CITY OF CASHMERE

Cashmere, Washington

SANITARY SEWER
LIFT STATION STANDARD DETAILS

SHEET INDEX

CONTACT INFORMATION	
CITY OF CASHMERE 101 WOODRING STREET CASHMERE, WA 98815 PHONE: 509-782-3513 FAX: 509-782-2840	CALL 48 HOURS BEFORE YOU DIG ONE CALL REPORT ALL SPILLS DEPT. OF ECOLOGY 1-800-258-5990

ABBREVIATIONS

CB	CATCH BASIN	GALV	GALVANIZED	PROP	PROPOSED
CONC	CONCRETE	HDPE	HIGH-DENSITY POLYETHYLENE	PSI	POUNDS PER SQUARE INCH
CL	CONSTRUCTION CENTERLINE	HMA	HOT MIXED ASPHALT	PVC	POLYVINYL CHLORIDE
CSBC	CRUSHED SURFACING BASE COURSE	ID	INSIDE DIAMETER	SPEC	SPECIFICATIONS
CSTC	CRUSHED SURFACING TOP COURSE	IE	INVERT ELEVATION	SS	SANITARY SEWER
DI	DUCTILE IRON	J-BOX	JUNCTION BOX	SSMH	SANITARY SEWER MANHOLE
DIAM	DIAMETER	LF	LINEAR FEET	SST	STAINLESS STEEL
DWG	DRAWING	MH	MANHOLE	STD	STANDARD
E	EASTING	MJ	MECHANICAL JOINT FITTING	STL	STEEL
EG	EXISTING GROUND	NO	NUMBER	TEL	TELEPHONE
ELEV	ELEVATION	OC	OFF CENTER	TEMP	TEMPORARY
EX	EXISTING	OD	OUTSIDE DIAMETER	TYP	TYPICAL
EW	EVEN WIDTH	P	POWER	WSDOT	WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
FG	FINISHED GRADE	PE	PLAIN END		

DEVELOPED BY RH2 ENGINEERING, INC.

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LIFT STATION STANDARD DETAIL

COVER

FILE:CA-LSDT-D-COV.DWG	REVISED: 2/20/2015	DETAIL NO.: LS01

CITY OF CASHMERE LIFT STATIONS

GENERAL

SEWAGE LIFT STATIONS SHALL BE APPROVED ON A CASE-BY-CASE BASIS. ALL LIFT STATIONS SHALL BE DESIGNED WITH ADEQUATE CAPACITY TO PROVIDE SERVICE FOR THE ULTIMATE DEVELOPMENT OF THE POTENTIAL SERVICE AREA. ADDITIONALLY, THE LIFT STATION SHALL MEET ALL STATE, LOCAL AND FEDERAL REGULATIONS. THE CITY OF CASHMERE'S ACCEPTANCE OF THE DESIGN DOES NOT GUARANTEE THAT THE LIFT STATION WILL PASS ANY STATE, LOCAL OR FEDERALLY REQUIRED INSPECTIONS.

DESIGN

GENERAL

1. PRIOR TO SUBMITTAL FOR REVIEW BY THE CITY, A WASHINGTON STATE LICENSED ENGINEERING WITH EXPERIENCE IN SEWAGE LIFT STATION DESIGN SHALL BE CONSULTED FOR ALL LIFT STATION DESIGNS. THE CONSULTING ENGINEER WILL SELECT A PUMP THAT OPERATES WITHIN THE PUMP'S PREFERRED OPERATING RANGE (P.O.R.) OR FAILING TO FIND A PUMP SELECTION THAT CAN OPERATE IN THE P.O.R. TO SELECT A PUMP THAT WILL OPERATE IN THE ACCEPTABLE OPERATING RANGE (A.O.R.). THE ENGINEER SHALL JUSTIFY THE PUMP SELECTION TO THE CITY. THE RESULTING DESIGN IS THE RESPONSIBILITY OF THE ENGINEER, NOT THE CONTRACTOR OR THE CITY. ALL PLANS SHALL BE STAMPED BY A WASHINGTON STATE LICENSED ENGINEER.
2. TWO COPIES OF ALL PLANS AND SPECIFICATIONS FOR FACILITIES TO BE INSTALLED SHALL BE FURNISHED TO THE CITY FOR REVIEW. THE CITY SHALL RETURN THE ORIGINAL TO THE APPLICANT AND IT SHALL BEAR EVIDENCE OF APPROVAL OR DENIAL.
3. NO DISCHARGE FROM A NEW LIFT STATION SHALL BE DISCHARGED TO AN EXISTING LIFT STATION EXCEPT WITH APPROVAL FROM THE CITY. ADDITIONALLY, A PROPOSED LIFT STATION MAY BE REQUIRED TO PHASE OUT AN EXISTING LIFT STATION. THIS DETERMINATION IS MADE BY THE CITY, AND IS BASED UPON PROXIMITY OF THE EXISTING LIFT STATION TO THE PROPOSED LIFT STATION.

PUMPS

1. A MINIMUM OF TWO PUMPS SHALL BE REQUIRED IN THE WET WELL (DUPLEX SYSTEM); EACH SHALL BE CAPABLE OF PUMPING IN EXCESS OF THE EXPECTED MAXIMUM, PEAK HOURLY FLOW OF FULL BUILD OUT. AN IDENTICAL THIRD PUMP SHALL BE PROVIDED BY THE CONTRACTOR FOR STAND-BY PURPOSES. FLYGT PUMPS SHALL HAVE MIX-FLUSH VALVE OR ALTERNATIVE FOR PRE-MIXING.
2. PUMP GUIDE MECHANISMS SHALL BE OF THE GUIDE RAIL TYPE.

WET WELL STORAGE

1. STORAGE OF ONE HOUR FOR PEAK HOURLY FLOW AT FULL BUILD OUT SHALL BE PROVIDED AS PER DEPARTMENT OF ECOLOGY, CRITERIA FOR SEWAGE WORKS DESIGN, SECTION C2-1.8.5.
2. STORAGE SHALL NOT BE IN THE OPERATING RANGE AND PIPING INTO LIFT STATION CAN BE CONSIDERED STORAGE PRIOR TO FIRST SERVICE.

CABLING AND ELECTRICAL

1. THE PUMPS AND PUMP CABLES SHALL BE DESIGNED TO PLUG DIRECTLY INTO THE LIFT STATION PANEL: A) EITHER WITH AN OPEN CHANNEL CONDUIT OR CONDUIT WHICH SHALL ALLOW FOR THE PASSAGE OF THE PUMP CORD AND PLUG B) WITHOUT EXTERNAL JUNCTION BOXES C) WITHOUT THE NEED OF A LICENSED ELECTRICIAN.
2. ALL CABLING, CHAIN ETC, WITHIN THE WET WELL, SHALL BE NEATLY ATTACHED TO SNAP CLIPS, CARABINER TYPE CLIPS OR EQUIVALENT AND SHALL BE OF STAINLESS STEEL CONSTRUCTION. THIS IS IN REFERENCE TO THE HATCH SIDE OF THE WET WELL.

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LIFT STATION STANDARD DETAIL

CONSTRUCTION NOTES
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(DESIGN CONTINUED FROM CONSTRUCTION NOTES PAGE 1)

SITE AND ACCESS

1. ALL VAULTS AND ELECTRICAL SHALL BE LOCATED INSIDE FENCED AREA.
2. FENCING AROUND THE LIFT STATION SITE. THE DISTRICT SHALL HAVE UNINHIBITED ACCESS TO THE WET WELL HATCH WITH SERVICE EQUIPMENT AS LARGE AS A COMBINATION JET/VAC TRUCK. GATES AND FENCING SHALL BE APPROPRIATELY SIZED AND LOCATED.
3. LIFT STATIONS WITH IN RESIDENTIAL ARES SHALL HAVE 6' TALL FENCING WITH NO BARBED WIRE. LIFT STATIONS LOCATED WITHIN COMMERCIAL/INDUSTRIAL AREAS SHALL HAVE 8' TALL FENCING WITH BARBED WIRE.
4. SIGNAGE SHALL CONSIST OF; ONE (1) CITY OF CASHMERE "LIFT STATION NAME" MOUNTED DIRECTLY ADJACENT TO THE SWING GATE, "CITY OF CASHMERE RESTRICTED AREA AUTHORIZED PERSONAL ONLY CALL (509) 782-3513" VISIBLE FROM ALL DIRECTIONS, QUANTITY AS REQUIRED. ALL SIGNS SHALL BE MOUNTED TO THE FENCE 4' ABOVE THE GROUND.
5. A MINIMUM OF ONE SERVICE TRUCK OR JET/VAC TRUCK SHALL BE ABLE TO PARK ENTIRELY WITHIN THE FENCED AREA.
6. A HOIST POCKET SHALL BE INSTALLED WHICH, IS COMPATIBLE WITH THE CURRENT HOISTS OWNED BY THE CITY. IF THE CURRENT HOISTS OWNED BY THE CITY ARE NOT OF SUFFICIENT CAPACITY, THEN A NEW HOIST SHALL ALSO BE PROVIDED AS PART OF THE LIFT STATION PACKAGE.

METERING

1. ELECTROMAGNETIC FLOW METERING SYSTEM SUITABLE FOR MEASURING AND TRANSMITTING FLOW RATE IN A FULL FLOWING PIPE SHALL BE REQUIRED. THE METER SHALL BE SIEMENS, ALTERNATIVE METERS WILL ONLY BE ALLOWED WITH THE CITY'S APPROVAL. THE SYSTEM SHALL OPERATE WITHIN THE ACCURACY REQUIRED OVER AN AMBIENT TEMPERATURE RANGE OF 10 TO +120° F AND A PROCESS TEMPERATURE RANGE OF +15 TO +120° F. METER AND ELECTRONICS SHALL BE RATED FOR CLASS 1 DIVISION 2 SERVICE.
2. CHECK VALVES SHALL BE OF THE CHECK BALL TYPE AND FUNCTION TO PERMIT FLOW IN ONLY ONE DIRECTION. THE CHECK VALVE SHALL BE LOCATED INSIDE THE VALVE VAULT, OUTSIDE OF THE WET WELL. EACH PUMP WILL HAVE ITS OWN CHECK VALVE. AN ECCENTRIC PLUG VALVE SHALL FOLLOW THE CHECK VALVE; EACH CHECK VALVE WILL HAVE ITS OWN ECCENTRIC PLUG VALVE.

SPECIFIED MATERIALS

1. ALL EXPOSED METAL ACCESSORIES WITHIN THE LIFT STATION WET WELL SHALL BE OF STAINLESS STEEL TYPE 316, TYPE 304 MAY BE REQUESTED FOR THE CITY'S APPROVAL. THE COVER HATCH MAY BE OF ALUMINUM ON A STAINLESS FRAME.
2. STRUCTURAL FILL IS REQUIRED AS INDICATED ON THE PLANS, IT SHALL CONFORM WITH “GRAVEL BACKFILL FOR WALLS” OF THE WSDOT STANDARD SPECIFICATIONS (CURRENT EDITION). CONTROLLED DENSITY FILL (CDF) MAY BE USED IN PLACE OF GRANULAR FILL.

PIPE

1. FORCE MAINS SHALL BE DESIGNED OF HDPE AND DESIGN VELOCITIES SHALL NOT BE LESS THAN 2 FT/S OR MORE THAN 6 FT/S.
2. DUCTILE IRON SHALL BE CENTRIFUGALLY APPLIED CEMENT MORTAR LINED.
3. ALL FITTINGS SHALL BE FULLY RESTRAINED.

COATINGS

1. DUCTILE IRON PIPE, EXPOSED IN VAULT OR WET WELL, PAINT SHALL BE ONE COAT TNEMEC SERIES 66 HI-BUILD EPOXOLINE, SURFACE PREPARATION AND INSTALLATION PER MANUFACTURER RECOMMENDATION. DUCTILE IRON PIPE IN CONTACT WITH GROUND SHALL BE ASPHALT COATED.
2. EXTERIOR OF CONCRETE VAULTS AND WET WELL SHALL BE ONE COAT TNEMEC SERIES 46H-413 HI-BUILD TNEMEC-TAR, SURFACE PREPARATION AND INSTALLATION PER MANUFACTURER RECOMMENDATION.
3. WET WELL INTERIOR SHALL BE RAVEN 405 ULTRA HIGH BUILD EPOXY, TNEMAC SERIES 435 PERMA-GLAZE OR APPROVED EQUAL, SURFACE PREPARATION. INSTALLATION SHALL BE APPLIED ONLY BY A CERTIFIED INSTALLER WITH CITY APPROVAL.

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CONSTRUCTION NOTES
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DEVIATIONS FROM STANDARDS

1. ANY DEVIATIONS FROM THE STANDARDS SHALL BE SUBMITTED IN WRITING TO THE CITY PRIOR TO SUBMITTAL OF THE LIFT STATION PLAN FOR REVIEW
2. ALL "MAJOR" DEVIATIONS FROM APPROVED PLANS OR SPECIFICATIONS MUST BE SUBMITTED IN WRITING. THE REQUEST SHALL COME FROM THE ENGINEER OR ENGINEERING FIRM WHOSE STAMP IS ON THE APPROVED PLANS OR SPECIFICATIONS. "MAJOR" IS DECIDED AT THE DISCRETION OF THE DISTRICT.

ELECTRICAL CONTROL PANEL

A DUPLEX OR TRIPLEX PUMP ELECTRICAL CONTROL PANEL ENCLOSED IN A NEMA (3R OR 4X), STAINLESS STEEL ENCLOSURE SHALL BE PROVIDED AND SHALL INCLUDE THE FOLLOWING FUNCTIONS:

1. A PLC CONTROLLED ALTERNATOR PROVIDING AUTOMATIC ALTERNATION OF THE PUMPS UNDER NORMAL OPERATING CONDITIONS AND ALLOWING BOTH PUMPS TO OPERATE SIMULTANEOUSLY IF THERE ARE HIGH INFLOW CONDITIONS. PLC SHALL BE ALLEN-BRADLEY COMPACTLOGIX L1 SERIES PLC 1769-L18ER-BB1B PER DISTRICT'S STANDARD.
2. WET WELL LEVEL INDICATION.
3. RANDOM DUTY START DELAY. THIS FUNCTION DELAYS THE START OF THE LEAD PUMP BY A RANDOM AMOUNT FROM ZERO TO A SELECTABLE MAXIMUM TIME. HELPS KEEP WET WELL CLEAN.
4. START / STOP DELAY: PROGRAMMABLE START AND STOP DELAYS FOR ALL PUMPS AND LEVEL ALARMS.
5. HAND-OFF-AUTO (H-O-A) SELECTOR SWITCHES FOR EACH PUMP.
6. A HIGH AND LOW LEVEL ALARM WILL BE PROVIDED.
7. A OPERATOR INTERFACE SCREEN PROVIDING: ALARM HISTORY; STATUS OF ALL LEVELS, FLOWS, AND PUMPS; TRENDING SCREEN FOR A SELECTABLE PERIOD FROM 6, 24, AND 48 HOURS; PUMPS STARTS; AND FLOW TOTALING. SCREEN SHALL BE ALLEN-BRADLEY PANELVIEW PLUS COMPACT TERMINALS 2711PC 600 MODEL PER DISTRICT'S STANDARD.

CONTROL PANEL SHALL CONSIST OF A BACK-UP CONTROL SYSTEM THAT ACTIVATES IN THE EVENT THAT THE PRIMARY CONTROL SYSTEM FAILS. A SEPARATE RELAY SYSTEM WILL TURN PUMPS ON AND OFF AND GIVE A HIGH LEVEL ALARM IN THE EVENT THE NORMAL OPERATING SYSTEM FAILS. A HIGH FLOAT SWITCH WILL ACTIVATE BOTH PUMPS TO THE “ON” CONDITION (A SEPARATED START TIME DELAY RELAY WILL BE INCLUDED SO THAT BOTH PUMPS DO NOT START SIMULTANEOUSLY) AND THE HIGH WATER ALARM WILL ACTIVATE. A LOW FLOAT WILL BE USED TO TURN THE PUMPS OFF.

ADDITIONAL FUNCTIONS

1. ALL FORCE MAINS SHALL BE METERED
2. SOFT STARTS SHALL BE PROVIDED IF THE PUMP HORSE POWER IS 7.5HP OR MORE. AN ELECTRICAL PROVIDER REVIEW OF THE ELECTRICAL SYSTEM MAY ALLOW THE REMOVAL OF SOFT STARTS UPON DISTRICT APPROVAL.
3. PHASE MONITOR
4. SURGE ARRESTOR ON UTILITY AND EMERGENCY POWER SYSTEMS.
5. DOME LIGHT HIGH WATER, EXTERNAL
6. INNER DOOR
7. WIRE DIAGRAMS
8. CONVENIENCE OUTLET OF 15 AMPS-120V
9. ANTI-CONDENSATION HEATERS
10. PADLOCK HASP AND EYE FOR OUTSIDE DOOR OF PANEL
11. A GENERATOR TRANSFER SWITCH AND RECEPTACLE WILL BE PROVIDED. THE RECEPTACLE WILL BE AN APPLETON ADR1044RS OR BE COMPATIBLE WITH AN APPLETON ACP1044CDRS PLUG. THIS TRANSFER SWITCH WILL BE ENCLOSED IN A SEPARATE PANEL BOX

SPECIFIED ALARMS & METERS

1. ALL NEW LIFT STATIONS MUST BE DESIGNED WITH HOUR AND AMP DRAW METERS ON THE CONTROL SIDE OF THE PANEL.
2. LEAKAGE AND OVER-TEMP INDICATION LIGHTS MUST BE PROVIDED ON THE CONTROL SIDE OF THE PANEL.
3. THE LIFT STATION MUST BE PROVIDED WITH A STANDARD AUTO-DIALER. IT MUST BE WIRED TO DIAL OUT ON A POWER FAILURE, PUMP #1 FAILURE, PUMP #2 FAILURE AND HIGH LEVEL.
4. ALL NEW LIFT STATIONS MUST BE EQUIPPED WITH A SUBMEG (OR APPROVED EQUAL). A SUBMEG IS AN AUTOMATIC MEGGER WHICH CHECKS FOR LOSS OF INSULATION.

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LIFT STATION STANDARD DETAIL

CONSTRUCTION NOTES
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CONSTRUCTION PHASE - TELEPHONE:

1. A TELEPHONE SERVICE IS REQUIRED TO BE INSTALLED BY THE CONTRACTOR.
2. THE CONTRACTOR SHALL HAVE THE SERVICE PROVIDER INSTALL THE SERVICE PEDESTAL.
3. THE CONTRACTOR SHALL INSTALL CONDUIT AND PULL-LINE FROM THE PEDESTAL TO THE LIFT STATION.
4. UPON RECEIPT OF A PHYSICAL ADDRESS FOR THE LIFT STATION, THE CITY NOTIFIES THE TELEPHONE SERVICE PROVIDER OF A NEW SERVICE LOCATION.
5. THE TELEPHONE SERVICE PROVIDER ARRANGES FOR AND PROVIDES TO PULL THE SERVICE LINE FROM THE PEDESTAL TO THE LIFT STATION CONDUIT.
6. THE SERVICE PROVIDER WILL THEN CONNECT THE SERVICE LINE TO THE LIFT STATION AND BEGIN BILLING THE CITY FOR SERVICE.
7. THE CITY WILL BILL, AND BE REIMBURSED BY, THE CONTRACTOR FOR THE TELEPHONE SERVICE FEES UNTIL ONE YEAR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY. AT WHICH TIME, THE DISTRICT WILL ASSUME RESPONSIBILITY FOR THE TELEPHONE SERVICE OF THE LIFT STATION.

CONSTRUCTION PHASE - ELECTRICITY

1. THE CITY WILL REQUEST ELECTRICAL SERVICE FROM THE PUD. THE CONTRACTOR SHALL NOTIFY THE CITY WHEN THEY REQUIRE ELECTRICAL SERVICE.
2. THE CITY WILL BILL, AND BE REIMBURSED BY, THE CONTRACTOR FOR THE ELECTRICAL SERVICE UNTIL ONE YEAR AFTER FINAL ACCEPTANCE OF THE PROJECT BY THE CITY. AT WHICH TIME, THE CITY WILL ASSUME RESPONSIBILITY FOR THE ELECTRICAL SERVICE OF THE LIFT STATION.

LIFT STATION TESTING

1. ON-SITE START-UP ASSISTANCE AND FAMILIARIZATION WITH THE LIFT STATION BY A REPRESENTATIVE OF THE PUMP OR LIFT STATION MANUFACTURER SHALL BE PROVIDED AT NO COST TO THE CITY FOR ONE DAY
2. CONTRACTOR SHALL PROVIDE ROTATION METER TO VERIFY PROPER PUMP ROTATION WITH THE CITY PRESENT.
3. PUMPS SHALL BE FLOW TESTED.
3. THE LIFT STATION OPERATION SHALL BE VERIFIED WHILE POWERED BY A STANDBY GENERATOR, PROVIDED BY THE CITY.
4. ALL ALARMS SHALL BE SIMULATED DURING TESTING.
    - AN OVER-TEMP MAY BE SIMULATED BY REMOVING ONE LEAD OF THE SENSOR STRING.
    - A POWER OUTAGE SHALL BE SIMULATED BY DISCONNECTING THE MAIN DISCONNECT.
    - A HIGH LEVEL MAY BE SIMULATED BY TIPPING FLOATS OR FILLING THE WET WELL.
    - A LEAKAGE MAY BE SIMULATED BY JUMPERING THE PUMP SENSOR LEADS.
3. THE AUTODIALER MUST BE FULLY FUNCTIONAL DURING TESTING.
4. PUMPS WILL BE STARTED AND CHECKED FOR "EXCESSIVE" VIBRATION, NOISE, AMP DRAW AND TO MAKE SURE THEY ARE OPERATING CORRECTLY.
10. THE WET WELL WILL BE PUMPED DOWN AND THE DISCHARGE ELBOWS WILL BE CHECKED FOR EXCESSIVE LEAKAGE.
11. THE PUMP BOTTOM WILL BE INSPECTED TO VERIFY PROPER FILLETS WERE INSTALLED PER PLANS.
12. ALL DOORS WILL BE INSPECTED FOR PROPER LATCHING AND OPERATION.
13. ALL CABLING AND CORDS WILL BE CHECKED FOR PROPER STRAIN RELIEF AND FASTENING.
14. ADDITIONAL TESTING MAY BE REQUIRED BY THE CITY FOR ADHERENCE TO THE STANDARDS.
15. ALL TESTINGS COSTS SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

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LIFT STATION STANDARD DETAIL

GENERAL NOTES
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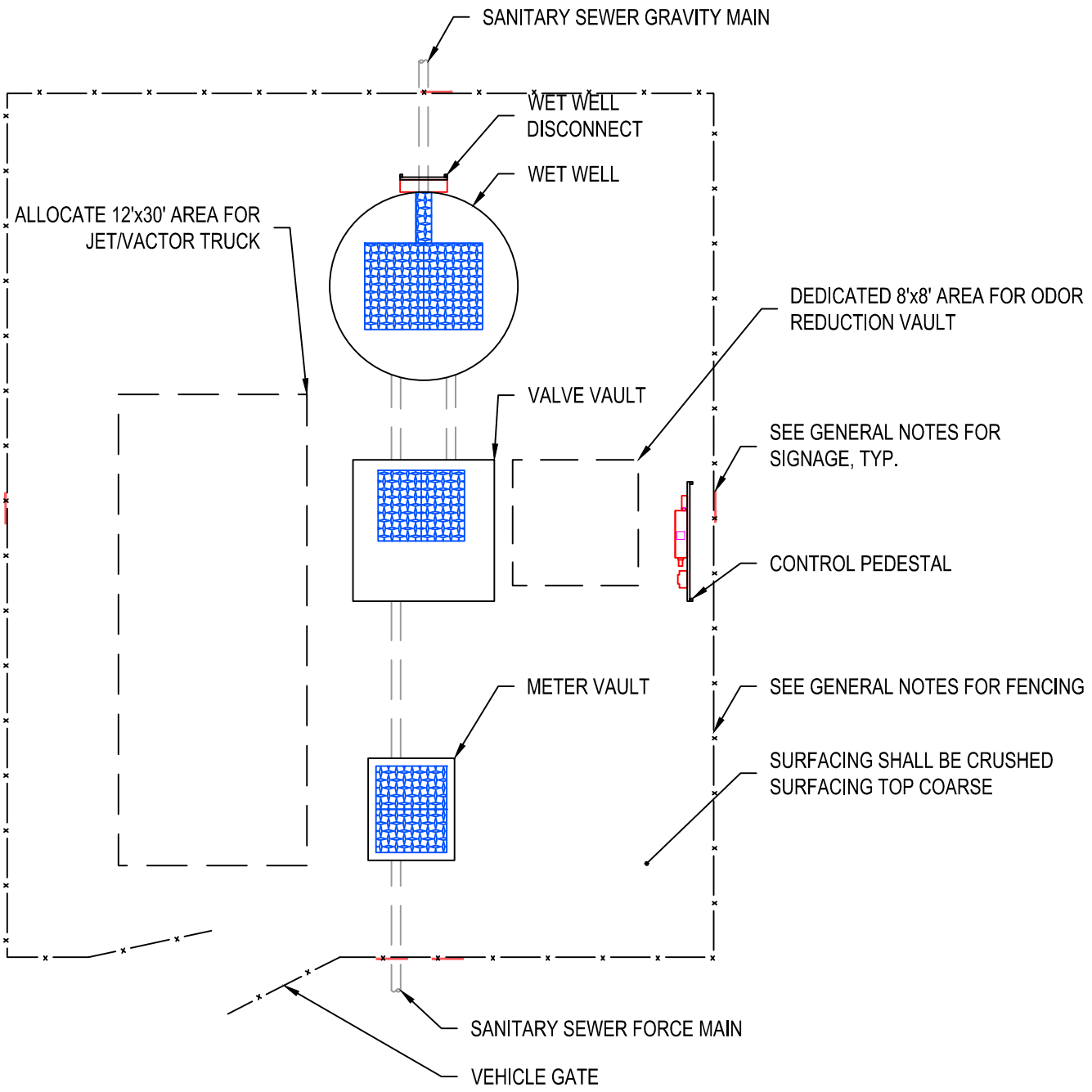
NOTES:
- GENERAL LAYOUT AND MAJOR COMPONENTS SHOWN. APPROXIMATE FOOT PRINT 55'x45', EVERY SITE WILL DIFFER, BUT SHALL PROVIDE ALL COMPONENTS.
- AREA SHALL BE DEDICATED BY EXCLUSIVE EASEMENT FOR THE CITY OF CASHMERE.



GENERAL SITE PLAN

NOT TO SCALE

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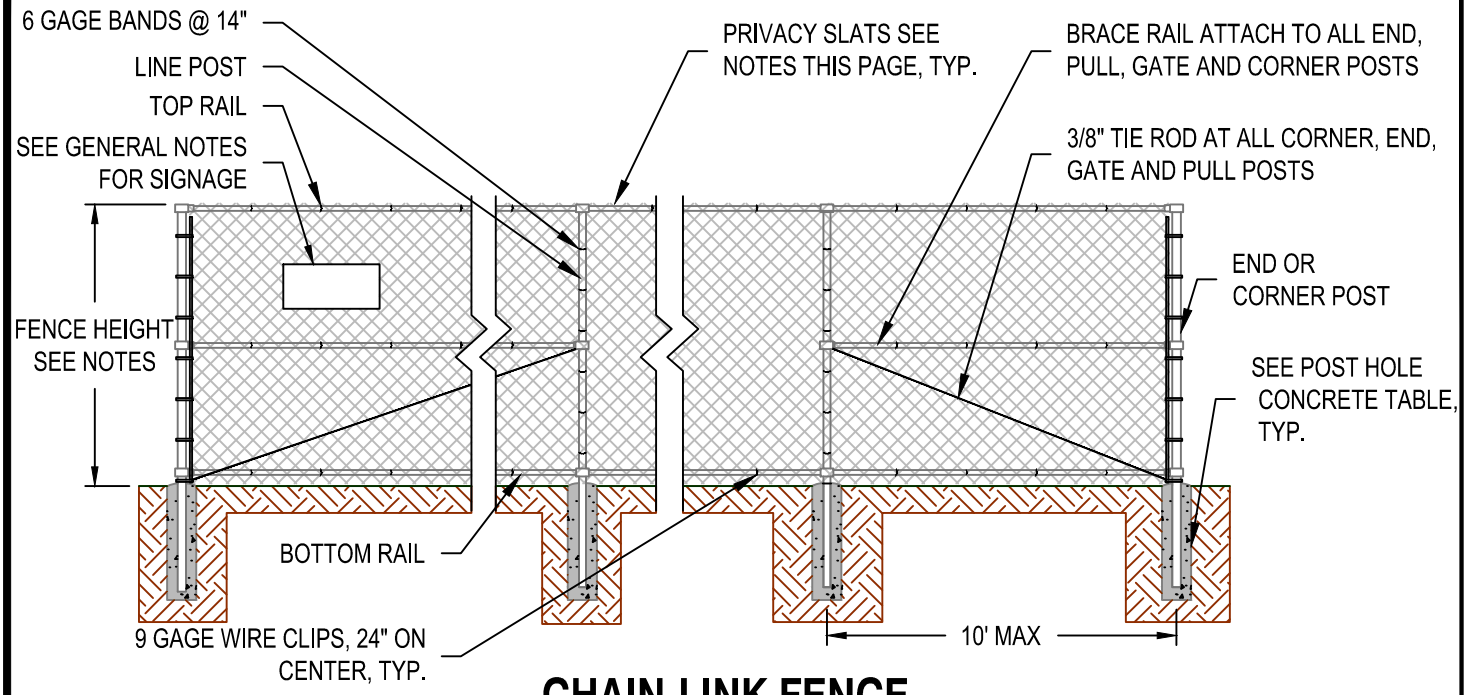
LIFT STATION STANDARD DETAIL

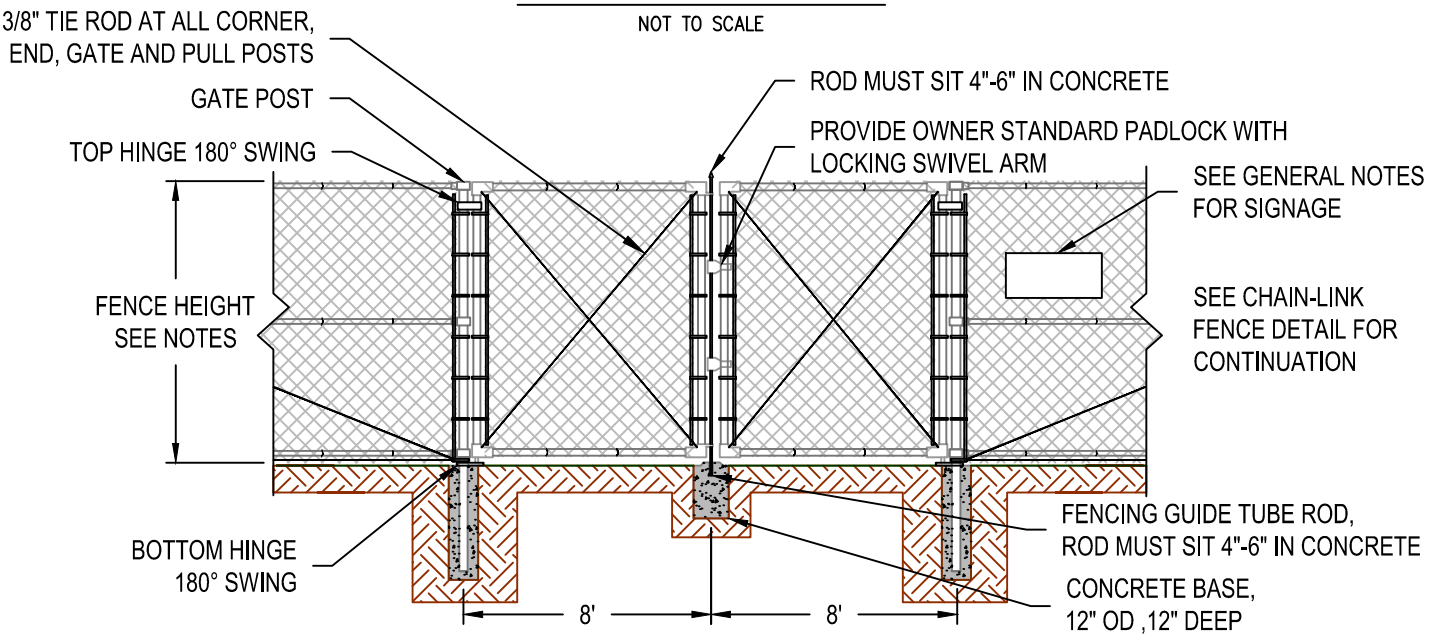
GENERAL SITE PLAN

FILE:CA-LSDT-D-SITE.DWG	REVISED: 2/20/2015	DETAIL NO.: LS06



CHAIN-LINK FENCE

NOT TO SCALE



VEHICLE GATE

NOT TO SCALE

POST HOLE CONCRETE		
	GATE AND END POST	LINE POSTS
MIN. DEPTH	60"	60"
MIN. DIAMETER	24"	24"
MIN. POST EMBEDMENT	54"	54"

POST AND RAIL SCHEDULE		
END, PULL, GATE, CORNER POSTS	LINE POSTS	TOP, MID AND BOTTOM RAIL
4" OD	2.875" OD	1.66" OD

NOTES:

1. NOTE: MINIMUM DEPTHS BASED ON IBC GRAVEL(GW) OR SANDY GRAVEL(GP) SOIL TYPES PER IBC TABLE 1804.2.
2. CONCRETE FOR ALL FOOTINGS SHALL BE 4000 PSI CONCRETE.
3. ALL CHAIN LINK FENCE SHALL BE GALVANIZED
4. PROVIDE VERTICAL PRIVACY SLATS WITH VERTICAL LOCKING FEATURE, NEUTRAL COLOR.

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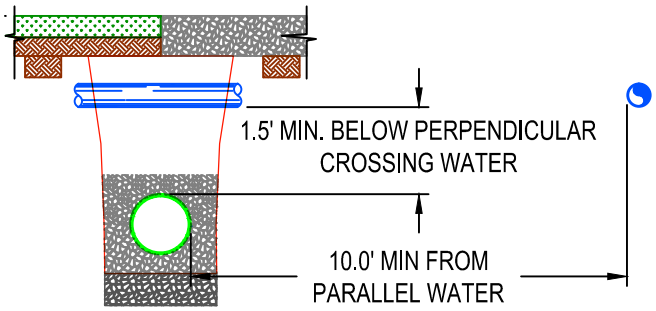
LIFT STATION STANDARD DETAIL

FENCE AND GATE DETAILS

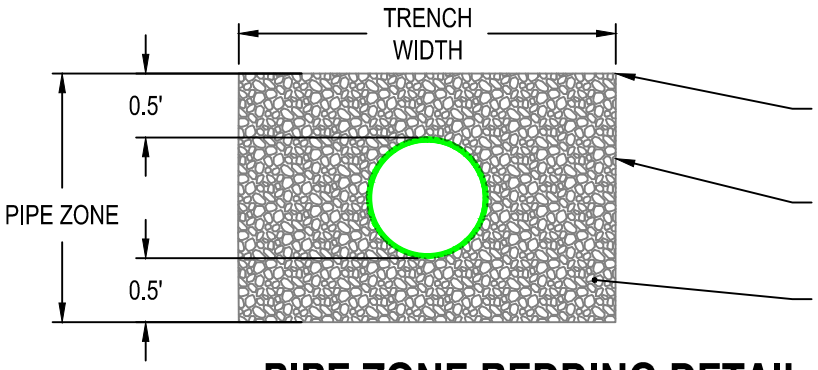
FILE:CA-LSDT-D-FENCE.DWG	REVISED: 2/20/2015	DETAIL NO.: LS07



IF 1.5' VERTICAL CLEARANCE IS AVAILABLE BELOW PARALLEL WATER, SEPARATION MAY BE REDUCED TO 5 FT HORIZONTAL, WALL TO WALL, ONLY IF APPROVED BY THE CITY. D.O.H. *WATER SYSTEM DESIGN MANUAL* SECTION 8.4 AND D.O.E. *CRITERIA FOR SEWAGE WORKS DESIGN* SECTION C1-9 SHALL BE ADHERED TO FOR CLEARANCES AND FOR MITIGATION METHODS.

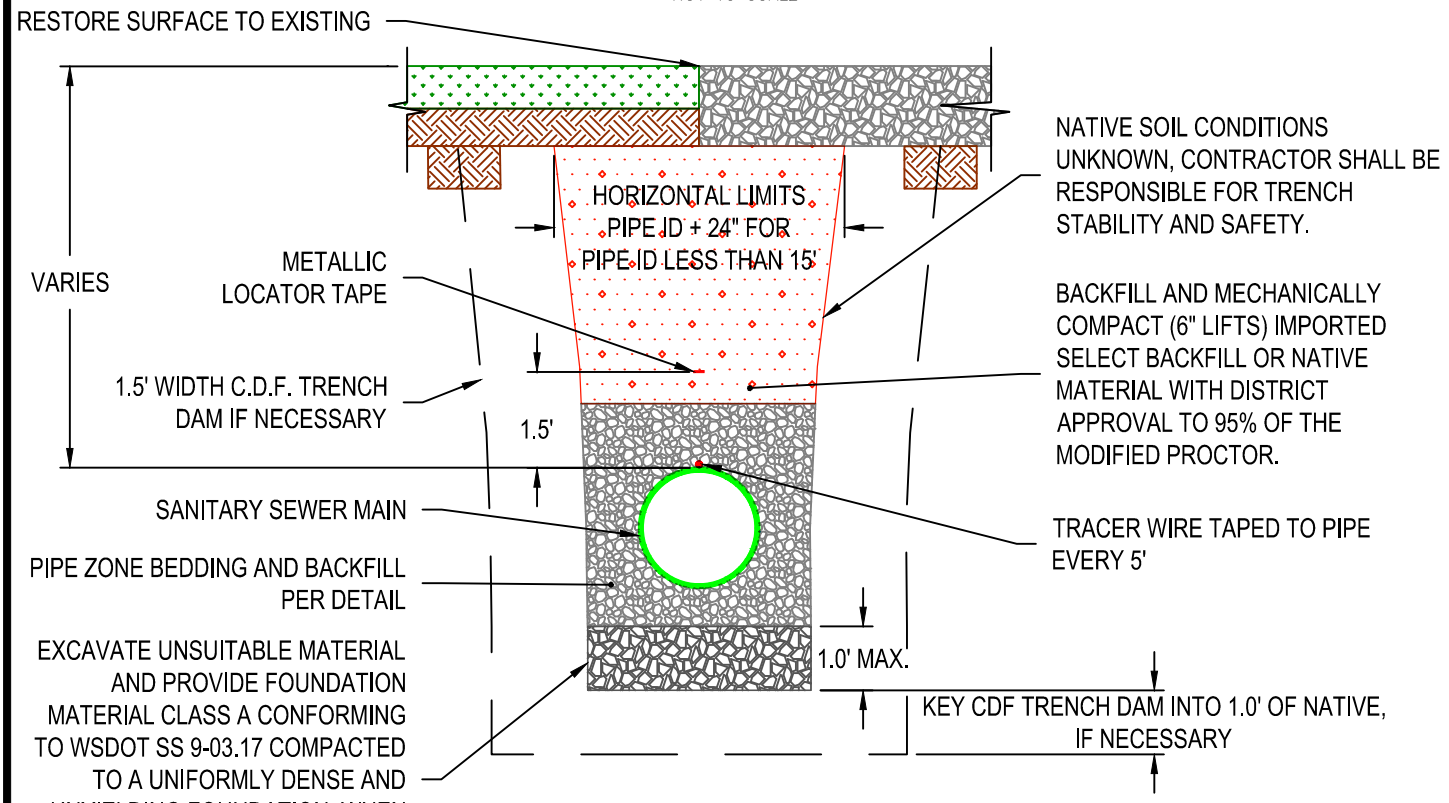
CLEARANCE DETAIL

NOT TO SCALE



PIPE ZONE BEDDING DETAIL

NOT TO SCALE



TRENCH DETAIL

NOT TO SCALE

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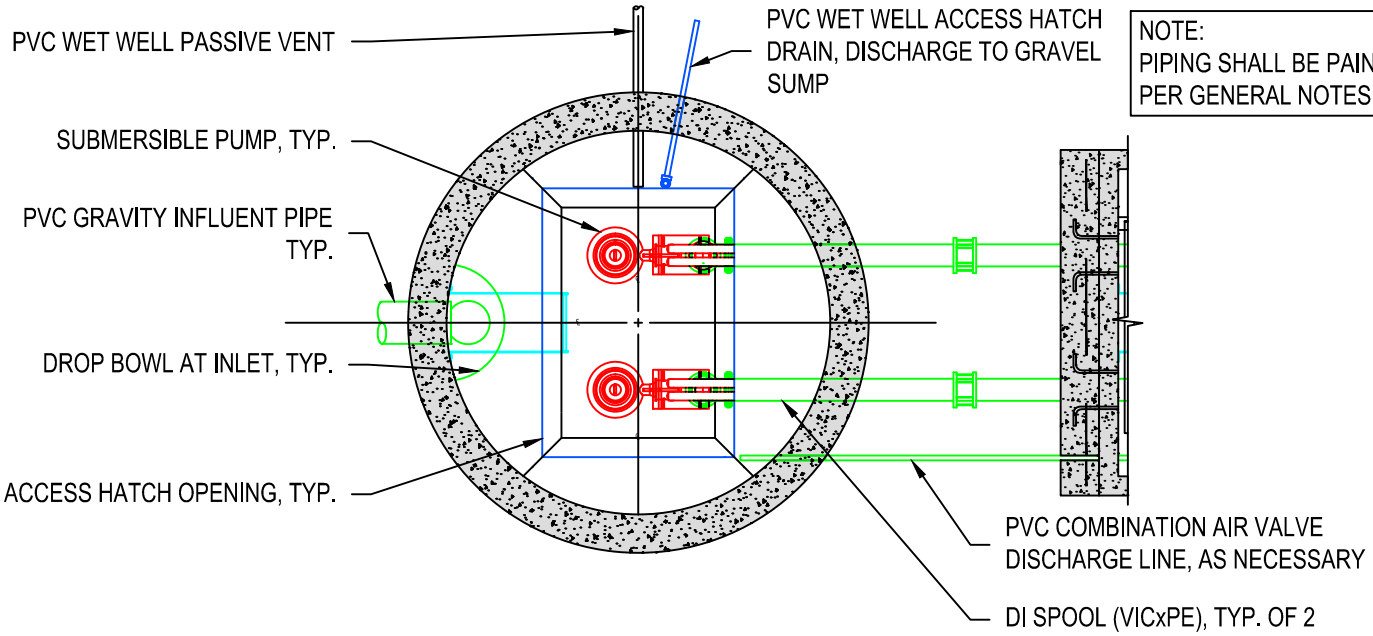
LIFT STATION STANDARD DETAIL

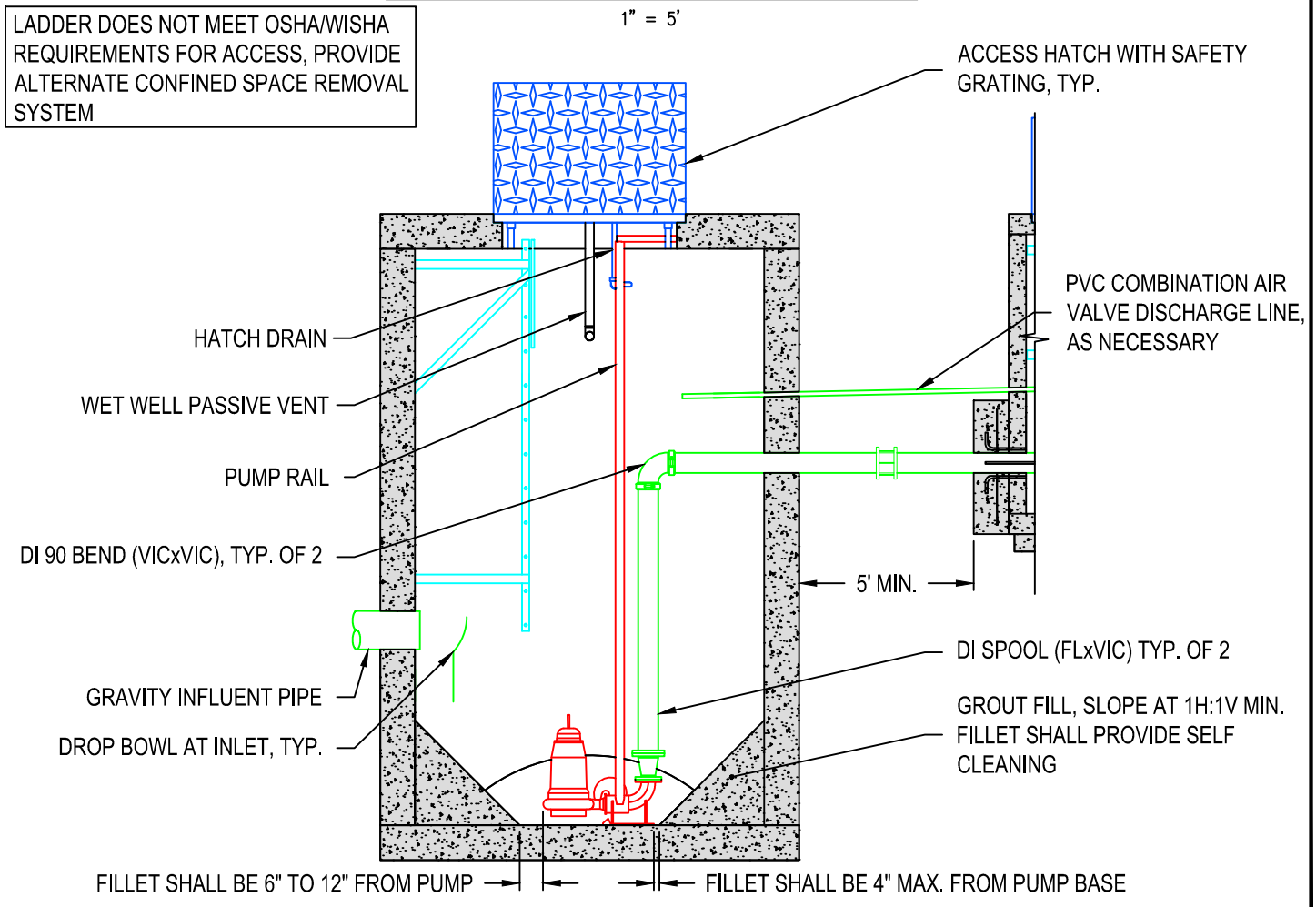
TRENCH AND BEDDING DETAILS

FILE:CA-LSDT-D-TRENCH.DWG	REVISED: 2/20/2015	DETAIL NO.: LS08



WET WELL MECHANICAL PLAN

1" = 5'



WET WELL MECHANICAL ELEVATION

1" = 5'

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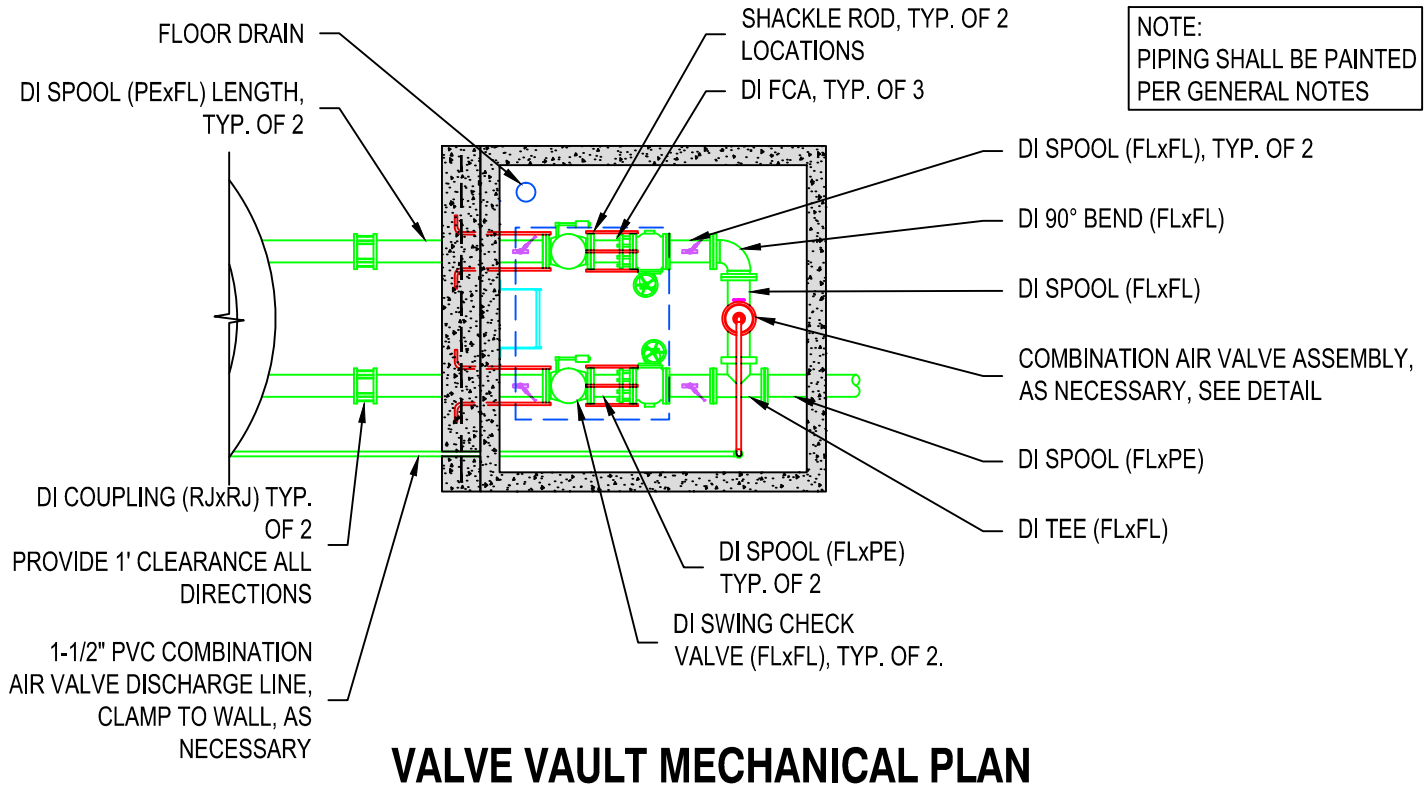
LIFT STATION STANDARD DETAIL

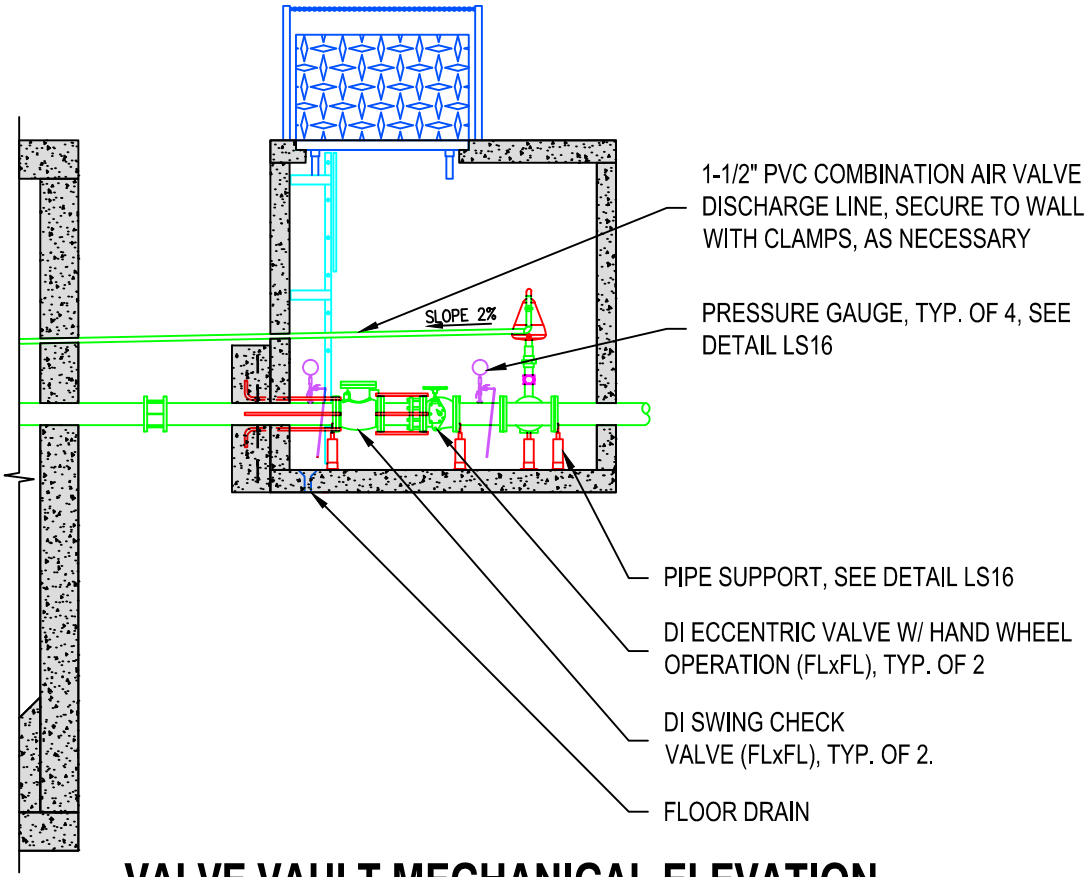
WET WELL MECHANICAL

FILE:CA-LSDT-D-WETMECH.DWG	REVISED: 2/20/2015	DETAIL NO.: LS09



VALVE VAULT MECHANICAL PLAN

1" = 5'



VALVE VAULT MECHANICAL ELEVATION

1" = 5'

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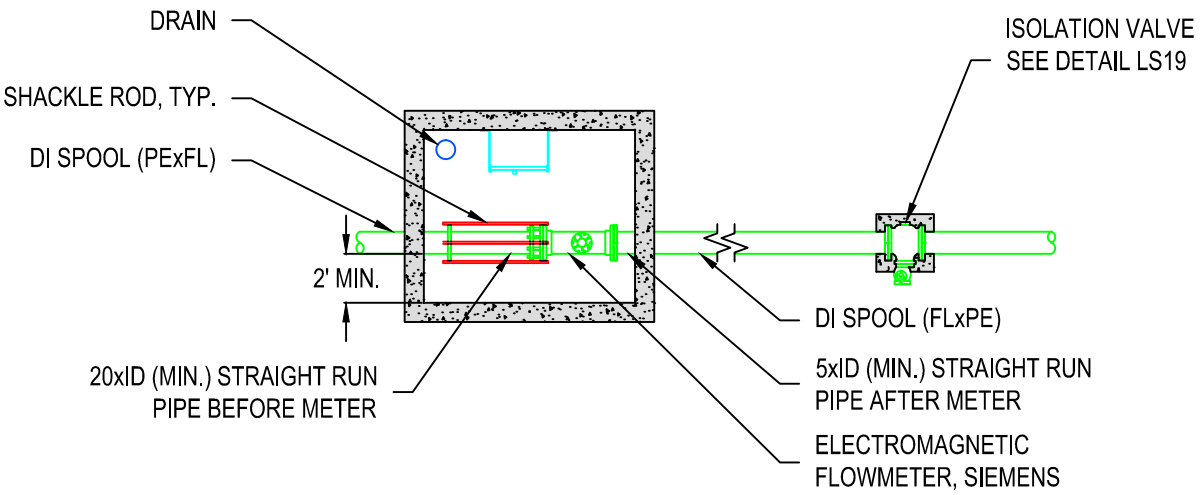
LIFT STATION STANDARD DETAIL

VALVE VAULT MECHANICAL

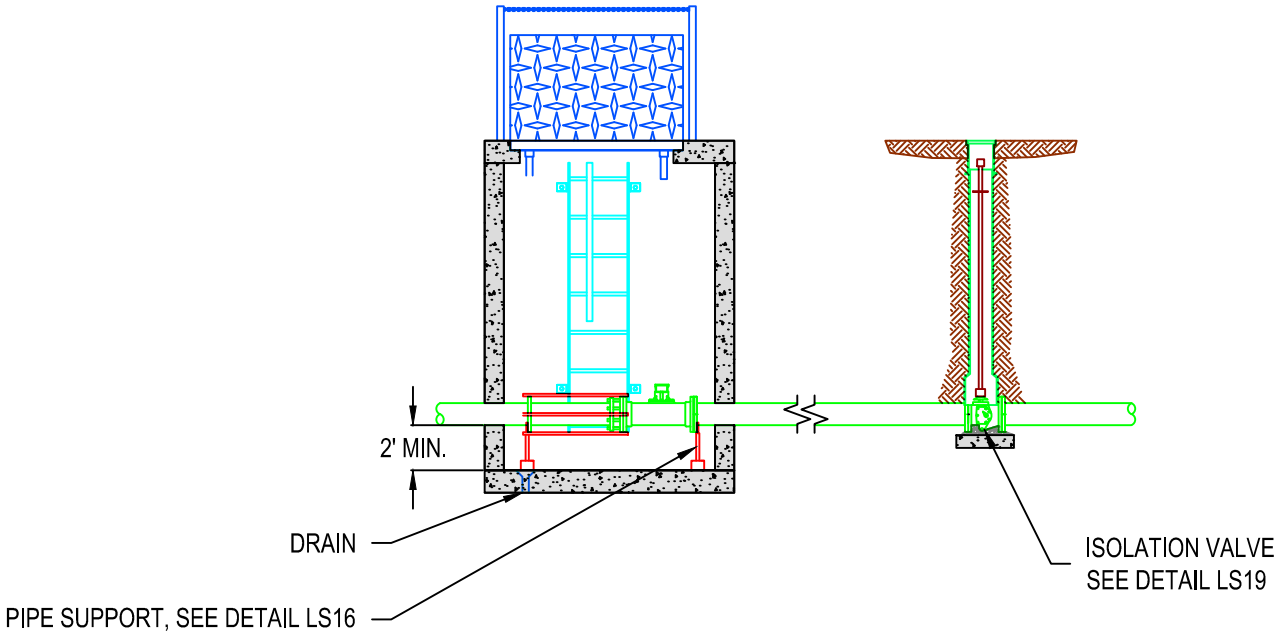
FILE:CA-LSDT-D-VAULTMECH.DWG	REVISED: 2/20/2015	DETAIL NO.: LS10

NOTE:
PIPING SHALL BE PAINTED
PER GENERAL NOTES



METER VAULT MECHANICAL PLAN

1" = 5'



METER VAULT MECHANICAL ELEVATION

1" = 5'

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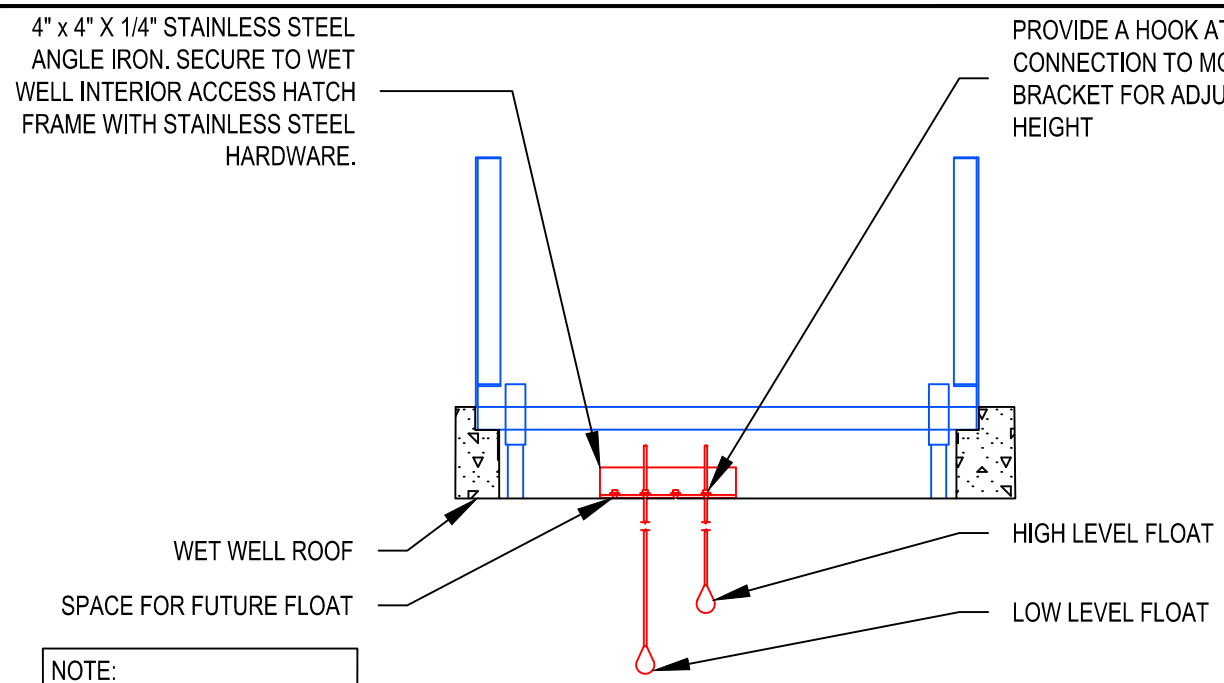
LIFT STATION STANDARD DETAIL

METER VAULT MECHANICAL

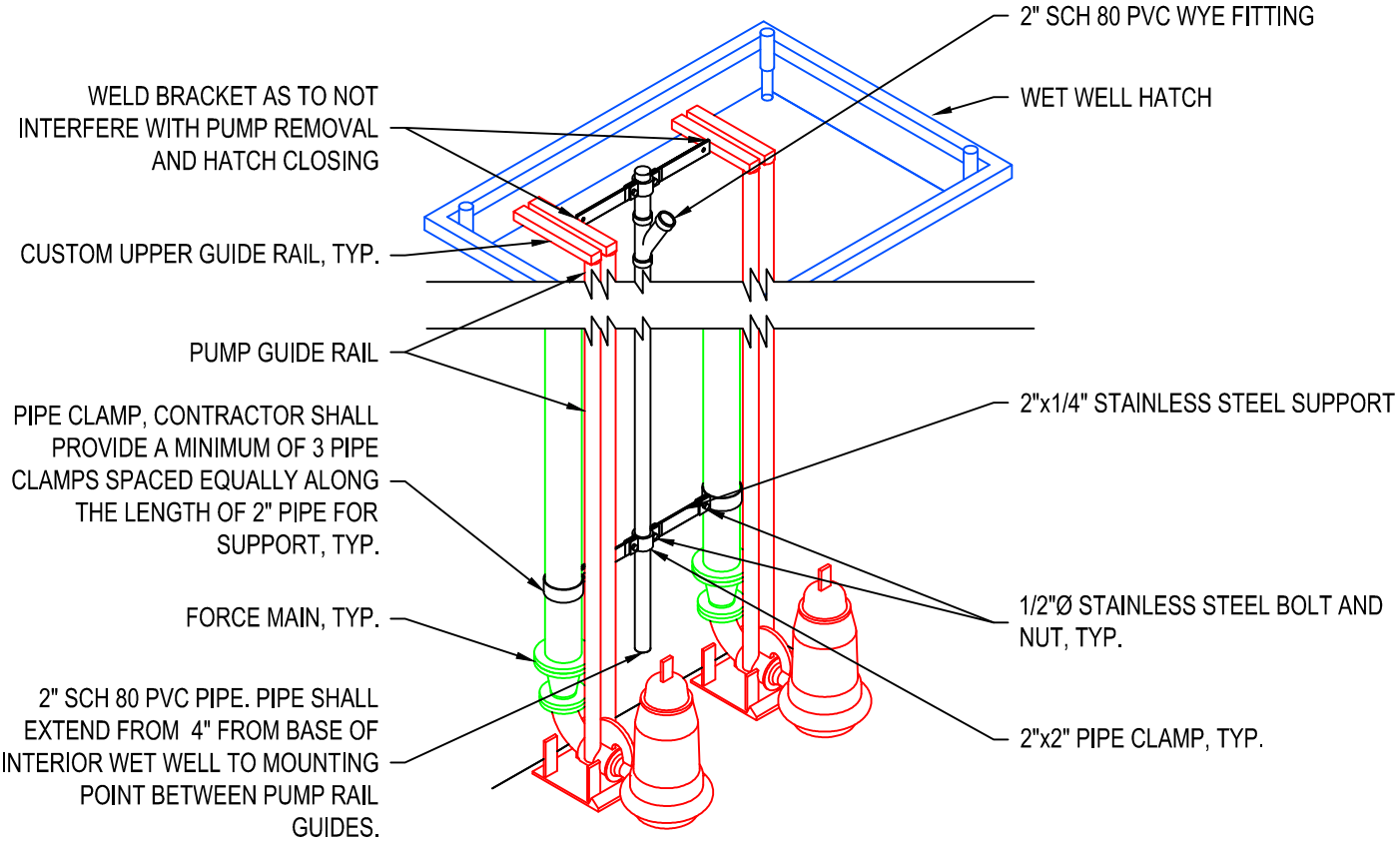
FILE:CA-LSDT-D-METERMECH.DWG	REVISED: 2/20/2015	DETAIL NO.: LS11



NOTE:
FLOAT ELEVATIONS FIELD ADJUSTED PER ENGINEER AT STARTUP

FLOAT MOUNTING DETAIL

NOT TO SCALE



LEVEL TRANSMITTER SLEEVE DETAIL

NOT TO SCALE

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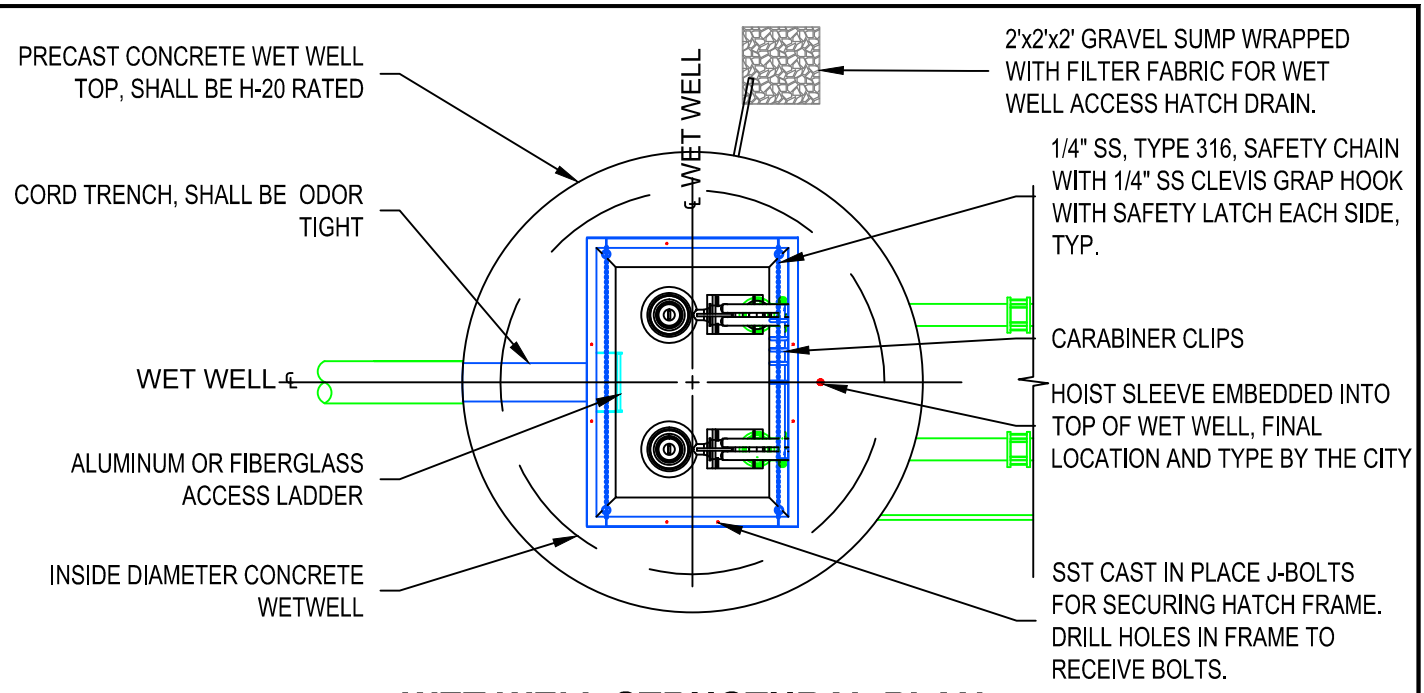
LIFT STATION STANDARD DETAIL

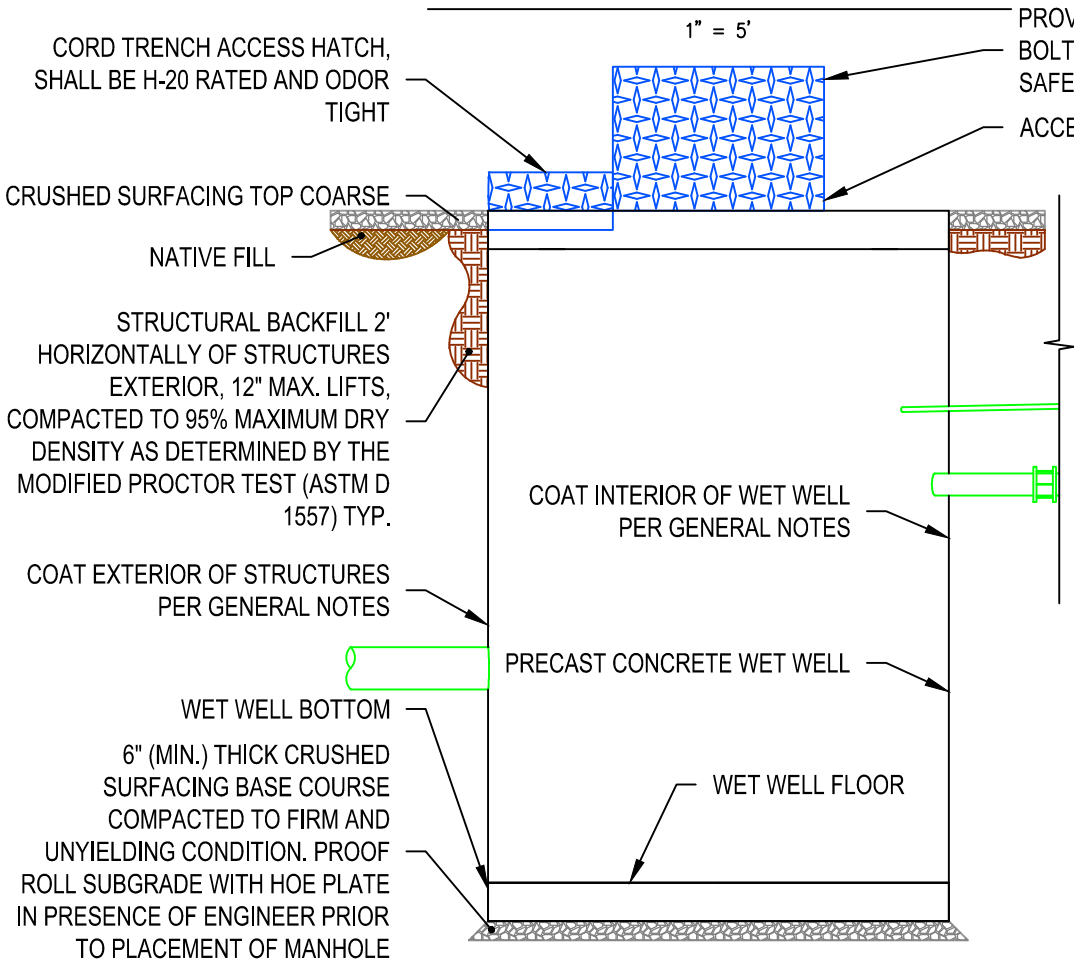
LEVEL CONTROL DETAILS

FILE:CA-LSDT-D-LEVEL.DWG	REVISED: 2/20/2015	DETAIL NO.: LS12



WET WELL STRUCTURAL PLAN

1" = 5'



WET WELL STRUCTURAL ELEVATION

1" = 5'

WET WELL ACCESS HATCH	
CLEAR OPENING	60"X84" MIN.
NO. OF LEAVES	2 MIN.
RATING	H-20
MOUNTING*	BOLTS
GRATING**	YES
SAFETY CHAIN***	YES
GASKET	ODOR TIGHT
DRAIN	YES
SPRING ASSIST	YES

ACCESS HATCH NOTES:

* ACCESS HATCH OVER WET WELL SHALL BE MOUNTED USING STAINLESS STEEL BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCH SHALL BE MOUNTED USING THE STANDARD FRAME ANCHORS THAT COME WITH THE HATCH.
** ACCESS HATCH SHALL HAVE REMOVABLE SAFETY GRATING COVER BELOW ACCESS HATCH LID.
*** SAFETY CHAINS SHALL BE PROVIDED ON ACCESS HATCHES AS DETAILED FOR EACH HATCH ON THIS SHEET.

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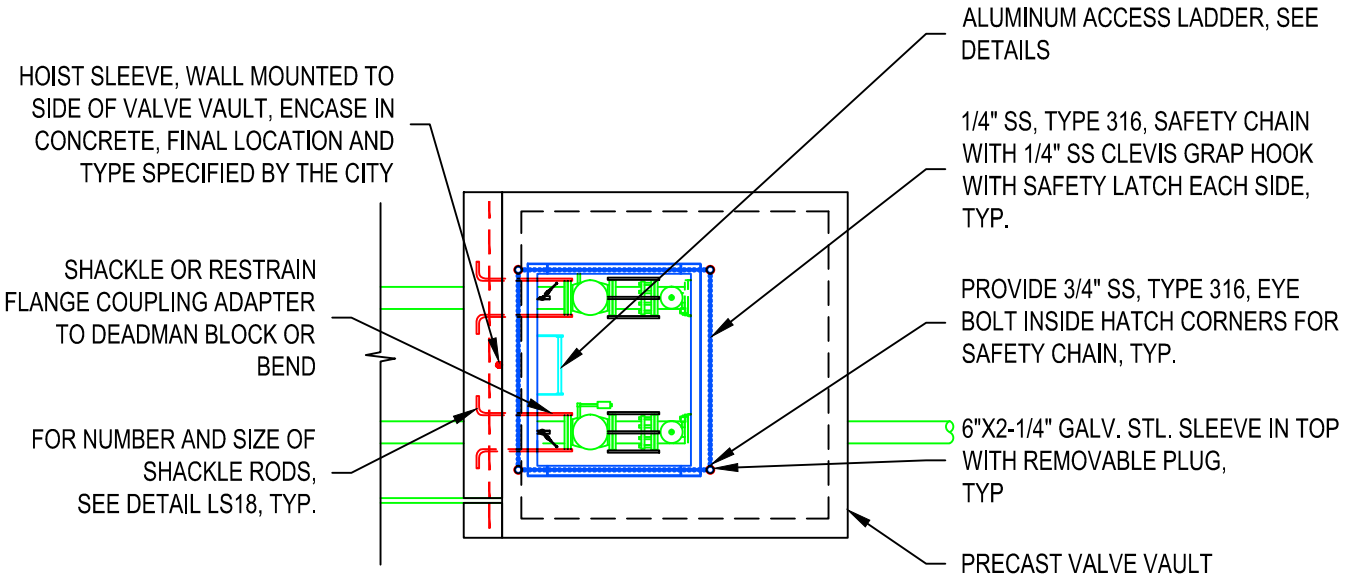
LIFT STATION STANDARD DETAIL

WET WELL STRUCTURAL

FILE:CA-LSDT-D-WETSTRU.DWG	REVISED: 2/20/2015	DETAIL NO.: LS13



VALVE VAULT STRUCTURAL PLAN

1" = 5'

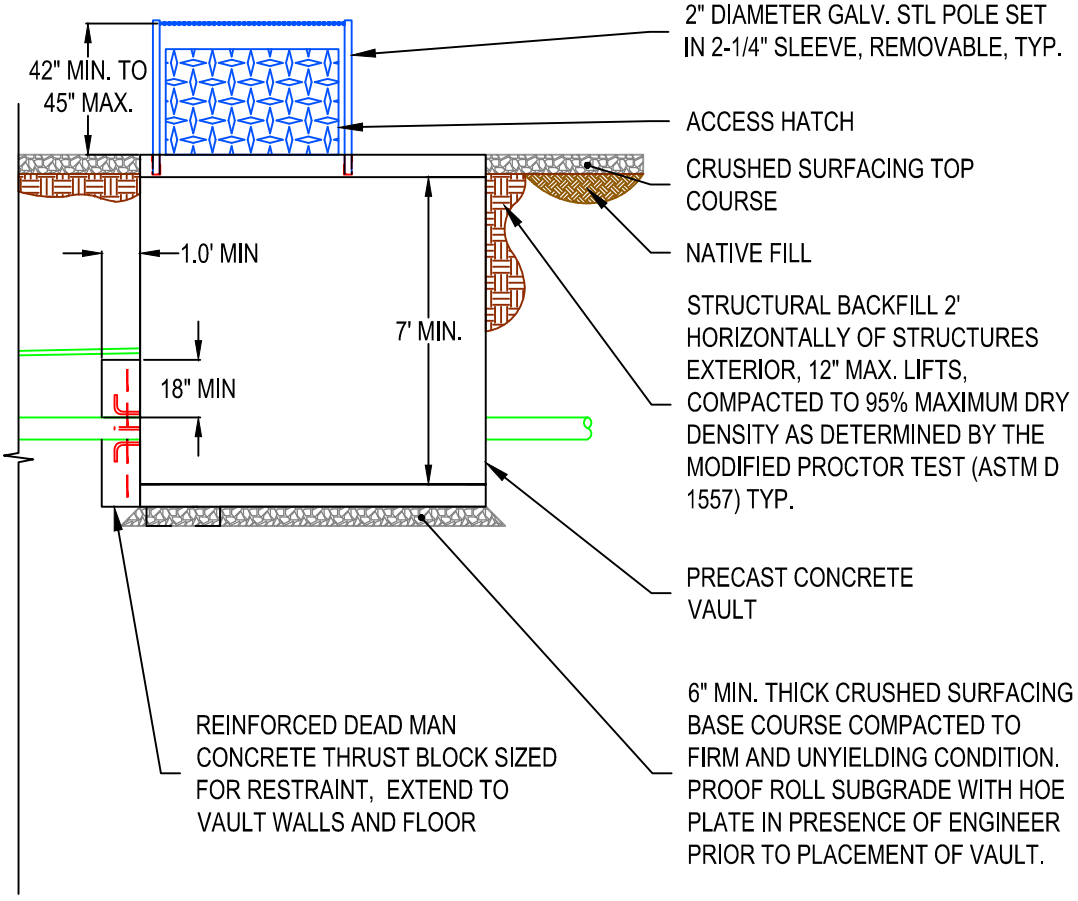
VAULT ACCESS HATCH	
CLEAR OPENING	48"X60" MIN.
NO. OF LEAVES	2 MIN.
RATING	H-20
MOUNTING*	ANCHOR
GRATING**	YES
SAFETY CHAIN***	YES
GASKET	ODOR TIGHT
DRAIN	YES
SPRING ASSIST	YES

ACCESS HATCH NOTES:

* ACCESS HATCH OVER VAULT SHALL BE MOUNTED USING STAINLESS STEEL BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCH SHALL BE MOUNTED USING THE STANDARD FRAME ANCHORS THAT COME WITH THE HATCH.

** ACCESS HATCH SHALL HAVE REMOVABLE SAFETY GRATING COVER BELOW ACCESS HATCH LID.

*** SAFETY CHAINS SHALL BE PROVIDED ON ACCESS HATCHES AS DETAILED FOR EACH HATCH ON THIS SHEET.



VALVE VAULT STRUCTURAL ELEVATION

1" = 5'

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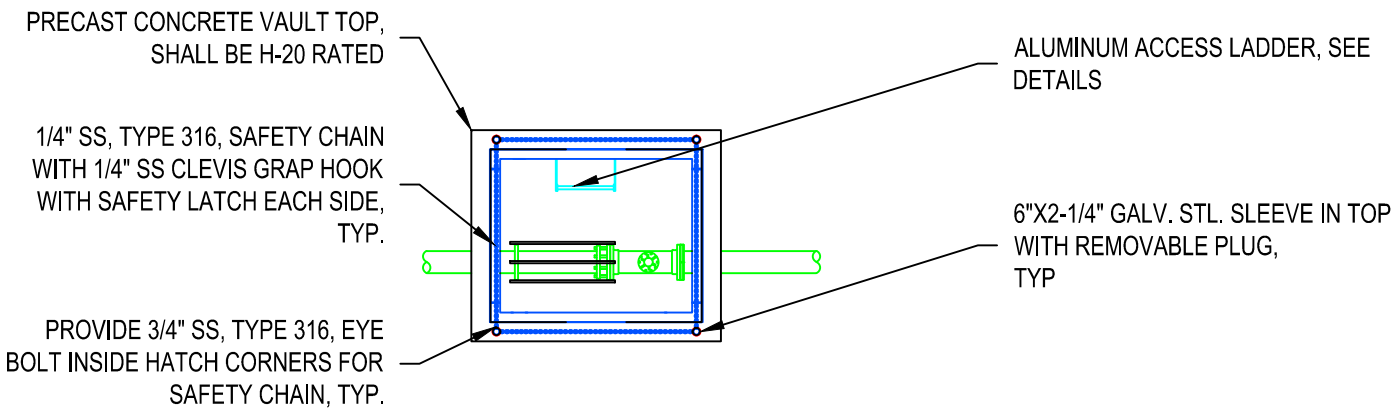
LIFT STATION STANDARD DETAIL

VALVE VAULT STRUCTURAL

FILE:CA-LSDT-D-VAULTSTRU.DWG	REVISED: 2/20/2015	DETAIL NO.: LS14



METER VAULT STRUCTURAL PLAN

1" = 5'

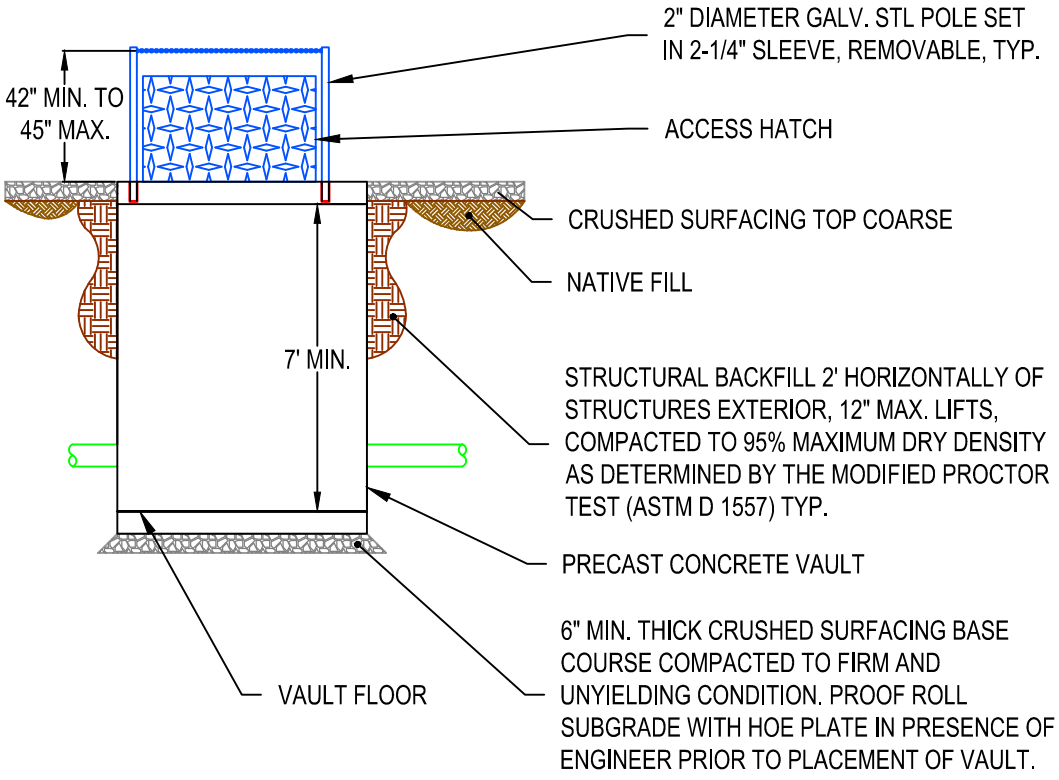
METER VAULT ACCESS HATCH	
CLEAR OPENING	48"X60" MIN.
NO. OF LEAVES	1 MIN.
RATING	H-20
MOUNTING*	ANCHOR
GRATING**	YES
SAFETY CHAIN***	YES
GASKET	ODOR TIGHT
DRAIN	YES
SPRING ASSIST	YES

ACCESS HATCH NOTES:

* ACCESS HATCH OVER METER VAULT SHALL BE MOUNTED USING STAINLESS STEEL BOLTS AS SHOWN ON THIS PLAN. OTHER ACCESS HATCH SHALL BE MOUNTED USING THE STANDARD FRAME ANCHORS THAT COME WITH THE HATCH.

** ACCESS HATCH SHALL HAVE REMOVABLE SAFETY GRATING COVER BELOW ACCESS HATCH LID.

*** SAFETY CHAINS SHALL BE PROVIDED ON ACCESS HATCHES AS DETAILED FOR EACH HATCH ON THIS SHEET.



METER VAULT STRUCTURAL ELEVATION

1" = 5'

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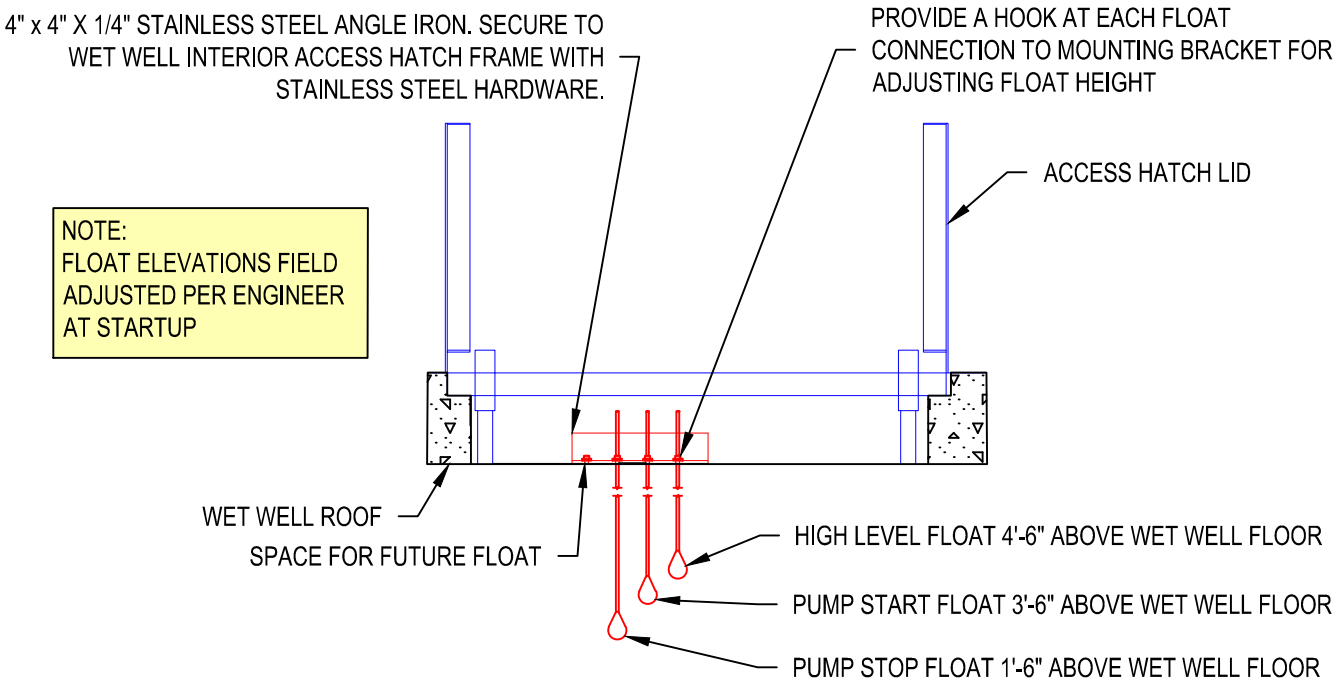
LIFT STATION STANDARD DETAIL

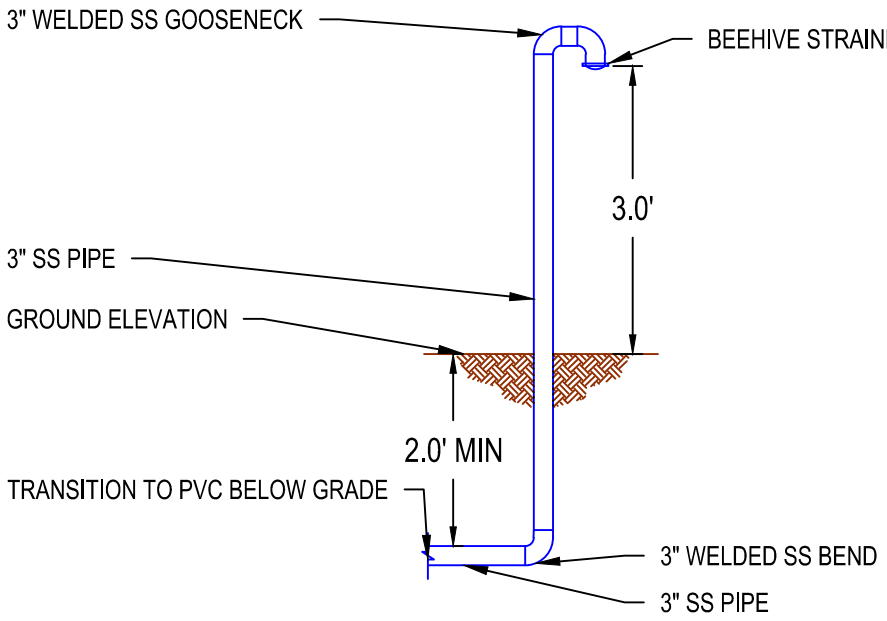
METER VAULT STRUCTURAL

FILE:CA-LSDT-D-METERSTRU.DWG	REVISED: 2/20/2015	DETAIL NO.: LS15



FLOAT MOUNTING DETAIL

NOT TO SCALE



WET WELL PASSIVE VENT DETAIL

NOT TO SCALE

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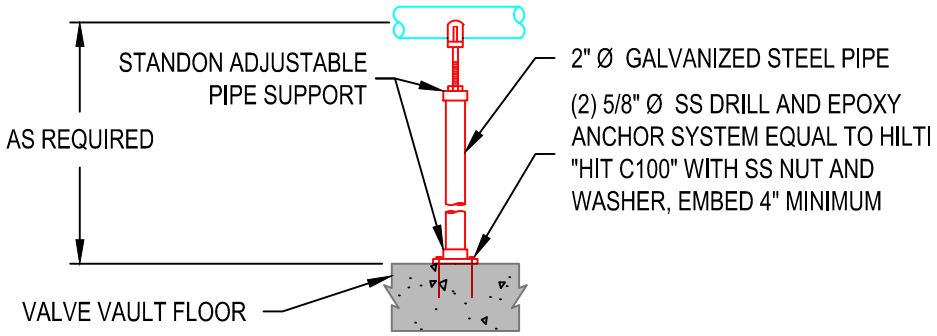
LIFT STATION STANDARD DETAIL

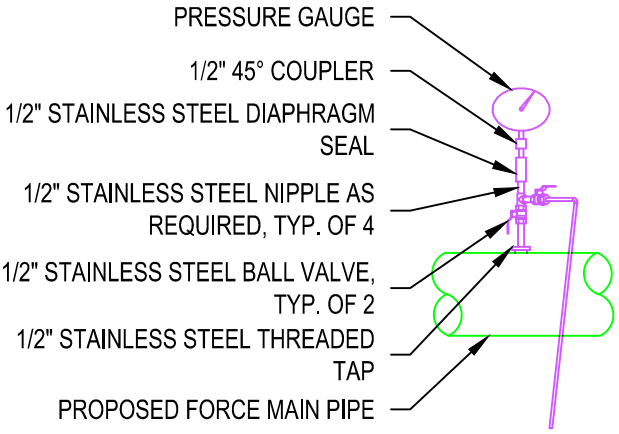
WET WELL DETAILS

FILE: CA-LSDT-D-FLOAT.DWG	REVISED: 2/20/2015	DETAIL NO.:



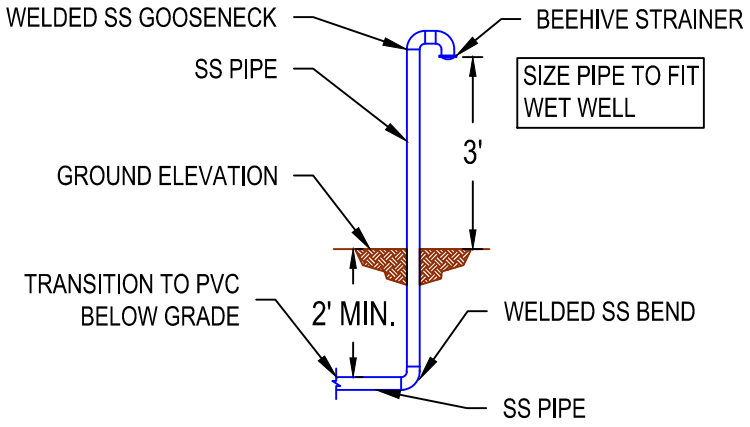
VERTICAL PIPE SUPPORT DETAIL

NOT TO SCALE



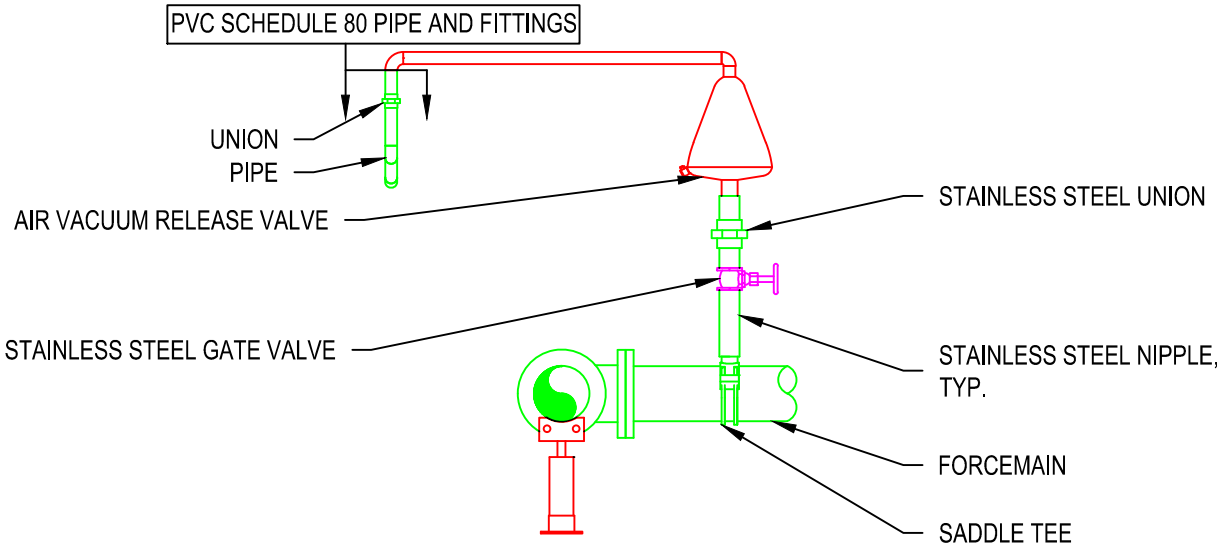
PRESSURE GAUGE DETAILS

NOT TO SCALE



WET WELL PASSIVE VENT DETAIL

NOT TO SCALE



SEWAGE COMBINATION ASSEMBLY DETAIL

NOT TO SCALE

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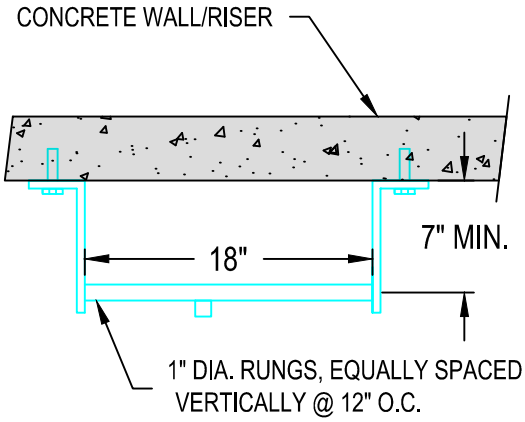
LIFT STATION STANDARD DETAIL

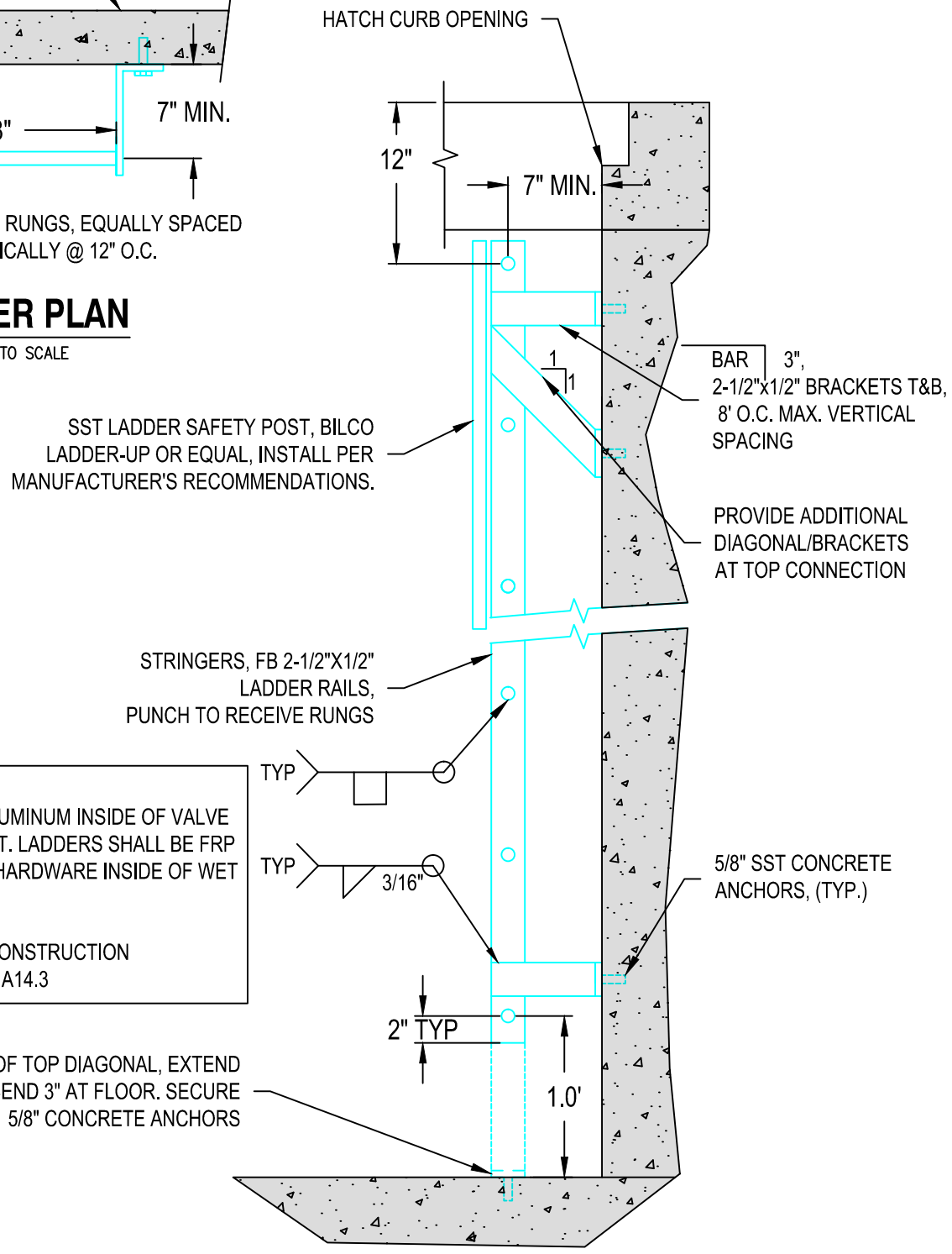
WET WELL AND VAULT DETAILS

FILE: CA-LSDT-D-AIRRELEASE.DWG	REVISED: 2/20/2015	DETAIL NO.: LS16



LADDER PLAN

NOT TO SCALE



NOTES:
1. LADDERS SHALL BE ALUMINUM INSIDE OF VALVE VAULT AND METER VAULT. LADDERS SHALL BE FRP WITH STAINLESS STEEL HARDWARE INSIDE OF WET WELL.

2. LADDER MUST MEET CONSTRUCTION REQUIREMENTS OF ANSI A14.3

LADDER PROFILE

NOT TO SCALE

City of Cashmere
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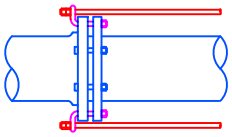
LIFT STATION STANDARD DETAIL

LADDER DETAIL

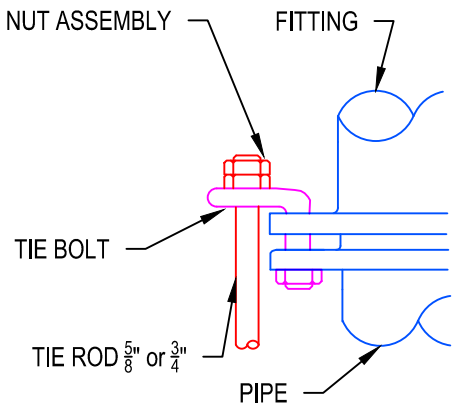
FILE:CA-LSDT-D-LADDER.DWG	REVISED: 2/20/2015	DETAIL NO.: LS17

ASTM A242 (COR-TEN® OR EQUAL) STEEL													ROD DIAMETER: 5/8" OR (3/4")
	NUMBER OF TIE RODS PER JOINT							MAXIMUM TIE ROD LENGTH, FEET					
PIPE DIAMETER	TEE DEAD END VALVE 90° BEND		45° BEND		22.5° BEND		11.25° BEND	TEE DEAD END VALVE 90° BEND		45° BEND		22.5° BEND		11.25° BEND	
3	2	-	2	-	2	-	2	-	100	--	100	--	100	--	100	--
4	2	(2)	2	(2)	2	(2)	2	(2)	100	(100)	100	(100)	100	(100)	100	(100)
6	2	(2)	2	(2)	2	(2)	2	(2)	60	(90)	80	(100)	100	(100)	100	(100)
8	4	(3)	2	(2)	2	(2)	2	(2)	50	(50)	50	(70)	90	(100)	100	(100)
10	6	(4)	4	(2)	2	(2)	2	(2)	40	(60)	60	(50)	60	(80)	100	(100)
12	8	(6)	4	(4)	2	(2)	2	(2)	60	(60)	60	(80)	50	(80)	100	(100)
14	10	(5)	6	(4)	4	(2)	2	(2)	60	(70)	60	(60)	80	(60)	80	(100)
16	12	(8)	8	(6)	4	(3)	2	(2)	60	(50)	60	(70)	60	(70)	60	(90)
18	16	(12)	8	(6)	6	(3)	3	(2)	50	(50)	50	(60)	70	(50)	70	(70)
ASTM A36 STEEL OR 304SS													ROD DIAMETER: 5/8" OR (3/4")			
3	2	-	2	-	2	-	2	-	100	--	100	--	100	--	100	--
4	2	(2)	2	(2)	2	(2)	2	(2)	100	(100)	100	(100)	100	(100)	100	(100)
6	2	(2)	2	(2)	2	(2)	2	(2)	60	(90)	80	(100)	100	(100)	100	(100)
8	4	(3)	3	(2)	2	(2)	2	(2)	50	(50)	70	(70)	90	(100)	100	(100)
10	6	(4)	4	(4)	2	(2)	2	(2)	70	(60)	60	(90)	60	(80)	100	(100)
12	8	(6)	6	(4)	4	(2)	2	(2)	80	(90)	80	(80)	100	(80)	100	(100)
14	12	(8)	8	(6)	4	(4)	2	(2)	70	(90)	80	(90)	80	(100)	80	(100)
16	16	(10)	10	(6)	4	(4)	3	(2)	70	(80)	80	(70)	90	(90)	90	(90)
18	-	(14)	12	(8)	6	(4)	3	(2)	--	(80)	80	(80)	70	(70)	70	(70)

TIE ROD SELECTION TABLES



TIE BOLT
STAR SUPPLY CORPORATION OR
APPROVED EQUAL



ATTACHMENT DETAIL

NOT TO SCALE

1) TIE RODS SHALL BE "ALL THREAD" ROD OF EITHER ASTM A242 (COR-TEN), GALVANIZED OR EPOXY COATED A36 STEEL, OR 304 STAINLESS STEEL. UNCOATED MILD STEEL WILL NOT BE ALLOWED.
2) TIE RODS SHALL HAVE "NATIONAL-COARSE" THREAD WITH EITHER TWO NUTS OR ONE SELF-LOCKING NUT AT EACH END (ALL NUTS SHALL BE GALVANIZED). NUTS ARE TO BE STAR NATIONAL TIENUT OR NUT OF EQUIVALENT OR GREATER OUTER DIAMETER.
3) NUMBER OF TIE RODS PER JOINT SHALL BE IN ACCORDANCE WITH TIE ROD SELECTION TABLES ABOVE UNLESS OTHERWISE SHOWN ON APPROVED DESIGN PLANS.
4) TIE ROD ASSEMBLY SHALL BE COATED WITH 2 COATS OF COAL TAR EPOXY. EPOXY SHALL BE APPLIED ONLY AFTER ASSEMBLY IS COMPLETE SO THAT NO ADDITIONAL DAMAGE TO COATING OCCURS. ANY DAMAGE SHALL BE TOUCHED UP PRIOR TO BURY.
5) TIE RODS SHALL BE ASSEMBLED SYMMETRICALLY ABOUT EACH JOINT (IF AN EVEN NUMBER OF RODS ARE USED THEN EACH ROD SHALL HAVE A ROD LOCATED ON THE DIRECT OPPOSITE SIDE OF JOINT. IF 3 OR 6 RODS ARE USED THEN AN EQUAL NUMBER OF UNSHACKLED BOLT HOLES SHALL BE LEFT BETWEEN ANY TWO TIE RODS.)
6) TIE ROD NUTS SHALL BE TIGHTENED UNIFORMLY AT EACH JOINT PRIOR TO COATING.
7) TIE ROD LENGTHS SHALL NOT EXCEED THOSE LISTED IN ABOVE TABLES, UNLESS SPECIFICALLY SHOWN ON APPROVED PLANS.
8) TIE ROD COUPLINGS SHALL BE GALVANIZED "STAR NATIONAL PRODUCTS TIECOUPLING" OR APPROVED EQUAL.
9) TIE RODS SHALL BE ATTACHED TO JOINTS WITH TIE BOLTS, EXCEPT FOR FIRE HYDRANT INSTALLATIONS WHICH SHALL USE EITHER TIE BOLTS OR GALVANIZED CAST ON LUGS. TIE BOLTS SHALL BE GALVANIZED "STAR NATIONAL PRODUCTS TIEBOLT" OR APPROVED EQUAL. "DUC-LUGS" ARE NOT ALLOWED.
10) 20" FITTINGS AND LARGER SHALL HAVE TIE ROD DESIGN INCLUDED ON DESIGN PLANS.

ATTACHMENT NOTES

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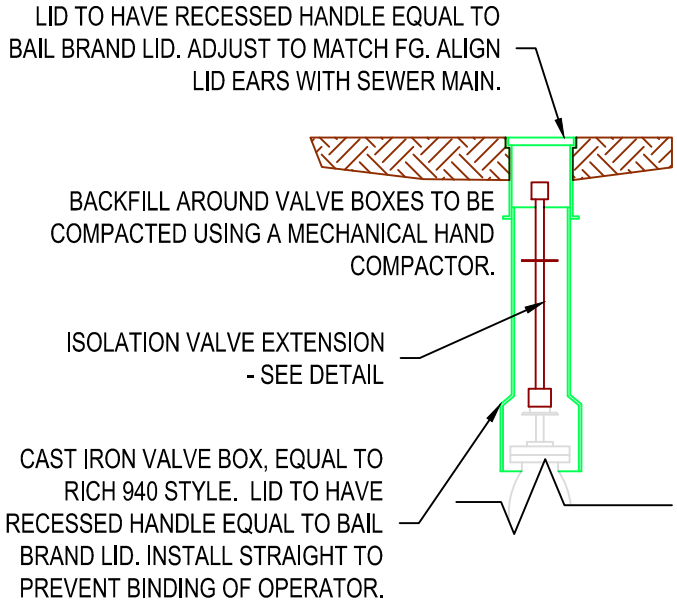
LIFT STATION STANDARD DETAIL

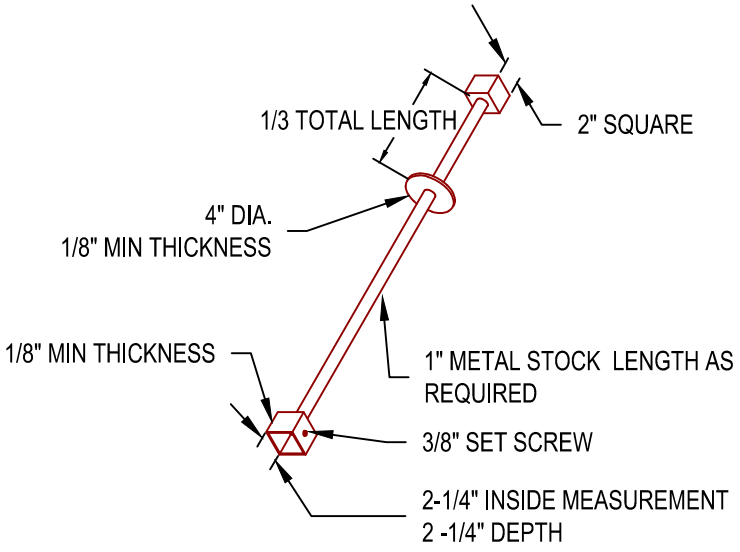
ATTACHMENTS

FILE:CA-LSDT-D-SHACKLE.DWG	REVISED: 2/20/2015	DETAIL NO.: LS18



ISOLATION VALVE BOX DETAIL

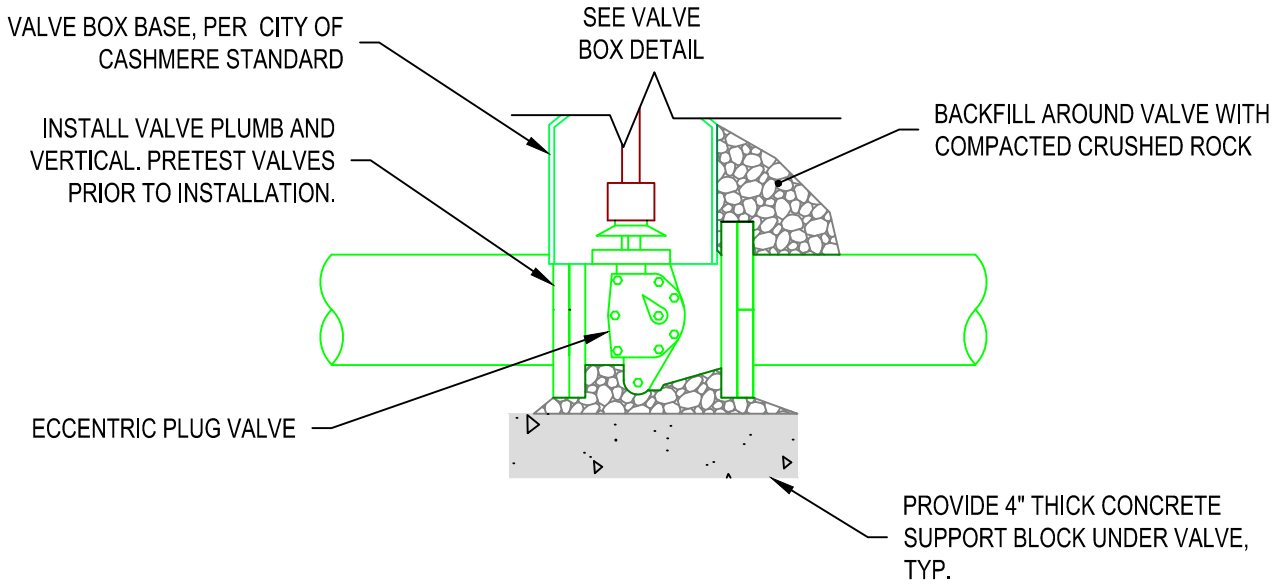
NOT TO SCALE



ISOLATION VALVE EXTENSION DETAIL

NOT TO SCALE

EXTENSIONS ARE REQUIRED WHEN THE VALVE NUT IS MORE THAN THREE (3) FEET BELOW FINISHED GRADE. EXTENSIONS ARE TO BE A MINIMUM OF ONE (1) FOOT LONG, ONLY ONE EXTENSION PER VALVE. ALL EXTENSIONS ARE TO BE MADE OF STEEL SIZED AS NOTED, AND PAINTED WITH TWO COATS OF CARBON ELASTIC (ATCO NO. 2221) AS SPECIFIED BY PRESERVATIVE PAINT CO. OR APPROVED EQUAL.



ISOLATION VALVE

NOT TO SCALE

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LIFT STATION STANDARD DETAIL

ISOLATION VALVE DETAILS

FILE:CA-LSDT-D-ISOVALVE.DWG	REVISED: 2/20/2015	DETAIL NO.: LS19

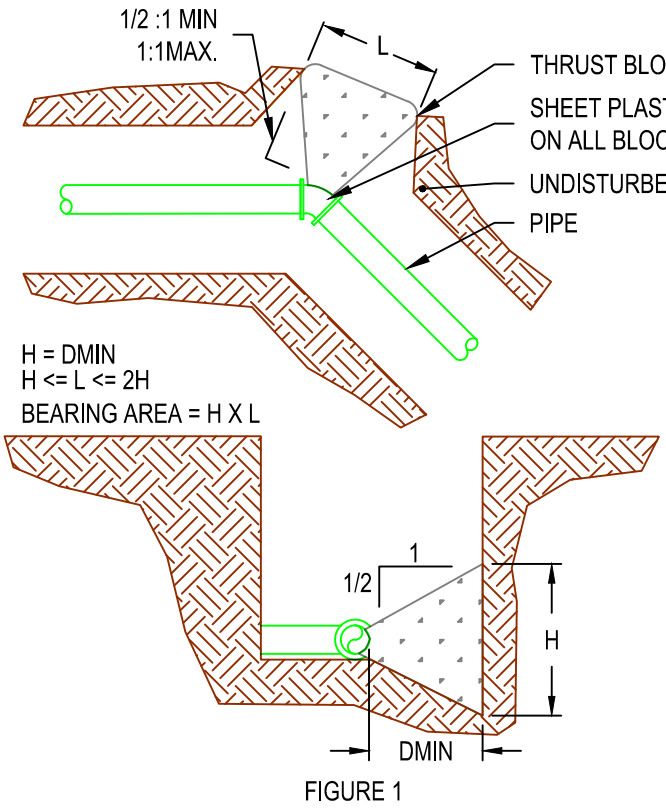
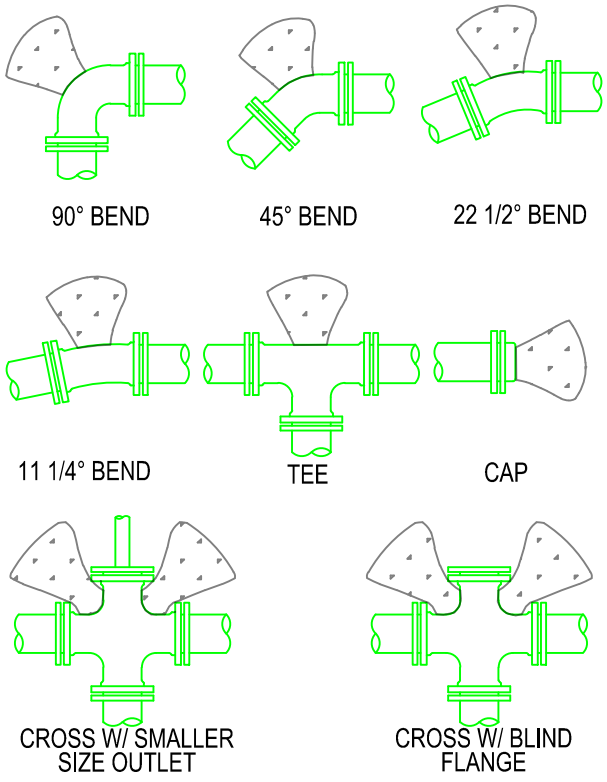


FIGURE 1



CONSTRAINTS

1. SOIL CONDITIONS AND BEARING CHARACTERISTICS ARE TO BE DETERMINED BY THE DISTRICT.
2. THIS STANDARD DETAIL IS FOR HORIZONTAL THRUST RESTRAINT ONLY.
3. CONCRETE BLOCKING SHALL BE PER APWA SPECIFICATION 7-11.3(13) 1984.
4. CONCRETE THRUST BLOCKING FOR FITTINGS LARGER THAN 16" SHALL BE AS SHOWN ON THE PROJECT PLANS.
5. MAINTAIN 18" MINIMUM GROUND COVER OVER THE TOP OF ALL CONCRETE BLOCKING.
6. WRAP FITTINGS WITH 8 mil THICK POLYETHYLENE

PROCEDURE

1. DETERMINE BEARING FACTOR IN TABLE 1 CORRESPONDING TO APPROPRIATE PIPE SIZE AND TYPE OF FITTING.
2. MULTIPLY THE BEARING FACTOR DETERMINED IN TABLE 1 BY THE MULTIPLICATION FACTOR IN TABLE 2 FOR THE APPROPRIATE SOIL CLASSIFICATION.THE RESULT IS THE REQUIRED AREA OF CONCRETE (IN SQ. FT.) WHICH MUST BEAR AGAINST UNDISTURBED SOIL.
3. USING TABLE 3 LOCATE THE MINIMUM DEPTH OF CONCRETE (Dmin) CORRESPONDING TO THE REQUIRED BEARING AREA.
4. USING Dmin, THE HEIGHT AND LENGTH OF THE THRUST BLOCKING CAN BE DETERMINED FROM THE DIMENSION RELATIONSHIPS ILLUSTRATED IN FIGURE 1 AND DESCRIBED BELOW:
   A. "H" EQUALS "D"
   B. MAX. "L" EQUALS 2 X "H"
   C. MIN. "L" EQUALS "H" SHEETING PRIOR TO POURING CONCRETE.

SIZE	TEST PRESSURE	TEES DEAD ENDS	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
3	300	2.25	2.25	2.25	2.25	2.25
4	300	2.25	2.25	2.25	2.25	2.25
6	300	2.83	4.00	2.25	2.25	2.25
8	300	5.00	7.11	3.85	2.25	2.25
10	300	7.86	11.11	6.00	3.06	2.25
12	300	11.31	16.00	8.66	4.41	2.25
14	250	12.83	18.14	9.82	5.00	2.51
16	225	15.08	21.33	11.54	5.88	2.96
* 2.25 BASED ON GEOMETRIC FACTORS						

TABLE 1: BEARING FACTOR

SOIL CONDITION	MULTIPLICATION FACTOR
*MUCK, PEAT, ETC.	-
SOFT CLAY	3.0
SAND	1.5
SAND AND GRAVEL	1.0
SAND AND GRAVEL CEMENTED W/ CLAY	0.75
HARD SHALE	0.30
* THRUST BLOCKING SHALL BE DESIGNED BY ENGINEER	

TABLE 2 MULTIPLICATION FACTOR

REQ'D BEARING AREA (SQ. FT.)	MINIMUM DEPTH DMIN
2.25 MIN.- 5.0	1.5'
5.01 - 10.0	2.25'
10.01 - 15.0	3.0'
15.01 - 30.0	4.0'
30.01 - 40.0	4.5'
40.01 - 50.0	5.0'
50.01 - 70.0	6.0'

TABLE 3: BLOCK SHAPE

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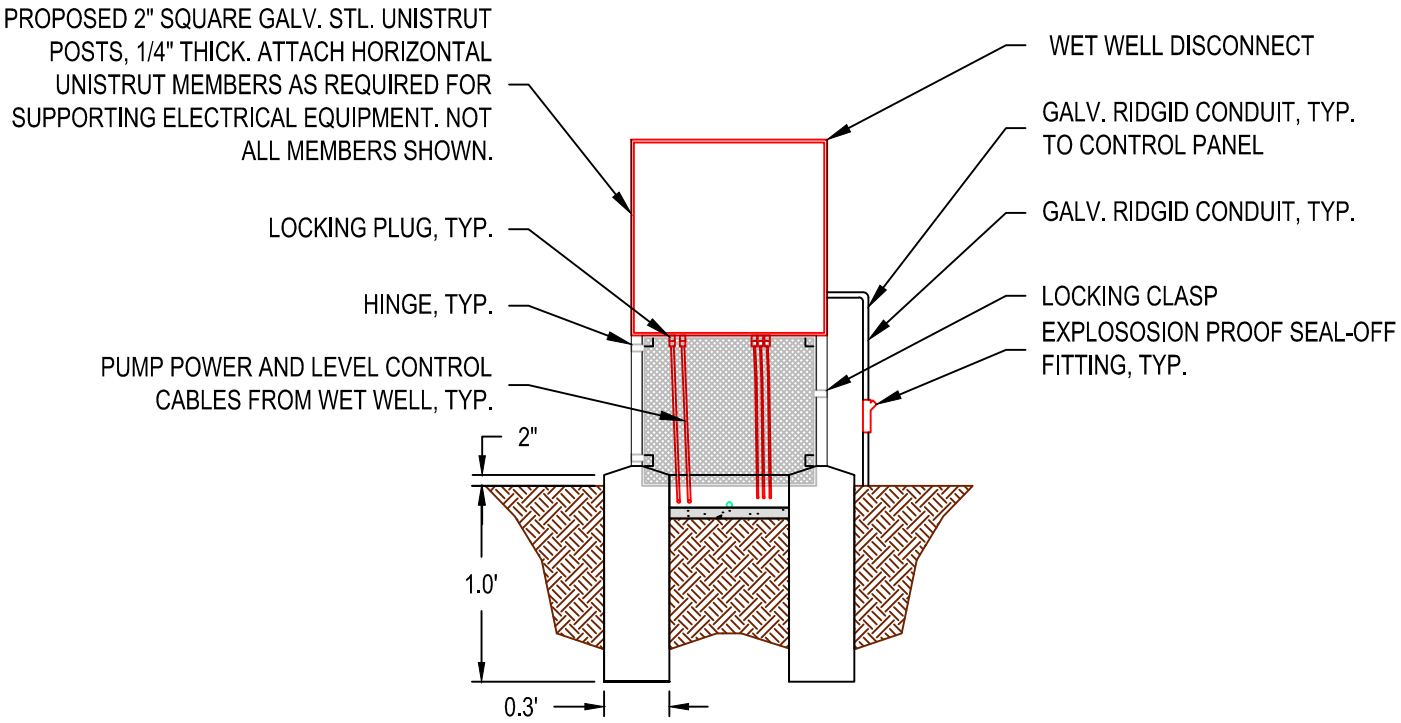
LIFT STATION STANDARD DETAIL

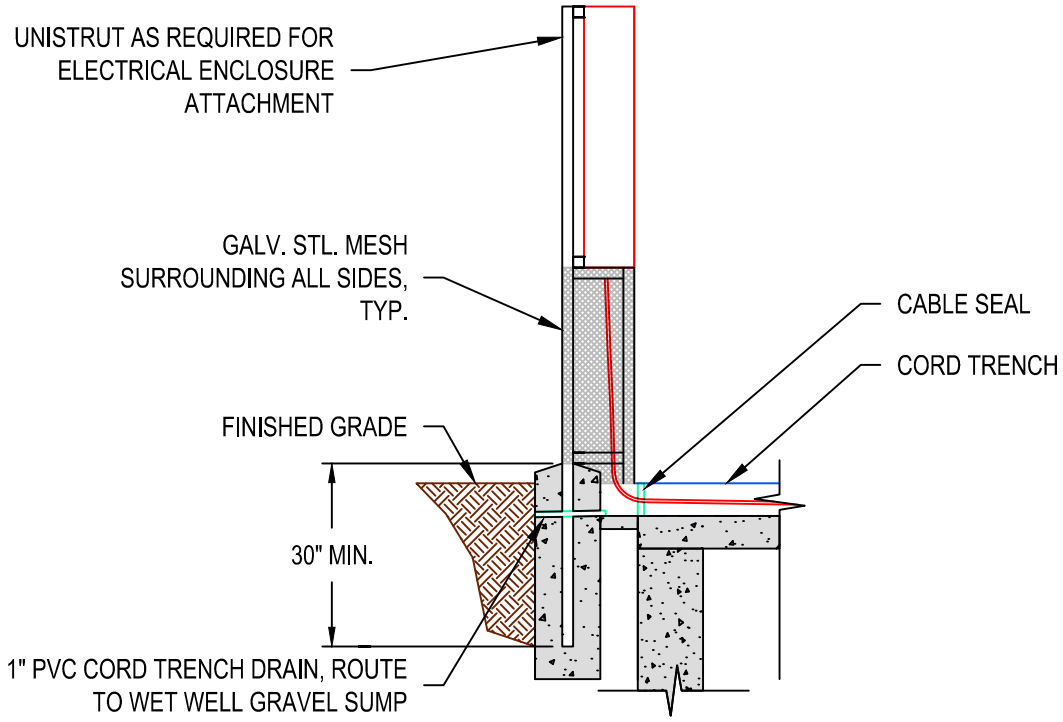
THRUST BLOCKING DETAILS

FILE:CA-LSDT-D-THBLOCK.DWG | REVISED: 2/20/2015 | DETAIL NO.: LS20



WET WELL DISCONNECT
FRONT ELEVATION

NOT TO SCALE



WET WELL DISCONNECT
SIDE ELEVATION

NOT TO SCALE

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101 Woodring St
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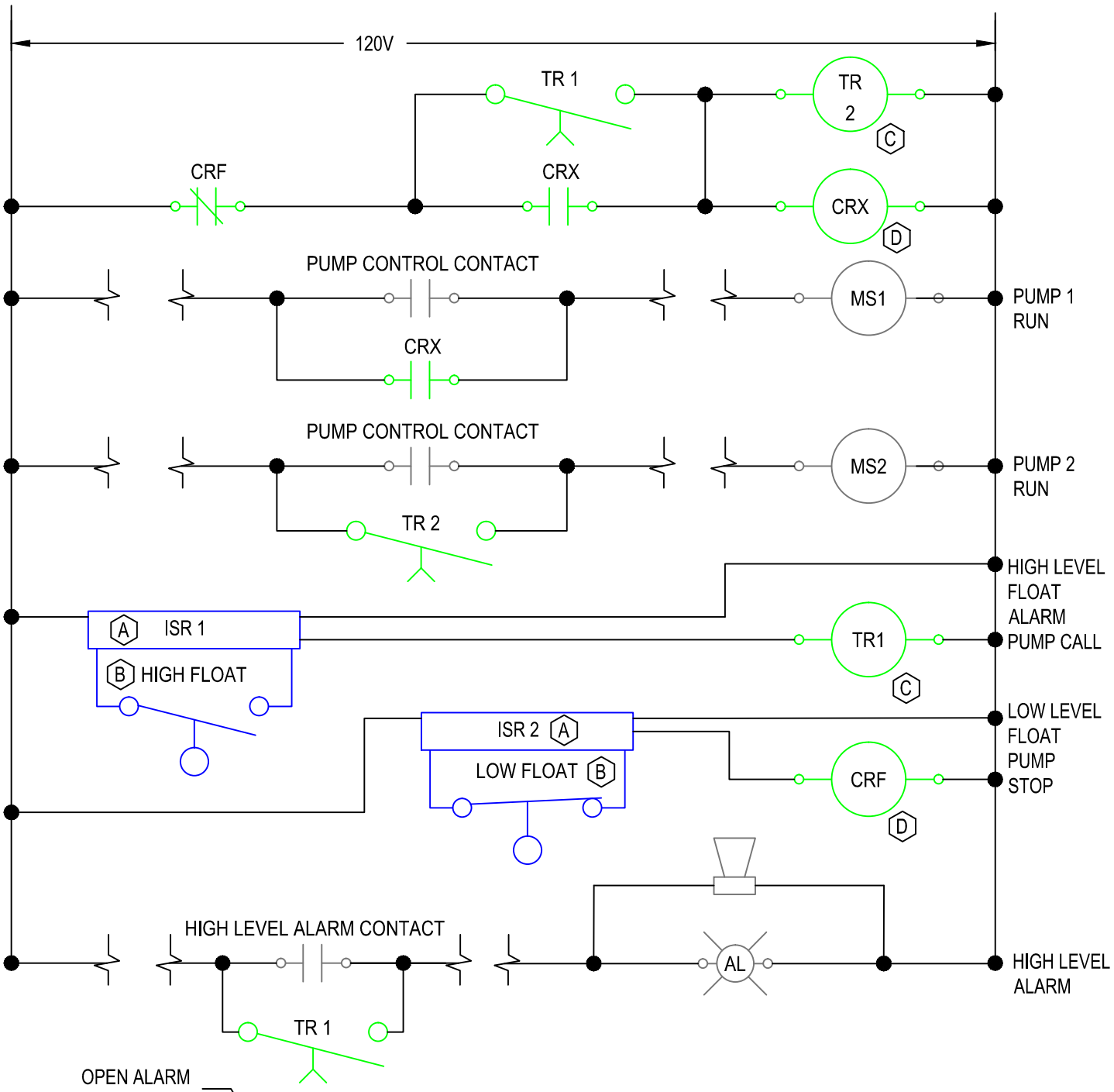
LIFT STATION STANDARD DETAIL

WET WELL DISCONNECT PEDESTAL

FILE:CA-LSDT-D-WWDISC-DWG	REVISED: 2/20/2015	DETAIL NO.: LS21



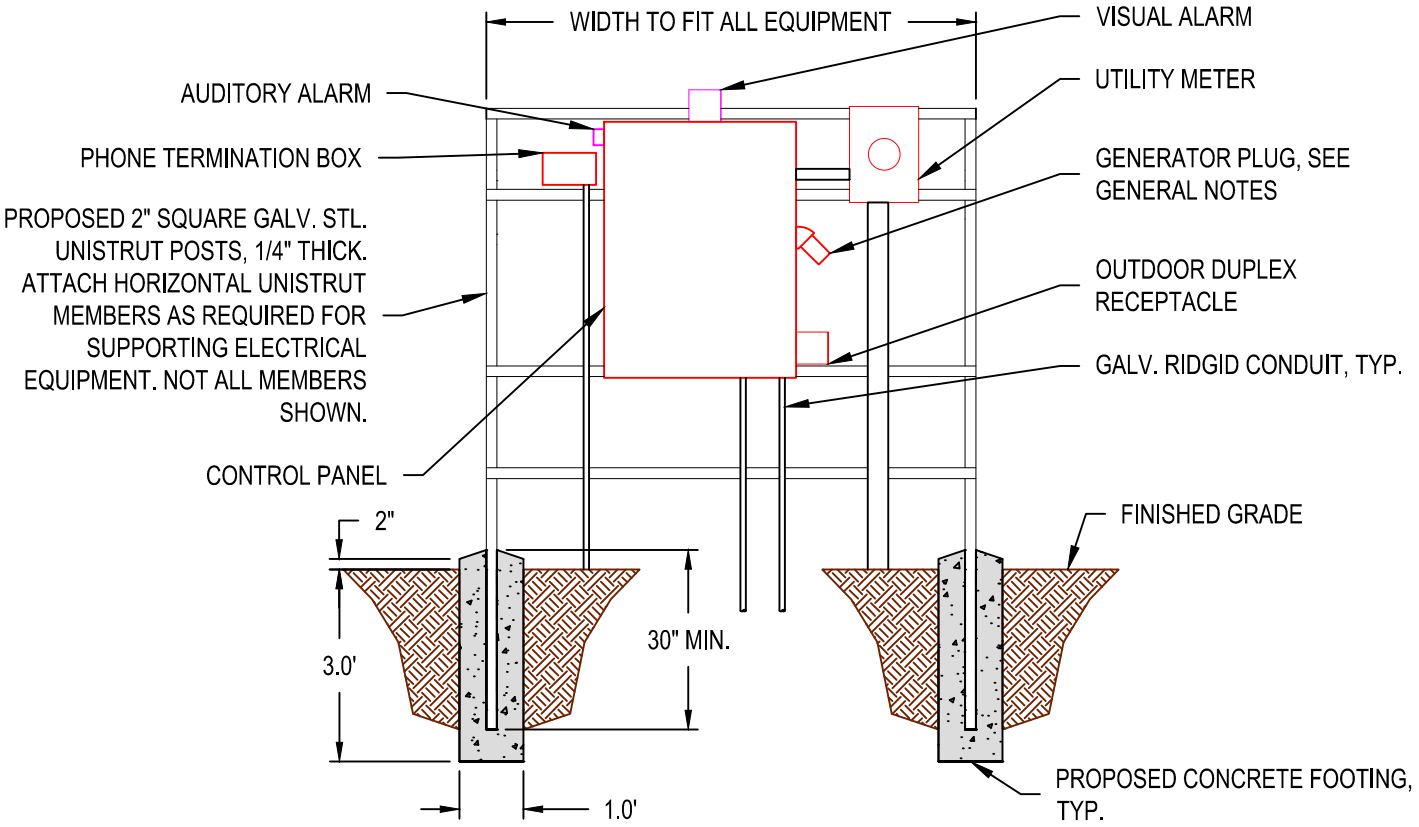
ELECTRICAL EQUIPMENT AND INSTRUMENTATION SCHEDULE	
ITEM	DESCRIPTION
A	INTRINSICALLY SAFE RELAY - STAHL 9002 SERIES OR EQUAL
B	INTRINSICALLY SAFE FLOAT SWITCH - CONTEGRA FS-90 NON-MERCURY, 316 SS
C	TIMER RELAY - IDEC RTE/GT3 SERIES OR EQUAL
D	CONTROL RELAY - IDEC OR EQUAL

City of Cashmere
101 Woodring St
509 782-3513
Fax 509 782-2840

LIFT STATION STANDARD DETAIL

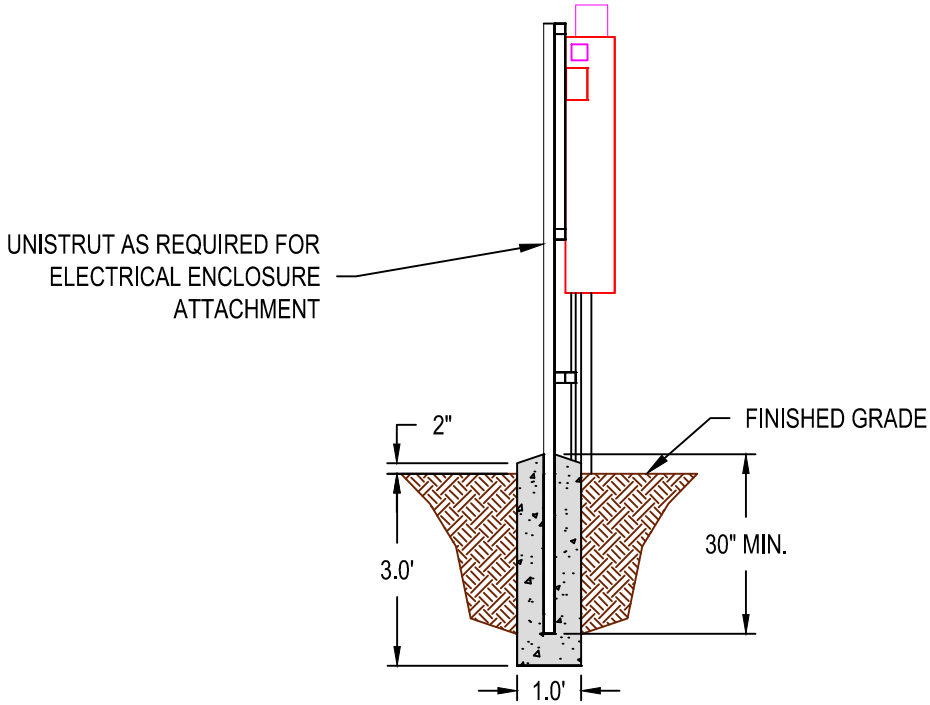
BACK-UP FLOAT CONTROL LOGIC

FILE:CA-LSDT-D-LOGIC.DWG	REVISED: 2/20/2015	DETAIL NO.: LS22



CONTROL PEDESTAL FRONT ELEVATION

NOT TO SCALE



CONTROL PEDESTAL SIDE ELEVATION

NOT TO SCALE

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LIFT STATION STANDARD DETAIL

CONTROL PEDESTAL

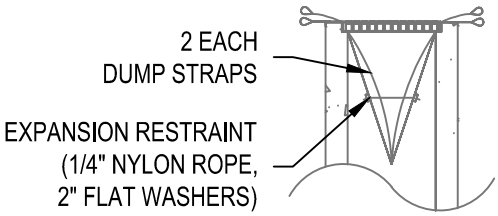
FILE:CA-LSDT-D-EPED.DWG	REVISED: 2/20/2015	DETAIL NO.: LS23

1. CONTRACTOR SHALL HAVE PUMPS AND A MINIMUM OF 100' OF APPROPRIATELY SIZED HOSE WITH FLOW DISSIPATER FOR DEWATERING LIFT STATION FOUNDATION. A DEWATERING PLAN SHALL BE APPROVED BY THE DISTRICT PRIOR TO CONSTRUCTION

2. IF REMOVAL OF STORMWATER FROM LIFT STATION FOUNDATION BECOMES NECESSARY CONTRACTOR SHALL INSTALL SUMP PUMP IN A MANNER THAT MINIMIZES SEDIMENT MOBILIZATION AND PROVIDE TEMPORARY STORM WATER COLLECTION SYSTEM, SUCH AS A BAKER TANK. THE DISCHARGE END FROM THE BAKER TANK SHALL HAVE A FLOW DISSIPATER TO REDUCE THE POTENTIAL FOR EROSION AT THE DISCHARGE LOCATION. THE PERIMETER OF THE DISCHARGE PROPERTY SHALL BE MONITORED FOR SURFACE WATER RUNOFF DURING DEWATERING OF THE FOUNDATION. SURFACE WATER RUNOFF FROM THE PROPERTY IS ACCEPTABLE IF IT IS MEASURED AT LESS THAN 100 NTU TURBIDITY AND IS NOT CAUSING EROSION.

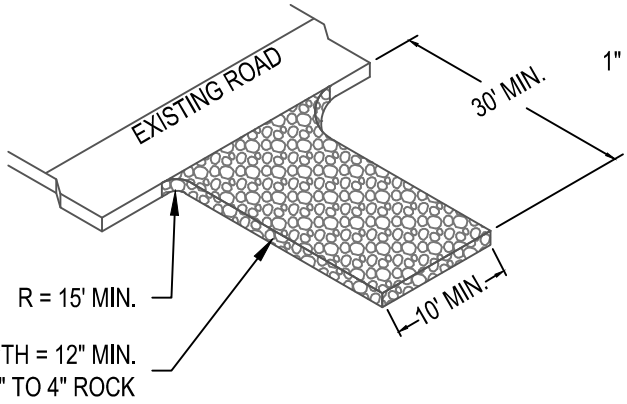
STORMWATER AND DEWATERING NOTES

NOT TO SCALE



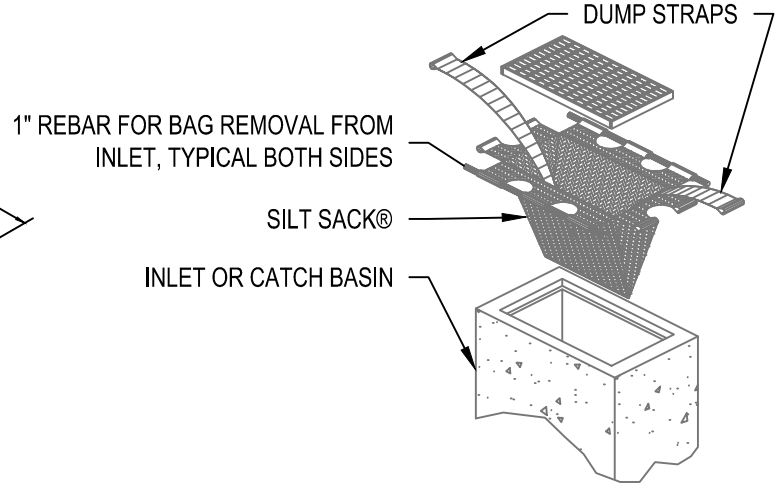
INSTALLATION DETAIL

NOT TO SCALE



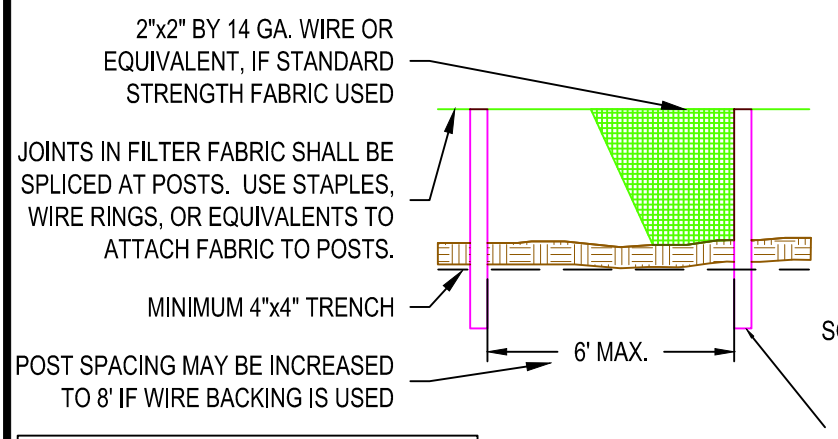
TRUCK WASH-PAD DETAIL

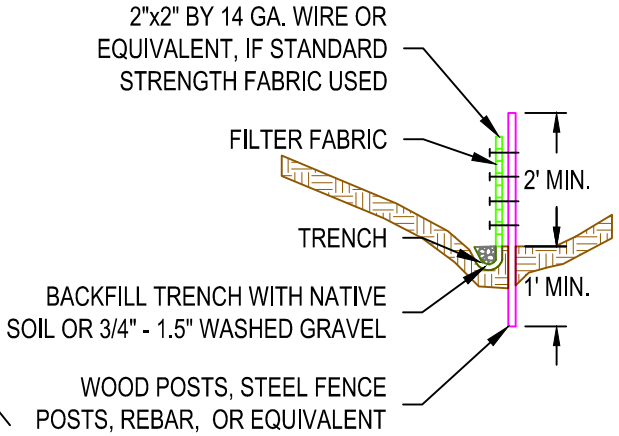
NOT TO SCALE



STORM DRAIN SILT SCREEN DETAIL

NOT TO SCALE





NOTE: FILTER FABRIC FENCES SHALL BE INSTALLED ALONG CONTOUR WHENEVER POSSIBLE

SILT FENCE DETAIL

NOT TO SCALE

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LIFT STATION STANDARD DETAIL

DEWATERING AND EROSION CONTROL DETAILS

FILE: CA-LSDT-D-DEWATER.DWG	REVISED: 2/20/2015	DETAIL NO.: LS24

REVISION HISTORY

2/20/2015

LIFT STATION STANDARD DETAILS ADDED TO CASHMERE STANDARD DETAIL SET.

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LIFT STATION STANDARD DETAIL

REVISION HISTORY

FILE:LSDT-REVHIST	REVISED: 2/20/2015	DETAIL NO.:LSDT-REVHIST