lake Water & Sewer District

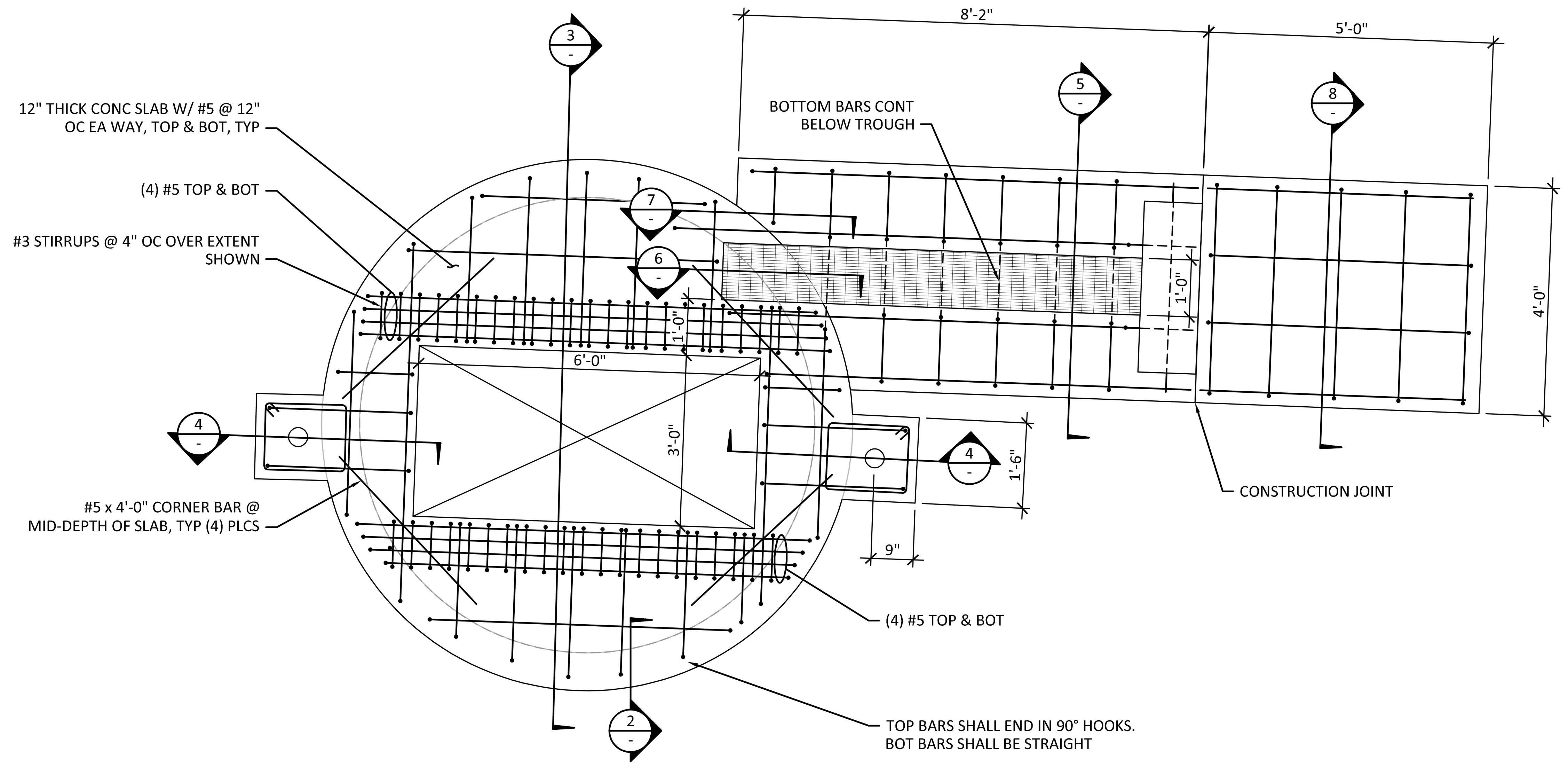
HIGHLANDS EAST LIFT STATION REHABILITATION

BUILDING SECTIONS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
S-5
24 of 52

R:_2023 Projects\23253.10 Silver Lake Water Highland East Ls_structural\Drafting_xx.xx.xx Current\S-5.dwg Paper 11/21/2024 11:39 AM JAKEG 25.0s (LMS Tech)



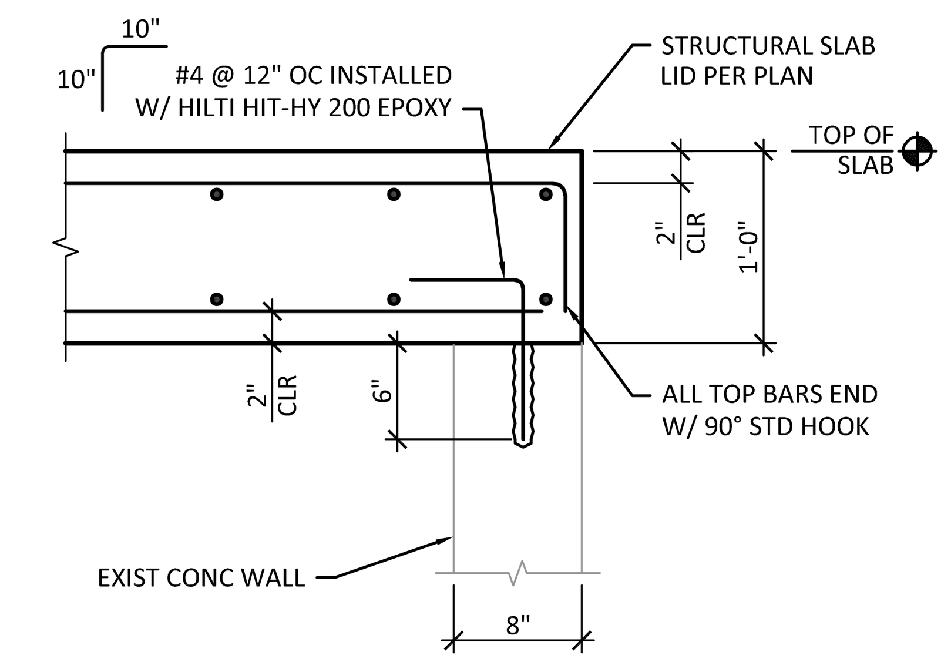
1 WET WELL PLAN

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

1'-0" 0 2'-0" 4'-0"

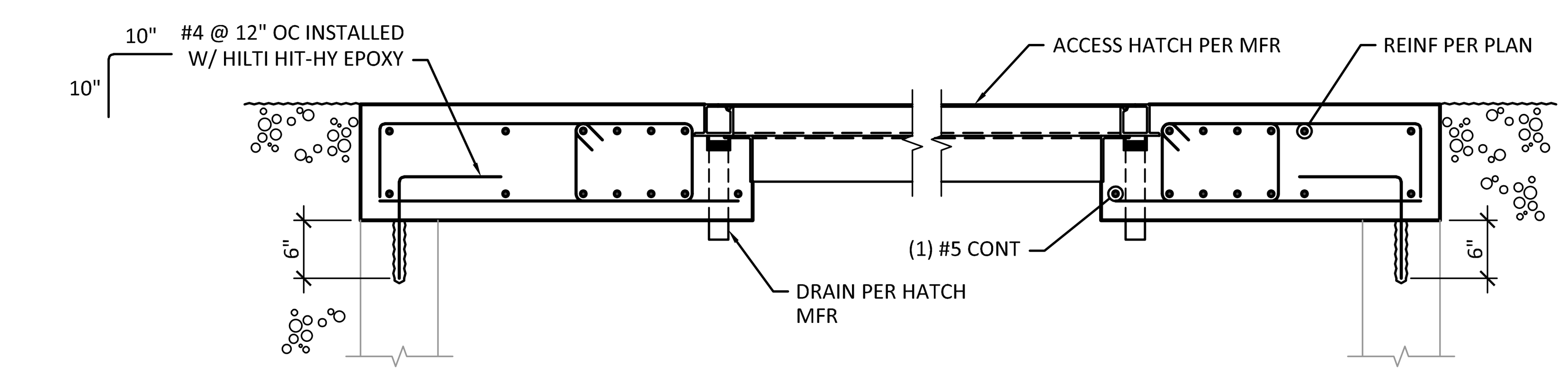
FOUNDATION PLAN NOTES:

1. PLACE ALL REINFORCEMENT PER NOTES AND DETAILS.
2. CONTRACTOR SHALL PROVIDE ALL WATERPROOFING, BACKFILL, & DRAINAGE AS REQUIRED TO PREVENT WATER INTRUSION.
3. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS INCLUDING GRADES, WET WELL ELEVATIONS, AND PIPE PENETRATIONS PRIOR TO CONSTRUCTION. NOTIFY THE DESIGN TEAM OF ANY DISCREPANCY. REINFORCE AROUND ALL PENETRATIONS AS SHOWN.



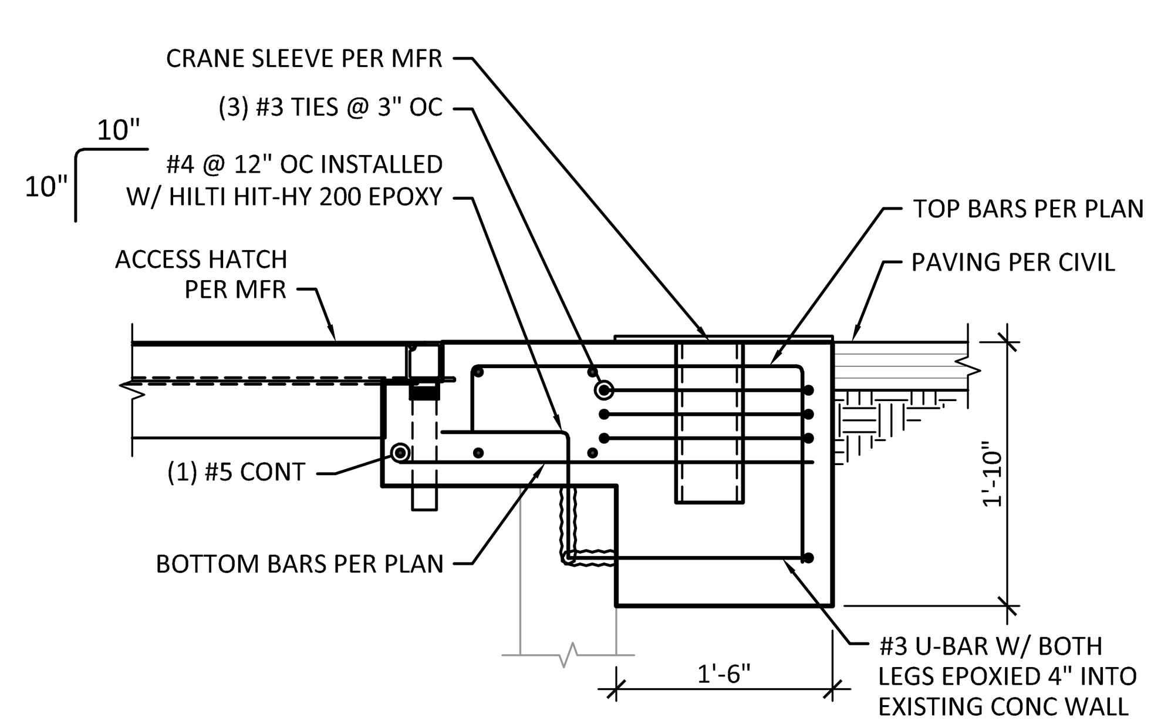
2 EDGE SECTION

SCALE: 1" = 1'-0"



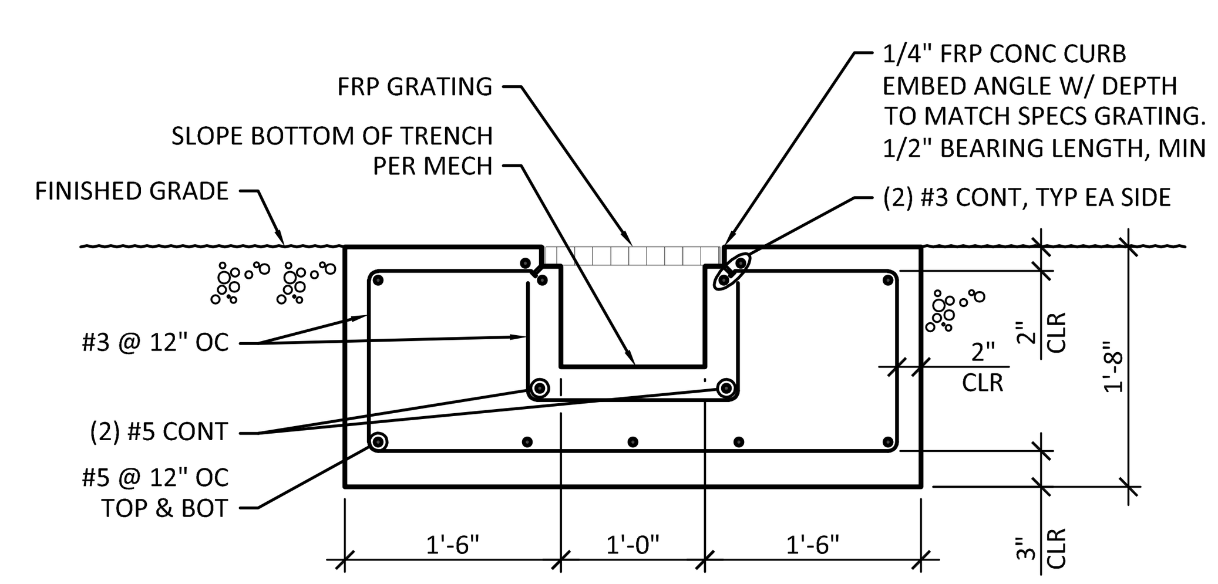
3 WET WELL SECTION - BEARING SHELF

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



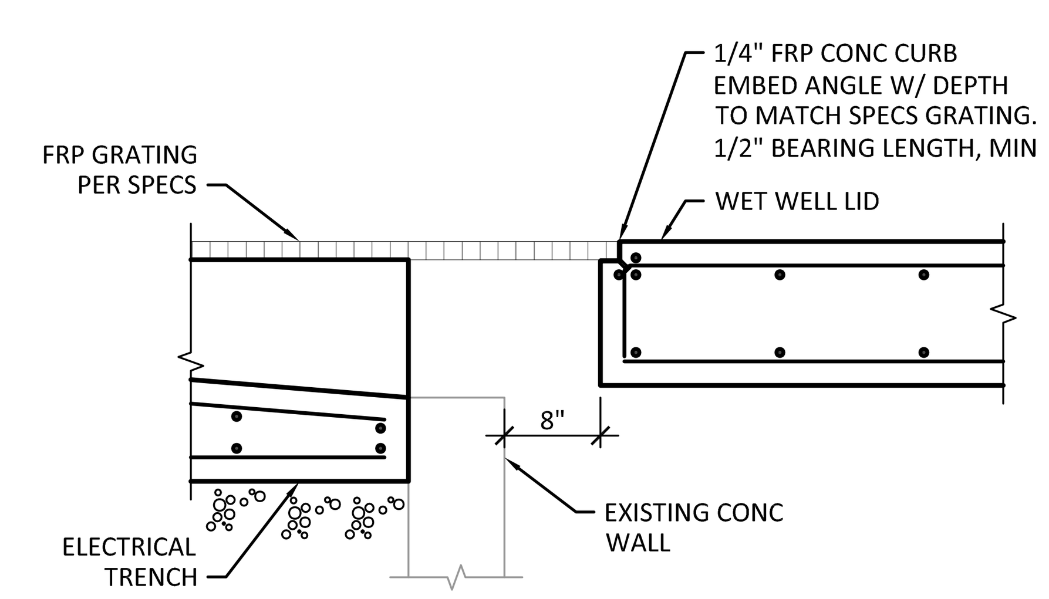
4 WET WELL SECTION - NON-BEARING ENDS

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



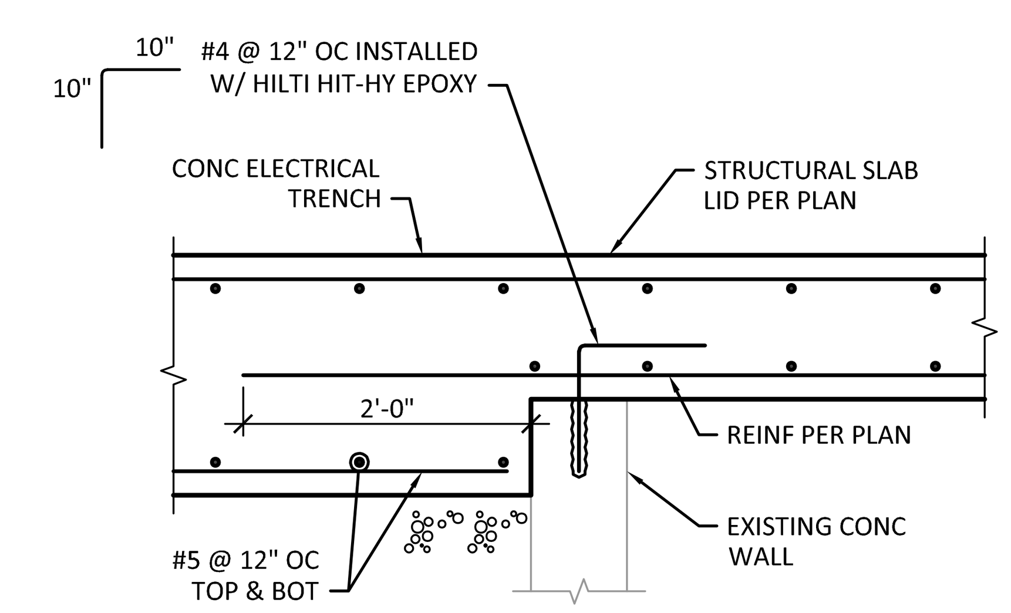
5 ELECTRICAL TRENCH SECTION

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



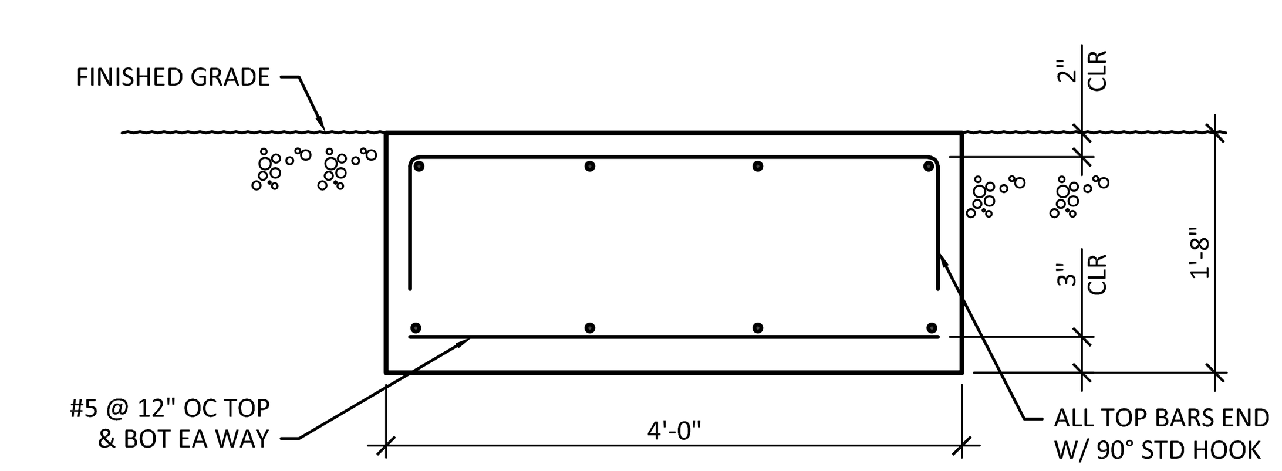
6 ELECTRICAL TRENCH SECTION

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



7 ELECTRICAL TRENCH SECTION

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



8 WIZARD ENCLOSURE SUPPORT SECTION

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

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FAX (425) 778-5536

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

SPM DESIGNED
LVW DRAWN
JGG CHECKED

JOSEPH G. GALLISHA, STATE OF WASHINGTON, 38553, PROFESSIONAL STRUCTURAL ENGINEER 11/21/24

consor

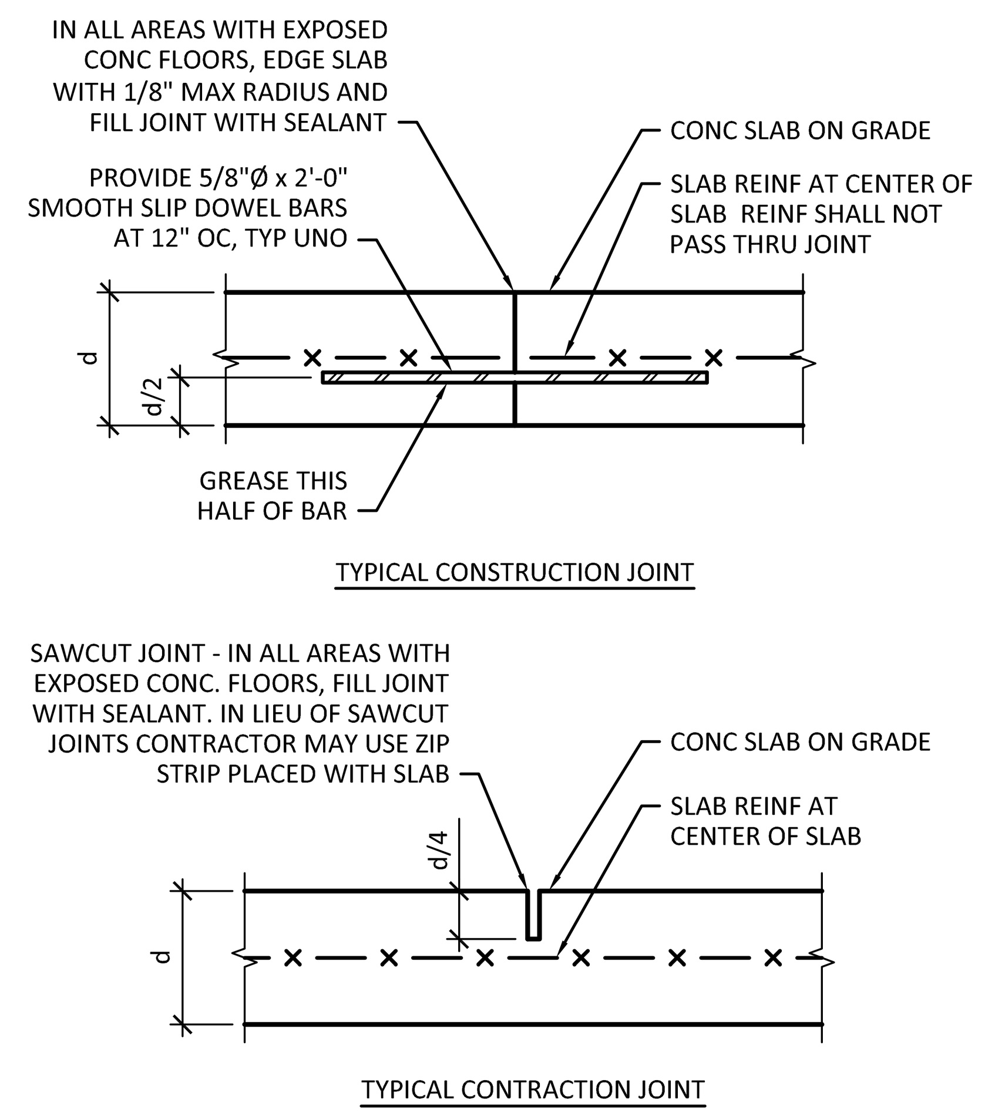
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

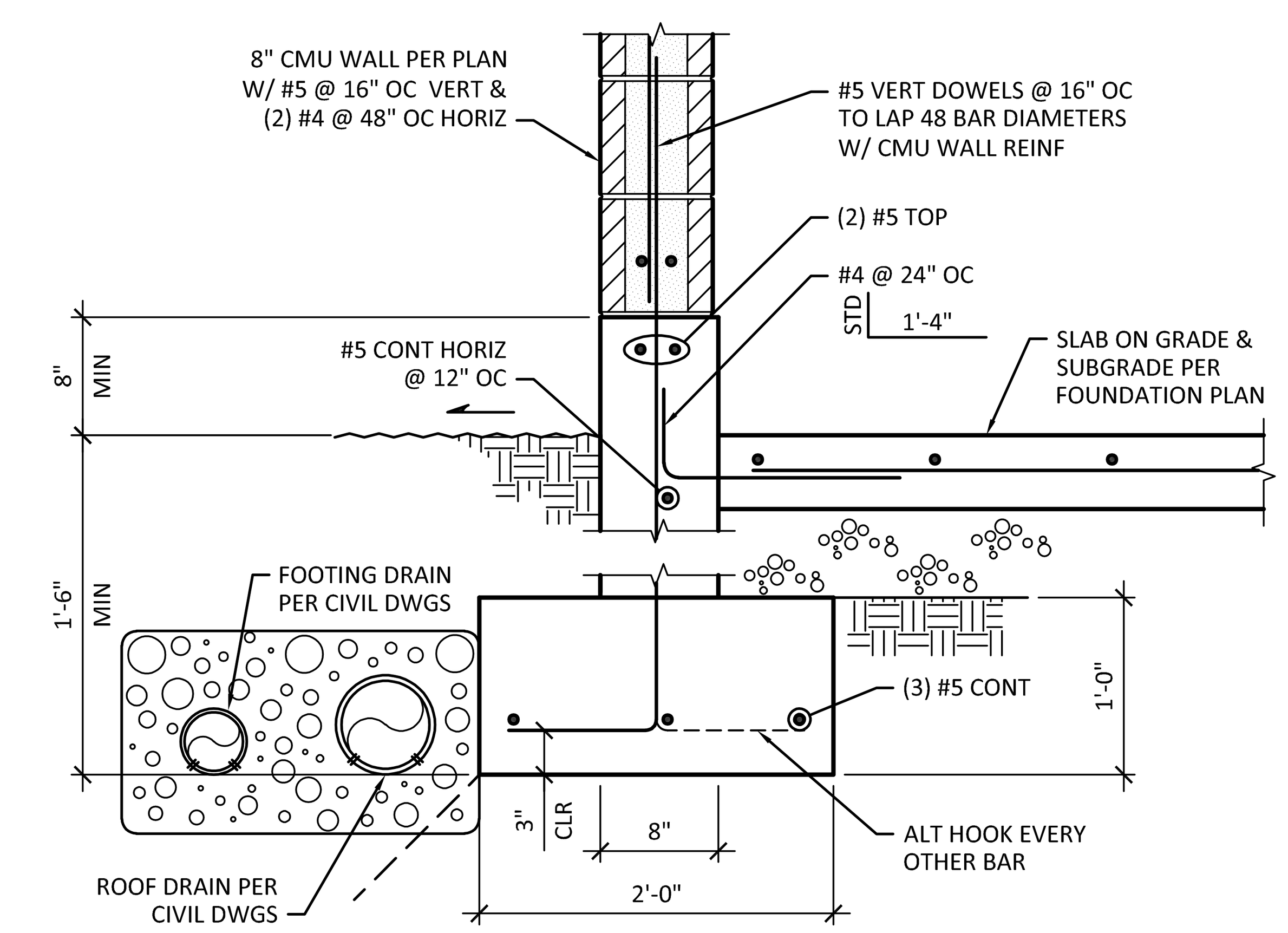
WET WELL TOP SLAB PLAN & DETAILS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

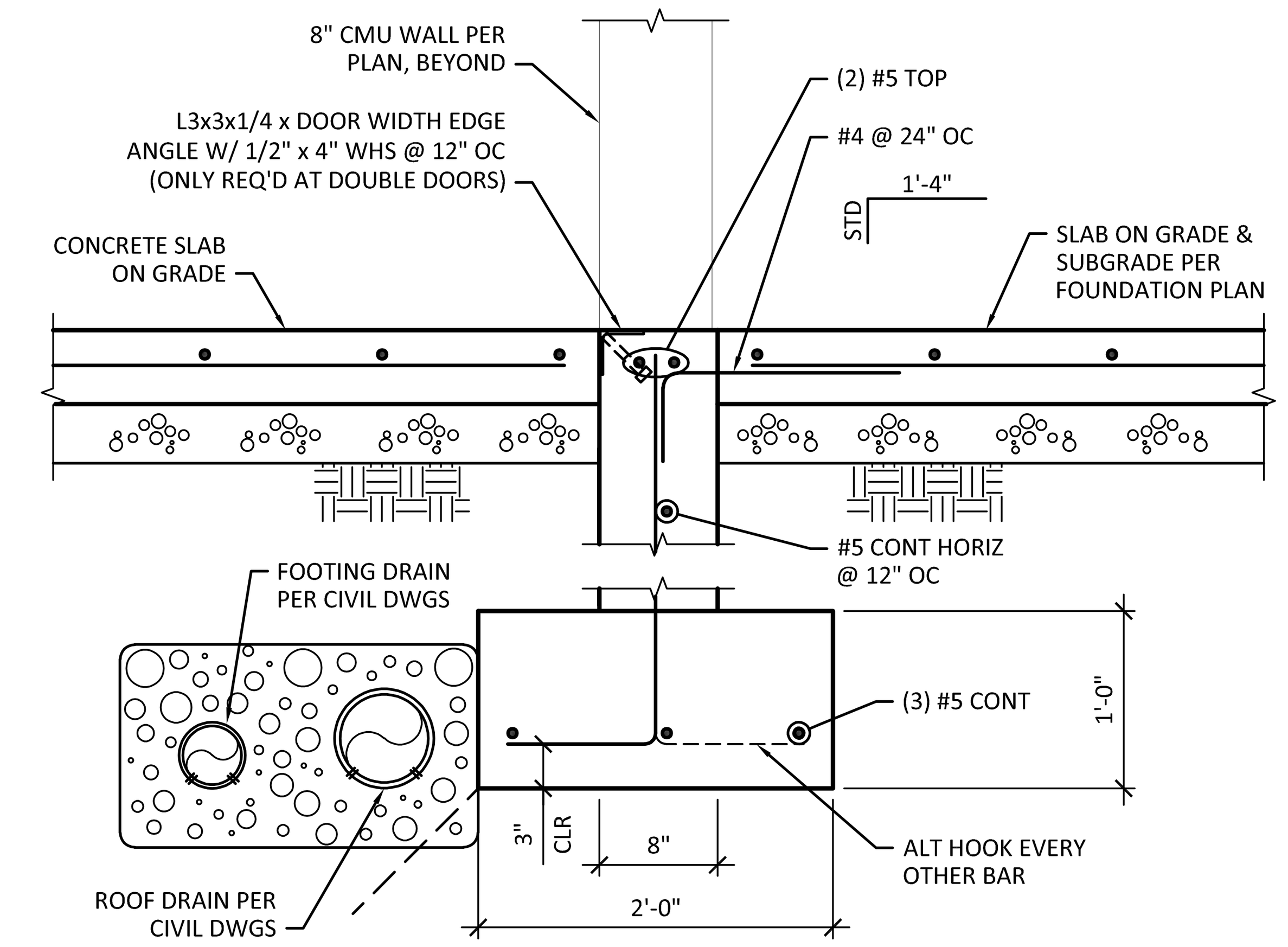
SHEET S-6



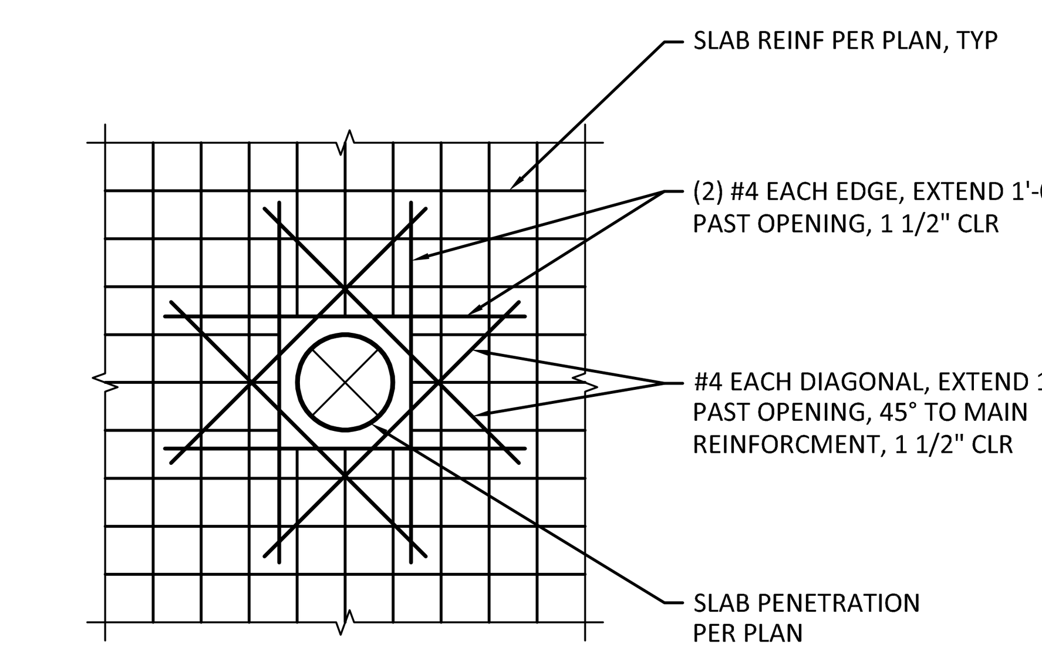
1 TYPICAL SLAB ON GRADE DETAILS
SCALE: 1" = 1'-0"



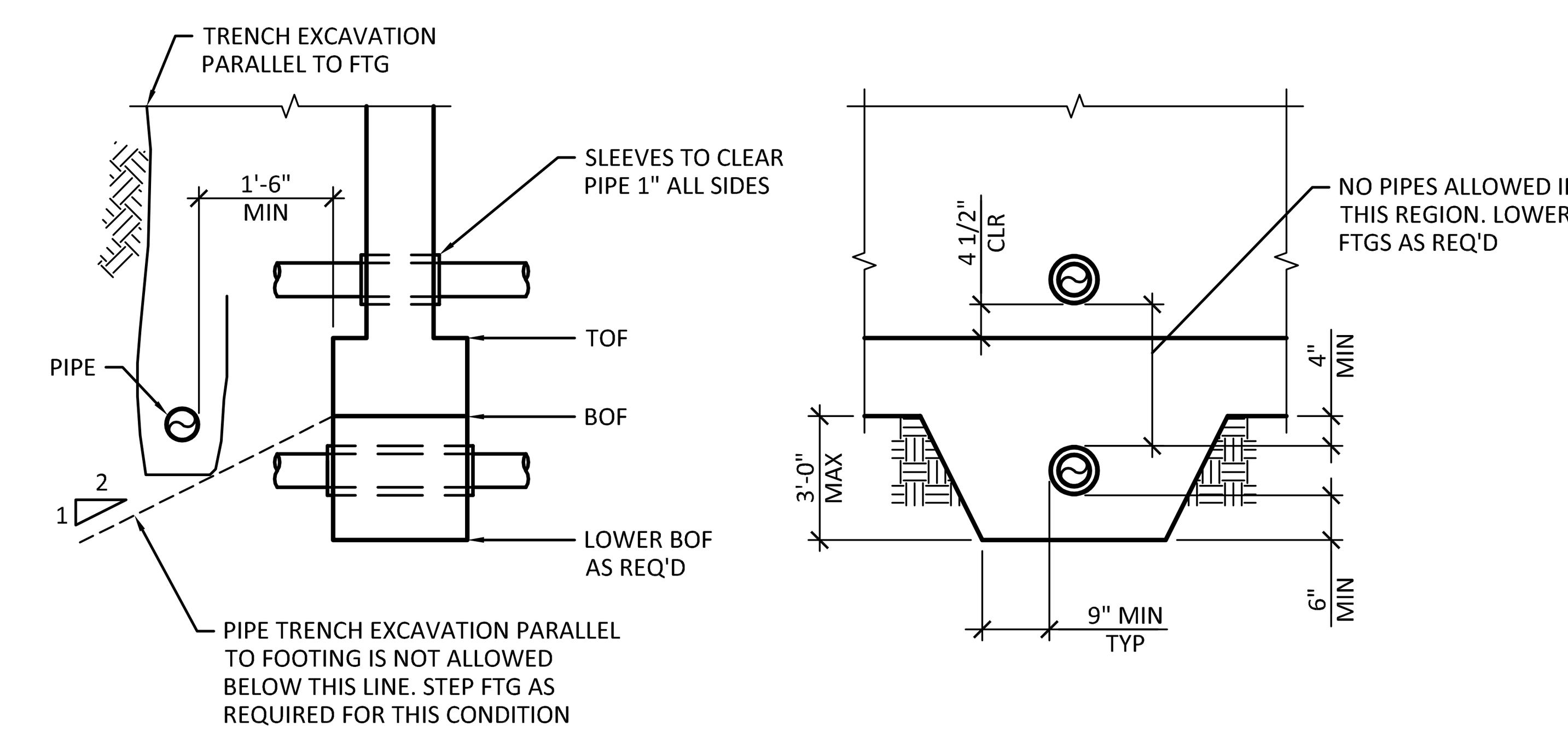
2 PERIMETER FOUNDATION SECTION
SCALE: 1" = 1'-0"



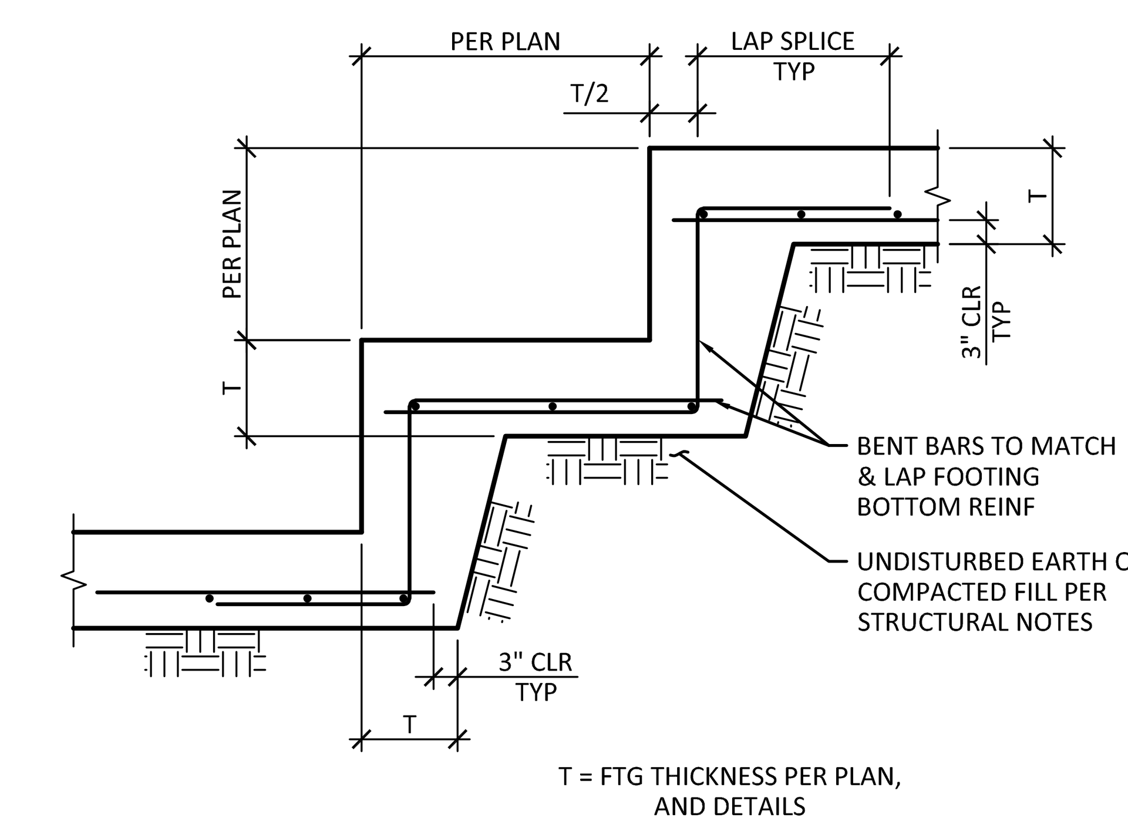
3 FOUNDATION SECTION AT DOOR OPENINGS
SCALE: 1" = 1'-0"



4 CONCRETE PENETRATION REINFORCING
SCALE: NTS



6 TYPICAL PIPE PENETRATION AT WALLS AND FOOTINGS
SCALE: 1/2" = 1'-0"



7 TYPICAL STEPPED WALL FOOTING
SCALE: 1/2" = 1'-0"

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HIGHLANDS EAST LIFT STATION REHABILITATION

FOUNDATION DETAILS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET S-7

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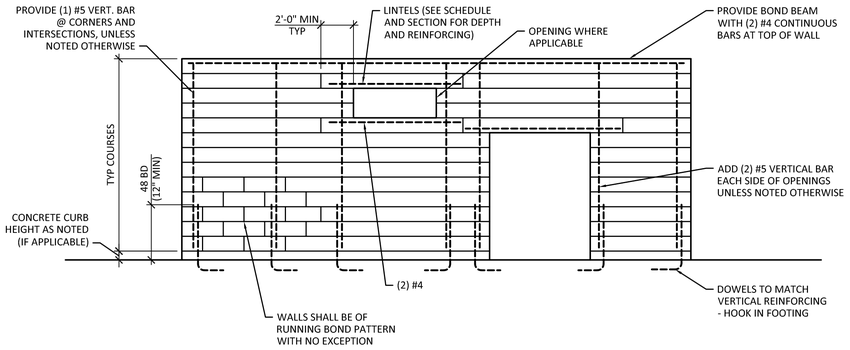
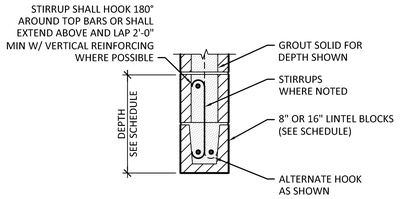
MINIMUM CMU WALL REINFORCING (BEARING WALL AND NON BEARING WALL)		
THICKNESS	VERTICAL REINFORCING	HORIZONTAL REINFORCING
8"	#5 @ 16"	(2) #4 @ 48" OC



TYPICAL CMU WALL ELEVATION



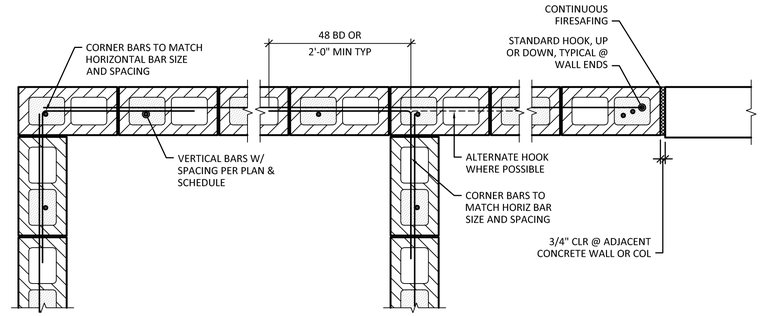
LINTEL SECTION

TYPICAL 8" CMU LINTEL REINFORCING			
CLEAR SPAN OR MARK	DEPTH	HORIZONTAL REINFORCING	STIRRUPS
4'-0" OR LESS	8"	(2) #4 BOT	#3 ⌡ @ 8" OC
4'-0" TO 6'-4"	16"	(1) #5 TOP (2) #5 BOT	#3 ⌡ @ 8" OC
6'-4" TO 9'-0"	16"	(1) #5 TOP (2) #6 BOT	#3 ⌡ @ 8" OC
9'-0" TO 12'-0"	24"	(2) #4 TOP (2) #6 BOT	#3 ⌡ @ 12" OC

NOTES:
1. FILL ALL CELLS CONTAINING REINFORCING OR EMBEDDED ITEMS AND ALL CELLS BELOW GRADE WITH GROUT. PROVIDE CLEANOUT HOLES AT BOTTOM OF ALL CELLS CONTAINING REINFORCING.
2. UNLESS OTHERWISE NOTED, LAP ALL REINFORCING 48 BAR DIAMETERS (BD) MINIMUM.

1 TYPICAL CMU DETAILS

SCALE: NTS

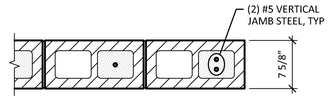


AT CORNER | AT INTERSECTION | AT END

SINGLE LAYER REINFORCING

2 TYPICAL CMU WALL REINFORCING

SCALE: 1" = 1'-0"



3 CMU JAMB STEEL

SCALE: 1" = 1'-0"

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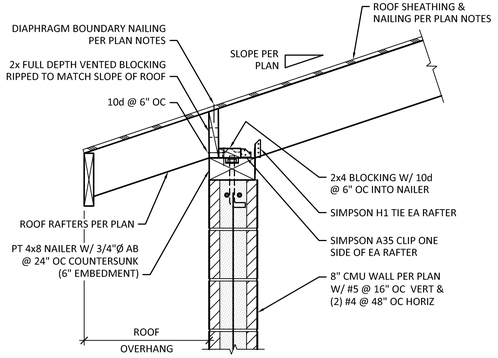
HIGHLANDS EAST LIFT STATION REHABILITATION

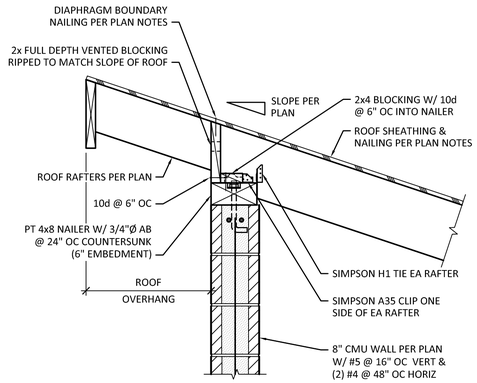
CMU DETAILS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

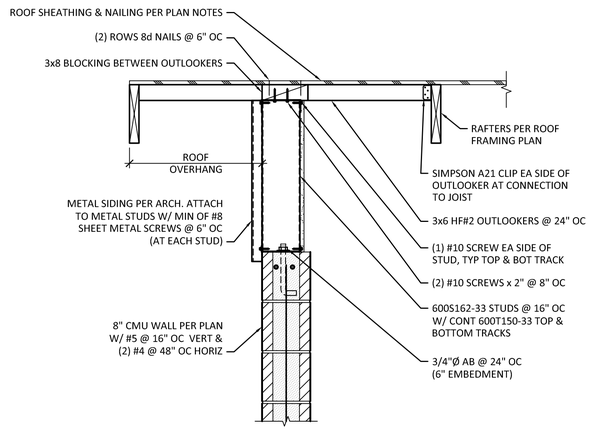
SHEET S-8



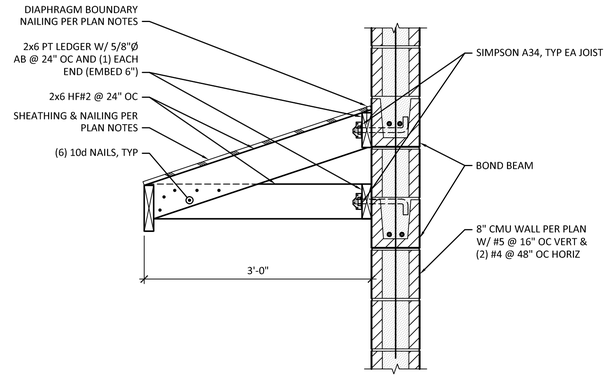
1 CMU WALL AT WOOD RAFTERS
SCALE: 1" = 1'-0"



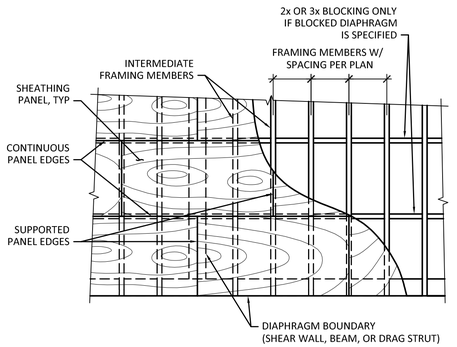
2 CMU WALL AT WOOD RAFTERS
SCALE: 1" = 1'-0"



3 CMU GABLE END SECTION AT ROOF
SCALE: 1" = 1'-0"



4 ENTRY AWNING DETAIL
SCALE: 1" = 1'-0"



5 TYPICAL ROOF SHEATHING DETAIL
SCALE: NTS

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11/21/24

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HIGHLANDS EAST LIFT STATION REHABILITATION

ROOF DETAILS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
S-9
28 of 52

Section I - Governing Codes	
2021 IBC & CHAPTER 51-50 WAC, 2021 UPC & CHAPTER 51-56 WAC	
2021 WASHINGTON STATE ENERGY CODE	
Section II - Building "Construction" Data	
Type of Construction	Type VB - CMU, Steel & Wood Rafters
Proposed Building Height	16 feet
Maximum Allowable Height	40 feet, IBC Table 504.3, Not Sprinkled
Number of Stories	1 story
Allowable Stories	2 stories, IBC Table 504.4, Not Sprinkled
Basement	No
Total Floor Area Provided (Gross)	160 square feet
Front	25 FT, SCC Table 30.23.041
Side	None, SCC Table 30.23.030
Rear	5 FT, SCC 30.23.120
Section III - Building "Occupancy" Data	
Building Occupancy Classification Group	U
Separated or Unseparated Use Areas	Unseparated
Accessory or Incidental Use Areas	N/A
Total Occupant Load by Floor	Not Customarily Occupied
Total Occupant Load for Each Room	Not Customarily Occupied
Total Occupant Load for Each Occupancy Group	Not Customarily Occupied
Section IV - Building Area Data "Actual" and "Allowable"	
Actual Building Area	160 SF Control Room
Allowable Base Area	13,760 square feet, IBC 506.3.3
Building Frontage	See Sheet A-3
Section V - "Fire Resistive" Building Elements	
Separation of Occupancies	N/A
Section VI - Building "Exiting"	
Maximum Floor Area Allowance Per Occupant	N/A - Not Customarily Occupied
Exits Required in Each Room or Area	1
Exits Provided in Each Room or Area	1
Exits Required per Floor	1
Exits Provided per Floor	1
Exit Width Required per Exit	32 inches
Minimum Corridor Exit Width Required	30 inches
Emergency Exit Illumination	See Sheet E-9
Exit Sign Layout Plan	See Sheet E-9
Section VII - Building "Fire Detection and Suppression"	
Smoke Detection/Fire Alarm System Req'd	No, IBC 907.2.4
Smoke Detection/Fire Alarm System Provided	Yes - Tied to SCADA, see Sheet PID-3
Type of System	Ionization Smoke Detector
Areas Protected	Control Room
Sprinkler System Req'd	No, N/A
Standpipe System Req'd	No, N/A
Number of Fire Dept Vehicle Accesses	1
Fire Extinguisher Locations	

Section VIII - Occupancy Ventilation Requirements	
Ventilation Required	Natural venitilation area > 4% of floor area
Ventilation Provided	Natural (door) = 28% of floor area
Section IX - Energy Code Requirements	
Control Room is conditioned space	
Roof - above deck rigid insulation	R = 38ci
Doors (steel door with polystyrene core)	R = 5
Mass floor	R = 30
CMU walls with integral perlite insulation	R = 9.5 or >/= 50% of blocks filled
Skylights	N/A
Lighting Layout	See Sheet E-4
Section X - Hazardous Materials	
Hazardous Materials Present	None
Section XI - Accessibility	
Facility is exempt from accessibility requirements per 2018 IBC 1103.2.9 "Equipment spaces"	
Section XII - Plumbing Fixture Count Requirements	
No Fixtures Required - Not Customarily Occupied	
Section XIII - Underground and Padmounted Transformers	
See Sheet E-3	
Section XIV - Special Inspection, Structural Observation	
Required Structural Inspections are listed on Sheet S-1	
Structural Observation requirements are indicated on Sheet S-1	
Submittals are listed in Specifications	
Section XV - Room Specific Requirements	
Not Applicable -Not Customarily Occupied	

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Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

CODE SUMMARY

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET A-1

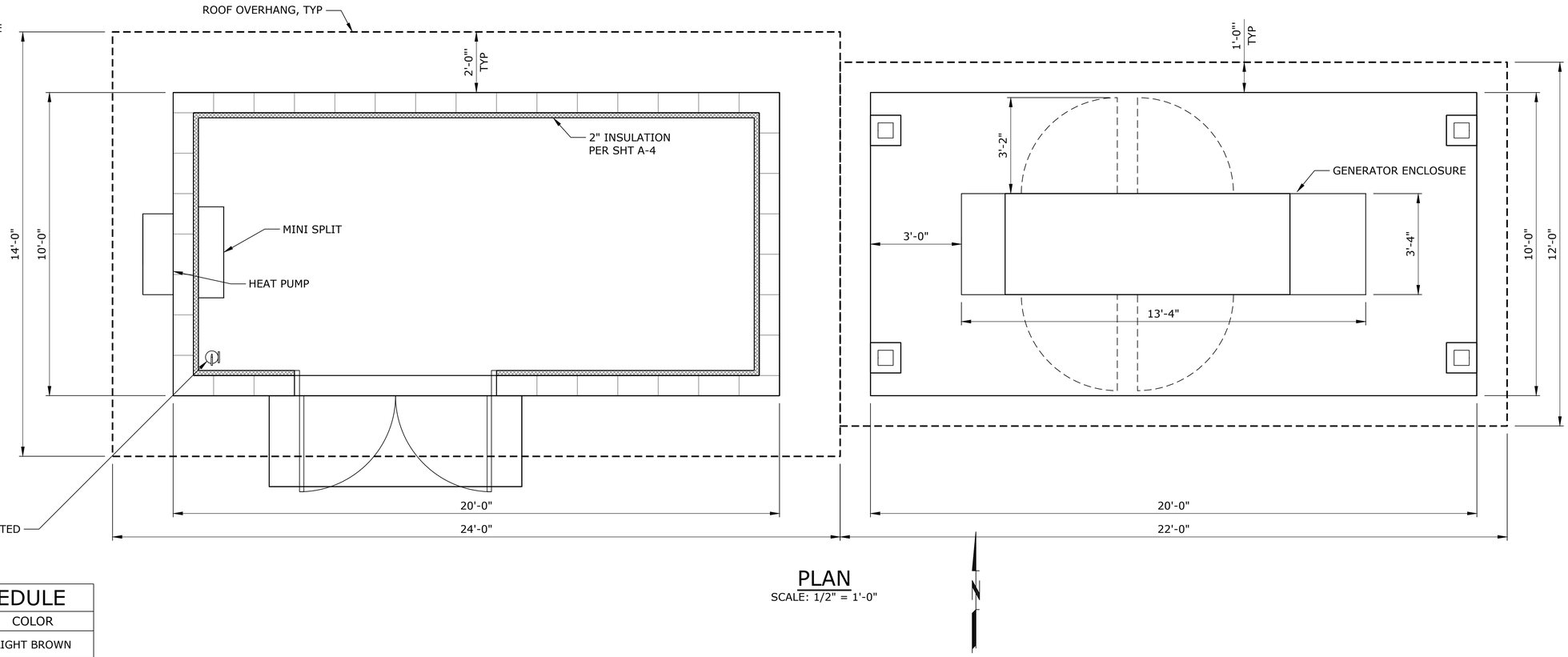
ARCHITECTURAL GENERAL NOTES:

1. ALL WORK SHALL CONFORM TO THE MOST RECENT VERSION OF THE I.B.C., THE WASHINGTON BUILDING CODE, WASHINGTON STATE ENERGY CODE, AS WELL AS ALL LOCAL JURISDICTION RULES AND REGULATIONS.

2. DIMENSIONS ARE TO FACE OF MASONRY, STUD/FRAMING UNLESS OTHERWISE INDICATED.

3. PROVIDE SEISMIC BRACING OF ALL EQUIPMENT, AS REQUIRED BY THE BUILDING CODE.

4. ALL ROOF PROJECTIONS SHALL BE 1-HOUR FIRE RATED, RAFTERS AND SHEATHING SHALL BE FIRE TREATED WOOD MEETING THE REQUIREMENTS OF SECTION 2303.2 IN THE 2018 IBC. ALL FIRE TREATED WOOD SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.



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

MATERIAL COLOR SCHEDULE

ITEM/SURFACE	MATERIAL	COLOR
EXTERIOR WALLS - MAIN BLOCK	SPLIT FACE CMU	LIGHT BROWN
EXTERIOR WALLS - ACCENT BLOCK	SPLIT FACE CMU	DARK BROWN
INTERIOR WALLS		WHITE
LOUVERS, DOORS, ROOF PANELS		DARK BRONZE
CEILINGS		WHITE
GUTTERS, DOWNSPOUTS		DARK BRONZE

* CMU BLOCK AND ROOF PANEL COLORS TO BE SUBMITTED TO DISTRICT FOR APPROVAL PER SPECIFICATION SECTIONS 04 22 00 & 07 41 13

DOOR SCHEDULE

DOOR #	DESCRIPTION	ROUGH OPENING*	NOMINAL SIZE	HARDWARE	OPEN	SPECIFICATION
(1)	STEEL DOUBLE DOOR	6'-8" x 7'-4"	3'-2" x 7'-2" 3'-2" x 7'-2"	PANIC BAR. MANUALLY OPERATED SURFACE BOLTS ARE NOT ALLOWED	RHR LHR	08 11 13

* PROVIDE OPENING ACCORDANCE TO SUPPLIER'S RECOMMENDATIONS, WHICH SUPERCEDE THIS ESTIMATE

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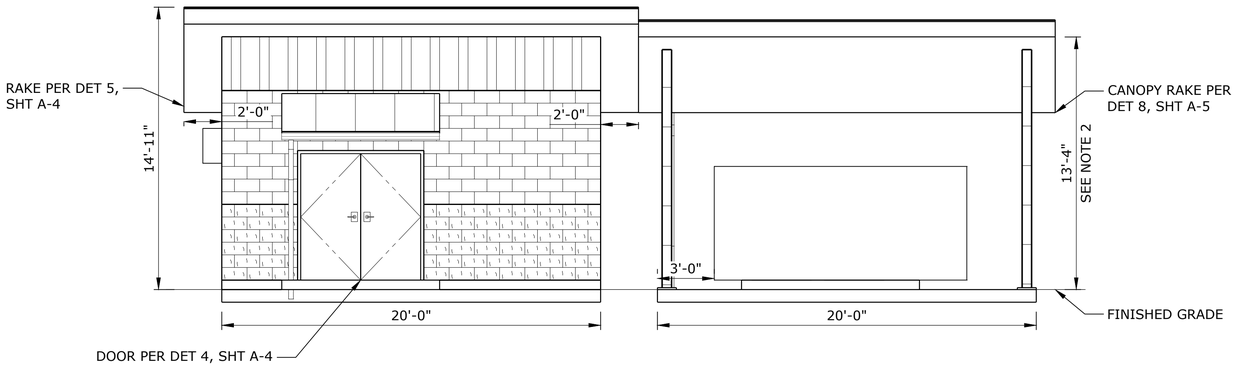
HIGHLANDS EAST LIFT STATION REHABILITATION

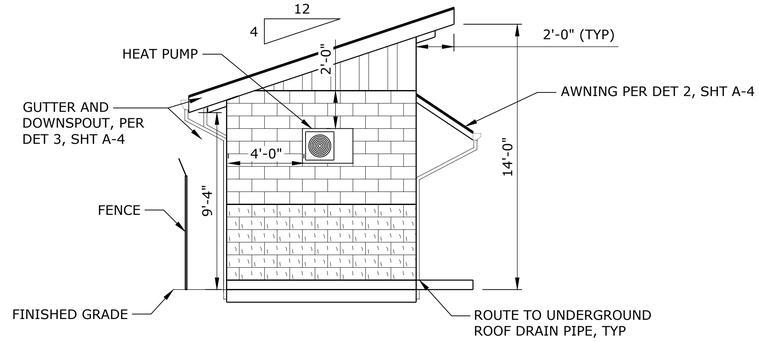
FLOOR PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET A-2



NORTH ELEVATION
SCALE: 1/4" = 1'-0"

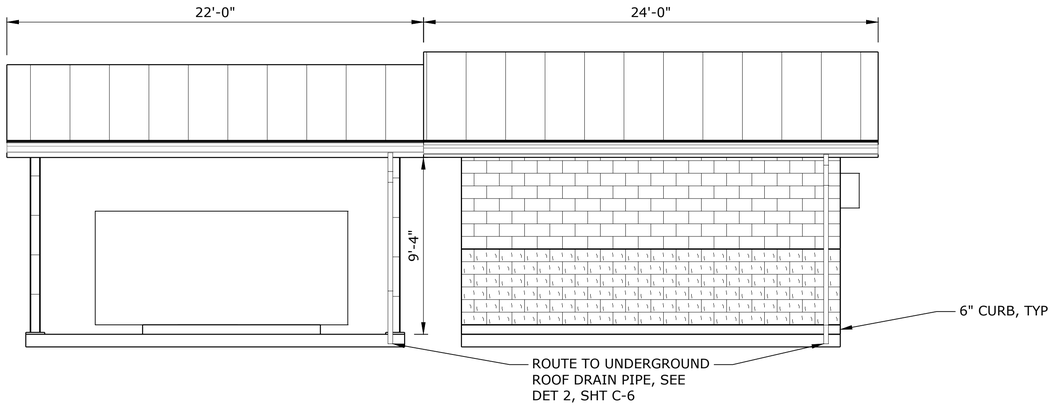


EAST ELEVATION
SCALE: 1/4" = 1'-0"

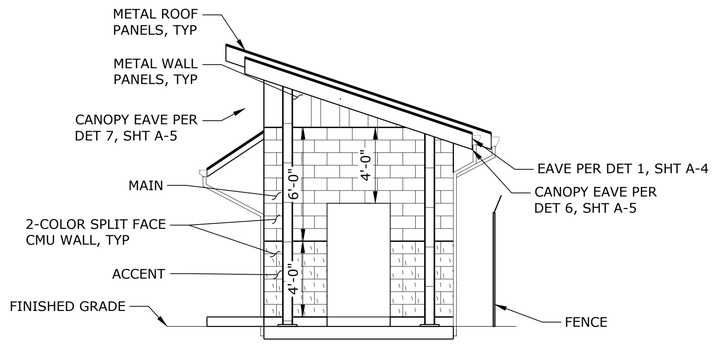
ARCHITECTURAL GENERAL NOTES:

1. USE SMOOTH FACE BLOCKS FOR EQUIPMENT MOUNTING LOCATIONS, UNDER VERTICAL SIDING, AT SOFFIT AND CANOPY ATTACHMENT POINTS.

2. CANOPY ROOF SHALL BE 4'-0" ABOVE GENERATOR ENCLOSURE.



SOUTH ELEVATION
SCALE: 1/4" = 1'-0"



WEST ELEVATION
SCALE: 1/4" = 1'-0"

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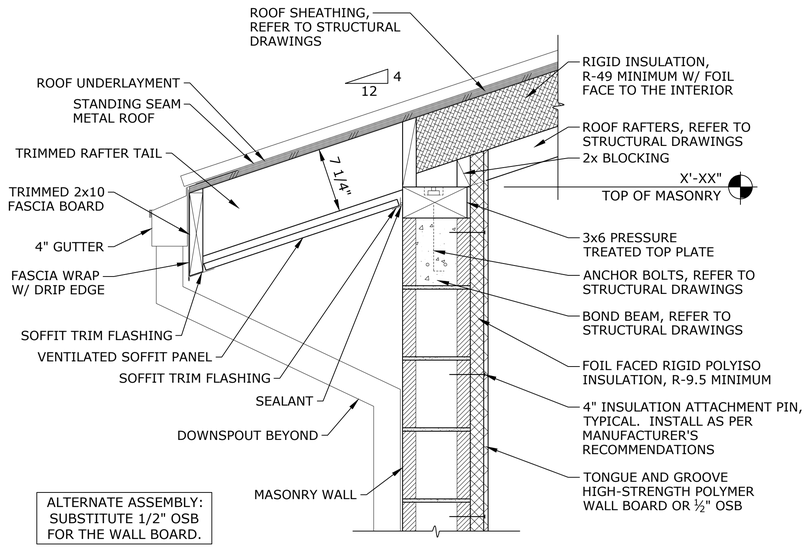
HIGHLANDS EAST LIFT STATION REHABILITATION

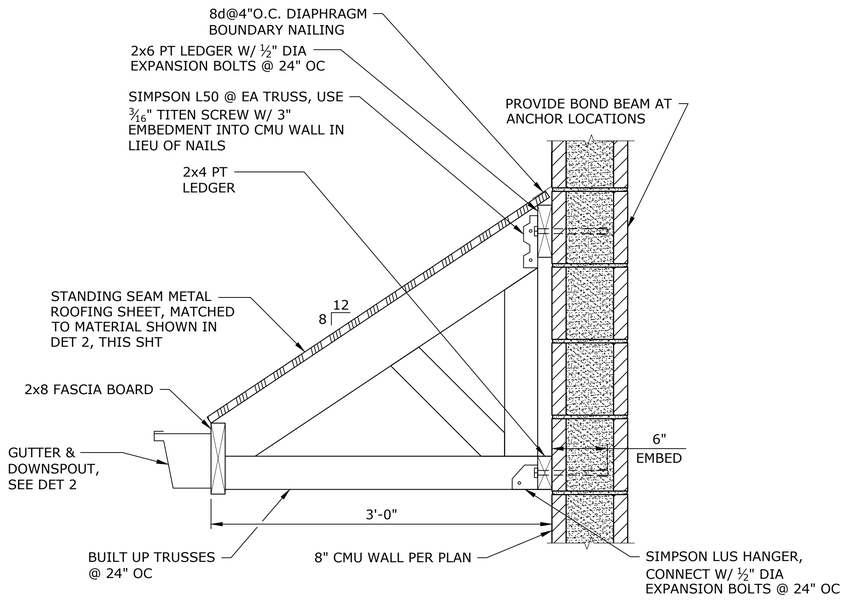
BUILDING ELEVATIONS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

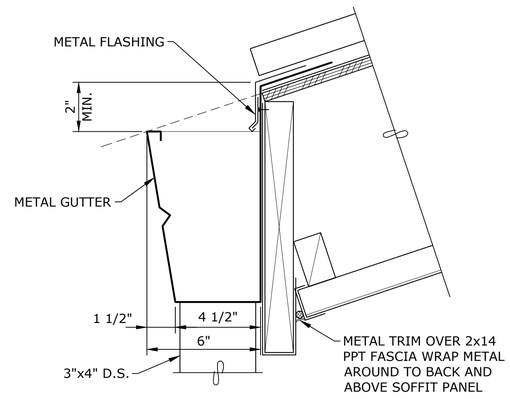
SHEET A-3



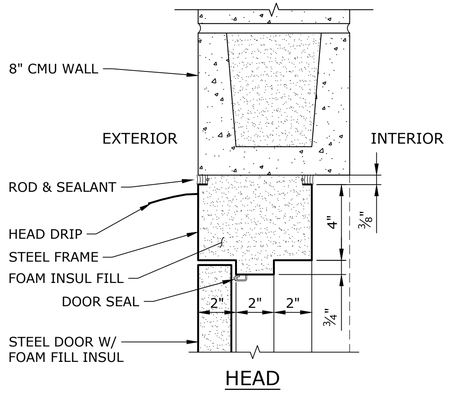
FASCIA, EAVE AND GUTTER DETAIL (1 / A-3)
SCALE: NTS



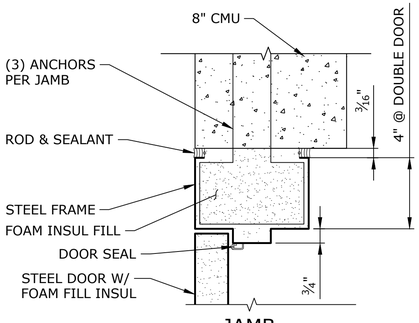
AWNING OVER ENTRY DOOR (2 / A-3)
SCALE: 1 1/2"=1'-0"



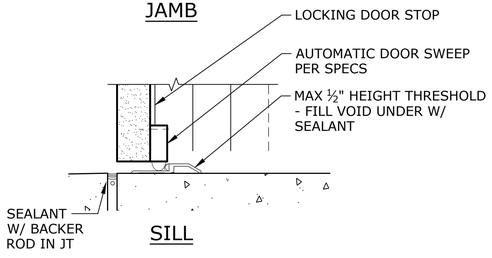
TYPICAL 6" GUTTER (3 / A-3)
SCALE: 3"=1'-0"



HEAD

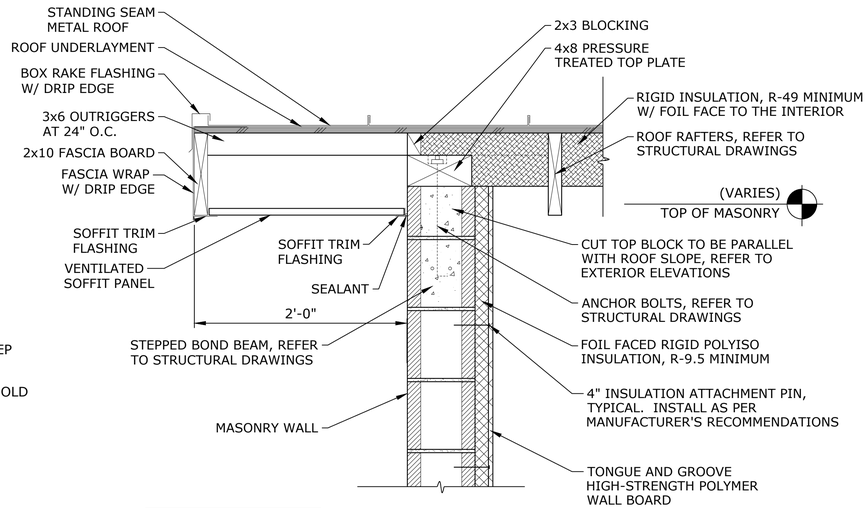


JAMB



SILL

EXTERIOR DOORS (4 / A-3)
SCALE: 3"=1'-0"



TYPICAL RAKE DETAIL (5 / A-3)
SCALE: NTS

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 48352 — REGISTERED PROFESSIONAL ENGINEER — 12.1.2024

consor

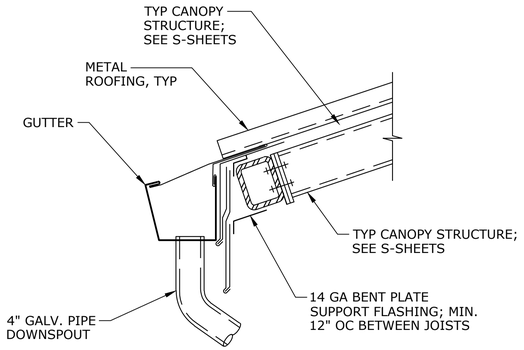
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

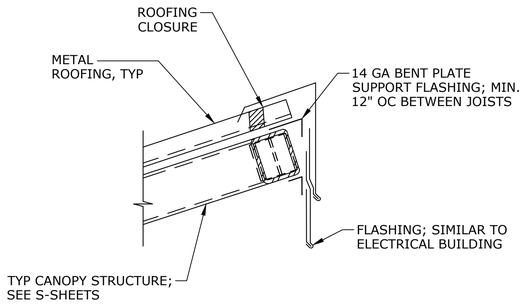
DETAILS - 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

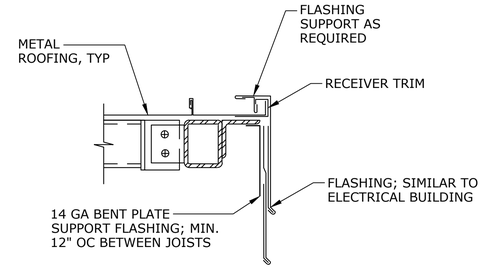
SHEET A-4



CANOPY LOW EAVE DETAIL (6 / A-3)
SCALE: NTS



CANOPY HIGH EAVE DETAIL (7 / A-3)
SCALE: 1 1/2"=1'-0"



CANOPY RAKE DETAIL (8 / A-3)
SCALE: 3"=1'-0"

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
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MCD DESIGNED
JSD DRAWN
PBC CHECKED

PETER BENEDICT CUNNINGHAM — STATE OF WASHINGTON — 48352 — REGISTERED PROFESSIONAL ENGINEER — 11/21/2024

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Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

DETAILS - 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET A-5

GENERAL NOTES

1. ALL MATERIALS AND INSTALLATIONS SHALL BE IN ACCORDANCE WITH THE LATEST NATIONAL ELECTRICAL CODE. INSTALLATION DRAWINGS, CONSTRUCTION SPECIFICATIONS AND LOCAL CODES. ALL MATERIALS SHALL BE NEW AND LISTED BY THE UNDERWRITERS' LABORATORY INC. (UL). ALL ELECTRICAL WORK SHALL BE INSTALLED IN A GOOD AND WORKMANLIKE MANNER.
2. REFER TO THE ELECTRICAL CIRCUIT SCHEDULE FOR CIRCUIT IDENTIFICATIONS, ROUTING, CONDUCTOR SIZES, ETC.
3. ELECTRICAL CONTRACTOR SHALL COORDINATE WITH OTHER DISCIPLINES AS REQUIRED TO MITIGATE INTERFERENCES.
4. CONDUIT MATERIAL SHOWN ON ELECTRICAL PLANS ARE SPECIFIC FOR THE LOCATION WHERE THE CONDUIT STARTS. CONTRACTOR IS RESPONSIBLE FOR TRANSITIONING TO APPROVED CONDUIT MATERIAL BASED ON LOCATION AND IN ACCORDANCE TO ELECTRICAL SPECIFICATIONS.

SYMBOLS

NEW ELECTRICAL EQUIPMENT

EXISTING ELECTRICAL EQUIPMENT

EQUIPMENT TO BE DEMO'D OR REMOVED

SURFACE MOUNTED LED LUMINAIRE *

RECESSED MOUNTED LED LUMINAIRE *

WALL MOUNTED LED LUMINAIRE *

* SHADED LUMINAIRE INDICATES BATTERY BACKED UNIT

POLE MOUNTED LUMINAIRE

$ $3 WALL SWITCH STANDARD TOGGLE, DESIGNATOR
3 = 3-WAY
D = DIMMER
T = TIMER

GFI DUPLEX, QUADPLEX RECEPTACLE, W/DESIGNATOR
GFI = GROUND FAULT INTERRUPTING
WP = WEATHERPROOF
+48 = HEIGHT AFF.

DISCONNECT RECEPTACLE AND PLUG

SPECIAL EQUIPMENT CONNECTION AS SHOWN

MOTOR CONNECTION, HORSEPOWER INDICATED

J (J) JUNCTION BOX

20A 30A DISCONNECT SWITCH, AMPERAGE RATING SHOWN

F 60/40 FUSED DISCONNECT SWITCH, SWITCH AND FUSE RATING SHOWN
60/40 = 60A SWITCH WITH 40A FUSE

5A FUSE, SIZE SHOWN

THERMAL MAGNETIC CIRCUIT BREAKER

30AC 150AT MAGNETIC ONLY CIRCUIT BREAKER (MOTOR CIRCUITS ONLY) CONTINUOUS CURRENT RATING AND TRIP SETTINGS SHOWN

2 MOTOR STARTER, SIZE SHOWN

M METERBASE W/UTILITY METER

ASD ADJUSTABLE SPEED DRIVE (AFE DESIGNATES ACTIVE FRONT END)

LINE OR LOAD REACTOR, IMPEDENCE SHOWN

T TRANSFORMER

CURRENT TRANSFORMER

GROUND ROD

GROUND ROD TEST WELL

AUTOMATIC TRANSFER SWITCH

GROUND CONNECTION PER NEC ARTICLE 250

CR 120V CONTROL RELAY, DPDT MINIMUM

CR 24VDC CONTROL RELAY, DPDT MINIMUM

RELAY CONTACT - NO, NC

PUSHBUTTON OR SWITCH CONTACT BLOCK - NO, NC

OFF HAND AUTO THREE POSITION SWITCH

R R PUSH-TO-TEST LED PILOT LIGHT

FLOAT SWITCH - NO, NC

TEMPERATURE SWITCH - NO, NC

LIMIT SWITCH - NO, NC

TIME DELAY CONTACTS, NORMALLY OPEN TIMED CLOSED NORMALLY CLOSED TIMED OPEN

SPEED POTENTIOMETER

ETM ELAPSED TIME METER

CNT COUNTER

FU 1A FUSED TERMINAL, SIZE SHOWN

FIELD TERMINAL

LOCAL TERMINAL OR LUG CONNECTION

S SMOKE/HEAT DETECTOR

I INTRUSION SWITCH

T THERMOSTAT/TEMPERATURE TRANSMITTER

MD MOTION DETECTOR/OCCUPANCY SENSOR

CONDUIT SEAL-OFF

CONDUIT CONCEALED UNDERFLOOR OR UNDERGROUND

CONDUIT CONCEALED IN WALL OR ABOVE CEILING IN FINISHED AREAS, EXPOSED IN PROCESS AND EQUIPMENT AREAS.

CONDUIT UP

CONDUIT DOWN

CONDUIT UP FROM UNDERGROUND RACEWAY

CONDUIT STUB

FLEXIBLE CONDUIT OR MFR CABLE

XXX XXX HOME RUN, ELECTRICAL PANEL DESTINATION SHOWN.

1. RUNS MARKED WITH CROSS-HATCHES INDICATE NUMBER OF NO.12 WIRE. LARGER GAUGES ARE SHOWN OR NOTED ELSEWHERE. LONG CROSS HATCH INDICATES NEUTRAL, SHORT INDICATES PHASE CONDUCTOR, SLANT INDICATES GROUND WIRE PER NEC ARTICLE 250.
2. FOR UNMARKED CONDUIT RUNS, CONTRACTOR SHALL INSTALL REQUIRED NUMBER OF WIRES FOR POWER AND/OR CONTROL OF ELEMENTS IN CIRCUIT(S) SHOWN. SIZE OF WIRE SHALL BE NO. 12, UNLESS OTHERWISE NOTED OR REQUIRED BY CODE.
3. SIZE CONDUIT ACCORDING TO SPECIFICATIONS AND APPLICABLE CODE.
4. DASHED LINE INDICATE CONDUITS CONCEALED UNDERGROUND OR UNDERFLOOR.
5. SOLID HOME RUN INDICATES CONDUIT ABOVE CEILING IN FINISHED AREA, CONCEALED IN WALL OR EXPOSED IN PROCESS AND EQUIPMENT AREAS.

P1 ELECTRICAL CIRCUIT IDENTIFICATION

P1 P2 / C1 C2 MULTIPLE ELECTRICAL CIRCUITS, SEPARATE CONDUITS

1"C– P1 P2 / P3 P4 MULTIPLE ELECTRICAL CIRCUITS, COMMON CONDUIT (SIZE SHOWN)

ABBREVIATIONS

a	CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS CLOSED
A	AMMETER, AMPERES
AC	ALTERNATING CURRENT
A/D	ANALOG TO DIGITAL
AF	AMPERE FRAME
AFE	ACTIVE FRONT END (VFD)
AIC	AMPERES INTERRUPTING CAPACITY
ALT	ALTERNATOR
A/M	AUTO/MANUAL CONTROLLER
ANN	ANNUNCIATOR
AS	AMMETER SWITCH
ASD	ADJUSTABLE SPEED DRIVE
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AUTO	AUTOMATIC
AWG	AMERICAN WIRE GAGE
b	CIRCUIT BREAKER AUX. CONTACT, CLOSED WHEN BREAKER IS OPEN
BCG	BARE COPPER GROUND
C	CONDUIT, CONTACTOR
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CC	CONTROL CABLE, CLOSING COIL
CHH	COMMUNICATION HANDHOLE
CL	CHLORINE
CKT	CIRCUIT
CMH	COMMUNICATION MANHOLE
CO	CONDUIT ONLY
COMM	COMMUNICATION
CON	CONTACTOR
COND	CONDUCTOR
CONT	CONTINUED, CONTINUATION
CPT	CONTROL POWER TRANSFORMER
CP	CONTROL PANEL
CR	CONTROL RELAY
CS	CONTROL SWITCH
CT	CURRENT TRANSFORMER
CVLS	CHECK VALVE LIMIT SW
DC	DIRECT CURRENT
DIAG	DIAGRAM
DISC	DISCONNECT
DISTR	DISTRIBUTION
DP	DISTRIBUTION PANEL
DPDT	DOUBLE POLE, DOUBLE THROW
DPST	DOUBLE POLE, SINGLE THROW
EXST	EXISTING
EF	EXHAUST FAN
EHH	ELECTRICAL HANDHOLE
ELEM	ELEMENTARY
EMERG	EMERGENCY
EFFL	EFFLUENT
EQ	EQUAL
EQUIP	EQUIPMENT
ETM	ELAPSED TIME METER
FACP	FIRE ALARM CONTROL PANEL
FIN FL	FINISHED FLOOR
FLEX	FLEXIBLE
FLUOR	FLUORESCENT
FO	FIBER OPTIC
FREQ	FREQUENCY
FU	FUSE
FUT	FUTURE
FVNR	FULL VOLTAGE, NON REVERSING
FVR	FULL VOLTAGE, REVERSING
FWD	FORWARD
GA	GAUGE
GEN	GENERATOR
GFI	GROUND FAULT INTERRUPTER
GRS	GALVANIZED RIGID STEEL
H_2O_2	HYDROGEN PEROXIDE
HMI	HUMAN MACHINE INTERFACE
HOA	HAND-OFF-AUTOMATIC
HOR	HAND-OFF-REMOTE
HORZ	HORIZONTAL
HPS	HIGH PRESSURE SODIUM
HTR	HEATER
HV	HIGH VOLTAGE
HZ	HERTZ (CYCLES PER SECOND)
INCAND	INCANDESCENT
I/O	INPUT/OUTPUT
I.S.	INTRINISICALLY SAFE
JB	JUNCTION BOX
KA	KILOAMPERES
KCMIL	THOUSANDS OF CIRCULAR MILS
KV	KILOVOLTS
KVA	KILOVOLT AMPERES
KVAR	KILOVOLT AMPERES REACTIVE
KVARH	KILOVOLT AMPERES REACTIVE HOURS
KW	KILOWATTS
KWH	KILOWATT HOURS
LCP	LIGHTING CONTROL PANEL
LP	LIGHTING PANEL
LPS	LOW PRESSURE SODIUM
LTG	LIGHTING
LT(S)	LIGHT(S)
(M)	MODIFIED
Ma	MILLIAMPERES
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MOV	MOTOR OPERATED VALVE
MS	MOTOR STARTER
MTD	MOUNTED
MTG	MOUNTING
MTS	MANUAL TRANSFER SWITCH
(N)	NEW
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOC.
NEUT	NEUTRAL
NO	NORMALLY OPEN, NUMBER
NTS	NOT TO SCALE
OVHD	OVERHEAD
OL	THERMAL OVERLOAD RELAY
OT	OVER TEMPERATURE
PB	PULLBOX, PUSHBUTTON
PD	POSITIVE DISPLACEMENT
PE	PHOTOELECTRIC
PEC	PHOTOELECTRIC CELL
PF	POWER FACTOR
pH	MEASURE OF ACIDITY OR ALKALINITY
PH	PHASE
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
PNL	PANEL
PNLBD	PANELBOARD
PRI	PRIMARY
PS	PRESSURE SWITCH
PSI	POUNDS PER SQUARE INCH
PWR	POWER
(RL)	RELOCATE
(RLD)	RELOCATED
RCPT	RECEPTACLE
RCT	REPEAT CYCLE TIMER
RPM	REVOLUTIONS PER MINUTE
RT	RESET TIMER
SCR	SILICON CONTROLLED RECTIFIER
SD	SMOKE DETECTOR
SDBC	SOFT-DRAWN BARE COPPER
SEC	SECONDS, SECONDARY
SECT	SECTION
SF	SUPPLY FAN
SHH	SIGNAL HANDHOLE
SIG	SIGNAL
SN	SOLID NEUTRAL
SPEC	SPECIFICATIONS
SPD	SURGE PROTECTIVE DEVICE
SPDT	SINGLE POLE, DOUBLE THROW
SS	STAINLESS STEEL, SOLID STATE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYNC	SYNCHRONIZING TERMINAL
TB	BOX, TERMINAL BOARD
TC	TELEPHONE CABINET
TEMP	TEMPERATURE
TP	TWISTED PAIR UNSHIELDED
TSP	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
UH	UNIT HEATER
UV	ULTRA VIOLET
V	VOLTS
VA	VOLT-AMPERES
VFD	VARIABLE FREQUENCY DRIVE
VAR	VOLT AMPERES REACTIVE
VERT	VERTICAL
VH	VAR-HOUR
VS	VOLTMETER SWITCH
W	WIRE, WATTS
WHM	WATTHOUR METER
WHDM	WATTHOUR DEMAND METER
WP	WEATHERPROOF
WTRT	WATERTIGHT
WTP	WATER TREATMENT PLANT

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e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.67.01

NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

RSC DESIGNED
RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/20/24

consor

Silver Lake Water & Sewer District

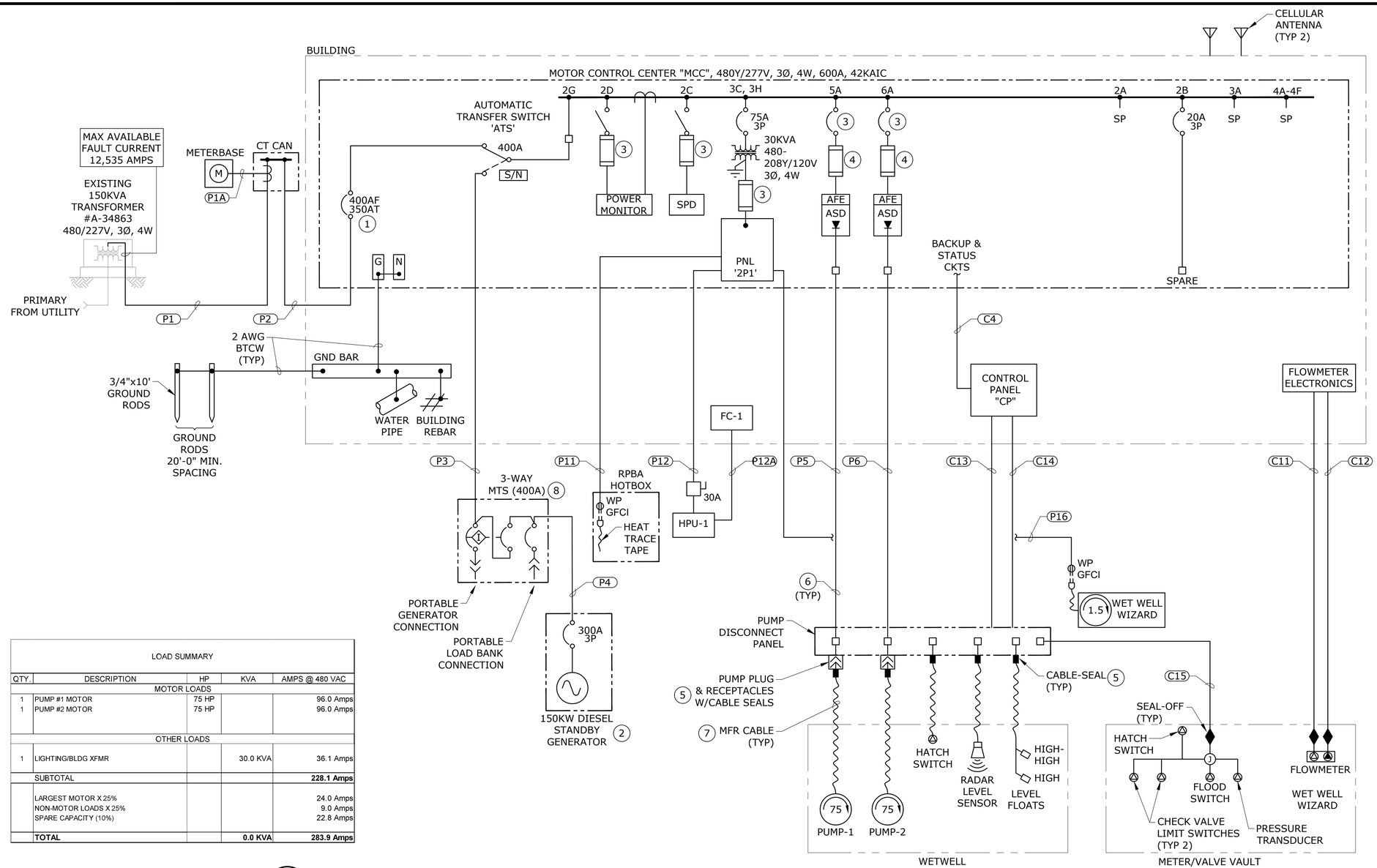
HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL LEGEND, SYMBOLS AND ABBREVIATIONS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-1

33 of 51



ONE-LINE DIAGRAM

SCALE: NONE

1 / -

LOAD SUMMARY				
QTY.	DESCRIPTION	HP	KVA	AMPS @ 480 VAC
	MOTOR LOADS			
1	PUMP #1 MOTOR	75 HP		96.0 Amps
1	PUMP #2 MOTOR	75 HP		96.0 Amps
	OTHER LOADS			
1	LIGHTING/BLDG XFMR		30.0 KVA	36.1 Amps
	SUBTOTAL			**228.1 Amps**
	LARGEST MOTOR X 25%			24.0 Amps
	NON-MOTOR LOADS X 25%			9.0 Amps
	SPARE CAPACITY (10%)			22.8 Amps
	TOTAL		**0.0 KVA**	**283.9 Amps**

LOAD SUMMARY

SCALE: NONE

2 / -

GENERAL NOTES:

1. ALL GROUNDING TO BE PER NEC ARTICLE 250.

KEY NOTES:

1. PROVIDE WARNING SIGN READING "UTILITY SERVICE DISCONNECT DOES NOT DISCONNECT GENERATOR".
2. REMOVE NEUTRAL/GROUND BOND FROM GENSET. SYSTEM IS SOLIDLY GROUNDED THROUGH ATS AND IS NOT A SEPARATELY DERIVED SYSTEM.
3. OVERCURRENT DEVICE AND SIZE FOR EQUIPMENT TO BE PROVIDED PER MFR. RECOMMENDATIONS.
4. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
5. PROVIDE COMPOUND BARRIER CABLE CONNECTOR AS A MEANS OF SEALING THE CABLES. APPLETON PROTEX SERIES OR APPROVED. VERIFY REQUIREMENT AND INSTALL ONLY IF REQUIRED BY THE LOCAL AHJ.
6. CIRCUITS TO PUMP DISCONNECT PANEL SHALL BE INSTALLED IN CONTINUOUS SECTION OF RGS CONDUIT FROM TRANSITION BELOW GRADE/SLAB AT CONDUIT BURIAL DEPTH, ALLOWING FOR NO USE OF SEAL OFF PER NEC ARTICLE 501.15 (B2) EXCEPTION NO. 1.
7. MFR'S CABLING TO BE ROUTED VIA CABLE TRENCH TO WET WELL.
8. 3-WAY MANUAL TRANSFER SWITCH WITH CAM-LOCK CONNECTORS.

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Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #10184436
PROJECT#:21.67.01

NO.	DATE	BY	REVISION

NOTICE

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RSC DESIGNED

RSC DRAWN

MEW CHECKED

MICHAEL EZRA WALLS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 7/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

ONE-LINE DIAGRAM

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-2

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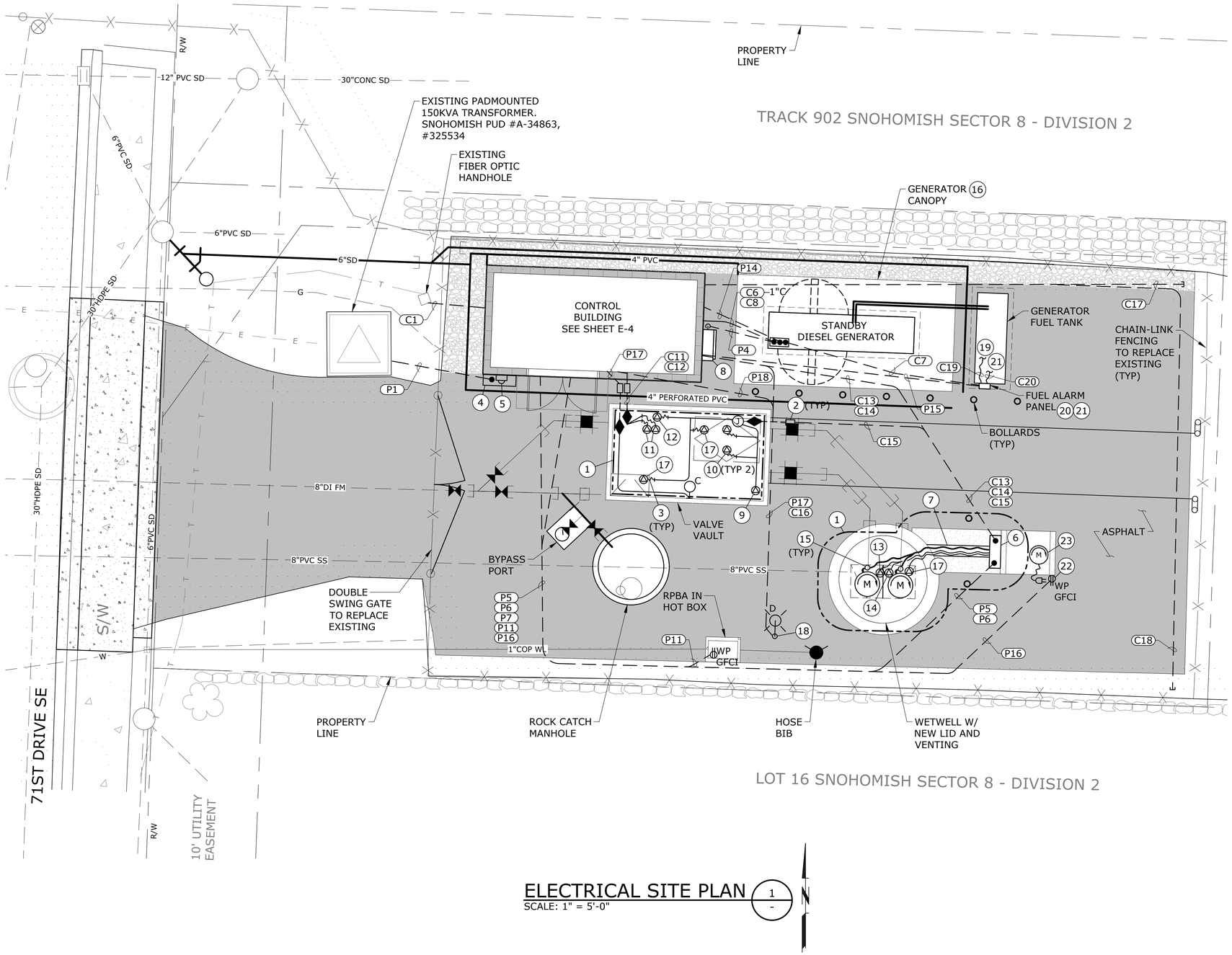
P:\Projects\21.67.02_consor_silver_lake_highlands_east_final_design\DWG\22-1070-WA-E-2.dwg E-2 11/20/2024 11:10 AM ROBERTC 23.1s (LMS Tech)

UTILITY CONTACT INFO:
COMPANY: SNOHOMISH PUD
CONTACT: JAMES LATHAM
PHONE: 1-425-783-8278
EMAIL: JELATHAM@SNOPUD.COM
REF#: 100122126

GENERAL NOTES:

1. SEE SHEET E-9 FOR CONDUIT AND CIRCUIT SCHEDULE.
2. SEE SHEET E-9 FOR LUMINAIRE SCHEDULE FOR AREA AND VAULT UNITS.
3. POWER SERVICE DESIGN IS BASED ON PRELIMINARY INFORMATION PROVIDED BY SNOHOMISH PUD. CONTRACTOR TO VERIFY AND COORDINATE WITH PUD'S FINALIZED DESIGN. SEE UTILITY CONTACT INFORMATION THIS SHEET.
4. DISTRICT TO APPLY FOR PUD COMMERCIAL PERMIT AND PAY FEES TO PUD. CONTRACTOR TO COORDINATE CONNECTION AND SERVICE REQUIREMENTS.
5. INSTALLATION OF POWER SERVICE METERING TO BE PER PUD'S LATEST ELECTRICAL SERVICE REQUIREMENTS. COORDINATE METERING INSTALLATION, INSPECTION AND ENERGIZING WITH SNOHOMISH PUD.
6. COORDINATE ALL ELECTRICAL INSPECTIONS AS REQUIRED BY L&I.
7. PROVIDE LONGSWEEP ELBOWS FOR FIBER SERVICE CONDUIT.
8. AREA LIGHTING PROVIDED DOES NOT ALLOW MORE THAN 1.0 FOOTCANDLE BEYOND ANY PROPERTY LINE.
9. IF JUNCTION BOXES ARE REQUIRED FOR ANY FIELD UNDERGROUND RUNS, CONTRACTOR TO ENSURE COORDINATION BETWEEN DEPTH OF CONDUIT AND DEPTH OF BOX. CONTRACTOR MAY USE OPEN BOTTOM JUNCTION BOX WITH 1' OF CRUSHED GRAVEL BASE. IF INSTALLED IN PAVED AREA, UNIT AND COVER SHALL BE TRAFFIC RATED. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.



ELECTRICAL SITE PLAN

SCALE: 1" = 5'-0"

KEY NOTES:

1. CLASS 1 DIV. 2 GROUP D SPACE IN AN ENVELOPE 18" ABOVE GRADE 3' LATERALLY FROM HATCH AND TRENCH OPENINGS FOR WETWELL AND CLASS 1 DIV. 2 GROUP D SPACE INSIDE VAULTS. INTERIOR OF WETWELL IS CLASS 1 DIV. 1 GROUP D SPACE.
2. CONDUITS ARE ENTERING HAZARDOUS AREA; PROVIDE TRANSITION 12" OUTSIDE VAULT FROM PVC TO RGS TO MAINTAIN CONTINUOUS CONDUITS TO SEAL OFFS.
3. FLEX FROM CONDULET TO FINAL CONNECTION AT EQUIPMENT. ROUTE ALONG WALL AND PIPING FOR CLEAN APPEARANCE.
4. CT-CAN, PER SNOHOMISH PUD REQUIREMENTS.
5. METERBASE, PER SNOHOMISH PUD REQUIREMENTS.
6. PUMP DISCONNECT PANEL (PDP)
7. CABLING TRENCH. SEE MECH. SHEETS. MFR. PUMP POWER CABLES, FLOAT CABLES AND RADAR LEVEL CABLING TO BE ROUTED CONTINUOUSLY FROM UNIT TO PDP.
8. 3-WAY MANUAL TRANSFER SWITCH, SEE SPECIFICATION SECTION 26 36 14.
9. FLOOD SWITCH, SEE SHEET E-9 FOR DETAIL.
10. CHECK VALVE LIMIT SWITCH, SEE SHEET E-9 FOR DETAIL.
11. FLOWMETER SIGNAL AND COIL CONNECTIONS.
12. DISCHARGE PRESSURE TRANSDUCER.
13. HIGH AND HIGH-HIGH FLOAT SWITCHES PER SPECIFICATIONS. PROVIDE WITH MFR CABLE LONG ENOUGH TO REACH PDP WITHOUT SPLICING. PROVIDE HANGER FOR MFR CABLING SUPPORT. SEE SHEET E-8 FOR DETAIL. VERIFY & COORDINATE FLOAT ELEVATION WITH CIVIL DISCIPLINE.
14. RADAR LEVEL TRANSDUCER PER SPECIFICATIONS. MOUNTED WITH MANUFACTURER'S MOUNT. PROVIDE WITH MFR CABLE LONG ENOUGH TO REACH CONTROL PANEL WITHOUT SPLICING. SEE SHEET E-9 FOR MOUNTING.
15. ROUTE MFR PUMP CABLING IN A MANNER TO NOT OBSTRUCT THE REMOVAL OF PUMPS. USE EYE HOOKS AND CARABINERS TO ASSIST IN ROUTING. SEE SHEET E-8 FOR DETAIL.
16. SEE SHEET E-4 FOR LIGHTING IN THIS AREA.
17. FACTORY SEALED HATCH LIMIT SWITCH. ALLEN-BRADLEY 802MC SERIES OR AS APPROVED. CONTRACTOR TO SELECT ACTUATOR LEVER ARM AS NEEDED FOR INSTALLATION. PROVIDE WITH MFR CABLE LONG ENOUGH TO REACH J-BOX OR PUMP DISCONNECT PANEL WITHOUT SPLICING.
18. POLE MOUNTED AREA LUMINAIRE WITH SPARE CONDUIT FOR POSSIBLE FUTURE SECURITY CAMERA. SEE SHEET E-9 FOR DETAIL.
19. ROUTE CONDUIT TO GENERATOR FUEL TANK SENSORS (LOW FUEL, HIGH FUEL, LEAK DETECTION), VERIFY WITH MFR AND WIRE TO FUEL ALARM PANEL.
20. WIRE OUTPUTS FOR LOW FUEL AND LEAK DETECTION BACK TO GENERATOR FOR REMOTE MONITORING. USE GENERATOR DC CONTROL FOR OUTPUT RELAY POWER.
21. WIRE OUTPUT TO GENERATOR SUPPLY SOLENOID VALVE. USE GENERATOR DC CONTROL FOR OUTPUT RELAY POWER TO SOLENOID. COORDINATE VOLTAGE AS NEEDED FOR SOLENOID WITH GENERATOR AND VALVE SUPPLIER.
22. PROVIDE GFCI ON STRUT MOUNT FOR CONNECTION OF WET WELL WIZARD. MOUNT 24" ABOVE GRADE.
23. WET WELL WIZARD BLOWER WITH WEATHER HOUSING ON 12" STAND. UNIT WITH WEATHER HOUSING AND STAND WILL BE TALL ENOUGH FOR EQUIPMENT TO BE LOCATED OUT OF THE HAZARDOUS LOCATION.

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RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/20/24

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Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

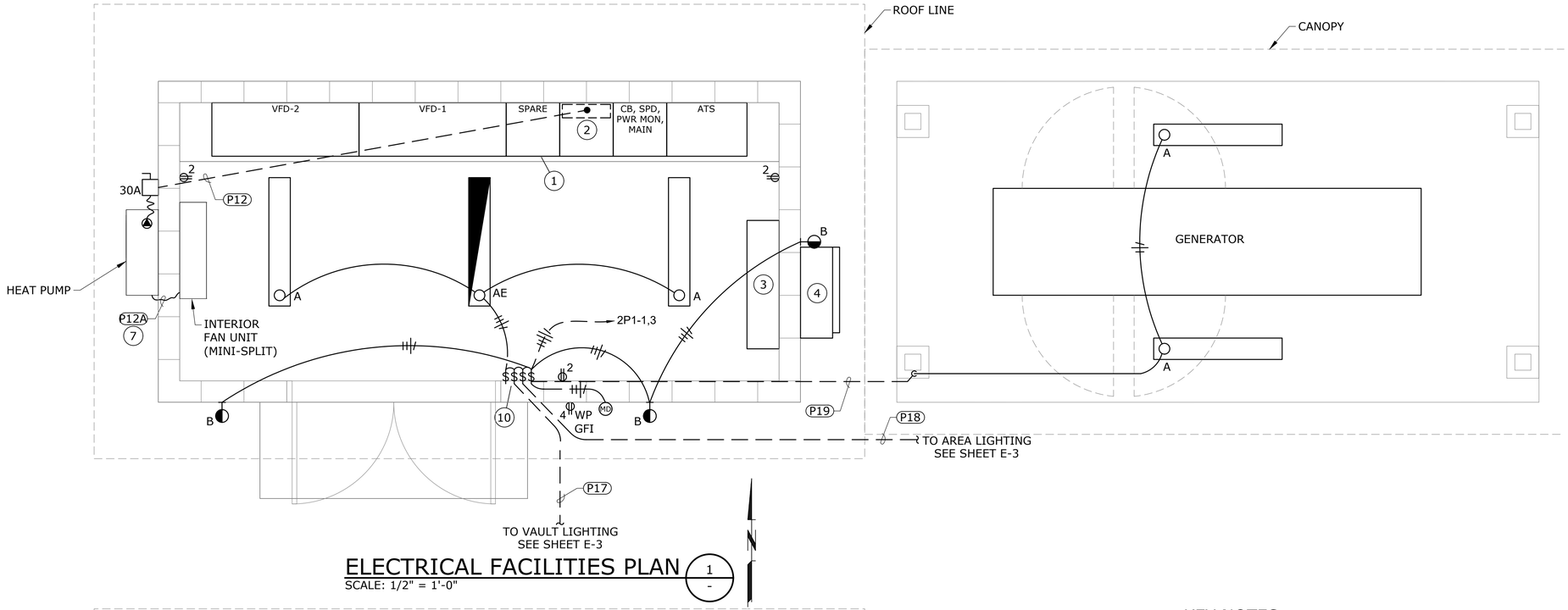
ELECTRICAL SITE PLAN

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-3

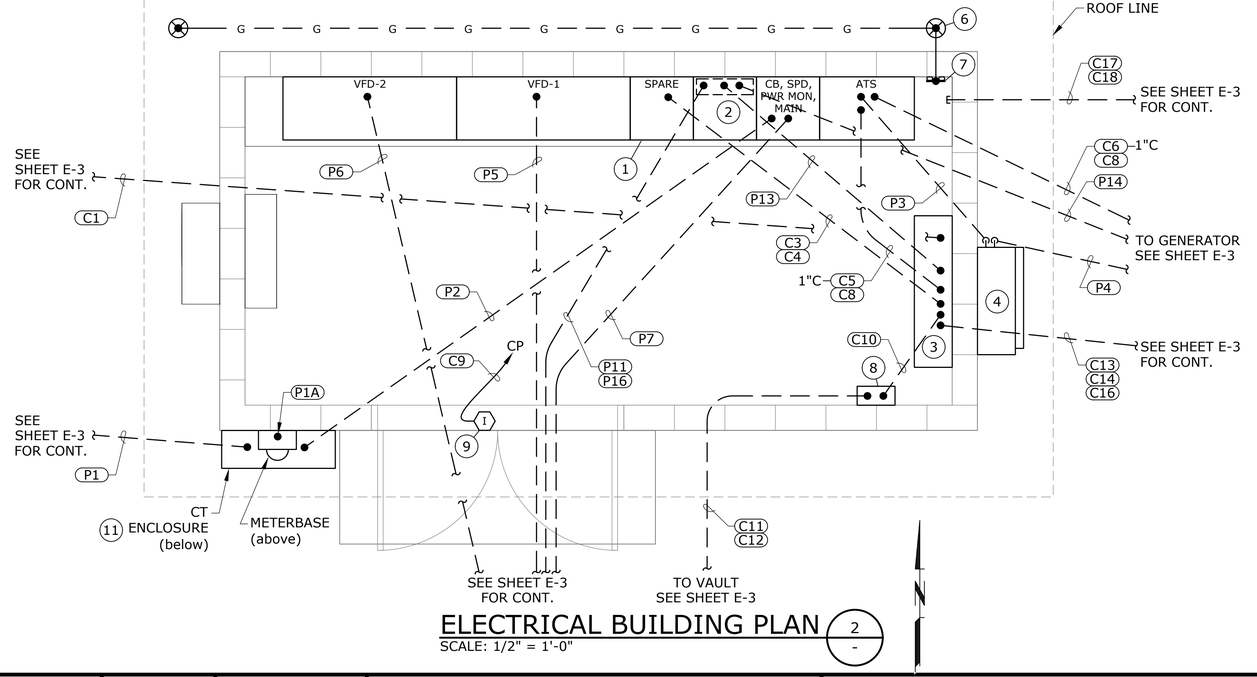
GENERAL NOTES

1. SEE SHEET E-5 FOR LUMINAIRE, PANEL AND CIRCUIT SCHEDULES.
2. ALL CONDUITS TO BE ROUTED UNDERGROUND, IN-SLAB, OR CONCEALED WHEREVER POSSIBLE OR PRACTICAL.
3. ALL RECEPTACLES TO BE LOCATED 18" AFF, UNLESS OTHERWISE NOTED.
4. LUMINAIRES TO BE SURFACE MOUNTED AT FINAL FINISHED CEILING ELEVATION. ROUTE CONDUITS ABOVE FINISHED CEILING FOR CLEAN APPEARANCE.
5. ROUTE UN-SWITCHED POWER CIRCUIT TO ALL BATTERY BACKED LUMINAIRES.
6. PURSUANT TO WSEC SECTION C405.2 EXCEPTION #4, THE INTERIOR LIGHTING IS EXEMPT FROM AUTOMATED LIGHTING CONTROLS TO ENSURE SAFETY OF OPERATIONS PERSONNEL.
7. PROVIDE LABELING AT SWITCHES INDICATING EQUIPMENT CONTROLLED BY SWITCH, IE. "INTERIOR, SITE AREA, BLDG, AND VAULT LIGHTING".



ELECTRICAL FACILITIES PLAN

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



ELECTRICAL BUILDING PLAN

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

KEY NOTES

1. MOTOR CONTROL CENTER (MCC), SEE SHEET E-6.
2. PANEL '2P1' INTERIOR TO MCC.
3. CONTROL PANEL (CP), SEE SHEET E-10.
4. 3-WAY MANUAL TRANSFER SWITCH, SEE SPECIFICATION SECTION 26 36 14.
5. GROUNDING TEST WELL, SEE SHEET E-8.
6. 2"x6" COPPER GROUND BAR WITH INSULATED STAND-OFFS. HARGER OR SIMILAR. CONNECT TO SERVICE GROUNDING AND REBAR PIGTAIL.
7. CONTRACTOR TO COORDINATE INSTALLATION OF ELECTRICAL CONNECTIONS FROM HEAT PUMP UNIT TO INTERIOR FAN UNIT WITH HVAC INSTALLER AND MANUFACTURER. PROVIDE POWER AND CONTROL CONDUCTORS IF NOT PROVIDED AS PART OF A MANUFACTURER INSTALLATION PACKAGE.
8. FLOWMETER ELECTRONICS. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. HEAVY DUTY, COMPACT, DOOR INTRUSION LIMIT SWITCH, ALLEN-BRADLEY 802B OR AS APPROVED. CONTRACTOR TO SELECT ACTUATOR LEVER ARM AS NEEDED FOR INSTALLATION.
10. LIGHTING CONTROL SWITCHES. PROVIDE AND INSTALL POWER CIRCUITING TO LUMINAIRES. HOMERUN SHOWN TO PANEL CIRCUIT ID.
11. ENSURE STACKING OF METERBASE AND CT ENCLOSURE MEET SNOHOMISH PUD HEIGHT REQUIREMENTS.

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NO.	DATE	BY	REVISION

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RSC DESIGNED
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MEW CHECKED

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consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL BUILDING PLANS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-4

PANEL: 2P1 BUS: 125A VOLTAGE: 120/208V, 3PH, 4 WIRE

FEEDER: SEE POWER RISER MAIN BRKR: M.L.O. MOUNTING: (INTERIOR TO MCC)

CKT NO.	CIRCUIT DESCRIPTION	CKT BREAKER POLES/AMPS	LOAD Type	LOAD Volt-Amps	PHASE	LOAD Volt-Amps	LOAD Type	CKT BREAKER POLES/AMPS	CIRCUIT DESCRIPTION	CKT NO.
1	INTERIOR LIGHTING	1-20		72	A	540		1-20	INTERIOR RECEPTACLE	2
3	EXTERIOR LIGHTING/AREA LIGHT	1-20		99	B	180		1-20	EXTERIOR RECEPTACLE	4
5	SPARE	1-20		0	C	1716		1-20	RECEPTACLE (WW WIZARD)	6
7	HEAT PUMP	2-20		1813	A	0		1-20	SPARE	8
9	--	-		1813	B	1000		1-20	GENERATOR BLOCK HEATER	10
11	CONTROL PANEL	1-20		500	C	192		1-20	GENERATOR BATTERY CHARGER	12
13	SPARE	1-20		0	A	5		1-20	FUEL ALARM PANEL	14
15	SPARE	1-20		0	B	0		1-20	SPARE	16
17	SPARE	1-20		0	C	0		1-20	SPARE	18

	CONNECTED LOAD		TOTAL LOAD		.....NOTES.....
LOAD PER PHASE (VA)	A=	2430	A=	2694	1.
	B=	3092	B=	3356	
	C=	2408	C=	2672	2.
LOAD PER PHASE (AMPS)	A=	20.25	A=	22.45	3.
	B=	25.77	B=	27.97	
	C=	20.07	C=	22.27	4.
TOTAL LOAD (KVA)		7.93		8.72	5.
SPARE CAPACITY	10.00%	0.79	DATE	24-Oct-24	

PANEL SCHEDULE

SCALE: NONE

1 / -

TYPE	DESCRIPTION	MOUNTING	VOLTAGE	INPUT WATTS	MANUFACTURER PART NUMBER	BATTERY BACKED	COLOR TEMP	LAMP TYPE LUMENS	NOTES
A	4' LOW PROFILE ENCLOSED AND GASKETED INDUSTRIAL LED. MOLDED FIBERGLASS HOUSING, ACRYLIC LINEAR RIBBED FROSTED LENS, 80CRI, MEDIUM DISTRIBUTION, 0-10V DIMMING, U.L. LISTED FOR WET LOCATIONS.	SURFACE	120/277V	24	LITHONIA LIGHTING: FEM LED SERIES OR AS APPROVED.	NO	40K	LED 3,790	
AE	SAME AS TYPE 'A' EXCEPT WITH 90 MINUTE EMERGENCY BACKUP BATTERY WITH INTEGRAL LED AND TEST SWITCH	SURFACE	120/277V	24	LITHONIA LIGHTING: FEM LED SERIES OR AS APPROVED.	YES	40K	LED 3,790	
B	DARK BRONZE, LED WALL LUMINAIRE WITH BATTERY BACKUP. SINGLE-PIECE ALUMINUM HOUSING WITH ONE-PIECE DOOR FRAME GASKET, IP66 RATING. ZERO UPLIGHT WIDE DISTRIBUTION OPTICS, 80CRI	SURFACE	120/277V	10	LITHONIA LIGHTING: WDGE2 LED SERIES OR AS APPROVED.	YES	YES	LED 1,289	MOUNT @ 8.5' ABOVE GRADE
B	HAZARDOUS RATED C1D2 LED WALL LUMINAIRE. DIE CAST ALUMINUM HOUSING WITH HIGH-TEMPERATURE SILICONE GASKETING, CLEAR GLASS LENS, WIDE DISTRIBUTION, NEMA 4X RATING.	SURFACE YOKE MNT	120/277V	10	RAB: HAZFFLED30 OR AS APPROVED	YES	YES	LED 1,289	MOUNT NEAR CEILING ON VAULT WALL.
D	DARK BRONZE, LED POLE LUMINAIRE WITH 4' SQUARE ALUMINUM POLE TO MATCH. SINGLE-PIECE ALUMINUM HOUSING WITH INTEGRAL HEAT SINK FINS AND LED DRIVER MOUNTED IN DIRECT CONTACT WITH THE CASTING TO PROMOTE LOW OPERATING TEMPERATURE AND LONG LIFE. IP65 RATING. ZERO UPLIGHT, TYPE 4M DISTRIBUTION OPTICS, 70CRI WITH PHOTOCELL AND MOTION OPTION	POLE	120/277V	38	LITHONIA LIGHTING: DSX0 LED SERIES WITH SSA POLE OR AS APPROVED.	NO	NO	LED 4,612	PROVIDE WITH HOUSESHIELD ACCESSORY

LUMINAIRE SCHEDULE

SCALE: NONE

2 / -

ALL CIRCUITS ARE IDENTIFIED ON THE PLANS WITH THE ELLIPSE SYMBOL. CONDUCTOR SIZES ARE BASED ON COPPER CONDUCTORS. CONDUIT SIZES ARE SHOWN FOR CASES WHEN CIRCUIT CONDUCTORS ARE RUN WITHOUT OTHER CIRCUITS. MULTIPLE CIRCUITS RUN IN COMMON CONDUITS ARE SHOWN ON PLANS AND SUPERSEDE THE BASIC CONDUIT SIZE SHOWN.

RACEWAY SIZES ARE IN INCHES WITH QUANTITIES IN EXCESS OF (1) SHOWN IN ADJACENT PARENTHESIS. CONDUCTOR CONFIGURATIONS ARE CODED AS FOLLOWS: P- FOR POWER CONDUCTORS, G - FOR GROUND CONDUCTORS, N - FOR NEUTRAL CONDUCTORS, C - FOR CONTROL CONDUCTORS, TSP - FOR TWISTED SHIELDED PAIR, TST - TWISTED SHIELDED TRIAD AND SP - FOR SPARE CONDUCTORS.

CIRCUITS REVISED SINCE LAST ISSUE ARE INDICATED BY AN ASTERISK(*).

CIRCUIT NUMBER	FROM	TO	CONDUCTORS	RACEWAY	NOTES
P1	CT CAN	UTILITY TRANSFORMER	(3) 500KCMIL, P (1) 500KCMIL, N	3	
P1A	CT CAN	METERBASE (UTILITY METER)	PULL CORD	1.25	CONDUCTORS AND CONNECTION OF CT'S BY UTILITY
P2	CT CAN	MCC (MAIN CB)	(3) 500KCMIL, P (1) 500KCMIL, N (1) 1/0 AWG, G	3	
P3	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC	3-WAY MANUAL TRANSFER SWITCH (MTS)	(3) 500KCMIL, P (1) 500KCMIL, N (1) 4 AWG, G	3	POWER
P4	MOTOR CONTROL CENTER (MCC)	GENERATOR	(3) 500KCMIL, P (1) 500KCMIL, N (1) 4 AWG, G	3	
P5	MOTOR CONTROL CENTER (MCC)	PUMP DISCONNECT PANEL (PDP)	1 AWG (VFD2 CBL) (1) 2-PAIR 18 TSP	2.5	PUMP #1 POWER - SEE CABLE SPEC PUMP SENSOR & RECEPT CONTACT
P6	MOTOR CONTROL CENTER (MCC)	PUMP DISCONNECT PANEL (PDP)	1 AWG (VFD2 CBL) (1) 2-PAIR 18 TSP	2.5	PUMP #2 POWER - SEE CABLE SPEC PUMP SENSOR & RECEPT CONTACT
P7-P10	UNUSED				
P11	PANEL '2P1' IN MCC	RPBA HOTBOX RECEPTACLE	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P12	PANEL '2P1' IN MCC	HEAT PUMP (OUTSIDE) HPU-1	(2) 12 AWG, P (1) 12 AWG, G	1	ROUTE TO UNIT VIA DISCONNECT.
P12A	HEAT PUMP HPU-1	FAN COIL (INSIDE) FC-1	MFR CABLE		COORDINATE WITH HVAC SUPPLIER
P13	PANEL '2P1' IN MCC	CONTROL PANEL "CP"	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P14	PANEL '2P1' IN MCC	GENERATOR	(2) 12 AWG, P (2) 12 AWG, N (1) 12 AWG, G	1	GENERATOR BLOCK HEATER & BATTERY CHARGER CKTS
P15	PANEL '2P1' IN MCC	FUEL ALARM PANEL	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P16	PANEL '2P1' IN MCC	WATER WIZARD RECEPTACLE	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P17	PANEL '2P1' IN MCC	VALVE VAULT LIGHT	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P18	INTERIOR LIGHT SWITCH	AREA LIGHT	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
P19	INTERIOR LIGHT SWITCH	GENERATOR CANOPY LIGHTING	(1) 12 AWG, P (1) 12 AWG, N (1) 12 AWG, G	1	
C1	EXISTING FIBER OPTIC HANDHOLE	CONTROL PANEL "CP"	PULL CORD	2	PROVIDE LONGSWEEP ELBOWS FOR FIBER SERVICE TO NEW BUILDING
C2	UNUSED				
C3	MOTOR CONTROL CENTER (MCC)	CONTROL PANEL "CP"	(3) CAT 6 (2) 18 AWG, TSP (1) 14 AWG, G	1.5	ETHERNET FOR VFD'S & PWR MONITOR
C4	MOTOR CONTROL CENTER (MCC)	CONTROL PANEL "CP"	(32) 14 AWG, C (2) 18 AWG, TSP (4) 14 AWG, SP (1) 14 AWG, G	1.5	VFD CTRL & STATUS
C5	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC	CONTROL PANEL "CP"	(7) 14 AWG, C (2) 14 AWG, SP (1) 14 AWG, G	1	ATS REMOTE START & STATUS
C6	AUTOMATIC TRANSFER SWITCH (ATS) IN MCC	GENERATOR	(2) 14 AWG, C (2) 14 AWG, SP (1) 14 AWG, G	1	START SIGNAL
C7	GENERATOR	FUEL ALARM PANEL	(6) 14 AWG, C (2) 14 AWG, SP (1) 14 AWG, G	1	LOW FUEL AND LEAK DETECTION FUEL SUPPLY SOLENOID POWER
C8	GENERATOR	CONTROL PANEL "CP"	(6) 14 AWG, C (2) 14 AWG, SP (1) 14 AWG, G	1	GENERATOR STATUS & ALARM PASS THRU & ATS SECTION OF MCC (DO NOT SPLICE)
C9	DOOR INTRUSION SWITCH	CONTROL PANEL "CP"	(2) 14 AWG, C (1) 14 AWG, G	3/4	
C10	FLOWMETER ELECTRONICS	CONTROL PANEL "CP"	(1) 18 AWG, TSP (3) 14 AWG, C (2) 14 AWG, SP (1) 14 AWG, G	1	ANALOG FLOW DC POWER & PULSE CKT
C11	FLOWMETER ELECTRONICS	FLOWTUBE (IN METER VAULT)	MFR CABLE (COIL CABLE)	1	
C12	FLOWMETER ELECTRONICS	FLOWTUBE (IN METER VAULT)	MFR CABLE (SIGNAL CABLE)	1	
C13	PUMP DISCONNECT PANEL (PDP)	CONTROL PANEL "CP"	(1) 14 AWG, P (1) 14 AWG, N (1) 14 AWG, G	1	PANEL HEATER POWER (120V)
C14	PUMP DISCONNECT PANEL (PDP)	CONTROL PANEL "CP"	(2) 18 AWG, TSP (12) 14 AWG, C (4) 14 AWG, SP (1) 14 AWG, G	1.5	SYSTEM PSI & WETWELL LEVEL VAULT & WETWELL SIGNALS
C15	PUMP DISCONNECT PANEL (PDP)	METER/VALVE VAULT	(8) 14 AWG, C (1) 18 AWG, TSP (4) 14 AWG, SP (1) 14 AWG, G	1	INTRUSION, CVLS AND FLOOD SIGNALS SYSTEM DISCH PRESSURE SIGNAL
C16	AREA LIGHT POLE	CONTROL PANEL "CP"	PULL CORD	1	SPARE CONDUIT FOR POSSIBLE FUTURE CAMERA
C17	BUILDING INTERIOR NORTHEAST CORNER OF ROOM	NORTHEAST CORNER OF SITE	PULL CORD	1	SPARE CONDUIT
C18	BUILDING INTERIOR NORTHEAST CORNER OF ROOM	SOUTHEAST CORNER OF SITE	PULL CORD	1	SPARE CONDUIT
C19	FUEL ALARM PANEL	FUEL TANK AND FUEL SUMP SENSORS	(6) 14 AWG, C (1) 14 AWG, G	3/4	SEPARATE OUT AS NEEDED FOR EACH CONNECTION. TANK LEAK, TANK LOW AND HIGH LEVEL
C20	FUEL ALARM PANEL	GENERATOR FUEL SUPPLY SOLENOID @ FUEL TANK	(2) 14 AWG, C (1) 14 AWG, G	1	

CIRCUIT SCHEDULE

SCALE: NONE

3 / -

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NO.	DATE	BY	REVISION

NOTICE

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RSC DRAWN

MEW CHECKED

MICHAEL EZRA WALLS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/20/24

consor

Silver Lake Water & Sewer District

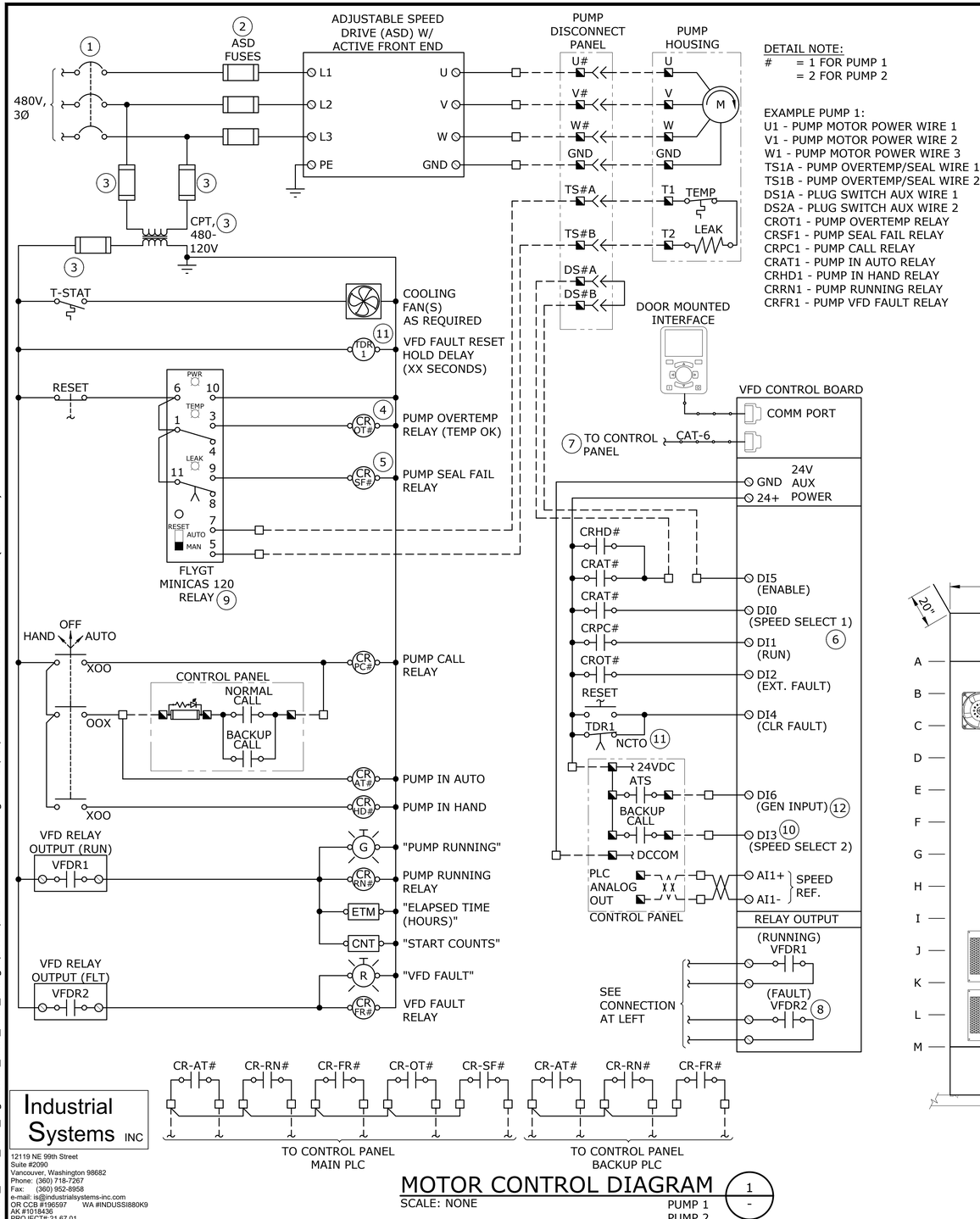
HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL SCHEDULES

PROJECT NO.: 22-1070 SCALE: AS SHOWN DATE: NOVEMBER 2024

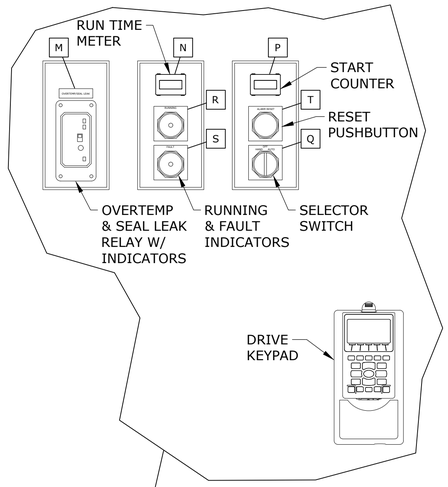
SHEET E-5

37 of 51



DETAIL NOTE:
= 1 FOR PUMP 1
= 2 FOR PUMP 2

EXAMPLE PUMP 1:
U1 - PUMP MOTOR POWER WIRE 1
V1 - PUMP MOTOR POWER WIRE 2
W1 - PUMP MOTOR POWER WIRE 3
TS1A - PUMP OVERTEMP/SEAL WIRE 1
TS1B - PUMP OVERTEMP/SEAL WIRE 2
DS1A - PLUG SWITCH AUX WIRE 1
DS2A - PLUG SWITCH AUX WIRE 2
CROT1 - PUMP OVERTEMP RELAY
CRSF1 - PUMP SEAL FAIL RELAY
CRPC1 - PUMP CALL RELAY
CRAT1 - PUMP IN AUTO RELAY
CRHD1 - PUMP IN HAND RELAY
CRRN1 - PUMP RUNNING RELAY
CRFR1 - PUMP VFD FAULT RELAY

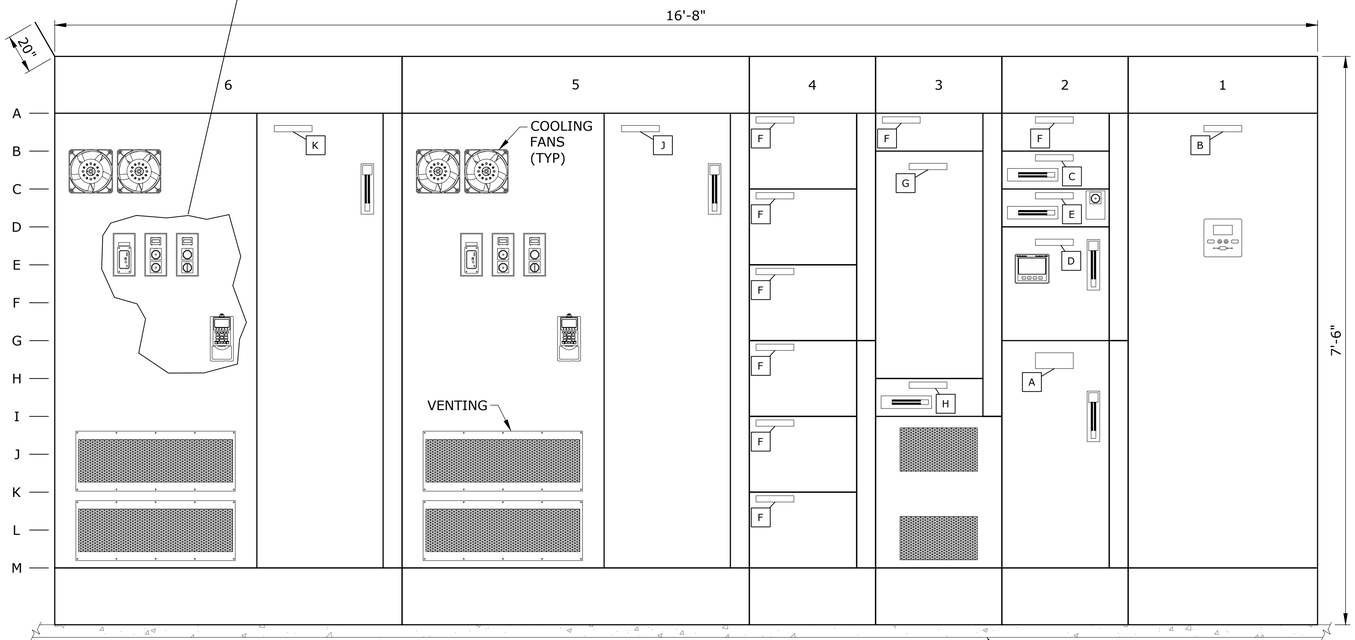


DETAIL (TYP 2)

A	ITEM	NAMEPLATE SCHEDULE
	A	MCC MAIN DISCONNECT - UTILITY SERVICE DISCONNECT DOES NOT DISCONNECT GENERATOR
	B	AUTOMATIC TRANSFER SWITCH
	C	SPARE
	D	POWER MONITOR
	C	SURGE PROTECTIVE DEVICE
	F	SPACE
	C	LIGHTING PANEL "2P1"
	H	PANEL "2P1" XFMR
	I	-- NOT USED --
	I	PUMP 1
	K	PUMP 1
	C	-- NOT USED --
	M	OVERTEMP/SEAL LEAK
	H	RUN TIME
	G	START COUNTS
	C	HAND/OFF/AUTO
	G	RUNNING
	C	FAULT
	T	ALARM RESET

KEY NOTES

1. CIRCUIT BREAKER SIZING AS REQUIRED BY MANUFACTURER.
2. FUSING FOR SCR PROTECTION, IF REQUIRED BY MANUFACTURER.
3. FUSING AND CPT SIZED PER MANUFACTURER'S RECOMMENDATIONS.
4. TEMPERATURE RELAY WILL BE ENERGIZED WHEN POWER IS APPLIED AND TEMPERATURE IS "OK".
5. SEAL FAIL RELAY WILL BE ENERGIZED WHEN THERE IS A SEAL LEAK ALARM.
6. CONFIGURE DIGITAL INPUT FOR SPEED SELECT IN AUTO TO ANALOG INPUT 1. DEFAULT SPEED SELECT VIA LOCAL KEYPAD.
7. ETHERNET COMMUNICATIONS USED FOR STATUS ONLY.
8. VFD FAULT PROGRAM CONTACT TO BE NORMALLY CLOSED HELD OPEN AND CLOSES ON FAULT OR POWER LOSS.
9. PUMP PROTECTION RELAY BASED ON FLYGT MINICAS PANEL MOUNTED UNIT TO BE USED WITH FLYGT PUMPS. UNIT HAS MOISTURE AND OVERTEMP LIGHTS AND A RESET BUTTON. IF A DIFFERENT MANUFACTURER OF PUMP IS SELECTED, CONTRACTOR TO MODIFY CONTROLS TO INCORPORATE SAME FUNCTIONALITY AT NO COST TO THE OWNER.
10. CONFIGURE DIGITAL INPUT FOR SPEED SELECT TO PRESET SPEED TO RUN AT 100% SPEED.
11. PROVIDE MULTI-FUNCTION TIMING RELAY FOR VFD FAULT CLEARING AT POWER-UP OR POWER BUMP. SETUP AS SHOWN AND SET DELAY TIME IN FIELD AT START-UP.
12. GENERATOR INPUT USED FOR SWITCHING DRIVE PARAMETERS FOR UTILITY AND GENERATOR KVA AND IMPEDANCE VALUES.



MCC ELEVATION
SCALE: NONE
2
-

MOTOR CONTROL DIAGRAM
SCALE: NONE
1
-
PUMP 1
PUMP 2

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MOTOR CONTROL DIAGRAMS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-6

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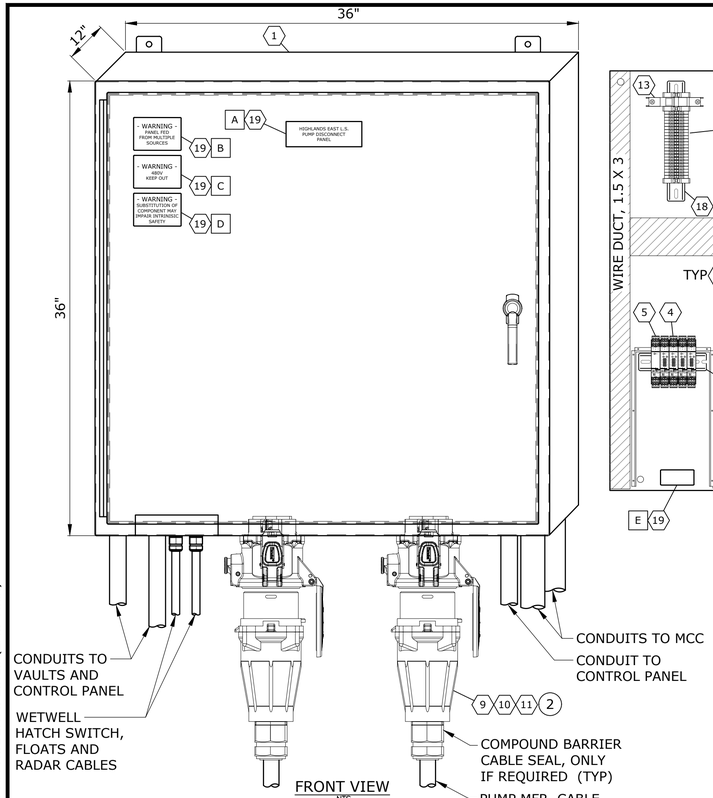
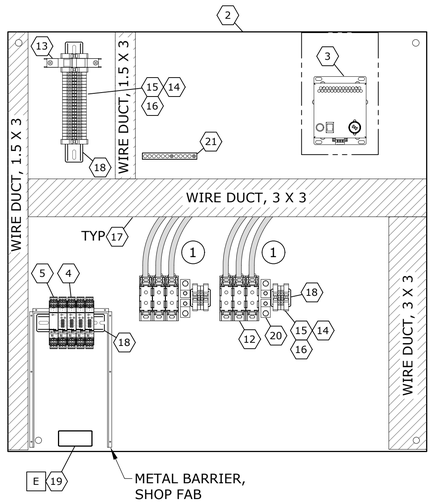


FRONT VIEW
NTS



INTERIOR VIEW
NTS

DETAIL NOTES

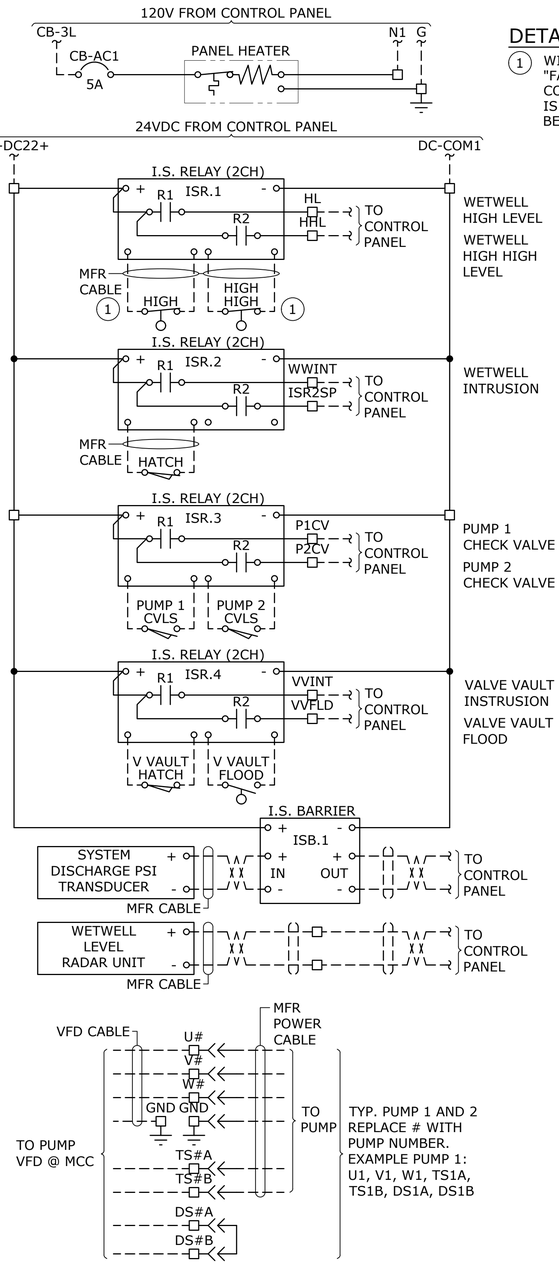
1. LEAVE ADEQUATE SPACE FOR CABLE BENDING RADIUS. APPROX. 6", VERIFY WITH MFR.
2. LABEL PUMP PLUGS AND PUMP RECEPTACLES WITH POLYPROPYLENE DYMO OR BRADY AGGRESSIVE ADHESIVE ½" HIGH LABELS. LABEL AS "P1" AND "P2" WITH A MINIMUM SIZE 5 FONT.

A

ITEM	NAMEPLATE SCHEDULE
A	HIGHLANDS EAST L.S. PUMP DISCONNECT PANEL
B	-WARNING- PANEL FED FROM MULTIPLE SOURCES
C	-WARNING- 480V KEEP OUT
D	-WARNING- SUBSTITUTION OF COMPONENTS MAY IMPAIR INTRINSIC SAFETY
E	INTRINSICALLY SAFE CIRCUITS

#	ITEM	QUANTITY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 36"x36"x12"	SAGINAW	SCE-36EL3612SSLPPL	YES
	2	1	BACK PANEL	SAGINAW	SCE-36P36	YES
	2	1	HEATER W/TSTAT, 125W	SAGINAW	SCE-HF1251A	YES
	4	2	INTRINSICALLY SAFE RELAYS, 2 CHANNEL, DIP SWITCH SETTABLE	TURCK	IM1-22EX-R	YES
	5	1	INTRINSICALLY SAFE BARRIER, 1 CHANNEL	TURCK	IM31-11EX-I	YES
	6	NA	NOT USED			
	2	NA	NOT USED			
	6	NA	NOT USED			
	9	1	PUMP RECEPTACLE (HP RATED SWITCH) W/AUX CONTACTS	MELTRIC	DS SERIES	YES
	10	1	PUMP INLET (HP RATED) W/AUX CONTACTS	MELTRIC	DS SERIES	YES
	11	1	INLET ACCESSORY HANDLE (SIZED FOR PUMP CABLE)	MELTRIC	DS SERIES	YES
	12	2	POWER DISTRIBUTION BLOCK, 175A, FINGER SAFE, 1 IN / 1 OUT	BUSSMAN	PDBFS204	YES
	12	1	MINIATURE CIRCUIT BREAKER (SIZE AS INDICATED ON DWG)	PANEL FABRICATOR CHOICE		YES
	14	A/R	TERMINAL BLOCK (NON FUSED)	PANEL FABRICATOR CHOICE		YES
	15	A/R	TERMINAL BLOCK (GROUND)	PANEL FABRICATOR CHOICE		YES
	16	A/R	TERMINAL BLOCK END STOP AND END PLATE	PANEL FABRICATOR CHOICE		YES
	12	A/R	WIREWAY (SIZE AS NOTED ON DRAWING)	PANEL FABRICATOR CHOICE		YES
	18	A/R	DIN RAIL	PANEL FABRICATOR CHOICE		YES
	19	1	PHENOLIC NAMEPLATE (SEE NAMEPLATE SCHEDULE)	PANEL FABRICATOR CHOICE		YES
	20	2	GROUND LUG, #14-2 AWG	BURNDY	KA2U	YES
	21	1	GROUND BUS	EATON C-H	GBK10	YES

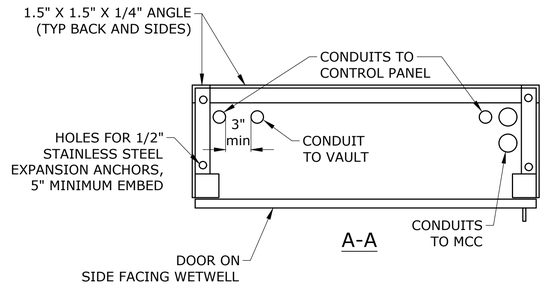
LAYOUT & BILL OF MATERIALS (1)
SCALE: NONE



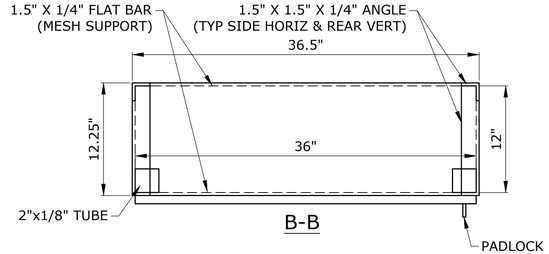
PUMP DISCONNECT PANEL WIRING (2)
SCALE: NONE

DETAIL NOTES

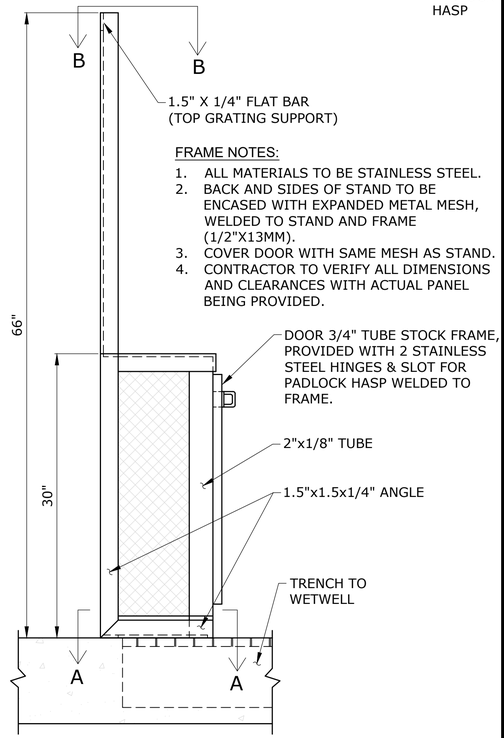
1. WIRE FLOAT FOR "FAIL-SAFE" OPERATION. CONTACT OPENS IF FLOAT IS LIFTED OR IF WIRE BECOMES DISCONNECTED.



A-A



B-B



FRAME NOTES:

1. ALL MATERIALS TO BE STAINLESS STEEL.
2. BACK AND SIDES OF STAND TO BE ENCASED WITH EXPANDED METAL MESH, WELDED TO STAND AND FRAME (1/2"X13MM).
3. COVER DOOR WITH SAME MESH AS STAND.
4. CONTRACTOR TO VERIFY ALL DIMENSIONS AND CLEARANCES WITH ACTUAL PANEL BEING PROVIDED.

PUMP DISCONNECT PANEL STAND (3)
SCALE: NONE

Industrial Systems INC
12119 NE 99th Street
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e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#:21.67.01

NO.	DATE	BY	REVISION

NOTICE
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RSC DESIGNED
RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/20/24

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL SCHEDULES

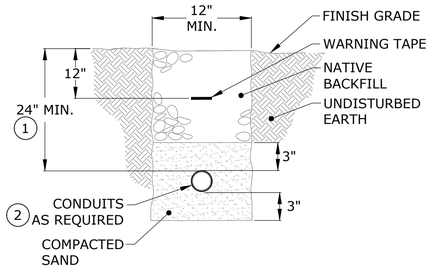
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-7

P:\Projects\21.67.02_consor_silver_lake_highlands_east_final_design\DWG\22-1070-WA-E-7.dwg E-7 11/20/2024 11:23 AM ROBERTC 23.1s (LMS Tech)

DETAIL NOTES

1. VERIFY TRENCH DEPTH AND COVERING FOR INCOMING SERVICE CONDUIT WITH LOCAL UTLITY.
2. COORDINATE WITH CIVIL DISCIPLINE FOR INTERSECTING PIPES.

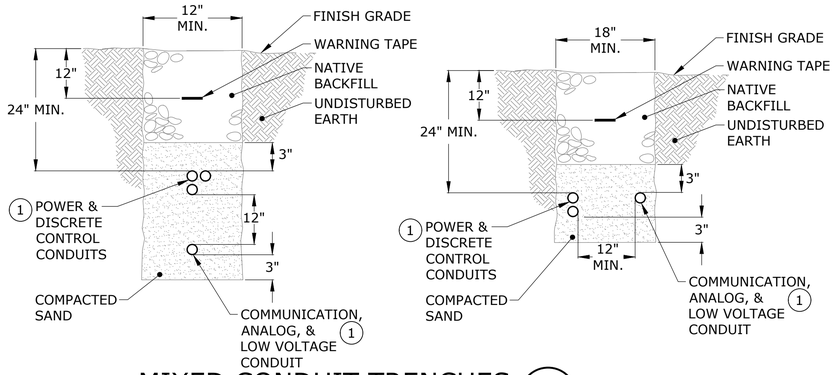


TYP. CONDUIT TRENCH 1

SCALE: NONE

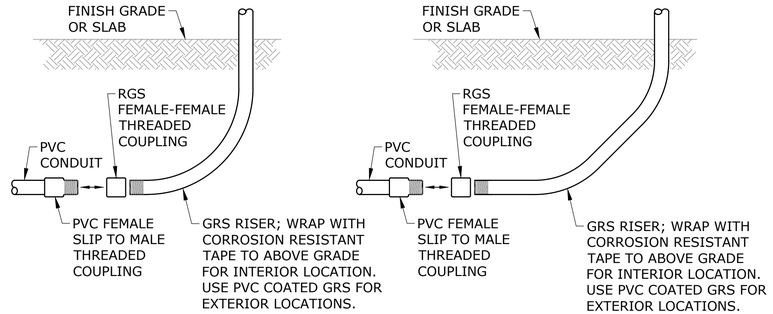
DETAIL NOTES

1. COORDINATE WITH CIVIL DISCIPLINE FOR INTERSECTING PIPES.



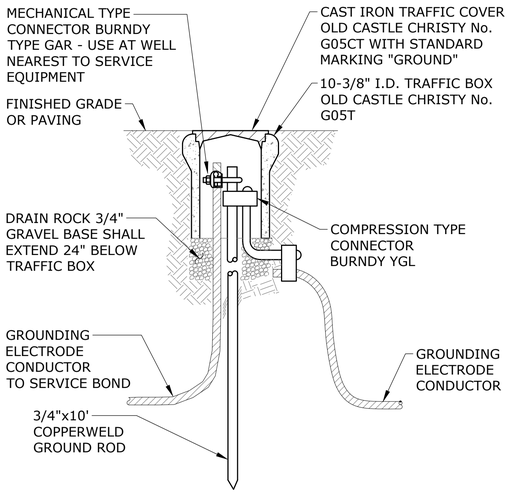
MIXED CONDUIT TRENCHES 2

SCALE: NONE



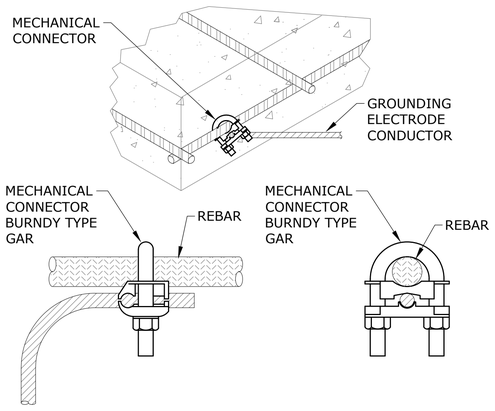
CONDUIT TRANSITION 3

SCALE: NONE



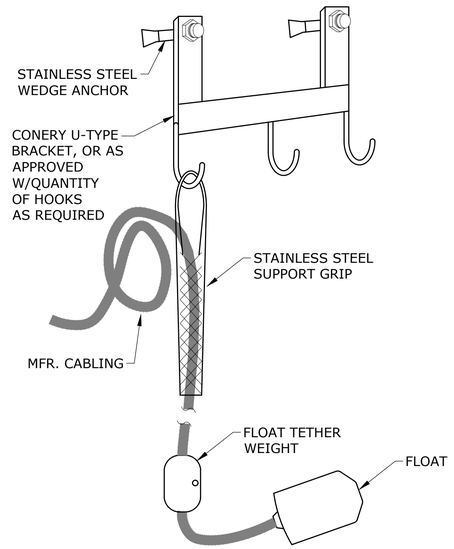
GROUND ROD TEST WELL 4

SCALE: NONE



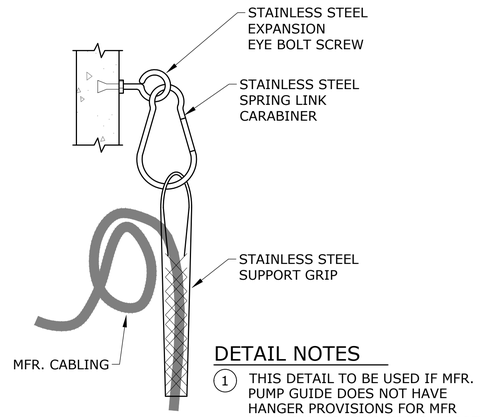
REBAR GROUNDING 5

SCALE: NONE



FLOAT CABLE MTG DETAIL 6

SCALE: NONE



DETAIL NOTES

1. THIS DETAIL TO BE USED IF MFR. PUMP GUIDE DOES NOT HAVE HANGER PROVISIONS FOR MFR PUMP CABLES. PROVIDE SUPPORT GRIP REGARDLESS OF MOUNTING BRACKET USED.

1 PUMP CABLE MOUNT DETAIL 7

SCALE: NONE

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consor

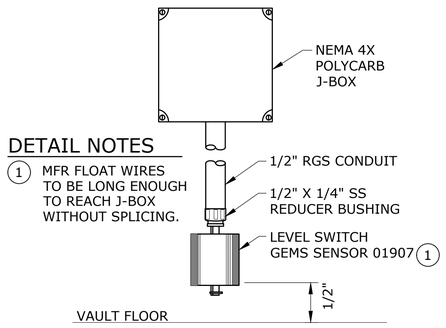
Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL DETAILS SHEET 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-8

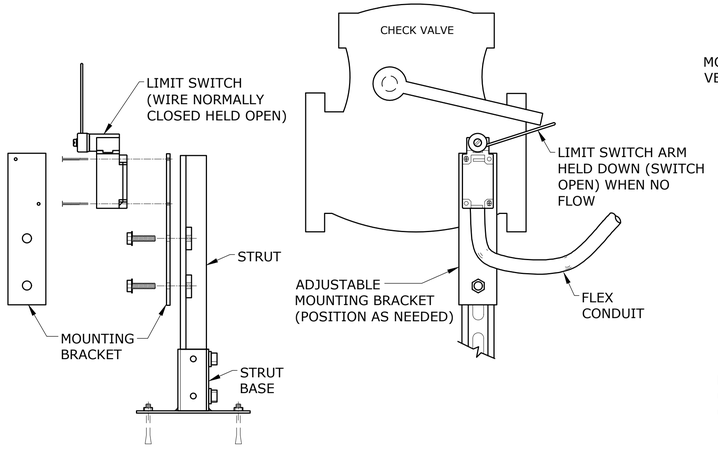


DETAIL NOTES

1. MFR FLOAT WIRES TO BE LONG ENOUGH TO REACH J-BOX WITHOUT SPLICING.

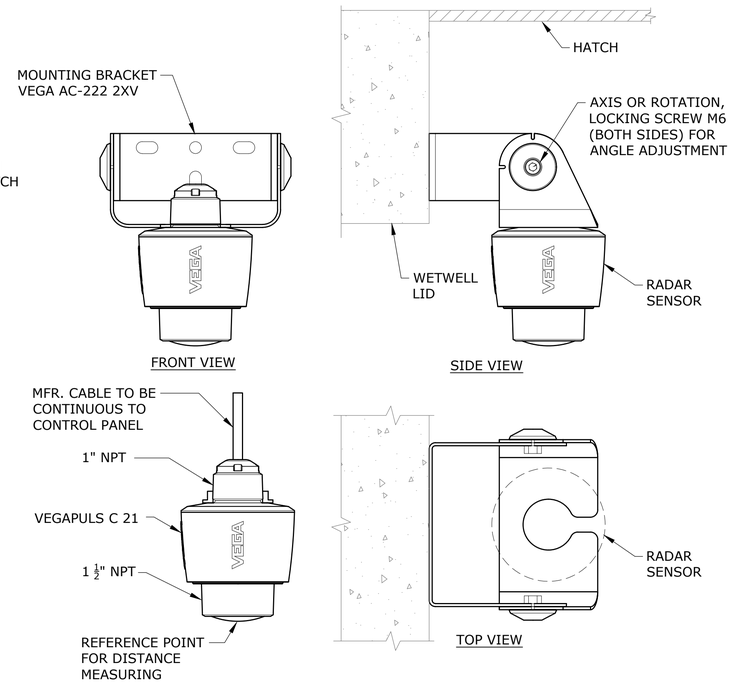
FLOOD SWITCH DETAIL 1/-

SCALE: NONE



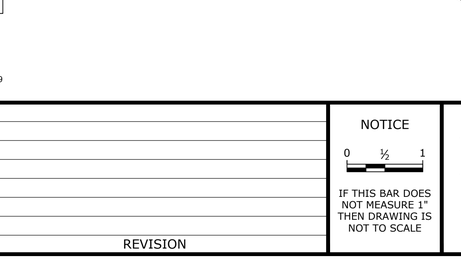
CHECK VALVE LIMIT SWITCH DETAIL 2/-

SCALE: NONE



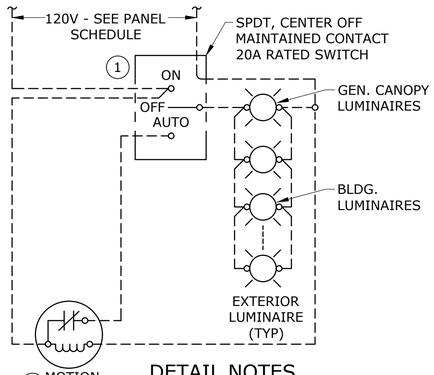
RADAR SENSOR MOUNT DETAIL 3/-

SCALE: NONE



AREA LUMINAIRE POLE DETAIL 4/-

SCALE: NONE



DETAIL NOTES

1. PROVIDE LABEL AT SWITCH "GEN/BLDG EXT LIGHTS".
2. 120V, U.L. LISTED FOR USE IN WET LOCATION. HUBBELL MS-DB OR AS APPROVED.

EXTERIOR LIGHTING CONTROL 5/-

SCALE: NONE

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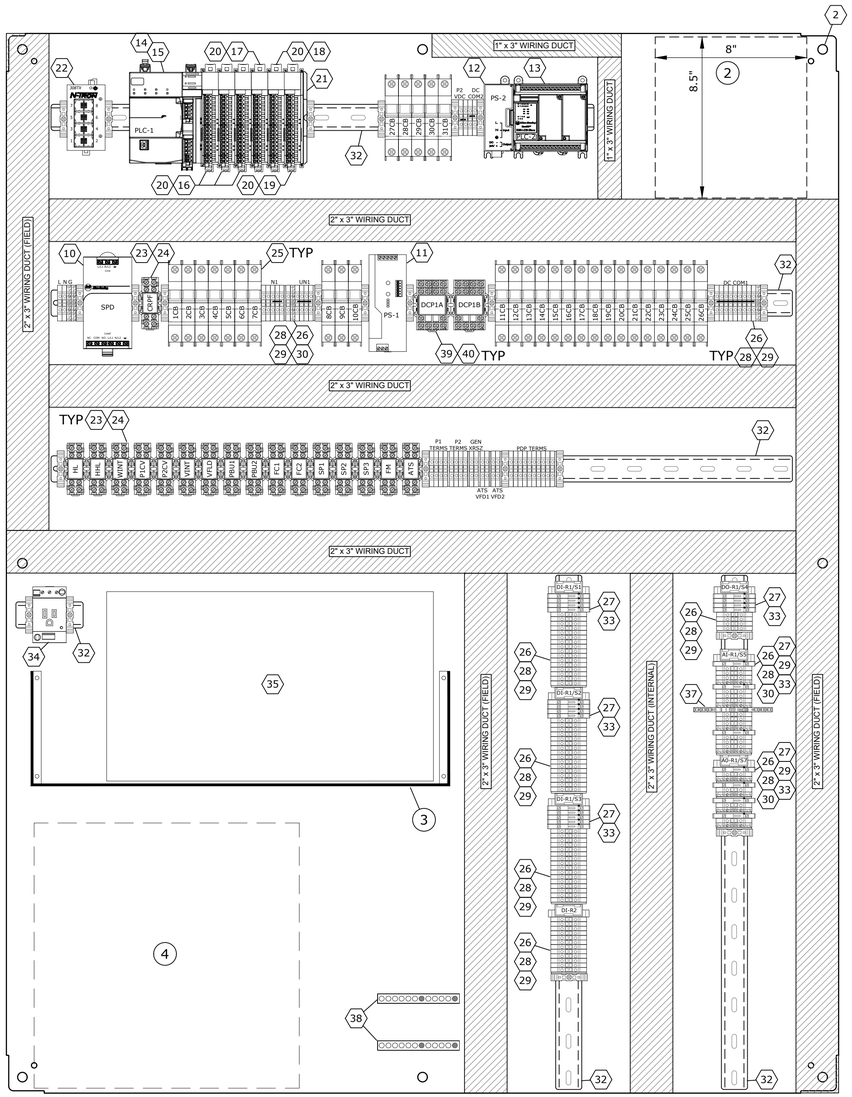
Silver Lake Water & Sewer District

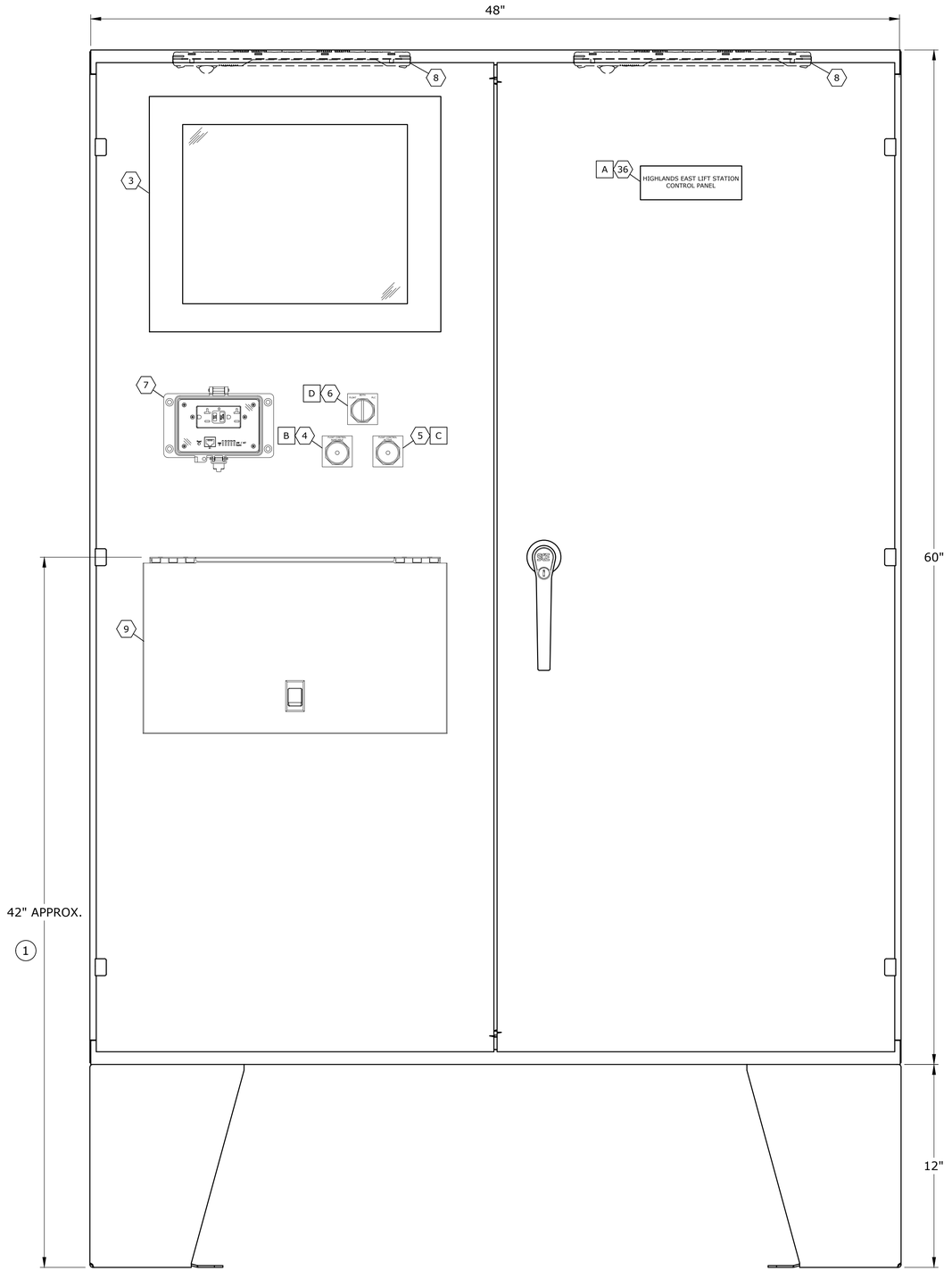
HIGHLANDS EAST LIFT STATION REHABILITATION

ELECTRICAL DETAILS SHEET 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-9





GENERAL NOTES

1. PANEL LAYOUT IS CONCEPTUAL AND FINALIZED LAYOUT SHALL BE PROVIDED BY MANUFACTURER PER UL-508 REQUIREMENTS.
2. SEE SHEET E-11 FOR BILL OF MATERIALS AND LEGEND SCHEDULE.

KEY NOTES

1. HEIGHT OF SHELF IS AT STANDING HEIGHT (APPROX. 42") FROM FLOOR.
2. SPACE RESERVED FOR DIN-RAIL MOUNTED CELLULAR ROUTER/FIREWALL EQUIPMENT.
3. SHELF FOR UPS. SHELF TO BE A MINIMUM 3 INCHES LARGER THAN UPS TO ACCOMMODATE EQUIPMENT TRANSFORMER TYPE PLUG-INS PLUGGED INTO THE BACK OF THE UPS OR DESIGNED SHORT ENOUGH TO NOT OBSCURE UPS PLUGS.
4. 14"x14" AREA DESIGNATED FOR INCOMING SERVICE FIBER EQUIPMENT.

CONTROL PANEL LAYOUT

SCALE: NONE

1
-

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HIGHLANDS EAST LIFT STATION REHABILITATION

CONTROL PANEL LAYOUT

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-10

A	ITEM	NAMEPLATE SCHEDULE
	A	HIGHLANDS EAST LIFT STATION CONTROL PANEL
	B	FLOAT CONTROL AVAILABLE
	C	FLOAT CONTROL ACTIVE
	D	FLOAT / BOTH / PLC

NAMEPLATE SCHEDULE

1 / -

SCALE: NONE

#	ITEM	QUANTITY	DESCRIPTION	MANUFACTURER	CATALOG NUMBER	EQUALS ALLOWED
	1	1	NEMA 4 ENCLOSURE, 60"x36"x12"	SAGINAW	SCE-604812LP	YES
	2	1	BACK PANEL	SAGINAW	SCE-60P48	YES
	2	1	OPERATOR INTERFACE TERMINAL, 17", 24VDC, SS BEZEL	HOPE INDUSTRIAL SYSTEMS	HIS-ML17-STTH	NO
	4	1	WHITE LED PILOT INDICATOR, PUSH TO TEST W/NAMEPLATE	ALLEN BRADLEY	800T-QTH2W	YES
	5	1	GREEN LED PILOT INDICATOR, PUSH TO TEST W/NAMEPLATE	ALLEN BRADLEY	800T-QTH2W	YES
	6	1	3 POS. SELECTOR SWITCH WITH BLANK NAMEPLATE	ALLEN BRADLEY	800T-J2A	YES
	2	1	DATAPORT W/ENET & GFCI FRONT / ENET SWITCH & RECPT REAR	GRACE ENGINEERED	P-E5-M4RF0	YES
	6	1	CONTROL PANEL LED LIGHT FIXTURE W/MOTION SENSOR	SAGINAW	SCE-SLMS	YES
	9	1	FOLDING SHELF FOR LAPTOP - 10.43"H x 18"W x 1.92D	SAGINAW	SCE-FS1218-09	YES
	10	1	TVSS SURGE SUPRESSOR 120V/240V SINGLE PHASE	ALLEN BRADLEY	4983-DC120-20	YES
	11	1	DC POWER SUPPLY 120VAC-24VDC, 10.0A	PHOENIX CONTACT	2904601	YES
	12	1	DC POWER SUPPLY 120VAC-24VDC, 12W	ALLEN BRADLEY	2080-PSAC-12W	NO
	12	1	PLC CPU W/EMBEDDED I/O - 12 DC IN, 8 RELAY OUT, ETHERNET/IP	ALLEN BRADLEY	2080-LC20-20QWBR	NO
	1●	1	PLC CONTROLLER W/ 2 ETHERNET/IP	ALLEN BRADLEY	5069-L306ER/A	NO
	15	1	POWER TERMINAL RTB KIT FOR PLC CONTROLLER	ALLEN BRADLEY	5069-RTB64-SCREW	NO
	16	3	16PT DC DIGITAL INPUT MODULE	ALLEN BRADLEY	5069-IB16	NO
	12	1	4PT DC DIGITAL ISOLATED OUTPUT MODULE	ALLEN BRADLEY	5069-OW4I	NO
	1●	1	4CH ANALOG ISOLATED INPUT MODULE	ALLEN BRADLEY	5069-IY4	NO
	1●	1	4CH ANALOG OUTPUT MODULE	ALLEN BRADLEY	5069-OF4	NO
	20	1	I/O 18 PINS SCREW TYPE TERMINAL BLOCK KIT	ALLEN BRADLEY	5069-RTB18-SCREW	NO
	21	1	PLC END CAP	ALLEN BRADLEY	5069-ECR	NO
	22	1	UNMANAGED INDUSTRIAL ETHERNET SWITCH, 8TX PORT	NTRON	308TX	YES
	22	A/R	DPDT CONTROL RELAY, 24VDC OR 120VAC W/INDICATOR	IDEC	RH2B SERIES	YES
	2●	A/R	DPDT CONTROL RELAY BASE	IDEC	SH2B-05C	YES
	25	A/R	MINIATURE CIRCUIT BREAKER (SIZE AS INDICATED ON DWG)	PANEL FABRICATOR CHOICE		YES
	2●	A/R	TERMINAL BLOCK (NON FUSED)	PANEL FABRICATOR CHOICE		YES
	27	A/R	TERMINAL BLOCK VDC (FUSED)/w BLOWN FUSE INDICATION	PANEL FABRICATOR CHOICE		YES
	2●	A/R	TERMINAL BLOCK END STOP	PANEL FABRICATOR CHOICE		YES
	29	A/R	TERMINAL BLOCK END ST●P	PANEL FABRICATOR CHOICE		YES
	20	A/R	TERMINAL BLOCK (GROUND)	PANEL FABRICATOR CHOICE		YES
	31	A/R	WIREWAY (SIZE AS NOTED ON DRAWING)	PANEL FABRICATOR CHOICE		YES
	32	A/R	DIN-RAIL	PANEL FABRICATOR CHOICE		YES
	32	A/R	5X20 FUSES (FUSE SIZE ACCORDING TO DRAWINGS)	PANEL FABRICATOR CHOICE		YES
	34	3	SIMPLEX RECEPTACLE, DIN-RAIL MOUNT	PHOENIX CONTACT	0804155	YES
	35	3	1000VA UPS WITH FAULT CONTACT	SEE SPECIFICATIONS	SEE SPECIFICATIONS	
	36	A/R	PHENOLIC NAMEPLATE (SEE NAMEPLATE SCHEDULE)	PANEL FABRICATOR CHOICE		YES
	37	1	.2A CLASS 2 ELECTRONIC CIRCUIT BREAKER	PHOENIX CONTACT	1361055	YES
	2●	1	GROUND BUS	EATON C-H	GBK10	YES
	29	1	4P4T CONTROL RELAY, 24VDC W/INDICATOR	IDEC	RH2B SERIES	YES
	40	2	4P4T CONTROL RELAY BASE	EATON C-H	SH4B-05C	YES

BILL OF MATERIALS

2 / -

SCALE: NONE

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NO.	DATE	BY	REVISION

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MEW CHECKED

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consor

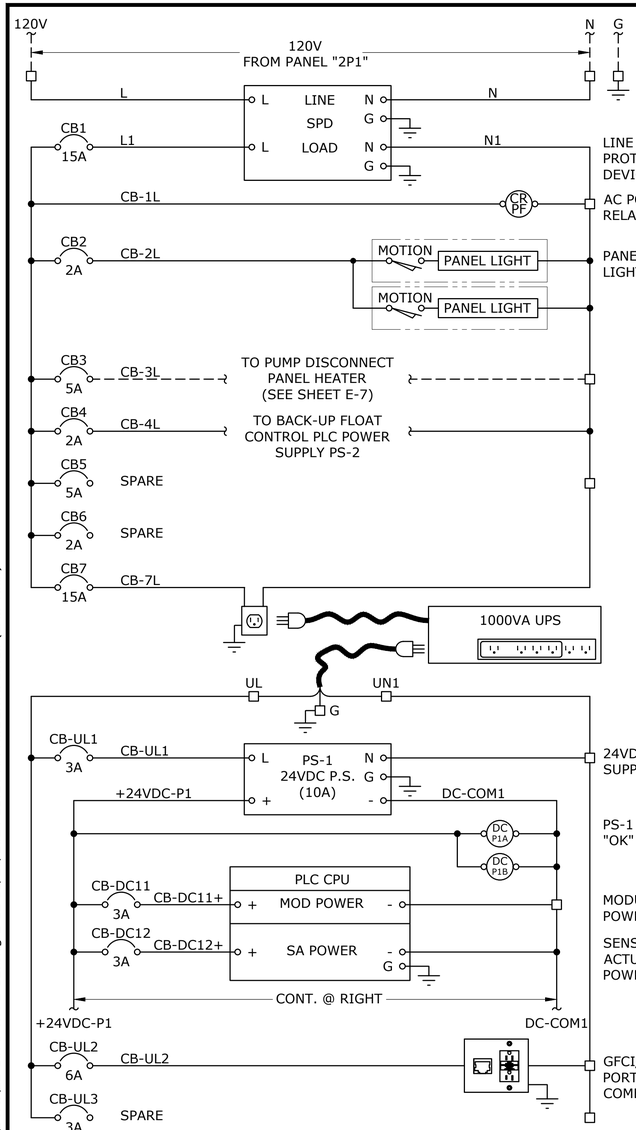
Silver Lake Water & Sewer District

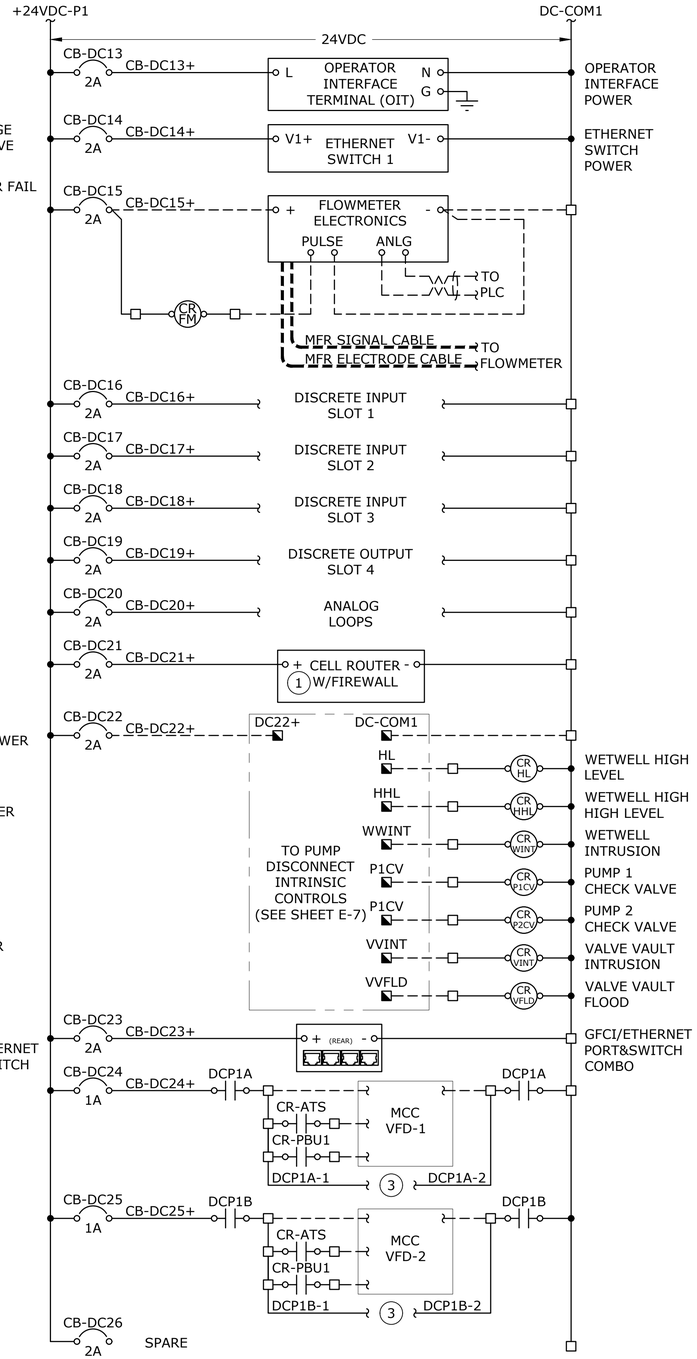
HIGHLANDS EAST LIFT STATION REHABILITATION

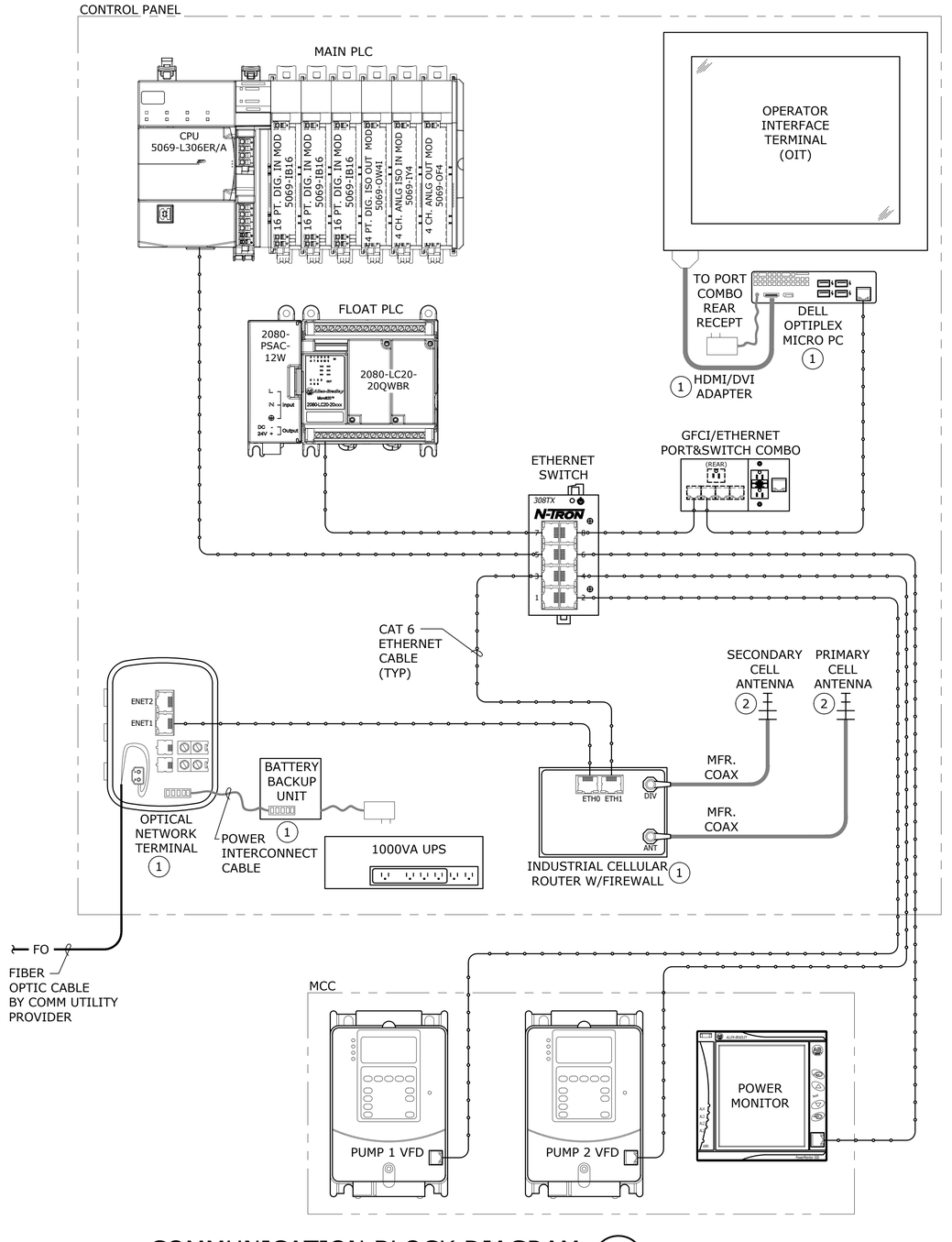
CONTROL PANEL NAMEPLATE SCHEDULE AND BILL OF MATERIALS

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-11







KEY NOTES

1. OWNER OR VENDOR PROVIDED AND INSTALLED EQUIPMENT.
2. CONTRACTOR TO COORDINATE LOCATION AND INSTALL OF ANTENNAS WITH OWNER.
3. SEE SHEET E-16 FOR BACK-UP 24VDC CONNECTION TO VFD'S.

CONTROL PANEL POWER DIAGRAM (1)

SCALE: NONE

COMMUNICATION BLOCK DIAGRAM (2)

SCALE: NONE

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HIGHLANDS EAST LIFT STATION REHABILITATION

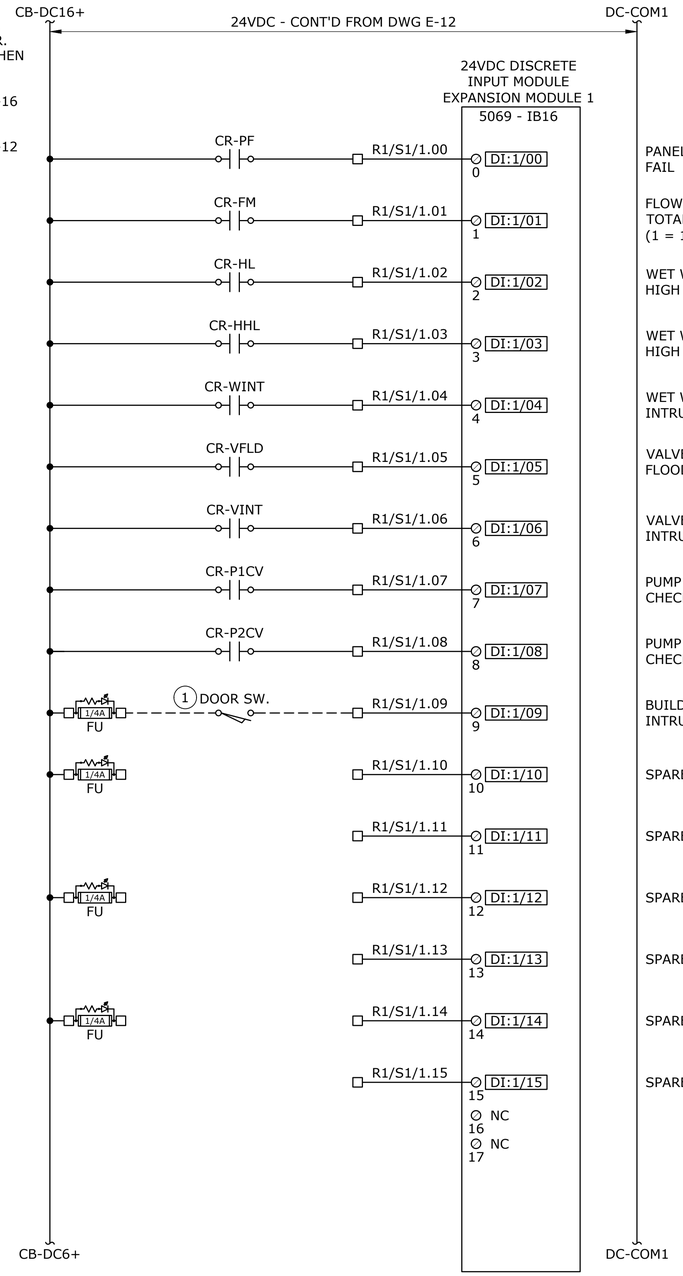
CONTROL PANEL POWER AND COMMUNICATION BLOCK DIAGRAMS

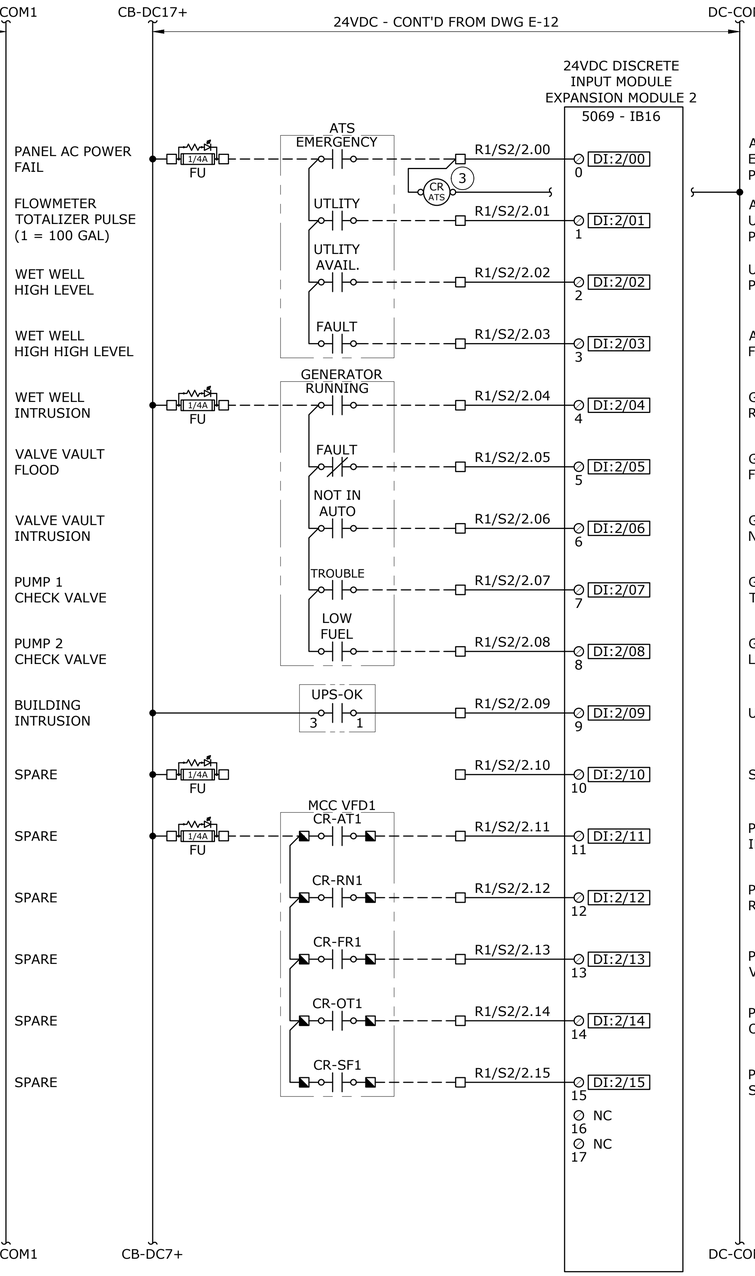
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

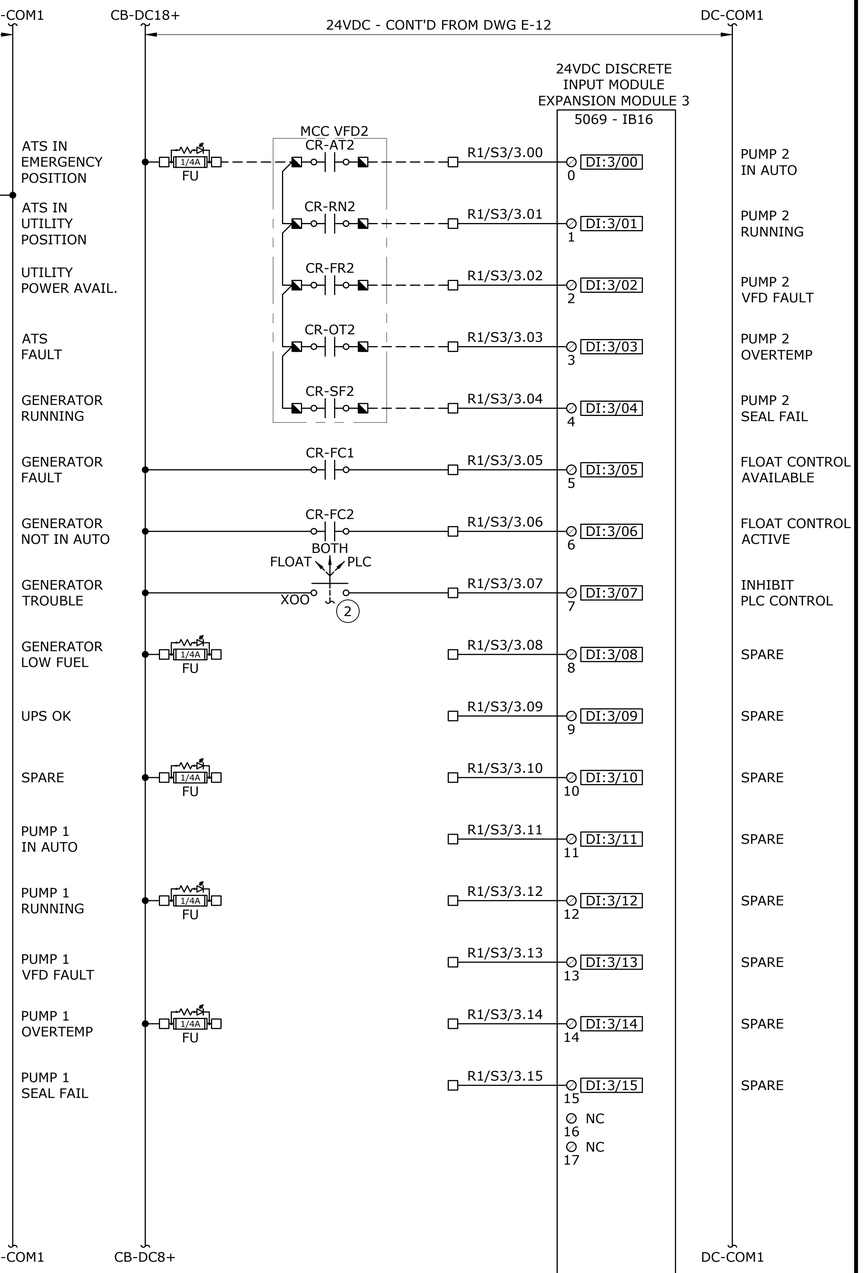
SHEET E-12

KEY NOTES

1. SWITCHES WIRED N.O. HELD CLOSED BY DOOR. THE SWITCH OPENS WHEN DOOR OPENS.
2. SEE DETAIL 2 SHEET E-16 FOR CONTINUATION.
3. SEE DETAIL 1 SHEET E-12 FOR RELAY CONTACT CONNECTIONS.







DISCRETE INPUT WIRING 1 - SCALE: NONE

DISCRETE INPUT WIRING 2 - SCALE: NONE

DISCRETE INPUT WIRING 3 - SCALE: NONE

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HIGHLANDS EAST LIFT STATION REHABILITATION

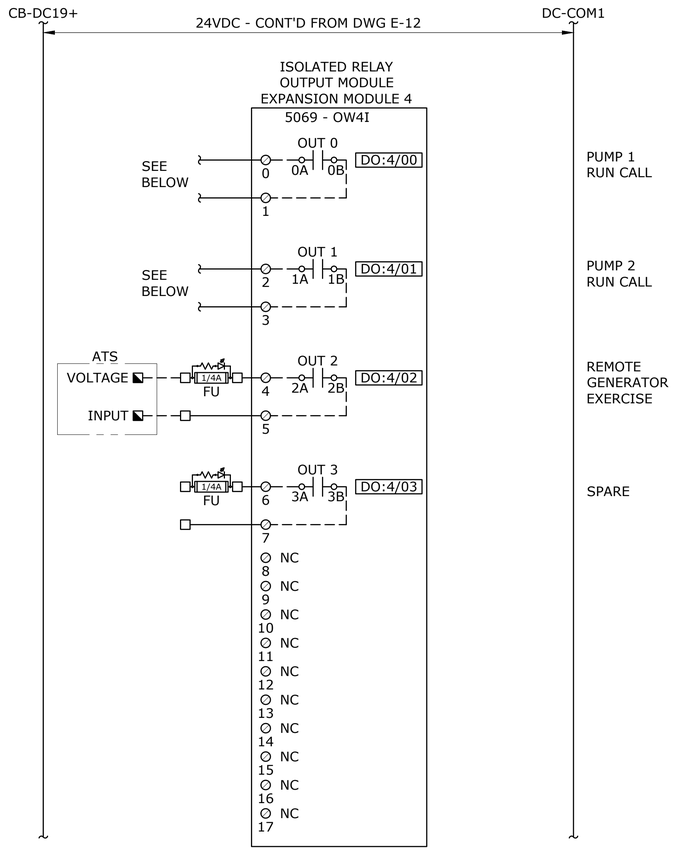
CONTROL PANEL MAIN PLC I/O WIRING SHEET 1

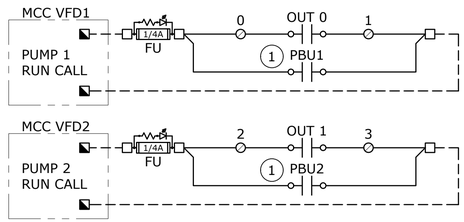
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-13

KEY NOTES

(1) SEE DETAIL 1 SHEET E-16 FOR CONNECTION.





DISCRETE OUTPUT WIRING

SCALE: NONE

1 / -

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MICHAEL EZRA WALLS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/20/24

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

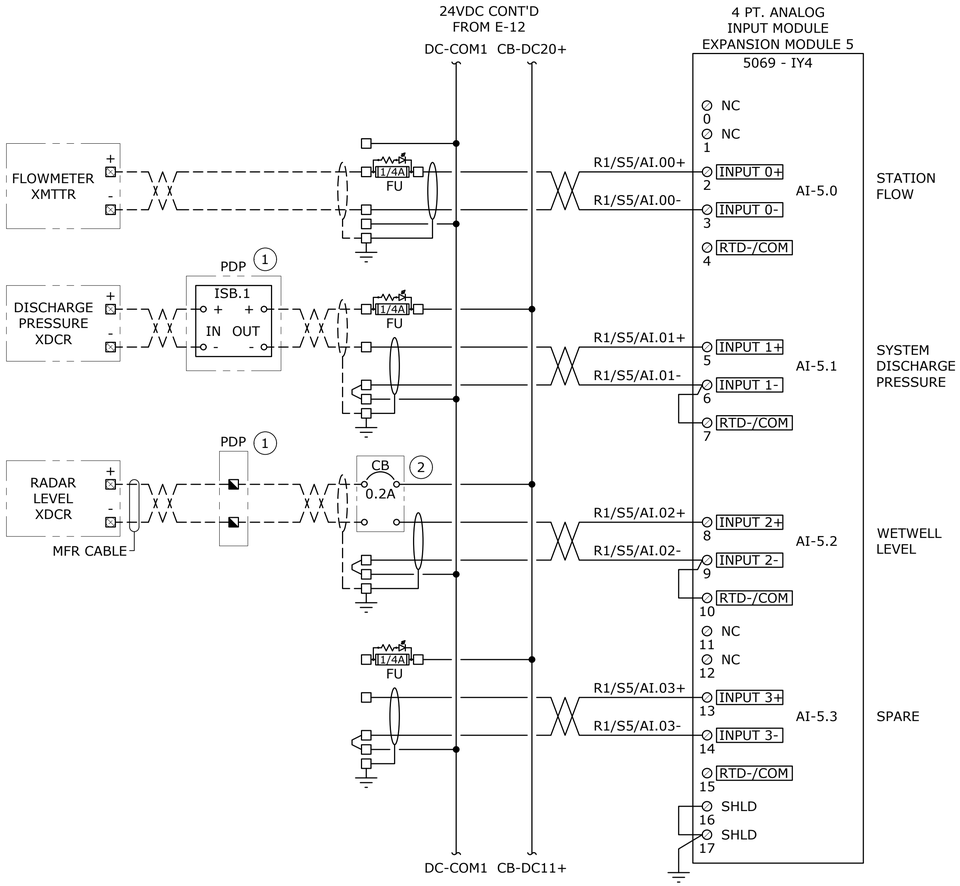
CONTROL PANEL MAIN PLC I/O WIRING SHEET 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-14

KEY NOTES

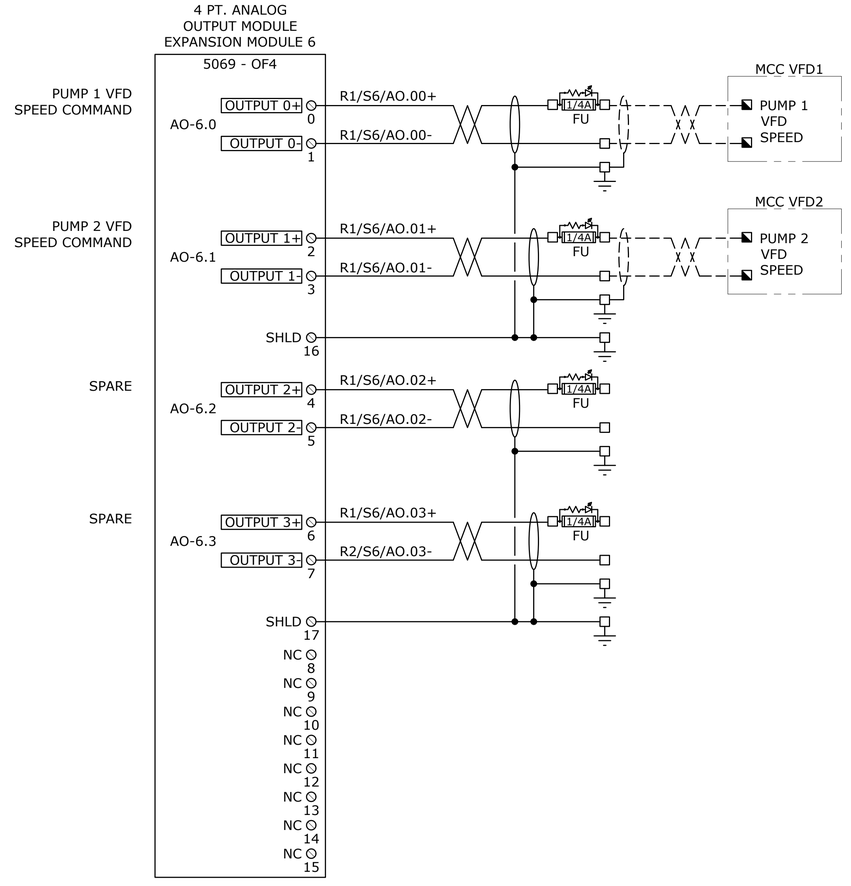
1. SEE DRAWING E-7 FOR CONNECTION AT PUMP DISCONNECT PANEL (PDP).
2. CLASS 2 ELECTRONIC CIRCUIT BREAKER WITH .2A TRIP RATING.



ANALOG INPUT WIRING

SCALE: NONE

1 / -



ANALOG OUTPUT WIRING

SCALE: NONE

2 / -

Industrial Systems INC
12119 NE 99th Street
Suite #2090
Vancouver, Washington 98682
Phone: (360) 718-7267
Fax: (360) 952-8958
e-mail: is@industrialsystems-inc.com
OR CCB #196597 WA #INDUSSI880K9
AK #1018436
PROJECT#: 21.67.01

NO.	DATE	BY	REVISION

NOTICE

0 ½ 1

IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

RSC DESIGNED
RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/2024

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Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

CONTROL PANEL
MAIN PLC
I/O WIRING SHEET 3

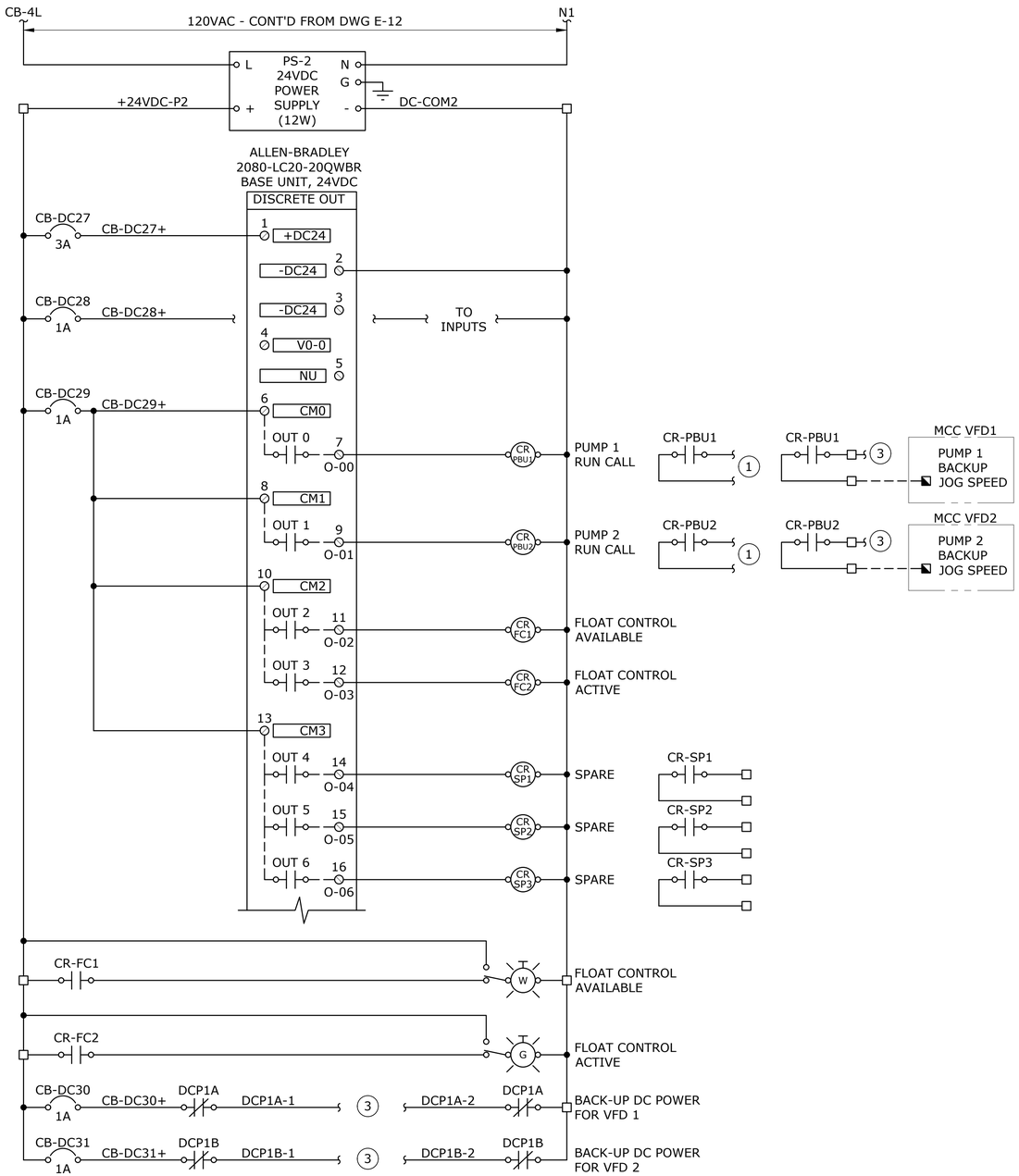
PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-15

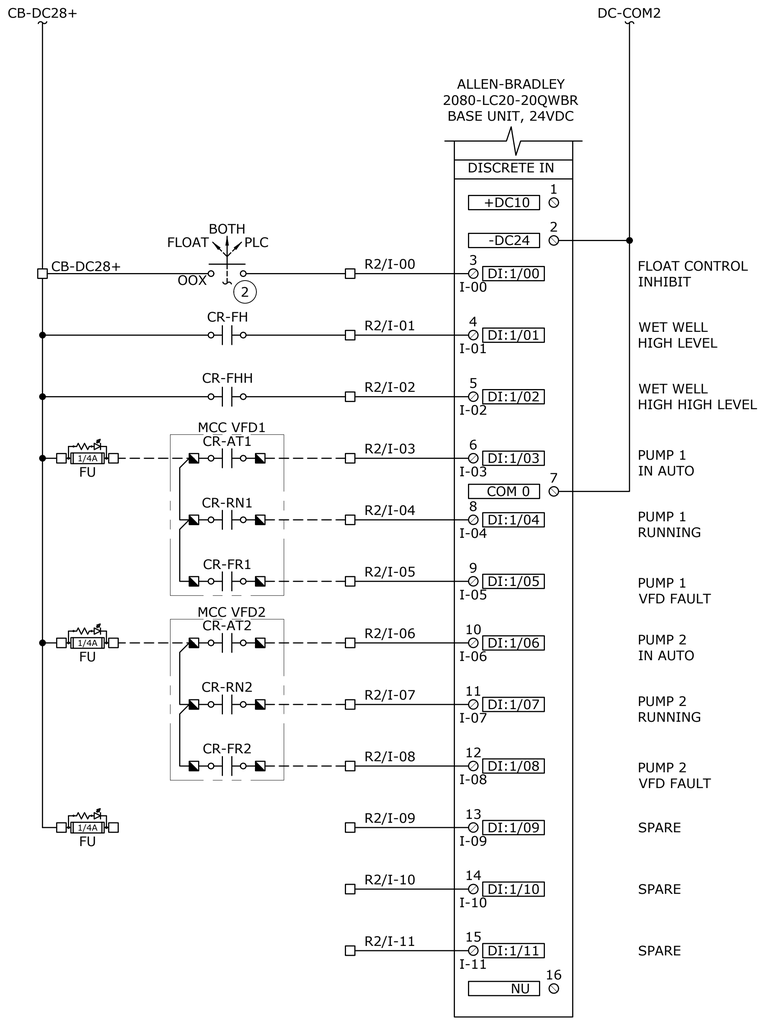
P:\Projects\21.67.02_consor_silver_lake_highlands_east_final_design\DWG\22-1070-WA-E-15.dwg E-15 11/20/2024 11:31:24 AM ROBERTC 23.1s (LMS Tech)

KEY NOTES

1. SEE DETAIL 1 SHEET E-14 FOR CONNECTION.
2. SEE DETAIL 3 SHEET E-13 FOR CONTINUATION.
3. SEE DETAIL 1 SHEET E-12 FOR CONNECTION.



DISCRETE OUTPUT WIRING (1)
SCALE: NONE



DISCRETE INPUT WIRING (2)
SCALE: NONE

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HIGHLANDS EAST LIFT STATION REHABILITATION

CONTROL PANEL BACK-UP FLOAT PLC I/O WIRING SHEET

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET E-16

GENERAL INSTRUMENT SYMBOLS

LOCATION/ACCESSIBILITY	DISCRETE INSTRUMENTS	SHARED DISPLAY AND CONTROL (DCS)	PLC	DISCRETE HARDWARE INTERLOCK
FIELD MOUNTED 1. FIELD OR LOCALLY MOUNTED. 2. ACCESSIBLE TO AN OPERATOR AT DEVICE.	○	▢	◇	◇
PRIMARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. FRONT OF MAIN PANEL OR CONSOLE MOUNTED. 3. VISIBLE ON VIDEO DISPLAY. 4. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	
PRIMARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. CENTRAL OR MAIN CONTROL ROOM. 2. REAR OF PANEL OR CABINET MOUNTED. 3. NOT VISIBLE ON VIDEO DISPLAY. 4. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	
AUXILIARY LOCATION NORMALLY ACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL CONTROL ROOM. 2. FIELD OR LOCAL CONTROL PANEL. 3. FRONT OF SECONDARY OR LOCAL PANEL MOUNTED. 4. VISIBLE ON VIDEO DISPLAY. 5. ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	
AUXILIARY LOCATION NORMALLY INACCESSIBLE TO AN OPERATOR 1. SECONDARY OR LOCAL CONTROL ROOM. 2. FIELD OR LOCAL CONTROL PANEL. 3. REAR OF SECONDARY OR LOCAL PANEL OR CABINET MOUNTED. 4. NOT VISIBLE ON VIDEO DISPLAY. 5. NOT NORMALLY ACCESSIBLE TO AN OPERATOR AT DEVICE OR CONSOLE.	⊖	⊟	◈	

ABBREVIATIONS

AG	ABOVE GROUND	LO	LOCKED OPEN
ATM	ATMOSPHERE	LP	LOW PRESSURE
BYP	BYPASS	LPT	LOW POINT
CC	CHEMICAL CLEANOUT	MTL	MATERIAL
CL	CENTERLINE	MAX	MAXIMUM
CO	CLEANOUT	MCC	MOTOR CONTROL CENTER
CONN	CONNECTION	MCP	MAIN CONTROL PANEL
CTR	CENTER	MIN	MINIMUM
CVLS	CHECK VALVE LIMIT SWITCH	MOV	MOTOR OPERATED VALVE
DCS	DISTRIBUTED CONTROL SYSTEM	MW	MANWAY
DES	DESIGN	NC	NORMALLY CLOSED
DIA	DIAMETER	NNF	NORMALLY NO FLOW
DP	DESIGN PRESSURE	NO	NORMALLY OPEN
D/P	DIFFERENTIAL PRESSURE	NOZ	NOZZLE
DRN	DRAIN	O/C	OPEN/CLOSE
DT	DESIGN TEMPERATURE	O/O	ON/OFF
DWG	DRAWING	OIT	OPERATOR INTERFACE TERMINAL
(E)	EXISTING	OP	OUTPUT
EL	ELEVATION	OVHD	OVERHEAD
ESD	EMERGENCY SHUTDOWN	PLC	PROGRAMMABLE LOGIC CONTROLLER
FOF	FACE OF FLANGE	PRESS	PRESSURE
(F)	FURNISHED	PV	PROCESS VARIABLE
FC	FAIL CLOSED	(R)	RELOCATED
FI	FAIL INDETERMINATE	REQD	REQUIRED
FL	FAIL LOCKED (LAST POSITION)	RIO	REMOTE I/O PANEL
FLG	FLANGE	RTD	RESISTANCE TEMPERATURE DETECTOR
FO	FAIL OPEN	SC	SAMPLE CONNECTION
FP	FULL PORT	SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
FV	FULL VACUUM		
GO	GEAR OPERATED	SCH	SCHEDULE
GR	GRADE	SD	SHUTDOWN
HC	HOSE CONNECTION	SG	SPECIFIC GRAVITY
HDR	HEADER	SIS	SAFETY INSTRUMENTED SYSTEM
HH	HAND HOLE	SO	STEAM OUT
HOA	HAND/OFF/AUTOMATIC	SP	SET POINT
HP	HIGH PRESSURE	SS	STAINLESS STEEL S/S or START/STOP
HPT	HIGH POINT	STD	STANDARD
IAS	INSTRUMENT AIR SUPPLY	T/C	THERMOCOUPLE
LC	LOCKED CLOSED	TDH	TOTAL DIFFERENTIAL HEAD
LCP	LOCAL CONTROL PANEL	TEMP	TEMPERATURE
		THRD	THREADED
		TSO	TIGHT SHUT-OFF
		TYP	TYPICAL
		UG	UNDERGROUND
		VNT	VENT
		VAC	VACUUM
		VB	VORTEX BREAKER
		VFD	VARIABLE FREQUENCY DRIVE
		W/	WITH
		W/O	WITHOUT

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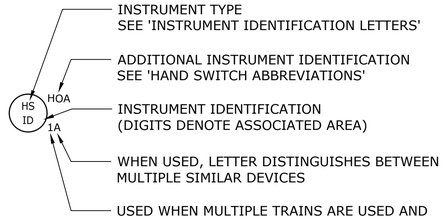
PROJECT#.21.67.01

INSTRUMENT IDENTIFICATION LETTERS

	FIRST LETTER		SUCCEEDING LETTERS		
	MEASURED OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS		ALARM		
B	BURNER, FLAME, COMBUSTION		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
C	USER'S CHOICE (TYPICALLY CONDUCTIVITY - ELECTRICAL)			CONTROL, COMMAND	CLOSED
D	USER'S CHOICE (TYPICALLY DENSITY OR SPECIFIC GRAVITY)	DIFFERENTIAL			DIVERT
E	VOLTAGE		SENSOR (PRIMARY ELEMENT)		
F	FLOW RATE	RATIO (FRACTION)			
G	USER'S CHOICE OR GAUGING (DIMENSIONAL)		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT (ELECTRICAL)		INDICATE		
J	POWER	SCAN			
K	TIME, TIME SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE (TYPICALLY MOISTURE OR HUMIDITY)	MOMENTARY			MIDDLE, INTERMEDIATE
N	USER'S CHOICE		USER'S CHOICE	USER'S CHOICE	USER'S CHOICE
O	USER'S CHOICE		ORIFICE, RESTRICTION		OPEN
P	PRESSURE, VACUUM		POINT (TEST) CONNECTION		
Q	QUANTITY OR HEAT DUTY	INTEGRATE, TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	THROUGH
U	MULTIVARIABLE		MULTIFUNCTION	MULTIFUNCTION	MULTIFUNCTION
V	VIBRATION, MECHANICAL ANALYSIS			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE, TORQUE		WELL		
X	UNCLASSIFIED	X AXIS	UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED
Y	EVENT, STATE OR PRESENCE	Y AXIS		RELAY, COMPUTE, CONVERT	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

TYPICAL INSTRUMENT TAG NUMBERS & DESIGNATION



HAND SWITCH ABBREVIATIONS

AO = AUTO/OFF	LOS = LOCKOUT/STOP
AM = AUTO/MANUAL	LA = LOCAL/AUTO
CM = COMPUTER/MANUAL	LR = LOCAL/REMOTE
CL = COMPUTER LOCAL	OC = OPEN/CLOSE
ES = EMERGENCY STOP	OCA = OPEN/CLOSE/AUTO
FR = FORWARD/REVERSE	OO = ON/OFF
FOR = FORWARD/OFF/REVERSE	OOA = ON/OFF/AUTO
FS = FAST/SLOW	OSC = OPEN/STOP/CLOSE
FOS = FAST/OFF/SLOW	RES = RESET
HA = HAND/AUTO	RF = RUN/FAULT
HIM = HUMAN INTERFACE MODULE	RSL = RAISE/STOP/LOWER
HOA = HAND/OFF/AUTOMATIC	SS = START/STOP
LLS = LEAD/LAG/STANDBY	SOR = START/OFF/RESET
LOC = LOCAL/OFF/COMPUTER	V/B = VFD/BYPASS
LOR = LOCAL/OFF/REMOTE	

PIPING LINE SYMBOLS

PRIMARY (AG & UG)

SECONDARY / UTILITY (AG & UG)

FUTURE OR EXISTING ON NEW P&IDs

JACKETED OR DOUBLE CONTAINMENT

INSTRUMENT LINE SYMBOLS

INSTRUMENT SUPPLY OR CONNECTION TO PROCESS

PNEUMATIC SIGNAL

ELECTRIC SIGNAL (ANALOG)

ELECTRIC SIGNAL (DISCRETE)

HYDRAULIC SIGNAL

CAPILLARY TUBE

ELECTROMAGNETIC, SONIC, OPTICAL, OR NUCLEAR SIGNAL

SOFTWARE OR DATA LINK

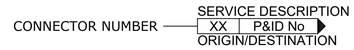
MECHANICAL LINK

FLOW STREAM IDENTIFIERS

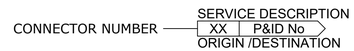
ABE = AERATION BASIN EFFLUENT
ABI = AERATION BASIN INFLUENT
BD = BASIN DRAIN
CS = COMBINED SLUDGE
CAS = CAUSTIC SODA
DR = DRAIN
DS = DIGESTER SOLIDS
FA = FOUL AIR
FE = FINAL EFFLUENT
GR = GRIT
ML = MIXED LIQUOR
NPW = NON POTABLE WATER
PA = PROCESS AIR
PE = PRIMARY EFFLUENT
PI = PRIMARY INFLUENT
PLE = PLANT EFFLUENT
PS = PRIMARY SLUDGE
RAS = RETURN ACTIVATED SLUDGE
SD = SANITARY DRAIN
SS = SANITARY SEWER
SSL = SECONDARY SLUDGE
SCM = SCUM
SSCM = SECONDARY SCUM
SCRN = SCREENINGS
SE = SECONDARY EFFLUENT
TE = TERTIARY EFFLUENT
TWAS = THICKENED WASTE ACTIVATED SLUDGE
UW = UTILITY WATER
WAS = WASTE ACTIVATED SLUDGE

OFF-PAGE CONNECTORS AND TIE-IN SYMBOL

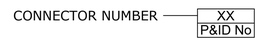
A. OFF-PLOT CONNECTOR



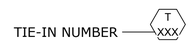
B. PRIMARY/SECONDARY LINES AND INSTRUMENT SIGNAL CONNECTOR



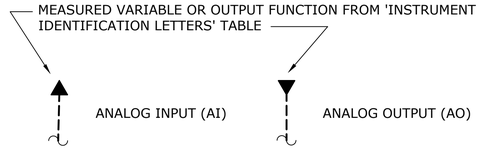
C. UTILITY CONNECTOR



D. TIE-IN SYMBOL

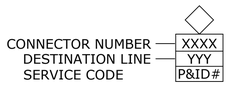


INPUT / OUTPUT SIGNALS

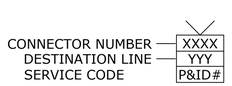


DRAIN CONNECTORS

CLOSED DRAIN

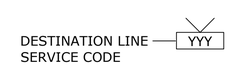


OPEN DRAIN



CLOSED DRAIN (NO P&ID)

OPEN DRAIN (NO P&ID)



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HIGHLANDS EAST LIFT STATION REHABILITATION

P&ID LEGEND SHEET 1

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET PID-1

PRIMARY ELEMENT SYMBOLS

- XX — GENERAL SYMBOL IN-LINE ELEMENT XX = FS, FG, FE, FT
- FIT / XXXX — IN-LINE FLOW ELEMENT WITH INTEGRAL INDICATING TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL, INT. ORIFICE ...
- FIT / FE / XXXX — IN-LINE FLOW ELEMENT WITH SEPARATE INDICATING TRANSMITTER XXXX = MASS, CORIOLIS, THERMAL...
- ORIFICE
- M — MAGNETIC
- TURBINE OR PROPELLER
- ULTRASONIC
- VORTEX
- PITOT TUBE
- AVERAGING PITOT TUBE
- FLOW NOZZLE
- VENTURI
- WEDGE METER
- LE — RADAR (NON-CONTACT)
- LE — ULTRASONIC LEVEL SENSOR
- LE — RADAR (GUIDED)
- LS* — FLOAT SWITCH / FLOAT SWITCH * = L/LL/H/HH
- FS* — FLOW SWITCH * = H/L
- FG — FLOW GLASS
- FLOW CONDITIONING DEVICES (e.g., STRAIGHTENING VANES)
- FO — RESTRICTION ORIFICE
- AE X — ANALYZER ELEMENT X INDICATES TYPE
  - pH = HYDROGEN POTENTIAL
  - DO = DISSOLVED OXYGEN
  - H2S = HYDROGEN SULFIDE
  - LEL = LOWER EXPLOSIVE LIMIT
  - O2 = OXYGEN
  - ORP = OXYGEN REDUCTION POTENTIAL
  - TUR = TURBIDITY
- ROTAMETER
- FI — ROTAMETER WITH INTEGRAL VALVE (SHOWN WITH OPTIONAL INTEGRAL VALVE)
- FLUME
- WEIR
- POSITIVE DISPLACEMENT
- ORIFICE IN QUICK CHANGE FITTING
- TARGET

PROCESS EQUIPMENT

- HORIZONTAL CENTRIFUGAL PUMP
- VERTICAL INLINE PUMP
- SUBMERSIBLE PUMP
- PROPELLER PUMP
- PROGRESSIVE CAVITY PUMP
- SUBMERSIBLE MIXER
- POSITIVE DISPLACEMENT PUMP
- LIQUID RING VACUUM PUMP
- VERTICAL CAN PUMP
- SCREW PUMP
- AERATION DIFFUSER
- POSITIVE DISPLACEMENT BLOWER
- CENTRIFUGAL BLOWER
- CENTRIFUGAL COMPRESSOR
- RECIPROCATING COMPRESSOR
- SCREW COMPRESSOR

VALVE SYMBOLS (N.C. WHEN SHADED)

- GATE VALVE
- CHECK VALVE
- STOP CHECK VALVE
- GLOBE VALVE
- BUTTERFLY VALVE
- NEEDLE VALVE
- BALL VALVE
- BALANCING VALVE
- PLUG VALVE
- DIAPHRAGM VALVE
- 3-WAY VALVE
- 4-WAY VALVE
- PINCH VALVE
- ANGLE VALVE
- KNIFE VALVE
- SLUICE OR SLIDE GATE

PIPING FITTINGS

- FLANGE
- WELDED CONNECTION
- CAP
- CONCENTRIC REDUCER
- ECCENTRIC REDUCER
- HOSE CONNECTION
- SPACER
- BLANK
- OPEN FIGURE 8 BLIND
- CLOSED FIGURE 8 BLIND
- PLUG
- BLIND FLANGE

PIPING SPECIALTY ITEMS

- Y-TYPE STRAINER
- CONE STRAINER
- T-TYPE STRAINER
- DUPLEX STRAINER
- BASKET STRAINER
- TEMPORARY STRAINER
- FILTER
- D — DETONATION ARRESTOR
- F — FLAME ARRESTOR
- T — STEAM TRAP
- EXHAUST HEAD
- S — IN-LINE SILENCER
- S — VENT SILENCER
- MECHANICAL COUPLING
- EJECTOR
- RS — REMOVABLE SPOOL
- DS — DESUPERHEATER
- FLEXIBLE HOSE
- EXPANSION JOINT
- DAMPER
- BREATHER
- VENT COVER
- IN-LINE MIXER
- DIVERTER VALVE
- ROTARY VALVE
- EXCESS FLOW VALVE
- PULSATION DAMPENER
- INJECTION SPOOL

CONTROL VALVE ACTUATOR SYMBOLS

- MANUAL OPERATOR
- DIAPHRAGM
- PRESSURE BALANCED DIAPHRAGM
- HANDWHEEL WITH ACTUATOR
- CYLINDER - PISTON
- M — MOTOR OPERATED - CONSTANT SPEED
- E/P — ELECTRO-PNEUMATIC
- S — SINGLE SOLENOID
- S, R — SINGLE SOLENOID - MANUAL RESET
- S, R — SINGLE SOLENOID - REMOTE RESET

MISCELLANEOUS INSTRUMENT SYMBOLS

- CHEMICAL SEAL- DIAPHRAGM
- ANNULAR SEAL
- X — PILOT LIGHT OR GAUGE GLASS ILLUMINATOR X INDICATES COLOR
  - R = RED
  - B = BLUE
  - G = GREEN
  - A = AMBER
  - W = WHITE
- DUAL FUNCTION OR INSTRUMENTS SHARING COMMON HOUSING
- I — UNDEFINED INTERLOCK LOGIC
- ETH — ETHERNET CONNECTION
- VFD — VARIABLE FREQUENCY DRIVE CONNECTION
- MS — MOTOR STARTER CONNECTION

SELF-ACTUATED DEVICES

- RUPTURE DISC - PRESSURE RELIEF SAFETY HEAD FOR PRESSURE RELIEF (EXPLOSION PANEL)
- RUPTURE DISC - VACUUM RELIEF SAFETY HEAD FOR VACUUM RELIEF (EXPLOSION PANEL)
- PRESSURE RELIEF - SAFETY VALVE
- VACUUM RELIEF VALVE
- PRESSURE AND VACUUM RELIEF VALVE CONSERVATION VENT
- P — PILOT OPERATED RELIEF VALVE WITH REMOTE SENSOR (USE APPROPRIATE RELIEF VALVE SYMBOL)
- PRESSURE REDUCING REGULATOR (SELF-CONTAINED)
- BACK PRESSURE REGULATOR (SELF-CONTAINED)
- BACK PRESSURE REGULATOR W/ EXTERNAL TAP
- PRESSURE REDUCING REGULATOR W/ EXTERNAL TAP
- DIFFERENTIAL PRESSURE REDUCING REGULATOR
- TEMPERATURE REGULATOR FILLED SYSTEM TYPE

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P&ID LEGEND SHEET 2

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET PID-2

SCADA

MAIN PLC

MCC

FIELD

EMERG POS ZI 05A
UTILITY AVAIL ZI 05C
RUN'G YI 06A
TROUBLE YA 06C
NOT IN AUTO HS 06E
REMOTE START YC 05E
UTLITY POS ZI 05B
FAULT YA 05D
FAULT YA 06B
LOW FUEL LAL 06D
LEVEL LI 01
HI-HI LEVEL LAHH 01
HI LEVEL LAH 01

BACK-UP PLC
HI-HI LEVEL LAHH 01
HI LEVEL LAH 01
RUN'G YI 01
START CMD YC 01
AUTO HS 01
FAULT XA 01
TYP. OF 2

SPD CTRL SC 01
AUTO HS 01
FAULT RESET XC 01
HI TEMP TAH 01
TOTAL STARTS QI 01
RUNTIME KI 01
SPD FDBK SI 01
FAULT XA 01
START CMD YC 01
SEAL FAIL MAH 01
RUN'G YI 01
TYP. OF 2

CVLS CLOSED ZIC 01
FLOW FAIL FAL 01
CVLS OPEN ZIO 01
VAULT FLOOD LAH 02
VAULT INTRUSION ZA 03
WETWELL INTRUSION ZA 02
DISCH PSI PI 03
PULSE TOTAL QI 01
FLOW FI 01
BLDG INTRUSION ZA 01

ETHERNET
VFD 01
HIM HS 01
TEMP YL 01
RUN YL 01
HOA HS 01
SEAL YL 01
FLT YL 01

ATS

EXISTING GENERATOR

PUMP DISCONNECT PANEL (PDP)

BUILDING INTERIOR
ZS 01
FIT 01
EXTERIOR DOORS

8"-SS (BYPASS)

MFR CABLE (TYP. OF 2)

LE 01
LSHH 01
LSH 01
ZS 02 HATCH
ZS 03 HATCH
PI 01
ZSC 01
PI 02
ZSC 02
LSH 02
FE 01
PI 03
PIT 03
M

8"-SS
SS - EXIST
TO FORCE MAIN

PROPOSED METER AND VALVE VAULT

4"-SD (VAULT DRAIN)

TS 01
MS 01
TS 02
MS 02

PUMP-1
PUMP-2

EXISTING WET WELL

PROPOSED ROCK CATCH MANHOLE

KEY NOTES:

1. SWITCH NORMALLY CLOSED, HELD OPEN. SWITCH OPENS WHEN "NO FLOW".

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NO.	DATE	BY	REVISION

NOTICE
0 ½ 1
IF THIS BAR DOES NOT MEASURE 1" THEN DRAWING IS NOT TO SCALE

RSC DESIGNED
RSC DRAWN
MEW CHECKED

MICHAEL EZRA WALLIS STATE OF WASHINGTON 57964 REGISTERED PROFESSIONAL ENGINEER 11/2024

consor

Silver Lake Water & Sewer District

HIGHLANDS EAST LIFT STATION REHABILITATION

P&ID PUMP STATION

PROJECT NO.: 22-1070 | SCALE: AS SHOWN | DATE: NOVEMBER 2024

SHEET
PID-3
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