City of Ferndale

Whatcom County, Washington

Contract Documents
for the Construction of

FERNDALE SEWER PUMP STATIONS #2 & #3 UPGRADES

BID DOCUMENTS

City of Ferndale - Project # SS2014-02
Wilson Engineering, LLC – Project # 2014-079

VOLUME 2

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June 8, 2016
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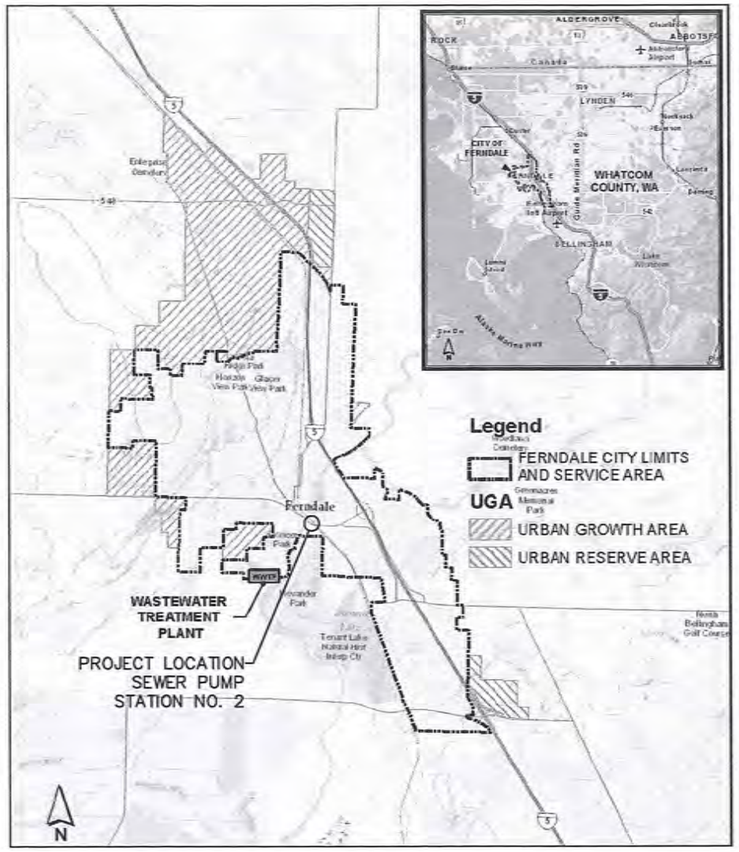
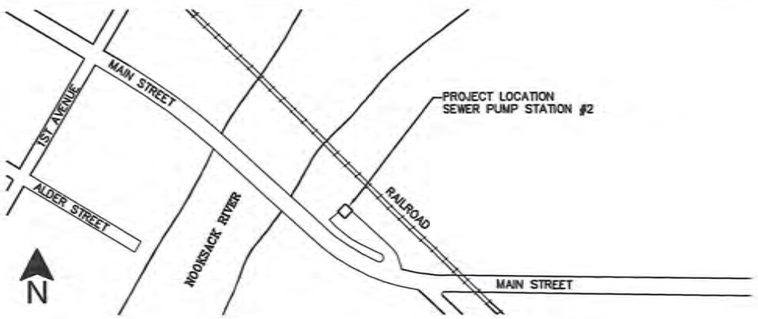
CITY OF FERNDALE, WA

PUMP STATION NO.2 UPGRADE – CITY PROJECT No. SS2014-02

VICINITY MAP - NOT TO SCALE



LOCATION MAP - NOT TO SCALE



GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF FERNDALE STANDARDS AND THE MOST CURRENT COPY OF THE STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION (WSDOT/APWA).
2. ALL APPROVALS AND PERMITS REQUIRED BY THE CITY OF FERNDALE SHALL BE OBTAINED PRIOR TO THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-332-2344 A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION.
4. ALL NEW PLASTIC PIPE AND SERVICES SHALL BE INSTALLED WITH CONTINUOUS TRACER TAPE INSTALLED 12" TO 18" UNDER THE PROPOSED FINISHED SUBGRADE. THE MARKER SHALL BE PLASTIC NON-BIODEGRADABLE, METAL CORE OR BACKING MARKED WATER WHICH CAN BE DETECTED BY A STANDARD METAL DETECTOR.
5. EROSION CONTROL MEASURES SHALL BE TAKEN BY THE CONTRACTOR DURING CONSTRUCTION TO PREVENT SILTATION TO EXISTING STORM DRAINAGE FACILITIES AND ROADWAYS.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THESE APPROVED PLANS ON CONSTRUCTION SITE AT ALL TIMES.
7. ANY CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER.
8. ALL LINES SHALL BE CLEANED AND PRESSURE TESTED PRIOR TO PAVING IN CONFORMANCE WITH THE ABOVE REFERENCED SPECIFICATIONS. TESTING SHALL TAKE PLACE AFTER ALL UNDERGROUND UTILITIES ARE INSTALLED AND COMPACTION OF THE ROADWAY SUBGRADE IS COMPLETED.
9. PRIOR TO BACKFILL ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED BY THE CITY OF FERNDALE CONSTRUCTION INSPECTOR. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FOR CORRECTION OF ANY DEFICIENCIES AND/OR FAILURES AS DETERMINED BY SUBSEQUENT TESTING AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE INSPECTOR FOR THE REQUIRED INSPECTIONS.
10. ALL WORK AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR ONE YEAR AFTER FINAL ACCEPTANCE.
11. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND NOT ALL ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE TO VERIFY AND PROTECT ALL UTILITIES.
12. ALL RESTORATION AND LANDSCAPING WITHIN PUBLIC OR PRIVATE PROPERTY SHALL OCCUR WITHIN THREE WEEKS OF DISTURBANCE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LAWNS, LANDSCAPING, FENCES, GRAVEL, ASPHALT AND CONCRETE.
13. THE CONTRACTOR SHALL KEEP A RECORD OF AS-BUILT INFORMATION THROUGHOUT THE ENTIRE PROJECT. THIS INFORMATION SHALL INCLUDE ALL DEVIATIONS FROM THE PLANS AND ANY OTHER PERTINENT INFORMATION NOT SHOWN ON THE PLANS BUT DISCOVERED DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL REPLACE ALL MONUMENTS, RIGHT-OF-WAY MARKERS, PROPERTY STAKES, ETC. THAT ARE DISTURBED DURING CONSTRUCTION. THE CONTRACTOR SHALL USE A SURVEYOR REGISTERED IN THE STATE OF WASHINGTON TO COMPLETE ALL SURVEY WORK.

EROSION AND SEDIMENTATION CONTROL

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT POLLUTION AND EROSION IN ACCORDANCE WITH WSDOT SECTION 1.07.15. EROSION CONTROL BEST MANAGEMENT PRACTICES SHALL CONFORM TO THE CURRENT WASHINGTON DEPARTMENT OF ECOLOGY STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN.

EXISTING UTILITIES

1. CONTRACTOR IS ADVISED THAT UNDERGROUND WATER, SEWER, STORM, TELEPHONE, FIBER OPTIC, AND GAS MAY BE LOCATED IN THE VICINITY OF THIS PROJECT. NO ATTEMPT WAS MADE TO SHOW ALL UTILITIES ON THE PLAN. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE. OTHER UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTHS AND PLAN LOCATIONS.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE TRUE AND CORRECT LOCATIONS OF EXISTING UTILITIES THAT MAY IMPACT THE WORK. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO COMMENCING CONSTRUCTION IF MARKED UTILITIES APPEAR TO CONFLICT WITH PROPOSED IMPROVEMENTS. THE COST OF LOCATING, PROTECTING AND ACCOMMODATING EXISTING UTILITIES SHALL BE INCIDENTAL TO THE COST OF THE PROJECT. IF AN ACTUAL CONFLICT REQUIRES RELOCATION OF AN EXISTING UTILITY OR THE REDESIGN OF THE PROPOSED IMPROVEMENT, THE ENGINEER WILL DETERMINE IF EXTRA PAY IS WARRANTED TO ACCOMMODATE THE CHANGED OR UNFORESEEN CONDITION. MINOR HORIZONTAL OR VERTICAL ADJUSTMENTS OF THE PROPOSED IMPROVEMENTS TO AVOID CONFLICTS SHALL NOT ENTITLE THE CONTRACTOR TO EXTRA PAY.

TRAFFIC CONTROL

1. THE CONTRACTOR IS NOT ALLOWED TO COMPLETELY CLOSE ANY STREET TO TRAFFIC. THE CONTRACTOR SHALL MAINTAIN ONE OPEN LANE EACH WAY FOR THE DURATION OF THE PROJECT.

BID DOCUMENTS

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 UTILITIES UNDERGROUND LOCATION CENTER

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PROJECT CONTACTS

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360-354-4471

OR

PROPANE GAS, INC
360-384-4922

NO.	REVISIONS	BY	DATE

CITY OF FERNDALE WASHINGTON

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Wilson SURVEY/ENGINEERING

ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 19548 — REGISTERED PROFESSIONAL ENGINEER — 6/8/16

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
COVER SHEET

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET C0.1 OF 39

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LEGEND & ABBREVIATIONS– SIZE & SCALE MAY VARY

EXISTING HATCH PATTERNS

DESCRIPTION
EXIST. CONCRETE
EXIST. BUILDING
EXIST. EARTH
EXIST. GRAVEL
EXIST. SAND

PROPOSED HATCH PATTERNS

DESCRIPTION
PROP. CONCRETE
PROP. TOP COURSE GRAVEL
PROP. GRAVEL
PROP. SAND
PROP. QUARRY SPALLS

SURFACE FEATURES
EXISTING PLAN LINETYPES

DESCRIPTION
BRIDGE
BUILDING LINE
BUILDING COLUMN
BUILDING OVERHANG
BULKHEAD
CONCRETE EDGE
CREEK EDGE
CROWN OF ROAD
CURB
DITCH CENTERLINE
DECK
DOCK
EDGE OF SAWCUT
EDGE OF PAVEMENT
FENCE
HIGH VISIBILITY FENCE
GATE
GRADE
GRAVEL
GUARDRAIL
JERSEY BARRIER
LAKE/POND WATER EDGE
LIP OF CURB
MISC SURFACE FEATURE
MISC TRAFFIC
PLANTER
PATH
RAILROAD
RAMP (WOOD)
RETAINING WALL
ROAD STRIPING
ROCKERY
RIVERBANK/SHORELINE
THALWAG LINE
TOP OF BANK/SLOPE
TOE OF BANK/SLOPE
VEGETATION/SHRUB LINE
WETLAND/SWAMP PERIMETER
WETLAND BUFFER

SURFACE FEATURES
PROPOSED PLAN LINETYPES

DESCRIPTION
BRIDGE
BUILDING LINE
CONCRETE
CURB
DITCH CENTERLINE
EDGE OF BIKE LANE
EDGE OF PAVEMENT
FENCE
GATE
GRAVEL
GUARDRAIL
JERSEY BARRIER
LIP OF CURB
REBAR
RETAINING WALL
ROCKERY
ROAD STRIPING

UTILITIES
EXISTING PLAN LINETYPES

DESCRIPTION
CABLE TELEVISION (AERIAL)
CABLE TELEVISION (BURIED)
SURVEILLANCE CAMERA (BURIED
FIBER OPTIC LINE (AERIAL)
FIBER OPTIC LINE (BURIED)
TELEPHONE (AERIAL)
TELEPHONE (BURIED)
TRAFFIC SIGNAL CONDUIT LINE
POWER (AERIAL)
POWER (BURIED)
UTILITY (AERIAL)
UTILITY (BURIED)
POWER DUCT BANK (BURIED)
DRAIN FIELD
SANITARY SEWER
APPROXIMATE SANITARY SEWER
SANITARY SEWER (FORCE MAIN)
APPROXIMATE SANITARY SEWER (FORCE MAIN)
STORM DRAINAGE
CULVERT (Ø WIDTH)
CULVERT
RECLAIMED WATER
IRRIGATION
WATER
APPROXIMATE WATER
8" WATER
OVERFLOW
STEAM
GAS
GAS TANK/STRUCTURE
OIL
AIR LINE
BURIED UTILITY APPROX. EXTENTS
MISC UTILITY (BURIED)

PROPOSED PLAN UTILITY LINETYPES
WATER

DESCRIPTION
WATER
8" WATER
IRRIGATION
RECLAIMED WATER
POTABLE WATER
WATER SERVICE
WATER STRUCTURE
FIRE DEPARTMENT CONNECTION
FIRE PROTECTION LINE

SANITARY SEWER

SEWER
8" SEWER
FORCE MAIN
DRAIN FIELD
SEWER SERVICE
SEWER STRUCTURE

STORM DRAIN

STORM DRAIN – SUBJECT PIPE
STORM DRAIN – OTHER PIPE
STORM SERVICE
FOOTING DRAIN
STORM STRUCTURE

MISC. UTILITIES

GAS
POWER
TELEPHONE/COMMUNICATIONS

GRADING

GRADE BREAK
SLOPE ARROWS

EROSION CONTROL

DESCRIPTION
EROSION TRIANGULAR SILT DIKE
EROSION CONTROL COMPOST BERM
EROSION CONTROL MINOR CONTOUR
EROSION CONTROL MAJOR CONTOUR
ORANGE BARRIER FENCE
SILT FENCE
STRAW WATTLE
EROSION CONTROL FLOWLINE
STRAW BALE
INLET PROTECTION
CHECK DAM

DEMOLITION

DESCRIPTION
SURFACE FEATURE OR UTILITY TO BE REMOVED
SAWCUT
CLEARING LIMIT
TREE OR BUSH TO BE REMOVED

SURVEY
PLAN LINETYPES

DESCRIPTION
CENTERLINE (EXISTING)
CENTERLINE (CONSTRUCTION)
CENTERLINE (PROPOSED)
CONTOUR (EXISTING MINOR)
CONTOUR (EXISTING INDEX)
HYDRO CONTOUR (EXISTING INDEX)
CONTOUR (PROPOSED INDEX)
CONTOUR (PROPOSED MINOR)
CATCHLINE
CUT LINE
DONATION LAND CLAIM (EXIST.)
EASEMENT (PROPOSED)
EASEMENT (EXISTING)
FILL LINE
MEANDER LINE
ORDINARY HIGH WATER LINE
MEAN LOW LEVEL WATER LINE
OWNERSHIP LINE
PROPERTY LINE (RECORD OR ADJACENT)
PROPERTY LINE
QUARTER SECTION LINE
RANGE/TOWNSHIP LINE
RESERVATION/PARK/FOREST (EX)
RIGHT-OF-WAY ℄ (EXISTING)
RIGHT-OF-WAY (EXISTING)
RIGHT-OF-WAY (EXISTING USED)
RIGHT-OF-WAY (PROPOSED)
RIGHT-OF-WAY (EX. RECORD) (RECORD OR ADJACENT)
RIGHT-OF-WAY (LIMITED ACCESS)
RIGHT-OF-WAY (LIMITED ACCESS)
SECTION LINE
SETBACK LINE (EXISTING)
SIXTEENTH SECTION LINE
STATE/COUNTY/CORPORATE LIMIT
VACATED RIGHT-OF-WAY
EASEMENT (RECORD)
RIGHT-OF-WAY CENTER (RECORD)
DONATION LAND CLAIM (RECORD)
MEANDER LINE (RECORD)
PARK LINE (RECORD)
SECTION LINE (RECORD)
QUARTER SECTION LINE (RECORD)
SIXTEENTH SECTION LINE (RECORD)
STATE LINE (RECORD)
RANGE LINE (RECORD)

PROFILE LINETYPES

DESCRIPTION
PROFILE EX. GRND ℄
PROFILE FINISH GRND ℄
PROFILE GRID
PROFILE VERTICAL GRID
PROFILE EX. GROUND LEFT
PROFILE EXISTING GROUND RIGHT
FIBER OPTIC PROFILE (EXISTING)
GAS PROFILE (EXISTING)
POWER PROFILE (EXISTING)
RAILROAD PROFILE (EXISTING)
SANITARY PROFILE (EXISTING)
SANITARY PROFILE (PROPOSED)
STORM PROFILE (EXISTING)
TELEPHONE PROFILE (EXISTING)
STORM PROFILE (PROPOSED)
TV PROFILE (EXISTING)
UTILITY PROFILE (EXISTING)
WATER PROFILE (EXISTING)
WATER PROFILE (PROPOSED)

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BID DOCUMENTS

MISC. SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		SOIL BORING
		MONITORING WELL
		TEST WELL
		TEST PIT
		EMBANKMENT
		MAIL BOX
		SIGN
		RIP RAP
		BOULDER
		SHRUB
		TREE (Conifer)*
		TREE (Deciduous)*
		STUMP–PLAN VIEW
		YARD LIGHT
		WELL
		PILE
		ROCKERY
		WHEEL STOP
		SPLASH BLOCK
		GAS METER
		GAS VALVE
		PAD MOUNTED TRANSFORMER
		POWER VAULT
		TRANSMISSION TOWER
		POWER METER
		GUY POLE
		UTILITY POLE
		UTILITY POLE ANCHOR
		TELE RISER
		CABLE RISER
		TELEPHONE VAULT
		STEAM MANHOLE
		PARKING METER
		POST

SANITARY SEWER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		SAN. SEWER CLEAN OUT
		SAN. SEWER MANHOLE

STORM DRAIN SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		STORM DRAIN CB TYPE 1
		STORM DRAIN CB TYPE 2
		STORM DRAIN CB TYPE 2 W/CB LID
		STORM DRAIN WITH OVERFLOW GRATE
		STORM DRAIN CLEAN–OUT

WATER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		ARV VALVE
		GLOBE VALVE, FL
		BALL CHECK VALVE, FL
		BLOW–OFF VALVE
		SWING CHECK VALVE, FL
		BUTTERFLY VALVE, FL
		HOSE BIB/SPIGOT
		DOUBLE LEAF CHECK VALVE
		PLUG VALVE
		BALL VALVE
		FLOAT VALVE
		PINCH VALVE
		PRESSURE & VACUUM RELIEF VALVE
		VACUUM RELIEF VALVE
		PRESSURE RELIEF VALVE
		PRESSURE REGULATING VALVE (SELF CONTAINED)
		BACK PRESSURE REGULATING VALVE (SELF CONTAINED)
		IN–LINE SPRING LOADED RELIEF VALVE
		CAP/PLUG
		GUARD POST
		THRUST BLOCK
		WATER METER
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		FIRE HYDRANT
		WATER MANHOLE
		POST INDICATOR VALVE
		11–1/4 BEND, MJ–FL
		22–1/2 BEND, MJ–FL
		45 BEND, MJ–FL
		90 BEND, MJ–FL
		FLXMJ ADAPTER
		COUPLER
		BLIND FLANGE
		GATE VALVE, FLxMJ
		GATE VALVE, MJ
		REDUCER, MJxFL
		REDUCER, MJ
		TEE, FL
		TEE, MJ
		TEE, MJxFL
		TEE, FLxMJ
		CROSS, FL
		CROSS, MJ

SURVEY SYMBOLS

BRASS SURFACE MONUMENT
NAIL IN CONCRETE
REBAR & CAP

SECTION/DETAIL CALL–OUTS

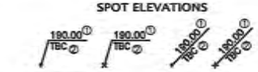
SECTION CALL OUTS: (A) REPRESENTS THE SECTION LABEL, (B) INDICATES THE SHEET ON WHICH THE SECTION APPEARS, AND (C) INDICATES THE SHEET ON WHICH THE SECTION IS CALLED OUT.

DETAIL CALL OUTS: (A) REPRESENTS THE DETAIL LABEL, (B) INDICATES THE SHEET ON WHICH THE DETAIL APPEARS, AND (C) INDICATES THE SHEET ON WHICH THE DETAIL IS CALLED OUT.

SYMBOLS

°	=DEGREES
±	=PLUS/MINUS
ø	=DIAMETER
Δ	=DELTA
℄	=CENTERLINE
℄	=FLOWLINE
℄	=PROPERTY LINE

SPOT ELEVATIONS



① = ELEVATION
② = DESCRIPTION– SEE DEFINED ABBREVIATIONS ABOVE

DIRECTIONAL ABBREVIATIONS

N	=NORTH
NE	=NORTHEAST
E	=EAST
SE	=SOUTHEAST
S	=SOUTH
SW	=SOUTHWEST
W	=WEST
NW	=NORTHWEST

ABBREVIATIONS

AL	=ALIGNMENT
ANC	=UTILITY POLE ANCHOR
APPROX	=APPROXIMATE
ASPH or AC	=ASPHALT
ASS'Y	=ASSEMBLY
ASTM	=AMERICAN SOCIETY FOR TESTING & MATERIALS
BLDG	=BUILDING
BMP	=BEST MANAGEMENT PRACTICE
BVCS	=BEGIN VERTICAL CURVE STATION
BVCE	=BEGIN VERTICAL CURVE ELEVATION
CB	=CATCH BASIN
CK	=CHECK VALVE
C/L, ℄	=CENTERLINE
CESCL	=CERTIFIED EROSION SEDIMENT CONTROL LEAD
COL	=COLUMN
CMP	=CORRUGATED METAL PIPE
C.O.	=CLEAN OUT
CONC, C	=CONCRETE
COR	=CORNER
CPP	=CORRUGATED POLYETHYLENE PIPE
CSTC	=CRUSHED SURFACING TOP COURSE
DDCVA	=DOUBLE DETECTOR CHECK VALVE ASSEMBLY
DF	=DRAIN FIELD
DI	=DUCTILE IRON
DO	=DISSOLVED OXYGEN
DR	=DIAMETER RATIO
DS	=DOWNSPOUT
EB	=EXPLORATION BORING
EFFL	=EFFLUENT
EG	=EXISTING GRADE
ELEV, EL	=ELEVATION
EOG	=EDGE OF GRAVEL
EOP	=EDGE OF PAVEMENT
EP	=EXPLORATION PIT
EXIST, EX	=EXISTING
EVCS	=END VERTICAL CURVE STATION
EVCE	=END VERTICAL CURVE ELEVATION
FDC	=FIRE DEPARTMENT CONNECTION
FF	=FINISH FLOOR
FG	=FINISH GRADE
FL	=FLOWLINE OR FLANGE (CONNECTION)
℄	=FLOWLINE
FLC	=FLOWLINE OF CURB
FNC	=FENCE
GB	=GRADE BREAK
GMET	=GAS METER
GP	=GUY POLE
GPM	=GALLONS PER MINUTE
GRVL, G	=GRAVEL
GUTT	=GUTTER
GV	=GATE VALVE
HB	=HOSE BIB
HDG	=HOT–DIP GALVANIZED
HDPE	=HIGH DENSITY POLYETHYLENE
H/V	=HORIZONTAL/VERTICAL
HWL	=HIGH WATER LEVEL
HYD	=HYDRANT
IE	=INVERT ELEVATION
INV	=INVERT
LF	=LINEAR FEET
LUM	=LUMINAIRE
LT	=LEFT
MAX	=MAXIMUM
MB	=MAIL BOX
MBR	=MEMBRANE BIO–REACTOR
MC	=MAINTENANCE CLEANING
MFEM	=MEMBRANE FILTRATION EQUIPMENT MANUFACTURER
MFR	=MANUFACTURER
MH	=MANHOLE
MIN	=MINIMUM
MISC	=MISCELLANEOUS
MJ	=MECHANICAL JOINT
MLSS	=MIXED LIQUOR SUSPENDED SOLIDS
MW	=MONITORING WELL
NPDES	=NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
O.C.	=ON CENTER
O.C.E.W	=ON CENTER EACH WAY
OD	=OUTSIDE DIAMETER
OHP	=OVERHEAD POWER
OHT	=OVERHEAD TELEPHONE
OSHA	=OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	=POINT OF CURVATURE
PCC	=POINT OF CONTINUING CURVATURE
PIV	=POST INDICATOR VALVE
P/L, ℄	=PROPERTY LINE
PLC	=PROGRAMMABLE LOGIC CONTROLLER
PLTR	=PLANTER
POL	=POINT ON LINE
PROP	=PROPOSED
PS	=PUMP STATION
PSI	=POUNDS PER SQUARE INCH
PT	=POINT OF TANGENCY
PVC	=POLYVINYL CHLORIDE
PVI	=POINT OF VERTICAL INTERSECTION
PW	=POTABLE WATER
R	=RADIUS
RCK	=ROCK/BOULDER
RET	=RETAINING
REC	=RECORD
REQ'D	=REQUIRED
RI	=RAPID INFILTRATION
RPBA	=REUSE PRESSURE BACKFLOW ASSEMBLY
RR	=RAILROAD
RT	=RIGHT
R/W or ROW	=RIGHT–OF–WAY
RW	=REUSE WATER
SCADA	=SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	=SCHEDULE
SDCB	=STORM DRAIN CATCH BASIN
SD	=STORM DRAIN
SDMH	=STORM DRAIN MANHOLE
SFH	=SINGLE FAMILY HOUSING
SH	=SHRUB/BUSH
SN	=SIGN
SPD	=STANDARD PROCTOR DENSITY
SPIK	=SPIKE
SS	=SANITARY SEWER
SSCO	=SANITARY SEWER CLEAN–OUT
SSMH	=SANITARY SEWER MANHOLE
STA	=STATION
STEP	=SEPTIC TANK EFFLUENT PUMP
S/W	=SIDEWALK
TBC	=TOP BACK OF CURB
TBD	=TO BE DETERMINED
TBM	=TEMPORARY BENCH MARK
T.O.W.	=TOP OF WALL
TYP	=TYPICAL
UP	=UTILITY POLE
VAC	=VACATED
VC	=VERTICAL CURVE
VCI	=VOLATILE CORROSION INHIBITOR
VEG	=VEGETATION
VFD	=VARIABLE FREQUENCY DRIVE
WAS	=WASTE ACTIVATED SLUDGE
WL	=WATERLINE
WM	=WATER METER
WS	=WATER SURFACE
WSDOT	=WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WV	=WATER VALVE
WWTP	=WASTE WATER TREATMENT PLANT
YD	=YARD DRAIN
YL	=YARD LIGHT

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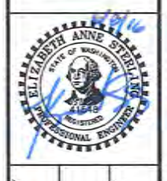

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 2
LEGEND & ABBREVIATIONS

SHEET	DATE	SCALE	JOB NUMBER
C0.2	6/08/2016	AS SHOWN	2014-079A

OF 39

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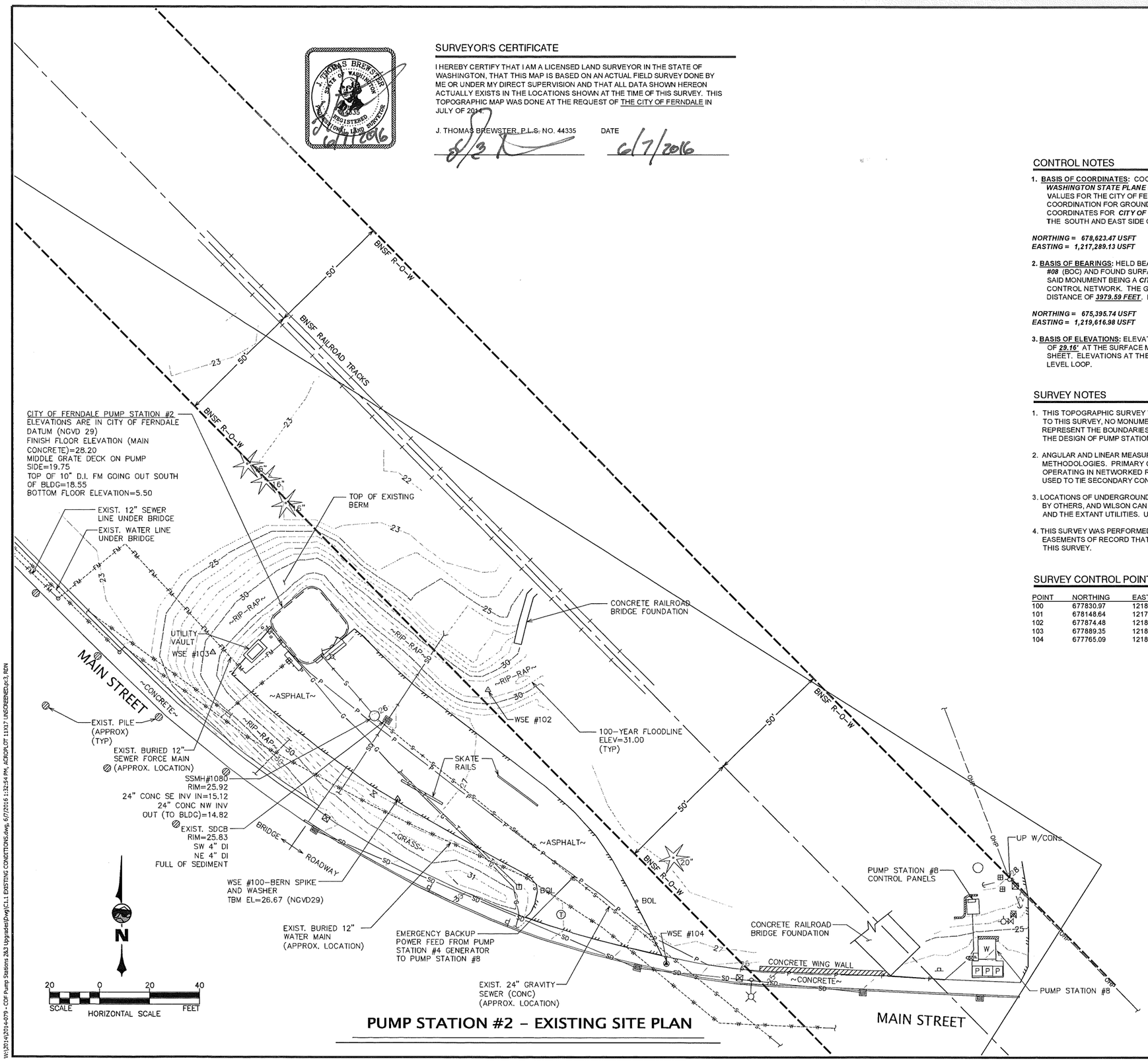
NO.	REVISIONS	BY	DATE

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A LICENSED LAND SURVEYOR IN THE STATE OF WASHINGTON, THAT THIS MAP IS BASED ON AN ACTUAL FIELD SURVEY DONE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DATA SHOWN HEREON ACTUALLY EXISTS IN THE LOCATIONS SHOWN AT THE TIME OF THIS SURVEY. THIS TOPOGRAPHIC MAP WAS DONE AT THE REQUEST OF THE CITY OF FERNDALE IN JULY OF 2014.

J. THOMAS BREWSTER, P.L.S. NO. 44335 DATE 6/7/2016



PUMP STATION #2 – EXISTING SITE PLAN

CONTROL NOTES

1. **BASIS OF COORDINATES:** COORDINATES ARE A GROUND-VALUE APPROXIMATION OF ***NAD83(2007) WASHINGTON STATE PLANE (NORTH ZONE) COORDINATES***, BASED UPON THE CONVERTED NAD83/91 VALUES FOR THE CITY OF FERNDALE'S 2001 HORIZONTAL AND VERTICAL CONTROL NETWORK. COORDINATION FOR GROUND-VALUE MENSURATION BASED UPON HOLDING THE FOLLOWING COORDINATES FOR ***CITY OF FERNDALE SURVEY MONUMENT #08***, A SURFACE MONUMENT IN CONCRETE AT THE SOUTH AND EAST SIDE OF THE SIDEWALK AT FERNDALE CITY COUNCIL CHAMBERS AS FOLLOWS:

NORTHING = 678,623.47 USFT
EASTING = 1,217,289.13 USFT

2. **BASIS OF BEARINGS:** HELD BEARING BETWEEN ABOVE MENTIONED ***CITY OF FERNDALE SURVEY MONUMENT #08*** (BOC) AND FOUND SURFACE MONUMENT IN CONCRETE AT CENTER OF CUL-DE-SAC OF SCOUT PLACE, SAID MONUMENT BEING A ***CITY OF FERNDALE CONTROL MONUMENT #11***, PER THE AFOREMENTIONED 2001 CONTROL NETWORK. THE GPS-DERIVED INVERSE BEARING BETWEEN #08 AND #11 BEING ***S 35° 47' 57" E*** A DISTANCE OF ***3979.59 FEET***. NAD83(2007) COORDINATES FOR #11 ARE AS FOLLOWS:

NORTHING = 675,395.74 USFT
EASTING = 1,219,616.98 USFT

3. **BASIS OF ELEVATIONS:** ELEVATIONS ARE ***NGVD29*** VALUES BASED UPON HOLDING THE PUBLISHED ELEVATION OF ***29.16'*** AT THE SURFACE MONUMENT DESIGNATED CITY OF ***FERNDALE #08***, PER THE PUBLISHED DATA SHEET. ELEVATIONS AT THE WILSON SITE CONTROL POINTS WERE ESTABLISHED BY CLOSED DIGITAL LEVEL LOOP.

SURVEY NOTES

1. THIS TOPOGRAPHIC SURVEY WAS PERFORMED IN JULY, 2014. ALTHOUGH THERE IS A BOUNDARY COMPONENT TO THIS SURVEY, NO MONUMENTS WERE SET DURING THE COURSE OF THIS SURVEY PURPORTING TO REPRESENT THE BOUNDARIES HEREON SHOWN. THIS TOPOGRAPHIC SURVEY WAS PREPARED TO SUPPORT THE DESIGN OF PUMP STATION UPGRADES.

2. ANGULAR AND LINEAR MEASUREMENTS WERE COLLECTED USING A COMBINATION OF GPS AND CONVENTIONAL METHODOLOGIES. PRIMARY CONTROL WAS COLLECTED USING TRIMBLE 5700 SURVEY-GRADE GPS RECEIVERS OPERATING IN NETWORKED RTK MODE. FROM GPS CONTROL, A TRIMBLE S-6 ROBOTIC TOTAL STATION WAS USED TO TIE SECONDARY CONTROL POINTS AND COLLECT TOPOGRAPHIC DATA.

3. LOCATIONS OF UNDERGROUND UTILITIES DEPICTED HEREON ARE ACCORDING TO SURFACE MARKS PROVIDED BY OTHERS, AND WILSON CAN NOT AND WILL NOT GUARANTEE THE CORRESPONDENCE BETWEEN THE MARKS AND THE EXTANT UTILITIES. UTILITIES MAY EXIST THAT WERE NOT MARKED AT THE TIME OF THIS SURVEY.

4. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT, AND THE EXISTENCE OF EASEMENTS OF RECORD THAT MAY AFFECT THE PROPERTY'S USE WAS NOT INVESTIGATED IN THE COURSE OF THIS SURVEY.

SURVEY CONTROL POINTS (NAD83/07, NGVD29)

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	677830.97	1218081.10	26.67	BERNTSEN SPIKE
101	678148.64	1217741.20	28.23	BERNTSEN SPIKE (NOT SHOWN)
102	677874.48	1218117.29	31.68	HUB AND TACK
103	677889.35	1218007.44	30.97	SPIKE AND RED PLASTIC CAP
104	677765.09	1218188.56	26.66	BRASS SURFACE MONUMENT

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
EXISTING CONDITIONS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

SHEET C1.1 | OF 39

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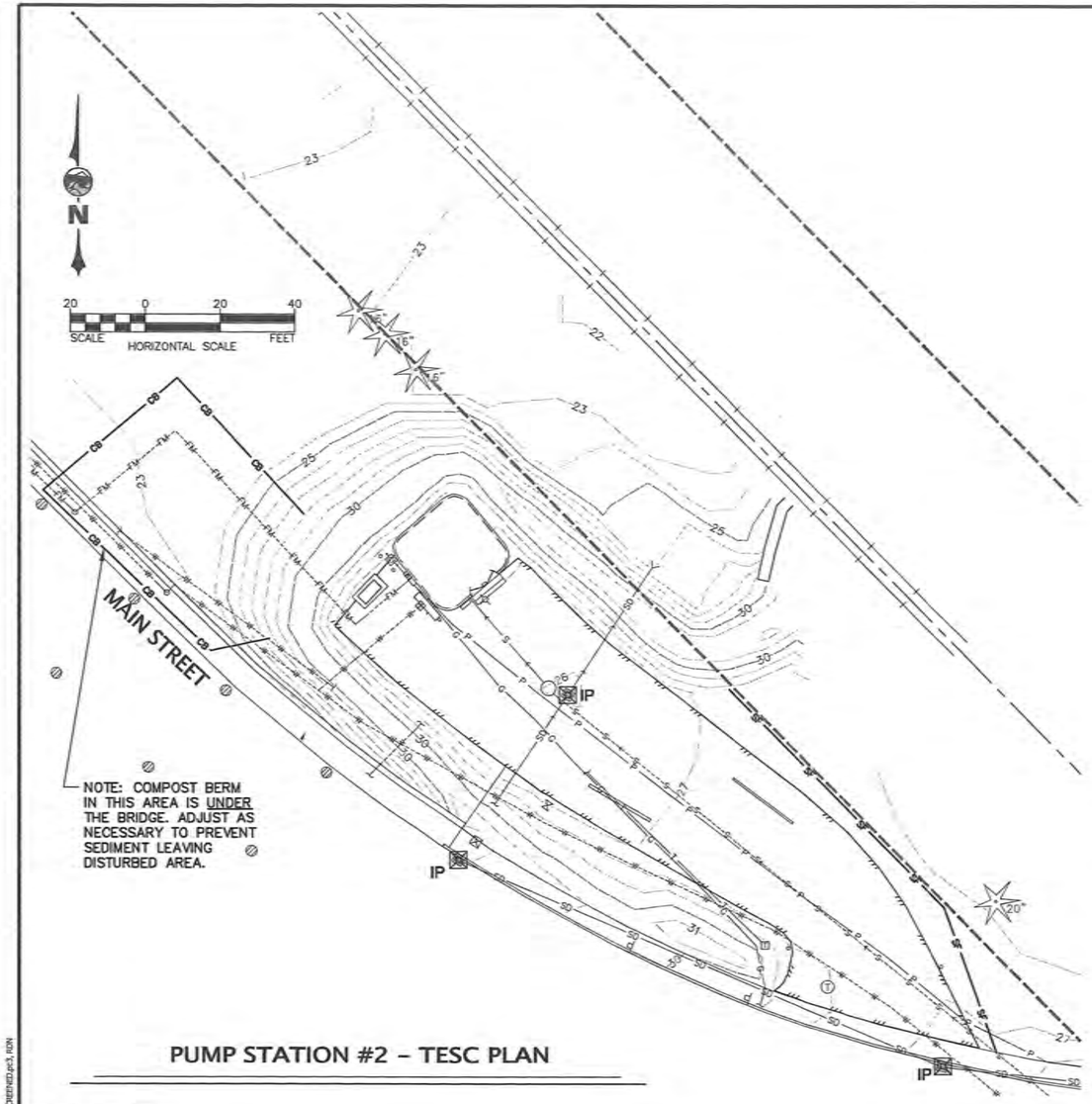


LEGEND

——SF—— = SILT FENCE BMP C-233

IP = INLET PROTECTION BMP C-220

——CB—— = COMPOST BERM

PUMP STATION #2 – TESC PLAN

PROJECT WIDE BMPS

THE FOLLOWING BMPS SHALL BE IMPLEMENTED THROUGHOUT THE ENTIRE PROJECT TO THE MAXIMUM EXTENT POSSIBLE:

BMP C101 PRESERVING NATURAL VEGETATION. CONTRACTOR SHALL CLEAR AND DISTURB ONLY AREAS REQUIRED TO CONSTRUCT IMPROVEMENTS AND SHALL DILIGENTLY MINIMIZE DISTURBED AREA.

BMP C102 BUFFER ZONES. CONTRACTOR SHALL MARK CLEARING LIMITS AND KEEP ALL EQUIPMENT AND CONSTRUCTION DEBRIS OUT OF NATURAL AREAS.

BMP C120 PERMANENT SEEDING & PLANTING. CONTRACTOR SHALL COMPLETE REQUIRED LANDSCAPING AS RAPIDLY AS POSSIBLE. ALL OTHER DISTURBED AREAS OUTSIDE OF PAVED AREAS SHALL BE HYDROSEEDED AS RAPIDLY AS POSSIBLE WITH SUITABLE SEED-MULCH-FERTILIZER MIX FOR LOCAL CLIMATE.

BMP C121 MULCHING . CONTRACTOR SHALL MULCH ALL LANDSCAPED AREAS AS RAPIDLY AS POSSIBLE.

BMP C130 SURFACE ROUGHENING. CONTRACTOR SHALL ROUGHEN DISTURBED AREAS PRIOR TO PERMANENT SEEDING AND PLANTING.

BMP C140 DUST CONTROL. CONTRACTOR SHALL KEEP DUST FROM CONSTRUCTION ACTIVITIES AND EXPOSED SOILS TO A MINIMUM.

BMP C160 CERTIFIED EROSION CONTROL LEAD (MUST BE EMPLOYED BY GENERAL CONTRACTOR AND ON SITE DURING CONSTRUCTION.)

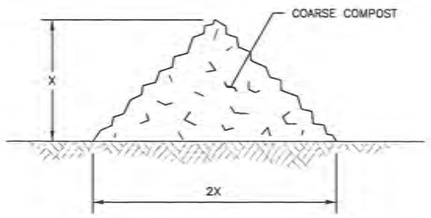
AREA SPECIFIC BMPs

THE FOLLOWING BMPs SHALL BE USED IN LOCATIONS IDENTIFIED ON THE SITE PLAN:

BMP C233 SILT FENCE. CONTRACTOR SHALL INSTALL SILT FENCE AT LOCATIONS NOTED ON PLANS.

BMP C220 CATCH BASIN INSERT. CONTRACTOR SHALL INSTALL INSERT AT LOCATIONS NOTED ON PLANS.

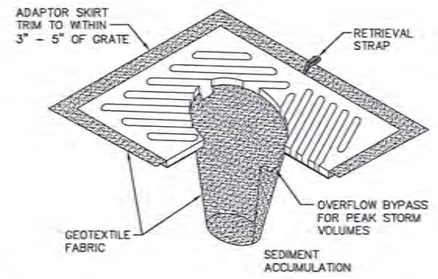
COMPOST BERM. CONTRACTOR SHALL INSTALL COMPOST BERM AT LOCATIONS NOTED ON PLANS.



X = 1.0' FOR SLOPES 4H:1V OR FLATTER

X = 1.5' FOR SLOPES STEEPER THAN 4H:1V

COMPOST BERM
NOT TO SCALE



NOTES:

1. INSERT SHALL BE INSTALLED PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. SEDIMENT SHALL BE REMOVED FROM THE UNIT WHEN IT BECOMES HALF FULL .
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING, AND RE-INSERTING IT INTO THE CATCH BASIN.

BMP C-220
CATCH BASIN INSERT
NOT TO SCALE

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BMP C233 – SILT (FILTER FABRIC) FENCE

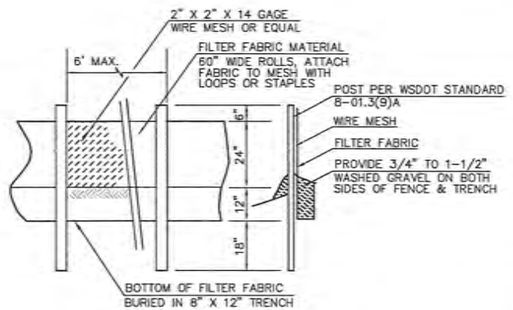
PURPOSE: USE OF A SILT FENCE REDUCES THE TRANSPORT OF COARSE SEDIMENT FROM A CONSTRUCTION SITE BY PROVIDING A TEMPORARY PHYSICAL BARRIER TO SEDIMENT AND REDUCING THE RUNOFF VELOCITIES OF OVERLAND FLOW.

INSTALLATION: USE DOWN SLOPE OF DISTURBED AREAS AS SHOWN ON THE PLAN AND AS NEEDED TO RESPOND TO SITE SPECIFIC CONDITIONS. GEOTEXTILE SHALL MEET THE FOLLOWING STANDARDS: POLYMETRIC MESH AOS (ASTM D4751) = 0.60 MM MAXIMUM FOR SLIT FILM WOVENS, 0.30 MM MAXIMUM FOR ALL OTHER GEOTEXTILES TYPES, AND 0.15 MM FOR ALL FABRIC TYPES, WATER PERMITTIVITY (ASTM D4491) = 0.2 SEC(-1) MINIMUM, GRAB TENSILE STRENGTH (ASTM D4632) = 180 POUNDS MINIMUM FOR EXTRA STRENGTH FABRIC, 100 POUNDS MINIMUM FOR STANDARD STRENGTH FABRIC, GRAB TENSILE ELONGATION (ASTM D4632) = 30% MAXIMUM, ULTRAVIOLET RESISTANCE (ASTM D4355) = 70% MINIMUM.

STANDARD STRENGTH FABRICS SHALL BE SUPPORTED WITH WIRE MESH, CHICKEN WIRE, 2-INCH X 2-INCH WIRE, SAFETY FENCE, OR JUTE MESH TO INCREASE THE STRENGTH OF THE FABRIC. SILT FENCE MATERIALS ARE AVAILABLE THAT HAVE SYNTHETIC MESH BACKING ATTACHED.

THE MINIMUM HEIGHT OF THE TOP OF THE SILT FENCE SHALL BE 2 FEET AND THE MAXIMUM HEIGHT SHALL BE 2.5 FEET.

MAINTENANCE: INSPECT THE FENCE AFTER RAINFALL EVENTS FOR SEDIMENT DEPOSITS UPSTREAM OF THE FENCE. REMOVE SEDIMENT DEPOSITS WHEN THEY REACH A DEPTH OF APPROXIMATELY 8 INCHES DEEP. REPLACE FILTER FABRIC FENCES DAMAGED BY CONSTRUCTION EQUIPMENT OR ULTRAVIOLET BREAKDOWN.



BMP C-233
SILT FENCE
NOT TO SCALE

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ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 22848 — REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WASHINGTON
WHATCOM COUNTY
PUMP STATION NO. 2
T.E.S.C. PLAN & DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	

SHEET C2.1 OF 39

TEMPORARY EROSION & SEDIMENTATION CONTROL PLAN

T.E.S.C. NARRATIVE –
(ORGANIZED PER DOE's BASIC ELEMENTS #1–12)

ELEMENT #1: MARK CLEARING LIMITS
Prior to beginning land disturbing activities, including clearing and grading, all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area should be clearly marked, both in the field and on the plans, to prevent damage and offsite impacts. Plastic, metal, or stake wire fence may be used to mark the clearing limits.

ELEMENT #2: ESTABLISH CONSTRUCTION ACCESS
Construction vehicle access and exit will occur via the existing access off Main Street. Access/egress will be limited to this one location. The access point shall be stabilized near the project site using track–clean plates to minimize the tracking of sediment into the parking lot or onto public roads. In place of track clean plates, contractor shall provide adequate provisions to ensure that no sediment is tracked off the construction site. In the event that sediment tracking occurs, contractor shall remove all tracked sediment immediately.

Wheel wash or tire baths, if required, shall be located on–site.

The parking lot access point will be cleaned thoroughly at the end of each day, or more frequently during wet weather, if necessary. Sediment shall be removed from roads by shoveling or pickup sweeping and shall be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner.

ELEMENT #3: CONTROL FLOW RATES
Properties and waterways downstream from this project shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site. Flow controls shall be implemented as early in the project construction phase as is practicable to mitigate flow rates.

The Ecology Manual requires a downstream analysis if changes in flows could impair or alter conveyance systems, stream banks, bed sediment or aquatic habitat. Since the proposed construction site is predominantly flat, and compost berms will be installed during construction, increased downstream flow rates are not anticipated during construction. No runoff will discharge directly from the site.

ELEMENT #4: INSTALL SEDIMENT CONTROLS
To the maximum extent possible, the duff layer, native topsoil, and natural vegetation shall be retained in an undisturbed state.

Prior to leaving the construction site, stormwater runoff from disturbed areas shall pass through a sediment pond or other appropriate sediment removal BMP. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must meet the flow control performance standard of Element #3. Full stabilization means concrete or asphalt paving; quarry spalls used as ditch lining; or the use of rolled erosion products, a bonded fiber matrix product, or vegetative cover in a manner that will fully prevent soil erosion. Sediment ponds, vegetated buffer strips, sediment barriers or filters, dikes, and other BMPs intended to trap sediment on–site shall be constructed as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.

Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing indicated in Element #5.

As a part of this project BMPs intended to trap sediment on site shall be implemented as one of the first steps in construction. Runoff will not discharge directly from the site.

ELEMENT #5: STABILIZE SOILS
The majority of the site is flat with some steeper slopes located near the bridge. During construction, all exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water, and wind erosion.

From October 1 through April 30 of each year, no soils shall remain exposed and unworked for more than 2 days. From May 1 to September 30 of each year, no soils shall remain exposed and unworked for more than 7 days. This condition applies to all soils on site, whether at final grade or not.

Applicable practices include, but are not limited to, temporary and permanent seeding, sodding, mulching, plastic covering, soil application of polyacrylamide (PAM), early application of gravel base on areas to be paved, and dust control.

Soil stabilization measures selected shall be appropriate for the time of year, site conditions, estimated duration of use, and potential water quality impacts that stabilization agents may have on downstream waters or ground water.

Soil stockpiles must be stabilized and protected with sediment trapping measures.

Work on trenching for utilities shall not exceed the capability of the individual contractor for his portion of the project to install the bedding materials, utilities, backfill, and to re–stabilize the disturbed soils, meeting the timing condition listed above.

At the discretion of the Owner, those sites unable to maintain the quality of their stormwater discharge may be required to provide soil stabilization to all exposed soil areas regardless of the working status of the area. Upon written notification, the Contractor shall provide full stabilization of all exposed soil areas within 24 hours.

During construction, BMPs will be followed to ensure that exposed soils are protected and stabilized. Stockpiles shall be covered and exposed soils shall be covered with straw, mulch or other acceptable methods. Construction shall take place during the summer months, and dust control measures will be practiced. After construction, exposed, unpaved surfaces disturbed by construction activities will be hydro–seeded or mulched.

ELEMENT #6: PROTECT SLOPES
The majority of the site is flat and stable. Sloped cuts near the bridge will be stabilized with netting or seeding.

Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. The erosion control design shall take into account the site's soil type and its potential for erosion. Runoff velocities shall be reduced by minimizing the continuous length of slope with terracing and diversions, by reducing slope steepness, and by roughening slope surface.

Upslope drainage and run–on waters from off–site shall be diverted with interceptors at the top of slope. Off–site stormwater shall be handled separately from stormwater generated on the site. Diversion of off–site stormwater around the site may be a viable option. Any diverted flows shall be redirected to the natural drainage location at or before the property boundary.

Drainage shall be provided to remove ground water intersecting the slope surface of exposed soil areas.

Excavated material shall be placed on the uphill side of trenches, consistent with safety and space considerations. Check dams shall be placed at regular intervals within trenches that are cut down a slope.

ELEMENT #7: PROTECT DRAIN INLETS
All existing storm drain inlets and those made operable during construction shall be protected so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

All approach roads shall be kept clean, and all sediment and street wash water shall not be allowed to enter storm drains without prior and adequate treatment unless treatment is provided before the storm drain discharges to water of the State.

ELEMENT #8: STABILIZE CHANNELS AND OUTLETS
All temporary on–site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2 year, 24–hour frequency storm for the developed condition.

Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

ELEMENT #9: CONTROL POLLUTANTS
All pollutants, including waste materials and demolition debris, that occur onsite will be handled and disposed of in a manner that does not cause contamination of stormwater.

Cover, containment, and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non–inert wastes present on the site. On–site fueling tanks shall include secondary containment.

On–site maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de–greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed on–site using temporary plastic placed beneath and, if raining, over the vehicle.

Wheel wash, or tire bath wastewater, shall be discharged to a separate on–site treatment system or to the sanitary sewer.

Concrete work that has not cured will be covered during rainfall to prevent increased stormwater pH as necessary to prevent violations of water quality standards. Management of pH–modifying sources shall prevent contamination of runoff and stormwater collected on the site. These sources include, but are not limited to, bulk cement, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

Application of agricultural chemicals, including fertilizers and pesticides is not anticipated under this contract. If agricultural chemicals are to be used, their application shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations shall be followed for application rates and procedures.

ELEMENT #10: CONTROL DE–WATERING
The following options will be implemented for dewatering as necessary.

Clean, non–turbid de–watering water, such as well–point ground water, will be discharged in a dispersed manner to thick natural vegetation near the site. This vegetated discharge location will be well away from surface waters, wetlands, or lagoon berms on site. This dewatering flow must not cause erosion or flooding of the receiving waters, and these clean waters shall not be routed through sediment ponds with stormwater.

Turbid dewatering water will be discharged to a setting tank or filter prior to being discharged to as described above for clean water.

Final discharge point must be coordinated with the Owner and Engineer.

ELEMENT #11: MAINTAIN BMPs
All temporary and permanent erosion and sediment control BMPs will be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with BMP specifications.

Sediment control BMPs shall be inspected weekly of after a runoff–producing storm event during the dry season and daily during the wet season. Because this project disturbs less than one acre of area, a certified erosion control lead need not be designated for the site. The contractor shall be responsible for all required inspection, maintenance, and repair of site BMPs.

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed.

ELEMENT #12: MANAGE THE PROJECT
The construction contractor is responsible for providing and maintaining these and such additional BMPs, as may be required to prevent erosion, control sediment, and prevent water pollution.

The contractor will be required, where feasible, to phase the project in order to prevent, to the maximum extent practicable, the transport of sediment from the development site during construction. Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities for any phase.

When establishing the permitted clearing and grading areas, consideration will be given to minimizing removal of existing trees and minimizing disturbance/compaction of native soils except as needed for building purposes. Permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas, will be delineated on the site plans and the development site.

The Owner and Engineer have evaluated, with input from utilities and other contractors, the stormwater management requirements for the entire project, including the utilities, when preparing the Construction TESC.

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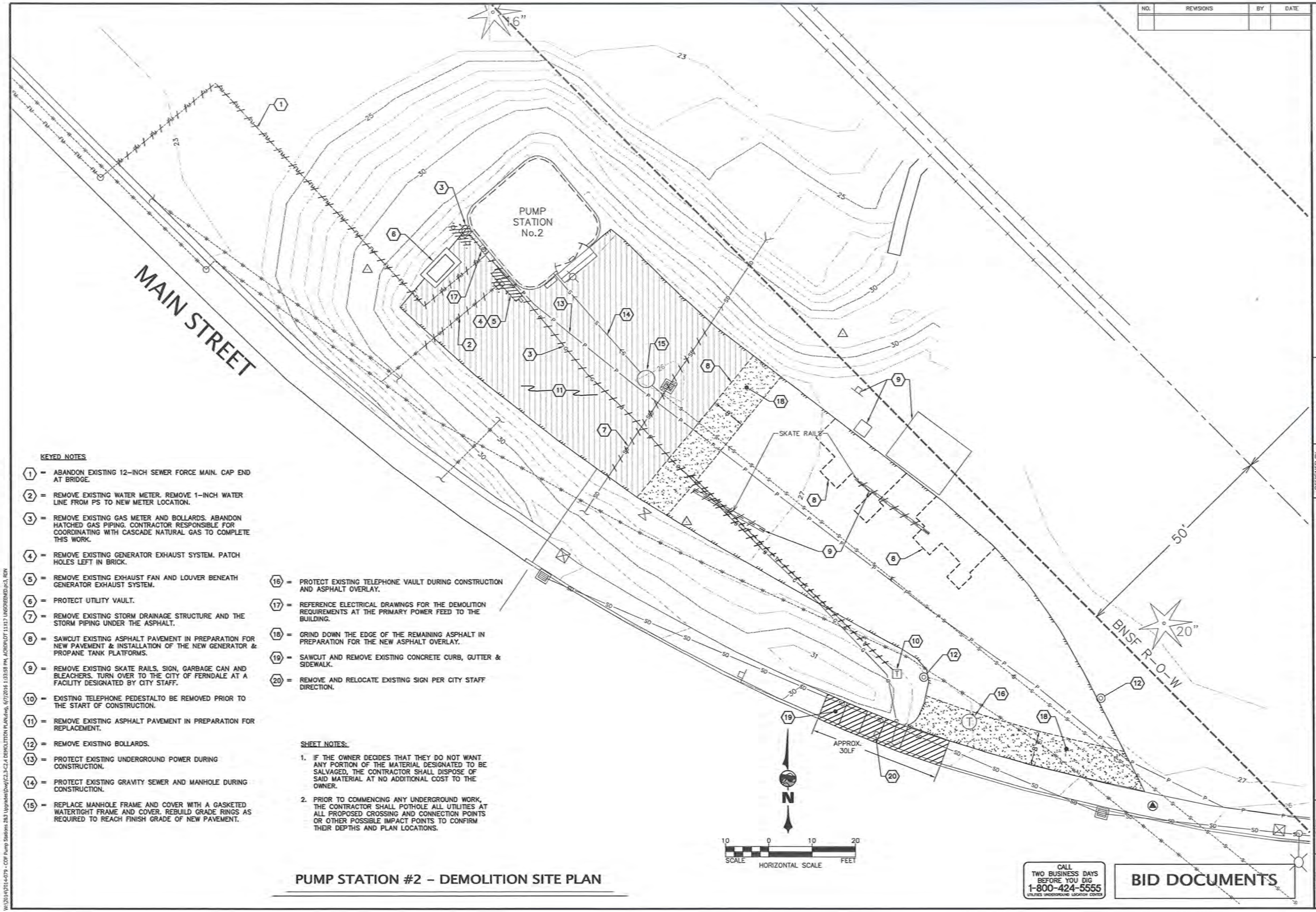
ELIZABETH ANNE STERLING, STATE OF WASHINGTON, 44548, REGISTERED PROFESSIONAL ENGINEER
6/8/16

DESIGNED BY	EAS/SJW
DRAWN BY	SJW/RDN
CHECKED BY	MMM

CITY OF FERNDALE
WHATCOM COUNTY — WASHINGTON
PUMP STATION NO. 2
T.E.S.C. NARRATIVE

DATE	6/08/2016
SCALE	AS SHOWN
JOB NUMBER	
SHEET	C2.2
OF	39

NO.	REVISIONS	BY	DATE



KEYED NOTES

(1) = ABANDON EXISTING 12-INCH SEWER FORCE MAIN. CAP END AT BRIDGE.

(2) = REMOVE EXISTING WATER METER. REMOVE 1-INCH WATER LINE FROM PS TO NEW METER LOCATION.

(3) = REMOVE EXISTING GAS METER AND BOLLARDS. ABANDON HATCHED GAS PIPING. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH CASCADE NATURAL GAS TO COMPLETE THIS WORK.

(4) = REMOVE EXISTING GENERATOR EXHAUST SYSTEM. PATCH HOLES LEFT IN BRICK.

(5) = REMOVE EXISTING EXHAUST FAN AND LOUVER BENEATH GENERATOR EXHAUST SYSTEM.

(6) = PROTECT UTILITY VAULT.

(7) = REMOVE EXISTING STORM DRAINAGE STRUCTURE AND THE STORM PIPING UNDER THE ASPHALT.

(8) = SAWCUT EXISTING ASPHALT PAVEMENT IN PREPARATION FOR NEW PAVEMENT & INSTALLATION OF THE NEW GENERATOR & PROPANE TANK PLATFORMS.

(9) = REMOVE EXISTING SKATE RAILS, SIGN, GARBAGE CAN AND BLEACHERS. TURN OVER TO THE CITY OF FERNDALE AT A FACILITY DESIGNATED BY CITY STAFF.

(10) = EXISTING TELEPHONE PEDESTALTO BE REMOVED PRIOR TO THE START OF CONSTRUCTION.

(11) = REMOVE EXISTING ASPHALT PAVEMENT IN PREPARATION FOR REPLACEMENT.

(12) = REMOVE EXISTING BOLLARDS.

(13) = PROTECT EXISTING UNDERGROUND POWER DURING CONSTRUCTION.

(14) = PROTECT EXISTING GRAVITY SEWER AND MANHOLE DURING CONSTRUCTION.

(15) = REPLACE MANHOLE FRAME AND COVER WITH A GASKETED WATERTIGHT FRAME AND COVER. REBUILD GRADE RINGS AS REQUIRED TO REACH FINISH GRADE OF NEW PAVEMENT.

(16) = PROTECT EXISTING TELEPHONE VAULT DURING CONSTRUCTION AND ASPHALT OVERLAY.

(17) = REFERENCE ELECTRICAL DRAWINGS FOR THE DEMOLITION REQUIREMENTS AT THE PRIMARY POWER FEED TO THE BUILDING.

(18) = GRIND DOWN THE EDGE OF THE REMAINING ASPHALT IN PREPARATION FOR THE NEW ASPHALT OVERLAY.

(19) = SAWCUT AND REMOVE EXISTING CONCRETE CURB, GUTTER & SIDEWALK.

(20) = REMOVE AND RELOCATE EXISTING SIGN PER CITY STAFF DIRECTION.

SHEET NOTES:

1. IF THE OWNER DECIDES THAT THEY DO NOT WANT ANY PORTION OF THE MATERIAL DESIGNATED TO BE SALVAGED, THE CONTRACTOR SHALL DISPOSE OF SAID MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
2. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS OR OTHER POSSIBLE IMPACT POINTS TO CONFIRM THEIR DEPTHS AND PLAN LOCATIONS.

PUMP STATION #2 – DEMOLITION SITE PLAN

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Wilson SURVEY/ENGINEERING

ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 41548 — REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 2
DEMOLITION SITE PLAN

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET C2.3 OF 39

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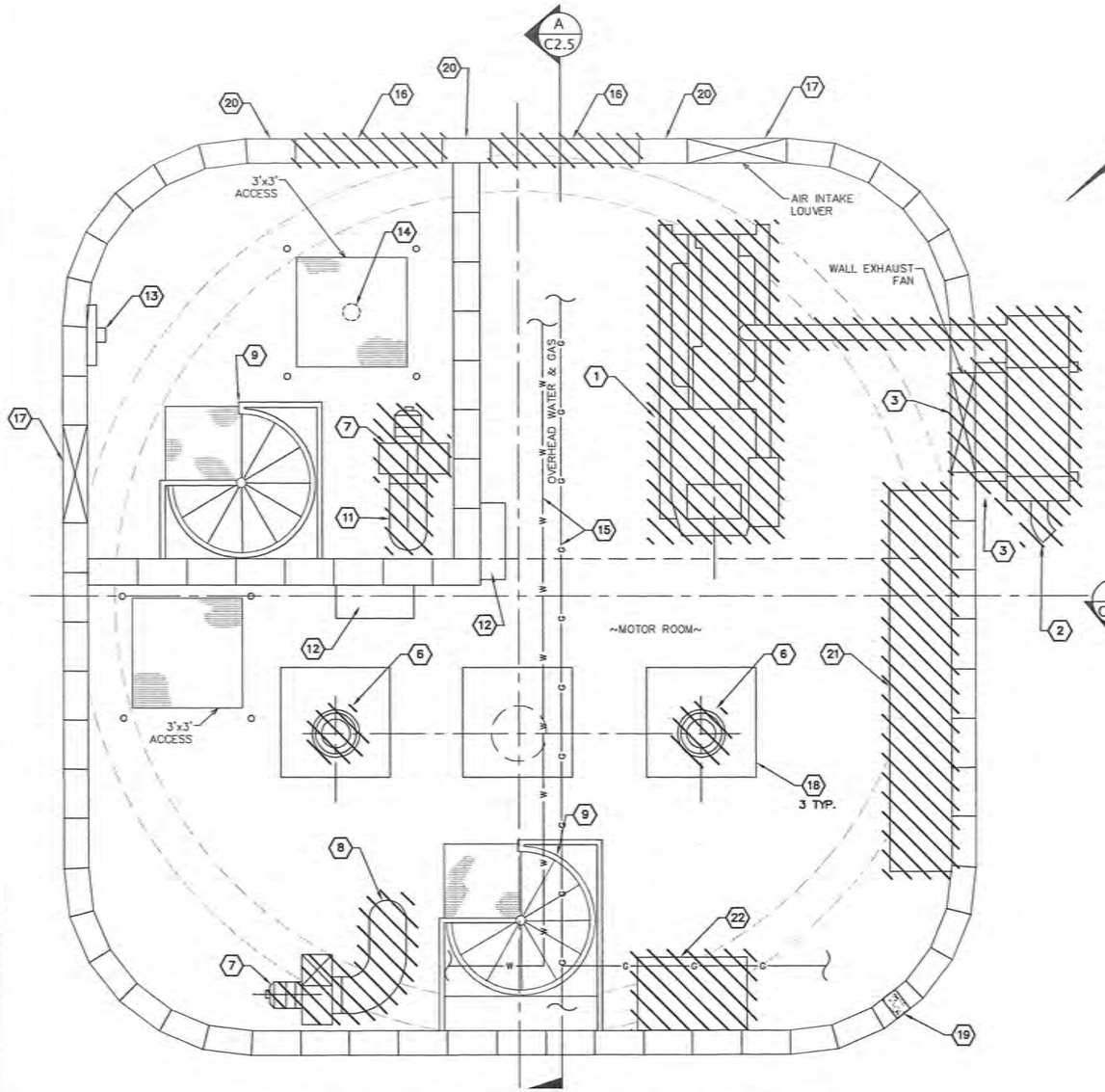
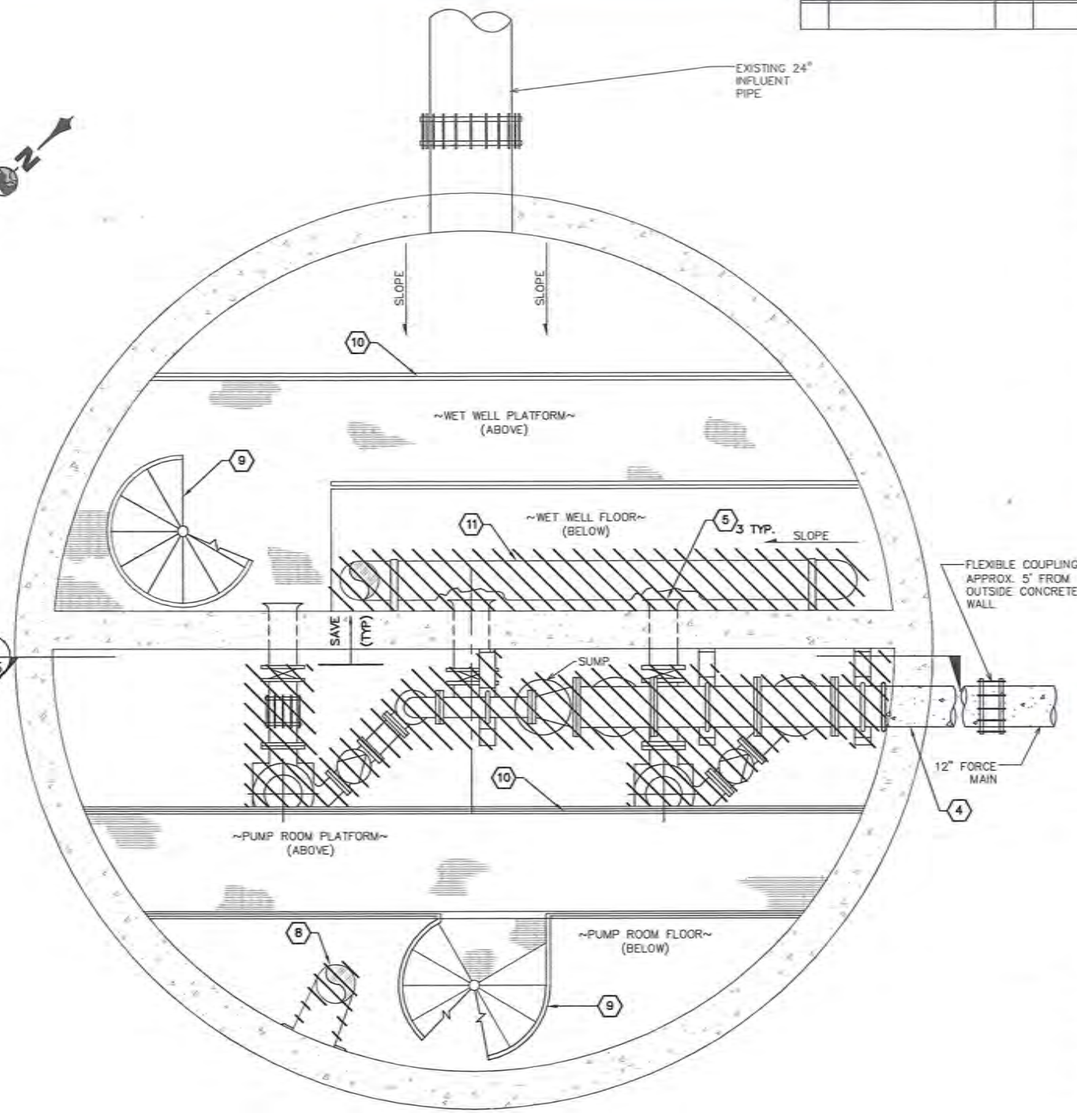
NO.	REVISIONS	BY	DATE



PUMP STATION #2 – DEMOLITION – MOTOR ROOM FLOOR



PUMP STATION #2 – DEMOLITION – PUMP ROOM & WET WELL

SCALE: 2 0 2 4 HORIZONTAL SCALE FEET

SCALE: 2 0 2 4 HORIZONTAL SCALE FEET

KEYED NOTES

1. = REMOVE & SALVAGE EXISTING GENERATOR.
2. = REMOVE & SALVAGE EXISTING EXHAUST SYSTEM.
3. = REMOVE & SALVAGE EXISTING EXHAUST FAN AND LOUVER BELOW GENERATOR EXHAUST SYSTEM.
4. = CUT & CAP 12"ø C.I. FORCE MAIN JUST INSIDE PUMP ROOM. SEAL FIRST 10–FT. OF BURIED FORCE MAIN WITH CDF.
5. = FLARED SUCTION INLETS (BELOW). PROTECT.
6. = REMOVE & SALVAGE EXISTING 15 HP PUMP MOTORS.
7. = REMOVE EXISTING EXHAUST FAN. NEW EXHAUST FANS TO BE LOCATED ON ROOF.
8. = EXISTING EXHAUST DUCT & SUPPORTS IN THE MOTOR AND PUMP ROOM TO BE REMOVED AND REPLACED AS DIRECTED.
9. = SPIRAL STAIRS, HANDRAILING, AND GRATING TO REMAIN. REFERENCE SPEC. SECTION 09900 FOR CLEANING.
10. = PLATFORM & PLATFORM SUPPORTS TO REMAIN. REFERENCE SPEC. SECTION 09900 FOR CLEANING.
11. = REMOVE AND REPLACE ALL DUCTING & SUPPORTS IN THE WET WELL VENTILATION SYSTEM.
12. = EXISTING "TELEMETRY PANEL" AND "INTRINSICALLY SAFE PANEL" TO REMAIN. PROTECT DURING CONSTRUCTION.
13. = REMOVE EXISTING HOIST MOUNT, PATCH WALL.
14. = CUT OFF EXISTING EYE–BOLT ON CEILING ABOVE. PATCH CEILING.
15. = REMOVE ALL EXISTING INTERIOR WATER AND GAS PIPING.
16. = REMOVE EXISTING DOORS & FRAMES IN PREPARATION FOR REPLACEMENT.
17. = REMOVE EXISTING LOUVERS IN PREPARATION FOR REPLACEMENT.
18. = SAWCUT 3'x 3' FLOOR OPENINGS (TYP 3). REFERENCE SHEET M3.1 FOR LOCATION AND SIZE.
19. = EXISTING WALL PENETRATION TO BE GROUTED WITH NON–SHRINK GROUT.
20. = REMOVE & REPLACE BRICK AT DOORWAY PER DETAIL 1/C4.4
21. = REMOVE EXISTING MCC & ELECTRICAL EQUIPMENT AS DIRECTED IN THE ELECTRICAL PLANS.
22. = REMOVE EXISTING WALL–HUNG DESK.

SHEET NOTES:

IF THE OWNER DECIDES THAT THEY DO NOT WANT ANY PORTION OF THE MATERIAL DESIGNATED TO BE SALVAGED, THE CONTRACTOR SHALL DISPOSE OF SAID MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
DEMOLITION – MECHANICAL

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET C2.4 OF 39

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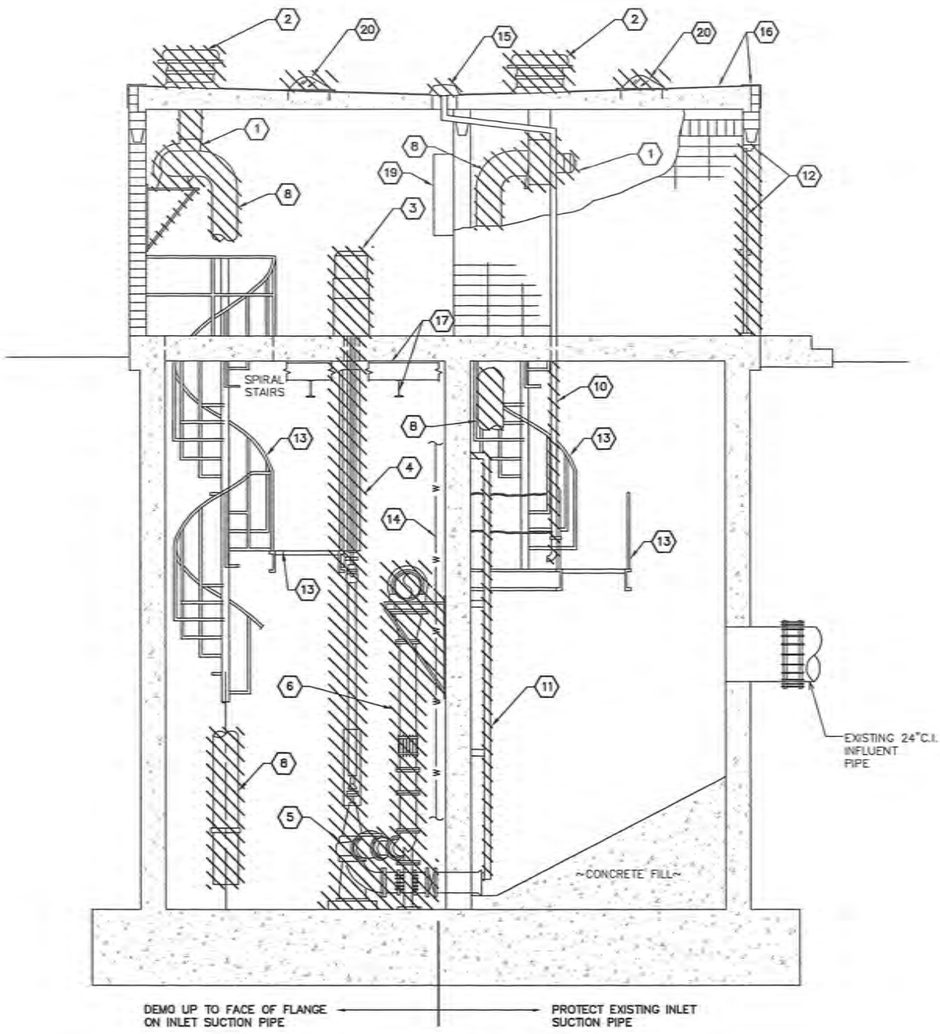
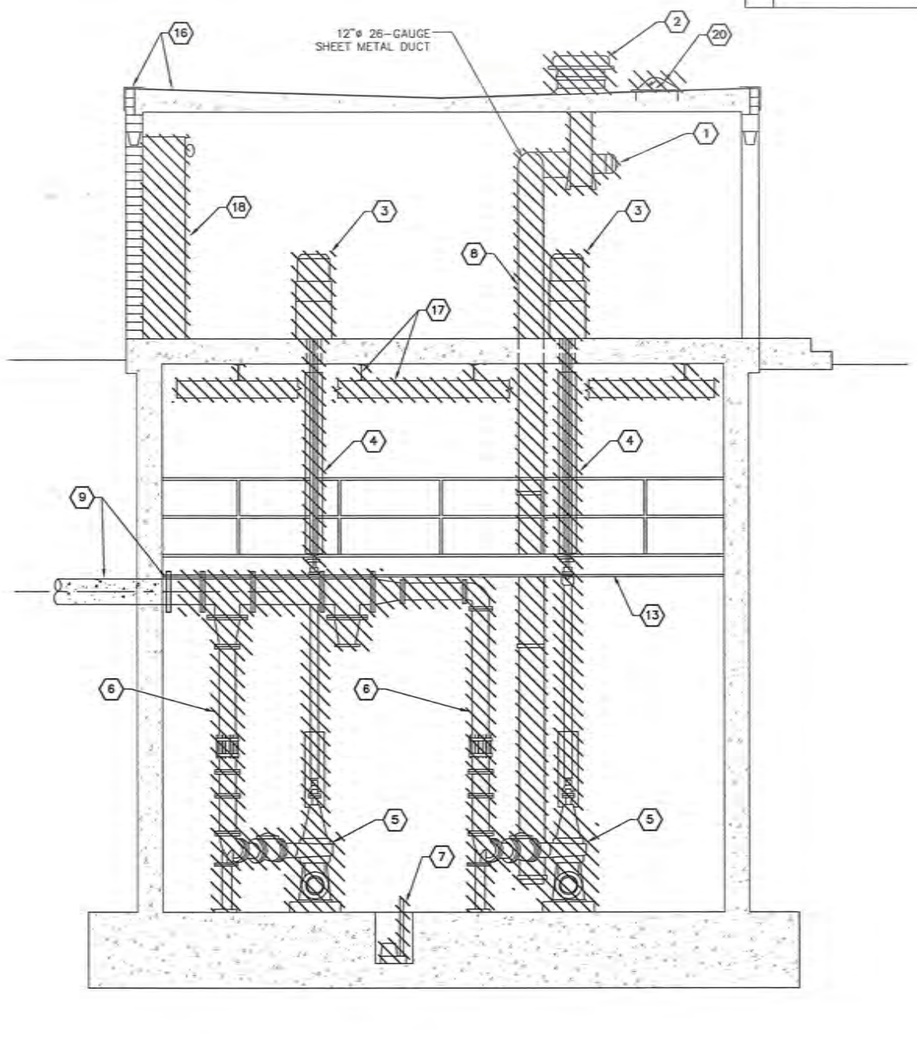


A-A / C2.4 SECTION A-A



B-B / C2.4 SECTION B-B

PUMP STATION #2 – DEMOLITION – MECHANICAL SECTIONS

SCALE: 3 0 3 6 FEET — HORIZONTAL SCALE

SHEET NOTES:

1. IF THE OWNER DECIDES THAT THEY DO NOT WANT ANY PORTION OF THE MATERIAL DESIGNATED TO BE SALVAGED, THE CONTRACTOR SHALL DISPOSE OF SAID MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
2. REMOVE ALL POTABLE WATER & GAS PIPING FROM THE PUMP AND MOTOR ROOMS (NOT SHOWN).

KEYED NOTES

(1) = REMOVE EXISTING EXHAUST FAN. NEW EXHAUST FANS TO BE LOCATED ON ROOF.
(2) = REMOVE EXISTING ROOF VENTS.
(3) = REMOVE EXISTING PUMP MOTORS.
(4) = REMOVE EXISTING SAFETY CAGE, PUMP DRIVE SHAFT & SUPPORTS.
(5) = REMOVE EXISTING PUMP & PUMP BASE.
(6) = REMOVE ALL PIPING, VALVES, FITTINGS, & PIPE SUPPORTS MARKED FOR DEMOLITION.
(7) = REMOVE SUMP PUMP & ASSOCIATED DISCHARGE PIPING AND SUPPORTS.
(8) = REMOVE AND REPLACE ALL DUCTING AND SUPPORTS IN THE WET SIDE AND DRY SIDE VENTILATION SYSTEMS.
(9) = CUT & CAP 12"ø CAST IRON FORCE MAIN JUST INSIDE PUMP ROOM. SEAL FIRST 10-FT OF BURIED FORCE MAIN WITH CDF.
(10) = REMOVE & REPLACE (IN KIND) EXISTING 3-IN. ROOF DRAIN AND SUPPORT WITHIN THE WET WELL.
(11) = REMOVE & REPLACE EXISTING LADDER.
(12) = REMOVE EXISTING DOORS & FRAMES IN PREPARATION FOR REPLACEMENT.
(13) = SPIRAL STAIRS, HANDRAIL, GRATING, PLATFORMS, AND PLATFORM SUPPORTS TO REMAIN. SEE SPEC. SECTION 09900 FOR CLEANING.
(14) = REMOVE ALL POTABLE WATER PIPING IN THE PUMP ROOM.
(15) = REMOVE EXISTING ROOF DRAIN IN PREPARATION FOR REPLACEMENT.
(16) = REMOVE EXISTING MEMBRANE ROOFING AND FLASHING AND PREP CONCRETE SURFACE FOR ROOF REPLACEMENT.
(17) = REMOVE EXISTING STRUCTURAL STEEL AND TURN OVER TO THE CITY. PATCH HOLES IN CEILING.
(18) = REMOVE EXISTING MCC & ELECTRICAL EQUIPMENT AS DIRECTED ON THE ELECTRICAL PLANS.
(19) = EXISTING "TELEMETRY PANEL" AND "INTRINSICALLY SAFE PANEL" (NOT SHOWN) TO REMAIN.
(20) = REMOVE & REPLACE EXISTING SKYLIGHTS.

INSPECTION NOTES:

1. SUBSEQUENT TO THE INITIATION OF BYPASS PUMPING AND THE SHUTDOWN OF THE STATION, THE STATION WELL SHALL BE DRAINED, CLEANED, AND INSPECTED FOR LEAKS PRIOR TO INSTALLATION OF ANY COATINGS. IF ANY LEAKS ARE IDENTIFIED, THE CONTRACTOR WILL SUBMIT TO THE CITY (REVIEW AND APPROVAL), A STEP-BY-STEP PLAN TO SEAL THE WET WELL. WORK ASSOCIATED WITH SEALING ANY LEAKS IN THE WET WELL WILL BE PAID FOR ON A FORCE ACCOUNT BASIS THROUGH THE BID ITEM SET ASIDE FOR THAT WORK. COSTS ASSOCIATED WITH NORMAL REPAIRS TO THE WET WELL, NOT ASSOCIATED WITH LEAK REPAIR, WHICH ARE NECESSARY FOR THE INSTALLATION OF THE WET WELL COATINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
2. AFTER INITIAL SHUTDOWN OF THE STATION, THE ENGINEER SHALL INSPECT THE SPIRAL STAIRS AND WALKWAY IN THE WET WELL TO DETERMINE IF ANY STRUCTURAL REPAIRS TO THE STRUCTURE OR ITS CONNECTIONS ARE NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SAFETY MEASURES, INCLUDING VENTILATION AND CONFINED SPACE ENTRY REQUIREMENTS, TO FACILITATE THIS INSPECTION WORK. WORK ASSOCIATED WITH ANY STRUCTURAL REPAIRS RESULTING FROM THIS INSPECTION SHALL BE PAID FOR ON A FORCE ACCOUNT BASIS THROUGH THE BID ITEM SET ASIDE FOR THAT WORK.

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
DEMOLITION – MECHANICAL SECTIONS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

SHEET C2.5 OF 39

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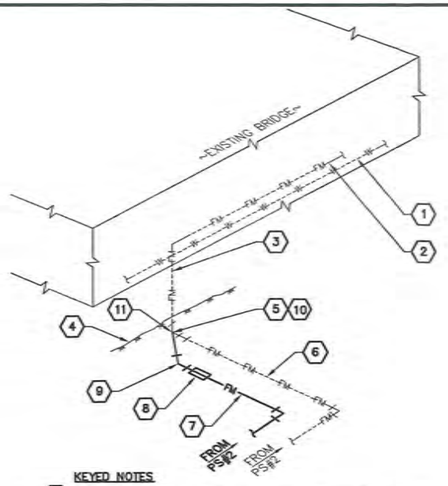


KEYED NOTES

(1) = EXISTING INSULATED 12"ø WATER MAIN UNDER BRIDGE

(2) = EXISTING INSULATED 12"ø SEWER FORCE MAIN UNDER BRIDGE

(3) = EXISTING INSULATED 12"ø SEWER FORCE MAIN, VERTICAL ORIENTATION

(4) = APPROXIMATE LOCATION OF EXISTING GRADE

(5) = NEW 12"ø 90° ELBOW. ROTATE 45° CLOCKWISE TO MATE-IN WITH NEW 12"ø SEWER FORCE MAIN

(6) = EXISTING BURIED 12"ø SEWER FORCE MAIN, TO BE ABANDONED. CAP END OF ABANDONED PIPE.

(7) = NEW 12"ø BURIED SEWER FORCE MAIN

(8) = NEW 12"ø FLEXIBLE COUPLING, RESTRAINED

(9) = NEW 12"ø 45° ELBOW, RESTRAINED

(10) = PRIOR TO COMMENCING WORK, POTHOLE THIS LOCATION TO CONFIRM THE PLAN LOCATION AND DEPTH OF THE FORCE MAIN

(11) = TIE-IN NEW FORCE MAIN TO NEW 90° ELBOW

NEW SEWER FORCE MAIN TIE-IN AT BRIDGE

1/- NOT TO SCALE

12-INCH SEWER FORCE MAIN PHOTO 1

12-INCH SEWER FORCE MAIN PHOTO 2

KEYED NOTES

(1) = EXISTING 12-INCH SEWER FORCE MAIN (APPROXIMATE LOCATION). SEE NOTE 3.

(2) = NEW 12-INCH SEWER FORCE MAIN. CONNECT TO EXISTING FORCE MAIN PER DETAIL 1/-

(3) = 12-INCH SEWER FORCE MAIN – PHOTO 1 (THIS SHEET)

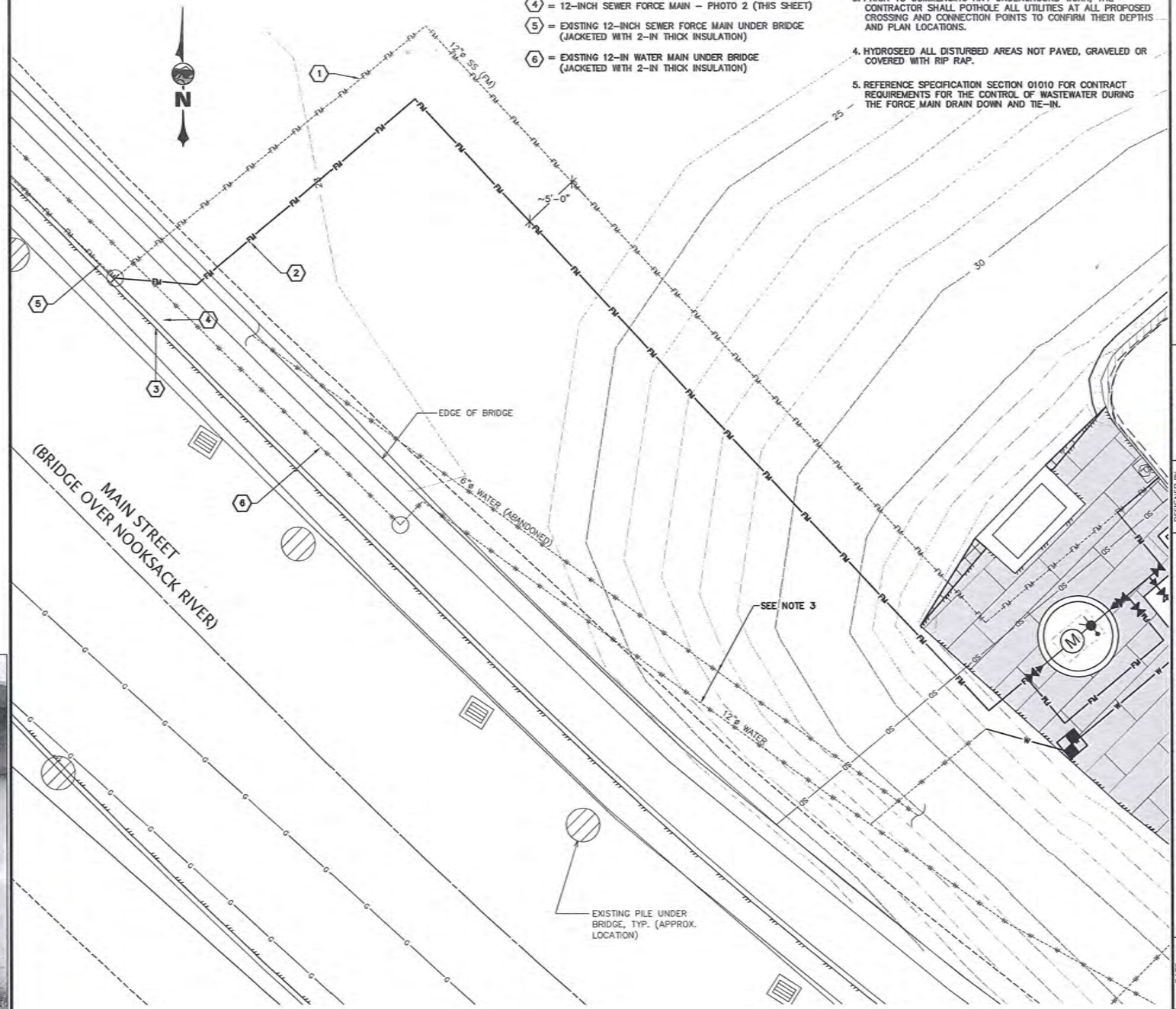
(4) = 12-INCH SEWER FORCE MAIN – PHOTO 2 (THIS SHEET)

(5) = EXISTING 12-INCH SEWER FORCE MAIN UNDER BRIDGE (JACKETED WITH 2-IN THICK INSULATION)

(6) = EXISTING 12-IN WATER MAIN UNDER BRIDGE (JACKETED WITH 2-IN THICK INSULATION)

NOTES:

1. NO CONSTRUCTION WORK OR STAGING SHALL BE PERFORMED WITHIN THE EXISTING BNSF RAILROAD RIGHT-OF-WAY.
2. ALL UNDERGROUND UTILITY PIPING TO BE INSTALLED IN ACCORDANCE WITH DETAIL 4/C4.1
3. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTHS AND PLAN LOCATIONS.
4. HYDROSEED ALL DISTURBED AREAS NOT PAVED, GRAVELED OR COVERED WITH RIP RAP.
5. REFERENCE SPECIFICATION SECTION 01010 FOR CONTRACT REQUIREMENTS FOR THE CONTROL OF WASTEWATER DURING THE FORCE MAIN DRAIN DOWN AND TIE-IN.



NEW 12" FORCE MAIN – PLAN

SCALE 5 0 5 10 FEET HORIZONTAL SCALE

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
PROPOSED SEWER CONNECTION PLAN

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET C3.1 OF 39

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NOTES:

1. NO CONSTRUCTION WORK OR STAGING SHALL BE PERFORMED WITHIN THE EXISTING BNSF RAILROAD RIGHT-OF-WAY.
2. ALL UNDERGROUND UTILITY PIPING TO BE INSTALLED IN ACCORDANCE WITH DETAIL (4/C4.1)
3. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTHS AND PLAN LOCATIONS.
4. FOR PUMP STATION TEMPORARY BYPASS PUMPING SCHEMATIC, SEE DETAIL (4/C4.2)
5. HYDROSEED ALL DISTURBED AREAS NOT PAVED, GRAVELED OR COVERED WITH RIP RAP.

PAVING LEGEND

= REPLACEMENT ASPHALT SECTION

= NEW ASPHALT SECTION

= ASPHALT OVERLAY

KEYED NOTES

(1) = MATE OVERLAY ASPHALT INTO THE BACK OF EXISTING SIDEWALK

(2) = NEW ASPHALT OVERLAY PER DETAIL (2/C4.1)

(3) = NEW ASPHALT SECTION PER DETAIL (2/C4.1)

(4) = REPLACE ASPHALT SECTION PER DETAIL (1/C4.1)

(5) = REPLACE ±30 LF SIDEWALK AND CURB & GUTTER TO MATCH EXISTING. REPLACE DRIVEWAY CUT RAMP IN KIND.

(6) = NEW BOLLARD PER DETAIL (6/C4.2)

(7) = TELEPHONE PEDESTAL RELMOVED BY FRONTIER COMMUNICATIONS PRIOR TO CONSTRUCTION.

(8) = PROTECT EXISTING ELECTRICAL VAULT

(9) = NEW CONCRETE BARRIER (TWO SECTIONS) PER DETAIL (1/C4.3)

(10) = NEW 24-FT WIDE DOUBLE-SWING BARRIER GATE PER DETAIL (4/C4.3)

(11) = NEW STANDBY GENERATOR. REFERENCE ELECTRICAL DRAWINGS FOR DETAILS.

(12) = NEW STANDBY GENERATOR PLATFORM. REFERENCE STRUCTURAL PLANS FOR DETAILS.

(13) = NEW 500-GALLON PROPANE TANK. CONTRACTOR TO COORDINATE WITH THE PROPANE SUPPLIER TO RENT AND INSTALL THE TANK. ALL COST ASSOCIATED WITH COORDINATING THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.

(14) = NEW PROPANE TANK PLATFORM. REFERENCE STRUCTURAL PLANS FOR DETAILS.

(15) = NEW BURIED 4"ø GATE VALVE PER DETAIL (3/C4.2)

(16) = REPLACE EXISTING DRAINAGE STRUCTURE WITH FOUR SECTIONS OF PRECAST CONCRETE TRENCH PER DETAIL (5/C4.2)

(17) = EXISTING WALL-MOUNTED LIGHT TO BE REPLACED. REFERENCE ELECTRICAL PLANS FOR DETAILS.

(18) = NEW FLOWMETER VAULT PER DETAIL (2/C4.4)

(19) = NEW BYPASS SNORKLE VAULT PER DETAIL (4/C4.4)

KEYED NOTES (CON'T)

(20) = NEW BURIED 12"ø GATE VALVE PER DETAIL (3/C4.2)

(21) = RELOCATE THE EXISTING 1"ø WATER LINE AROUND THE METER VAULT BYPASS. SEE NOTE 3.

(22) = NEW GAS SERVICE. ROUTE PIPING TO NEW GAS METER TO BE INSTALLED ADJACENT TO THE NEW GENERATOR PLATFORM. REFERENCE ELECTRICAL DRAWINGS FOR LOCATION OF NEW METER AND CONNECTION POINT TO THE GENERATOR. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH CASCADE NATURAL GAS TO COMPLETE THIS WORK.

(23) = NEW POTABLE REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY WITH ALUMINUM INSULATED ENCLOSURE PER DETAIL (3/C4.1)

(24) = NEW 1" DIA. WATER SERVICE AND METER PER CITY OF FERNDALE STANDARDS. CONNECT TO EXISTING SERVICE LINE.

(25) = APPROX. LOCATION OF EXISTING 12" SEWER FORCE MAIN (BURIED) TO BE ABANDONED. SEE NOTE 3.

(26) = NEW 12" D.I. SEWER FORCE MAIN. SEE SHEET C3.1 FOR DETAILS. REFERENCE NOTE 3 THIS SHEET.

(27) = APPROX. LOCATION OF EXISTING 12" WATER MAIN. SEE NOTE 3.

(28) = ABANDONED 6" WATER LINE, APPROXIMATE LOCATION.

(29) = REPLACE MANHOLE FRAME AND COVER WITH A GASKETED WATERTIGHT FRAME AND COVER. REBUILD GRADE RINGS AS REQUIRED TO REACH FINISH GRADE OF NEW PAVEMENT.

(30) = CLEAR DEBRIS AND WEEDS AWAY FROM THE BASE OF THE MASONRY STRUCTURE. RIP RAP BASE OF SLOPE AND PLACE 1'-0" WIDE BY 2-IN. THICK LAYER OF CSTC AROUND STRUCTURE.

KEYED NOTES (CON'T)

(31) = RELOCATE EXISTING SIGN AS DIRECTED BY CITY OF FERNDALE.

(32A) = NEW 2"ø TELEPHONE CONDUIT & PEDESTAL. CONTRACTOR TO COORDINATE WITH THE TELEPHONE UTILITY FOR INSTALLATION . TELEPHONE UTILITY TO INSTALL CONDUIT & PEDESTAL. CONTRACTOR TO PROVIDE TRENCHING & BACKFILL.

(32B) = NEW 2"ø TELEPHONE CONDUIT TO BE INSTALLED BY CONTRACTOR FROM PEDESTAL TO PUMP STATION. BRING CONDUIT ABOVE GRADE AT BUILDING AND CAP.

(33) = NEW 2"ø FIBER OPTIC CONDUIT. REFERENCE ELECTRICAL PLANS FOR ADDITIONAL DETAILS.

(34) = NEW GATE STOP, 2 TYP. PER DETAIL (4/C4.3)

(35) = SCHEMATIC LOCATION OF NEW UNDERGROUND PROPANE LINE FROM TANK TO GENERATOR. PIPE SIZE TO BE DETERMINED BY GENERATOR MANUFACTURER.

PUMP STATION #2 (EXISTING)

WSE #103

WSE #102

WSE #100

WSE #104

3 (TYP) IN THIS AREA

6 (TYP)

BNSF RAILROAD TRACKS

BNSF RIGHT-OF-WAY

MAIN STREET

D/W RAMP

±30'

10' (TYP)

N

SCALE 10 0 10 20 FEET
HORIZONTAL SCALE

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CITY OF FERNDALE
WASHINGTON
WHATCOM COUNTY

PUMP STATION NO. 2
PROPOSED SITE PLAN

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET C3.2 OF 39

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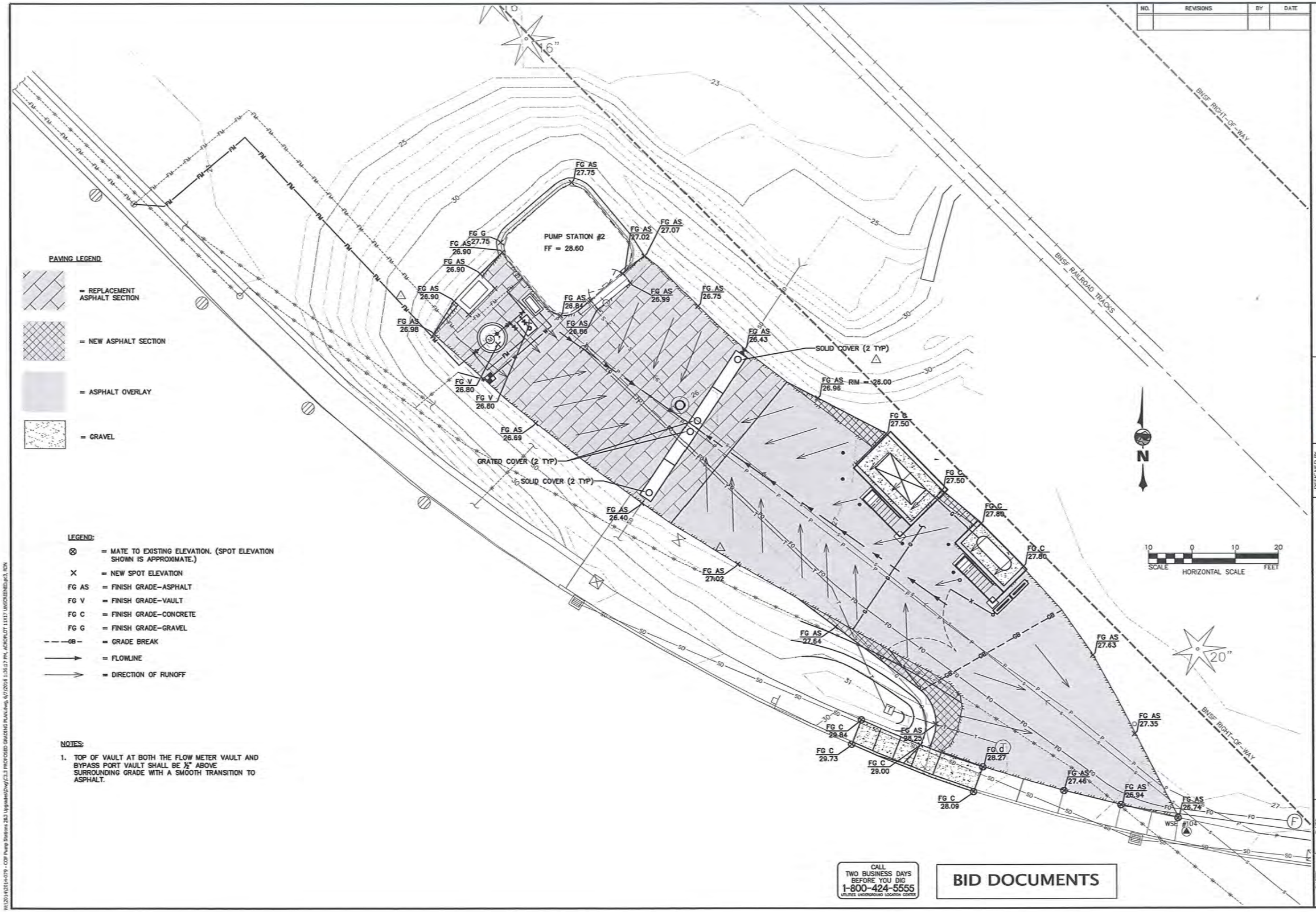

LEGEND:

⊗	= MATE TO EXISTING ELEVATION. (SPOT ELEVATION SHOWN IS APPROXIMATE.)
×	= NEW SPOT ELEVATION
FG AS	= FINISH GRADE–ASPHALT
FG V	= FINISH GRADE–VAULT
FG C	= FINISH GRADE–CONCRETE
FG G	= FINISH GRADE–GRAVEL
–GB–	= GRADE BREAK
→	= FLOWLINE
→	= DIRECTION OF RUNOFF

NOTES:

1. TOP OF VAULT AT BOTH THE FLOW METER VAULT AND BYPASS PORT VAULT SHALL BE ½" ABOVE SURROUNDING GRADE WITH A SMOOTH TRANSITION TO ASPHALT.

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CITY OF FERNDALE
WASHINGTON
WHATCOM COUNTY

PUMP STATION NO. 2
PROPOSED GRADING PLAN

SHEET	DATE	SCALE	JOB NUMBER
C3.3	6/08/2016	AS SHOWN	2014-079A
OF 39			

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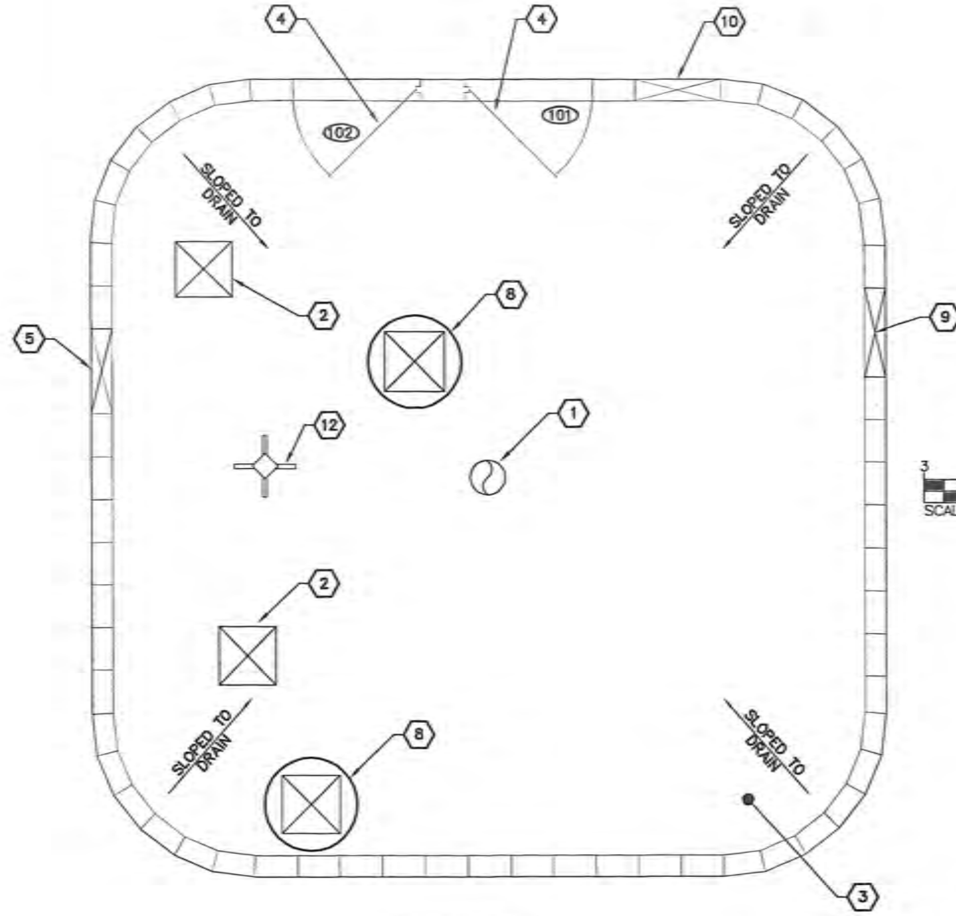
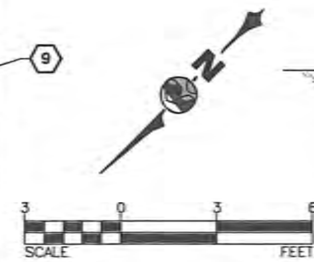
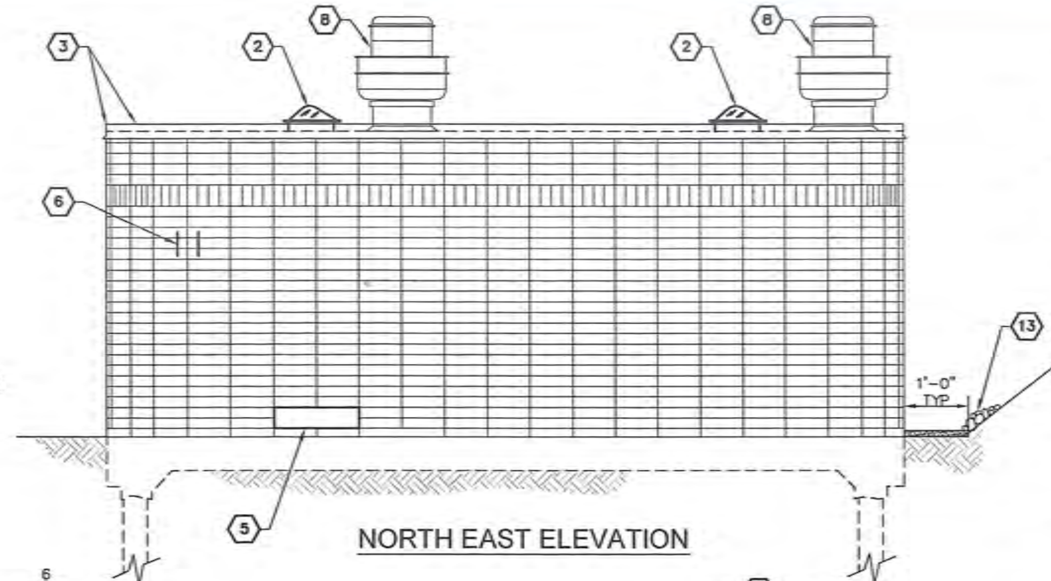
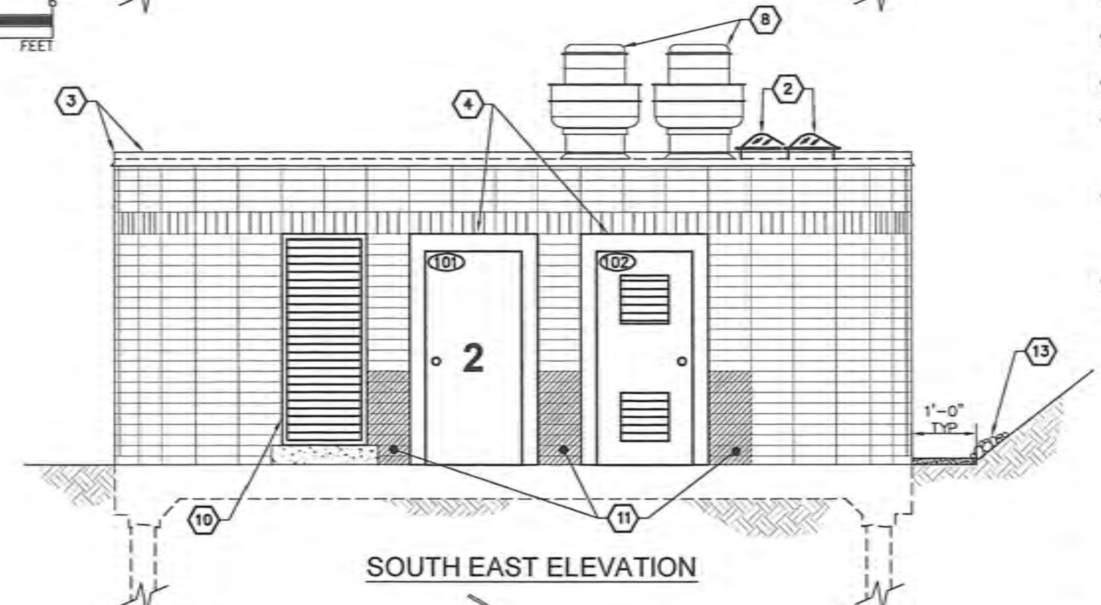


ROOF PLAN

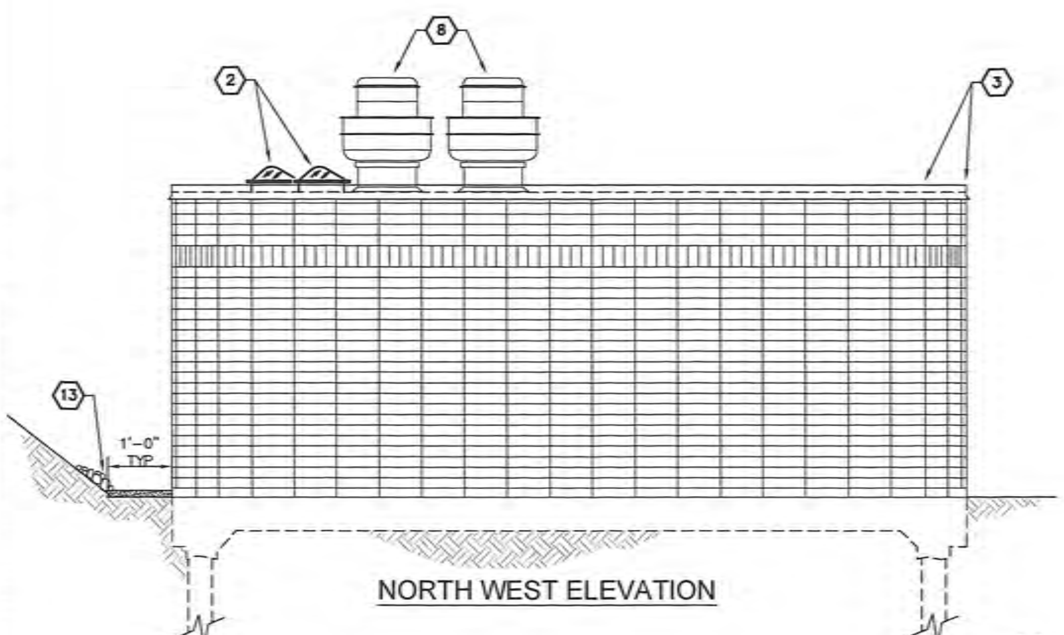




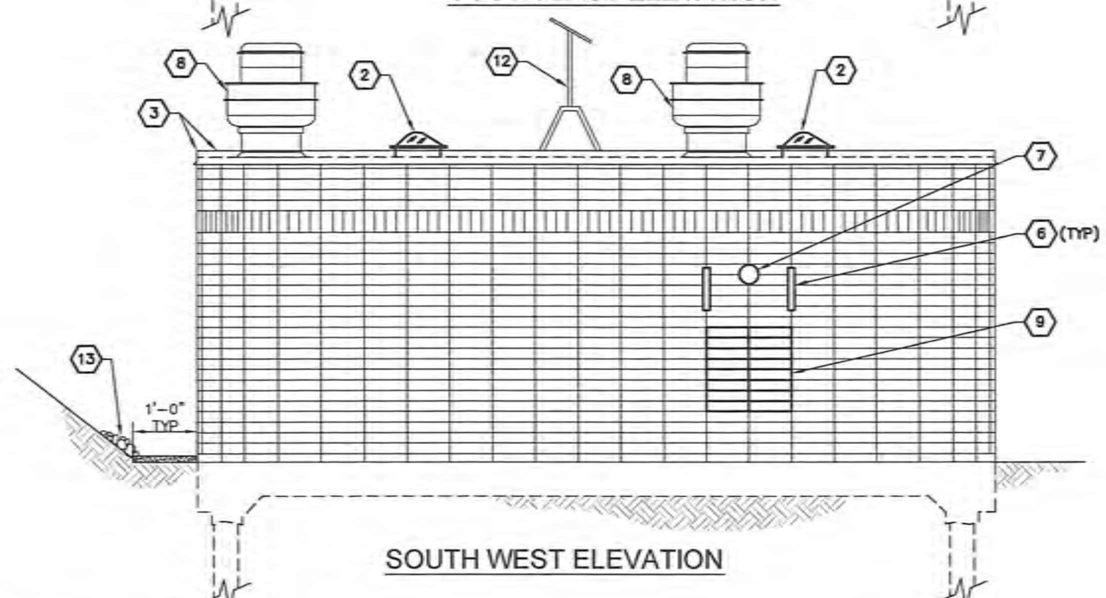
NORTH EAST ELEVATION



SOUTH EAST ELEVATION



NORTH WEST ELEVATION



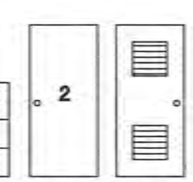
SOUTH WEST ELEVATION

DOOR SCHEDULE

ABBREVIATIONS
INS HM = INSULATED HOLLOW METAL
PT = BAKED-ON ENAMEL PAINT

#	TYPE	SIZE	MATERIAL	FINISH	HARDWARE GROUP
101	A	3'-6"x 7'-0"x 1¾"	INS HM	PT	1
102	B*	3'-6"x 7'-0"x 1¾"	INS HM	PT	1

*LOUVER SIZE = 24"W x 24"H, (TYP)



TYPE A TYPE B

NO.	REVISIONS	BY	DATE

KEYED NOTES

(1) = REPLACE EXISTING ROOF DRAIN PER DETAIL 5/C4.3 TIE INTO EXISTING ROOF DRAIN PIPING.

(2) = INSTALL NEW SKYLIGHT PER DETAIL 2/C4.3

(3) = REMOVE EXISTING MEMBRANE ROOF AND FASCIA AND PREPARE CONCRETE ROOF FOR NEW MEMBRANE SYSTEM. INSTALL NEW PERIMETER EXTRUDED ALUMINUM FASCIA AND FLASHING AROUND ALL NEW ROOF EQUIPMENT. INSTALL NEW ROOF MEMBRANE SYSTEM.

(4) = INSTALL NEW DOORS #101 & 102. REFERENCE DOOR SCHEDULE FOR DETAILS. ROUGH OPENING FOR EACH DOOR IS APPROXIMATELY 4'-0" X 7'-4⅜". CONTRACTOR TO CONFIRM IN THE FIELD.

(5) = REPLACE EXISTING FIXED LOUVER IN KIND. ROUGH OPENING APPROXIMATELY 2'-8" x 8".

(6) = REMOVE EXISTING UNUSED STEEL SUPPORTS, ANGLES, AND BRACKETS. PATCH ALL HOLES WITH NON-SHRINK GROUT. TYPICAL AROUND THE WHOLE EXTERIOR OF THE BUILDING.

(7) = PLUG EXISTING EXHAUST PIPE OPENING WITH NON-SHRINK GROUT.

(8) = INSTALL NEW ROOFTOP BLOWERS PER DETAIL 2/C4.4

(9) = REPAIR EXISTING 2'-8"x 2'-8" OPENING WITH NEW BRICK

(10) = REPLACE EXISTING LOUVER PER DETAIL 3/C4.3

(11) = REMOVE AND REPLACE CRACKED BRICK (HATCHED) PER DETAIL 1/C4.4

(12) = REMOVE AND REINSTALL EXISTING ANTENNA & MOUNTING AS REQUIRED FOR INSTALLATION OF THE NEW ROOF. (FOR CLARITY, THE ANTENNA IS ONLY SHOWN ON THE SOUTHWEST ELEVATION.) COORDINATE WITH INSTALLATION OF NEW ROOF.

(13) = CLEAR DEBRIS AND WEEDS AWAY FROM THE BASE OF THE MASONRY STRUCTURE. RIP RAP BASE OF SLOPE AND PLACE 1'-0" WIDE BY 2-IN. THICK LAYER OF CSTC AROUND STRUCTURE.

FINISH SCHEDULE

LOCATION	MATERIAL	CONDITION
DRY SIDE		
MOTOR ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
PUMP ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
STAIRWAY/WALKWAY	ALUMINUM	E
WET SIDE		
ACCESS ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
WET WELL		
BELOW WALKWAY PLATFORM (INCL. FLOOR)	CONCRETE	A
ABOVE WALKWAY PLATFORM (INCL. CEILING)	CONCRETE	B
STAIRWAY/WALKWAY	ALUMINUM	E
MISCELLANEOUS		
MISC. EXPOSED FERROUS METAL	MISC.	D
DOORS	PT ON GALV. STEEL	C (STENCIL "2", MATCH EXISTING)
EXTERIOR WALLS	BRICK MASONRY & CONCRETE	G

*SOLVENT CLEANING UNDER GENERATOR, IN PUMP ROOM AND WET WELL ACCESS ROOM AS NECESSARY.

NOTE: REFERENCE SPECIFICATIONS SECTIONS 09900 & 09100 FOR DETAIELD REQUIREMENTS FOR THE SURFACE PREPARATION, COATING & PAINTING WORK.

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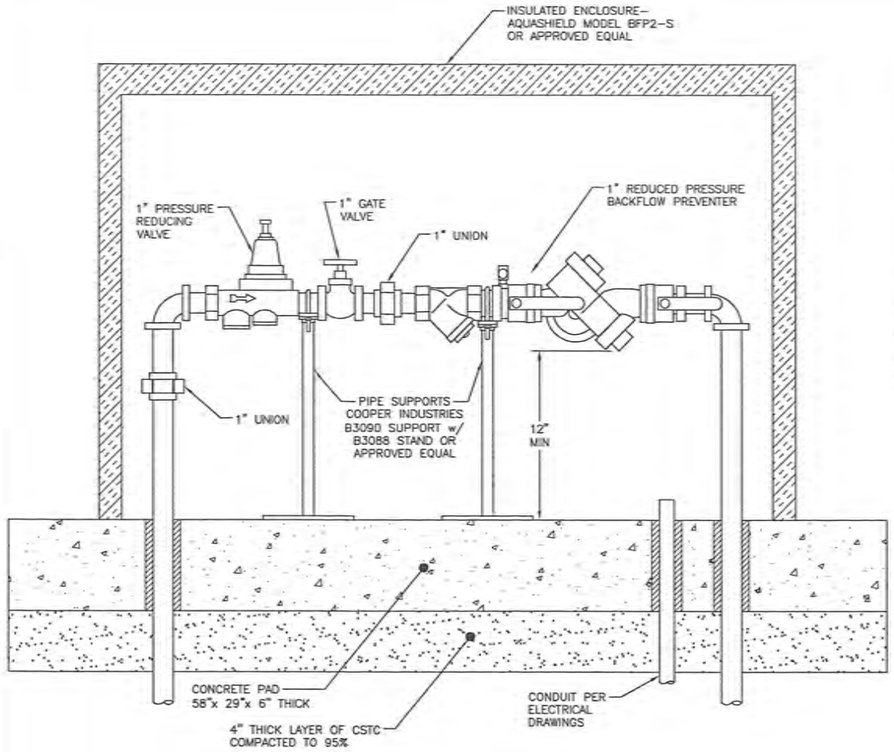
ELIZABETH ANNE STERLING STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY EAS/SJW
DRAWN BY SJW/RDN
CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
EXTERIOR BUILDING PLANS & ELEVATIONS

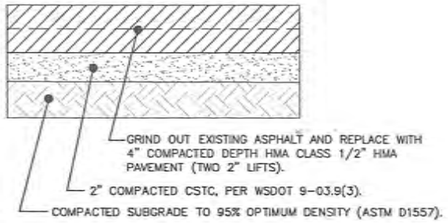
DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079A
SHEET C3.4 OF 39



POTABLE WATER RPBFP ASSEMBLY & INSULATED ENCLOSURE DETAIL

3 / C3.2

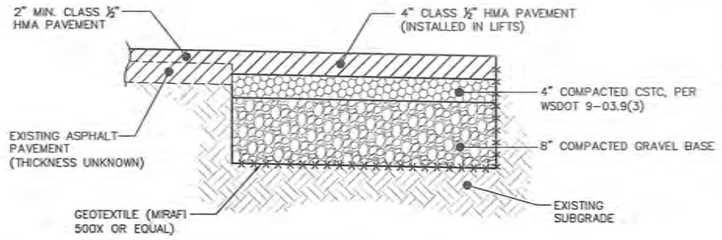
NOT TO SCALE



ASPHALT REPLACEMENT SECTION

1 / C3.2

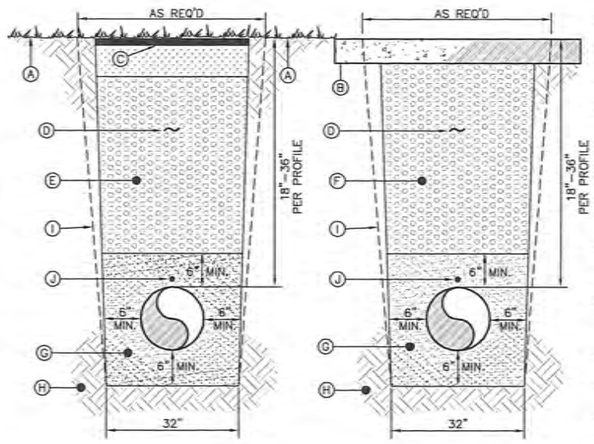
NOT TO SCALE



ASPHALT OVERLAY SECTION & NEW ASPHALT SECTION

2 / C3.2

NOT TO SCALE



UNPAVED AREAS PAVED AREAS

KEYED NOTES:

A. PROVIDE 2–INCHES OF TOPSOIL AND HYDROSEED EXPOSED AREAS.

B. NEW SIDEWALK OR PAVEMENT

C. HYDROSEED OVER 6 INCHES OF TOPSOIL TYPE "A" PER SPECIFICATIONS

D. 2" METALLIC DETECTOR TAPE 8" TO 12" BELOW FINISH GRADE.

E. BANK RUN GRAVEL BACKFILL PER WSDOT 9–03.19 COMPACTED TO 90% MAX. DENSITY INSIDE RIGHT–OF–WAY.

F. BANK RUN GRAVEL BACKFILL PER WSDOT 9–03.19 COMPACTED TO 95% MAX. DENSITY

G. PIPE ZONE GRAVEL BEDDING PER WSDOT 9–03.12(3) COMPACTED TO 95% MAX. DENSITY

H. UNDISTURBED NATIVE MATERIAL

I. ROCK EXCAVATION PAY LIMITS COMPACTED TO 90% MAX. DENSITY

J. #10 AWG INSULATED TRACER WIRE STUBBED TO GROUND LEVEL EVERY 1000 FEET.

TYPICAL TRENCHING & BACKFILL

4 / C3.2

NOT TO SCALE

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ELIZABETH ANNE STEWART — STATE OF WASHINGTON — 22648 — REGISTERED PROFESSIONAL ENGINEER

4/8/16

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

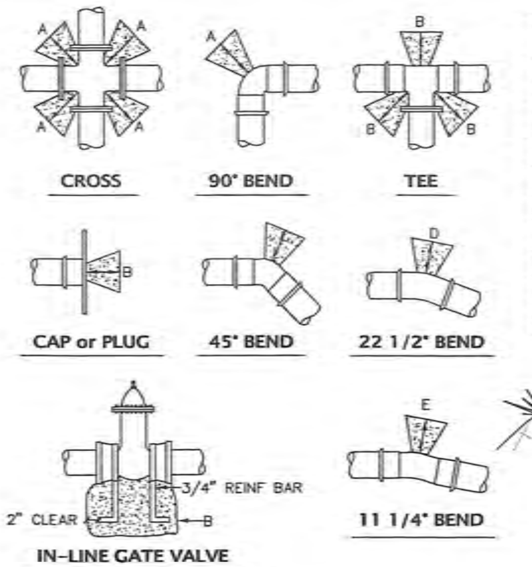
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 2
CIVIL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

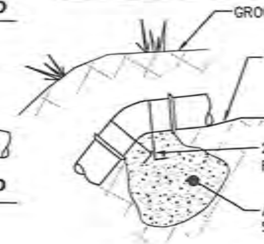
SHEET C4.1 OF 39

W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\C4.1-C4.4 DETAILS.dwg, 6/7/2016 4:22:12 PM, ACROPLOT 11X17 UNSCREENED.cpc3, RDN



(PARTIAL RESTRAINT MUST BE PROVIDED BY PIPELINE BEYOND VALVE)

THRUST BLOCK TABLE					
MINIMUM BEARING AREA AGAINST UNDISTURBED SOIL IN SQUARE FEET					
PIPE SIZE	A	B	C	D	E
4"	2	2	2	2	2
6"	4	3	2	2	2
8"	7	5	4	2	2
10"	11	8	6	3	2
12"	16	12	9	5	3
16"	29	20	16	8	4
20"	45	32	24	13	6



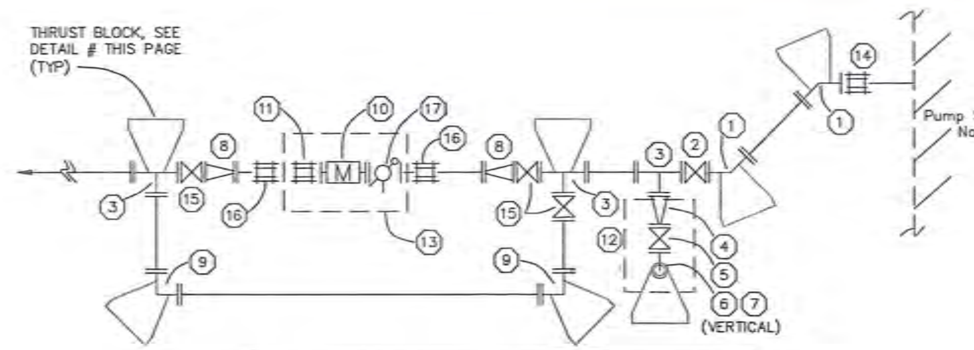
VERTICAL BEND

NOTES

1. SQUARE FEET OF CONCRETE THRUST BLOCK AREA IS BASED ON 200 P.S.I. INTERNAL PRESSURE, A SOIL SAFE BEARING OF 3000 POUNDS PER SQUARE FOOT AND A FACTOR OF SAFETY OF 1.5.
2. BEARING AREA MUST BE ADJUSTED FOR INTERNAL PRESSURES AND LOWER SOIL BEARING VALUES.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP OR DISMANTLING JOINT.
5. THE CONTRACTOR SHALL INSTALL BLOCKING WHICH IS ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
6. STAINLESS STEEL BANDING SHALL BE USED AT 2" PVC VERTICAL BENDS INSTEAD OF 1" RODS. CONTACT ENGINEER FOR SIZING OF THRUST BLOCK AND DETAILS.
7. ALL BENDS, TEES & CROSSES SHALL INCLUDE RESTRAINED JOINTS (ROMAC GRIPPER) AS WELL AS THRUST BLOCKING.

1 / C3.2 SEWER FORCE MAIN THRUST BLOCK SCHEDULE
NOT TO SCALE

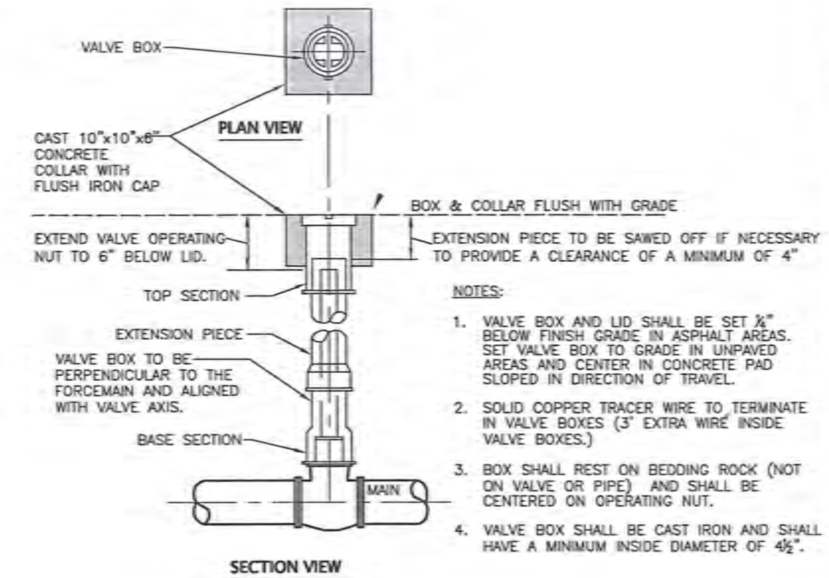
C4.4



KEYED	DESCRIPTION
1	12" ø D.I. 45° EL (MJxMJ)
2	12"ø GATE VALVE (FLxMJ)
3	12"ø D.I. TEE (FLxFLxFL)
4	8"x12"ø D.I. REDUCER (FLxFL)
5	8"ø GATE VALVE (FLxFL)
6	8"ø D.I. 90° EL (FLxFL)
7	8"ø FLxFNPT ADAPTER (COMPANION FLANGE) 8"ø SSL NPT NIPPLE (12" MIN LENGTH) 8"ø SSL FEMALE CAM & GROOVE x FNPT
8	10"x12"ø D.I. REDUCER (FLxFL)
9	12"ø D.I. 90° EL (FLxFL)
10	10"ø MAGNETIC FLOW METER (FLxFL)
11	10"ø FLANGED COUPLING ADAPTER
12	METER BOX
13	FLOW METER VAULT
14	12"ø FLEXIBLE COUPLING W/ RESTRAINT HARNESS
15	12"ø GATE VALVE (FLxFL)
16	10"ø FLEXIBLE COUPLING WITH RESTRAINT HARNESS
17	2"ø COMBINATION AIR/VACUUM RELEASE VALVE & ASSEMBLY. REFERENCE METER VAULT DETAIL.

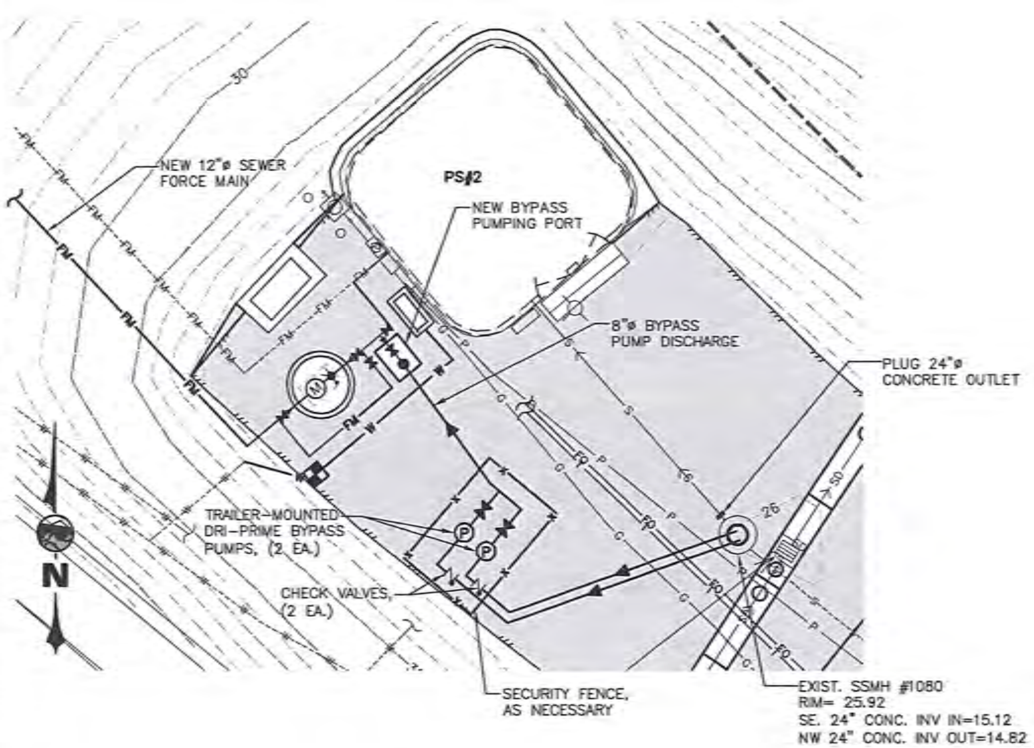
NOTES:
1. RELOCATED 1"ø WATER LINE IN THIS AREA IS NOT SHOWN. REFERENCE SHEET C3.2 FOR WATER LINE DETAILS.
2. IN LIEU OF THRUST BLOCKING THE CONTRACTOR MAY SUBMIT A MECHANICAL RESTRAINT SYSTEM FOR REVIEW.

2 / C3.2 SEWER FORCE MAIN YARD PIPING SCHEMATIC
NOT TO SCALE

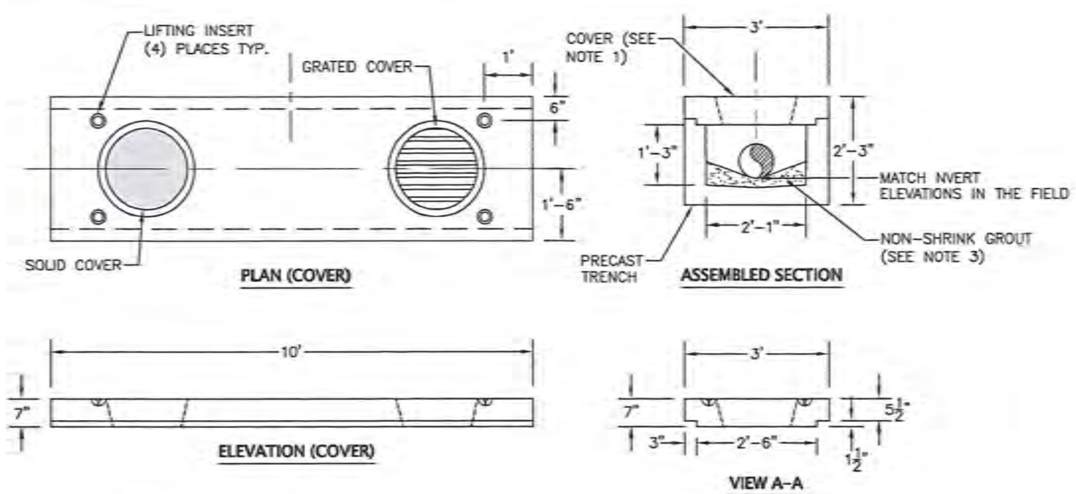


NOTES:
1. VALVE BOX AND LID SHALL BE SET ½" BELOW FINISH GRADE IN ASPHALT AREAS. SET VALVE BOX TO GRADE IN UNPAVED AREAS AND CENTER IN CONCRETE PAD SLOPED IN DIRECTION OF TRAVEL.
2. SOLID COPPER TRACER WIRE TO TERMINATE IN VALVE BOXES (3' EXTRA WIRE INSIDE VALVE BOXES.)
3. BOX SHALL REST ON BEDDING ROCK (NOT ON VALVE OR PIPE) AND SHALL BE CENTERED ON OPERATING NUT.
4. VALVE BOX SHALL BE CAST IRON AND SHALL HAVE A MINIMUM INSIDE DIAMETER OF 4½".

3 / C3.2 TYPICAL VALVE BOX & CONCRETE COLLAR DETAIL
NOT TO SCALE



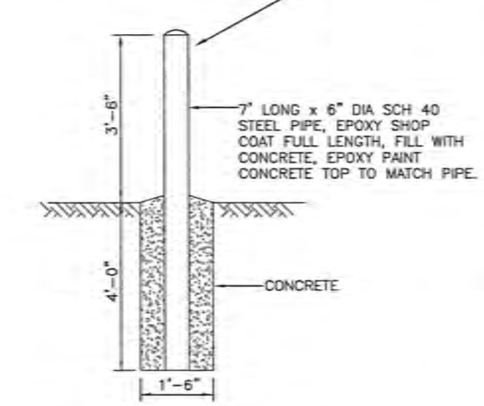
4 / C3.2 SEWER BYPASS PUMPING SCHEMATIC
NOT TO SCALE



NOTES:
1. REFERENCE SHEET C3.2 FOR LOCATION AND TYPE OF COVER OPENING IN EACH TRENCH SECTION.
2. CONCRETE TRENCH AND COVER SHALL BE RATED FOR H-20 LOADING.
3. GROUT BOTTOM OF TRENCH TO PIPE INVERTS. CONFIRM SMOOTH LONGITUDINAL SLOPE FROM INLET TO OUTLET.

5 / C3.2 PRECAST CONCRETE TRENCH DETAIL
NOT TO SCALE

ENCASE ALL BOLLARDS WITH BUMPER POST SLEEVES. SLEEVES TO BE YELLOW, 1/4" PE, UV RESISTANT, WITH NEOPRENE TAPE AS RECOMMENDED BY MFR. NEW PIG CORP, ITEM# PLS 195 (800-468-4647).



6 / C3.2 TYPICAL BOLLARD FOR ASPHALT SURFACE
NOT TO SCALE

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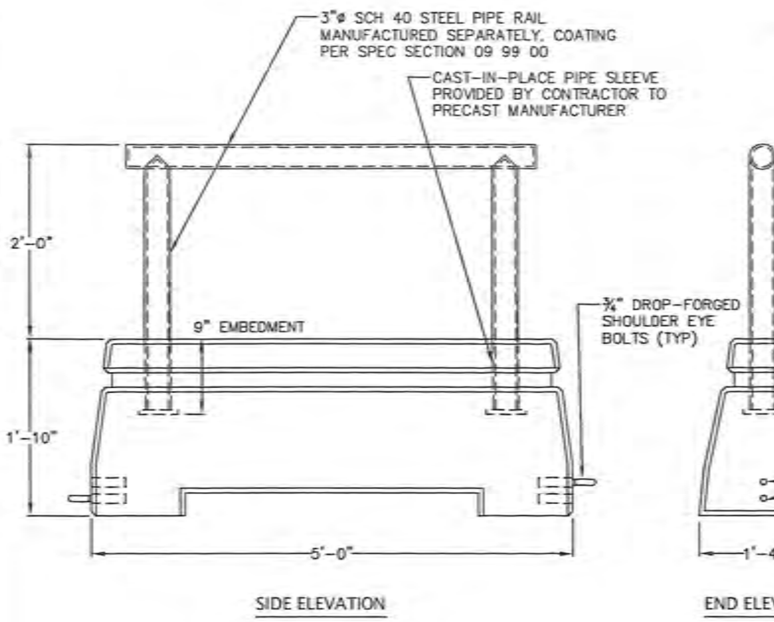


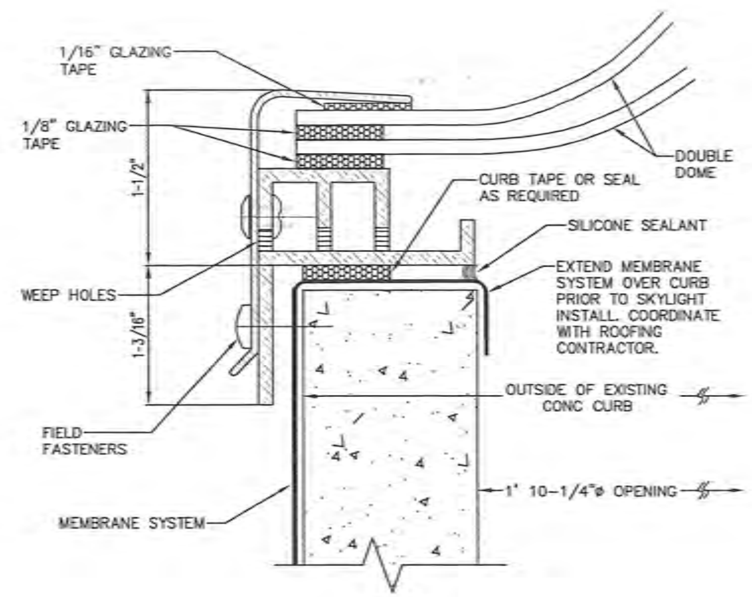
DESIGN NOTES:

1. CONCRETE: F_c=6,000 psi @ 28 DAYS.
2. REINFORCEMENT: ASTM A-615 GRADE 60.
3. 1½" BAR COVER TYPICAL.
4. WEIGHT=1350 LBS. (~270 LB/FT).
5. CONCRETE BARRIER DESIGNED TO WITHSTAND 1,500 LBS HORIZONTAL IMPACT (18" ABOVE GRADE).

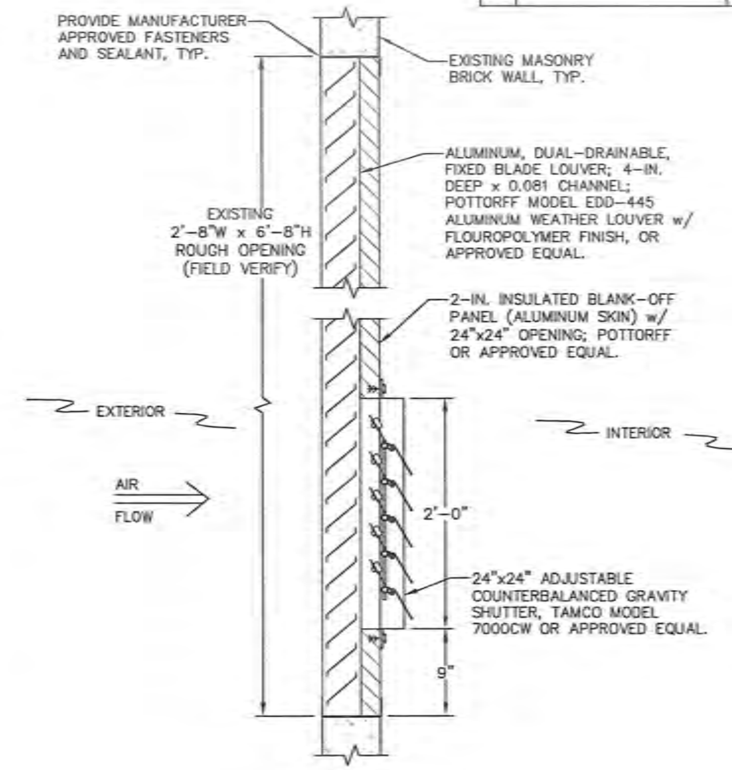
NOTE:

1. CONNECT BARRIER UNITS TOGETHER AT EYE BOLTS WITH A 1¼"ø x 4½" LG. BOLT & NUT (316 SSL).

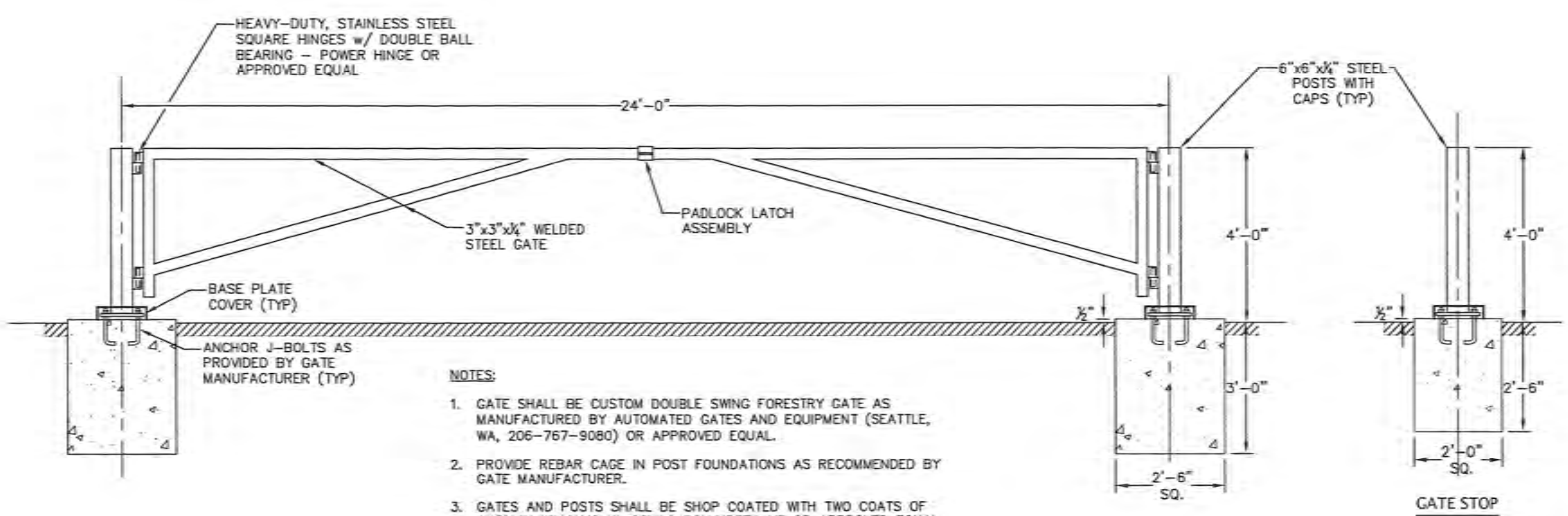
1 / C3.2 CONCRETE BARRIER RAIL
NOT TO SCALE



2 / M1.2 SKYLIGHT DETAIL
NOT TO SCALE
M1.3
C3.4



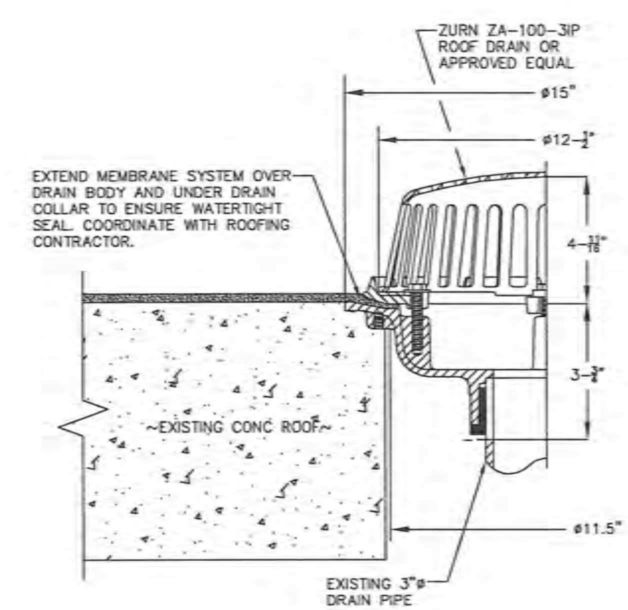
3 / C3.4 LOUVER DETAIL
NOT TO SCALE
M1.1
M1.2



NOTES:

1. GATE SHALL BE CUSTOM DOUBLE SWING FORESTRY GATE AS MANUFACTURED BY AUTOMATED GATES AND EQUIPMENT (SEATTLE, WA, 206-767-9080) OR APPROVED EQUAL.
2. PROVIDE REBAR CAGE IN POST FOUNDATIONS AS RECOMMENDED BY GATE MANUFACTURER.
3. GATES AND POSTS SHALL BE SHOP COATED WITH TWO COATS OF SHERWIN WILLIAMS HI-SOLIDS POLYURETHANE OR APPROVED EQUAL.

4 / C3.2 BARRIER GATE DETAIL
NOT TO SCALE



5 / M1.2 ROOF DRAIN DETAIL
NOT TO SCALE
C3.4

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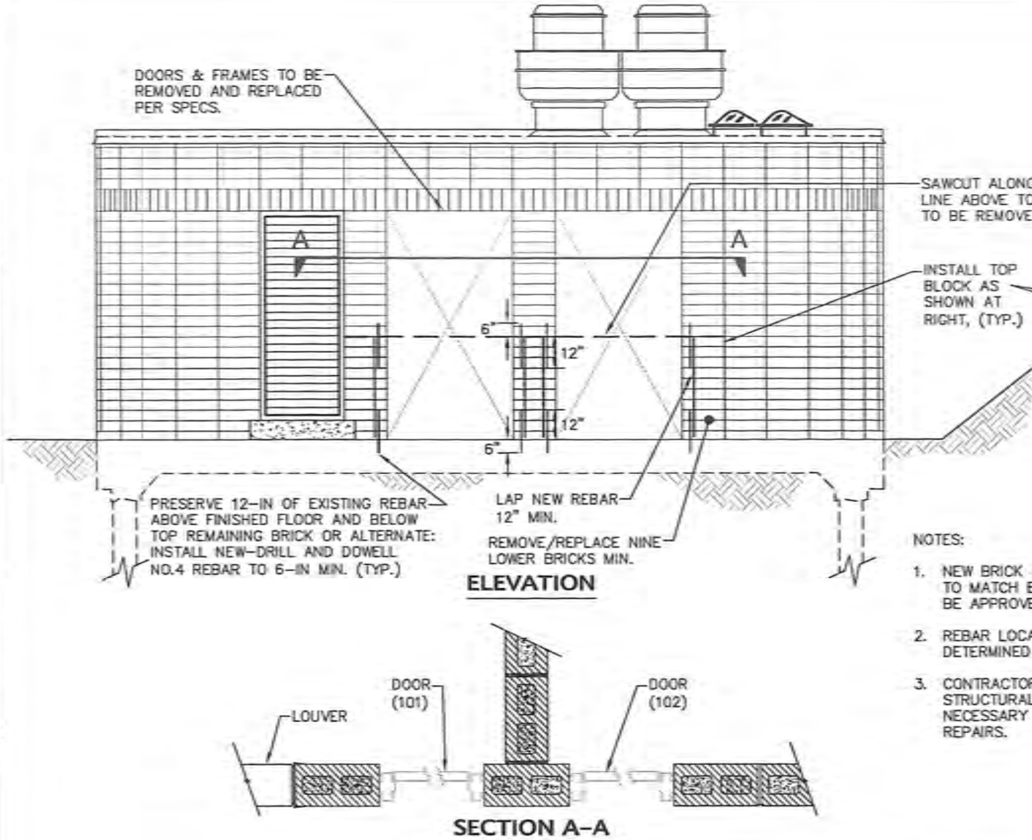
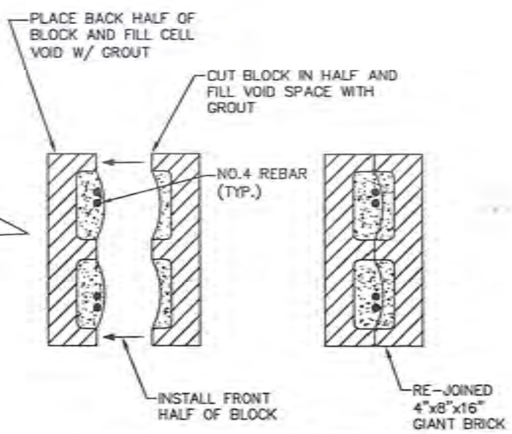




CONCEPTUAL DETAIL. CONTRACTOR MAY PROPOSE ALTERNATE METHOD FOR REVIEW.

TOP BLOCK INSTALL DETAIL

NOTES:

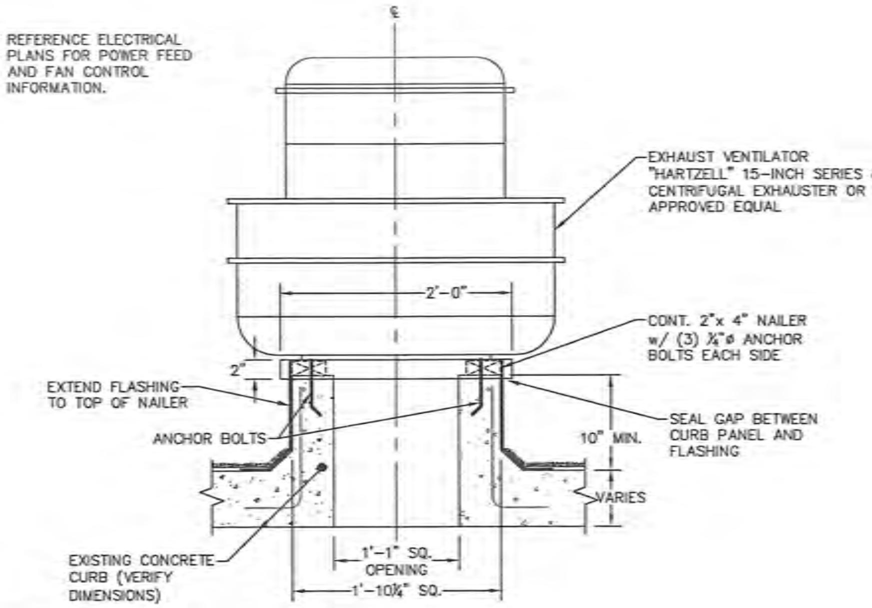
1. NEW BRICK COLOR AND STYLE TO MATCH EXISTING. COLOR TO BE APPROVED BY OWNER.
2. REBAR LOCATION TO BE DETERMINED DURING DEMOLITION.
3. CONTRACTOR TO PROVIDE STRUCTURAL SHORING AS NECESSARY DURING MASONRY REPAIRS.

1 / C3.4 — **MASONRY BRICK REPAIR DETAIL**

NOT TO SCALE

C2.4

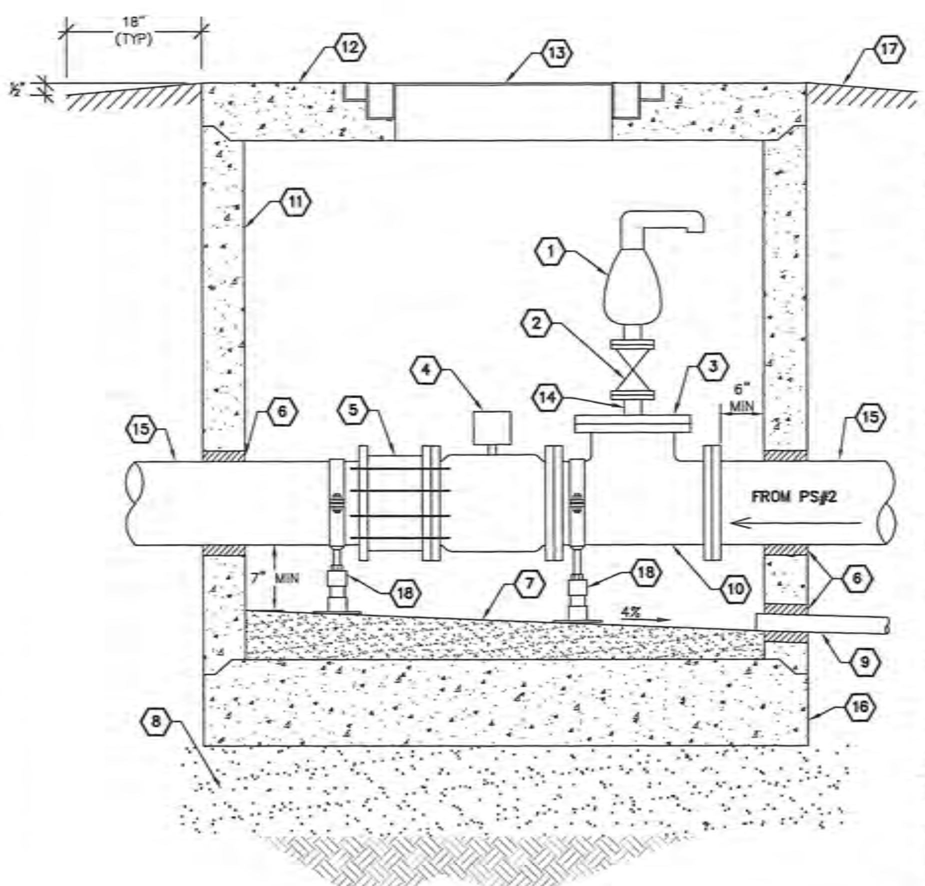
NOTE: REFERENCE ELECTRICAL PLANS FOR POWER FEED AND FAN CONTROL INFORMATION.



2 / C3.2 — **ROOF EXHAUST BLOWER DETAIL**

NOT TO SCALE

M1.2
M1.3



KEYED NOTES

1. = 2"ø COMBINED AIR/VACUUM RELEASE VALVE – A.R.I. D-025 COMBINATION AIR VALVE (SHORT VERSION) OR APPROVED EQUAL.
2. = 2"ø RESILIENT WEDGE GATE VALVE.
3. = 10"ø D.I. BLIND FLANGE TAPPED w/ A 2" THREADED HOLE.
4. = 10"ø MAGNETIC FLOWMETER. DIGITAL DISPLAY LOCATED IN P.S.#2 BUILDING. PROVIDE LONG ENOUGH CABLE TO REACH DISPLAY UNSPLICED.
5. = 10"ø D.I. FLANGED COUPLING ADAPTER.
6. = VAULT WALL PENETRATION w/ KOR-N-SEAL BOOT.
7. = GROUT VAULT FLOOR WITH A MINIMUM 4% SLOPE TO DRAIN.
8. = 12" THICK LAYER OF COMPACTED CSTC OVER UNYIELDING COMPACTED SUBGRADE.
9. = 2"ø DRAIN. ROUTE TO WET WELL AT A MINIMUM 2% SLOPE.
10. = 10"x 10"x 10" D.I. TEE (FLANGED).
11. = 72"ø TYPE 3 MANHOLE PER WSDOT STD. PLAN B-15.60-01 RISER HEIGHT EQUAL TO 6'-0".
12. = 72"ø TYPE 3 MANHOLE TOP SLAB PER WSDOT STD. PLAN B-30.90-01. CONTRACTOR RESPONSIBLE FOR REDESIGN OF NON-STANDARD OPENING.
13. = DOUBLE LEAF 30"x48" H-20 RATED ALUMINUM HATCH WITH SAFETY GRATE SYSTEM. SYRACUSE CASTINGS DTD-10HDA05G OR EQUAL.
14. = 2"ø x 6"L D.I. SPOOL (THREADED x FLANGE).
15. = 10" D.I. FORCE MAIN PIPE.
16. = 72"ø TYPE 3 MANHOLE BASE PER WSDOT STD. PLAN B-15.60-01.
17. = NEW HMA PAVING
18. = PIPE SUPPORT PER DETAIL 2 / M2.1

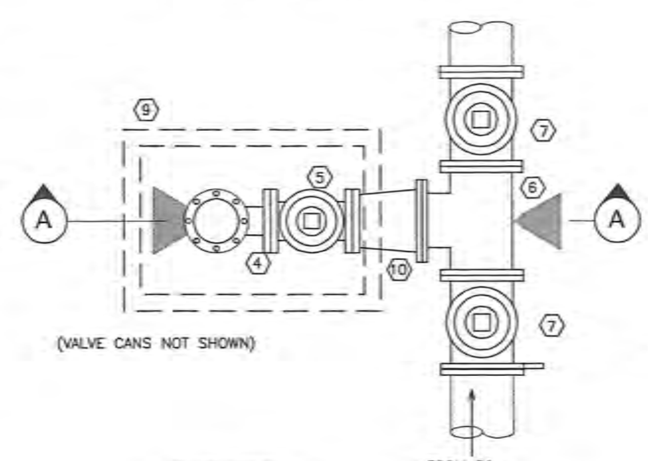
3 / C3.2 — **METER VAULT DETAIL**

NOT TO SCALE

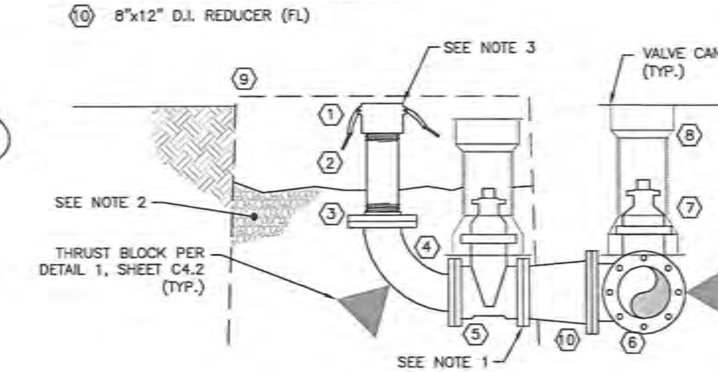
NOTES:

1. INSTALL ADDITIONAL PIPING BETWEEN TEE AND PUMPING PORT VALVE AS REQUIRED TO INSTALL PORT IN LOCATION APPROVED BY ENGINEER.
2. BACKFILL IN AND AROUND METER BOX SHALL BE CRUSHED SURFACING TOP COURSE PER WSDOT 9-03.9(3). INSTALL MINIMUM 1 FOOT WIDE GRAVEL 'COLLAR' AROUND BOX.
3. ALLOW 4-IN. SPACE BETWEEN THE TOP OF THE CAM & GROOVE FITTING AND THE INSIDE OF THE METER BOX LID.

1. 8-IN. STAINLESS STEEL FEMALE CAM & GROOVE BY 6-IN. FNPT ADAPTER
2. 8-IN. STAINLESS STEEL NPT NIPPLE (MIN. 8" LONG)
3. 8-IN. D.I. FLANGE TO 6-IN. FNPT ADAPTER (COMPANION FLANGE)
4. 8-IN. D.I. LONG RADIUS BEND (FL)
5. 8-IN. GATE VALVE (FL)
6. 12-IN. D.I. TEE (FL)
7. 12-IN. GATE VALVE (FLXMJ) – (2 EACH)
8. CAST IRON VALVE BOX
9. H20 LOADING CONCRETE METER BOX WITH CAST ITON LID. LID TO BE LOCKABLE WITH PAD LOCK
10. 8"x12" D.I. REDUCER (FL)



PLAN VIEW



SECTION A-A

4 / C3.2 — **BYPASS PUMPING PORT ASSEMBLY**

NOT TO SCALE

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Wilson SURVEY/ENGINEERING

ELIZABETH ANNE STEEL — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 6/8/16

DESIGNED BY EAS/SJW | DRAWN BY SJW/RDN | CHECKED BY MMM

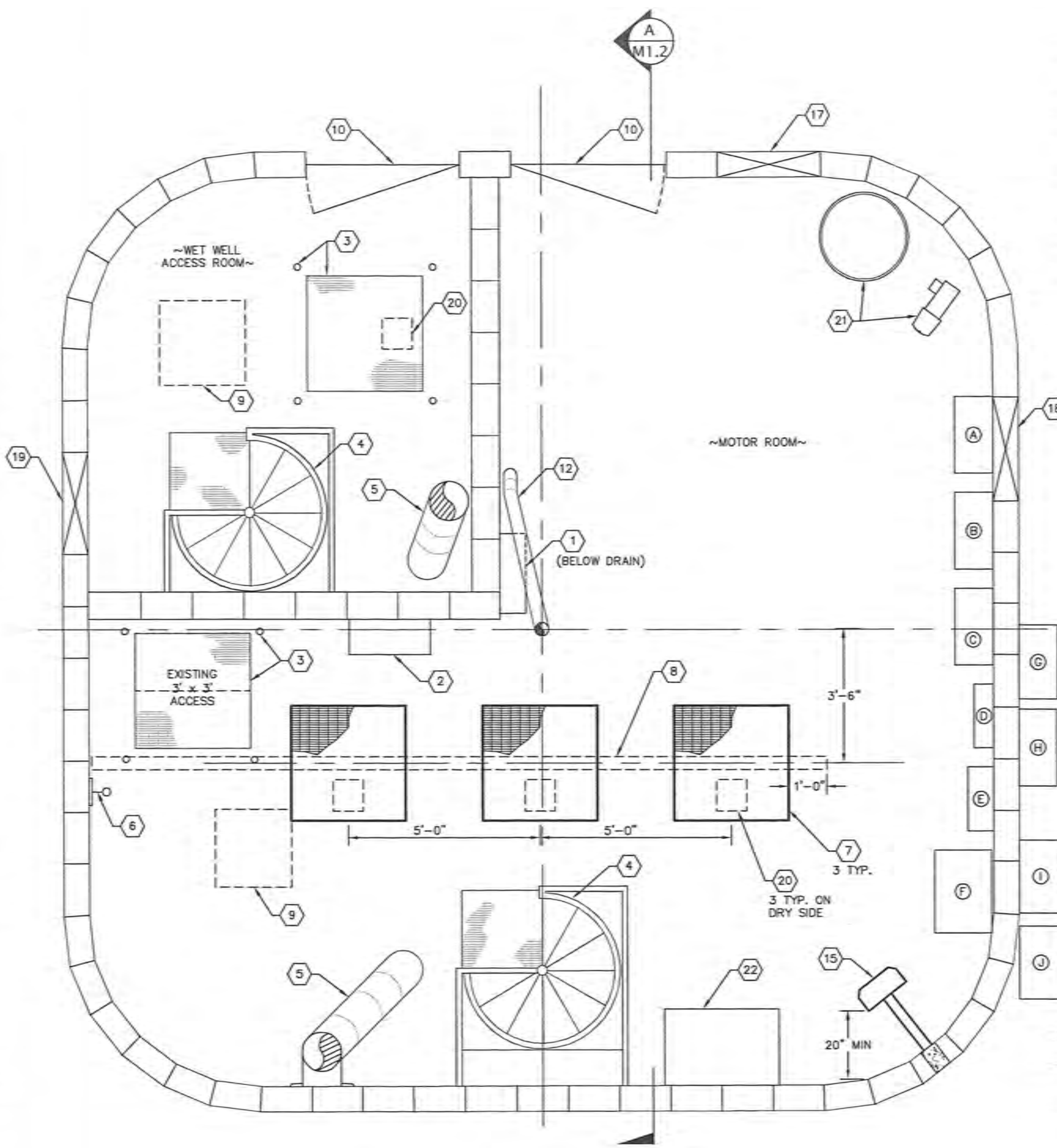
CITY OF FERNDALE — WHATCOM COUNTY — WASHINGTON

PUMP STATION NO. 2
CIVIL DETAILS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

SHEET C4.4 OF 39

NO.	REVISIONS	BY	DATE



PLAN VIEW - ABOVE GRADE

LEGEND

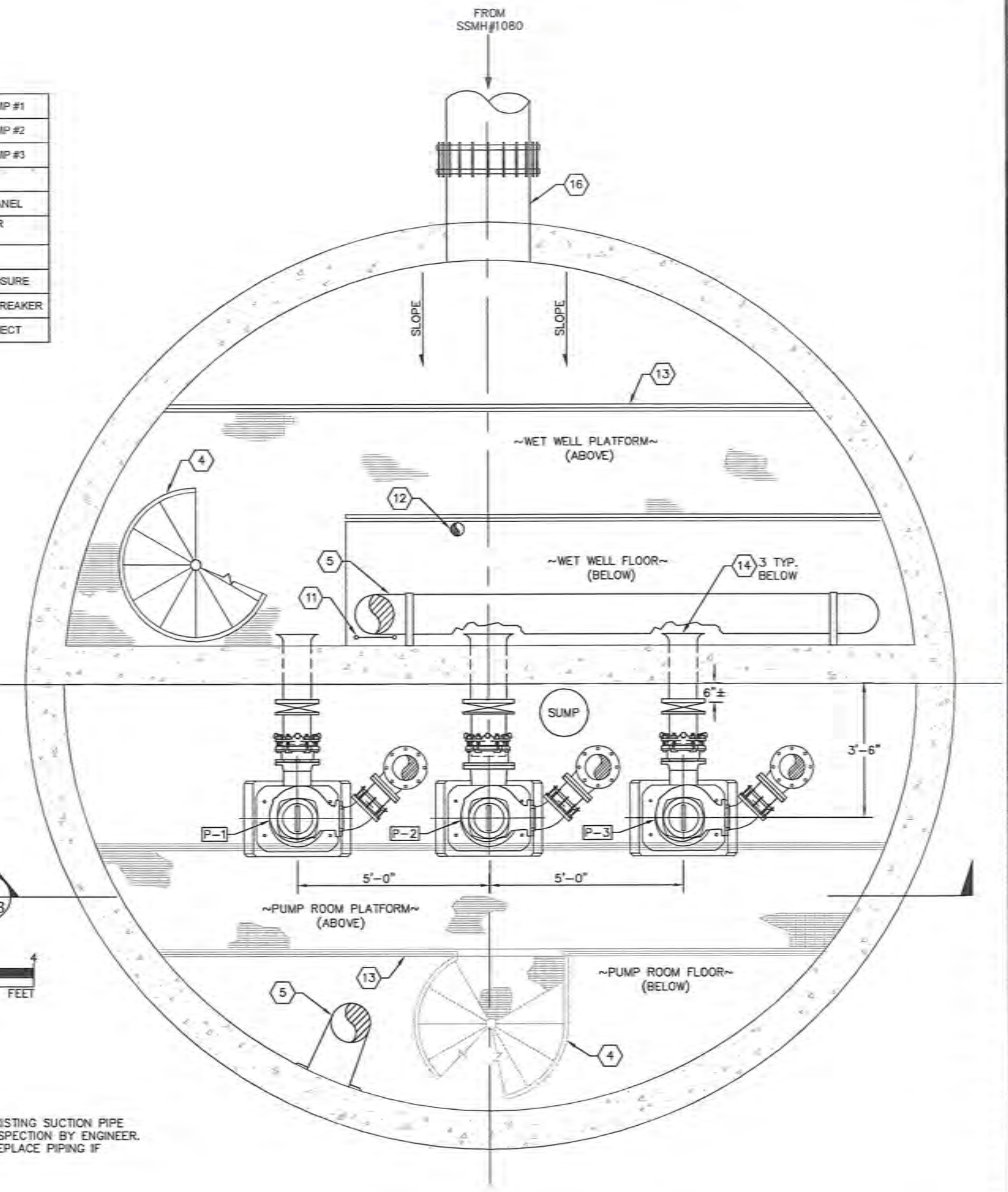
Ⓐ	CONTROL PANEL - PUMP #1
Ⓑ	CONTROL PANEL - PUMP #2
Ⓒ	CONTROL PANEL - PUMP #3
Ⓓ	LIGHTING PANEL
Ⓔ	MAIN DISTRIBUTION PANEL
Ⓕ	AUTOMATIC TRANSFER SWITCH
Ⓖ	CT ENCLOSURE
Ⓗ	UTILITY METER ENCLOSURE
Ⓘ	SERVICE ENTRANCE BREAKER
Ⓙ	GENERATOR DISCONNECT

B M1.3

SCALE 2 0 2 4 FEET

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.



PLAN VIEW - BELOW GRADE

KEYED NOTES

(1) = EXISTING INTRINSICALLY SAFE ELECTRICAL CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.

(2) = EXISTING TELEMETRY CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.

(3) = EXISTING 3'-0" x 3'-0" FLOOR OPENING WITH GRATE AND FOUR SAFETY BOLLARD INSERTS IN FLOOR. GRATING TO BE SANDBLASTED.

(4) = SPIRAL STAIRS, HANDRAILING AND GRATING TO BE CLEANED PER SPEC. SECTION 09900.

(5) = NEW 12"ø DUCT AND DUCT SUPPORTS TO REPLACE EXISTING "WET SIDE" AND "DRY SIDE" VENTILATION SYSTEMS. DUCT SUPPORTS PER DETAIL 6/M2.1

(6) = INSTALL EPOXY INSERT & THREADED STAINLESS STEEL EYE BOLT SUITABLE FOR SECURING OVERHEAD HOIST HOOK. PLACEMENT OF EYE BOLT PER CITY STAFF.

(7) = NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL 8/S1.4. TYPICAL OF 3.

(8) = NEW OVERHEAD TROLLEY BEAM PER DETAIL 7/S1.4

(9) = NEW 2'-0" x 2'-0" SKYLIGHT ABOVE, 2/C4.3 2 TYPICAL PER DETAIL

(10) = NEW ACCESS DOORS. REFERENCE SHEET C3.4 FOR ADDITIONAL DETAILS.

(11) = NEW WET WELL LADDER PER DETAIL 3/M2.2

(12) = EXISTING 4" ROOF DRAIN TO BE REPLACED WITHIN WET WELL. INSTALL NEW STAINLESS STEEL SUPPORTS FOR DRAIN.

(13) = EXISTING PLATFORM, PLATFORM SUPPORTS AND HANDRAIL TO BE CLEANED PER SPEC. SECTION 09900.

(14) = EXISTING SUCTION SPOOL THROUGH WALL. PROTECT DURING CONSTRUCTION FOR REUSE. SEE NOTE 1.

(15) = NEW ELECTRIC UNIT HEATER, MOUNTED VERTICALLY.

(16) = 24" CONCRETE SEWER INLET

(17) = REPLACE EXISTING LOUVER PER DETAIL 3/C4.3

(18) = EXISTING FAN OPENING TO BE BRICKED UP.

(19) = EXISTING FIXED LOUVER VENT TO BE REPLACED IN KIND.

(20) = FALL RESTRAINT CEILING EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 5/S1.4

(21) = NEW AIR GAP WATER SYSTEM PER DETAIL 4/M2.2

(22) = NEW WALL HANGING STEEL DESK, TENNSCO WALL HANGING FOREMAN'S DESK MODEL SR-59, OR APPROVED EQUAL OR APPROVED EQUAL.

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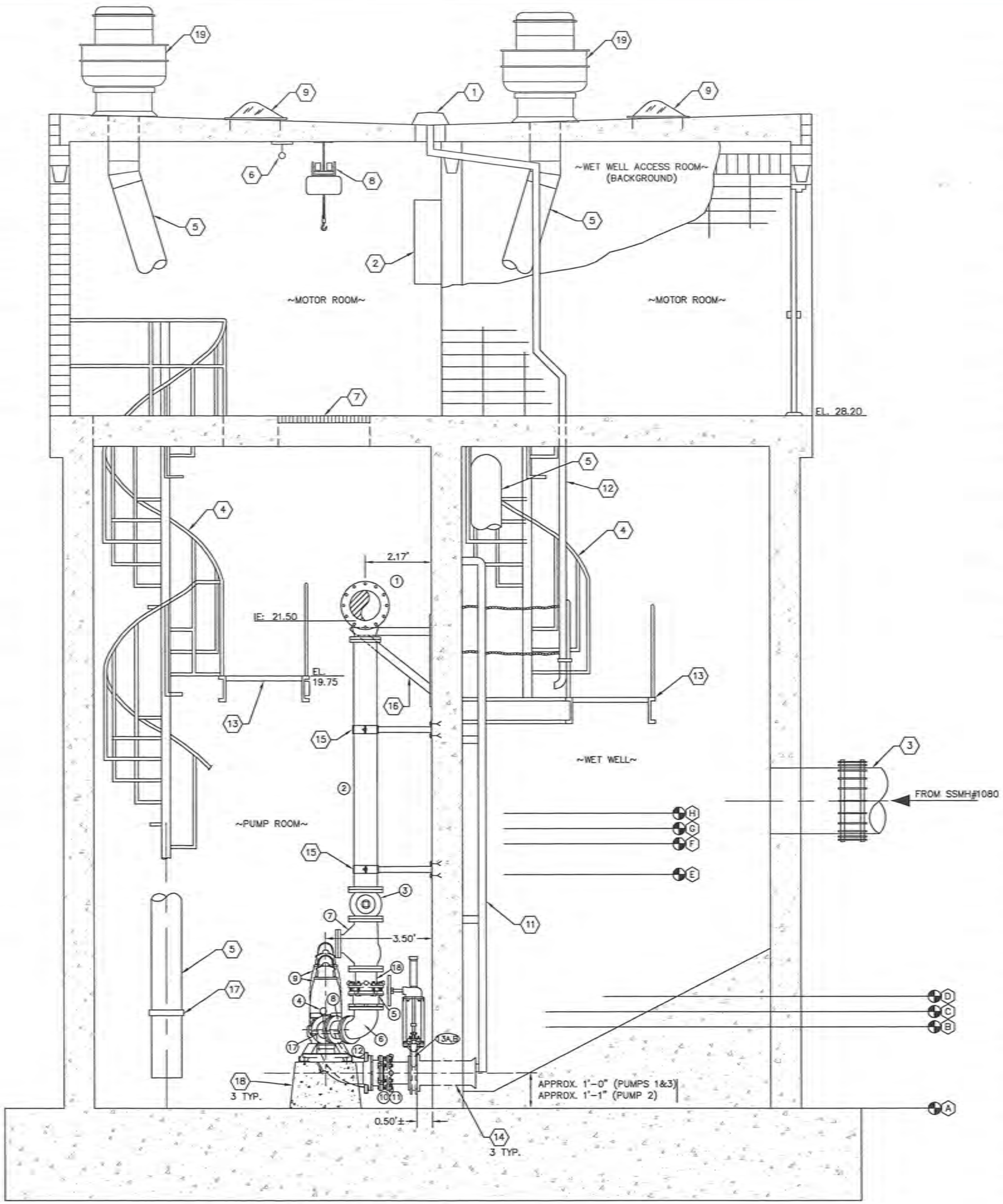
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
MECHANICAL PLANS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079A



A
M1.1

PUMP STATION 2 - MECHANICAL UPGRADES

SCALE 2 0 2 4 FEET

KEYED NOTES

1 = NEW ROOF DRAIN PER DETAIL 5/C4.3
2 = EXISTING TELEMETRY CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
3 = 24" CONCRETE SEWER INLET.
4 = SPIRAL STAIRS, HANDRAILING AND GRATING TO BE CLEANED PER SPEC. SECTION 09900.
5 = NEW 12"ø DUCT AND DUCT SUPPORTS TO REPLACE EXISTING "WET SIDE" AND "DRY SIDE" VENTILATION SYSTEMS. DUCT SUPPORTS PER DETAIL 6/M2.1
6 = FALL RESTRAINT EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 5/S1.4
7 = NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL. TYPICAL OF 3. 8/S1.4
8 = NEW OVERHEAD TROLLEY BEAM PER DETAIL 7/S1.4
9 = NEW 2'-0" x 2'-0" SKYLIGHT PER DETAIL 2/C4.3
10 = NEW ACCESS DOORS. REFERENCE SHEET C3.4 FOR ADDITIONAL DETAILS.
11 = NEW WET WELL LADDER PER DETAIL 3/M2.2
12 = EXISTING 4" ROOF DRAIN TO BE REPLACED WITHIN WET WELL. INSTALL NEW STAINLESS STEEL SUPPORTS FOR DRAIN.
13 = EXISTING PLATFORM, PLATFORM SUPPORTS AND HANDRAIL TO BE CLEANED PER SPEC. SECTION 09900.
14 = EXISTING SUCTION SPOOL THROUGH WALL. PROTECT DURING CONSTRUCTION FOR REUSE. SEE NOTE 1.
15 = TYPE 1 PIPE SUPPORT. SEE DETAIL 1/M2.1
16 = TYPE 4 PIPE SUPPORT. SEE DETAIL 4/M2.1
17 = TYPE 1 DUCT SUPPORT. SEE DETAIL 6/M2.1
18 = NEW CONCRETE PUMP BASE PER DETAIL 6/S1.4
19 = NEW ROOF EXHAUST BLOWER UNIT PER DETAIL 2/C4.4

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.
2. THE LONG RADIUS BEND USED ON PUMP 2 WILL RAISE PUMP 2 (AND DISCHARGE) APPROXIMATELY 5" HIGHER THAN PUMPS 1 & 3.
3. ELBOW STAND PIPE SUPPORT ASSOCIATED WITH THIS ELBOW NOT SHOWN FOR CLARITY.
4. POTABLE WATER PIPING IN THE MOTOR ROOM NOT SHOWN.

SCHEDULE A - PIPING MATERIALS*

ITEM	DESCRIPTION
1	12"x8" DUCTILE IRON TEE, FXF
2	8" DUCTILE IRON SPOOL, FXF
3	8" GATE VALVE W/ HANDWHEEL OPERATOR, FXF
4	PRESSURE GAGE ASSEMBLY
5	8" RESTRAINED FLANGED COUPLING ADAPTER PER SPECS
6	8"X6" 90° BASE BEND, DUCTILE IRON, FXF, SEE NOTE 3
7	8" BALL CHECK VALVE PER SPECS
8	6" DISMANTLING JOINT, DJ400, DI, FXF
9	PUMPS PER SPECS
10	8" DISMANTLING JOINT, DJ405, DI, FXF (PUMPS 1 & 3)
11	10" DISMANTLING JOINT, DJ405, DI, FXF (PUMP 2)
12	8"X6" LONG RADIUS INLET ELBOW, 90°, DUCTILE IRON (PUMP 2) SEE NOTE 2
13A	8" KNIFE GATE VALVE PER SPECS, FXF (PUMPS 1 & 3)
13B	10" KNIFE GATE VALVE PER SPECS, FXF (PUMP 2)
14	12" DUCTILE IRON SPOOL, FxF
15	12" DUCTILE IRON SPOOL, FxPE
16	12" FLEXIBLE COUPLING WITH RESTRAINT HARNESS
17	6" 45° BEND, DUCTILE IRON, FXF
18	8" DUCTILE IRON SPOOL, FXPE

* REFERENCE SHEET M1.3 FOR SCHEDULE ITEMS NOT VISIBLE IN THIS SECTION VIEW.

SCHEDULE B - CONTROL ELEVATIONS

CONTROL POINT	DESCRIPTION	ELEV.
A	WET WELL BOTTOM	5.50
B	LOW - LOW LEVEL ALARM	8.17
C	LOW LEVEL ALARM / REDUNDANT OFF	8.67
D	PUMP OFF	9.17
E	LEAD ON	13.17
F	LAG ON	14.17
G	HIGH LEVEL ALARM / LAG - LAG ON	14.67
H	HIGH - HIGH LEVEL ALARM	15.17

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ELIZABETH ANNE STEELE, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER

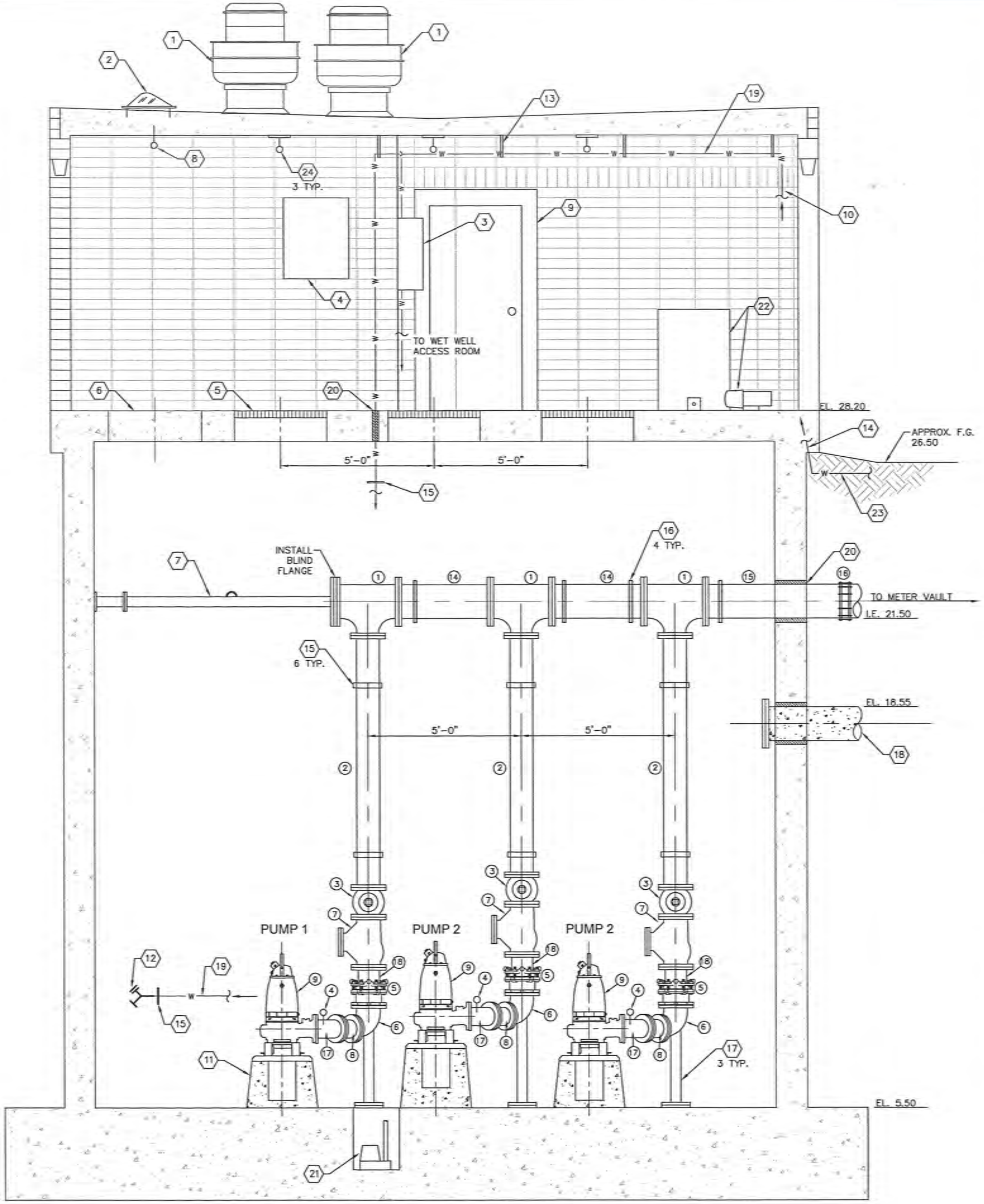
DESIGNED BY EAS/RJW
DRAWN BY SJW/RDN
CHECKED BY MKM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 2
MECHANICAL SECTIONS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079A

SHEET M1.2 OF 39



PUMP STATION 2 - MECHANICAL UPGRADES

B / M1.1

SCALE 2 0 2 4 FEET

KEYED NOTES

1. NEW ROOF EXHAUST BLOWER UNIT PER DETAIL 2/C4.4
2. NEW 2'-0" x 2'-0" SKYLIGHT PER DETAIL 2/C4.3
3. EXISTING INTRINSICALLY SAFE CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
4. EXISTING TELEMETRY CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
5. NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL. TYPICAL OF 3. 8/S1.4
6. EXISTING 3'-0" x 3'-0" FLOOR OPENING w/ GRATE.
7. PIPE MANIFOLD BRACE PER DETAIL 7/M2.1
8. EXISTING CEILING-MOUNTED LIFTING EYE.
9. NEW ACCESS DOOR (101). REFERENCE SHEET C3.4 FOR ADDITIONAL DETAILS.
10. 1"ø POTABLE WATER FROM AIR GAP SYSTEM.
11. NEW CONCRETE PUMP BASE PER DETAIL 6/S1.4 (3 TYPICAL).
12. NEW ¾" HOSE BIB.
13. PIPE HANGER, 6'-0" O.C. TYPICAL.
14. 1"ø POTABLE WATER TO AIR GAP SYSTEM.
15. TYPE 3 PIPE SUPPORT - SEE DETAIL 3/M2.1
16. TYPE 4 PIPE SUPPORT - SEE DETAIL 4/M2.1
17. TYPE 5 PIPE SUPPORT - SEE DETAIL 5/M2.1
18. OLD 12" FORDE MAIN - CAPPED AND PLUGGED UNDER THIS CONTRACT.
19. ¾" POTABLE WATER.
20. PIPE PENETRATION THROUGH FLOOR OR WALL PER DETAIL 5/M2.2
21. SUMP PUMP SYSTEM PER DETAIL 2/M2.2
22. AIR GAP WATER SYSTEM PER DETAIL 4/M2.2
23. 1"ø POTABLE WATER FROM RPBFP ENCLOSURE.
24. FALL RESTRAINT EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 5/S1.4

SCHEDULE A - PIPING MATERIALS*

ITEM	DESCRIPTION
1	12"x8" DUCTILE IRON TEE, FXF
2	8" DUCTILE IRON SPOOL, FXF
3	8" GATE VALVE W/ HANDWHEEL OPERATOR, FXF
4	PRESSURE GAGE ASSEMBLY
5	8" RESTRAINED FLANGED COUPLING ADAPTER PER SPECS
6	8"X6" 90° BASE BEND, DUCTILE IRON, FXF, SEE NOTE 3
7	8" BALL CHECK VALVE PER SPECS
8	6" DISMANTLING JOINT, DJ400, DI, FXF
9	PUMPS PER SPECS
10	8" DISMANTLING JOINT, DJ405, DI, FXF (PUMPS 1 & 3)
11	10" DISMANTLING JOINT, DJ405, DI, FXF (PUMP 2)
12	8"X6" LONG RADIUS INLET ELBOW, 90°, DUCTILE IRON (PUMP SEE NOTE 2
13A	8" KNIFE GATE VALVE PER SPECS, FXF (PUMPS 1 & 3)
13B	10" KNIFE GATE VALVE PER SPECS, FXF (PUMP 2)
14	12" DUCTILE IRON SPOOL, FxF
15	12" DUCTILE IRON SPOOL, FxPE
16	12" FLEXIBLE COUPLING WITH RESTRAINT HARNESS
17	6" 45° BEND, DUCTILE IRON, FXF
18	8" DUCTILE IRON SPOOL, FXPE

* REFERENCE SHEET M1.2 FOR SCHEDULE ITEMS NOT VISIBLE IN THIS SECTION VIEW.

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.
2. THE LONG RADIUS BEND USED ON PUMP 2 WILL RAISE PUMP 2 (AND DISCHARGE) APPROXIMATELY 5" HIGHER THAN PUMPS 1 & 3.
3. OVERHEAD TROLLEY BEAM AND TROLLEY NOT SHOWN.
4. OVERHEAD WALKWAY IN PUMP ROOM NOT SHOWN FOR CLARITY.
5. ELECTRICAL CABINETS IN MOTOR ROOM NOT SHOWN FOR CLARITY.

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DESIGNED BY EAS/SJW
DRAWN BY SJW/RDN
CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
MECHANICAL SECTIONS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079A

SHEET M1.3 OF 39

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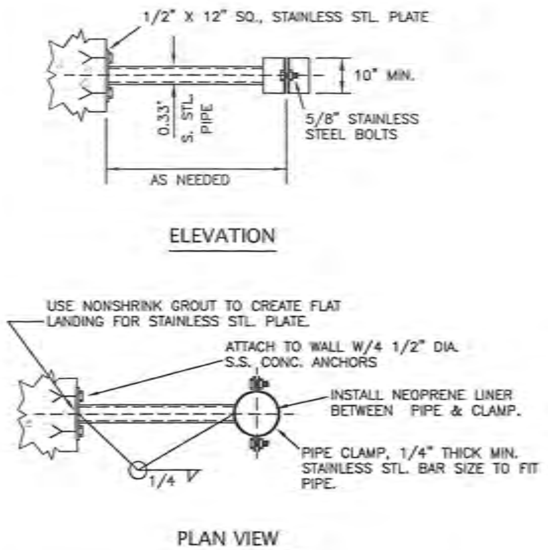
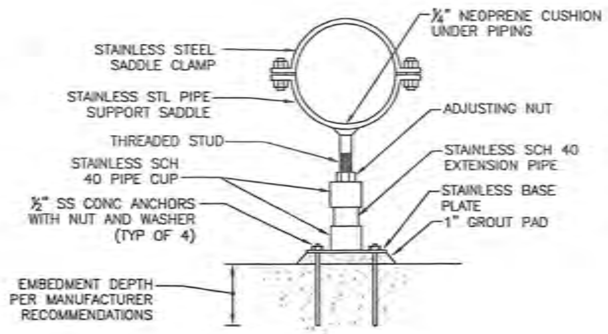


TYPE 1 PIPE SUPPORT VERTICAL PIPE BRACE DETAIL

1 / M1.2

NOT TO SCALE



SADDLE SIZE	½"x2"
THREADED STUD	1"x6"
CUP ID	2½"
¾" BASE PLAT	8"x8"
EXTENSION PIPE DIA	2"

NOTES:

1. TO INSURE PROPER SUPPORT AND STABILITY, AFTER FINAL HEIGHT ADJUSTMENT IS ATTAINED, APPLY TACK WELDS TO BOTH SUPPORT CUPS AND EXTENSION PIPE. USE E70XX ELECTRODE FOR WELDS.
2. ALL PARTS TO BE STAINLESS STEEL.
3. FIELD PAINT AS SPECIFIED. PER 09900

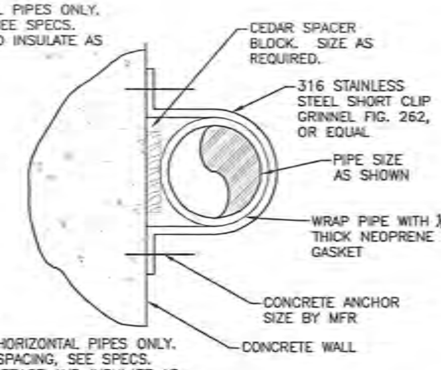
TYPE 2 PIPE SUPPORT PIPE SADDLE DETAIL

2 / C4.4

NOT TO SCALE

NOTES:

1. FOR HORIZONTAL PIPES ONLY.
2. FOR SPACING, SEE SPECS.
3. HEAT TRACE AND INSULATE AS SPECIFIED.



NOTES:

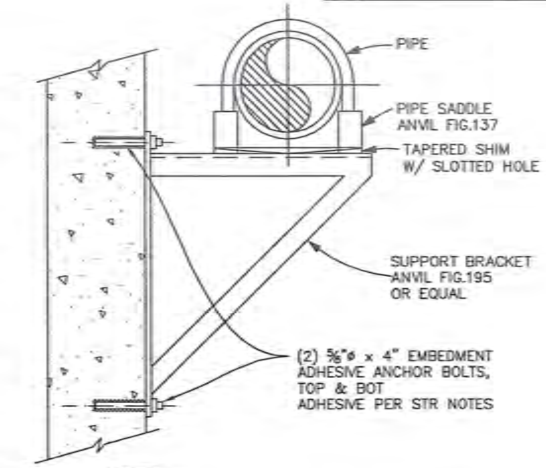
1. FOR HORIZONTAL PIPES ONLY.
2. FOR SPACING, SEE SPECS.
3. HEAT TRACE AND INSULATE AS SPECIFIED.

TYPE 3 PIPE SUPPORT PIPE WALL CLAMP DETAIL

3 / M1.2

NOT TO SCALE

M1.3



NOTES:

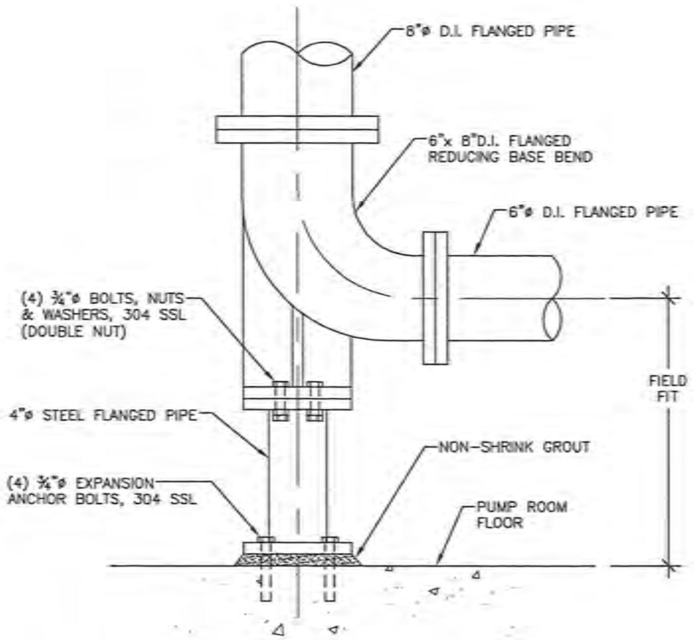
1. PIPE SUPPORT MATERIAL SHALL BE CARBON STEEL WITH A HOT-DIPPED GALVANIZED FINISH.
2. ANCHORS SHALL BE 304 STAINLESS STEEL.

TYPE 4 PIPE SUPPORT PIPE BRACKET DETAIL

4 / M1.2

NOT TO SCALE

M1.3

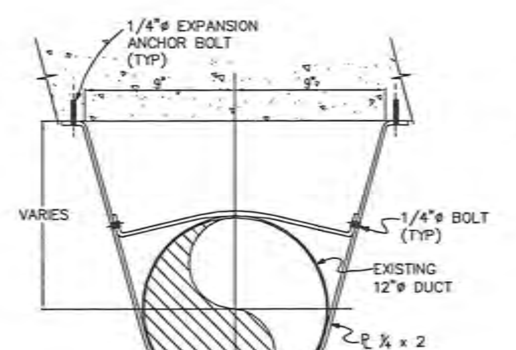


TYPE 5 PIPE SUPPORT PIPE ELBOW STAND DETAIL

5 / M1.2

NOT TO SCALE

M1.3



NOTES:

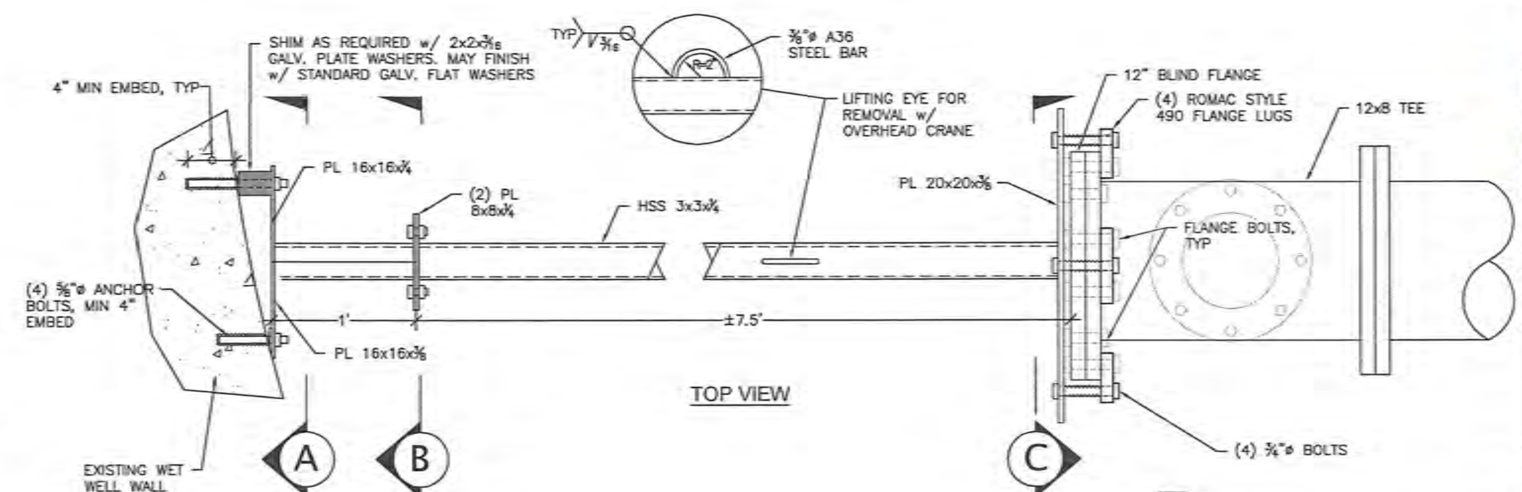
1. PIPE SUPPORT MATERIAL, ANCHOR BOLTS AND FASTENERS SHALL BE TYPE 304 STAINLESS STEEL.

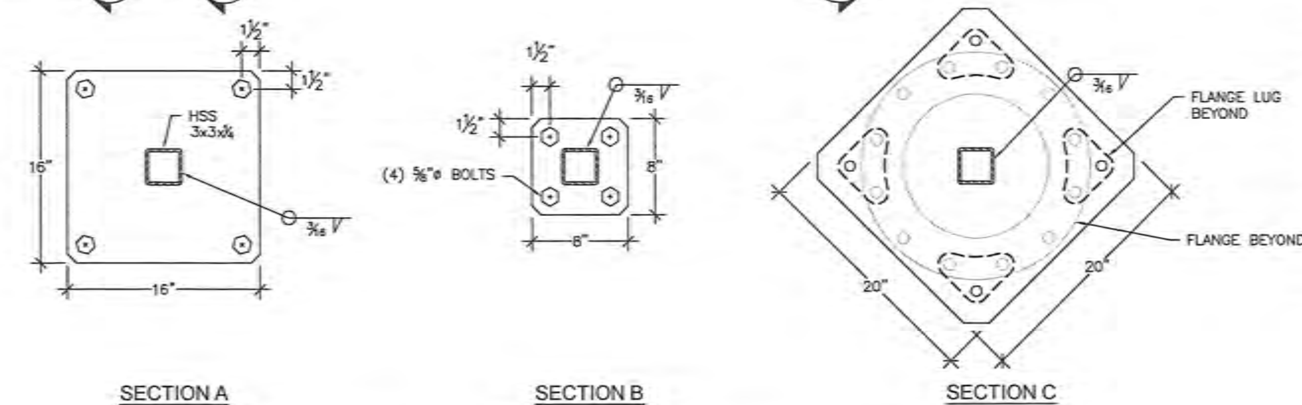
TYPE 1 DUCT SUPPORT WALL OR CEILING DUCT SUPPORT

6 / M1.2

NOT TO SCALE

M1.3





PIPE MANIFOLD BRACE DETAILS

7 / M1.3

NOT TO SCALE

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CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

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MECHANICAL DETAILS

DATE 6/08/2016
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W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\M2.1-M2.3 DETAILS.dwg, 6/7/2016 1:39:00 PM, ACROPLOT 11X17 UNSCREENED.pc3, RDN

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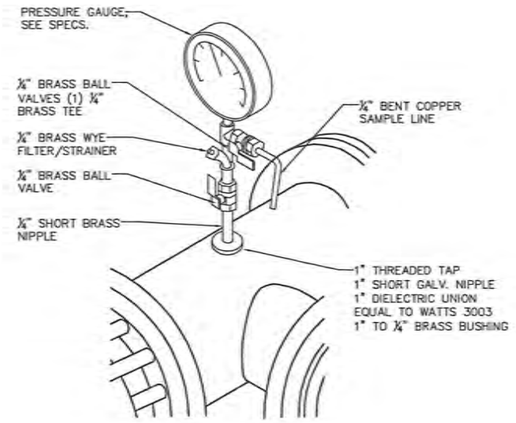
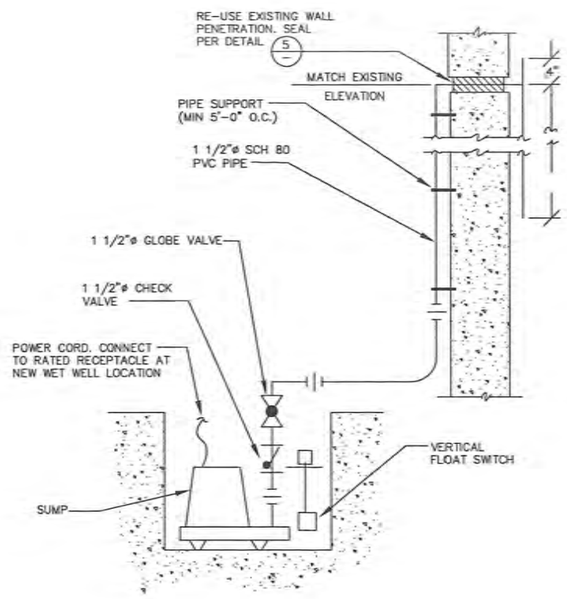
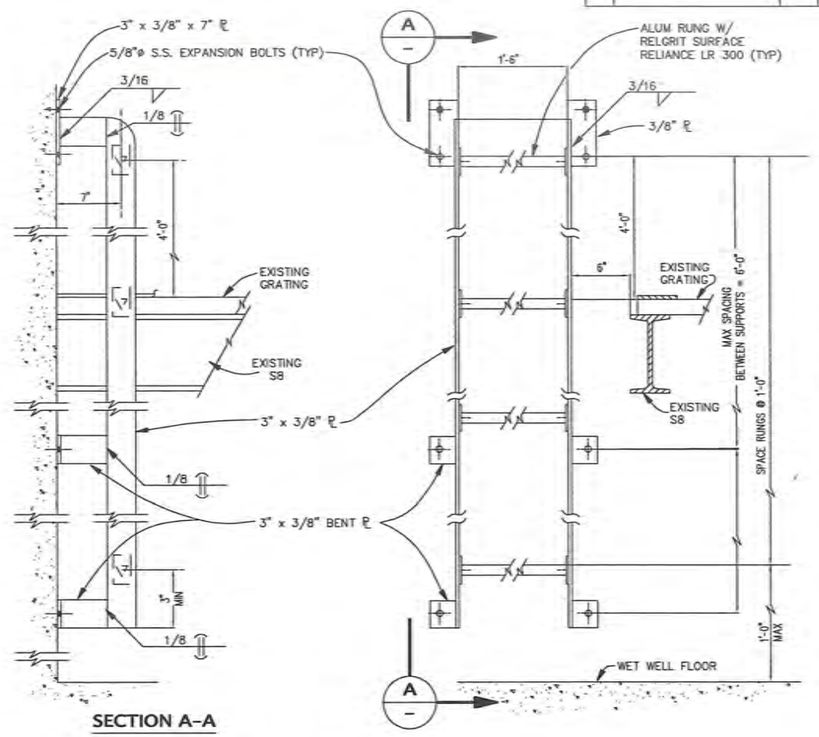


1 M1.2 **PRESSURE GAUGE ASSEMBLY**
NOT TO SCALE
M1.3

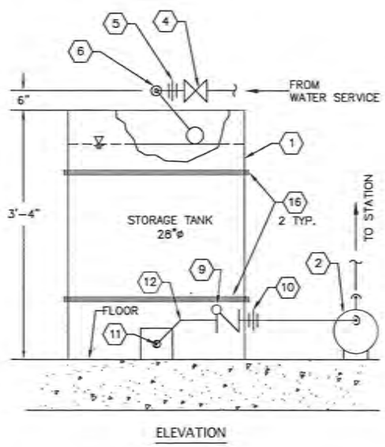


2 M1.2 **SUMP PUMP PIPING SCHEMATIC**
NOT TO SCALE



SECTION A-A

3 M1.1 **WET WELL LADDER – DETAIL**
NOT TO SCALE
M1.2
M1.3



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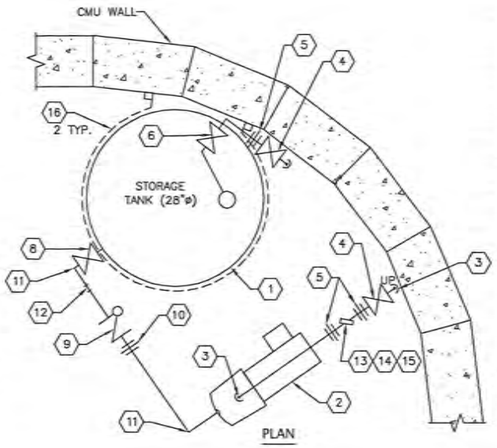
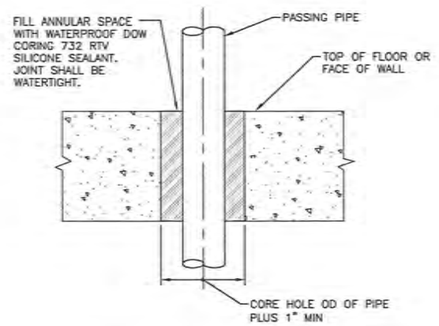


PLAN

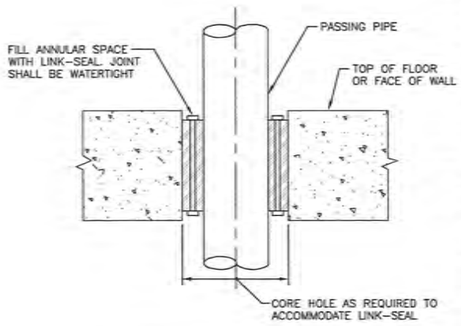
KEYED NOTES:

1. = 100 GALLON POLYETHYLENE STORAGE TANK (OPEN TOP)
2. = ½ HP JET PUMP
3. = 1"ø 90° EL
4. = 1"ø GATE VALVE
5. = 1"ø UNION
6. = 1"ø HEAVY DUTY FLOAT VALVE OUTSIDE TANK w/ #12.5 STEM & 3"ø FLOAT INSIDE TANK
7. =
8. = 1¼"ø GATE VALVE
9. = 1¼"ø CHECK VALVE
10. = 1¼"ø UNION
11. = 1¼"ø 90° EL
12. = 1¼"ø 45° EL
13. = 1" TEE
14. = ¾"x 1" BUSHING
15. = PRESSURE GAUGE
16. = CABLE RESTRAINTS. ¼" SSL CABLE (VINYL COATED), SSL TURNBUCKLES AND SSL UNISTRUT WALL ATTACHMENTS.

4 M1.1 **AIR GAP WATER SYSTEM**
NOT TO SCALE
M1.3



½" - 2"Ø PIPE OR CONDUIT



> 2"Ø PIPE OR CONDUIT

5 M1.3 **FLOOR/WALL PENETRATION DETAILS**
NOT TO SCALE

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EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

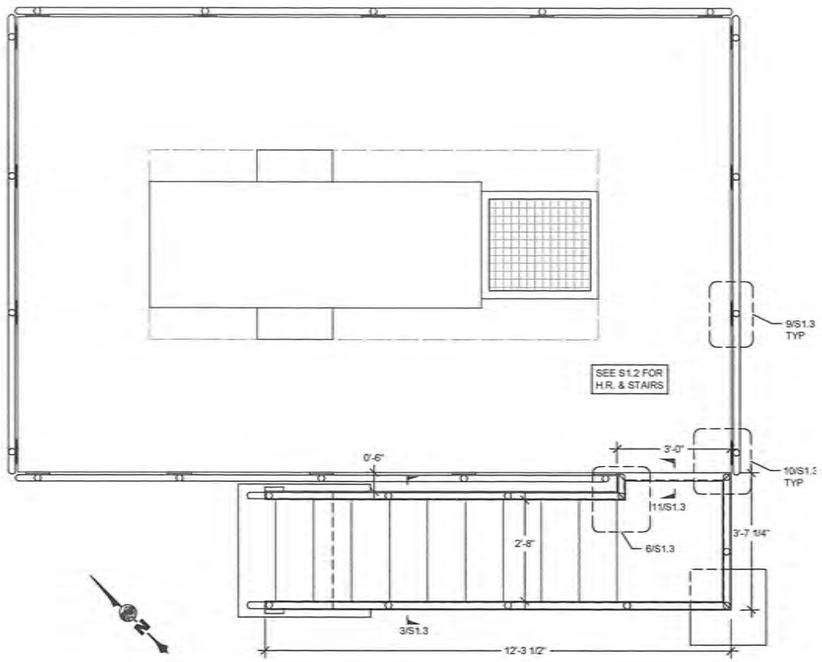
PUMP STATION NO. 2
MECHANICAL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET M2.2 OF 39

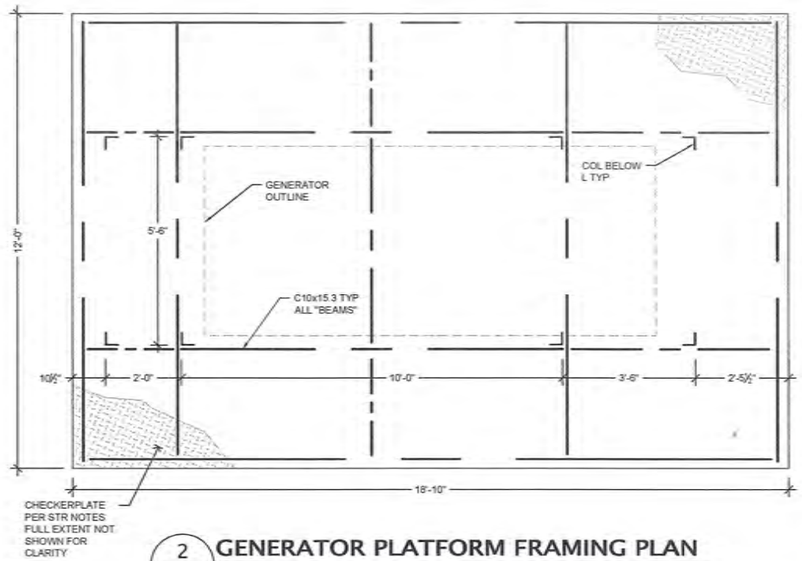
W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\M2.1-M2.3 DETAILS.dwg, 6/7/2016 1:39:06 PM, ACADPLOT 11.X17 UNSORTED.ctb, RDN

NO.	REVISIONS	BY	DATE



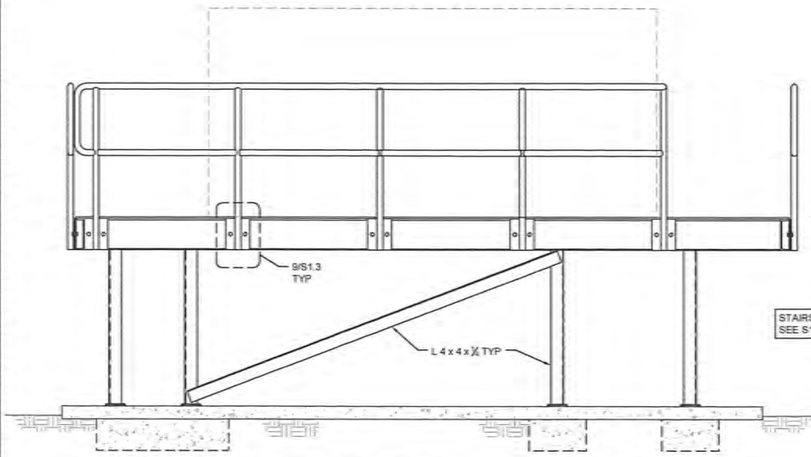
1 C3.2 **GENERATOR PLATFORM PLAN**

6" 1'-6" 0 1'-0" 2'-0"



2 C3.2 **GENERATOR PLATFORM FRAMING PLAN**

6" 1'-6" 0 1'-0" 2'-0"



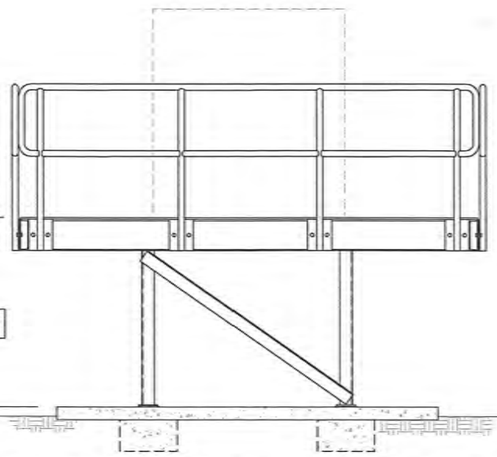
4 C3.2 **GENERATOR PLATFORM SOUTHWEST ELEVATION**

6" 1'-6" 0 1'-0" 2'-0"

FLOOR, BFE = 32.0' (APPROX.)

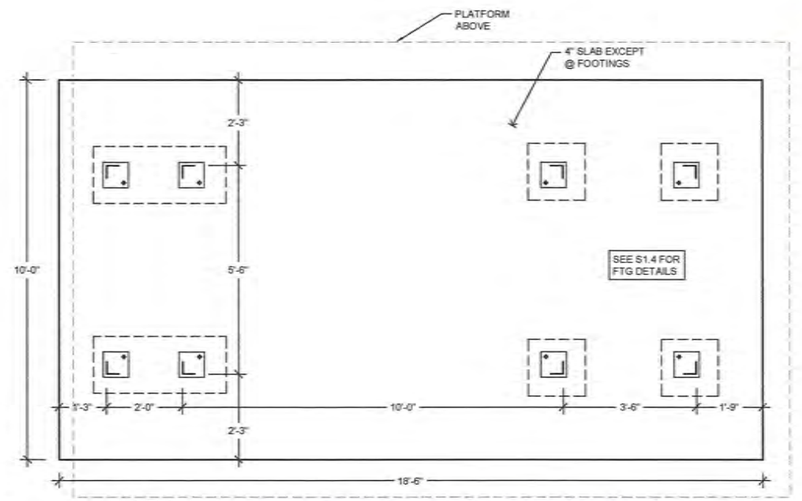
STAIRS NOT SHOWN FOR CLARITY. SEE S1.2 FOR STAIR DETAILS

F.G. = 27.0' (APPROX.)



5 C3.2 **GENERATOR PLATFORM END–ON ELEVATION**

6" 1'-6" 0 1'-0" 2'-0"



3 C3.2 **GENERATOR PLATFORM FOUNDATION PLAN**

6" 1'-6" 0 1'-0" 2'-0"

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ENGINEERING RESPONSIBILITIES:

STRUCTURE BY CHARLES WAUGH, P.E.

SITING, ELEVATIONS, AND ARRANGEMENT BY ELIZABETH STERLING, P.E.

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CHARLES B. WAUGH STATE OF WASHINGTON 16826 PROFESSIONAL ENGINEER

6/8/16

DESIGNED BY EAS/SJW | DRAWN BY SJW/RDN | CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 2
GENERATOR PLATFORM PLANS & ELEVATIONS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

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SHEET S1.1 OF 39

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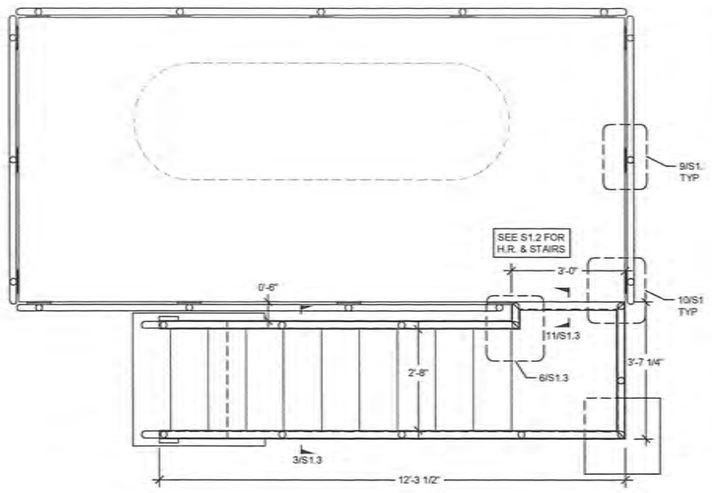
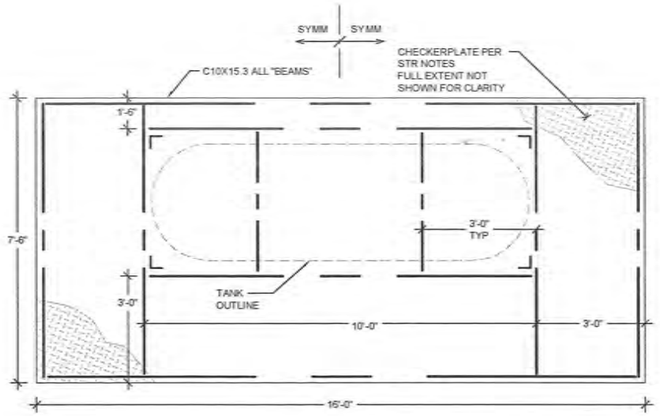


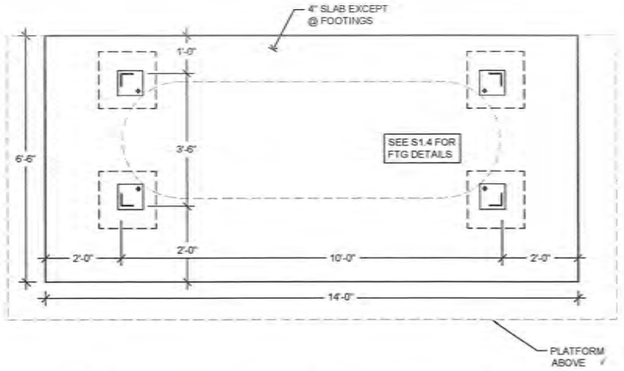
1 C3.2 **PROPANE TANK PLATFORM PLAN**

6" 1'-6"
0 1'-0" 2'-0"



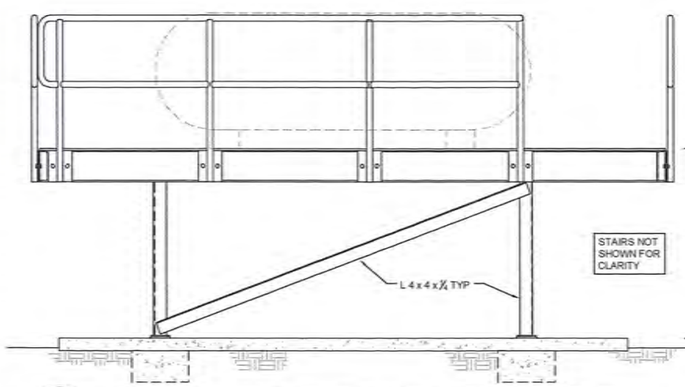
2 C3.2 **PROPANE TANK PLATFORM FRAMINGPLAN**

6" 1'-6"
0 1'-0" 2'-0"



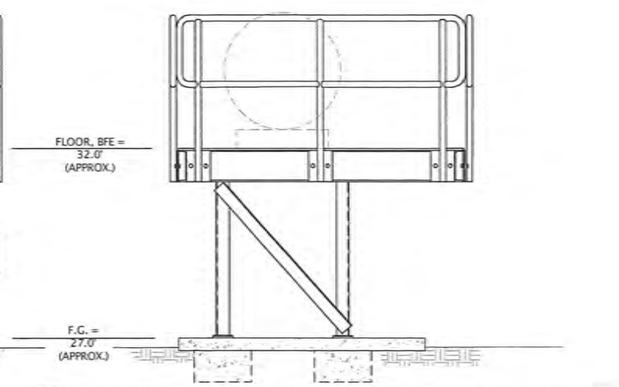
3 C3.2 **PROPANE TANK FOUNDATION PLAN**

6" 1'-6"
0 1'-0" 2'-0"



4 C3.2 **PROPANE TANK PLATFORM SW ELEVATION**

6" 1'-6"
0 1'-0" 2'-0"



5 C3.2 **PROPANE TANK PLATFORM NW ELEVATION**

6" 1'-6"
0 1'-0" 2'-0"

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PROFESSIONAL ENGINEER
8 JUNE 2016

ELIZABETH ANNE STERLING
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41548
REGISTERED
PROFESSIONAL ENGINEER
6/8/16

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WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
PROPANE TANK PLATFORM PLANS & ELEVATIONS

DATE	SCALE	JOB NUMBER
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SHEET S1.2 OF 39

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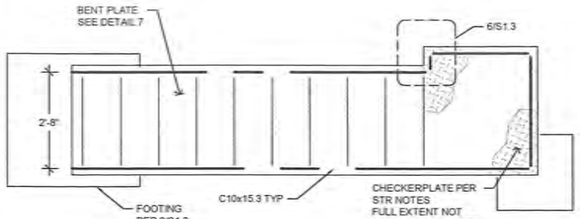
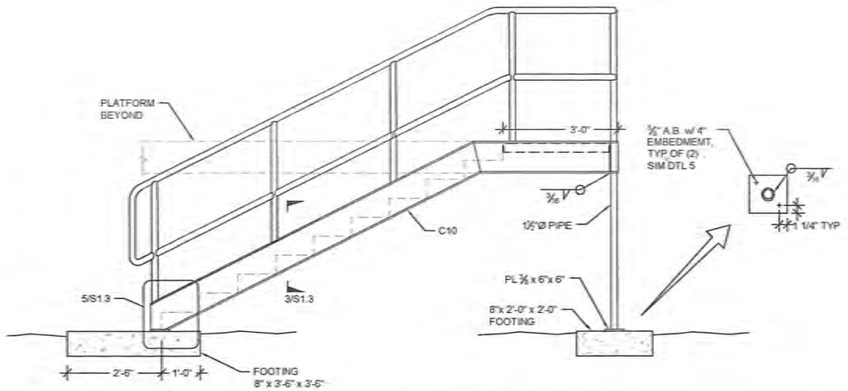


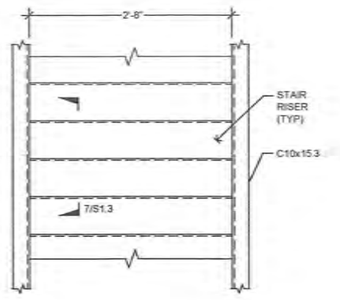
1 S1.1 **TYPICAL STAIRWAY FRAMING PLAN**

S1.2 6" 1'-6" 0 1'-0" 2'-0"



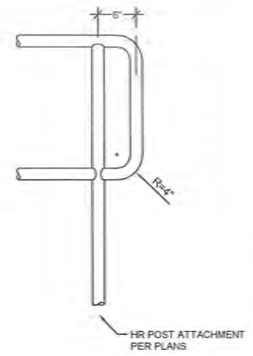
2 S1.1 **TYPICAL STAIRWAY ELEVATION**

S1.2 6" 1'-6" 0 1'-0" 2'-0"



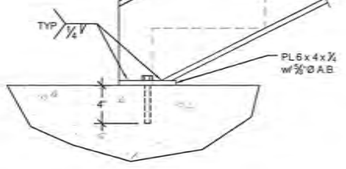
3 S1.1 **PARTIAL TYP STAIR ELEVATION**

S1.2 3" 9" 0 6" 1'-0"



4 S1.1 **TYP HR @ END POST**

S1.2 3" 9" 0 6" 1'-0"

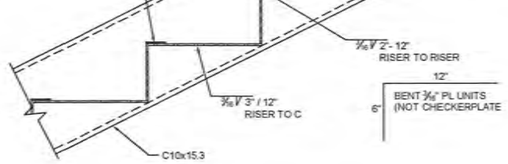


5 – **STAIR BASE PLATE**

3" 9" 0 6" 1'-0"

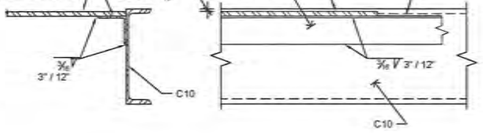
6 – **STAIR BASE PLATE**

3" 9" 0 6" 1'-0"



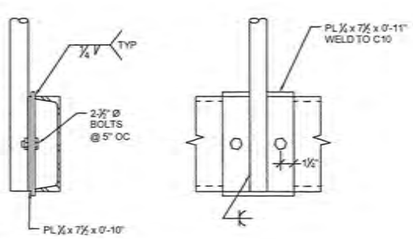
7 – **STAIR DETAIL**

3" 9" 0 6" 1'-0"



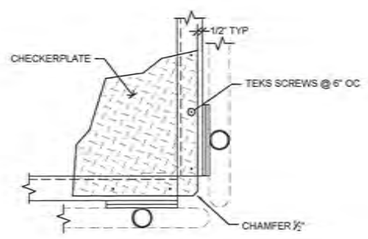
8 – **CHECKERPLATE ATTACHMENT AT STAIR LANDING**

3" 9" 0 6" 1'-0"



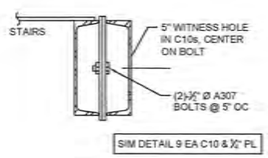
9 S1.1 **STAIR BASE PLATE**

S1.2 3" 9" 0 6" 1'-0"



10 S1.1 **STAIR BASE PLATE**

S1.2 3" 9" 0 6" 1'-0"



11 S1.1 **TYP STAIR TO PLATFORM CONNECTION**

S1.2 3" 9" 0 6" 1'-0"

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CHARLES B. WAUGH — STATE OF WASHINGTON — 16526 — PROFESSIONAL ENGINEER
8 June 2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 2
STAIR & HANDRAIL DETAILS

DATE	SCALE	JOB NUMBER
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SHEET S1.3 OF 39

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6/9/16

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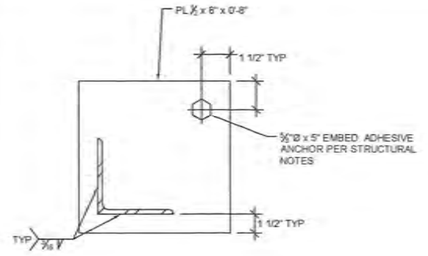
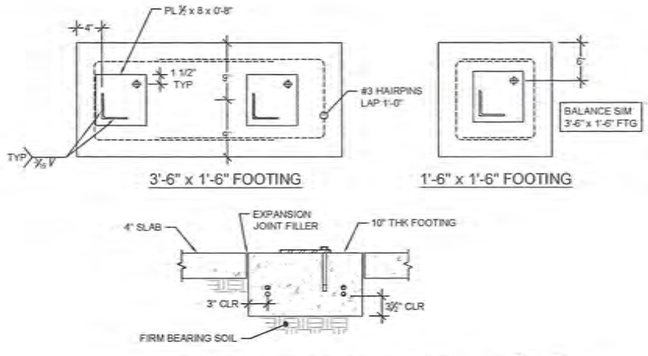
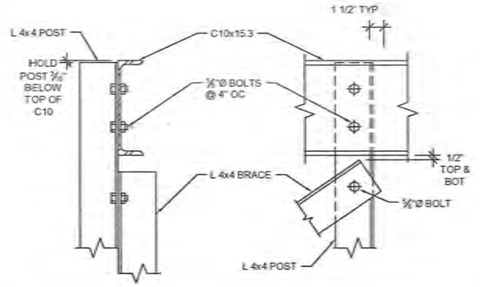


PLAN VIEW

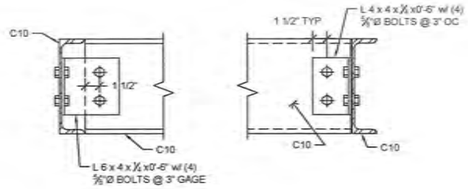
1 / S1.1 — S1.2 **TYP BASE PLATE**



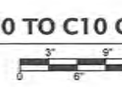
2 / S1.1 — S1.2 **TYP FOOTING DETAILS**

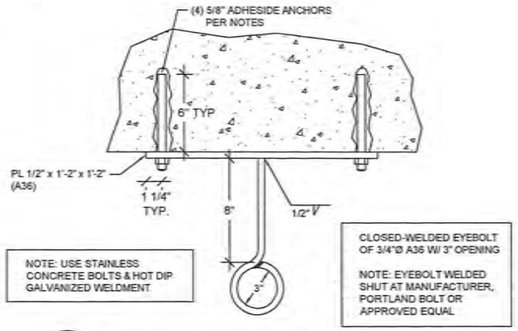


3 / S1.1 — S1.2 **TYP C10 / POST / BRACE CONNECTIONS**



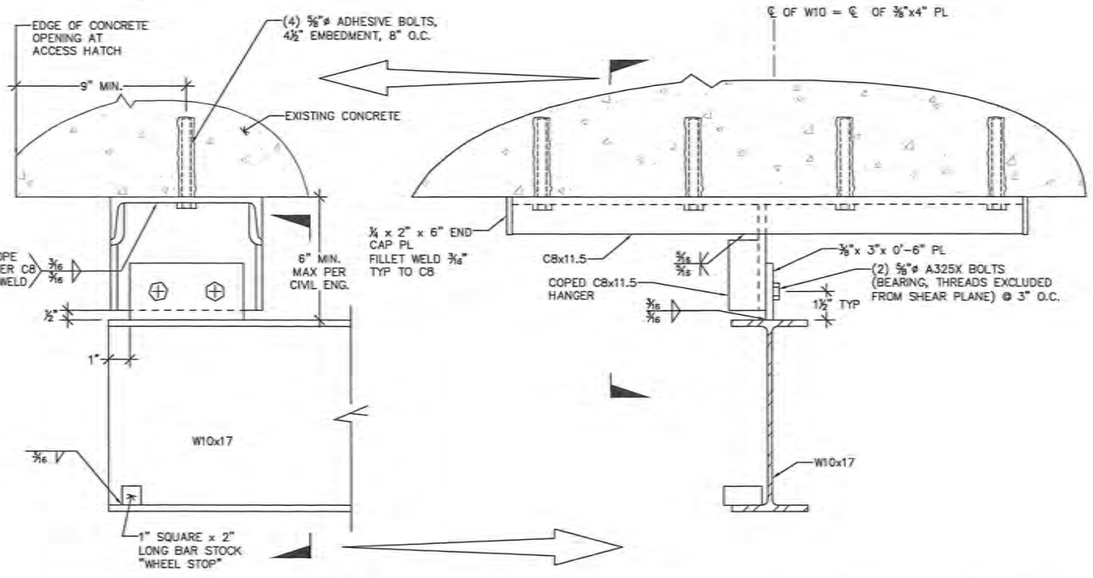
4 / S1.1 — S1.2 **TYP C10 TO C10 CONNECTIONS**



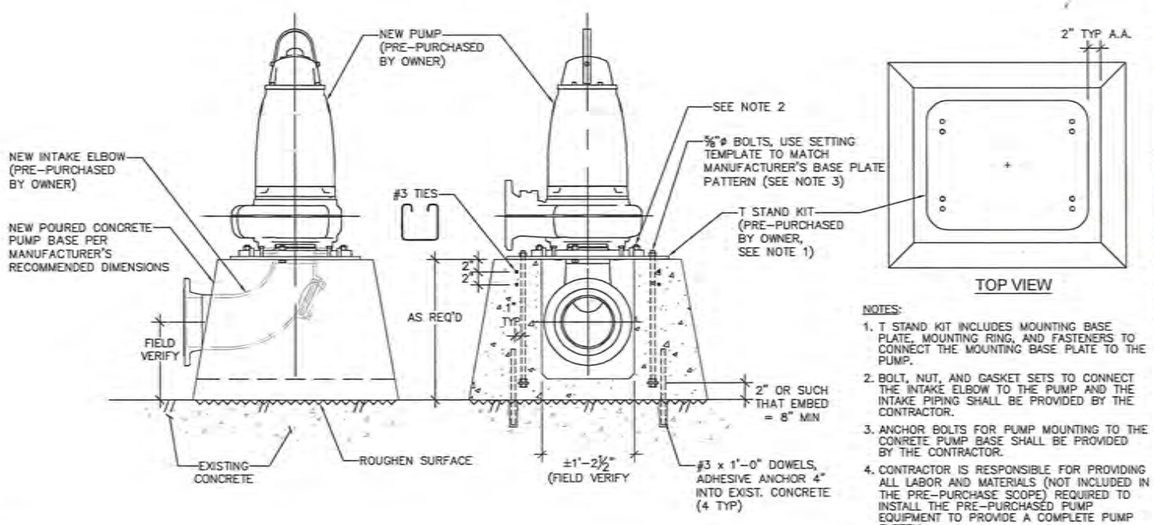


5 / M1.1 — M1.2, M1.3 **FALL RESTRAINT – CEILING EYEBOLT**

NOT TO SCALE



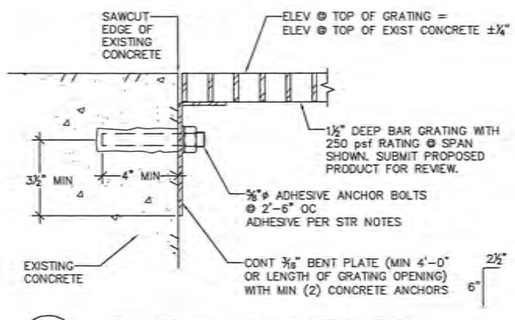
7 / M1.1 — M1.2 **TROLLEY BEAM HANGER**



NOTES:

1. T STAND KIT INCLUDES MOUNTING BASE PLATE, MOUNTING RING, AND FASTENERS TO CONNECT THE MOUNTING BASE PLATE TO THE PUMP.
2. BOLT, NUT, AND GASKET SETS TO CONNECT THE INTAKE ELBOW TO THE PUMP AND THE INTAKE PIPING SHALL BE PROVIDED BY THE CONTRACTOR.
3. ANCHOR BOLTS FOR PUMP MOUNTING TO THE CONCRETE PUMP BASE SHALL BE PROVIDED BY THE CONTRACTOR.
4. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS (NOT INCLUDED IN THE PRE-PURCHASE SCOPE) REQUIRED TO INSTALL THE PRE-PURCHASED PUMP EQUIPMENT TO PROVIDE A COMPLETE PUMP SYSTEM.

6 / M1.2 — M1.3 **CONCRETE PUMP BASE**



8 / M1.1 — M1.2, M1.3 **GRATING SUPPORT DETAIL**

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SITING, ELEVATIONS, AND ARRANGEMENT BY ELIZABETH STERLING, P.E.

NO.	REVISIONS	BY	DATE

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CHARLES B. WAUGH — STATE OF WASHINGTON — 16826 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER

6/8/2016

ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 41548 — REGISTERED — PROFESSIONAL ENGINEER

6/8/16

DESIGNED BY	DRAWN BY	CHECKED BY
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CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 2
STRUCTURAL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET S1.4 OF 39

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STRUCTURAL NOTES

BUILDING CODE CRITERIA

1. All construction is to comply with the 2012 International Building Code (IBC).
2. Loads:
   Catalog load allowance for generator and propane tank.
   100 psf uniform live load for cantilever platforms.
   Wind loads are negligible. Earthquake parameters are as follows:
   SS = 0.95 S1 = 0.32, Soil "E," I_e = 1.5
3. Special Inspections
   No special inspections are required. Concrete work is fully supported on grade, and the design concrete strength of 3500 psi is for reasons of durability.
4. Structural Observation
   The Structural Engineer of record will perform Structural Observations as defined in IBC Section 1702, as required. Note that Structural Observation does not constitute Special Inspection.

01000 GENERAL

1. Employ good standards of workmanship throughout. Provide all materials and perform all construction as indicated. Secure the prior written approval of the Engineer of Record (aka EOR, who is the Engineer whose name is on these drawings) for substitutions.
2. In case of conflict between these notes and the drawings, the more stringent will govern.
3. Verify all dimensions in the field.
4. These drawings and the designs herein are copyrighted by Wilson Engineering, and are for use on this project only.
5. **Do not scale drawings.**
6. The structure as shown on these drawings is designed to be stable and to resist the indicated loads in the completed condition. The drawings do not indicate the method or sequence of construction. The contractor is solely responsible for temporary bracing and shoring, and for safety programs, methods, and procedures of operation for the construction of the design.

01340 SHOP DRAWINGS AND SUBMITTALS

1. Shop drawings shall be submitted before fabrication is started. Allow two weeks for review by the EOR.
2. Shop drawings and submittals shall be clear and legible. Each submittal shall include:
   A. Name of project, fabricator's name, General Contractor, date, and unique drawing title and/or number including revision number.
   B. A blank of 4" x 4" space for Structural Engineer's review stamp.
3. Resubmittals shall be clearly identified as revisions, and all changes clearly marked. The EOR will not be responsible to find unmarked changes.

02220 FOUNDATIONS

1. Spread footings are designed for a maximum total bearing pressure of 1000 psf maximum.
2. Remove all topsoil and organic material from the area below the foundation, and use engineered fill if necessary to provide firm bearing.
3. Place concrete for footings against firm bearing soil. No geotechnical investigation has been performed for this project. Soils are assumed to be sandy-silt or silty-sands. Confirm soils types upon completion of excavation to footing elevation, and notify the engineer if any areas differ from this assumption.
4.

03300 REINFORCED CONCRETE AND ACCESSORIES

1. Reinforcing bars shall be ASTM A615, Grade 60. Do not weld rebar.
2. Bar detailing not shown otherwise, and support of reinforcing bars in forms, shall conform to the Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.
3. Provide 3" minimum cover from face of bars to face of concrete.
4. All concrete shall be ready-mix. Comply with requirements of ASTM C 94 and as follows
   Aggregate Per: ASTM C33 Cement Shall be: Type I or II per ASTM C150
   Admixtures for air entrainment and water reduction shall be per ASTM C260 & ASTM C494 Type A, respectively.
5. Properties including 28-day strengths shall be as follows:

Application	f'c (psi)	w/c (max)	aggregate (max)	Air %
A. Foundation	3500	0.50	1"	6.0

6. Hold all bolts, anchors, dowels, reinforcing bars and metal inserts firmly and accurately in place before concrete is poured; do not insert ("stab") after pouring concrete.
7. Post-installed adhesive anchors bolts shall be of steel conforming to the requirements of the applicable ICC-ES report for the adhesive system. Make and clean holes with equipment per the ICC-ES report. See the drawings for embedment, or use 5" minimum.
   Accepted adhesive products include:
   A. ITW-Ramset Company: Epcon G5 System
   B. Hilti Inc: RE-500 SD System
   C. Simpson Strong-Tie Company: SET-XP Epoxy
   D. Other systems with written approval of the Engineer of Record
   For any product to be accepted, it shall have a currently valid ICC-ES report with test results indicating that it is suitable for use in cracked concrete. Use in accordance with manufacturer's recommendations, including ambient temperature and moisture conditions at time of use.

05120 STRUCTURAL STEEL

1. Materials (except as noted in drawings):
   All materials shall be new stock, unless noted otherwise.
   Channel Shapes: ASTM A36
   Plates and bars: ASTM A36 (A529, A572, A588 optional)
   Steel Pipe: ASTM A53, Grade B
   Bolts, Regular: ASTM A307
   Galvanizing: Shapes and weldments ASTM A123
   Bolts and hardware ASTM A153
2. Minimum welds:
   Welds not specified shall be 3/16" continuous fillet welds, or minimum size per AISC, whichever is greater. All weld sizes are effective sizes; increase as required if gaps exist at meeting surfaces.
3. Welding shall be by WABO Certified welders and shall be as detailed or as specified by American Welding Society Standards D1.1.
4. Field welding is not permitted.
5. All steel shall be hot dip galvanized after fabrication except checkerplate which shall be galvanized separately before attachment to the platform structure.
6. Checkerplate shall conform to ASTM A786 with a raised diamond pattern and a durable factory applied non-skid finish. Connect to framing with TEKS screws @ 8" O.C., OR powder actuated fasteners @ 8" O.C., diameter, length and powder charge per PAF manufacturer.

NO.	REVISIONS	BY	DATE

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CHARLES B. WAUGH — STATE OF WASHINGTON — 18826 — STRUCTURAL ENGINEER — PROFESSIONAL ENGINEER
C. Waugh 8 JUNE 2016

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 2
STRUCTURAL NOTES

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET	OF
S1.5	39

6/8/16
ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 41548 — REGISTERED — PROFESSIONAL ENGINEER

ENGINEERING RESPONSIBILITIES:
STRUCTURE BY CHARLES WAUGH, P.E.
SITING, ELEVATIONS, AND ARRANGEMENT BY ELIZABETH STERLING, P.E.

W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\S1.1-S1.5 GEN AND TANK PLATFORMS.dwg, 6/7/2016 1:49:01 PM, ACROPLOT 11X17 UNSCREENED.pc3, EDN

RACEWAYS AND CONDUCTORS

- MANUFACTURERS CORD/CABLE
- HEAT TAPE ON PIPING
- FLEXIBLE CONDUIT
- TWISTED SHIELDED PAIR
- S — SEWER LINE
- OE — OVERHEAD ELECTRICAL
- EE — EXISTING CONDUIT UNDERGROUND
- CONDUIT EXPOSED
- CONDUIT BELOW GRADE OR CONCEALED
- CONDUIT CAPPED
- CONDUIT BENT UP OR TOWARD
- CONDUIT BENT DOWN OR AWAY
- GROUNDING CAD WELD CONNECTION
- CONDUCTORS NOT CONNECTED
- CONDUCTORS CONNECTED
- CONDUIT SEALS CLASS 1, DIV. 1 EXPLOSION PROOF
- NEW EQUIPMENT (STANDARD LINEWEIGHT)
- EXISTING EQUIPMENT (E) (LIGHT LINEWEIGHT)
- EQUIPMENT TO BE REMOVED

LIGHTING AND RECEPTACLES

- 1 / F1 — LED LIGHTING FIXTURE. FIXTURE IDENTIFIER AND SWITCHED CIRCUIT INDICATED. REFER TO LIGHTING SCHEDULE FOR FIXTURE AND LAMP TYPE.
- 1 / F1 — LED LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK
- LIGHTING FIXTURE, EMERGENCY DUAL HEAD WITH INTEGRAL BATTERY PACK. EXIT SIGN WHERE INDICATED.
- LED EXIT SIGN
- LIGHTING FIXTURE, CEILING MOUNTED
- PC — PHOTOELECTRIC CONTROL UNIT. WALL MOUNTED
- LIGHTING FIXTURE, POLE MOUNT
- LIGHTING FIXTURE, WALL MOUNT
- 3 — DUPLEX RECEPTACLE, NUMBER INDICATES CIRCUIT. GFCI WHERE INDICATED
- 3 — FOURPLEX RECEPTACLE, NUMBER INDICATES CIRCUIT.
- 3 — DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTER NUMBER INDICATES CIRCUIT.
- 3 — DUPLEX RECEPTACLE FLOOR MOUNTED, NUMBER INDICATES CIRCUIT.
- SPECIAL PURPOSE RECEPTACLE OR DEDICATED EQUIPMENT CONNECTION, AS NOTED.
- TELEPHONE OUTLET
- DATA OUTLET
- SPLIT TELEPHONE DATA OUTLET
- IC — INTERCOM
- 3a — SWITCH, NUMBERS REFER TO SWITCH TYPE AND SWITCHED CIRCUIT.
- J — JUNCTION BOX
- J EX — JUNCTION BOX, EXPLOSION PROOF
- T — THERMOSTAT
- H — HUMIDISTAT

CALLOUTS AND DESIGNATIONS

- A — CONDUIT CALLOUT
- A — TRENCH CALLOUT
- EF-1 — EQUIPMENT CALLOUT
- F1 — LIGHTING FIXTURE CALLOUT: SEE SCHEDULE
- X — DRAWING KEY NOTE CALLOUT
- X — DETAIL NUMBER
- XX — DETAIL IDENTIFIER
- REFERENCE DRAWING NUMBER
- LPA-1,3 — PANEL AND CIRCUIT (EXAMPLE: PANEL LPA, CIRCUITS 1 AND 3)
- PHASE/SWITCHLEG CONDUCTOR
- HOMERUN/CONDUIT
- GROUND CONDUCTOR
- NEUTRAL CONDUCTOR

ELECTRICAL AND POWER DISTRIBUTION

- PANELBOARD 208Y/120V OR 120/240V
- PANELBOARD 480Y/277V
- UTILITY METER
- 5 — MOTOR CONNECTION NUMBER INDICATES HORSEPOWER
- O.L. — THERMAL OVERLOAD RELAY
- 2 — FULL VOLTAGE NON REVERSING MOTOR STARTER NUMBER INDICATES NEMA SIZE
- REDUCED VOLTAGE SOLID STATE STARTER
- VARIABLE FREQUENCY DRIVE
- LINE REACTOR/FILTER
- G — BUS CONNECTION (N=NEUTRAL, G=GROUND)
- 75KW — HEATER, NUMBER INDICATES KW
- 50 — DISCONNECT SWITCH - HP RATED, AS INDICATED
- 50 — DISCONNECT SWITCH (FUSED)
- TRANSFORMER
- CARTRIDGE FUSE AND FUSEHOLDER
- ATS - AUTOMATIC TRANSFER SWITCH MTS - MANUAL TRANSFER SWITCH
- 200/3 — THERMAL MAG CIRCUIT BREAKER, RATING/NO. POLES
- 200/3 MCP — MOTOR CIRCUIT PROTECTOR, RATING/NO. POLES
- GROUND ROD AND WELL
- GROUNDING ELECTRODE
- PULL OUT PLUG-RECEPTACLE/MCC CONNECTION
- BATTERY
- SIDEWALK SNOWMELT

CONTROLS AND INSTRUMENTATION

NORMALLY CLOSED / NORMALLY OPEN

- TEMPERATURE SWITCH - TS
- LEVEL SWITCH - LS
- PRESSURE SWITCH - PS
- LIMIT SWITCH - LS
- CONTACT - CR = CONTROL RELAY, MS-MOTOR STARTER, OR AS INDICATED
- SWITCH - SW
- FLOW SWITCH - FS
- PB — PUSHBUTTON - PB
- TIME DELAY - TD
- HAND / OFF / AUTO — SELECTOR SWITCH. HAND-OFF-AUTO SHOWN. X'S INDICATE CONTACT SWITCHING CONVENTION.
- AM — AMMETER
- VM — VOLTMETER
- GEN — GENERATOR
- MS — MOTOR STARTER
- PFR — PHASE FAIL RELAY
- ETM — ELAPSED TIME METER
- SCT — STARTS COUNTER
- CR — CONTROL RELAY
- TDR — TIME DELAY RELAY
- SV-SOLENOID VALVE
- PT — INSTRUMENT (L=LEVEL, F=FLOW P=PRESSURE)
- R — INDICATING LIGHT, LETTER INDICATES: R-RED, G-GREEN, A-AMBER, W-WHITE, B-BLUE
- D.C. TERMINAL
- A.C. TERMINAL
- FIELD INSTRUMENT
- HORN
- SPEED POTENTIOMETER

STANDARD ABBREVIATIONS

A, AMP	AMPERE
AC	AIR COMPRESSOR
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT POINT (PLC)
AIC	AMPERES INTERRUPTING CAPACITY
AL	ALARM
ALT	ALTERNATOR
AO	ANALOG OUTPUT POINT (PLC)
ATS	AUTOMATIC TRANSFER SWITCH
BAT	BATTERY
BC	BATTERY CHARGER
BH	BLOCK HEATER
BP	BYPASS CONTACTOR
C	CONDUIT (RGS)
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CNT	COUNTER
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CV	CHECK VALVE
DEM	DEMAND
DI	DIGITAL INPUT POINT (PLC)
DO	DIGITAL OUTPUT POINT (PLC)
DWG	DRAWING
E OR (E)	EXISTING DEVICE
EF	EXHAUST FAN
E.O.D.O.	ELECTRICAL OPERATED DRAW OUT
FE	FLOW ELEMENT
FS	FLOW SWITCH
FT	FLOW TRANSMITTER
FU	FUSED
FVNR	FULL VOLTAGE NON-REVERSING
G, GND	GROUND
GEN	GENERATOR
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
H	HOT, HIGH
HH	HAND HOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HTR	HEATER
IC	ISOLATION CONTACTOR
ISR	INTRINSICALLY SAFE RELAY
KW	KILOWATT
KWH	KILOWATT HOUR
KWD	KILOWATT DEMAND
LC	LIGHTING CONTACTOR
LCP	LOCAL CONTROL PANEL
LE	LEVEL ELEMENT
LS	LIMIT SWITCH
LT	LEVEL TRANSMITTER
LTG	LIGHTING
M	METER
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MFR	MANUFACTURER
MOV	MOTOR OPERATED VALVE OR METAL OXIDE VARISTOR
MS	MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OI	OPERATOR INTERFACE
OIT	OPERATOR IN TROUBLE
OL	OVERLOAD RELAY
OT	OVER TEMP
P	POWER
PB	PUSH BUTTON
PE	PHOTO ELECTRIC RELAY
PFR	PHASE FAILURE RELAY
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
POT	POTENTIOMETER
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLY VINYL CHLORIDE (CONDUIT)
RGS	RIGID GAVLANIZED STEEL (CONDUIT)
RTM	RUN TIME METER
RV	REDUCED VOLTAGE
S	SIGNAL
SA	SURGE ARRESTOR
SE	SERVICE ENTRANCE
SHT	SHEET
SS	STAINLESS STEEL
SSS	SOLID STATE STARTER
SV	SOLENOID VALVE
T	THERMOSTAT
TC	TIME CLOCK
TDR	TIME DELAY
TST	TWISTED SHIELDED THREE CONDUCTOR (TRIAD)
TYP	TYPICAL
UH	UNIT HEATER
UPS	UNINTERUPTABLE POWER SUPPLY
VS	VIBRATION SWITCH
VT	VIBRATION TRANSMITTER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
W	WATT
WHM	WATT HOUR METER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
XMTR	TRANSMITTER

PROJECT GENERAL NOTES:

1. THE ELECTRICAL DRAWINGS AND SCHEDULES ARE FUNCTIONAL IN NATURE AND DO NOT SPECIFY EXACT LOCATIONS OF EQUIPMENT OR EQUIPMENT TERMINATIONS. IT IS THE INTENT OF THESE DRAWINGS TO DESCRIBE AND PROVIDE FOR THE FURNISHING, INSTALLING, TESTING AND PLACING IN FULLY OPERATIONAL CONDITION ALL EQUIPMENT, MATERIALS, DEVICES AND NECESSARY APPURTENANCES TO PROVIDE A COMPLETE ELECTRICAL SYSTEM, TOGETHER WITH SUCH OTHER MISCELLANEOUS INSTALLATIONS AND EQUIPMENT SHOWN ON THE DRAWINGS. THE WORK SHALL INCLUDE ALL MATERIALS, APPLIANCES AND APPARATUS NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE, FULLY OPERATIONAL INSTALLATION OF ALL ELECTRICAL SYSTEMS SHOWN ON THE DRAWINGS.
2. THIS PROJECT INCLUDES THE INSTALLATION OF PACKAGED EQUIPMENT SYSTEM(S) OR SUB-SYSTEM(S) THAT WILL REQUIRE COORDINATION BETWEEN THE CONTRACTOR AND THE MANUFACTURER TO DETERMINE THE DETAILED INSTALLATION REQUIREMENTS. THE ENGINEER HAS SHOWN GENERAL INSTALLATION INFORMATION FOR THESE SYSTEMS BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF DESIGN. WHERE INDICATED ON THE DRAWINGS TO 'PROVIDE A COMPLETE AND OPERATIONAL SYSTEM' THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, INSTALLATION, AND COORDINATION WITH THE MANUFACTURER REQUIRED SO THE EQUIPMENT IS INSTALLED AND OPERATES IN A SATISFACTORY MANNER. MINOR CHANGES IN EQUIPMENT LOCATIONS (LESS THAN 20 FEET), QUANTITY OF TERMINATIONS OR WIRES, JUNCTION BOXES, CONDUIT, ETC SHALL BE INCLUDED IN THE CONTRACT PRICE.
3. CONTRACTOR SHALL COORDINATE WITH OWNER AND UTILITY FOR REMOVAL OF EXISTING EQUIPMENT AND ANY REQUIRED PHASING TO MAINTAIN ALL REQUIRED POWER AND CONNECTIONS .
4. DISPOSE OF ALL DEMO MATERIALS NOT WANTED BY OWNER.
5. COORDINATE WITH OWNER FOR DETAILED EQUIPMENT CONNECTION REQUIREMENTS. GENERAL POWER DISTRIBUTION AND CIRCUIT DESIGNATIONS ARE SHOWN ON THE DRAWINGS.
6. ALL CONDUIT IN NEW WALLS OR CEILINGS SHALL BE CONCEALED WHERE POSSIBLE.
7. ALL ELECTRICAL SERVICE REQUIREMENTS FOR NEW UTILITY SERVICE, TRANSFORMER, METERING, TRENCHING, ETC SHALL BE COORDINATED AND INSTALLED IN STRICT ACCORDANCE WITH OKANOGAN COUNTY PUD REQUIREMENTS. ALL UTILITY INFORMATION MUST BE VERIFIED PRIOR TO BID.
8. THE NUMBER OF CONDUCTORS AND CONDUIT ROUTING WILL VARY BASED ON HOW THE CONTRACTOR ELECTS TO ROUTE AND COMBINE CIRCUITING. THE CONTRACTOR SHALL PROVIDE DETAILED REDLINE MARKUPS ON A DEDICATED SET OF CONSTRUCTION DRAWINGS TO THE ENGINEER UPON COMPLETION OF THE PROJECT FOR PREPARATION OF RECORD DRAWINGS. THIS INCLUDES ACTUAL RACEWAY ROUTING, CONDUCTOR QUANTITIES, PANEL SCHEDULES, RECEPTACLE CONFIGURATIONS AND MOUNTING ELEVATIONS, ETC.
9. ALL MATERIALS SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE ARTICLE 110-14C. WIRING AND CIRCUIT BREAKERS ON THIS PROJECT ARE DESIGNED FOR 75 DEG C OPERATION ABOVE 100 AMPERES; 60 DEG C FOR 100 AMPERES AND BELOW. ALL PRODUCTS FURNISHED ON THIS PROJECT SHALL HAVE ELECTRICAL TERMINATIONS RATED FOR 60 DEG C FOR AMPACITIES OF 100 AMPERES AND BELOW, AND RATED FOR 75 DEG C FOR AMPACITIES ABOVE 100 AMPERES. ALL CONDUCTORS SHALL BE COPPER.

ELECTRICAL SHEET INDEX

E1 ELECTRICAL SYMBOLS AND ABBREVIATIONS
E2 ELECTRICAL SITE PLAN
E3 ONE LINE DIAGRAM
E4 MOTOR ROOM EQUIPMENT ELEVATION
E5 ELECTRICAL DEMOLITION PLAN
E6 POWER AND CONTROLS PLAN
E7 LIGHTING PLAN
E8 FLOAT CONTROL PANEL
E9 TELEMETRY PANEL ADDITIONS - SH.1
E10 TELEMETRY PANEL ADDITIONS - SH.2
E11 PUMP CONTROL PANEL WIRING DIAGRAM
E12 ELECTRICAL SCHEDULES
E13 ELECTRICAL DETAILS

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6-8-2016

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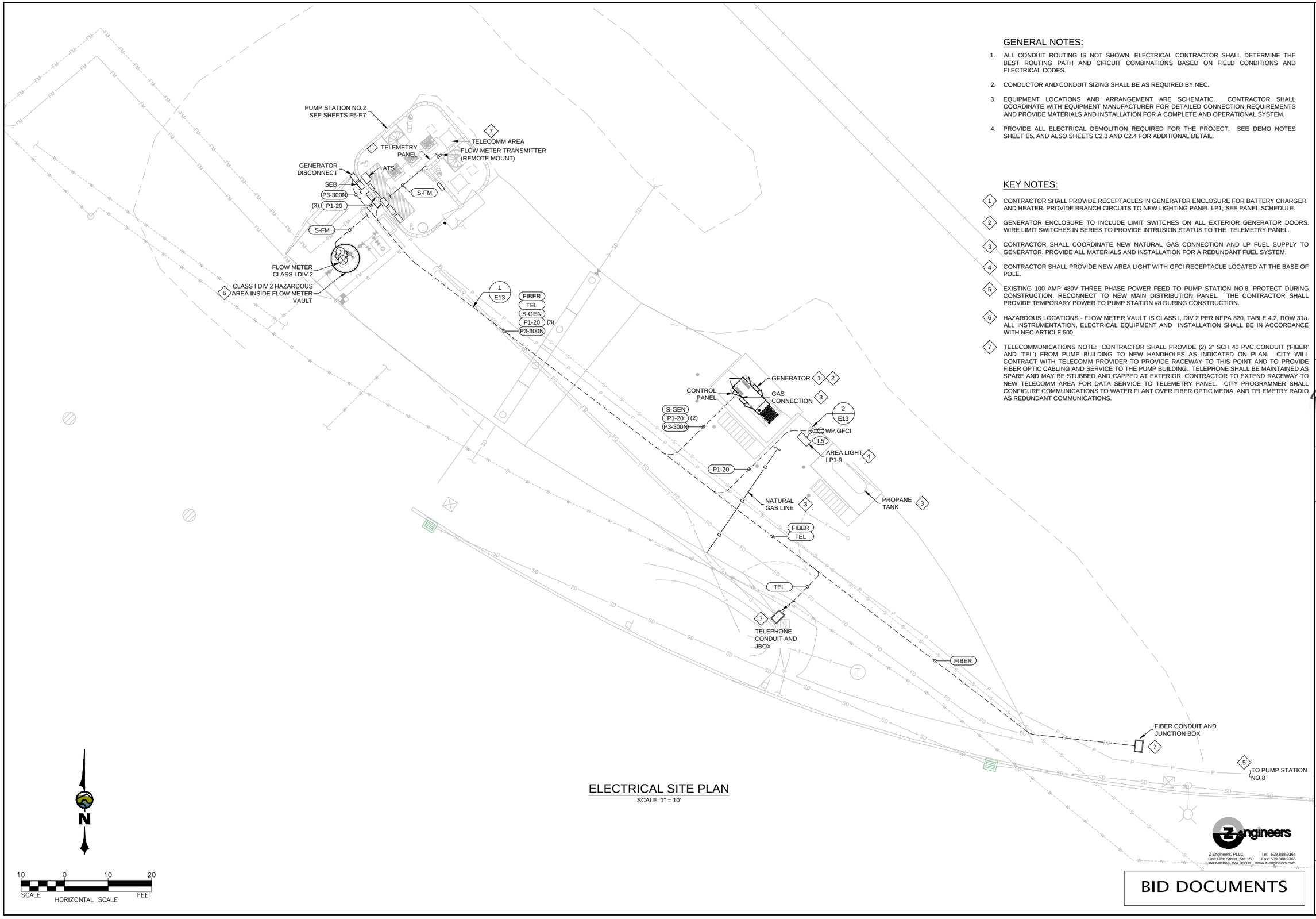
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
ELECTRICAL SYMBOLS AND ABBREVIATIONS

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

SHEET E1 OF 39



ELECTRICAL SITE PLAN

SCALE: 1" = 10'

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. PROVIDE ALL ELECTRICAL DEMOLITION REQUIRED FOR THE PROJECT. SEE DEMO NOTES SHEET E5, AND ALSO SHEETS C2.3 AND C2.4 FOR ADDITIONAL DETAIL.

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE RECEPTACLES IN GENERATOR ENCLOSURE FOR BATTERY CHARGER AND HEATER. PROVIDE BRANCH CIRCUITS TO NEW LIGHTING PANEL LP1; SEE PANEL SCHEDULE.
2. GENERATOR ENCLOSURE TO INCLUDE LIMIT SWITCHES ON ALL EXTERIOR GENERATOR DOORS. WIRE LIMIT SWITCHES IN SERIES TO PROVIDE INTRUSION STATUS TO THE TELEMETRY PANEL.
3. CONTRACTOR SHALL COORDINATE NEW NATURAL GAS CONNECTION AND LP FUEL SUPPLY TO GENERATOR. PROVIDE ALL MATERIALS AND INSTALLATION FOR A REDUNDANT FUEL SYSTEM.
4. CONTRACTOR SHALL PROVIDE NEW AREA LIGHT WITH GFCI RECEPTACLE LOCATED AT THE BASE OF POLE.
5. EXISTING 100 AMP 480V THREE PHASE POWER FEED TO PUMP STATION NO.8. PROTECT DURING CONSTRUCTION, RECONNECT TO NEW MAIN DISTRIBUTION PANEL. THE CONTRACTOR SHALL PROVIDE TEMPORARY POWER TO PUMP STATION #8 DURING CONSTRUCTION.
6. HAZARDOUS LOCATIONS - FLOW METER VAULT IS CLASS I, DIV 2 PER NFPA 820, TABLE 4.2, ROW 31a. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.
7. TELECOMMUNICATIONS NOTE: CONTRACTOR SHALL PROVIDE (2) 2" SCH 40 PVC CONDUIT ('FIBER' AND 'TEL') FROM PUMP BUILDING TO NEW HANDHOLES AS INDICATED ON PLAN. CITY WILL CONTRACT WITH TELECOMM PROVIDER TO PROVIDE RACEWAY TO THIS POINT AND TO PROVIDE FIBER OPTIC CABLING AND SERVICE TO THE PUMP BUILDING. TELEPHONE SHALL BE MAINTAINED AS SPARE AND MAY BE STUBBED AND CAPPED AT EXTERIOR. CONTRACTOR TO EXTEND RACEWAY TO NEW TELECOMM AREA FOR DATA SERVICE TO TELEMETRY PANEL. CITY PROGRAMMER SHALL CONFIGURE COMMUNICATIONS TO WATER PLANT OVER FIBER OPTIC MEDIA, AND TELEMETRY RADIO AS REDUNDANT COMMUNICATIONS.

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6-8-2016

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CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2
ELECTRICAL SITE PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

SHEET E2 OF 39

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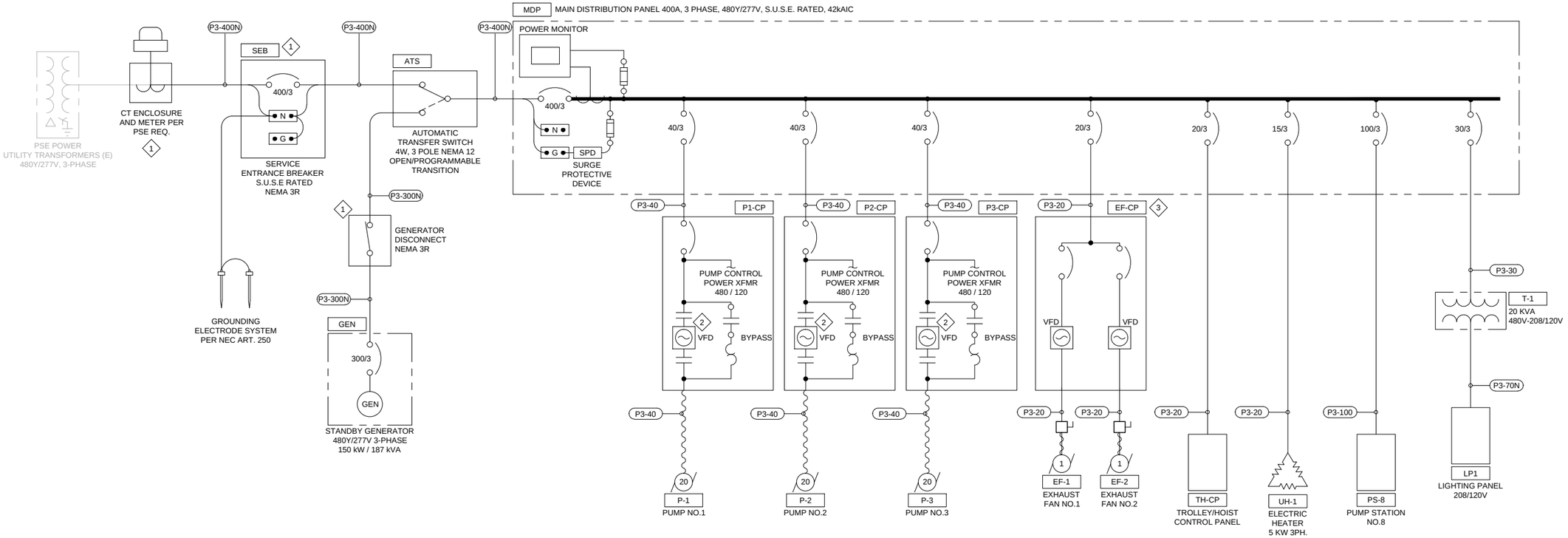
BID DOCUMENTS

KEY NOTES:

1. UTILITY METER, CURRENT TRANSFORMER, SERVICE ENTRANCE BREAKER AND GENERATOR DISCONNECT SHALL BE INSTALLED ABOVE THE 100 YR. FLOOD LEVEL.
2. VFD'S SHALL BE ALLEN BRADLEY POWERFLEX 525 SERIES WITH FULL VOLTAGE BYPASS.
3. PROVIDE VENTILATION CONTROL PANEL INCLUDING VFD'S IN NEMA 12 ENCLOSURE WITH LOCAL HOA AND MANUAL SPEED CONTROLS. SEE MECHANICAL SPECIFICATIONS.



ONE LINE DIAGRAM

SCALE: NONE

LOAD CALCULATION

EQ ID	EQUIPMENT DESCRIPTION	SUPPLY POWER	CONNECTED LOAD	HP / KVA	LOAD AMPS	DEMAND FACTOR (%)	DEMAND AMPS
P-1	PUMP NO.1	480V, 3PH	20.0	HP	27.0	125%	33.8
P-2	PUMP NO.2	480V, 3PH	20.0	HP	27.0	100%	27.0
P-3	PUMP NO.3	480V, 3PH	20.0	HP	27.0	100%	27.0
EF-1	EXHAUST FAN NO.1	480V, 3PH	1.0	HP	2.1	100%	2.1
EF-2	EXHAUST FAN NO.2	480V, 3PH	1.0	HP	2.1	100%	2.1
TR-1	TROLLEY	480V, 3PH	0.5	HP	1.1	100%	1.1
HS-1	HOIST	480V, 3PH	0.5	HP	1.1	100%	1.1
T-1	LIGHTING PANEL TRANSFORMER	480V, 3PH	20.0	kVA	24.2	63%	15.3
PS-8	PUMP STATION NO.8	480V, 3PH	60.0	HP	87.7	100%	87.7
UH-1	ELECTRIC UNIT HEATER	480V, 3PH	5.0	kVA	7.5	100%	7.5
					206.8		204.6

LOAD CALCULATION

SCALE: NONE

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6-8-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
ONE LINE DIAGRAM

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

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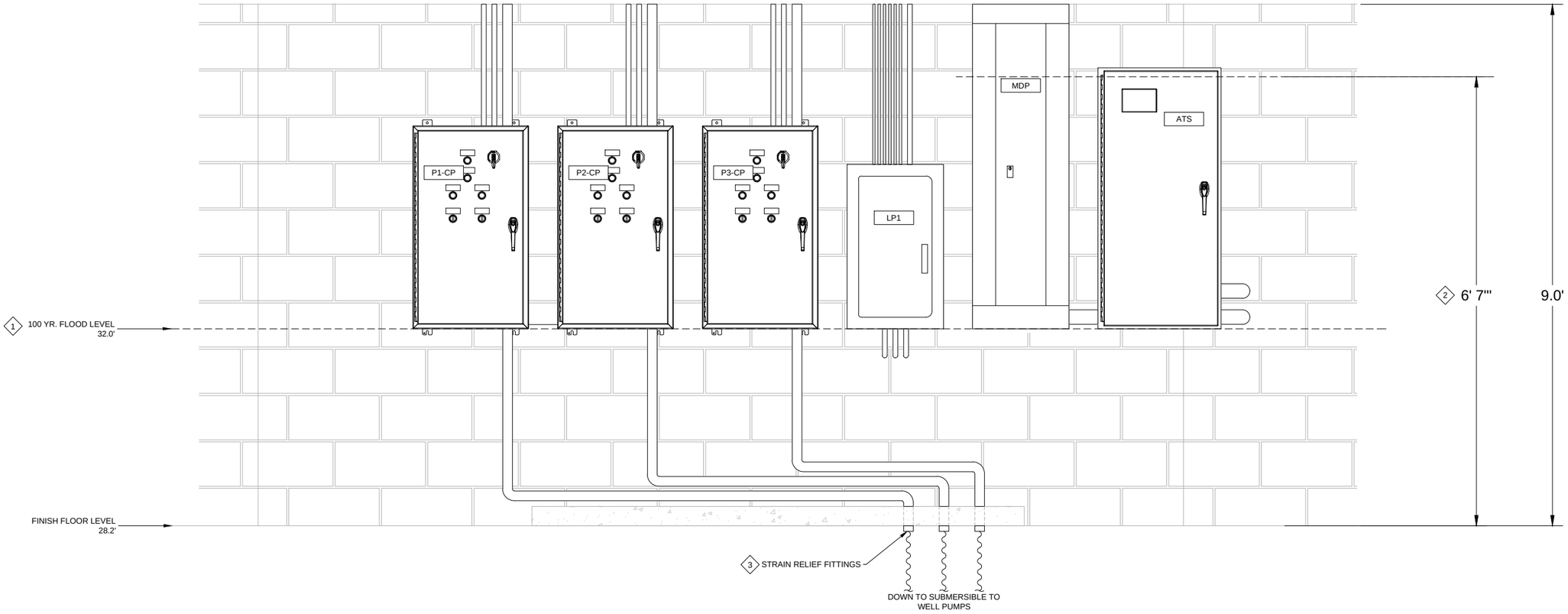
BID DOCUMENTS

KEY NOTES:

1. AUTOMATIC TRANSFER SWITCH, MAIN DISTRIBUTION PANEL, PUMP CONTROL PANELS AND LIGHTING PANEL SHALL BE INSTALLED ABOVE THE 100 YR. FLOOD LEVEL.
2. SELECT AND ARRANGE PANELS SO HIGHEST SWITCH IS BELOW 6'7" ABOVE FINISHED FLOOR.
3. ROUTE CONDUIT FOR MOTOR LEADS THROUGH SLAB. INSTALL STRAIN RELIEF FITTINGS FOR SUBMERSIBLE CABLES TO PUMPS.



MOTOR ROOM EQUIPMENT - ELEVATION

SCALE: NONE

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CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2

MOTOR ROOM EQUIPMENT ELEVATION

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

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DEMOLITION WORK:

1. ALL DEMOLITION WORK REQUIRED UNDER THIS CONTRACT IS NOT SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL INSPECT THE EXISTING SITES AND INSTALLATIONS PRIOR TO BIDDING AND SHALL MAKE HIS OWN JUDGMENT AS TO THE WORK REQUIRED TO PROVIDE COMPLETE DEMOLITION AS SHOWN OR WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.
3. EXISTING EQUIPMENT, SYSTEMS, AND MATERIALS REMOVED DURING DEMOLITION SHALL BE MADE AVAILABLE FOR THIS INSPECTION AND DECISION AS TO WHETHER THE OWNER WILL RETAIN POSSESSION. ITEMS SELECTED FOR RETENTION SHALL BE TURNED OVER TO THE OWNER. THESE ITEMS SHALL BE DELIVERED TO A LOCATION ON THE PREMISES SELECTED BY THE OWNER. ALL MATERIAL NOT SELECTED FOR RETENTION BY THE OWNER AND DEBRIS SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR.
4. SEE CIVIL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL DEMOLITION AND PHASING REQUIREMENTS.

DEMOLITION NOTES:

D1 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING MOTOR CONTROL CENTER INCLUDING SERVICE DISCONNECT, AUTOMATIC TRANSFER SWITCH, TRANSFORMER, PANELBOARD, MOTOR STARTERS, AND CIRCUIT BREAKER FOR THE 100A POWER FEED TO PUMP STATION NO.8.

D2 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING 150KW GENERATOR INCLUDING NATURAL GAS FUEL SUPPLY, WALL MOUNTED AIR-INTAKE LOUVER, EXHAUST FAN, AND EXTERIOR MUFFLER SYSTEM.

D3 REPLACE EXISTING UTILITY SERVICE EQUIPMENT. COORDINATE EQUIPMENT REQUIREMENTS WITH PUGET SOUND ENERGY.

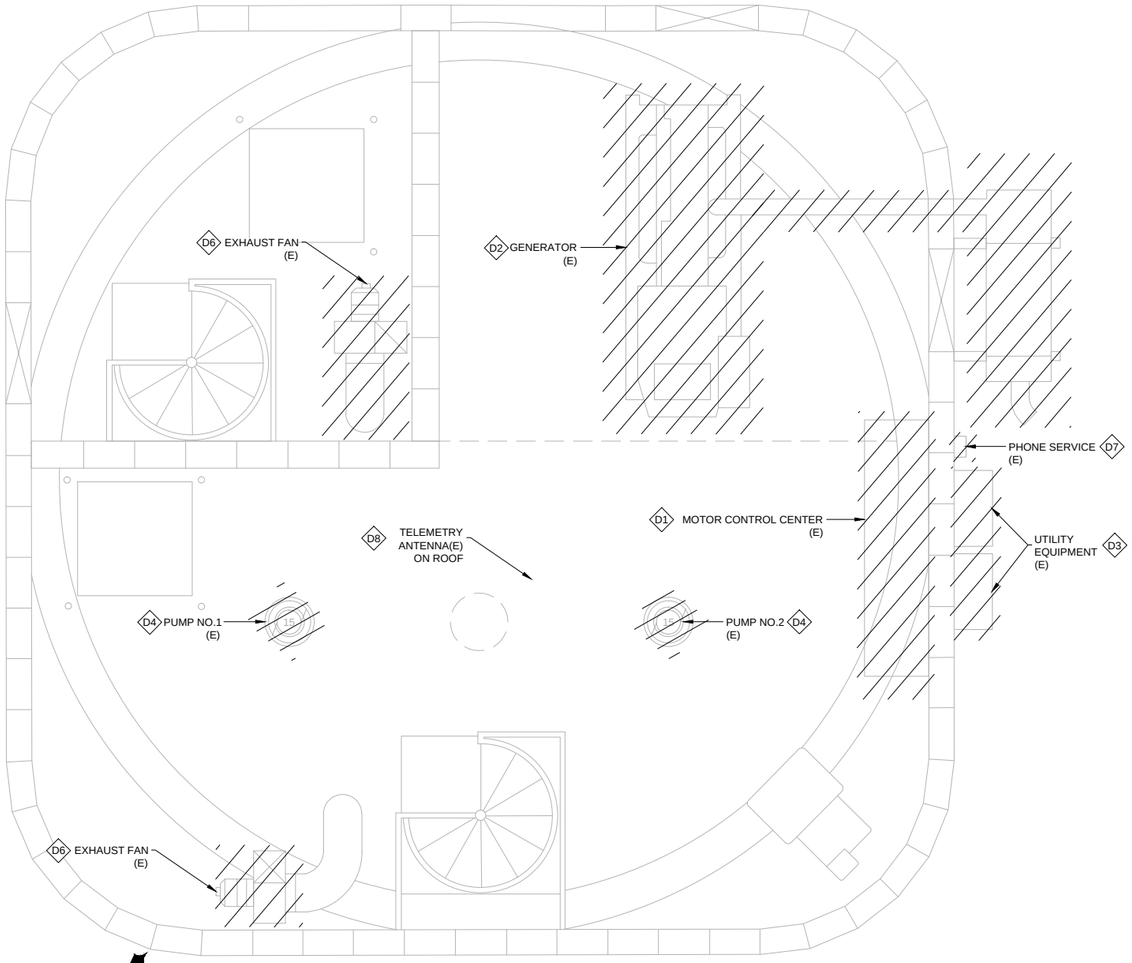
D4 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF TWO (2) EXISTING 15HP PUMPS.

D5 REPLACE ALL EXISTING FLUORESCENT LIGHT FIXTURES WITH LED FIXTURES.

D6 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF TWO (2) EXISTING EXHAUST FANS.

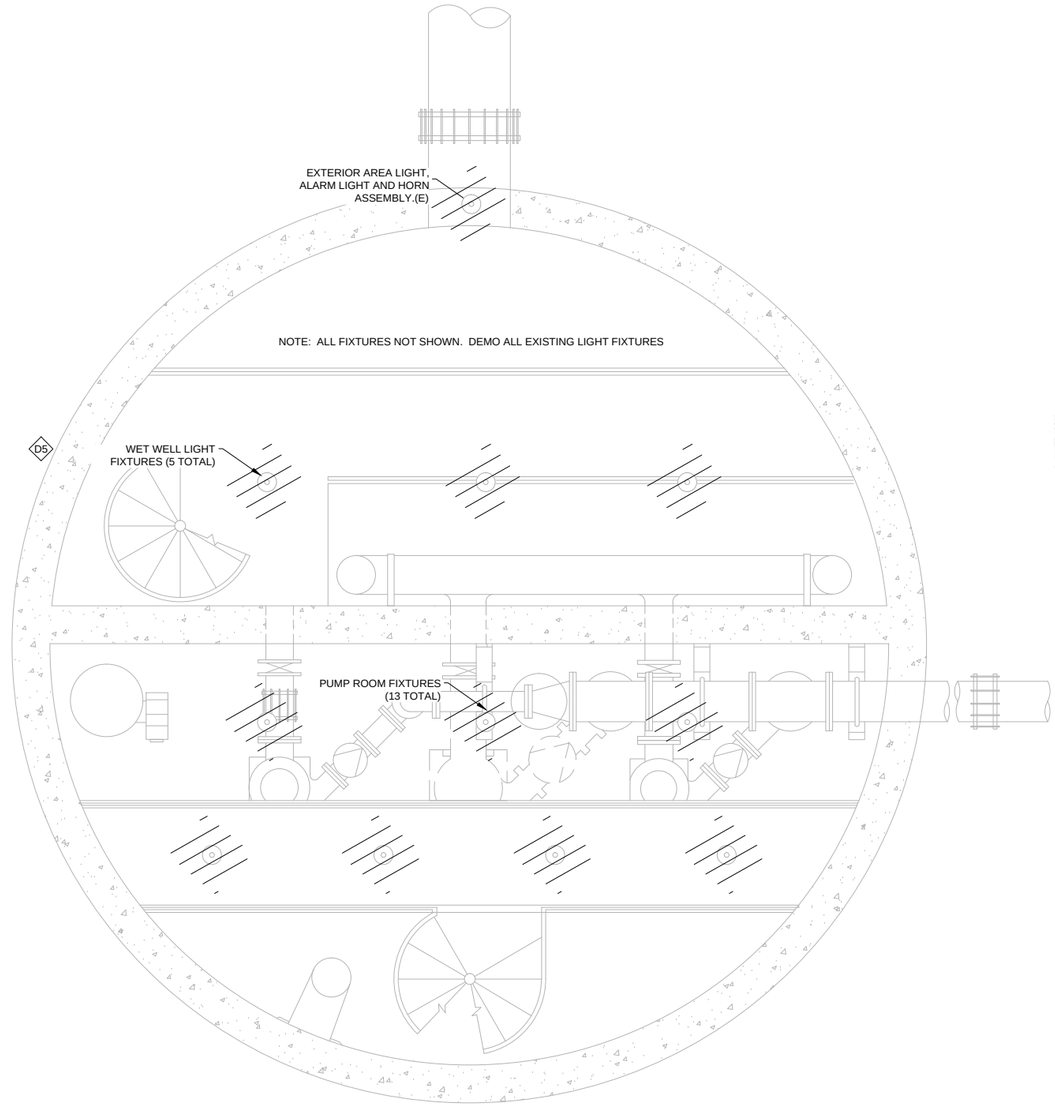
D7 PROVIDE COMPLETE DEMOLITION OF EXISTING PHONE SERVICE. PATCH AND SEAL INTERIOR / EXTERIOR WALL AS REQUIRED.

D8 REMOVE EXISTING TELEMETRY EQUIPMENT LOCATED ON ROOF. PROTECT AND REINSTALL AFTER ROOF RENOVATION.



MOTOR ROOM - DEMOLITION PLAN

SCALE: 1" = 2'



PUMP ROOM & WET WELL - DEMOLITION PLAN

SCALE: 1" = 2'

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6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
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CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2

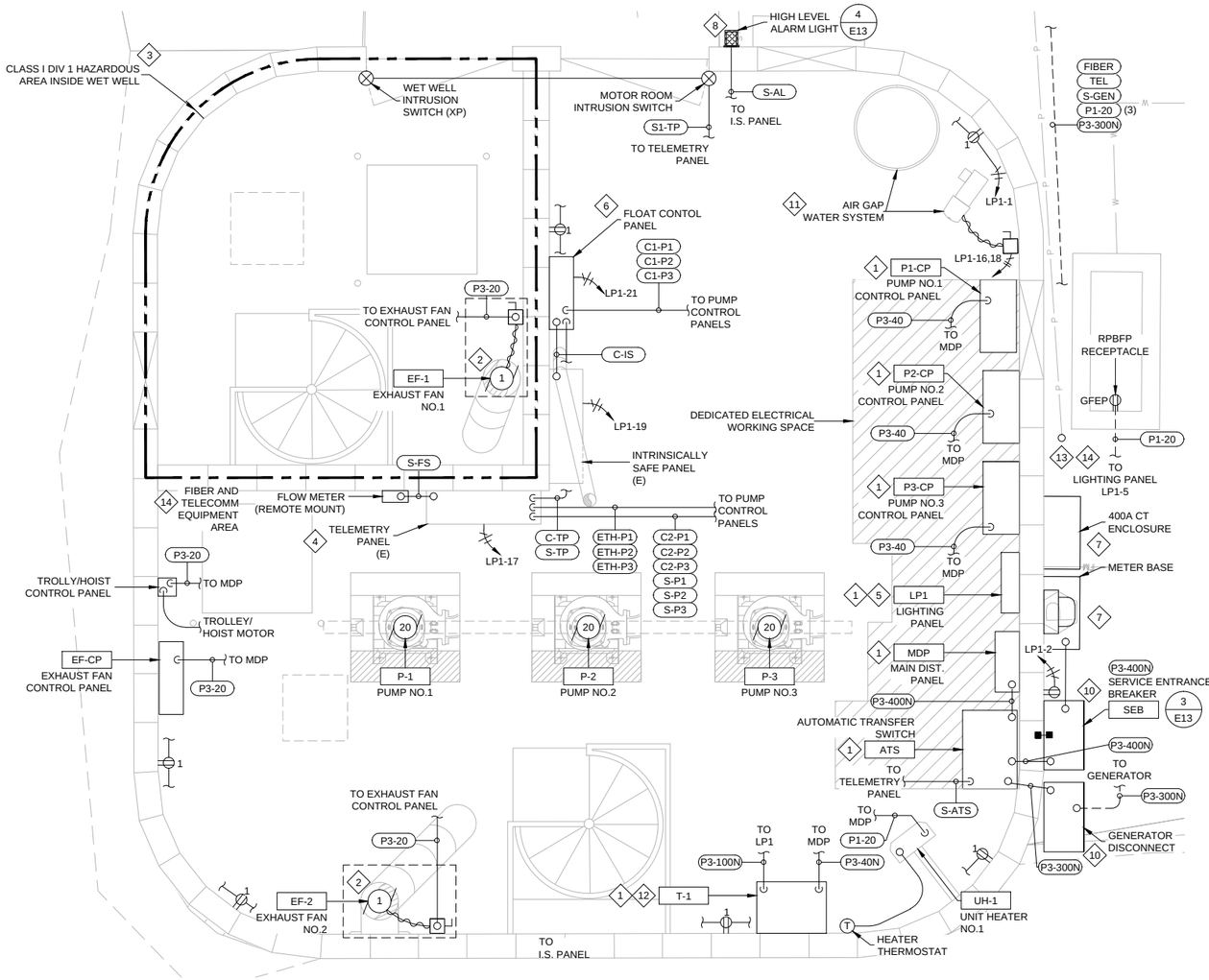
ELECTRICAL DEMOLITION PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

SHEET E5 OF 39

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE NEW ELECTRICAL PANELS AND ALL REQUIRED RACEWAY SHOWN ON DRAWINGS.
2. EXHAUST FAN MOTOR AND DISCONNECT LOCATED ON ROOF OF BUILDING, PROVIDE RACEWAY TO FAN CONTROL PANEL.
3. HAZARDOUS LOCATIONS - CLASS I, DIV 1 PER NFPA 820. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.
4. CONTRACTOR SHALL PROVIDE NEW ALLEN BRADLEY PANELVIEW 700, I/O CARDS AND INSTALLATION REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM.
5. CONNECT NEW AND EXISTING ELECTRICAL EQUIPMENT TO NEW PANEL LP1. PROVIDE NEW RACEWAY AS REQUIRED.
6. CONTRACTOR SHALL PROVIDE NEW NEMA 12 FLOAT CONTROL PANEL.
7. DEMO EXISTING UTILITY SERVICE EQUIPMENT AND REPLACE WITH NEW CT ENCLOSURE AND METER BASE TO MEET CURRENT PSE REQUIREMENTS. COORDINATE WITH PUGET SOUND ENERGY.
8. PROVIDE VANDAL PROOF RED LED HIGH LEVEL ALARM LIGHT. WIRE TO TELEMETRY PANEL TO INDICATE HIGH LEVEL ALARM.
9. REPLACE EXISTING WET WELL LEVEL TRANSMITTER, LEVEL FLOATS AND OPERATOR IN TROUBLE PUSH BUTTONS. REPLACE EXISTING PUMP ROOM FLOOD SWITCH AND OPERATOR IN TROUBLE PUSH BUTTON.
10. ALL ELECTRICAL EQUIPMENT SHALL ALL BE INSTALLED ABOVE THE 100 YR. FLOOD LEVEL.
11. PROVIDE ELECTRICAL DISCONNECT FOR AIR GAP WATER SYSTEM. DISCONNECT PREVENTS THE WATER SYSTEM FROM RUNNING IN AUTO WHEN POWER IS OFF.
12. CONTRACTOR SHALL PROVIDE EQUIPMENT REQUIRED TO WALL MOUNT ELECTRICAL TRANSFORMER T-1 ABOVE THE 100 YR. FLOOD LEVEL.
13. INTERCEPT AND EXTEND PS#8 FEEDER TO NEW 480V DISTRIBUTION PANEL. PROVIDE JUNCTION BOX FOR SPLICING OF NEW TO EXISTING CONDUCTORS.
14. TELECOMMUNICATIONS NOTE: CONTRACTOR SHALL PROVIDE (2) 2" SCH 40 PVC CONDUIT ('FIBER' AND 'TEL') FROM PUMP BUILDING TO NEW HANDHOLES AS INDICATED ON PLAN. CITY WILL CONTRACT WITH TELECOMM PROVIDER TO PROVIDE RACEWAY TO THIS POINT AND TO PROVIDE FIBER OPTIC CABLING AND SERVICE TO THE PUMP BUILDING. TELEPHONE SHALL BE MAINTAINED AS SPARE AND MAY BE STUBBED AND CAPPED AT EXTERIOR. CONTRACTOR TO EXTEND RACEWAY TO NEW TELECOMM AREA FOR DATA SERVICE TO TELEMETRY PANEL, AND REINSTALL TELEMETRY ANTENNA ON RENOVATED ROOF. CITY PROGRAMMER SHALL CONFIGURE COMMUNICATIONS TO WATER PLANT OVER FIBER OPTIC MEDIA, AND TELEMETRY RADIO AS REDUNDANT COMMUNICATIONS.



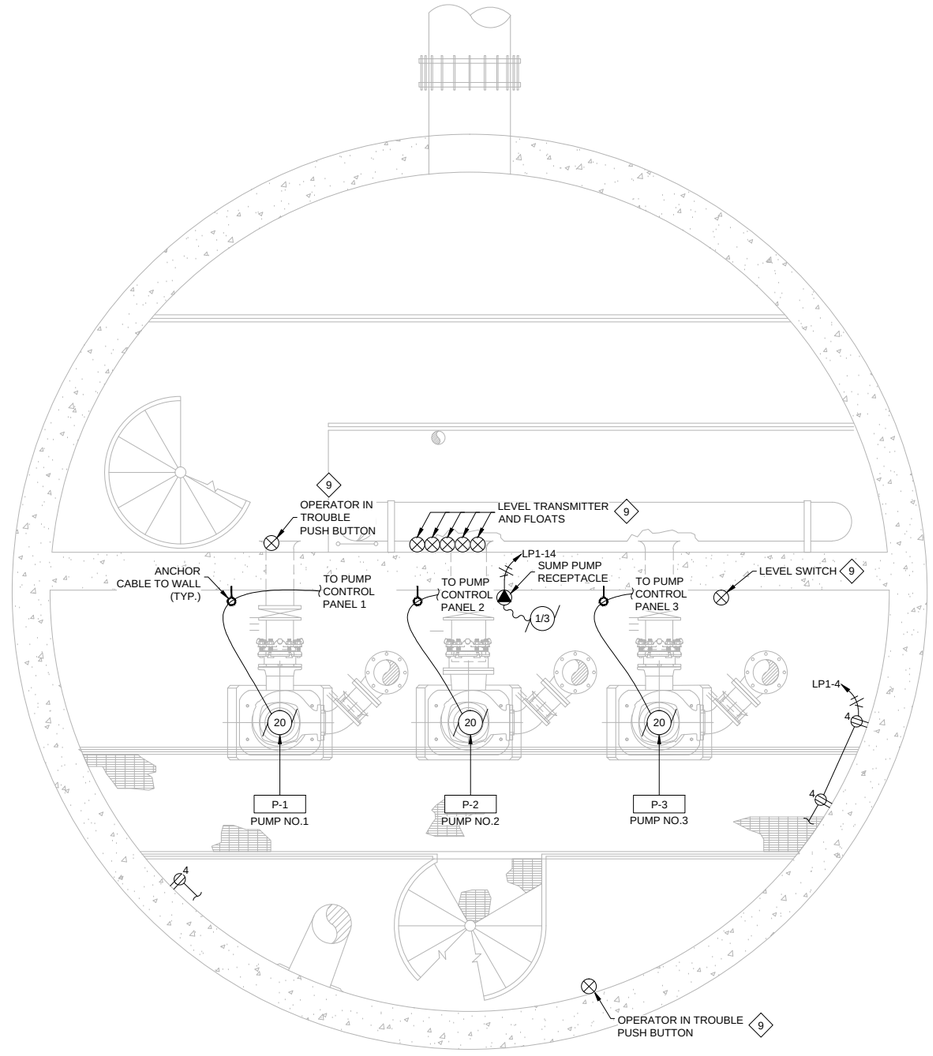
MOTOR ROOM FLOOR - POWER & CONTROLS PLAN

SCALE: 1" = 2'

SCALE HORIZONTAL SCALE 2 0 2 4 FEET

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. REPLACE ALL EXISTING RECEPTACLES WITH NEW GFCI WITH WET LOCATION COVERS. PROVIDE STAINLESS STEEL COVER PLATES FOR ALL SPARE JUNCTION BOXES IN EXISTING WALLS.



PUMP ROOM & WET WELL - POWER & CONTROLS PLAN

SCALE: 1" = 2'

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2
POWER AND CONTROLS PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

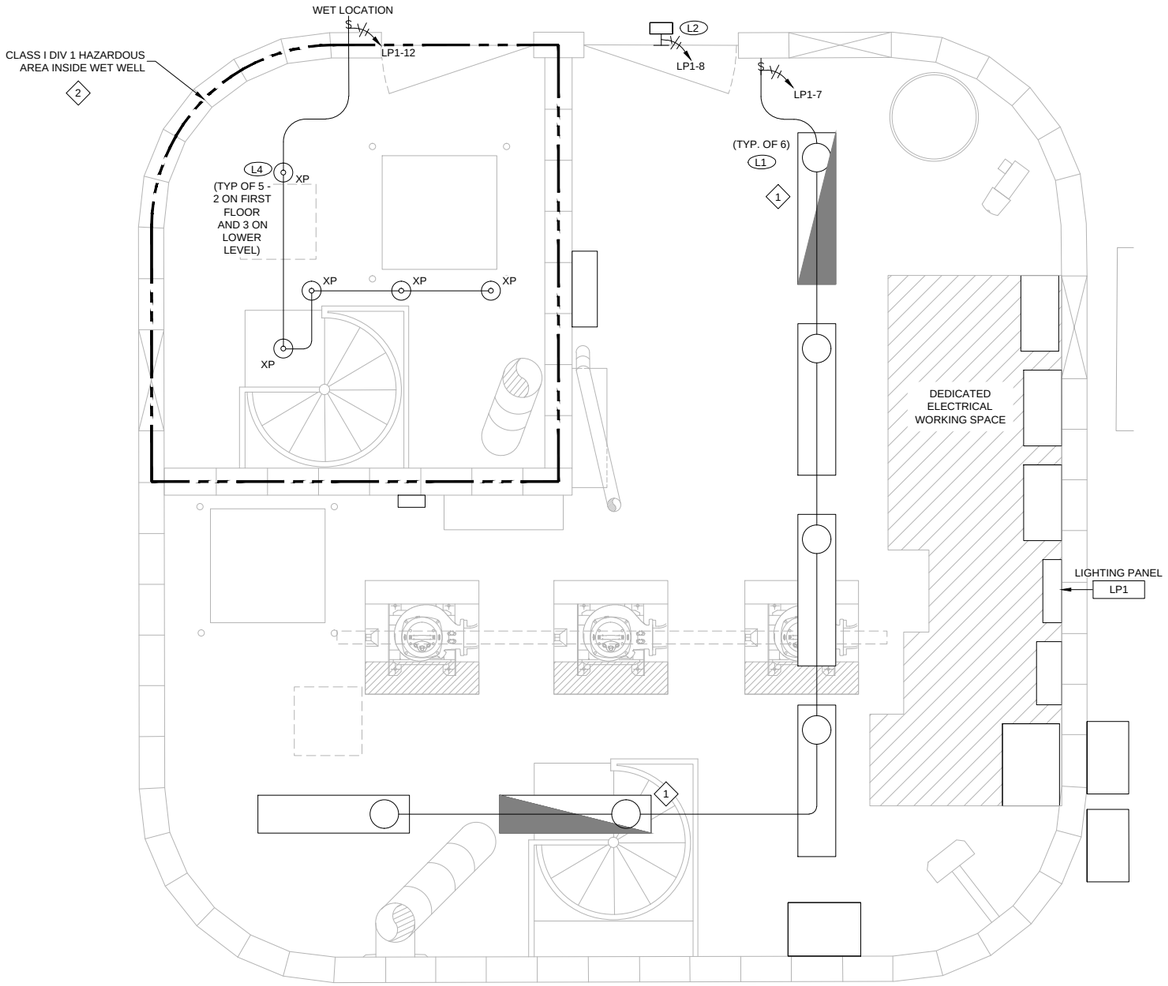
SHEET E6 OF 39

GENERAL LIGHTING NOTES:

1. DEMO ALL EXISTING LIGHTING AND REPLACE WITH NEW FIXTURES PER LIGHTING SCHEDULE. COORDINATE ALL FINAL FIXTURE LOCATIONS WITH MECHANICAL TO AVOID CONFLICTS.
2. LIGHTING CIRCUITS SHALL BE #12 AWG COPPER. ROUTING SHOWN ON PLANS IS SCHEMATIC. ROUTE ALL LIGHTING CIRCUITS TO LIGHTING PANEL, SEE SCHEDULES. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
3. PROVIDE UNSWITCHED POWER CIRCUIT TO ALL EMERGENCY FIXTURES. CONTRACTOR MAY USE EXISTING RECESSED JBOXES AND RACEWAY WHERE IN SUITABLE CONDITION. REPLACE WHERE NECESSARY. PROVIDE STAINLESS STEEL COVER ON ALL SPARE RECESSED JBOXES.

KEY NOTES:

1. PROVIDE LIGHT FIXTURE WITH EMERGENCY BATTERY PACK WHERE INDICATED.
2. HAZARDOUS LOCATIONS - CLASS I, DIV 1 PER NFPA 820. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.



SCALE HORIZONTAL SCALE: 2 0 2 4 FEET

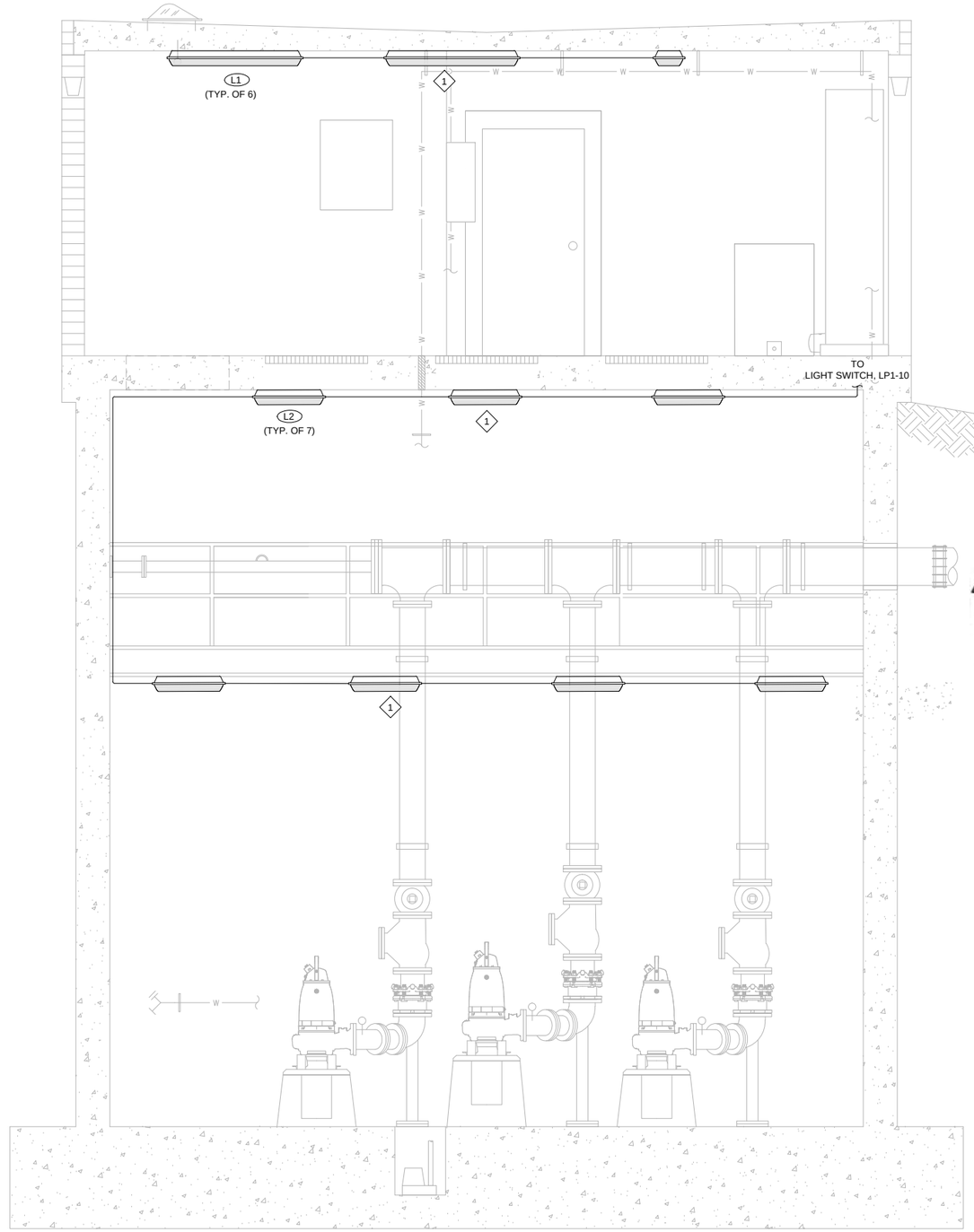
MOTOR ROOM FLOOR - LIGHTING PLAN

SCALE: 1" = 2'

FIXTURE SCHEDULE					
ID	DESCRIPTION	MOUNTING	LAMPS	VA	MANUFACTURER / PART NO.
L1	4' LED STRIP WET LOCATION	SURFACE MOUNT	LED	50	LITHONIA FEM4 LED SERIES #FEM4-4L/35 IMAFL OR EQUAL
L2	2' LED STRIP, WET LOCATION	PENDANT MOUNT/JBOX	LED	40	LITHONIA DMW2 L24-4000LM-AFL-MD-MV-40K-JSB, OR EQUAL
L3	EXTERIOR WALL SCONCE - DOORS	SURFACE MOUNT	LED	47	LITHONIA WSTM LED-2A-40K-MV-DDBXD-PE, OR EQUAL
L4	HAZARDOUS LOCATION FIXTURE	SURFACE MOUNT	MH	70	CROUSE HINDS EVLS HAZARD GARD SERIES #EVLS-A-9-2-07-1-120-IR OR EQUAL
L5	AREA LIGHT, POLE MOUNT	POLE MOUNT	LED	150	LITHONIA #DSX0-LED-40C-1000-40K-MV-DDBXD-PE, 20' POLE, OR EQUAL

LIGHTING FIXTURE SCHEDULE

SCALE: NONE



PUMP ROOM - LIGHTING PLAN

SCALE: 1" = 2'

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6-8-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2
LIGHTING PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

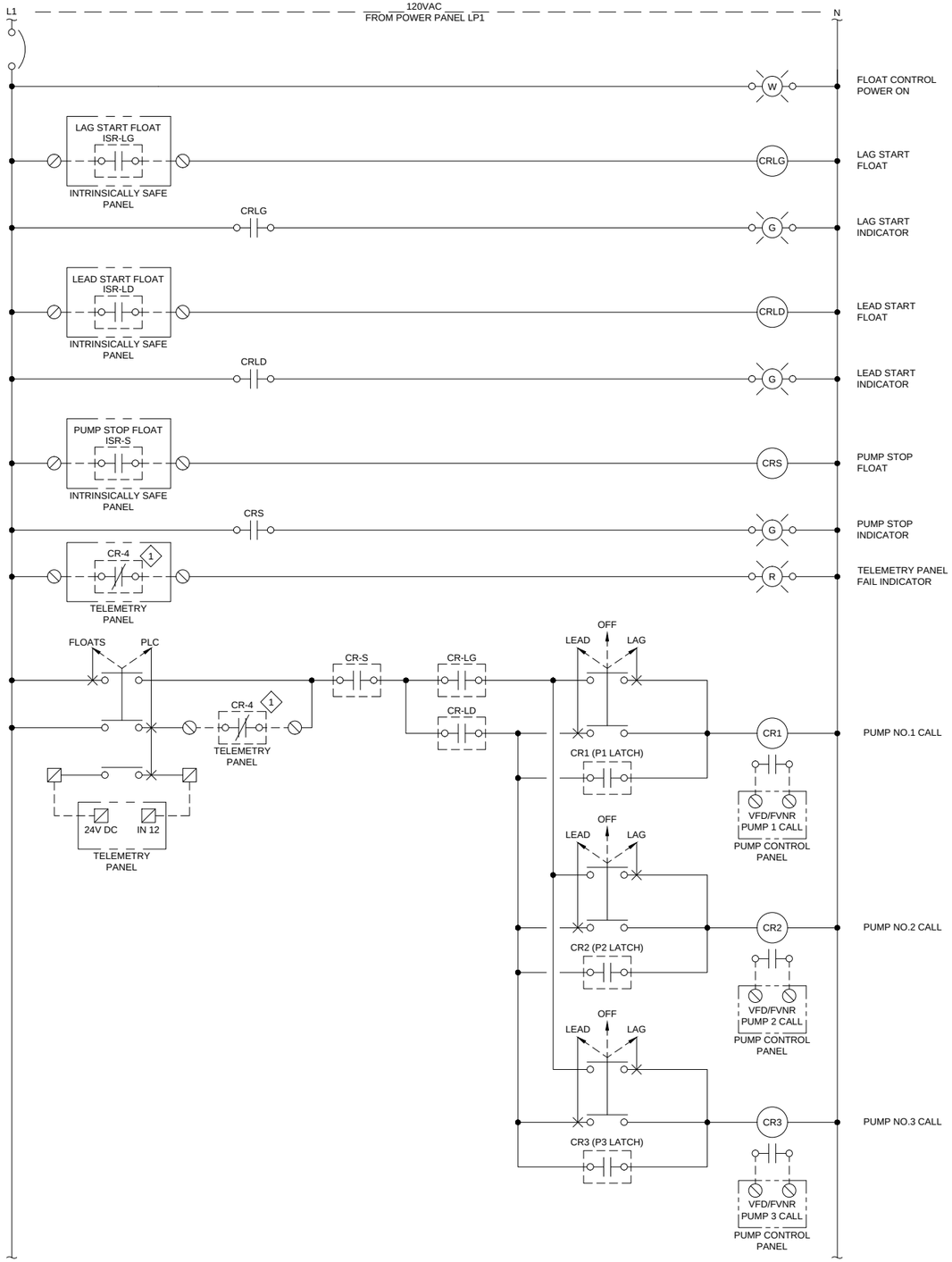
SHEET E7 OF 39

GENERAL NOTES:

1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.

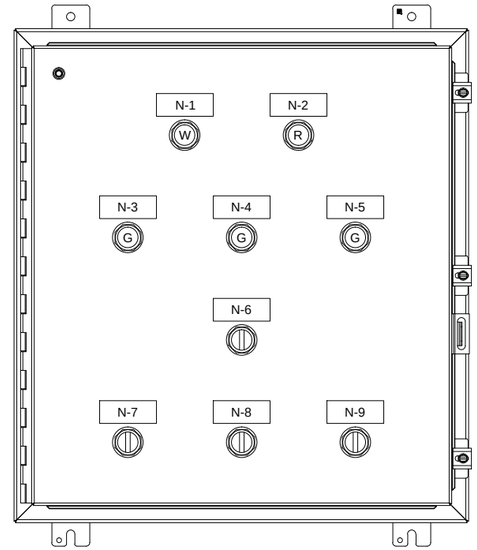
KEY NOTES:

1. NORMALLY CLOSED CONTACT. PLC TO KEEP OUTPUT ON (CONTACT OPEN) DURING NORMAL PLC OPERATION. IF THE PLC FAILS OR FAULTS, THE OUTPUT WILL DE-ENERGIZE AND AUTOMATICALLY ENABLE THE BACKUP FLOAT CONTROL.



PANEL NAMEPLATE SCHEDULE

LABEL	ENGRAVING TEXT
N-1	FLOAT CONTROL PANEL / POWER (WHITE)
N-2	TELEMETRY PANEL FAIL (RED)
N-3	PUMP STOP FLOAT (GREEN)
N-4	LEAD START FLOAT (GREEN)
N-5	LAG START FLOAT (GREEN)
N-6	FLOAT / PLC
N-7	PUMP NO.1 / LEAD - OFF - LAG
N-8	PUMP NO.2 / LEAD - OFF - LAG
N-9	PUMP NO.3 / LEAD - OFF - LAG



FLOAT CONTROL PANEL - WIRING DIAGRAM & ELEVATION

SCALE: NONE

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CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO.2
FLOAT CONTROL PANEL

DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

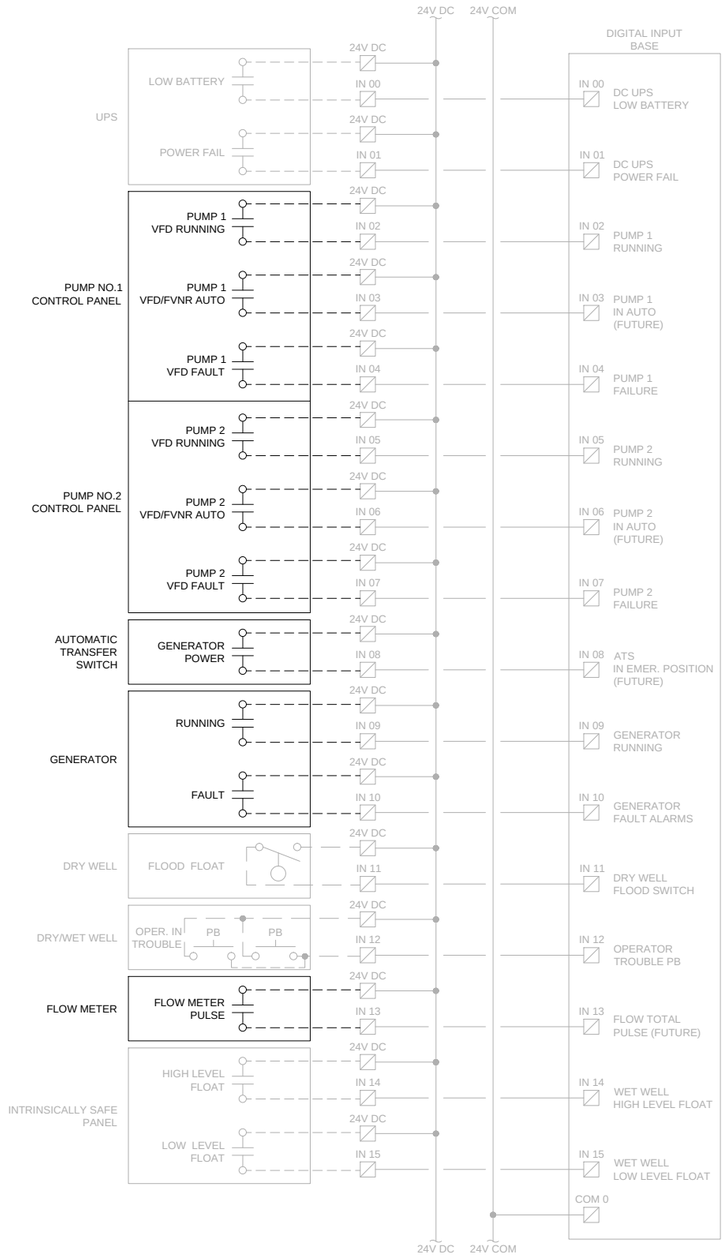
SHEET E8 OF 39

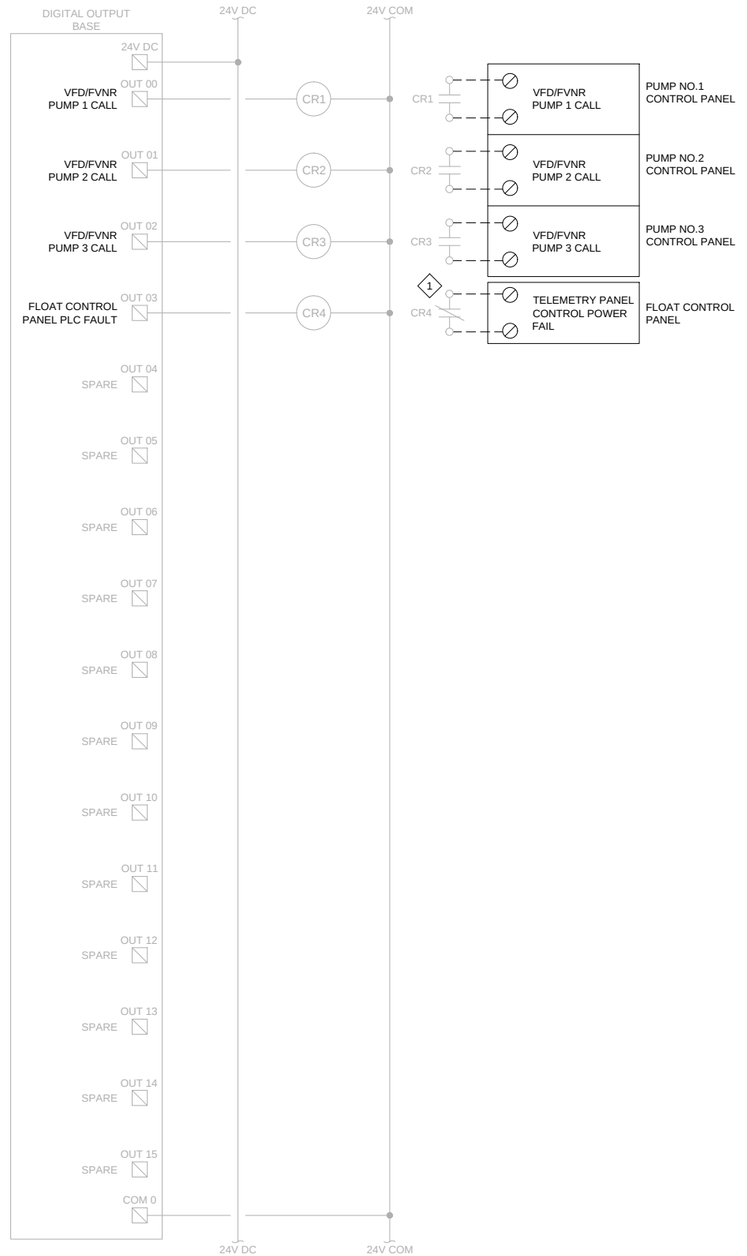
GENERAL NOTES:

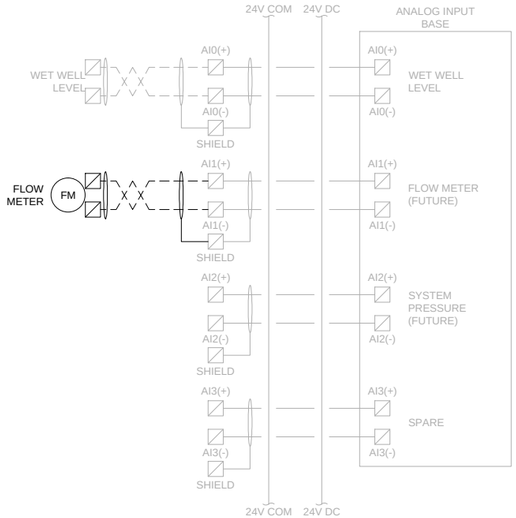
1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.

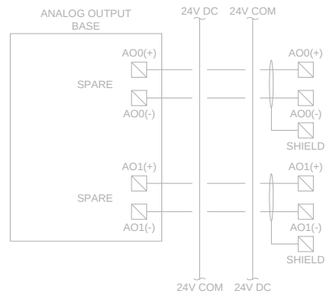
KEY NOTES:

1. PLC OUTPUT IS ENERGIZED DURING NORMAL PLC OPERATING CONDITIONS.









TELEMETRY PANEL I/O WIRING DIAGRAMS - EXISTING

SCALE: NONE

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
TELEMETRY PANEL ADDITIONS – SH.1

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

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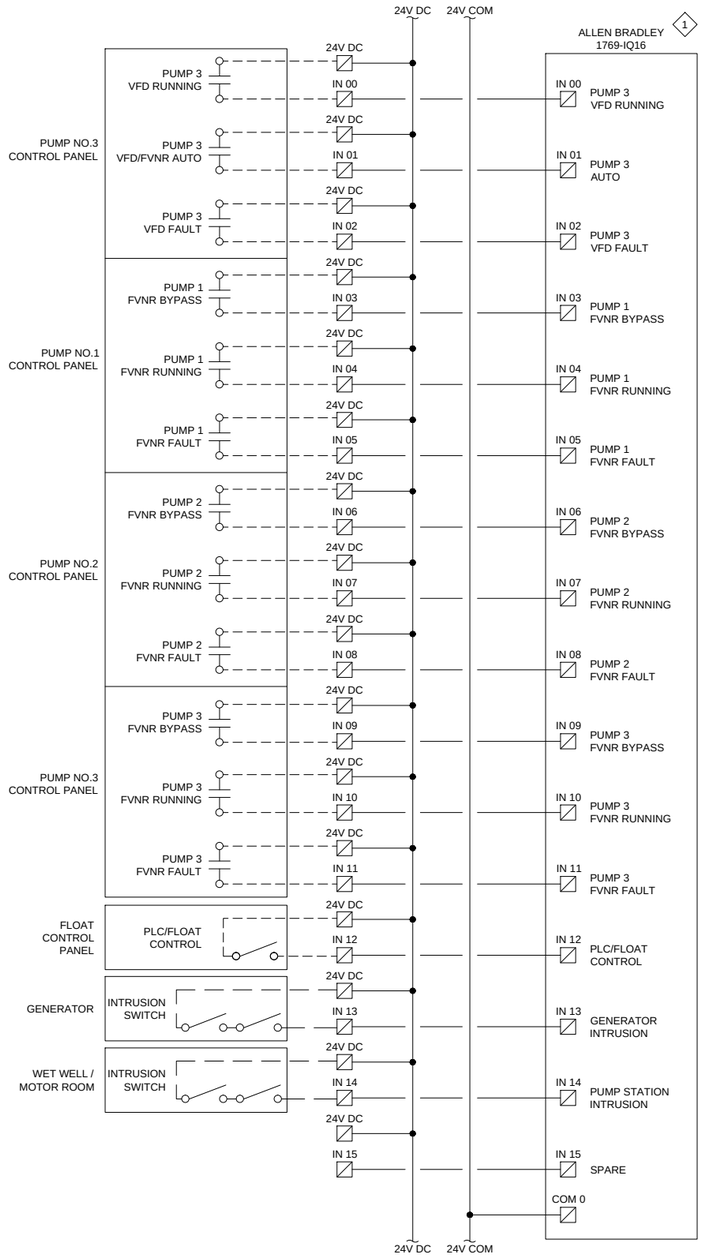
SHEET E9 OF 39

GENERAL NOTES:

1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.



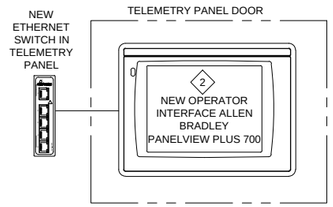
TELEMETRY PANEL I/O WIRING DIAGRAMS - NEW

SCALE: NONE

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE NEW I/O CARD, OPERATOR INTERFACE AND 8 PORT NETWORK SWITCH. MODIFICATIONS TO EXISTING TELEMETRY PANEL AND INSTALLATION BY CITY PROGRAMMER. PROIVDE ALL MODIFICATIONS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. NETWORK SWITCH WILL BE CONNECTED TO ALLEN BRADLEY POWERFLEX VFD'S FOR MONITORING AND SPEED CONTROL THROUGH ETHERNET PROTOCOL.

2. PLC AND OPERATOR INTERFACE PROGRAMMING WILL BE PROVIDED BY CITY'S PROGRAMMER, L2 SYSTEMS, UNDER FORCE ACCOUNT. SEE SPECIFICATIONS.



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DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
TELEMETRY PANEL ADDITIONS – SH.2

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

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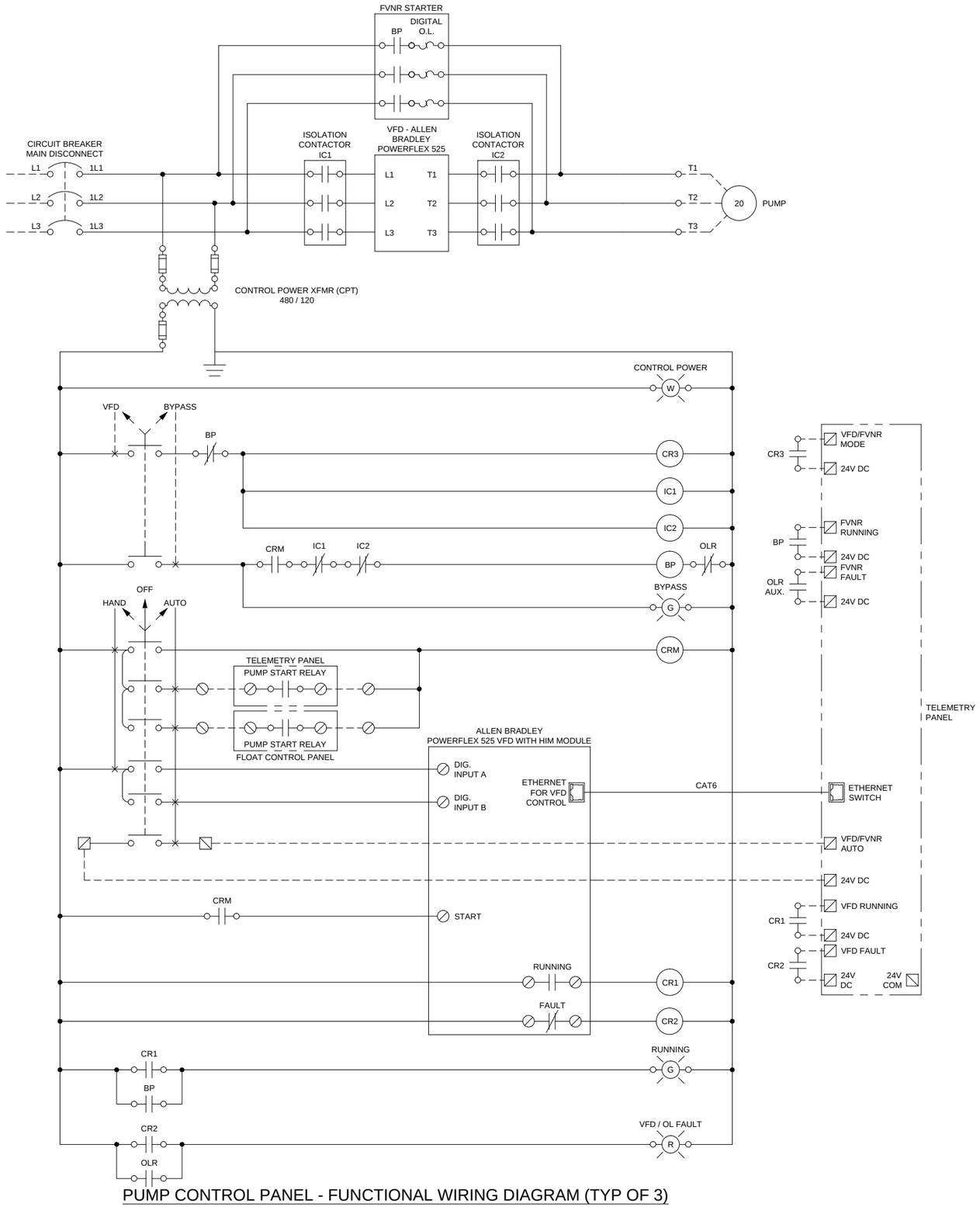
SHEET E10 OF 39



PUMP CONTROL PANEL - FUNCTIONAL WIRING DIAGRAM (TYP OF 3)

SCALE: NONE

BID DOCUMENTS

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6-8-2016

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CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.2

PUMP CONTROL PANEL WIRING DIAGRAM

DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079A

SHEET E11 OF 39

PANEL: MDP			PANEL SCHEDULE								PROJECT: PUMP STATION NO.2	
480Y/277V, 3Ph, 4W.			400A Bus				400A M.C.B.				SURFACE MOUNTED	
CKT NO	DESCRIPTION / LOCATION	LOAD (VA)	LOAD TYPE	C.B. AMP	C.B. POLE	PHASE	C.B. POLE	C.B. AMP	LOAD TYPE	LOAD (VA)	DESCRIPTION / LOCATION	CKT NO
1	PUMP NO.1 - CONTROL PANEL (20HP)	7,474	LM	40	3	A	3	40	M	7,474	PUMP NO.2 CONTROL PANEL (20HP)	2
3	---	7,474	LM	---	---	B	---	---	M	7,474	---	4
5	---	7,474	LM	---	---	C	---	---	M	7,474	---	6
7	PUMP NO.3 - CONTROL PANEL (20HP)	7,474	M	40	3	A					SPACE	8
9	---	7,474	M	---	---	B					SPACE	10
11	---	7,474	M	---	---	C					SPACE	12
13	EXHAUST FAN CONTROL PANEL	1,164	M	20	3	A	3	20	M	609	TROLLY / HOIST - CONTROL PANEL	14
15	---	1,164	M	---	---	B	---	---	M	609	---	16
17	---	1,164	M	---	---	C	---	---	M	609	---	18
19	PUMP STATION NO.8	24,109	M	100	3	A	3	40	S		LIGHTING PANEL LP1 TRANSFORMER	20
21	---	24,109	M	---	---	B	---	---	S		---	22
23	---	24,109	M	---	---	C	---	---	S		---	24
25	UNIT HEATER NO.1	1,666	H	15	3	A	3	30	G		TVSS (BREAKER SIZE AS REQ'D)	26
27	---	1,666	H	---	---	B	---	---	G		---	28
29	---	1,666	H	---	---	C	---	---	G		---	30

TOTAL CONNECTED LOAD: PH A 49,970 VA 180.3 AMPS
TOTAL CONNECTED LOAD: PH B 49,970 VA 180.3 AMPS
TOTAL CONNECTED LOAD: PH C 49,970 VA 180.3 AMPS

DATE: June 08, 2016

MAX PHASE CONNECTED LOAD: PH A 49,970 VA
TOTAL CONNECTED LOAD (3 x MAX): 149.9 kVA 180.3 AMPS

PANEL RATING: 42,000 AIC
TOTAL DEMAND LOAD: 168.1 kVA 202.2 AMPS

		CONNECTED LOADS	SUBFED LOADS [S]	TOTAL LOADS	DEMAND FACTOR	DEMAND LOAD
G	GENERAL (NON-CONTINUOUS)	0 VA	4,000 VA	4,000 VA	100%	4,000 VA
L	LIGHTING	0 VA	950 VA	950 VA	125%	1,188 VA
R	RECEPTACLES - UP TO 10 kVA	0 VA	2,160 VA	2,160 VA	100%	2,160 VA
	OVER 10 kVA		0 VA	0 VA	50%	0 VA
K	KITCHEN	0 VA	0 VA	0 VA	100%	0 VA
H	HEATING	4,998 VA	2,500 VA	7,498 VA	100%	7,498 VA
M	MOTORS	122,490 VA	2,744 VA	125,234 VA	100%	125,234 VA
LM	LARGEST MOTOR	22,422 VA	0 VA	22,422 VA	125%	28,028 VA
WH	WATER HEATER	0 VA	0 VA	0 VA	100%	0 VA
C	CONTINUOUS (GENERAL LOAD)	0 VA	0 VA	0 VA	125%	0 VA
N	NON-COINCIDENT	0 VA	0 VA	0 VA	0%	0 VA
	TOTAL:	149,910 VA	12,354 VA	162,264 VA		168,107 VA

NOTES:
1. NEMA 12 ENCLOSURE
2.
3.
4.
5.
6.

MDP PANEL SCHEDULE
SCALE: NONE

PANEL: LP1			PANEL SCHEDULE								PROJECT: PUMP STATION NO.2	
208Y/120V, 3Ph, 4W.			250A Bus				70A M.C.B.				SURFACE MOUNTED	
CKT NO	DESCRIPTION / LOCATION	LOAD (VA)	LOAD TYPE	C.B. AMP	C.B. POLE	PHASE	C.B. POLE	C.B. AMP	LOAD TYPE	LOAD (VA)	DESCRIPTION / LOCATION	CKT NO
1	RECEPTACLES - MOTOR ROOM	1,080	R	20	1	A	1	20	R	180	RECEPTACLES - UTLITY SERVICE	2
3	RECEPTACLES	180	R	20	1	B	1	20	R	540	RECEPTACLES - DRY WELL	4
5	RECEPTACLES - RBP VALVE	1,000	H	20	1	C	1	20	R	180	RECEPTACLES - E. LOU. MT.	6
7	LIGHTS - MOTOR ROOM	200	L	20	1	A	1	20	L	50	LIGHTS - EXTERIOR	8
9	LIGHTS - GENERATOR	150	L	20	1	B	1	20	L	300	LIGHTS - DRY WELL	10
11	SPARE			20	1	C	1	20	L	250	LIGHTS - WET WELL	12
13	GENERATOR - BATTERY CHARGER	1,000	G	20	1	A	1	20	M	1,080	SUMP PUMP	14
15	GENERATOR - HEATER	1,500	H	20	1	B	2	20	M	832	AIR GAP WATER SYSTEM	16
17	TELEMETRY PANEL	1,000	G	20	1	C	---	---	M	832	---	18
19	INTRINSICALLY SAFE PANEL	1,000	G	20	1	A	1	20			SPARE	20
21	FLOAT CONTROL PANEL	1,000	G	20	1	B	1	20			SPARE	22
23	SPARE			20	1	C	1	20			SPARE	24
25	SPARE			20	1	A	1	20			SPARE	26
27	SPARE			20	1	B	1	20			SPARE	28
29	SPARE			20	1	C	1	20			SPARE	30

TOTAL CONNECTED LOAD: PH A 4,590 VA 38.3 AMPS
TOTAL CONNECTED LOAD: PH B 4,502 VA 37.5 AMPS
TOTAL CONNECTED LOAD: PH C 3,262 VA 27.2 AMPS

DATE: June 07, 2016

MAX PHASE CONNECTED LOAD: PH A 4,590 VA
TOTAL CONNECTED LOAD (3 x MAX): 13.8 kVA 38.3 AMPS

PANEL RATING: 22,000 AIC
TOTAL DEMAND LOAD: 12.6 kVA 35.0 AMPS

		CONNECTED LOADS	SUBFED LOADS [S]	TOTAL LOADS	DEMAND FACTOR	DEMAND LOAD
G	GENERAL (NON-CONTINUOUS)	4,000 VA	0 VA	4,000 VA	100%	4,000 VA
L	LIGHTING	950 VA	0 VA	950 VA	125%	1,188 VA
R	RECEPTACLES - UP TO 10 kVA	2,160 VA	0 VA	2,160 VA	100%	2,160 VA
	OVER 10 kVA		0 VA	0 VA	50%	0 VA
K	KITCHEN	0 VA	0 VA	0 VA	100%	0 VA
H	HEATING	2,500 VA	0 VA	2,500 VA	100%	2,500 VA
M	MOTORS	2,744 VA	0 VA	2,744 VA	100%	2,744 VA
LM	LARGEST MOTOR	0 VA	0 VA	0 VA	125%	0 VA
WH	WATER HEATER	0 VA	0 VA	0 VA	100%	0 VA
C	CONTINUOUS (GENERAL LOAD)	0 VA	0 VA	0 VA	125%	0 VA
N	NON-COINCIDENT	0 VA	0 VA	0 VA	0%	0 VA
	TOTAL:	12,354 VA	0 VA	12,354 VA		12,592 VA

NOTES:
1. NEMA 12 ENCLOSURE
2.
3.
4.
5.
6.

LP1 PANEL SCHEDULE
SCALE: NONE

SINGLE PHASE RACEWAY & CONDUCTORS						THREE PHASE RACEWAY & CONDUCTORS					
FEEDER ID	AMPERAGE	# OF SETS	CONDUIT	COND. EACH	GROUND COND.	FEEDER ID	AMPERAGE	# OF SETS	CONDUIT	COND. EACH	GROUND COND.
P1-20	20A	(1)	3/4"	(2) #12	(1) #12	P3-20	20A	(1)	3/4"	(3) #12	(1) #12
P1-25	25A	(1)	3/4"	(2) #12	(1) #12	P3-25	25A	(1)	3/4"	(3) #12	(1) #12
P1-30	30A	(1)	3/4"	(2) #10	(1) #10	P3-30	30A	(1)	3/4"	(3) #10	(1) #10
P1-35	35A	(1)	1"	(2)#8	(1) #10	P3-35	35A	(1)	1"	(3)#8	(1) #10
P1-40	40A	(1)	1"	(2) #8	(1) #10	P3-40	40A	(1)	1"	(3) #8	(1) #10
P1-45	45A	(1)	1"	(2)#6	(1) #10	P3-45	45A	(1)	1"	(3) #6	(1) #10
P1-50	50A	(1)	1"	(2) #6	(1) #10	P3-50	50A	(1)	1"	(3) #6	(1) #10
P1-60	60A	(1)	1"	(2) #4	(1) #10	P3-60	60A	(1)	1-1/4"	(3) #4	(1) #10
P1-70	70A	(1)	1"	(2) #4	(1) #8	P3-70	70A	(1)	1-1/4"	(3) #4	(1) #8
P1-80	80A	(1)	1-1/4"	(2) #3	(1) #8	P3-80	80A	(1)	1-1/4"	(3) #3	(1) #8
P1-90	90A	(1)	1-1/4"	(2) #2	(1) #8	P3-90	90A	(1)	1-1/4"	(3) #2	(1) #8
P1-100	100A	(1)	1-1/4"	(2) #1	(1) #8	P3-100	100A	(1)	1-1/2"	(3) #1	(1) #8
P1-125	125A	(1)	1-1/4"	(2) #1	(1) #6	P3-125	125A	(1)	1-1/2"	(3) #1	(1) #6
P1-150	150A	(1)	1-1/2"	(2) #1/0	(1) #6	P3-150	150A	(1)	2"	(3) #1/0	(1) #6
P1-175	175A	(1)	2"	(2) #2/0	(1) #6	P3-175	175A	(1)	2"	(3) #2/0	(1) #6
P1-200	200A	(1)	2"	(2) #3/0	(1) #6	P3-200	200A	(1)	2"	(3) #3/0	(1) #6
P1-225	225A	(1)	2"	(2) #4/0	(1) #4	P3-225	225A	(1)	2-1/2"	(3) #4/0	(1) #4
P1-250	250A	(1)	2-1/2"	(2) #250	(1) #4	P3-250	250A	(1)	2-1/2"	(3) #250	(1) #4
P1-300	300A	(1)	2-1/2"	(2) #350	(1) #4	P3-300	300A	(1)	3"	(3) #350	(1) #4
P1-350	350A	(1)	3"	(2)#500	(1) #3	P3-350	350A	(1)	3"	(3) #500	(1) #3
P1-400	400A	(2)	2"	(3) #3/0	(1) #3	P3-400	400A	(2)	2"	(3) #3/0	(1) #3

NOTES:
1. FEEDER ID FOLLOWED BY THE SUFFIX "N" INDICATES NEUTRAL CONDUCTOR. PROVIDE ADDITIONAL NEUTRAL CONDUCTOR SIZED TO MATCH PHASE CONDUCTORS.
2. CONDUCTOR AMPACITY BASED ON NEC TABLE 310.16.
3. CONDUIT FILL BASED ON NEC ANNEX C, TABLE C.1 FOR THHN TYPE CONDUCTORS. CONTRACTOR SHALL PROVIDE ADJUSTMENTS AS NECESSARY FOR OTHER CONDUCTOR TYPES.
4. CONTRACTOR MAY COMBINE BRANCH CIRCUITS IN COMMON RACEWAY UP TO SIX CURRENT CARRYING CONDUCTORS. ADJUSTMENT FACTORS SHALL BE APPLIED PER NEC TABLE 310.15(B)(2)(a).
5. MINIMUM CONDUIT SIZE FOR UNDERGROUND RACEWAY IS 1 INCH.

RACEWAY & CONDUCTOR SCHEDULE
SCALE: NONE

ID	VOLTAGE	CONDUIT	WIRE QTY	SIZE	DESCRIPTION
C-IS	120VAC	3/4"	8	#14 AWG	FLOATS PANEL - I.S. PANEL - LEAD/LAG/STOP FLOAT STATUS
C-TP	120VAC	3/4"	4	#14 AWG	FLOATS PANEL - TELEMETRY PANEL - OVERIDE SIGNAL
C1-P1	120VAC	3/4"	2	#14 AWG	FLOATS PANEL - PUMP NO.1 - START COMMAND
C1-P2	120VAC	3/4"	2	#14 AWG	FLOATS PANEL - PUMP NO.2 - START COMMAND
C1-P3	120VAC	3/4"	2	#14 AWG	FLOATS PANEL - PUMP NO.3 - START COMMAND
C2-P1	120VAC	3/4"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.1 - START COMMAND
C2-P2	120VAC	3/4"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.2 - START COMMAND
C2-P3	120VAC	3/4"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.3 - START COMMAND
S-P1	24VDC	1"	14	#14 AWG	TELEMETRY PANEL - PUMP NO.1 VFD/FVNR - AUTO/RUN/FAULT/BYPASS
S-P2	24VDC	1"	14	#14 AWG	TELEMETRY PANEL - PUMP NO.2 VFD/FVNR - AUTO/RUN/FAULT/BYPASS
S-P3	24VDC	1"	14	#14 AWG	TELEMETRY PANEL - PUMP NO.3 VFD/FVNR - AUTO/RUN/FAULT/BYPASS
S-ATS	24VDC	1"	10	#14 AWG	TELEMETRY PANEL - ATS/GEN - UTILITY/RUN/FAULT/INTR. STATUS
S-GEN	24VDC	1"	10	#14 AWG	GENERATOR - ATS - RUNNING/FAULT/INTRUSION/COMMAND STATUS
S-FM	24VDC	1"	2	FC	FLOW METER - ELECTRODE W/EMPTY PIPE DET. & COIL FACTORY CABLE
S-AL	24VDC	3/4"	4	#14 AWG	I.S. PANEL - ALARM LIGHT - HIGH LEVEL ALARM LIGHT
S-FS	24VDC	3/4"	4	#14 AWG	TELEMETRY PANEL - FLOW METER NO.1 - 24VDC POWER/PULSE SIGNAL
---	---	---	1	#18 TSP	TELEMETRY PANEL - FLOW METER NO.1 - FLOW SIGNAL
S-TP	24VDC	3/4"	4	#14 AWG	FLOATS PANEL - TELEMETRY PANEL - FLOAT/PLC STATUS
S1-TP	24VDC	3/4"	4	#14 AWG	TELEMETRY PANEL - WET WELL & MOTOR ROOM INTRUSION
ETH-P1	---	1"	1	CAT 6	TELEMETRY PANEL - PUMP NO.1 - COMMUNICATION CABLE
ETH-P2	---	1"	1	CAT 6	TELEMETRY PANEL - PUMP NO.2 - COMMUNICATION CABLE
ETH-P3	---	1"	1	CAT 6	TELEMETRY PANEL - PUMP NO.3 - COMMUNICATION CABLE
FIBER	---	2"	---	---	FIBER CABLING BY WAVE BROADBAND
TEL	---	2"	---	---	FUTURE TELEPHONE CONDUIT

RACEWAY SCHEDULE - CONTROLS
SCALE: NONE

Z engineers
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Wilson SURVEY/ENGINEERING

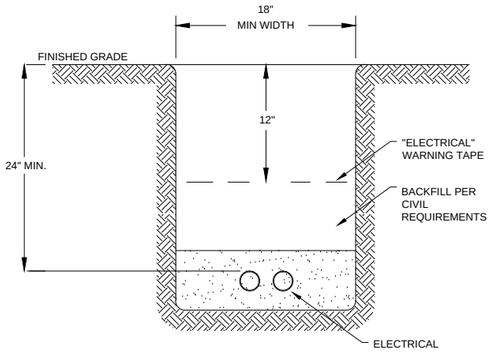
BRIAN L. ZIESMER STATE OF WASHINGTON 37463 REGISTERED PROFESSIONAL ENGINEER
6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
ELECTRICAL SCHEDULES

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

SHEET E12 OF 39

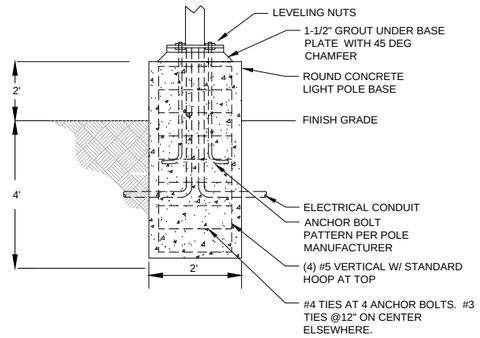


SECONDARY AND FEEDER RACEWAY
SCALE: NONE

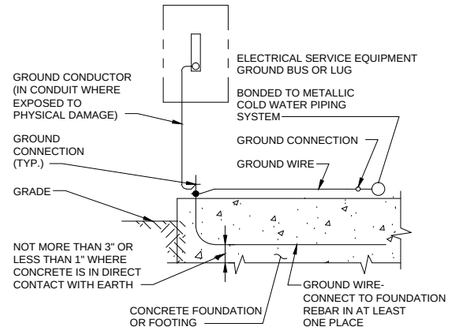
GENERAL NOTES:

1. MAINTAIN 12" MIN. SEPARATION BETWEEN WATER UTILITIES.
2. PROVIDE 2" SEPARATION BETWEEN MULTIPLE CONDUITS AND NEAREST SIDEWALL.
3. TRENCH WIDTH TO ACCOMMODATE ALL CONDUITS AND SERVICES. MINIMUM WIDTH 18".
4. BACKFILL IN ACCORDANCE WITH UTILITY AND CIVIL STANDARDS.
5. CONDUIT SHALL BE BEDDED W/SAND (3" BASE & 3" COVER MIN).

1 / --- ELECTRICAL RACEWAY AND TRENCHING DETAILS
SCALE: NONE

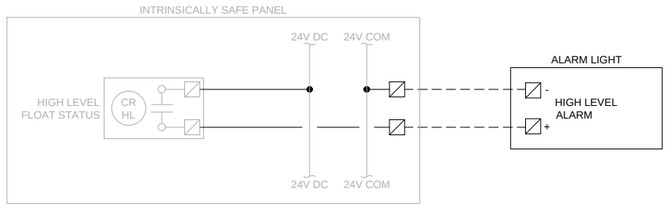


2 / --- LIGHT POLE BASE DETAIL
SCALE: NONE



GENERAL NOTE: CONTRACTOR SHALL PROVIDE ALL REQUIRED GROUNDING AND BONDING TO MEET REQUIREMENTS OF NEC ARTICLE 250.

3 / --- GROUNDING SYSTEM DETAIL
SCALE: NONE



4 / --- HIGH LEVEL ALARM LIGHT - WIRING DIAGRAM
SCALE: NONE

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REGISTERED
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6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.2
ELECTRICAL DETAILS

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079A

SHEET E13 OF 39

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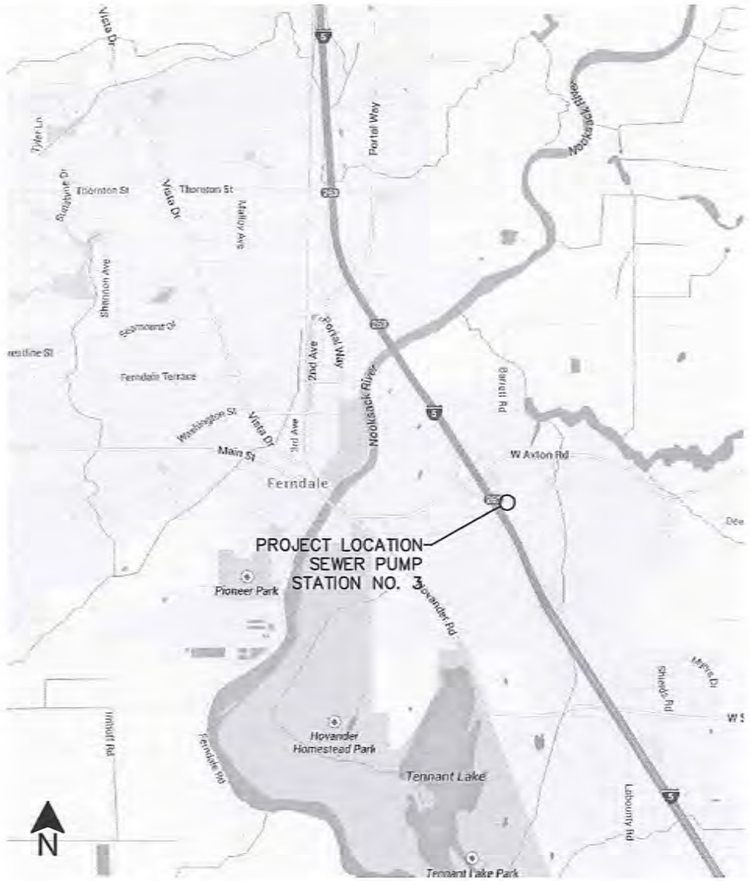
BID DOCUMENTS

CITY OF FERNDALE, WA

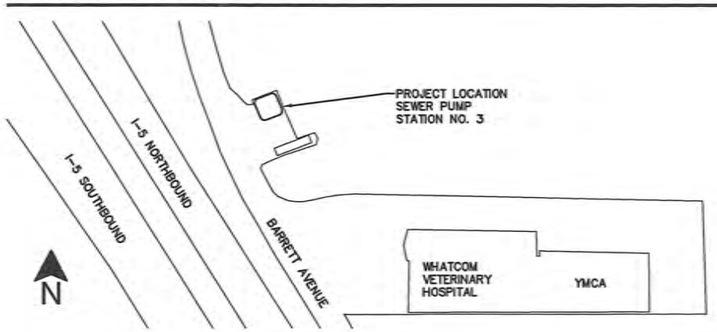
PUMP STATION NO.3 UPGRADE – CITY PROJECT No. SS2014-02

NO.	REVISIONS	BY	DATE

VICINITY MAP - NOT TO SCALE



LOCATION MAP - NOT TO SCALE



GENERAL NOTES

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CITY OF FERNDALE STANDARDS AND THE MOST CURRENT COPY OF THE STATE OF WASHINGTON STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION (WSDOT/APWA).
2. ALL APPROVALS AND PERMITS REQUIRED BY THE CITY OF FERNDALE SHALL BE OBTAINED PRIOR TO THE START OF CONSTRUCTION.
3. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL VERIFY ALL UTILITY LOCATIONS PRIOR TO CONSTRUCTION BY CALLING THE UNDERGROUND LOCATE LINE AT 1-800-332-2344 A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION.
4. ALL NEW PLASTIC PIPE AND SERVICES SHALL BE INSTALLED WITH CONTINUOUS TRACER TAPE INSTALLED 12" TO 18" UNDER THE PROPOSED FINISHED SUBGRADE. THE MARKER SHALL BE PLASTIC NON-BIODEGRADABLE, METAL CORE OR BACKING MARKED WATER WHICH CAN BE DETECTED BY A STANDARD METAL DETECTOR.
5. EROSION CONTROL MEASURES SHALL BE TAKEN BY THE CONTRACTOR DURING CONSTRUCTION TO PREVENT SILTATION TO EXISTING STORM DRAINAGE FACILITIES AND ROADWAYS.
6. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO HAVE A COPY OF THESE APPROVED PLANS ON CONSTRUCTION SITE AT ALL TIMES.
7. ANY CHANGES TO THE DESIGN SHALL FIRST BE REVIEWED AND APPROVED BY THE PROJECT ENGINEER.
8. ALL LINES SHALL BE CLEANED AND PRESSURE TESTED PRIOR TO PAVING IN CONFORMANCE WITH THE ABOVE REFERENCED SPECIFICATIONS. TESTING SHALL TAKE PLACE AFTER ALL UNDERGROUND UTILITIES ARE INSTALLED AND COMPACTION OF THE ROADWAY SUBGRADE IS COMPLETED.
9. PRIOR TO BACKFILL ALL MAINS AND APPURTENANCES SHALL BE INSPECTED AND APPROVED BY THE CITY OF FERNDALE CONSTRUCTION INSPECTOR. APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FOR CORRECTION OF ANY DEFICIENCIES AND/OR FAILURES AS DETERMINED BY SUBSEQUENT TESTING AND INSPECTIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE INSPECTOR FOR THE REQUIRED INSPECTIONS.
10. ALL WORK AND MATERIALS SHALL BE GUARANTEED BY THE CONTRACTOR FOR ONE YEAR AFTER FINAL ACCEPTANCE.
11. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE APPROXIMATE AND NOT ALL ARE SHOWN. THE CONTRACTOR IS RESPONSIBLE TO VERIFY AND PROTECT ALL UTILITIES.
12. ALL RESTORATION AND LANDSCAPING WITHIN PUBLIC OR PRIVATE PROPERTY SHALL OCCUR WITHIN THREE WEEKS OF DISTURBANCE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL LAWNS, LANDSCAPING, FENCES, GRAVEL, ASPHALT AND CONCRETE.
13. THE CONTRACTOR SHALL KEEP A RECORD OF AS-BUILT INFORMATION THROUGHOUT THE ENTIRE PROJECT. THIS INFORMATION SHALL INCLUDE ALL DEVIATIONS FROM THE PLANS AND ANY OTHER PERTINENT INFORMATION NOT SHOWN ON THE PLANS BUT DISCOVERED DURING CONSTRUCTION
14. THE CONTRACTOR SHALL REPLACE ALL MONUMENTS, RIGHT-OF-WAY MARKERS, PROPERTY STAKES, ETC. THAT ARE DISTURBED DURING CONSTRUCTION. THE CONTRACTOR SHALL USE A SURVEYOR REGISTERED IN THE STATE OF WASHINGTON TO COMPLETE ALL SURVEY WORK.

EROSION AND SEDIMENTATION CONTROL

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT POLLUTION AND EROSION IN ACCORDANCE WITH WSDOT SECTION 1.07.15. EROSION CONTROL BEST MANAGEMENT PRACTICES SHALL CONFORM TO THE CURRENT WASHINGTON DEPARTMENT OF ECOLOGY STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN.

EXISTING UTILITIES

1. CONTRACTOR IS ADVISED THAT UNDERGROUND WATER, SEWER, STORM, TELEPHONE, FIBER OPTIC, AND GAS MAY BE LOCATED IN THE VICINITY OF THIS PROJECT. NO ATTEMPT WAS MADE TO SHOW ALL UTILITIES ON THE PLAN. LOCATIONS SHOWN FOR EXISTING UTILITIES ARE APPROXIMATE. OTHER UTILITIES MAY EXIST WHICH ARE NOT SHOWN ON THE PLANS. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTHS AND PLAN LOCATIONS.
2. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE THE TRUE AND CORRECT LOCATIONS OF EXISTING UTILITIES THAT MAY IMPACT THE WORK. CONTRACTOR SHALL NOTIFY ENGINEER PRIOR TO COMMENCING CONSTRUCTION IF MARKED UTILITIES APPEAR TO CONFLICT WITH PROPOSED IMPROVEMENTS. THE COST OF LOCATING, PROTECTING AND ACCOMMODATING EXISTING UTILITIES SHALL BE INCIDENTAL TO THE COST OF THE PROJECT. IF AN ACTUAL CONFLICT REQUIRES RELOCATION OF AN EXISTING UTILITY OR THE REDESIGN OF THE PROPOSED IMPROVEMENT, THE ENGINEER WILL DETERMINE IF EXTRA PAY IS WARRANTED TO ACCOMMODATE THE CHANGED OR UNFORESEEN CONDITION. MINOR HORIZONTAL OR VERTICAL ADJUSTMENTS OF THE PROPOSED IMPROVEMENTS TO AVOID CONFLICTS SHALL NOT ENTITLE THE CONTRACTOR TO EXTRA PAY.

TRAFFIC CONTROL

1. THE CONTRACTOR IS NOT ALLOWED TO COMPLETELY CLOSE ANY STREET TO TRAFFIC. THE CONTRACTOR SHALL MAINTAIN ONE OPEN LANE EACH WAY FOR THE DURATION OF THE PROJECT.

BID DOCUMENTS

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 UTILITIES UNDERGROUND LOCATION CENTER

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C2.2	TESC NARRATIVE
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C2.5	DEMOLITION - MECHANICAL SECTIONS
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E13.0	ELECTRICAL DETAILS

CONTACTS

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206-947-6397 (CELL)
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425-457-1540 (CELL)

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jstoner@wavebroadband.com

TELEPHONE:
FRONTIER COMMUNICATIONS
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CASCADE NATURAL GAS
BRANDON HAUGHNESS
ENGINEER ASSOCIATE
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PROPANE:
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360-354-4471

OR

PROPANE GAS, INC
360-384-4922

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Wilson SURVEY/ENGINEERING

ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 21548 — REGISTERED PROFESSIONAL ENGINEER — 6/08/16

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
COVER SHEET

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET C0.1 OF 35

W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\PS3 dwg\C0.1 COVER SHEET.dwg, 6/7/2016 1:22:57 PM, ACAD PLOT 11X17 LANDSCAPE.pc3, RDN

LEGEND & ABBREVIATIONS– SIZE & SCALE MAY VARY

EXISTING HATCH PATTERNS

DESCRIPTION
EXIST. CONCRETE
EXIST. BUILDING
EXIST. EARTH
EXIST. GRAVEL
EXIST. SAND

PROPOSED HATCH PATTERNS

DESCRIPTION
PROP. CONCRETE
PROP. TOP COURSE GRAVEL
PROP. GRAVEL
PROP. SAND
PROP. QUARRY SPALLS

SURFACE FEATURES
EXISTING PLAN LINETYPES

DESCRIPTION
BRIDGE
BUILDING LINE
BUILDING COLUMN
BUILDING OVERHANG
BULKHEAD
CONCRETE EDGE
CREEK EDGE
CROWN OF ROAD
CURB
DITCH CENTERLINE
DECK
DOCK
EDGE OF SAWCUT
EDGE OF PAVEMENT
FENCE
HIGH VISIBILTY FENCE
GATE
GRADE
GRAVEL
GUARDRAIL
JERSEY BARRIER
LAKE/POND WATER EDGE
LIP OF CURB
MISC SURFACE FEATURE
MISC TRAFFIC
PLANTER
PATH
RAILROAD
RAMP (WOOD)
RETAINING WALL
ROAD STRIPING
ROCKERY
RIVERBANK/SHORELINE
THALWAG LINE
TOP OF BANK/SLOPE
TOE OF BANK/SLOPE
VEGETATION/SHRUB LINE
WETLAND/SWAMP PERIMETER
WETLAND BUFFER

SURFACE FEATURES
PROPOSED PLAN LINETYPES

DESCRIPTION
BRIDGE
BUILDING LINE
CONCRETE
CURB
DITCH CENTERLINE
EDGE OF BIKE LANE
EDGE OF PAVEMENT
FENCE
GATE
GRAVEL
GUARDRAIL
JERSEY BARRIER
LIP OF CURB
REBAR
RETAINING WALL
ROCKERY
ROAD STRIPING

UTILITIES
EXISTING PLAN LINETYPES

DESCRIPTION
CABLE TELEVISION (AERIAL)
CABLE TELEVISION (BURIED)
SURVEILLANCE CAMERA (BURIED
FIBER OPTIC LINE (AERIAL)
FIBER OPTIC LINE (BURIED)
TELEPHONE (AERIAL)
TELEPHONE (BURIED)
TRAFFIC SIGNAL CONDUIT LINE
POWER (AERIAL)
POWER (BURIED)
UTILITY (AERIAL)
UTILITY (BURIED)
POWER DUCT BANK (BURIED)
DRAIN FIELD
SANITARY SEWER
APPROXIMATE SANITARY SEWER
SANITARY SEWER (FORCE MAIN)
APPROXIMATE SANITARY SEWER (FORCE MAIN)
STORM DRAINAGE
CULVERT (Ø WIDTH)
CULVERT
RECLAIMED WATER
IRRIGATION
WATER
APPROXIMATE WATER
8" WATER
OVERFLOW
STEAM
GAS
GAS TANK/STRUCTURE
OIL
AIR LINE
BURIED UTILITY APPROX. EXTENTS
MISC UTILITY (BURIED)

PROPOSED PLAN UTILITY LINETYPES
WATER

DESCRIPTION
WATER
8" WATER
IRRIGATION
RECLAIMED WATER
POTABLE WATER
WATER SERVICE
WATER STRUCTURE
FIRE DEPARTMENT CONNECTION
FIRE PROTECTION LINE

SANITARY SEWER

DESCRIPTION
SEWER
8" SEWER
FORCE MAIN
DRAIN FIELD
SEWER SERVICE
SEWER STRUCTURE

STORM DRAIN

DESCRIPTION
STORM DRAIN – SUBJECT PIPE
STORM DRAIN – OTHER PIPE
STORM SERVICE
FOOTING DRAIN
STORM STRUCTURE

MISC. UTILITIES

DESCRIPTION
GAS
POWER
TELEPHONE/COMMUNICATIONS

GRADING

DESCRIPTION
GRADE BREAK
SLOPE ARROWS

EROSION CONTROL

DESCRIPTION
EROSION TRIANGULAR SILT DIKE
EROSION CONTROL COMPOST BERM
EROSION CONTROL MINOR CONTOUR
EROSION CONTROL MAJOR CONTOUR
ORANGE BARRIER FENCE
SILT FENCE
STRAW WATTLE
EROSION CONTROL FLOWLINE
STRAW BALE
INLET PROTECTION
CHECK DAM

DEMOLITION

DESCRIPTION
SURFACE FEATURE OR UTILITY TO BE REMOVED
SAWCUT
CLEARING LIMIT
TREE OR BUSH TO BE REMOVED

SURVEY
PLAN LINETYPES

DESCRIPTION
CENTERLINE (EXISTING)
CENTERLINE (CONSTRUCTION)
CENTERLINE (PROPOSED)
CONTOUR (EXISTING MINOR)
CONTOUR (EXISTING INDEX)
HYDRO CONTOUR (EXISTING INDEX)
CONTOUR (PROPOSED INDEX)
CONTOUR (PROPOSED MINOR)
CATCHLINE
CUT LINE
DONATION LAND CLAIM (EXIST.)
EASEMENT (PROPOSED)
EASEMENT (EXISTING)
FILL LINE
MEANDER LINE
ORDINARY HIGH WATER LINE
MEAN LOW LEVEL WATER LINE
OWNERSHIP LINE
PROPERTY LINE (RECORD OR ADJACENT)
PROPERTY LINE
QUARTER SECTION LINE
RANGE/TOWNSHIP LINE
RESERVATION/PARK/FOREST (EX)
RIGHT-OF-WAY ℄ (EXISTING)
RIGHT-OF-WAY (EXISTING)
RIGHT-OF-WAY (EXISTING USED)
RIGHT-OF-WAY (PROPOSED)
RIGHT-OF-WAY (EX. RECORD) (RECORD OR ADJACENT)
RIGHT-OF-WAY (LIMITED ACCESS)
RIGHT-OF-WAY (LIMITED ACCESS)
SECTION LINE
SETBACK LINE (EXISTING)
SIXTEENTH SECTION LINE
STATE/COUNTY/CORPORATE LIMIT
VACATED RIGHT-OF-WAY
EASEMENT (RECORD)
RIGHT-OF-WAY CENTER (RECORD)
DONATION LAND CLAIM (RECORD)
MEANDER LINE (RECORD)
PARK LINE (RECORD)
SECTION LINE (RECORD)
QUARTER SECTION LINE (RECORD)
SIXTEENTH SECTION LINE (RECORD)
STATE LINE (RECORD)
RANGE LINE (RECORD)

PROFILE LINETYPES

DESCRIPTION
PROFILE EX. GRND ℄
PROFILE FINISH GRND ℄
PROFILE GRID
PROFILE VERTICAL GRID
PROFILE EX. GROUND LEFT
PROFILE EXISTING GROUND RIGHT
FIBER OPTIC PROFILE (EXISTING)
GAS PROFILE (EXISTING)
POWER PROFILE (EXISTING)
RAILROAD PROFILE (EXISTING)
SANITARY PROFILE (EXISTING)
SANITARY PROFILE (PROPOSED)
STORM PROFILE (EXISTING)
TELEPHONE PROFILE (EXISTING)
STORM PROFILE (PROPOSED)
TV PROFILE (EXISTING)
UTILITY PROFILE (EXISTING)
WATER PROFILE (EXISTING)
WATER PROFILE (PROPOSED)

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 (UTILITIES UNDERGROUND LOCATION CENTER)

BID DOCUMENTS

MISC. SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		SOIL BORING
		MONITORING WELL
		TEST WELL
		TEST PIT
		EMBANKMENT
		MAIL BOX
		SIGN
		RIP RAP
		BOULDER
		SHRUB
		TREE (Conifer)*
		TREE (Deciduous)*
		STUMP–PLAN VIEW
		YARD LIGHT
		WELL
		PILE
		ROCKERY
		WHEEL STOP
		SPLASH BLOCK
		GAS METER
		GAS VALVE
		PAD MOUNTED TRANSFORMER
		POWER VAULT
		TRANSMISSION TOWER
		POWER METER
		GUY POLE
		UTILITY POLE
		UTILITY POLE ANCHOR
		TELE RISER
		CABLE RISER
		TELEPHONE VAULT
		STEAM MANHOLE
		PARKING METER
		POST

SANITARY SEWER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		SAN. SEWER CLEAN OUT
		SAN. SEWER MANHOLE

STORM DRAIN SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		STORM DRAIN CB TYPE 1
		STORM DRAIN CB TYPE 2
		STORM DRAIN CB TYPE 2 W/CB LID
		STORM DRAIN WITH OVERFLOW GRATE
		STORM DRAIN CLEAN–OUT

WATER SYMBOLS

EXISTING	PROPOSED	DESCRIPTION
		ARV VALVE
		GLOBE VALVE, FL
		BALL CHECK VALVE, FL
		BLOW–OFF VALVE
		SWING CHECK VALVE, FL
		BUTTERFLY VALVE, FL
		HOSE BIB/SPIGOT
		DOUBLE LEAF CHECK VALVE
		PLUG VALVE
		BALL VALVE
		FLOAT VALVE
		PINCH VALVE
		PRESSURE & VACUUM RELIEF VALVE
		VACUUM RELIEF VALVE
		PRESSURE RELIEF VALVE
		PRESSURE REGULATING VALVE (SELF CONTAINED)
		BACK PRESSURE REGULATING VALVE (SELF CONTAINED)
		IN–LINE SPRING LOADED RELIEF VALVE
		CAP/PLUG
		GUARD POST
		THRUST BLOCK
		WATER METER
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		FIRE HYDRANT
		WATER MANHOLE
		POST INDICATOR VALVE
		11–1/4 BEND, MJ–FL
		22–1/2 BEND, MJ–FL
		45 BEND, MJ–FL
		90 BEND, MJ–FL
		FLXMJ ADAPTER
		COUPLER
		BLIND FLANGE
		GATE VALVE, FLxMJ
		GATE VALVE, MJ
		REDUCER, MJxFL
		REDUCER, MJ
		TEE, FL
		TEE, MJ
		TEE, MJxFL
		TEE, FLxMJ
		CROSS, FL
		CROSS, MJ

SURVEY SYMBOLS

- BRASS SURFACE MONUMENT
- NAIL IN CONCRETE
- REBAR & CAP

SECTION/DETAIL CALL–OUTS

E(A) / (C)C22/C22(B) — E(A) / C34 (B)

SECTION CALL OUTS: (A) REPRESENTS THE SECTION LABEL, (B) INDICATES THE SHEET ON WHICH THE SECTION APPEARS, AND (C) INDICATES THE SHEET ON WHICH THE SECTION IS CALLED OUT.

1(A) / (C)C22/C22(B) — 1(A) / C34 (B)

DETAIL CALL OUTS: (A) REPRESENTS THE DETAIL LABEL, (B) INDICATES THE SHEET ON WHICH THE DETAIL APPEARS, AND (C) INDICATES THE SHEET ON WHICH THE DETAIL IS CALLED OUT.

SYMBOLS

°	=DEGREES
±	=PLUS/MINUS
ø	=DIAMETER
Δ	=DELTA
℄	=CENTERLINE
℄	=FLOWLINE
℄	=PROPERTY LINE

SPOT ELEVATIONS

190.00① TBC② — 190.00① TBC② — 190.00① TBC② — 190.00① TBC②

①= ELEVATION
②= DESCRIPTION– SEE DEFINED ABBREVIATIONS ABOVE

DIRECTIONAL ABBREVIATIONS

N	=NORTH
NE	=NORTHEAST
E	=EAST
SE	=SOUTHEAST
S	=SOUTH
SW	=SOUTHWEST
W	=WEST
NW	=NORTHWEST

ABBREVIATIONS

AL	=ALIGNMENT
ANC	=UTILITY POLE ANCHOR
APPROX	=APPROXIMATE
ASPH or AC	=ASPHALT
ASS'Y	=ASSEMBLY
ASTM	=AMERICAN SOCIETY FOR TESTING & MATERIALS
BLDG	=BUILDING
BMP	=BEST MANAGEMENT PRACTICE
BVCS	=BEGIN VERTICAL CURVE STATION
BVCE	=BEGIN VERTICAL CURVE ELEVATION
CB	=CATCH BASIN
CK	=CHECK VALVE
C/L ℄	=CENTERLINE
CESCL	=CERTIFIED EROSION SEDIMENT CONTROL LEAD
COL	=COLUMN
CMP	=CORRUGATED METAL PIPE
C.O.	=CLEAN OUT
CONC, C	=CONCRETE
COR	=CORNER
CPP	=CORRUGATED POLYETHYLENE PIPE
CSTC	=CRUSHED SURFACING TOP COURSE
DDCVA	=DOUBLE DETECTOR CHECK VALVE ASSEMBLY
DF	=DRAIN FIELD
DI	=DUCTILE IRON
DO	=DISSOLVED OXYGEN
DR	=DIAMETER RATIO
DS	=DOWNSPOUT
EB	=EXPLORATION BORING
EFFL	=EFFLUENT
EG	=EXISTING GRADE
ELEV, EL	=ELEVATION
EOG	=EDGE OF GRAVEL
EOP	=EDGE OF PAVEMENT
EP	=EXPLORATION PIT
EXIST, EX	=EXISTING
EVCS	=END VERTICAL CURVE STATION
EVCE	=END VERTICAL CURVE ELEVATION
FDC	=FIRE DEPARTMENT CONNECTION
FF	=FINISH FLOOR
FG	=FINISH GRADE
FL	=FLOWLINE OR FLANGE (CONNECTION)
℄	=FLOWLINE
FLC	=FLOWLINE OF CURB
FNC	=FENCE
GB	=GRADE BREAK
GMET	=GAS METER
GP	=GUY POLE
GPM	=GALLONS PER MINUTE
GRVL, G	=GRAVEL
GUTT	=GUTTER
GV	=GATE VALVE
HB	=HOSE BIB
HDG	=HOT–DIP GALVANIZED
HDPE	=HIGH DENSITY POLYETHYLENE
H:V	=HORIZONTAL/VERTICAL
HWL	=HIGH WATER LEVEL
HYD	=HYDRANT
IE	=INVERT ELEVATION
INV	=INVERT
LF	=LINEAR FEET
LUM	=LUMINAIRE
LT	=LEFT
MAX	=MAXIMUM
MB	=MAIL BOX
MBR	=MEMBRANE BIO–REACTOR
MC	=MAINTENANCE CLEANING
MFEM	=MEMBRANE FILTRATION EQUIPMENT MANUFACTURER
MFR	=MANUFACTURER
MH	=MANHOLE
MIN	=MINIMUM
MISC	=MISCELLANEOUS
MJ	=MECHANICAL JOINT
MLSS	=MIXED LIQUOR SUSPENDED SOLIDS
MW	=MONITORING WELL
NPDES	=NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
O.C.	=ON CENTER
O.C.E.W	=ON CENTER EACH WAY
OD	=OUTSIDE DIAMETER
OHP	=OVERHEAD POWER
OHT	=OVERHEAD TELEPHONE
OSHA	=OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
PC	=POINT OF CURVATURE
PCC	=POINT OF CONTINUING CURVATURE
PIV	=POST INDICATOR VALVE
P/L ℄	=PROPERTY LINE
PLC	=PROGRAMMABLE LOGIC CONTROLLER
PLTR	=PLANTER
POL	=POINT ON LINE
PROP	=PROPOSED
PS	=PUMP STATION
PSI	=POUNDS PER SQUARE INCH
PT	=POINT OF TANGENCY
PVC	=POLYVINYL CHLORIDE
PVI	=POINT OF VERTICAL INTERSECTION
PW	=POTABLE WATER
R	=RADIUS
RCK	=ROCK/BOULDER
RET	=RETAINING
REC	=RECORD
REQ'D	=REQUIRED
RI	=RAPID INFILTRATION
RPBA	=REUSE PRESSURE BACKFLOW ASSEMBLY
RR	=RAILROAD
RT	=RIGHT
R/W or ROW	=RIGHT–OF–WAY
RW	=REUSE WATER
SCADA	=SUPERVISORY CONTROL AND DATA ACQUISITION
SCH	=SCHEDULE
SDCB	=STORM DRAIN CATCH BASIN
SD	=STORM DRAIN
SDMH	=STORM DRAIN MANHOLE
SFH	=SINGLE FAMILY HOUSING
SH	=SHRUB/BUSH
SN	=SIGN
SPD	=STANDARD PROCTOR DENSITY
SPK	=SPIKE
SS	=SANITARY SEWER
SSCO	=SANITARY SEWER CLEAN–OUT
SSMH	=SANITARY SEWER MANHOLE
STA	=STATION
STEP	=SEPTIC TANK EFFLUENT PUMP
S/W	=SIDEWALK
TBC	=TOP BACK OF CURB
TBD	=TO BE DETERMINED
TBM	=TEMPORARY BENCH MARK
T.O.W.	=TOP OF WALL
TYP	=TYPICAL
UP	=UTILITY POLE
VAC	=VACATED
VC	=VERTICAL CURVE
VCI	=VOLATILE CORROSION INHIBITOR
VEG	=VEGETATION
VFD	=VARIABLE FREQUENCY DRIVE
WAS	=WASTE ACTIVATED SLUDGE
WL	=WATERLINE
WM	=WATER METER
WS	=WATER SURFACE
WSDOT	=WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WV	=WATER VALVE
WWTP	=WASTE WATER TREATMENT PLANT
YD	=YARD DRAIN
YL	=YARD LIGHT

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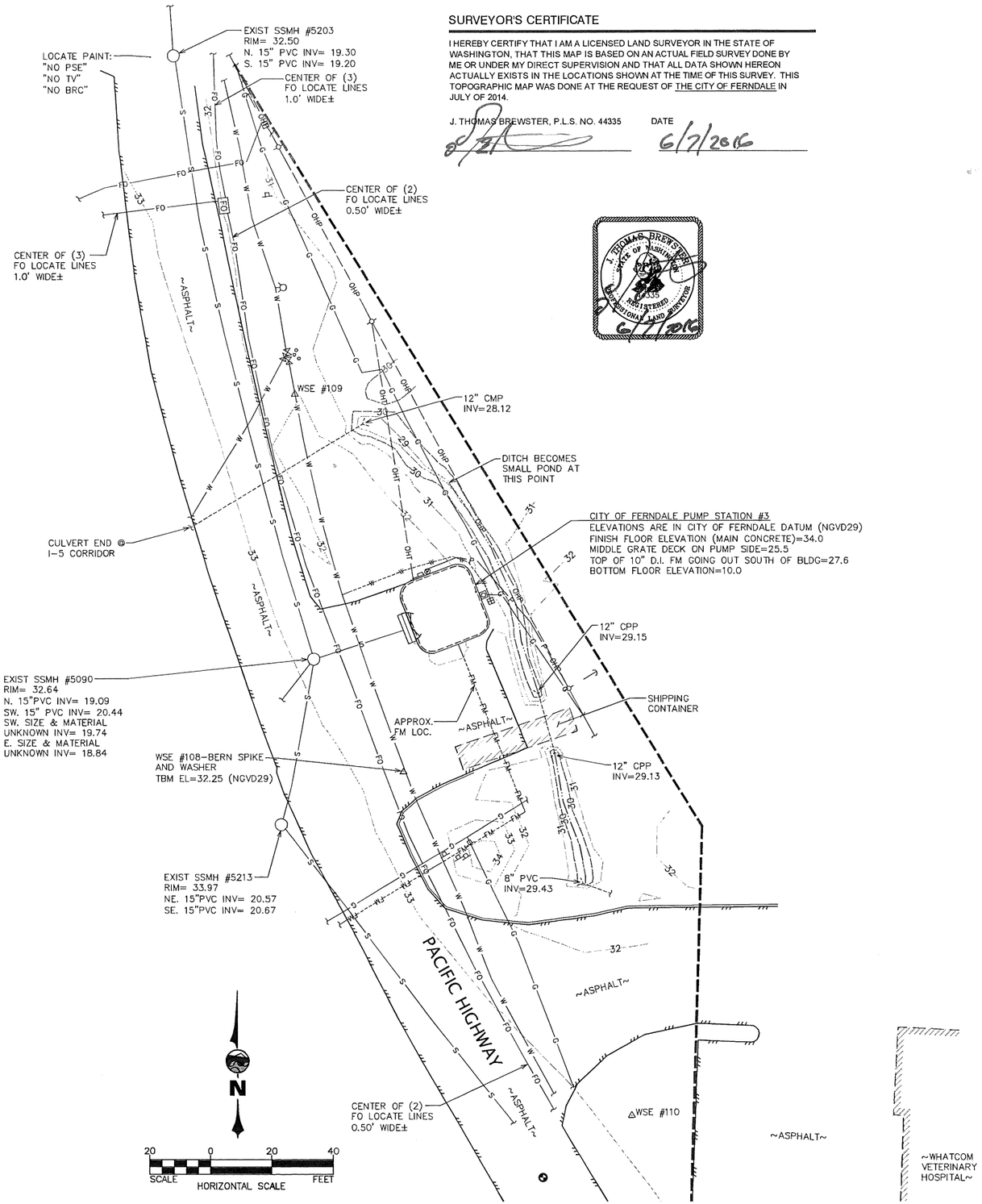
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
LEGEND & ABBREVIATIONS

SHEET	DATE	SCALE	JOB NUMBER
C0.2	6/08/2016	AS SHOWN	2014-079B
OF 35			

W:\2014\2014-079 - COF Pump Stations 2&3 \projects\Dwg\PS3 dwg\C0.2 Legend & Abbreviations.dwg, 6/7/2016 1:23:21 PM, ACROPLOT 11X17.LWG(STRETCH).ctb, RDN



PUMP STATION #3 – EXISTING SITE PLAN

SURVEYOR'S CERTIFICATE

I HEREBY CERTIFY THAT I AM A LICENSED LAND SURVEYOR IN THE STATE OF WASHINGTON, THAT THIS MAP IS BASED ON AN ACTUAL FIELD SURVEY DONE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT ALL DATA SHOWN HEREON ACTUALLY EXISTS IN THE LOCATIONS SHOWN AT THE TIME OF THIS SURVEY. THIS TOPOGRAPHIC MAP WAS DONE AT THE REQUEST OF THE CITY OF FERNDALE IN JULY OF 2014.

J. THOMAS BREWSTER, P.L.S. NO. 44335 DATE 6/7/2016

J. THOMAS BREWSTER STATE OF WASHINGTON 44335 REGISTERED PROFESSIONAL LAND SURVEYOR 6/7/2016

CONTROL NOTES

1. BASIS OF COORDINATES: COORDINATES POSITIONS SHOWN ARE ***NAD83/91 WASHINGTON STATE PLANE (NORTH ZONE) COORDINATES***, BASED UPON THE PUBLISHED VALUES FOR THE CITY OF FERNDALE'S 2001 HORIZONTAL AND VERTICAL CONTROL NETWORK. COORDINATION FOR GROUND-VALUE MENSURATION BASED UPON HOLDING THE FOLLOWING PUBLISHED COORDINATES FOR ***CITY OF FERNDALE SURVEY MONUMENT #08,*** A SURFACE MONUMENT IN CONCRETE AT THE SOUTH AND EAST SIDE OF THE SIDEWALK AT FERNDALE CITY COUNCIL CHAMBERS AS FOLLOWS:

NORTHING = 678,623.10 USFT
EASTING = 1,217,288.97 USFT

2. BASIS OF BEARINGS: HELD BEARING BETWEEN ABOVE MENTIONED ***CITY OF FERNDALE SURVEY MONUMENT #08*** (BOC) AND FOUND SURFACE MONUMENT IN CONCRETE AT AT THE NORTH SIDE OF AXTON ROAD , SAID MONUMENT BEING ***CITY OF FERNDALE CONTROL MONUMENT #09***, PER THE AFOREMENTIONED 2001 CONTROL NETWORK. THE GPS-DERIVED INVERSE BEARING BETWEEN #08 AND #09 BEING ***N 89° 22' 58" E*** A DISTANCE OF ***9321.70 FEET***. NAD83/91 COORDINATES FOR #09 ARE AS FOLLOWS:

NORTHING = 678,723.53 USFT
EASTING = 1,226,610.13 USFT

3. BASIS OF ELEVATIONS: ELEVATIONS ARE ***NGVD29*** VALUES BASED UPON HOLDING THE PUBLISHED ELEVATION OF ***31.27'*** AT THE MONUMENT DESIGNATED CITY OF ***FERNDALE #12***, A SURFACE MONUMENT IN THE NORTHWEST QUADRANT OF THE INTERSECTION OF SMITH ROAD AND LABOUNTY DRIVE, PER THE PUBLISHED DATA SHEET. ELEVATIONS AT THE WILSON SITE CONTROL POINTS WERE ESTABLISHED BY CLOSED DIGITAL LEVEL LOOP.

SURVEY NOTES

1. THIS TOPOGRAPHIC SURVEY WAS PERFORMED IN JULY AND AUGUST, 2014. ALTHOUGH THERE IS A BOUNDARY COMPONENT TO THIS SURVEY, NO MONUMENTS WERE SET DURING THE COURSE OF THIS SURVEY PURPORTING TO REPRESENT THE BOUNDARIES HEREON SHOWN. THIS TOPOGRAPHIC SURVEY WAS PREPARED TO SUPPORT THE DESIGN OF PUMP STATION UPGRADES.
2. ANGULAR AND LINEAR MEASUREMENTS WERE COLLECTED USING A COMBINATION OF GPS AND CONVENTIONAL METHODOLOGIES. PRIMARY CONTROL WAS COLLECTED USING TRIMBLE 5700 SURVEY-GRADE GPS RECEIVERS OPERATING IN NETWORKED RTK MODE. FROM GPS CONTROL, A TRIMBLE S-6 ROBOTIC TOTAL STATION WAS USED TO TIE SECONDARY CONTROL POINTS AND COLLECT TOPOGRAPHIC DATA.
3. LOCATIONS OF UNDERGROUND UTILITIES DEPICTED HEREON ARE ACCORDING TO SURFACE MARKS PROVIDED BY OTHERS, AND WILSON CAN NOT AND WILL NOT GUARANTEE THE CORRESPONDENCE BETWEEN THE MARKS AND THE EXTANT UTILITIES. UTILITIES MAY EXIST THAT WERE NOT MARKED AT THE TIME OF THIS SURVEY.
4. THIS SURVEY WAS PERFORMED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT, AND THE EXISTENCE OF EASEMENTS OF RECORD THAT MAY AFFECT THE PROPERTY'S USE WAS NOT INVESTIGATED IN THE COURSE OF THIS SURVEY.

SURVEY CONTROL POINTS (NAD83/91, NGVD29)

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
106	676903.25	1221857.07	35.78	BERNTSEN SPIKE (NOT SHOWN)
108	677766.32	1221428.69	32.25	BERNTSEN SPIKE
109	677889.43	1221393.60	31.80	HUB AND TACK
110	677653.65	1221503.18	32.65	HUB AND TACK

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 UTILITIES UNDERGROUND LOCATION CENTER

BID DOCUMENTS

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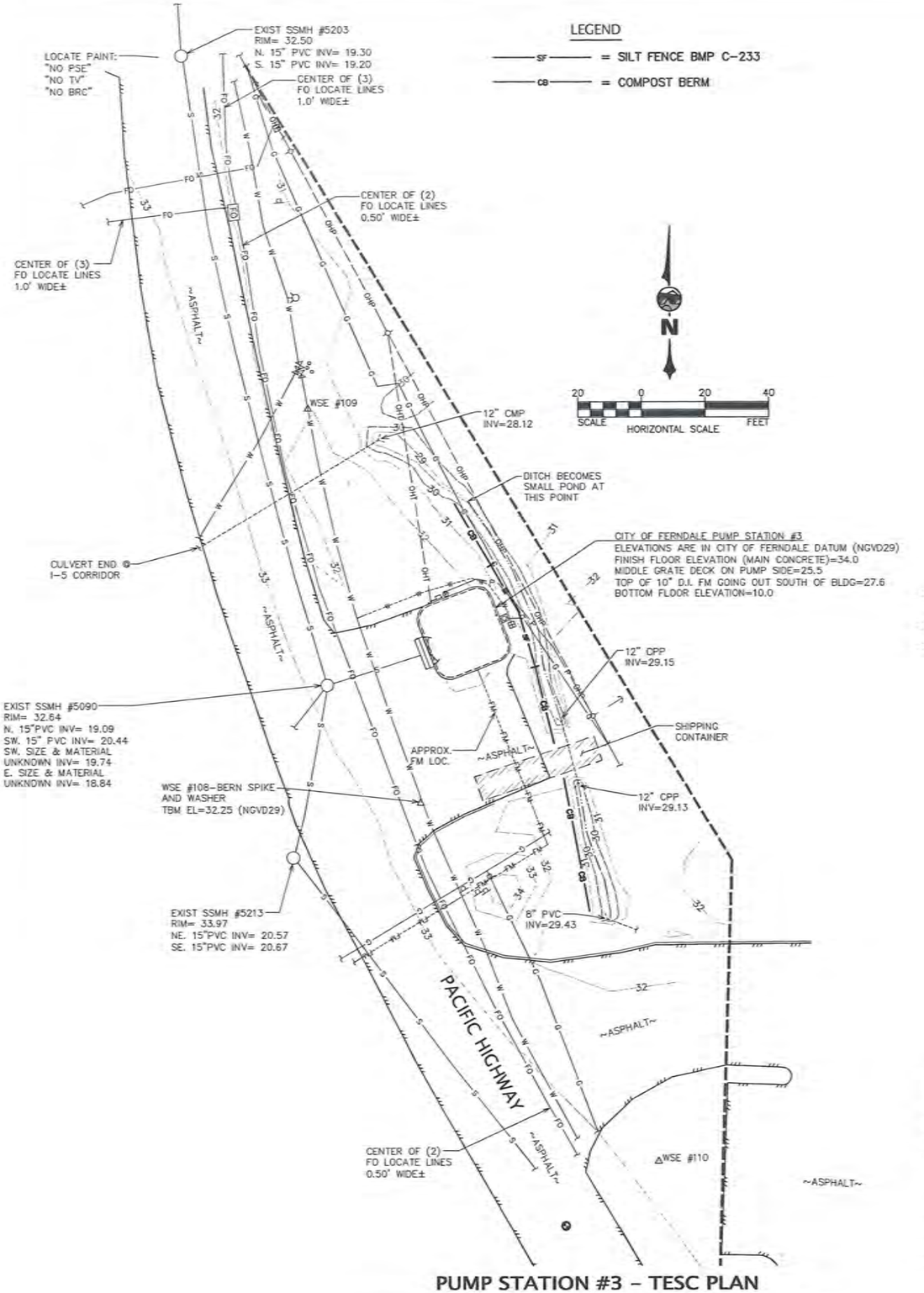
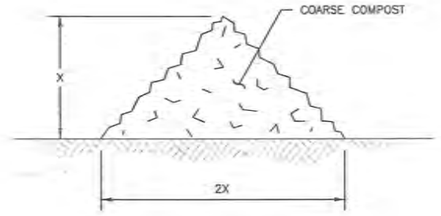
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
EXISTING CONDITIONS

DATE	6/08/2016
SCALE	AS SHOWN
JOB NUMBER	2014-079B
SHEET	C1.1
OF	35

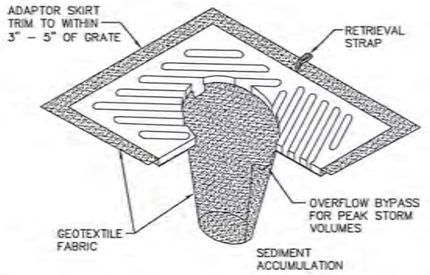


PUMP STATION #3 – TESC PLAN



X = 1.0' FOR SLOPES 4H:1V OR FLATTER
X = 1.5' FOR SLOPES STEEPER THAN 4H:1V

COMPOST BERM
NOT TO SCALE



NOTES:

1. INSERT SHALL BE INSTALLED PRIOR TO CLEARING AND GRADING ACTIVITY, OR UPON PLACEMENT OF A NEW CATCH BASIN.
2. SEDIMENT SHALL BE REMOVED FROM THE UNIT WHEN IT BECOMES HALF FULL .
3. SEDIMENT REMOVAL SHALL BE ACCOMPLISHED BY REMOVING THE INSERT, EMPTYING, AND RE-INSERTING IT INTO THE CATCH BASIN.

BMP C-220
CATCH BASIN INSERT
NOT TO SCALE

BMP C233 – SILT (FILTER FABRIC) FENCE

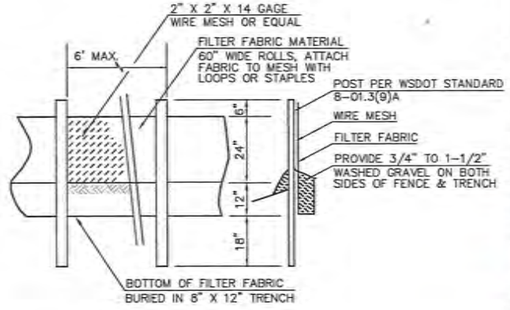
PURPOSE: USE OF A SILT FENCE REDUCES THE TRANSPORT OF COARSE SEDIMENT FROM A CONSTRUCTION SITE BY PROVIDING A TEMPORARY PHYSICAL BARRIER TO SEDIMENT AND REDUCING THE RUNOFF VELOCITIES OF OVERLAND FLOW.

INSTALLATION: USE DOWN SLOPE OF DISTURBED AREAS AS SHOWN ON THE PLAN AND AS NEEDED TO RESPOND TO SITE SPECIFIC CONDITIONS. GEOTEXTILE SHALL MEET THE FOLLOWING STANDARDS: POLYMETRIC MESH AOS (ASTM D4751) = 0.60 MM MAXIMUM FOR SLIT FILM WOVENS, 0.30 MM MAXIMUM FOR ALL OTHER GEOTEXTILES TYPES, AND 0.15 MM FOR ALL FABRIC TYPES, WATER PERMITTIVITY (ASTM D4491) = 0.2 SEC(-1) MINIMUM, GRAB TENSILE STRENGTH (ASTM D4632) = 180 POUNDS MINIMUM FOR EXTRA STRENGTH FABRIC, 100 POUNDS MINIMUM FOR STANDARD STRENGTH FABRIC, GRAB TENSILE ELONGATION (ASTM D4632) = 30% MAXIMUM, ULTRAVIOLET RESISTANCE (ASTM D4355) = 70% MINIMUM.

STANDARD STRENGTH FABRICS SHALL BE SUPPORTED WITH WIRE MESH, CHICKEN WIRE, 2-INCH X 2-INCH WIRE, SAFETY FENCE, OR JUTE MESH TO INCREASE THE STRENGTH OF THE FABRIC. SILT FENCE MATERIALS ARE AVAILABLE THAT HAVE SYNTHETIC MESH BACKING ATTACHED.

THE MINIMUM HEIGHT OF THE TOP OF THE SILT FENCE SHALL BE 2 FEET AND THE MAXIMUM HEIGHT SHALL BE 2.5 FEET.

MAINTENANCE: INSPECT THE FENCE AFTER RAINFALL EVENTS FOR SEDIMENT DEPOSITS UPSTREAM OF THE FENCE. REMOVE SEDIMENT DEPOSITS WHEN THEY REACH A DEPTH OF APPROXIMATELY 8 INCHES DEEP. REPLACE FILTER FABRIC FENCES DAMAGED BY CONSTRUCTION EQUIPMENT OR ULTRAVIOLET BREAKDOWN.



BMP C-233
SILT FENCE
NOT TO SCALE

PROJECT WIDE BMPS

THE FOLLOWING BMPS SHALL BE IMPLEMENTED THROUGHOUT THE ENTIRE PROJECT TO THE MAXIMUM EXTENT POSSIBLE:

BMP C101 PRESERVING NATURAL VEGETATION. CONTRACTOR SHALL CLEAR AND DISTURB ONLY AREAS REQUIRED TO CONSTRUCT IMPROVEMENTS AND SHALL DILIGENTLY MINIMIZE DISTURBED AREA.

BMP C102 BUFFER ZONES. CONTRACTOR SHALL MARK CLEARING LIMITS AND KEEP ALL EQUIPMENT AND CONSTRUCTION DEBRIS OUT OF NATURAL AREAS.

BMP C120 PERMANENT SEEDING & PLANTING. CONTRACTOR SHALL COMPLETE REQUIRED LANDSCAPING AS RAPIDLY AS POSSIBLE. ALL OTHER DISTURBED AREAS OUTSIDE OF PAVED AREAS SHALL BE HYDROSEEDED AS RAPIDLY AS POSSIBLE WITH SUITABLE SEED-MULCH-FERTILIZER MIX FOR LOCAL CLIMATE.

BMP C121 MULCHING . CONTRACTOR SHALL MULCH ALL LANDSCAPED AREAS AS RAPIDLY AS POSSIBLE.

BMP C130 SURFACE ROUGHENING. CONTRACTOR SHALL ROUGHEN DISTURBED AREAS PRIOR TO PERMANENT SEEDING AND PLANTING.

BMP C140 DUST CONTROL. CONTRACTOR SHALL KEEP DUST FROM CONSTRUCTION ACTIVITIES AND EXPOSED SOILS TO A MINIMUM.

BMP C160 CERTIFIED EROSION CONTROL LEAD (MUST BE EMPLOYED BY GENERAL CONTRACTOR AND ON SITE DURING CONSTRUCTION.)

BMP C220 CATCH BASIN INSERT. CONTRACTOR SHALL INSTALL CATCH BASIN INSERTS AS NEEDED.

AREA SPECIFIC BMPs

THE FOLLOWING BMPs SHALL BE USED IN LOCATIONS IDENTIFIED ON THE SITE PLAN:

BMP C233 SILT FENCE. CONTRACTOR SHALL INSTALL SILT FENCE AT LOCATIONS NOTED ON PLANS.

COMPOST BERM. CONTRACTOR SHALL INSTALL COMPOST BERM AT LOCATIONS NOTED ON PLANS.

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ELIZABETH ANNE STEELE
STATE OF WASHINGTON
41548
REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
TESC PLAN & DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET C2.1 OF 35

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TEMPORARY EROSION & SEDIMENTATION NARRATIVE

T.E.S.C. NARRATIVE –
(ORGANIZED PER DOE's BASIC ELEMENTS #1–12)

ELEMENT #1: MARK CLEARING LIMITS
Prior to beginning land disturbing activities, including clearing and grading, all clearing limits, sensitive areas and their buffers, and trees that are to be preserved within the construction area should be clearly marked, both in the field and on the plans, to prevent damage and offsite impacts. Plastic, metal, or stake wire fence may be used to mark the clearing limits.

ELEMENT #2: ESTABLISH CONSTRUCTION ACCESS
Construction vehicle access and exit will occur via the existing access off Pacific Highway. Access/egress will be limited to this one location. The access point shall be stabilized near the project site using track–clean plates to minimize the tracking of sediment into the parking lot or onto public roads. In place of track clean plates, contractor shall provide adequate provisions to ensure that no sediment is tracked off the construction site. In the event that sediment tracking occurs, contractor shall remove all tracked sediment immediately.

Wheel wash or tire baths, if required, shall be located on–site.

The parking lot access point will be cleaned thoroughly at the end of each day, or more frequently during wet weather, if necessary. Sediment shall be removed from roads by shoveling or pickup sweeping and shall be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner.

ELEMENT #3: CONTROL FLOW RATES
Properties and waterways downstream from this project shall be protected from erosion due to increases in the volume, velocity, and peak flow rate of stormwater runoff from the project site. Flow controls shall be implemented as early in the project construction phase as is practicable to mitigate flow rates.

The Ecology Manual requires a downstream analysis if changes in flows could impair or alter conveyance systems, stream banks, bed sediment or aquatic habitat. Since the proposed construction site is predominantly flat, and compost berms will be installed during construction, increased downstream flow rates are not anticipated during construction. No runoff will discharge directly from the site.

ELEMENT #4: INSTALL SEDIMENT CONTROLS
To the maximum extent possible, the duff layer, native topsoil, and natural vegetation shall be retained in an undisturbed state.

Prior to leaving the construction site, stormwater runoff from disturbed areas shall pass through a sediment pond or other appropriate sediment removal BMP. Runoff from fully stabilized areas may be discharged without a sediment removal BMP, but must meet the flow control performance standard of Element #3. Full stabilization means concrete or asphalt paving; quarry spalls used as ditch lining; or the use of rolled erosion products, a bonded fiber matrix product, or vegetative cover in a manner that will fully prevent soil erosion. Sediment ponds, vegetated buffer strips, sediment barriers or filters, dikes, and other BMPs intended to trap sediment on–site shall be constructed as one of the first steps in grading. These BMPs shall be functional before other land disturbing activities take place.

Earthen structures such as dams, dikes, and diversions shall be seeded and mulched according to the timing indicated in Element #5.

As a part of this project BMPs intended to trap sediment on site shall be implemented as one of the first steps in construction. Runoff will not discharge directly from the site.

ELEMENT #5: STABILIZE SOILS
The majority of the site is flat. During construction, all exposed and unworked soils shall be stabilized by application of effective BMPs that protect the soil from the erosive forces of raindrop impact and flowing water, and wind erosion.

From October 1 through April 30 of each year, no soils shall remain exposed and unworked for more than 2 days. From May 1 to September 30 of each year, no soils shall remain exposed and unworked for more than 7 days. This condition applies to all soils on site, whether at final grade or not.

Applicable practices include, but are not limited to, temporary and permanent seeding, sodding, mulching, plastic covering, soil application of polyacrylamide (PAM), early application of gravel base on areas to be paved, and dust control.

Soil stabilization measures selected shall be appropriate for the time of year, site conditions, estimated duration of use, and potential water quality impacts that stabilization agents may have on downstream waters or ground water.

Soil stockpiles must be stabilized and protected with sediment trapping measures.

Work on trenching for utilities shall not exceed the capability of the individual contractor for his portion of the project to install the bedding materials, utilities, backfill, and to re–stabilize the disturbed soils, meeting the timing condition listed above.

At the discretion of the Owner, those sites unable to maintain the quality of their stormwater discharge may be required to provide soil stabilization to all exposed soil areas regardless of the working status of the area. Upon written notification, the Contractor shall provide full stabilization of all exposed soil areas within 24 hours.

During construction, BMPs will be followed to ensure that exposed soils are protected and stabilized. Stockpiles shall be covered and exposed soils shall be covered with straw, mulch or other acceptable methods. Construction shall take place during the summer months, and dust control measures will be practiced. After construction, exposed, unpaved surfaces disturbed by construction activities will be hydro–seeded or mulched.

ELEMENT #6: PROTECT SLOPES
The majority of the site is flat and stable.
Cut and fill slopes shall be designed and constructed in a manner that will minimize erosion. The erosion control design shall take into account the site's soil type and its potential for erosion. Runoff velocities shall be reduced by minimizing the continuous length of slope with terracing and diversions, by reducing slope steepness, and by roughening slope surface.

Upslope drainage and run–on waters from off–site shall be diverted with interceptors at the top of slope. Off–site stormwater shall be handled separately from stormwater generated on the site. Diversion of off–site stormwater around the site may be a viable option. Any diverted flows shall be redirected to the natural drainage location at or before the property boundary.

Drainage shall be provided to remove ground water intersecting the slope surface of exposed soil areas.

Excavated material shall be placed on the uphill side of trenches, consistent with safety and space considerations. Check dams shall be placed at regular intervals within trenches that are cut down a slope.

ELEMENT #7: PROTECT DRAIN INLETS
All existing storm drain inlets and those made operable during construction shall be protected so that stormwater runoff does not enter the conveyance system without first being filtered or treated to remove sediment.

All approach roads shall be kept clean, and all sediment and street wash water shall not be allowed to enter storm drains without prior and adequate treatment unless treatment is provided before the storm drain discharges to water of the State.

ELEMENT #8: STABILIZE CHANNELS AND OUTLETS
All temporary on–site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2 year, 24–hour frequency storm for the developed condition.

Stabilization, including armoring material, adequate to prevent erosion of outlets, adjacent stream banks, slopes and downstream reaches shall be provided at the outlets of all conveyance systems.

ELEMENT #9: CONTROL POLLUTANTS
All pollutants, including waste materials and demolition debris, that occur onsite will be handled and disposed of in a manner that does not cause contamination of stormwater.

Cover, containment, and protection from vandalism shall be provided for all chemicals, liquid products, petroleum products, and non–inert wastes present on the site. On–site fueling tanks shall include secondary containment.

On–site maintenance and repair of heavy equipment and vehicles involving oil changes, hydraulic system drain down, solvent and de–greasing cleaning operations, fuel tank drain down and removal, and other activities which may result in discharge or spillage of pollutants to the ground or into stormwater runoff must be conducted using spill prevention measures, such as drip pans. Contaminated surfaces shall be cleaned immediately following any discharge or spill incident. Emergency repairs may be performed on–site using temporary plastic placed beneath and, if raining, over the vehicle.

Wheel wash, or tire bath wastewater, shall be discharged to a separate on–site treatment system or to the sanitary sewer.

Concrete work that has not cured will be covered during rainfall to prevent increased stormwater pH as necessary to prevent violations of water quality standards. Management of pH–modifying sources shall prevent contamination of runoff and stormwater collected on the site. These sources include, but are not limited to, bulk cement, new concrete washing and curing waters, waste streams generated from concrete grinding and sawing, exposed aggregate processes, and concrete pumping and mixer washout waters.

Application of agricultural chemicals, including fertilizers and pesticides is not anticipated under this contract. If agricultural chemicals are to be used, their application shall be conducted in a manner and at application rates that will not result in loss of chemical to stormwater runoff. Manufacturers' recommendations shall be followed for application rates and procedures.

ELEMENT #10: CONTROL DE–WATERING
The following options will be implemented for dewatering as necessary.

Clean, non–turbid de–watering water, such as well–point ground water, will be discharged in a dispersed manner to thick natural vegetation near the site. This vegetated discharge location will be well away from surface waters, wetlands, or lagoon berms on site. This dewatering flow must not cause erosion or flooding of the receiving waters, and these clean waters shall not be routed through sediment ponds with stormwater.

Turbid dewatering water will be discharged to a settling tank or filter prior to being discharged to as described above for clean water.

Final discharge point must be coordinated with the Owner and Engineer.

ELEMENT #11: MAINTAIN BMPs
All temporary and permanent erosion and sediment control BMPs will be maintained and repaired as needed to assure continued performance of their intended function. Maintenance and repair shall be conducted in accordance with BMP specifications.

Sediment control BMPs shall be inspected weekly of after a runoff–producing storm event during the dry season and daily during the wet season. Because this project disturbs less than one acre of area, a certified erosion control lead need not be designated for the site. The contractor shall be responsible for all required inspection, maintenance, and repair of site BMPs.

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or after the temporary BMPs are no longer needed. Trapped sediment shall be removed.

ELEMENT #12: MANAGE THE PROJECT
The construction contractor is responsible for providing and maintaining these and such additional BMPs, as may be required to prevent erosion, control sediment, and prevent water pollution.

The contractor will be required, where feasible, to phase the project in order to prevent, to the maximum extent practicable, the transport of sediment from the development site during construction. Revegetation of exposed areas and maintenance of that vegetation shall be an integral part of the clearing activities for any phase.

When establishing the permitted clearing and grading areas, consideration will be given to minimizing removal of existing trees and minimizing disturbance/compaction of native soils except as needed for building purposes. Permitted clearing and grading areas and any other areas required to preserve critical or sensitive areas, buffers, native growth protection easements, or tree retention areas, will be delineated on the site plans and the development site.

The Owner and Engineer have evaluated, with input from utilities and other contractors, the stormwater management requirements for the entire project, including the utilities, when preparing the Construction TESC.

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ELIZABETH ANNE STERLING
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REGISTERED
PROFESSIONAL ENGINEER
06/08/16

DESIGNED BY EAS/SJW	DRAWN BY SJW/RDN	CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
TESC NARRATIVE

SHEET C2.2	DATE 6/08/2016	SCALE AS SHOWN
OF 35		JOB NUMBER 2014-079B

KEYED NOTES

1. = REMOVE EXISTING 1-INCH POTABLE WATER SERVICE AND METER IN PREPARATION FOR INSTALLATION OF NEW METER AND SERVICE LINE. FOLLOW CITY OF FERNDALE REGULATIONS AND STANDARDS.
2. = CUT AND CAP EXISTING GAS SERVICE. REMOVE EXISTING GAS METER ASSEMBLY. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH CASCADE NATURAL GAS TO COMPLETE THIS WORK.
3. = PROTECT EXISTING UNDERGROUND POWER FEED TO BUILDING.
4. = PROTECT EXISTING UNDERGROUND POWER FEED TO SHIPPING CONTAINER.
5. = REMOVE ANY EXISTING BRUSH, WEEDS AND DEBRIS FROM THE EXISTING DRAINAGE DITCH AND BEHIND THE PUMP STATION AND PARKING AREA.
6. = SAWCUT ASPHALT.
7. = EXISTING SHIPPING CONTAINER TO STAY.
8. = REMOVE EXISTING VENTILATION FAN AND LOUVER.
9. = REMOVE EXISTING GENERATOR EXHAUST SYSTEM.
10. = REMOVE CONDUIT RISER REMAINING FROM REMOVAL OF OVERHEAD COMMUNICATIONS.
11. = REMOVE EXISTING ASPHALT IN PREPARATION FOR NEW.
12. = EXISTING 12-INCH SEWER FORCE MAIN TO BE CAPPED AND ABANDONED.
13. = REMOVE TWO EXISTING SHRUBS.
14. = REMOVE BRUSH, WEEDS AND DEBRIS FROM HATCHED AREA IN PREPARATION FOR MULCH. PROTECTING EXISTING TREE AND ORNAMENTAL SHRUBS.
15. = REMOVE AND REPLACE EXISTING SIGNS AND MARKERS AS NECESSARY.

NOTES:

1) PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTH AND PLAN LOCATIONS.

PUMP STATION No.3

SCALE 5 0 5 10 FEET
HORIZONTAL SCALE

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PROFESSIONAL ENGINEER

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
DEMOLITION SITE PLAN

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET C2.3 OF 35

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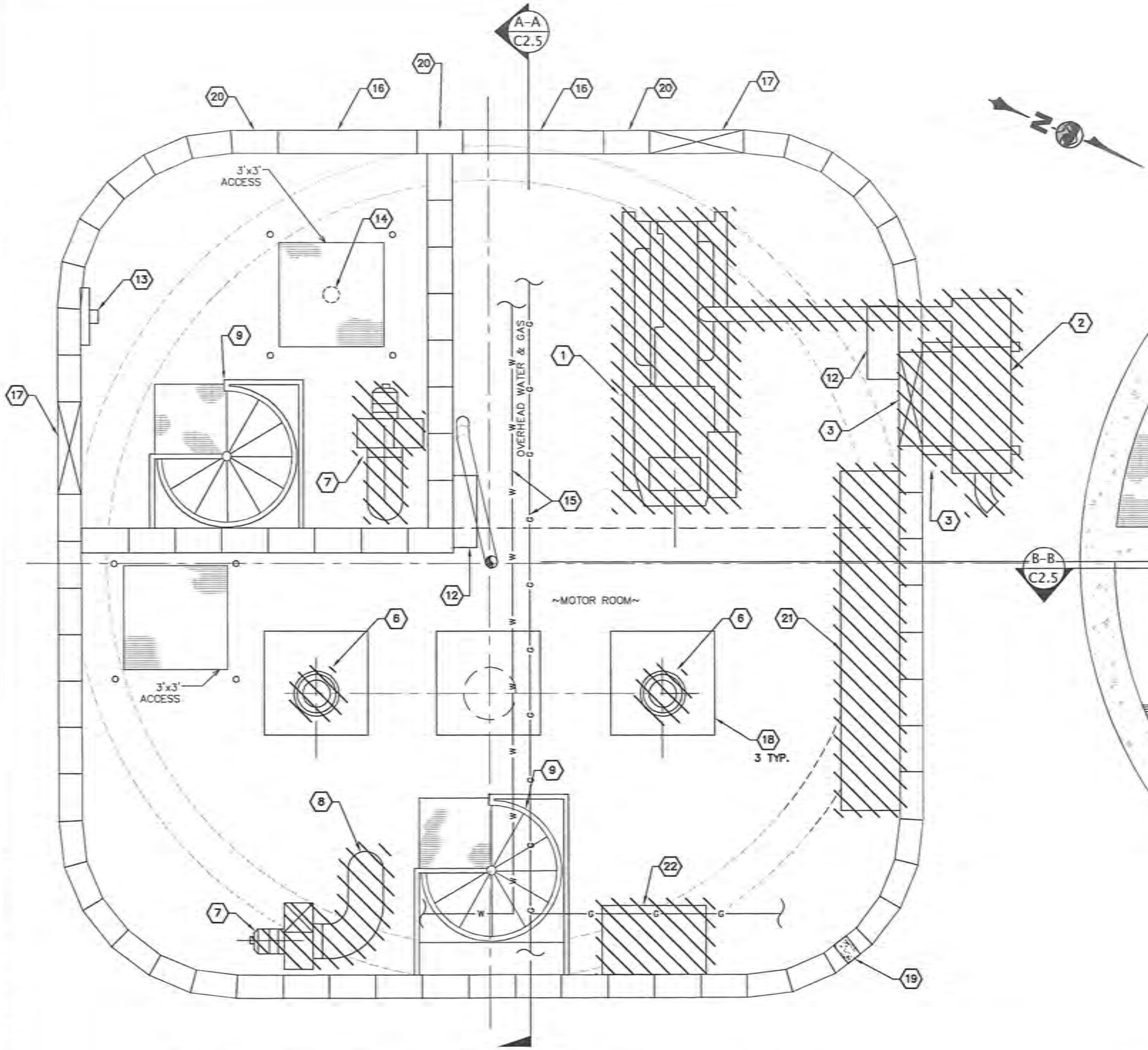
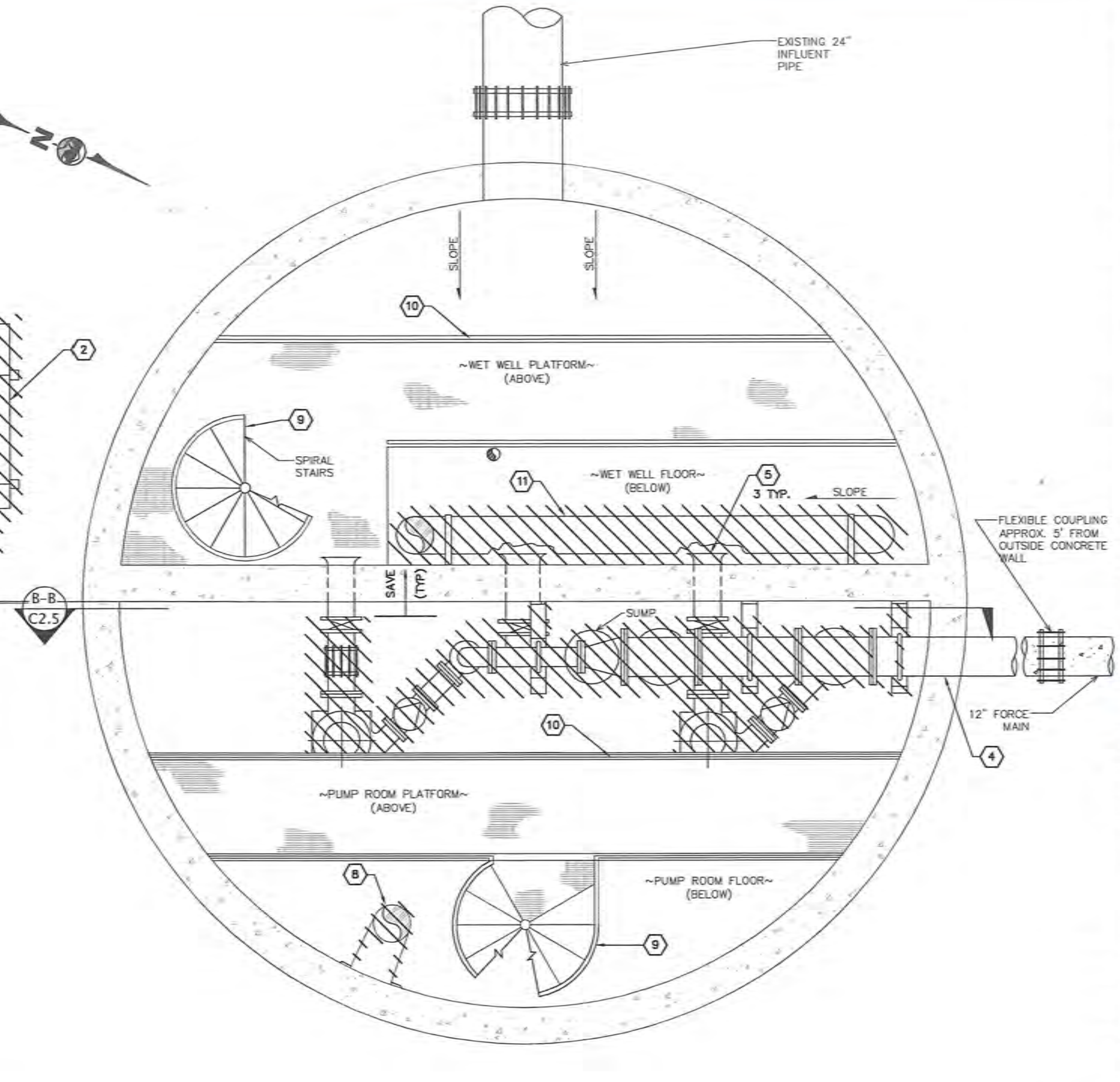


PUMP STATION #3 – DEMOLITION – MOTOR ROOM FLOOR



PUMP STATION #3 – DEMOLITION – PUMP ROOM & WET WELL

2 0 2 4
SCALE HORIZONTAL SCALE FEET

KEYED NOTES

1 = REMOVE & SALVAGE EXISTING GENERATOR.

2 = REMOVE & SALVAGE EXISTING EXHAUST SYSTEM.

3 = REMOVE & SALVAGE EXISTING EXHAUST FAN AND LOUVER BELOW GENERATOR EXHAUST SYSTEM.

4 = RE-USE EXISTING 12"ø WALL SPOOL IF IT MATCHES THE CENTERLINE OF THE NEW INTERIOR PIPE. IF THE NEW PIPING DOESN'T MATCH UP, THE CONTRACTOR SHALL REPLACE THE WALL SPOOL. CUT PIPE BACK ON EXTERIOR TO ALLOW CONNECTION OF THE NEW FORCE MAIN. CAP AND PLUG 10-FT OF ABANDONED MAIN WITH CDF. REMOVE EXISTING PIPE BRACKET SUPPORT.

5 = FLARED SUCTION INLETS (BELOW), PROTECT.

6 = REMOVE & SALVAGE EXISTING 15 HP PUMPS.

7 = REMOVE EXISTING EXHAUST FAN. NEW EXHAUST FANS TO BE LOCATED ON ROOF.

8 = EXISTING EXHAUST DUCT AND SUPPORTS IN THE MOTOR AND PUMP ROOMS TO BE REMOVED AND REPLACED.

9 = SPIRAL STAIRS, HANDRAILING, AND GRATING TO BE CLEANED PER SPEC. SECTION 00 99 00.

10 = PLATFORM & PLATFORM SUPPORTS TO BE CLEANED PER SPEC. SECTION 00 99 00.

11 = REMOVE AND REPLACE ALL DUCTING & SUPPORTS IN THE WET WELL VENTILATION SYSTEM.

12 = EXISTING "TELEMETRY PANEL" AND "INTRINSICALLY SAFE" PANEL TO REMAIN. TELEMETRY PANEL TO BE RELOCATED AS DIRECTED IN THE ELECTRICAL PLANS.

13 = REMOVE EXISTING HOIST MOUNT, PATCH WALL.

14 = CUT OFF EXISTING EYE-BOLT ON CEILING ABOVE. PATCH CEILING.

15 = REMOVE ALL EXISTING INTERIOR WATER AND GAS PIPING.

16 = REMOVE EXISTING DOORS & FRAMES IN PREPARATION FOR REPLACEMENT.

17 = REMOVE EXISTING LOUVERS IN PREPARATION FOR REPLACEMENT.

18 = SAWCUT 3'x 3' FLOOR OPENINGS (TYP 3). REFERENCE SHEET M3.1 FOR LOCATION AND SIZE.

19 = EXISTING WALL PENETRATION TO BE GROUTED WITH NON-SHRINK GROUT.

20 = REMOVE & REPLACE BRICK AT DOORWAY PER DETAIL 1/C4.4

21 = REMOVE EXISTING MCC & ELECTRICAL EQUIPMENT AS DIRECTED IN THE ELECTRICAL PLANS.

22 = REMOVE EXISTING WALL-HUNG DESK.

SHEET NOTES:

1. IF THE OWNER DECIDES THAT THEY DO NOT WANT ANY PORTION OF THE MATERIAL DESIGNATED TO BE SALVAGED, THE CONTRACTOR SHALL DISPOSE OF SAID MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
2. ALL ROOF DRAIN PIPING IN THE WET WELL IS TO BE REPLACED.

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CHECKED BY	MMM
DATE	6/08/2016
SCALE	AS SHOWN
JOB NUMBER	2014-0798
SHEET	C2.4 OF 35

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
DEMOLITION – MECHANICAL

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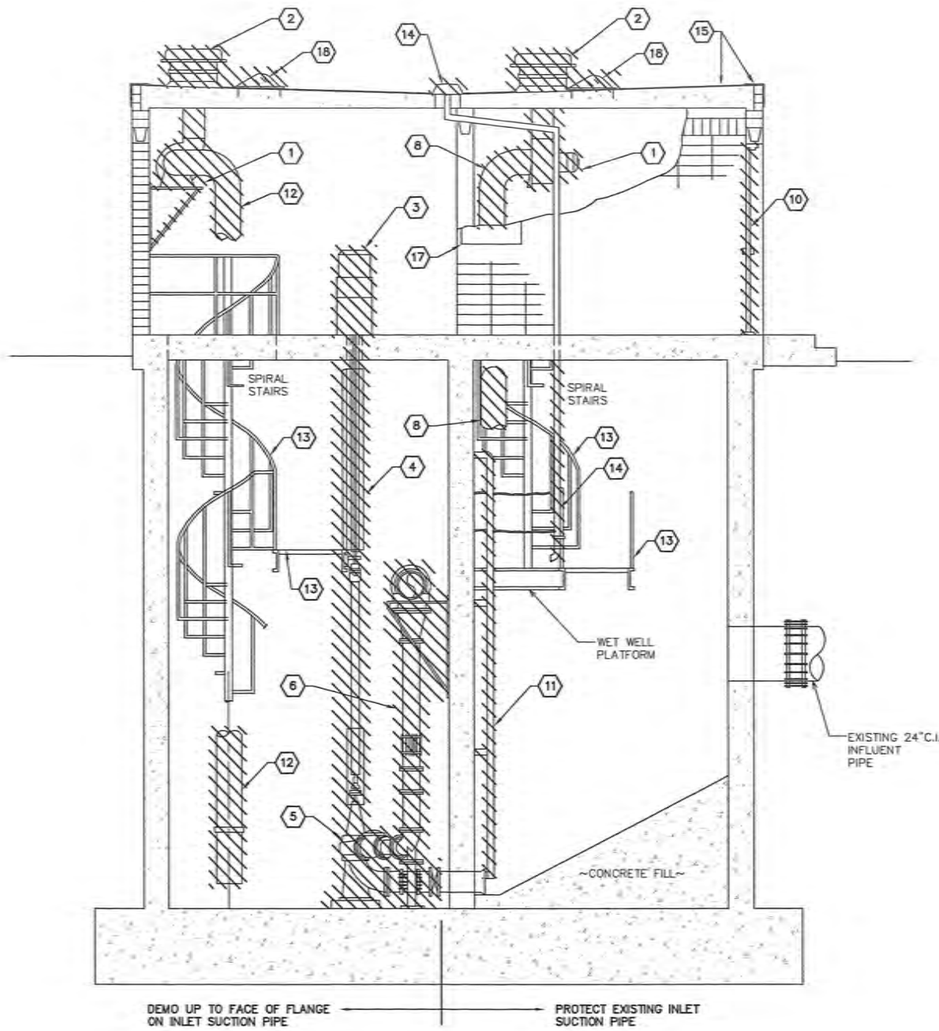
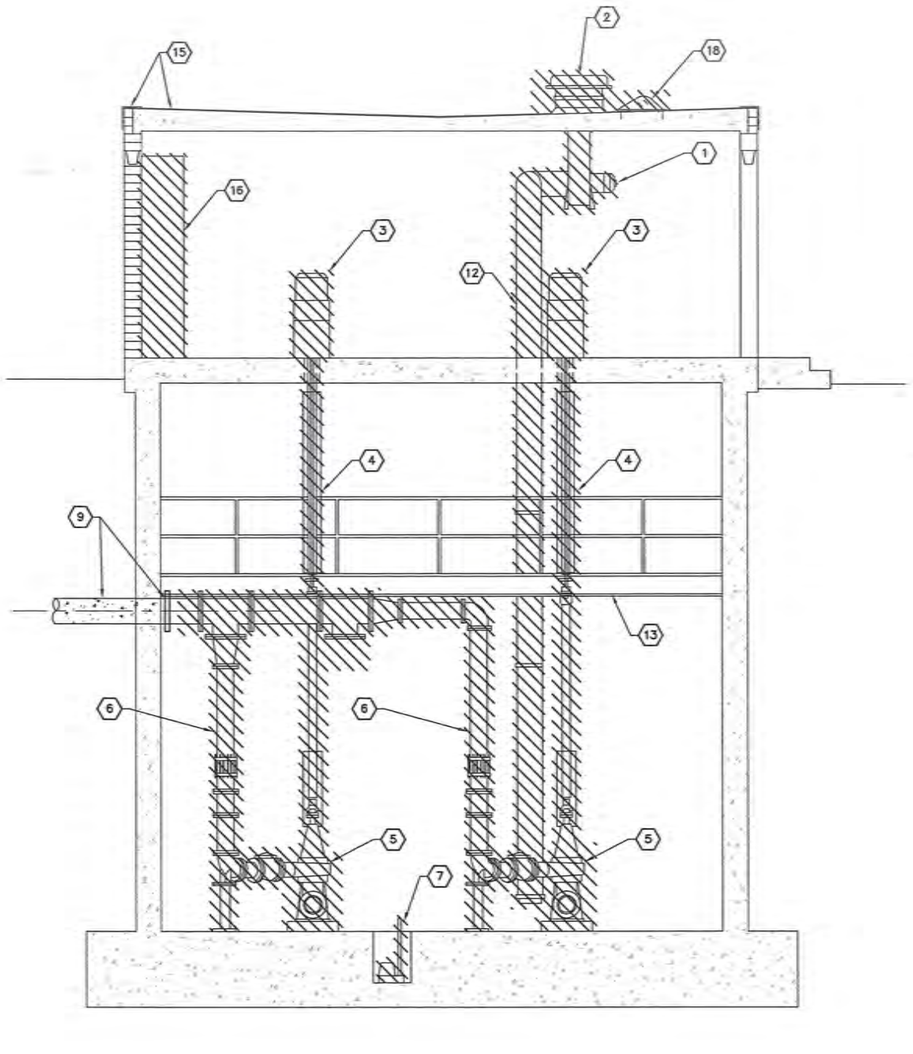


A-A C2.4 SECTION A-A



B-B C2.4 SECTION B-B

SHEET NOTES:

1. IF THE OWNER DECIDES THAT THEY DO NOT WANT ANY PORTION OF THE MATERIAL DESIGNATED TO BE SALVAGED, THE CONTRACTOR SHALL DISPOSE OF SAID MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
2. REMOVE ALL POTABLE WATER & GAS PIPING FROM THE PUMP AND MOTOR ROOMS (NOT SHOWN).

PUMP STATION #3 – DEMOLITION – MECHANICAL SECTIONS

3 0 3 6
SCALE HORIZONTAL SCALE FEET

KEYED NOTES

1. = REMOVE EXISTING EXHAUST FAN. NEW EXHAUST FANS TO BE LOCATED ON ROOF.
2. = REMOVE EXISTING ROOF VENTS.
3. = REMOVE EXISTING PUMP MOTORS.
4. = REMOVE EXISTING SAFETY CAGE, PUMP DRIVE SHAFT & SUPPORTS.
5. = REMOVE EXISTING PUMP & PUMP BASE.
6. = REMOVE ALL PIPING, VALVES, FITTINGS, & PIPE SUPPORTS MARKED FOR DEMOLITION.
7. = REMOVE SUMP PUMP & ASSOCIATED DISCHARGE PIPING AND SUPPORTS.
8. = REMOVE AND REPLACE ALL DUCTING AND SUPPORTS IN THE WET WELL VENTILATION SYSTEM.
9. = RE-USE EXISTING 12"ø WALL SPOOL IF IT MATCHES THE CENTERLINE OF THE NEW INTERIOR PIPE. IF THE NEW PIPING DOESN'T MATCH UP, THE CONTRACTOR SHALL REPLACE THE WALL SPOOL. CUT PIPE BACK ON EXTERIOR TO ALLOW CONNECTION OF THE NEW FORCE MAIN. CAP AND PLUG 10-FT OF ABANDONED MAIN WITH CDF. REMOVE EXISTING PIPE BRACKET SUPPORT.
10. = REMOVE EXISTING DOORS & FRAMES IN PREPARATION FOR REPLACEMENT.
11. = REMOVE & REPLACE EXISTING LADDER.
12. = REMOVE AND REPLACE ALL DUCTING AND SUPPORTS IN THE DRY SIDE VENTILATION SYSTEM.
13. = SPIRAL STAIRS, HANDRAIL, GRATING, PLATFORMS, AND PLATFORM SUPPORTS TO REMAIN. SEE SPEC. SECTION 00 99 00 FOR CLEANING.
14. = REMOVE & REPLACE (IN KIND) EXISTING 3-IN. ROOF DRAIN AND SUPPORT WITHIN THE WET WELL.
15. = REMOVE EXISTING MEMBRANE ROOFING AND FLASHING AND PREP CONCRETE SURFACE FOR ROOF REPLACEMENT.
16. = REMOVE EXISTING MCC & ELECTRICAL EQUIPMENT AS DIRECTED ON THE ELECTRICAL PLANS.
17. = EXISTING "TELEMETRY PANEL" AND "INTRINSICALLY SAFE PANEL" TO REMAIN (TELEMETRY PANEL NOT SHOWN).
18. = REMOVE AND REPLACE EXISTING SKYLIGHTS.

INSPECTION NOTES:

1. SUBSEQUENT TO THE INITIATION OF BYPASS PUMPING AND THE SHUTDOWN OF THE STATION, THE STATION WELL SHALL BE DRAINED, CLEANED, AND INSPECTED FOR LEAKS PRIOR TO INSTALLATION OF ANY COATINGS. IF ANY LEAKS ARE IDENTIFIED, THE CONTRACTOR WILL SUBMIT TO THE CITY (REVIEW AND APPROVAL), A STEP-BY-STEP PLAN TO SEAL THE WET WELL. WORK ASSOCIATED WITH SEALING ANY LEAKS IN THE WET WELL WILL BE PAID FOR ON A FORCE ACCOUNT BASIS THROUGH THE BID ITEM SET ASIDE FOR THAT WORK. COSTS ASSOCIATED WITH NORMAL REPAIRS TO THE WET WELL, NOT ASSOCIATED WITH LEAK REPAIR, WHICH ARE NECESSARY FOR THE INSTALLATION OF THE WET WELL COATINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
2. AFTER INITIAL SHUTDOWN OF THE STATION, THE ENGINEER SHALL INSPECT THE SPIRAL STAIRS AND WALKWAY IN THE WET WELL TO DETERMINE IF ANY STRUCTURAL REPAIRS TO THE STRUCTURE OR ITS CONNECTIONS ARE NECESSARY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL SAFETY MEASURES, INCLUDING VENTILATION AND CONFINED SPACE ENTRY REQUIREMENTS, TO FACILITATE THIS INSPECTION WORK. WORK ASSOCIATED WITH ANY STRUCTURAL REPAIRS RESULTING FROM THIS INSPECTION SHALL BE PAID FOR ON A FORCE ACCOUNT BASIS THROUGH THE BID ITEM SET ASIDE FOR THAT WORK.

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ELIZABETH ANNE STIRLING STATE OF WASHINGTON 41548 REGISTERED PROFESSIONAL ENGINEER

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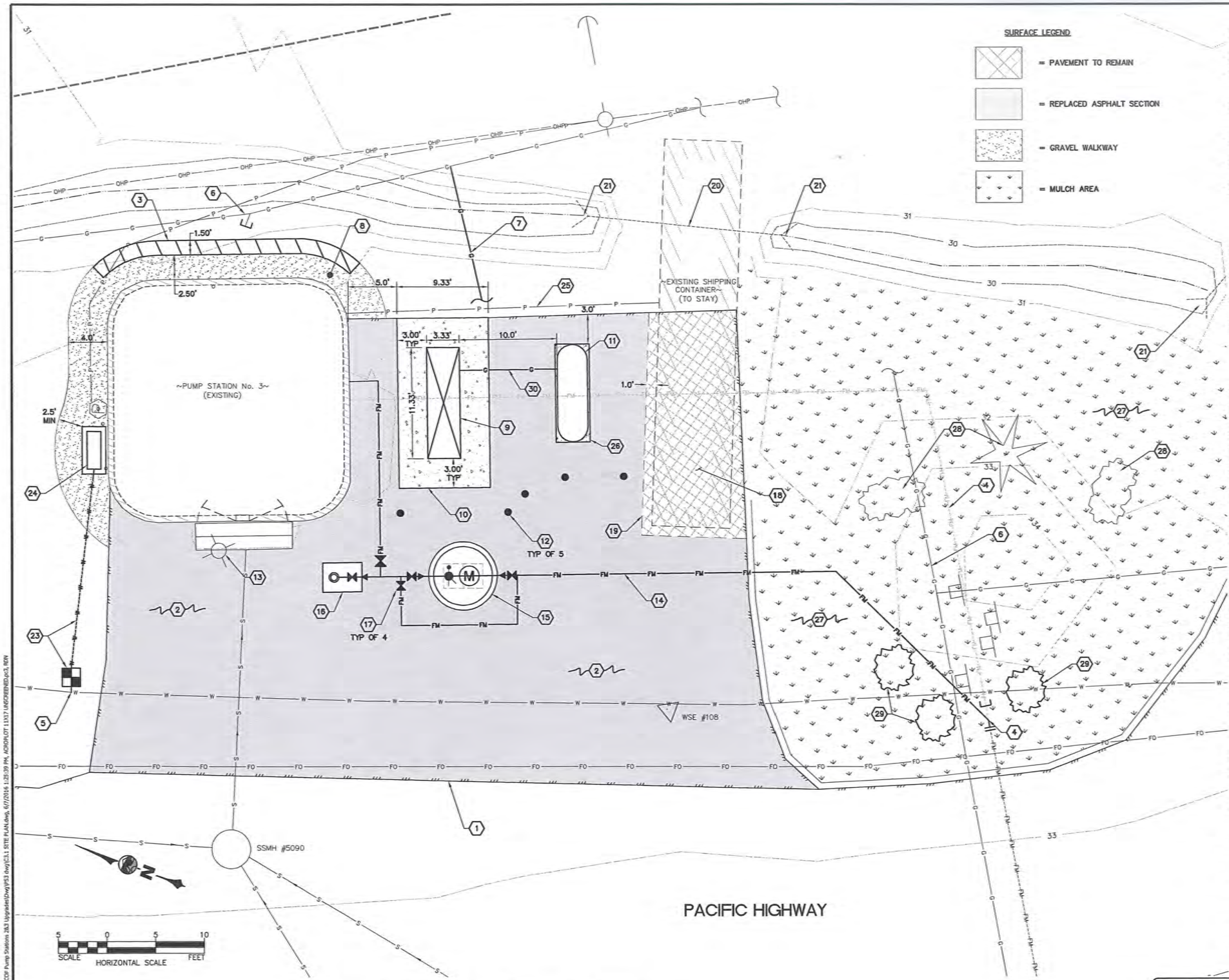
EAS/SJW	SJW/RDN	MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
DEMOLITION – MECHANICAL SECTIONS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET C2.5 OF 35



PUMP STATION #3 – SITE PLAN

SURFACE LEGEND

- = PAVEMENT TO REMAIN
- = REPLACED ASPHALT SECTION
- = GRAVEL WALKWAY
- = MULCH AREA

KEYED NOTES

1. = MATE NEW ASPHALT INTO EDGE OF ROADWAY AT SAWCUT LINE.
2. = REPLACE ASPHALT SECTION PER DETAIL (1/C4.1)
3. = NEW GRAVITY BLOCK RETAINING WALL PER DETAIL (5/C4.1) PROTECT EXISTING POWER DURING INSTALLATION. CONSTRUCT WALL AROUND POWER FEED.
4. = APPROXIMATE LOCATION OF EXISTING 12-INCH SEWER FORCEMAIN. ABANDON FROM PS#3 TO CONNECTION POINT. SEE NOTES 2 & 4.
5. = APPROXIMATE LOCATION OF EXISTING POTABLE WATER SERVICE. SEE NOTE 2.
6. = APPROXIMATE LOCATION OF EXISTING GAS SERVICE. SEE NOTE 2.
7. = NEW GAS SERVICE. ROUTE PIPING TO NEW GAS METER TO BE INSTALLED ADJACENT TO THE NEW GENERATOR PLATFORM. REFERENCE ELECTRICAL DRAWINGS FOR FINAL LOCATION OF NEW METER AND THE CONNECTION POINT TO THE GENERATOR. CONTRACTOR RESPONSIBLE FOR COORDINATING WITH CASCADE NATURAL GAS TO COMPLETE THIS WORK.
8. = NEW 2'-6" TO 4'-0" WIDE GRAVEL WALKWAY AROUND PUMP HOUSE PER DETAIL (5/C4.1)
9. = NEW STANDBY GENERATOR. REFERENCE ELECTRICAL PLANS FOR DETAILS.
10. = NEW EQUIPMENT PAD FOR GENERATOR PER DETAIL (5/S1.1)
11. = NEW 500-GALLON PROPANE TANK. REFERENCE STRUCTURAL DRAWINGS FOR EQUIPMENT SLAB DETAILS. THE CONTRACTOR TO COORDINATE WITH THE PROPANE SUPPLIER TO RENT AND INSTALL THE TANK. ALL COSTS ASSOCIATED WITH COORDINATING THIS WORK (EXCLUDING RENTAL) SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
12. = NEW BOLLARD PER DETAIL (2/C4.2)
13. = EXISTING WALL-MOUNTED LIGHT TO BE REPLACED. REFERENCE ELECTRICAL PLANS FOR DETAILS.
14. = NEW 12-INCH SEWER FORCE MAIN.
15. = NEW FLOWMETER VAULT PER DETAIL (1/C4.3)
16. = NEW BYPASS SNORKEL VAULT PER DETAIL (3/C4.3)
17. = NEW BURIED 12-INCH GATE VALVE PER DETAIL (4/C4.2)
18. = EXISTING ASPHALT UNDER SHIPPING CONTAINER TO REMAIN.
19. = MATE NEW ASPHALT TO EXISTING ASPHALT AT SAWCUT LINE.
20. = EXISTING 12-INCH STORM CULVERT TO BE CLEANED AND PROTECTED DURING CONSTRUCTION.
21. = RIP RAP CULVERT ENDS PER DETAIL (6/C4.1)
22. = RESERVED.
23. = NEW 1" DIA. WATER SERVICE AND METER PER CITY OF FERNDALE STANDARDS. CONNECT AT MAIN (SEE NOTE 2).
24. = NEW POTABLE REDUCED PRESSURE BACKFLOW PREVENTER ASSEMBLY WITH ALUMINUM INSULATED ENCLOSURE PER DETAIL (2/C4.3)
25. = EXISTING POWER TO CONTAINER. PROTECT DURING CONSTRUCTION.
26. = NEW CONCRETE PAD FOR PROPANE TANK PER DETAIL (3/S1.1)
27. = REMOVE WEEDS AND BRUSH FROM HATCHED AREA AND INSTALL 4" THICK MULCH.
28. = PROTECT TREE AND ORNAMENTAL SHRUBS INDICATED.
29. = PLANT SMALL SHRUBS AS DIRECTED BY CITY OF FERNDALE. FOR BIDDING PURPOSES ASSUME INSTALLATION OF 8 EA, 2-GALLON EVERGREEN SHRUBS.
30. = SCHEMATIC LOCATION OF NEW UNDERGROUND PROPANE LINE FROM TANK TO GENERATOR. PIPE SIZE TO BE DETERMINED BY GENERATOR MANUFACTURER.

NOTES:

1. ALL UNDERGROUND UTILITY PIPING TO BE INSTALLED IN ACCORDANCE WITH DETAIL (2/C4.1)
2. PRIOR TO COMMENCING ANY UNDERGROUND WORK, THE CONTRACTOR SHALL POTHOLE ALL UTILITIES AT ALL PROPOSED CROSSING AND CONNECTION POINTS TO CONFIRM THEIR DEPTH AND PLAN LOCATIONS.
3. HYDROSEED DISTURBED AREAS AROUND STATION AND PAVING.
4. REFERENCE SPECIFICATION SECTION 01010 FOR CONTRACT REQUIREMENTS REGARDING CONTROL OF WASTEWATER DURING DRAIN DOWN AND TIE-IN OF THE NEW FORCE MAIN.

CALL TWO BUSINESS DAYS BEFORE YOU DIG 1-800-424-5555 UTILITIES UNDERGROUND LOCATION CENTER

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ELIZABETH ANNE STEELE — STATE OF WASHINGTON — 21548 — REGISTERED PROFESSIONAL ENGINEER

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CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 3
PROPOSED SITE PLAN

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET C3.1 OF 35

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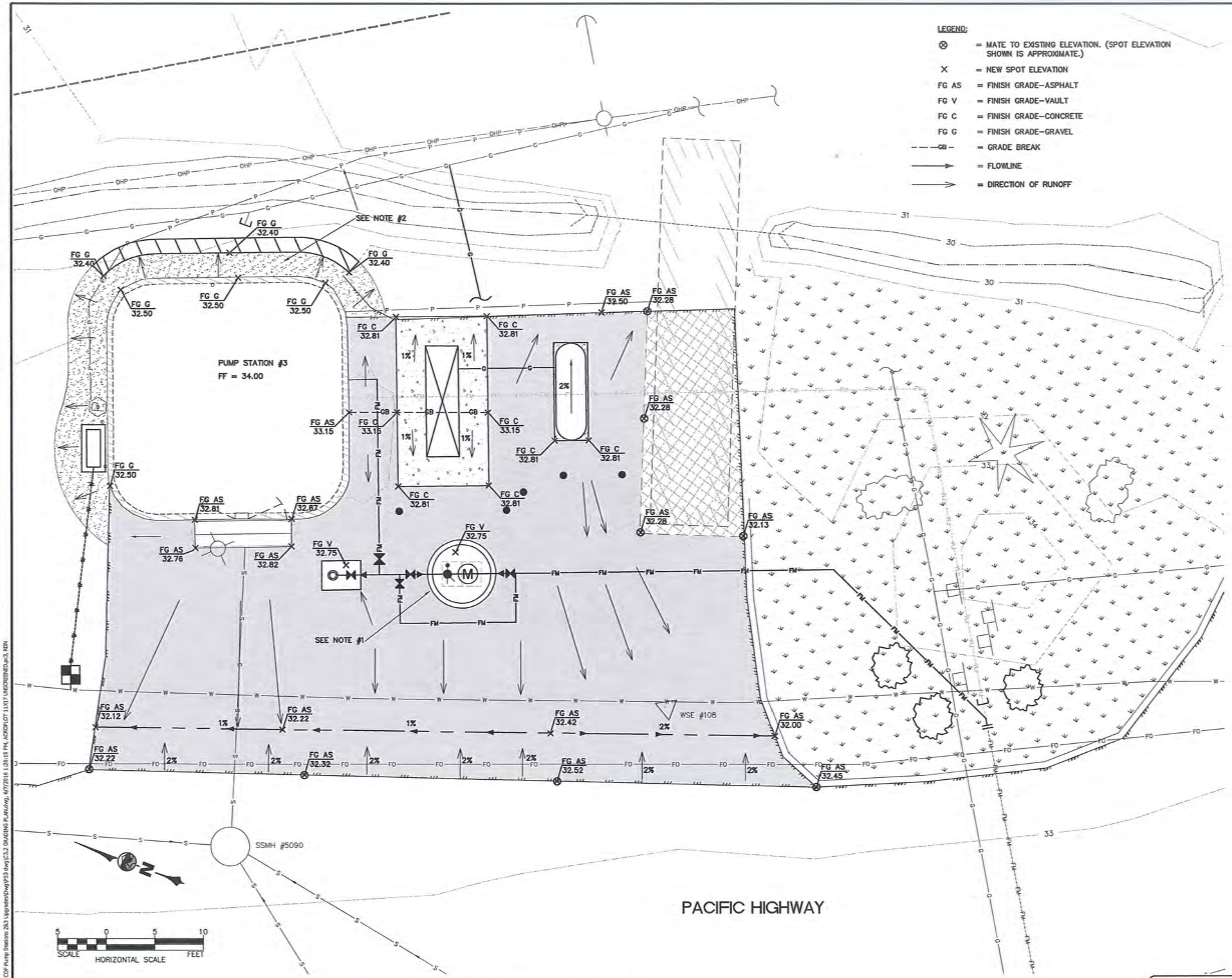

NOTES:

1. TOP OF VAULT AT BOTH THE FLOW METER VAULT AND BYPASS PORT VAULT SHALL BE ½" ABOVE SURROUNDING GRADE WITH A SMOOTH TRANSITION TO ASPHALT.
2. CROSS SLOPE ON GRAVEL PATH SHALL BE ≈ 4%.

PUMP STATION #3 – GRADING PLAN

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 3
PROPOSED GRADING PLAN

SHEET	DATE	SCALE	JOB NUMBER
C3.2	6/08/2016	AS SHOWN	2014-079B

OF 35

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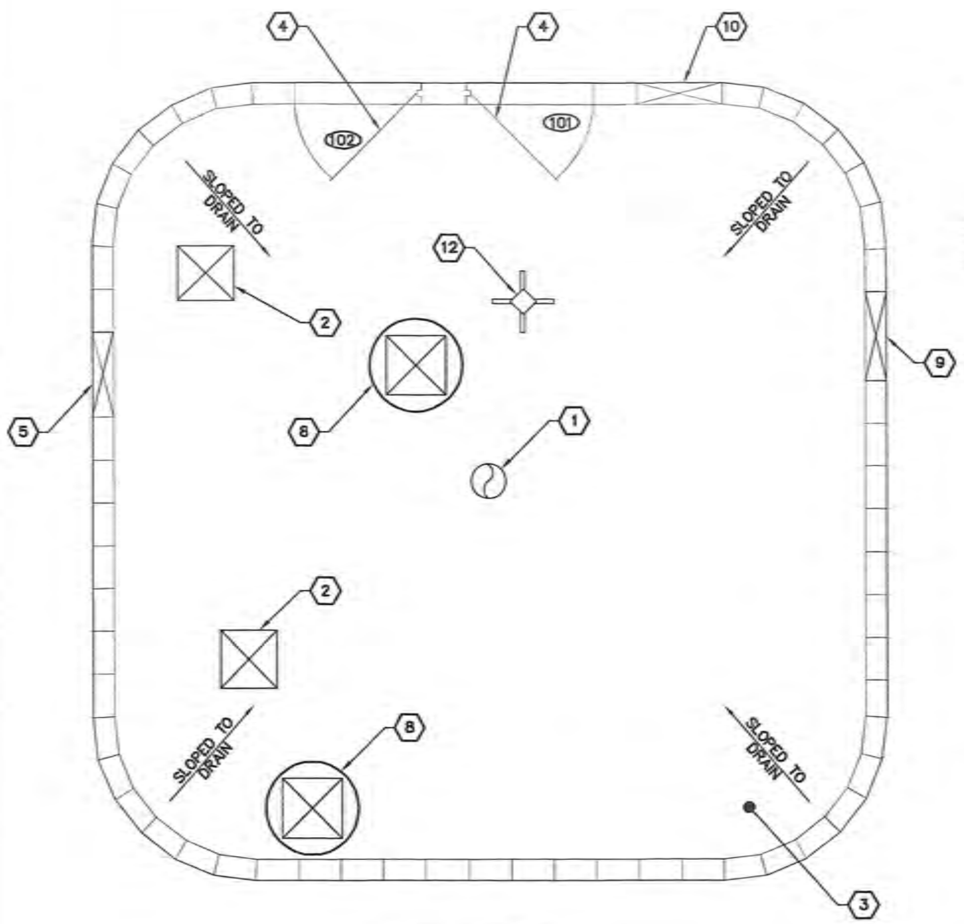
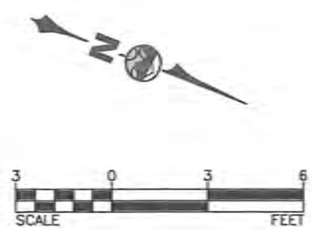
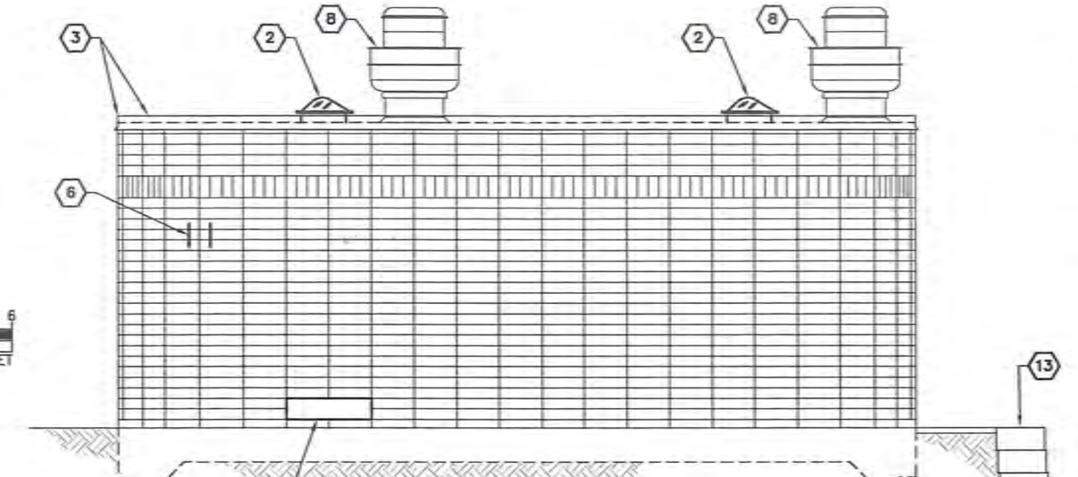
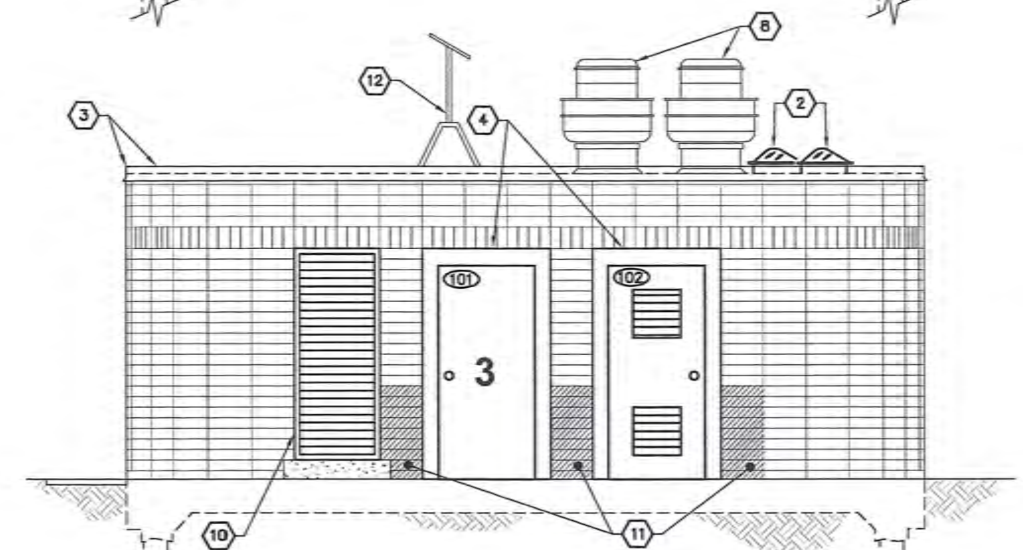


ROOF PLAN

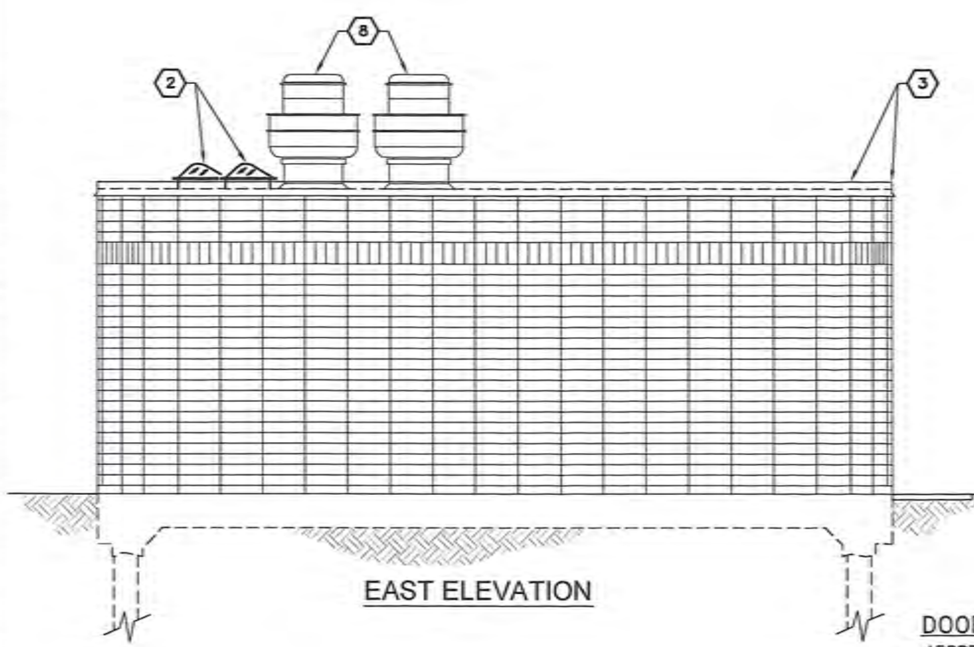




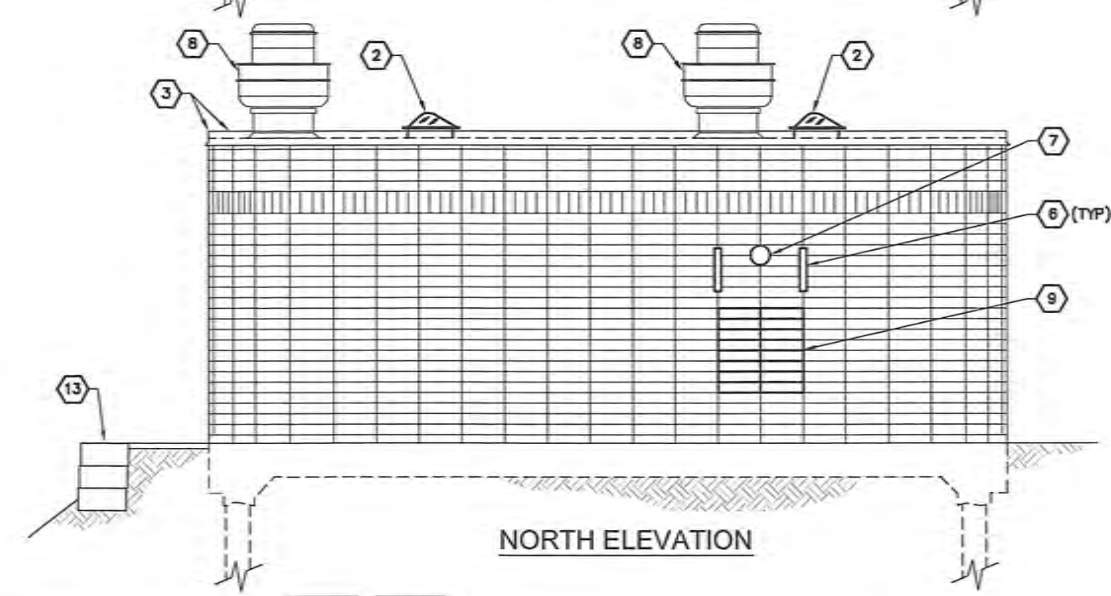
SOUTH ELEVATION



WEST ELEVATION



EAST ELEVATION



NORTH ELEVATION

KEYED NOTES

(1) = REPLACE EXISTING ROOF DRAIN PER DETAIL 4/C4.1. TIE INTO EXISTING ROOF DRAIN PIPING.

(2) = INSTALL NEW SKYLIGHT PER DETAIL 3/C4.1

(3) = REMOVE EXISTING MEMBRANE ROOF AND FASCIA AND PREPARE CONCRETE ROOF FOR NEW MEMBRANE SYSTEM. INSTALL NEW PERIMETER EXTRUDED ALUMINUM FASCIA AND FLASHING AROUND ALL NEW ROOF EQUIPMENT. INSTALL NEW ROOF MEMBRANE SYSTEM.

(4) = INSTALL NEW DOORS #101 & 102. REFERENCE DOOR SCHEDULE FOR DETAILS. ROUGH OPENING FOR EACH DOOR IS APPROXIMATELY 4'–0" X 7'–4". CONTRACTOR TO CONFIRM IN THE FIELD.

(5) = REPLACE EXISTING FIXED LOUVER IN KIND. ROUGH OPENING APPROXIMATELY 2'–8" x 8".

(6) = REMOVE EXISTING UNUSED STEEL SUPPORTS, ANGLES, AND BRACKETS. PATCH ALL HOLES WITH NON–SHRINK GROUT. TYPICAL AROUND THE WHOLE EXTERIOR OF THE BUILDING.

(7) = PLUG EXISTING EXHAUST PIPE OPENING WITH NON–SHRINK GROUT.

(8) = INSTALL NEW ROOFTOP BLOWERS PER DETAIL 2/C4.4

(9) = REPAIR EXISTING 2'–8"x 2'–8" OPENING WITH NEW BRICK

(10) = REPLACE EXISTING LOUVER PER DETAIL 4/C4.3

(11) = REMOVE AND REPLACE CRACKED BRICK (HATCHED) PER DETAIL 1/C4.4

(12) = REMOVE AND REINSTALL EXISTING ANTENNA & MOUNTING AS REQUIRED FOR INSTALLATION OF THE NEW ROOF. (FOR CLARITY, THE ANTENNA IS ONLY SHOWN ON THE WEST ELEVATION.) COORDINATE WITH INSTALLATION OF NEW ROOF.

(13) = GRAVEL PATH AND RETAINING WALL PER DETAIL 5/C4.1

FINISH SCHEDULE

LOCATION	MATERIAL	CONDITION
DRY SIDE		
MOTOR ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
PUMP ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
STAIRWAY/WALKWAY	ALUMINUM	E
WET SIDE		
ACCESS ROOM		
CEILING	CONCRETE	B
WALLS	BRICK MASONRY	G
FLOOR	CONCRETE	F*
WET WELL		
BELOW WALKWAY PLATFORM (INCL. FLOOR)	CONCRETE	A
ABOVE WALKWAY PLATFORM (INCL. CEILING)	CONCRETE	B
STAIRWAY/WALKWAY	ALUMINUM	E
MISCELLANEOUS		
MISC. EXPOSED FERROUS METAL	MISC.	D
DOORS	PT ON GALV. STEEL	C (STENCIL "3", MATCH EXISTING)
EXTERIOR WALLS	BRICK MASONRY & CONCRETE	G

*SOLVENT CLEANING UNDER GENERATOR, IN PUMP ROOM AND WET WELL ACCESS ROOM AS NECESSARY.

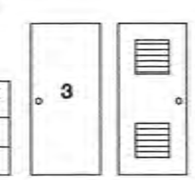
NOTE: REFERENCE SPECIFICATIONS SECTIONS 09900 & 09100 FOR DETAIELD REQUIREMENTS FOR THE SURFACE PREPARATION, COATING & PAINTING WORK.

DOOR SCHEDULE

ABBREVIATIONS
INS HM = INSULATED HOLLOW METAL
PT = BAKED–ON ENAMEL PAINT

#	TYPE	SIZE	MATERIAL	FINISH	HARDWARE GROUP
101	A	3'–6"x 7'–0"x 1¾"	INS HM	PT	1
102	B*	3'–6"x 7'–0"x 1¾"	INS HM	PT	1

*LOUVER SIZE = 24"W x 24"H, (TYP)



NOTE: REFERENCE SPECIFICATIONS SECTIONS 09900 & 09100 FOR DETAIELD REQUIREMENTS FOR THE SURFACE PREPARATION, COATING & PAINTING WORK.

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DESIGNED BY EAS/SJW
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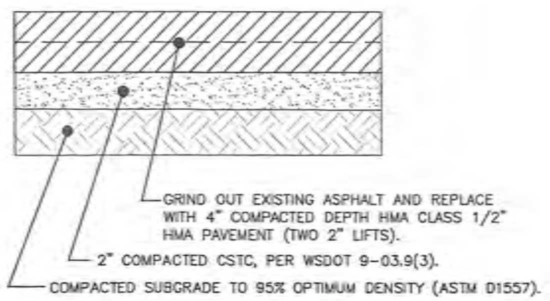
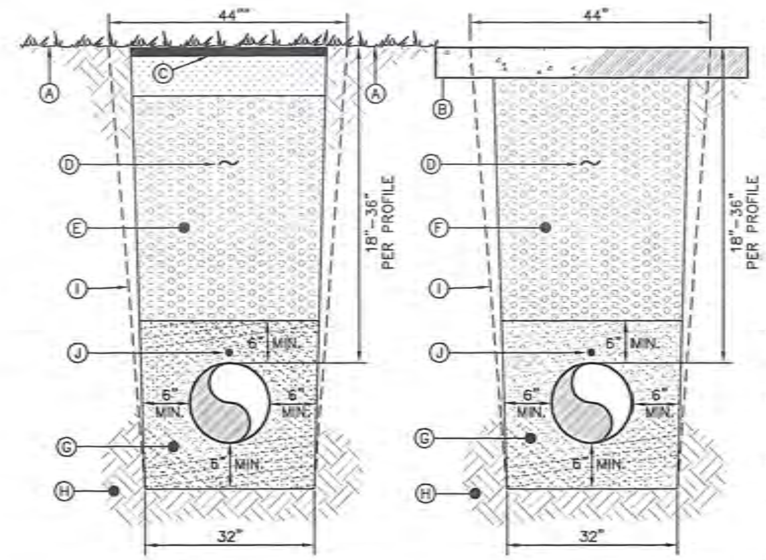
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
EXTERIOR BUILDING PLANS & ELEVATIONS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079B
SHEET C3.3 OF 35



1 / C3.1 ASPHALT REPLACEMENT SECTION

NOT TO SCALE

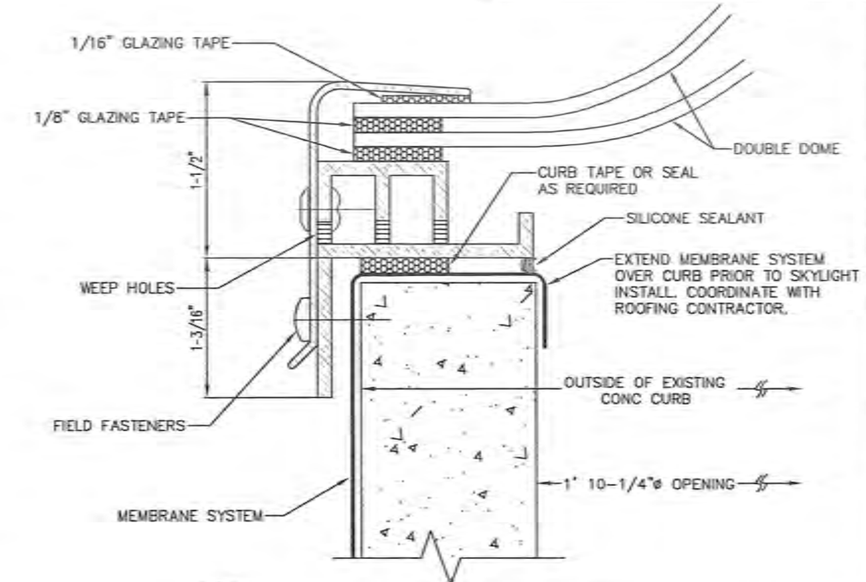


KEYED NOTES:

A. SOD AND TOPSOIL EXPOSED AREAS.
B. NEW SIDEWALK OR PAVEMENT
C. SODDED LAWN OVER 6 INCHES OF TOPSOIL TYPE "A" PER SPECIFICATIONS
D. 2" METALLIC DETECTOR TAPE 8" TO 12" BELOW FINISH GRADE.
E. BANK RUN GRAVEL BACKFILL PER WSDOT 9-03.19 COMPACTED TO 90% MAX. DENSITY INSIDE RIGHT-OF-WAY.
F. BANK RUN GRAVEL BACKFILL PER WSDOT 9-03.19 COMPACTED TO 95% MAX. DENSITY
G. PIPE ZONE GRAVEL BEDDING PER WSDOT 9-03.12(3) COMPACTED TO 95% MAX. DENSITY
H. UNDISTURBED NATIVE MATERIAL
I. ROCK EXCAVATION PAY LIMITS COMPACTED TO 90% MAX. DENSITY
J. #10 AWG INSULATED TRACER WIRE STUBBED TO GROUND LEVEL EVERY 1000 FEET.

2 / C3.1 TYPICAL TRENCHING & BACKFILL

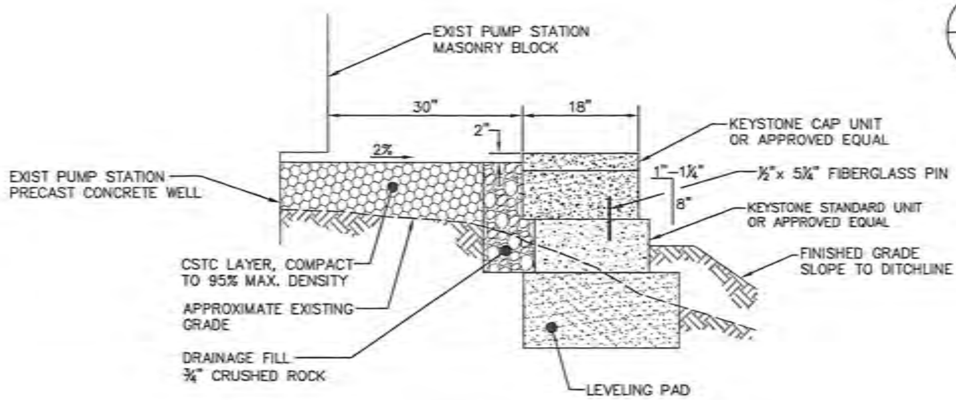
NOT TO SCALE



3 / C3.3 SKYLIGHT DETAIL

NOT TO SCALE

M1.2
M1.3



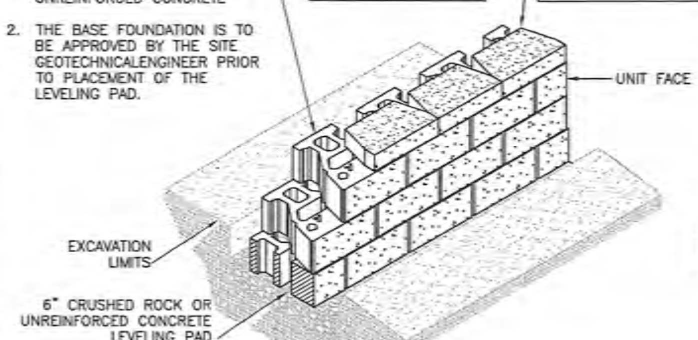
TYPICAL GRAVEL GRAVITY WALL SYSTEM

BASE LEVELING PAD NOTES:

1. THE LEVELING PAD IS TO BE CONSTRUCTED OF CRUSHED STONE OR 2,000 PSI± UNREINFORCED CONCRETE
2. THE BASE FOUNDATION IS TO BE APPROVED BY THE SITE GEOTECHNICALENGINEER PRIOR TO PLACEMENT OF THE LEVELING PAD.

COMPAC III STANDARD UNIT	
WIDTH:	18"
*DEPTH:	18"
HEIGHT:	8"
*WEIGHT:	108 lbs

COMPAC III CAP UNIT	
WIDTH:	18"
*DEPTH:	10 1/2"
HEIGHT:	4"
*WEIGHT:	50 lbs

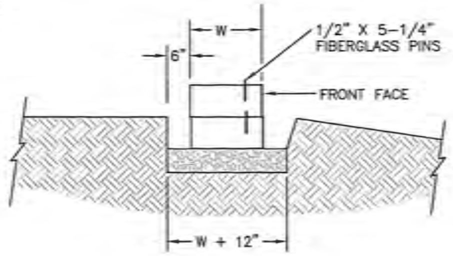


BASE PAD ISOMETRIC SECTION VIEW

*DIMENSIONS & WEIGHT MAY VARY BY REGION

NOTE:

1. THE LEVELING PAD IS TO BE CONSTRUCTED OF CRUSHED STONE OR 2000 PSI ± UNREINFORCED CONCRETE.

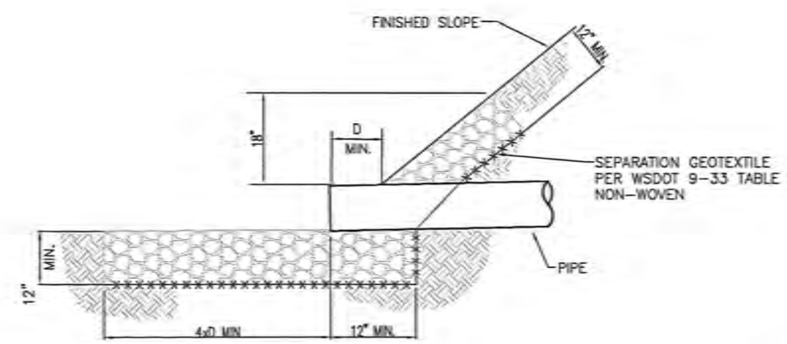


SECTION

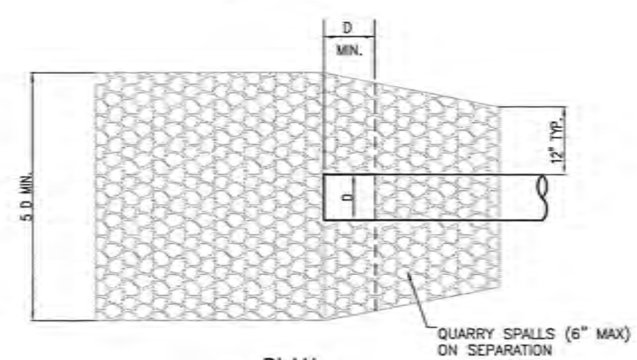
LEVELING PAD DETAIL

5 / C3.1 GRAVEL PATH & RETAINING WALL SYSTEM

NOT TO SCALE



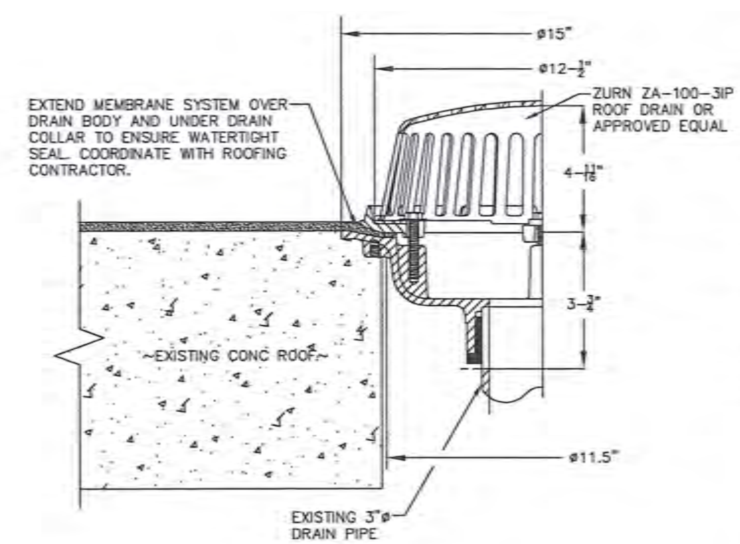
SECTION



PLAN

6 / C3.1 PIPE INLET/OUTLET PROTECTION

NOT TO SCALE



4 / C3.3 ROOF DRAIN DETAIL

NOT TO SCALE

M1.2

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ELIZABETH ANNE STEELE — STATE OF WASHINGTON — REGISTERED PROFESSIONAL ENGINEER — 6/8/16

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CHECKED BY MMM

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
CIVIL DETAILS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079B

SHEET C4.1 OF 35

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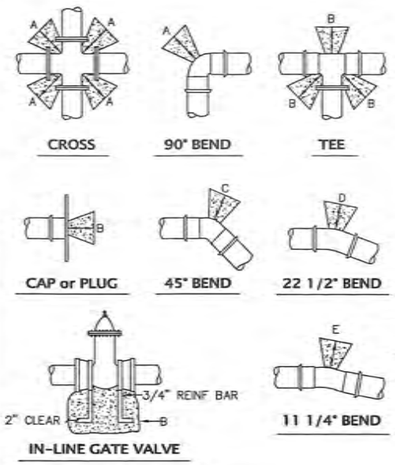
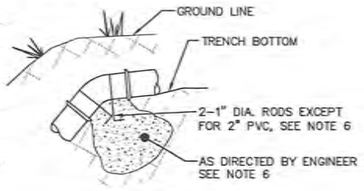


(PARTIAL RESTRAINT MUST BE PROVIDED BY PIPELINE BEYOND VALVE)

THRUST BLOCK TABLE					
MINIMUM BEARING AREA AGAINST UNDISTURBED SOIL IN SQUARE FEET					
PIPE SIZE	A	B	C	D	E
4"	2	2	2	2	2
6"	4	3	2	2	2
8"	7	5	4	2	2
10"	11	8	6	3	2
12"	16	12	9	5	3
16"	29	20	16	8	4
20"	45	32	24	13	6



VERTICAL BEND

NOTES

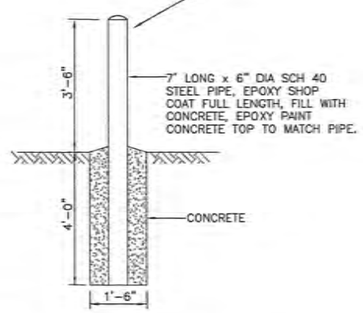
1. SQUARE FEET OF CONCRETE THRUST BLOCK AREA IS BASED ON 200 P.S.I. INTERNAL PRESSURE, A SOIL SAFE BEARING OF 3000 POUNDS PER SQUARE FOOT AND A FACTOR OF SAFETY OF 1.5.
2. BEARING AREA MUST BE ADJUSTED FOR INTERNAL PRESSURES AND LOWER SOIL BEARING VALUES.
3. CONCRETE BLOCKING SHALL BE CAST IN PLACE AND HAVE A MINIMUM OF 1/4 SQUARE FOOT BEARING AGAINST THE FITTING.
4. BLOCK SHALL BEAR AGAINST FITTINGS ONLY AND SHALL BE CLEAR OF JOINTS TO PERMIT TAKING UP OR DISMANTLING JOINT.
5. THE CONTRACTOR SHALL INSTALL BLOCKING WHICH IS ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.
6. STAINLESS STEEL BANDING SHALL BE USED AT 2" PVC VERTICAL BENDS INSTEAD OF 1" RODS. CONTACT ENGINEER FOR SIZING OF THRUST BLOCK AND DETAILS.
7. ALL BENDS, TEES & CROSSES SHALL INCLUDE RESTRAINED JOINTS (ROMAC GRIPPER) AS WELL AS THRUST BLOCKING.

1 C3.1 SEWER FORCE MAIN THRUST BLOCK SCHEDULE

NOT TO SCALE

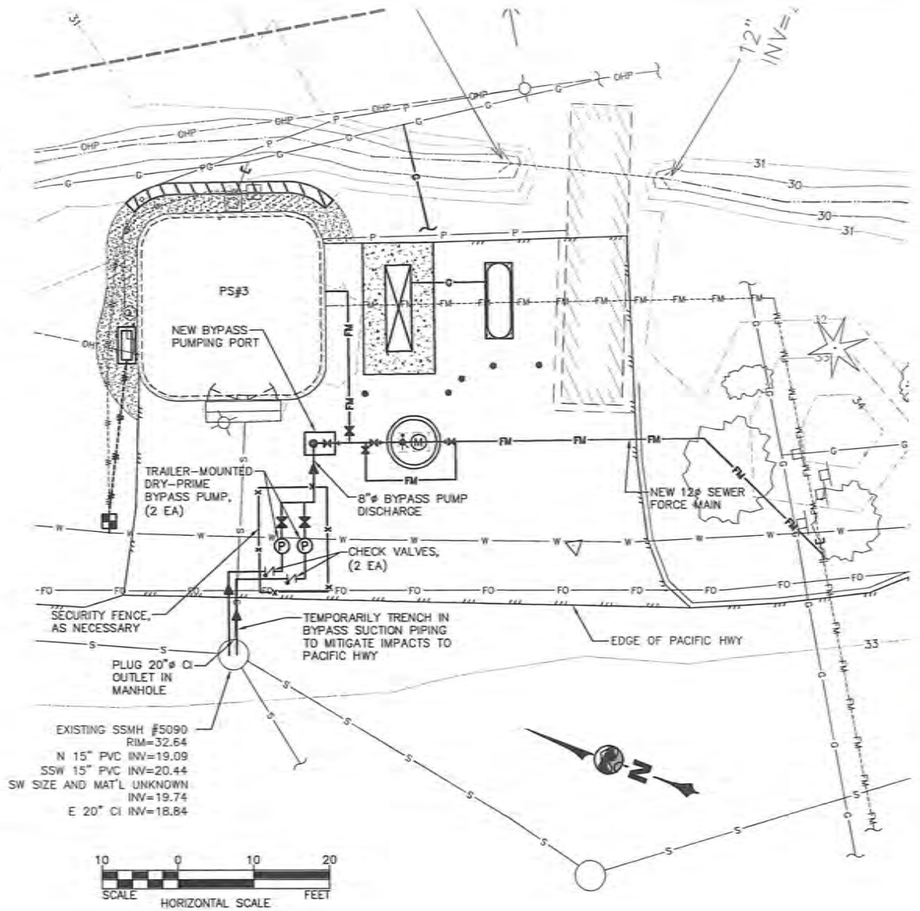
C4.3

ENCASE ALL BOLLARDS WITH BUMPER POST SLEEVES. SLEEVES TO BE YELLOW, 1/4" PE, UV RESISTANT, WITH NEOPRENE TAPE AS RECOMMENDED BY MFR. NEW PIG CORP. ITEM# PLS 195 (800-468-4647).



2 C3.1 TYPICAL BOLLARD FOR ASPHALT SURFACE

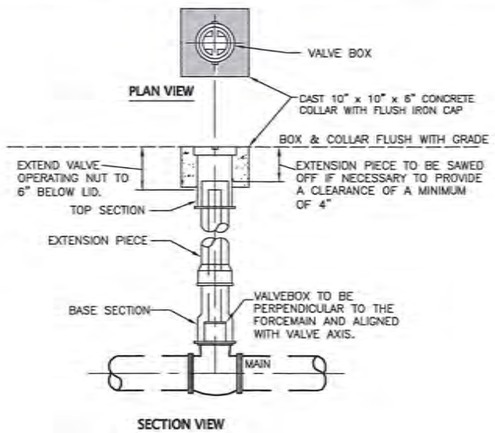
NOT TO SCALE



3 C3.1 SEWER BYPASS PUMPING SCHEMATIC

NOTES:

1. VALVE BOX AND LID SHALL BE SET ¼" BELOW FINISH GRADE IN ASPHALT AREAS. SET VALVE BOX TO GRADE IN UNPAVED AREAS AND CENTER IN CONCRETE PAD SLOPED IN DIRECTION OF TRAVEL.
2. SOLID COPPER TRACER WIRE TO TERMINATE IN VALVE BOXES (3' EXTRA WIRE INSIDE VALVE BOXES.)
3. BOX SHALL REST ON BEDDING ROCK (NOT ON VALVE OR PIPE) AND SHALL BE CENTERED ON OPERATING NUT.
4. VALVE BOX SHALL BE CAST IRON AND SHALL HAVE A MINIMUM INSIDE DIAMETER OF 4½".

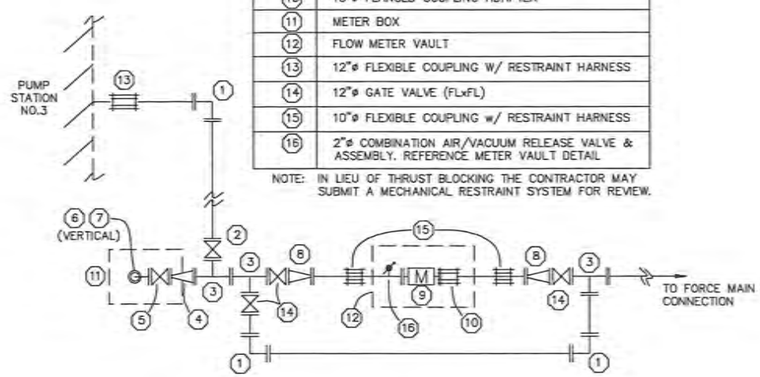


4 C3.1 TYPICAL VALVE BOX & CONCRETE COLLAR DETAIL

NOT TO SCALE

KEYED	DESCRIPTION
1	12" ø D.I. 90° EL (MJxMJ)
2	12"ø GATE VALVE (FLxMJ)
3	12"ø D.I. TEE (FLxFLxFL)
4	8"x12"ø D.I. REDUCER (FLxFL)
5	8"ø GATE VALVE (FLxFL)
6	8"ø D.I. 90° EL (FLxFL)
7	8"ø FLxFNPT ADAPTER (COMPANION FLANGE) 8"ø SSL NPT NIPPLE (1"-2" MIN LENGTH) 8"ø SSL FEMALE CAM & GROOVE x FNPT
8	10"x12"ø D.I. REDUCER (FLxFL)
9	10"ø MAGNETIC FLOW METER (FLxFL)
10	10"ø FLANGED COUPLING ADAPTER
11	METER BOX
12	FLOW METER VAULT
13	12"ø FLEXIBLE COUPLING W/ RESTRAINT HARNESS
14	12"ø GATE VALVE (FLxFL)
15	10"ø FLEXIBLE COUPLING w/ RESTRAINT HARNESS
16	2"ø COMBINATION AIR/VACUUM RELEASE VALVE & ASSEMBLY. REFERENCE METER VAULT DETAIL

NOTE: IN LIEU OF THRUST BLOCKING THE CONTRACTOR MAY SUBMIT A MECHANICAL RESTRAINT SYSTEM FOR REVIEW.



5 – SEWER FORCE MAIN YARD PIPING SCHEMATIC

NOT TO SCALE

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ELIZABETH ANNE STERLING — STATE OF WASHINGTON — 21548 — REGISTERED PROFESSIONAL ENGINEER

7/8/16

DESIGNED BY	DRAWN BY	CHECKED BY
EAS/SJW	SJW/RDN	MMM

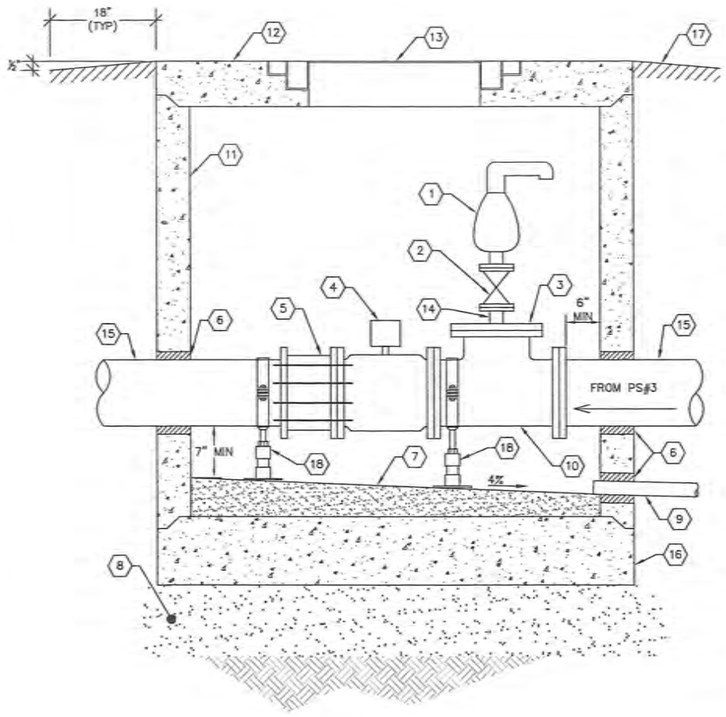
CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 3
CIVIL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-0798

SHEET C4.2 OF 35

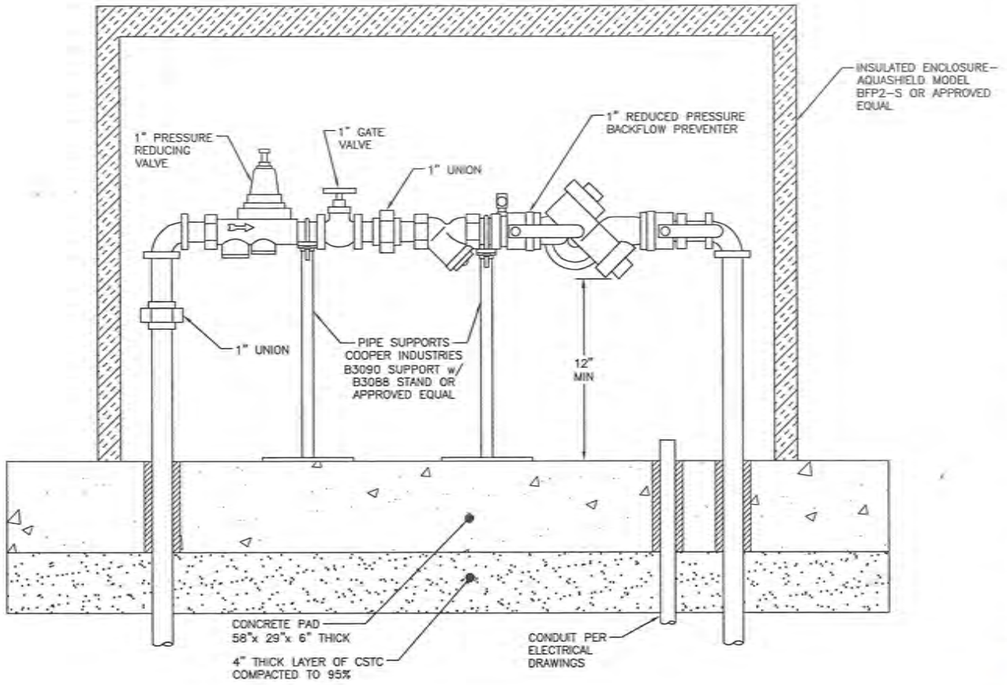
W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\PS3 dwg\C4.1-C4.4 DETAILS.dwg, 6/7/2016 1:27:25 PM, ACROPLOT 11X17 UNSCREENED.pc3, RDN



KEYED NOTES

1. = 2"ø COMBINED AIR/VACUUM RELEASE VALVE – A.R.I. D-025 COMBINATION AIR VALVE (SHORT VERSION) OR APPROVED EQUAL.
2. = 2"ø RESILIENT WEDGE GATE VALVE.
3. = 10"ø D.I. BLIND FLANGE TAPPED w/ A 2" THREADED HOLE.
4. = 10"ø MAGNETIC FLOWMETER. DIGITAL DISPLAY LOCATED IN P.S.#2 BUILDING. PROVIDE LONG ENOUGH CABLE TO REACH DISPLAY UNSPLICED.
5. = 10"ø D.I. FLANGED COUPLING ADAPTER.
6. = VAULT WALL PENETRATION w/ KOR-N-SEAL BOOT.
7. = GROUT VAULT FLOOR WITH A MINIMUM 4% SLOPE TO DRAIN.
8. = 12" THICK LAYER OF COMPACTED CSTC OVER UNYIELDING COMPACTED SUBGRADE.
9. = 2"ø DRAIN. ROUTE TO WET WELL AT A MINIMUM 2% SLOPE.
10. = 10"x 10"x 10" D.I. TEE (FLANGED).
11. = 72"ø TYPE 3 MANHOLE PER WSDOT STD. PLAN B-15.60-01 RISER HEIGHT EQUAL TO 6'-0".
12. = 72"ø TYPE 3 MANHOLE TOP SLAB PER WSDOT STD. PLAN B-30.90-01. CONTRACTOR RESPONSIBLE FOR REDESIGN OF NON-STANDARD OPENING.
13. = DOUBLE LEAF 30"x48" H-20 RATED ALUMINUM HATCH WITH SAFETY GRATE SYSTEM. SYRACUSE CASTINGS DTD-10HDA05G OR EQUAL.
14. = 2"ø x 6"L D.I. SPOOL (THREADED x FLANGE).
15. = 10" D.I. FORCE MAIN PIPE.
16. = 72"ø TYPE 3 MANHOLE BASE PER WSDOT STD. PLAN B-15.60-01.
17. = NEW HMA PAVING
18. = PIPE SUPPORT PER DETAIL 2/M2.1

1/C3.1 **METER VAULT DETAIL**
NOT TO SCALE

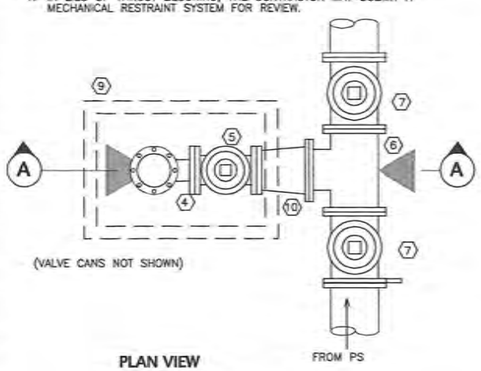


2/C3.1 **POTABLE WATER RPBFP ASSEMBLY & INSULATED ENCLOSURE DETAIL**
NOT TO SCALE

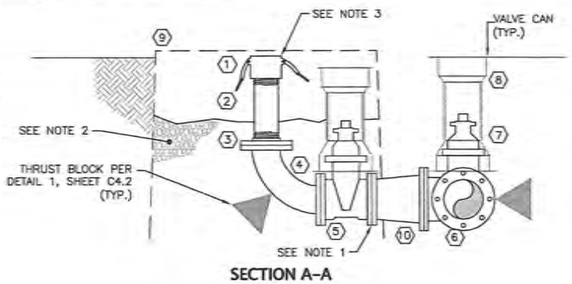
NOTES:

1. INSTALL ADDITIONAL PIPING BETWEEN TEE AND PUMPING PORT VALVE AS REQUIRED TO INSTALL PORT IN LOCATION APPROVED BY ENGINEER.
2. BACKFILL IN AND AROUND METER BOX SHALL BE CRUSHED SURFACING TOP COURSE PER WSDOT 9-03.9(3). INSTALL MINIMUM 1 FOOT WIDE GRAVEL "COLLAR" AROUND BOX.
3. ALLOW 4-IN. SPACE BETWEEN THE TOP OF THE CAM & GROOVE FITTING AND THE INSIDE OF THE METER BOX LID.
4. IN LIEU OF THRUST BLOCKING, THE CONTRACTOR MAY SUBMIT A MECHANICAL RESTRAINT SYSTEM FOR REVIEW.

1. 8-IN. STAINLESS STEEL FEMALE CAM & GROOVE BY 6-IN. FNPT ADAPTER
2. 8-IN. STAINLESS STEEL NPT NIPPLE (MIN. 8" LONG)
3. 8-IN. D.I. FLANGE TO 6-IN. FNPT ADAPTER (COMPANION FLANGE)
4. 8-IN. D.I. LONG RADIUS BEND (FL)
5. 8-IN. GATE VALVE (FL)
6. 12-IN. D.I. TEE (FL)
7. 12-IN. GATE VALVE (FLXMJ) – (2 EACH)
8. CAST IRON VALVE BOX
9. H20 LOADING CONCRETE METER BOX WITH CAST IRON LID. LID TO BE LOCKABLE WITH PAD LOCK.
10. 8"x12" D.I. REDUCER (FL)

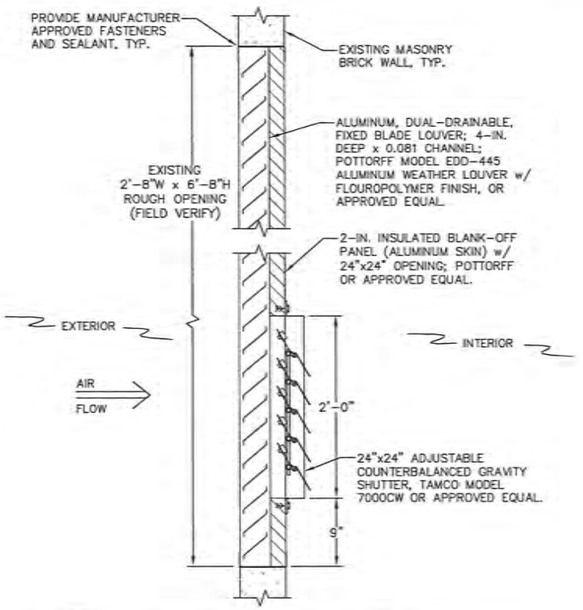


PLAN VIEW



SECTION A-A

3/C3.1 **BYPASS PUMPING PORT ASSEMBLY**
NOT TO SCALE



4/C3.3 **LOUVER DETAIL**
NOT TO SCALE

M1.1

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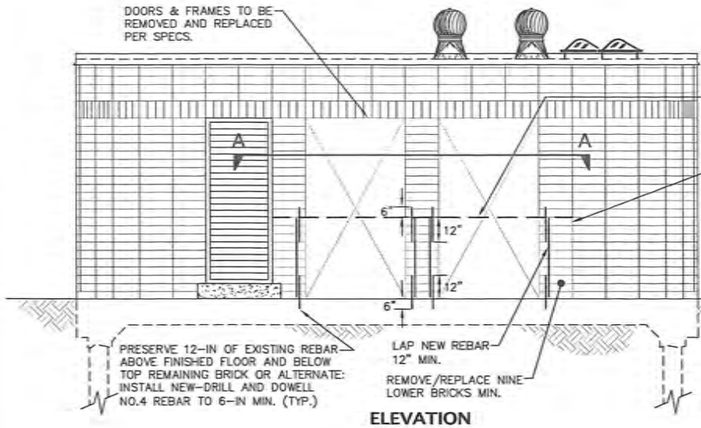
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
CIVIL DETAILS

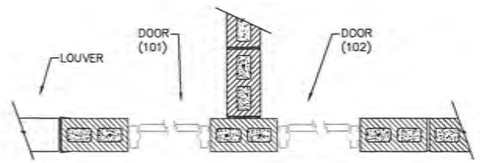
DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-0798

SHEET C4.3 OF 35

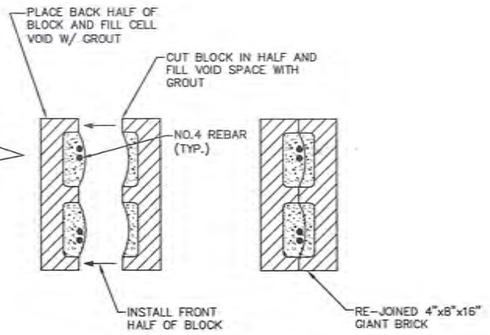
W:\2014\2014-0798 - COF Pump Stations 2&3 Upgrades\Dwg\PS3 dwg\CAL-C4.4 DETAILS.dwg, 6/7/2016 1:27:33 PM, ACADPLOT 11X17 UNSCRIBED.pc3, RDN



ELEVATION



SECTION A-A



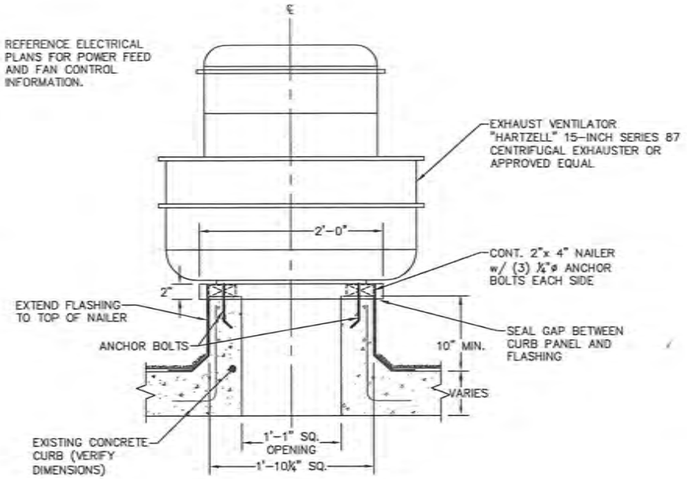
NOTES:

1. NEW BRICK COLOR AND STYLE TO MATCH EXISTING. COLOR TO BE APPROVED BY OWNER.
2. REBAR LOCATION TO BE DETERMINED DURING DEMOLITION.
3. CONTRACTOR TO PROVIDE STRUCTURAL SHORING AS NECESSARY DURING MASONRY REPAIRS.

CONCEPTUAL DETAIL. CONTRACTOR MAY PROPOSE ALTERNATE METHOD FOR REVIEW.

TOP BLOCK INSTALL DETAIL

NOTE: REFERENCE ELECTRICAL PLANS FOR POWER FEED AND FAN CONTROL INFORMATION.



1 / C2.4 — C3.2 **MASONRY BRICK REPAIR DETAIL**

NOT TO SCALE

2 / C3.2 — M1.3 **ROOF EXHAUST BLOWER DETAIL**

NOT TO SCALE

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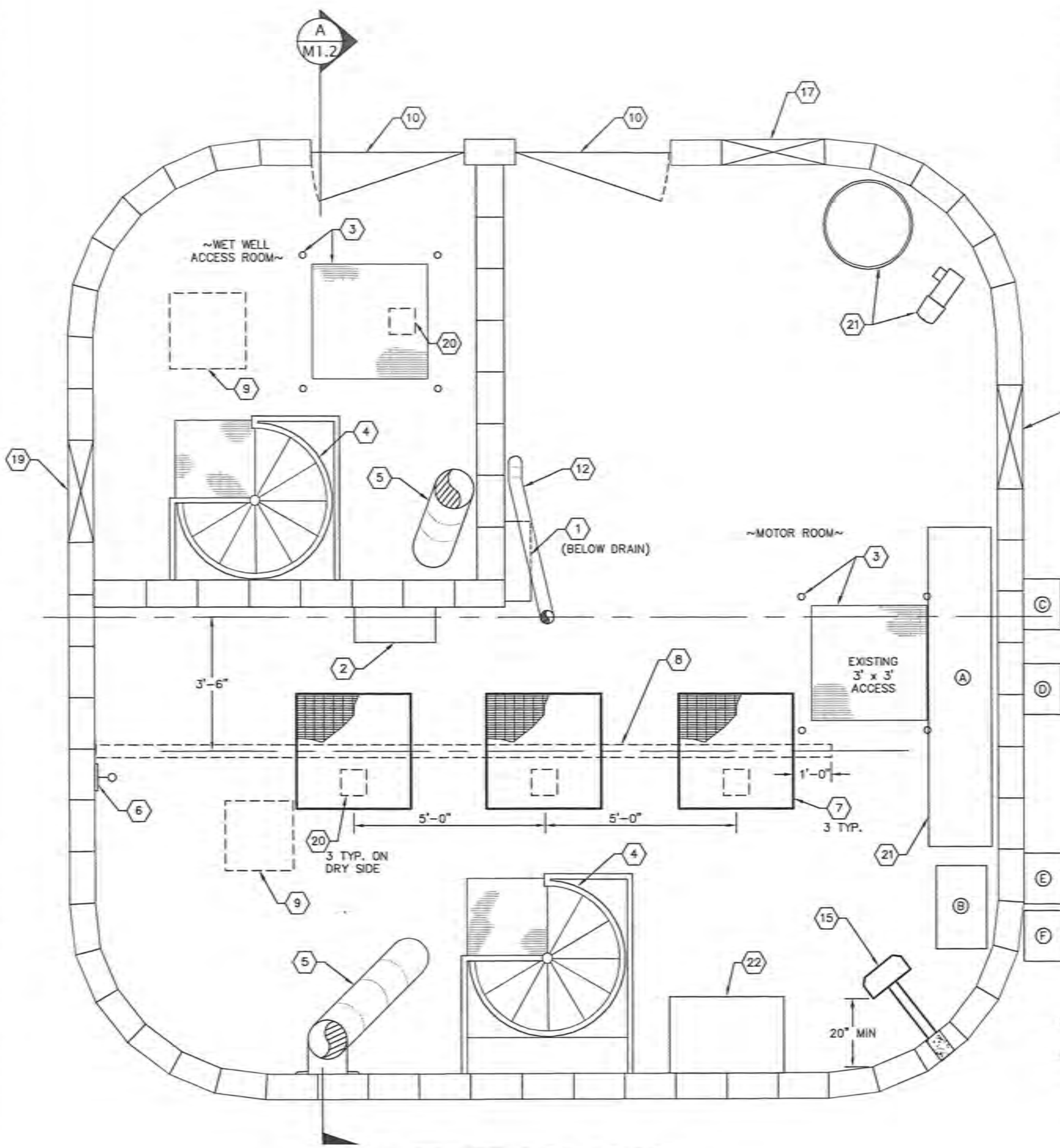
PUMP STATION NO. 3
CIVIL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

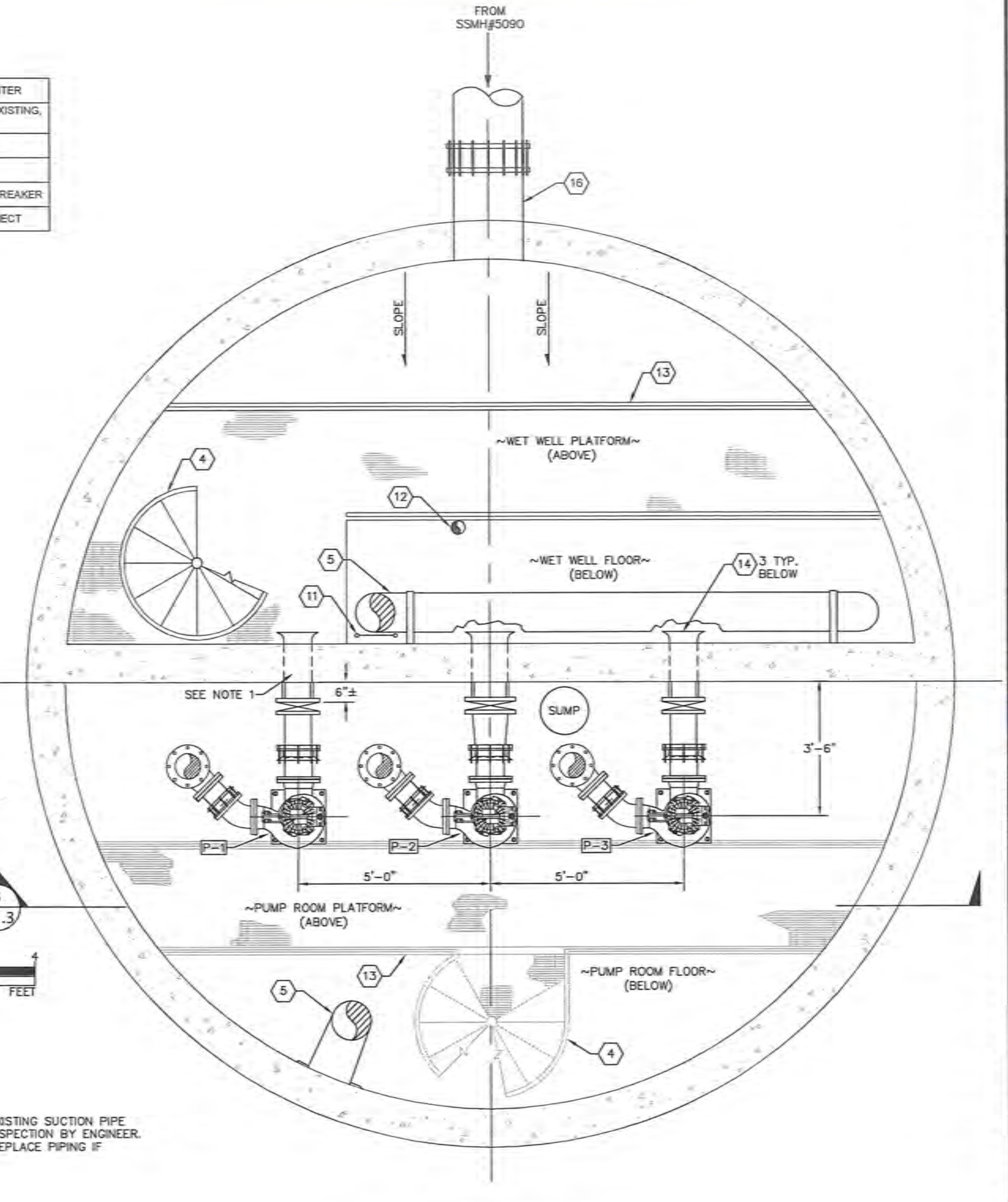
SHEET C4.4 OF 35



PLAN VIEW - ABOVE GRADE

LEGEND

Ⓐ	MOTOR CONTROL CENTER
Ⓑ	TELEMETRY PANEL (EXISTING, RELOCATED)
Ⓒ	UTILITY DISCONNECT
Ⓓ	UTILITY METER
Ⓔ	SERVICE ENTRANCE BREAKER
Ⓕ	GENERATOR DISCONNECT



PLAN VIEW - BELOW GRADE

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.

KEYED NOTES

(1) = EXISTING INTRINSICALLY SAFE ELECTRICAL CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.

(2) = EXISTING TELEMETRY CABINET. RELOCATE AS DIRECTED BY THE ELECTRICAL PLANS.

(3) = EXISTING 3'-0" x 3'-0" FLOOR OPENING WITH GRATE AND FOUR SAFETY BOLLARD INSERTS IN FLOOR. GRATING TO BE CLEANED PER SPEC. SECTION 00 99 00.

(4) = SPIRAL STAIRS, HANDRAILING AND GRATING TO BE CLEANED PER SPEC. SECTION 09900.

(5) = NEW 12"ø DUCT AND DUCT SUPPORTS TO REPLACE EXISTING "WET SIDE" AND "DRY SIDE" VENTILATION SYSTEMS. DUCT SUPPORTS PER DETAIL 6/M2.1

(6) = INSTALL EPOXY INSERT & THREADED STAINLESS STEEL EYE BOLT SUITABLE FOR SECURING OVERHEAD HOIST HOOK. PLACEMENT OF EYE BOLT PER CITY STAFF.

(7) = NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL 2/S1.1. TYPICAL OF 3.

(8) = NEW OVERHEAD TROLLEY BEAM PER DETAIL 4/S1.1

(9) = NEW 2'-0" x 2'-0" SKYLIGHT 3/C4.3 ABOVE PER DETAIL.

(10) = NEW ACCESS DOORS. REFERENCE SHEET C3.3 FOR ADDITIONAL DETAILS.

(11) = NEW WET WELL LADDER PER DETAIL 1/M2.2

(12) = EXISTING 4" ROOF DRAIN TO BE REPLACED WITHIN WET WELL. INSTALL NEW STAINLESS STEEL SUPPORTS FOR DRAIN.

(13) = EXISTING PLATFORM, PLATFORM SUPPORTS AND HANDRAIL TO BE CLEANED PER SPEC. SECTION 09900.

(14) = EXISTING SUCTION SPOOL THROUGH WALL. PROTECT DURING CONSTRUCTION FOR REUSE. SEE NOTE 1.

(15) = NEW ELECTRIC UNIT HEATER, MOUNTED VERTICALLY.

(16) = 20" C.I. SEWER INLET

(17) = REPLACE EXISTING LOUVER PER DETAIL 4/C4.3

(18) = EXISTING FAN OPENING TO BE BRICKED UP.

(19) = EXISTING FIXED LOUVER VENT TO BE REPLACED IN KIND.

(20) = FALL RESTRAINT CEILING EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 6/S1.1

(21) = NEW AIR GAP SYSTEM PER DETAIL 4/M2.2

(22) = NEW WALL HANGING STEEL DESK, TENNSCO WALL HANGING FOREMAN'S DESK MODEL SR-59, OR APPROVED EQUAL OR APPROVED EQUAL.

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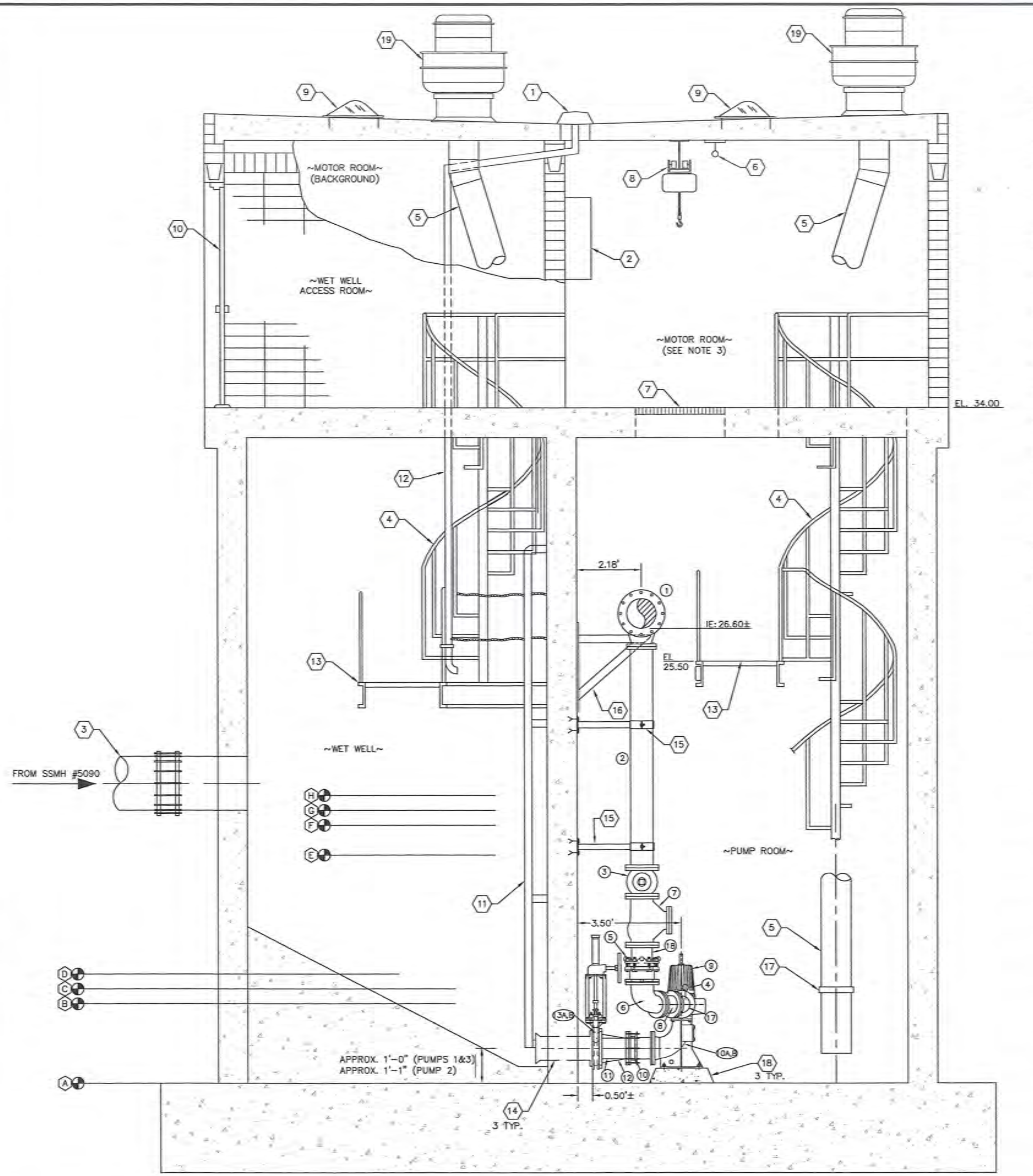
CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 3 MECHANICAL PLANS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-0798

SHEET M1.1 OF 35



A/M1.1 PUMP STATION 3 - MECHANICAL UPGRADES

KEYED NOTES

1 = NEW ROOF DRAIN PER DETAIL 4/C4.1
2 = EXISTING INTRINSICALLY CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
3 = 20" C.I. SEWER INLET.
4 = SPIRAL STAIRS, HANDRAILING AND GRATING TO BE CLEANED PER SPEC. SECTION 09900.
5 = NEW 12"ø DUCT AND DUCT SUPPORTS TO REPLACE EXISTING "WET SIDE" AND "DRY SIDE" VENTILATION SYSTEMS. DUCT SUPPORTS PER DETAIL 6/M2.1
6 = FALL RESTRAINT EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 6/S1.1
7 = NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL. TYPICAL OF 3. 2/S1.1
8 = NEW OVERHEAD TROLLEY BEAM PER DETAIL 4/S1.1
9 = NEW 2'-0" x 2'-0" SKYLIGHT PER DETAIL 3/C4.1
10 = NEW ACCESS DOORS. REFERENCE SHEET C3.2 FOR ADDITIONAL DETAILS.
11 = NEW WET WELL LADDER PER DETAIL 1/M2.2
12 = EXISTING 4" ROOF DRAIN TO BE REPLACED WITHIN WET WELL. INSTALL NEW STAINLESS STEEL SUPPORTS FOR DRAIN.
13 = EXISTING PLATFORM, PLATFORM SUPPORTS AND HANDRAIL TO BE CLEANED PER SPEC. SECTION 09900.
14 = EXISTING SUCTION SPOOL THROUGH WALL. PROTECT DURING CONSTRUCTION FOR REUSE. SEE NOTE 1.
15 = TYPE 1 PIPE SUPPORT. SEE DETAIL 1/M2.1
16 = TYPE 4 PIPE SUPPORT. SEE DETAIL 4/M2.1
17 = TYPE 1 DUCT SUPPORT. SEE DETAIL 6/M2.1
18 = NEW PUMP BASE PER DETAIL 1/S1.1
19 = NEW ROOF EXHAUST BLOWER UNIT PER DETAIL 2/C4.4

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.
2. ELECTRICAL CABINET AND HEATER IN BACKGROUND NOT SHOWN. THE LONG RADIUS BEND USED ON PUMP 2 WILL RAISE PUMP 2 (AND DISCHARGE) APPROXIMATELY 5" HIGHER THAN PUMPS 1 & 3.
3. ELBOW STAND PIPE SUPPORT ASSOCIATED WITH THIS ELBOW NOT SHOWN FOR CLARITY.
4. POTABLE WATER PIPING IN THE MOTOR ROOM NOT SHOWN.

SCHEDULE A - PIPING MATERIALS*

ITEM	DESCRIPTION
1	12"x8" DUCTILE IRON TEE, FXF
2	8" DUCTILE IRON SPOOL, FXPE
3	8" GATE VALVE W/ HANDWHEEL OPERATOR, FXF
4	PRESSURE GAGE ASSEMBLY
5	8" RESTRAINED FLANGED COUPLING ADAPTER PER SPECS
6	6"x8" 90° BASE BEND, DUCTILE IRON, FXF, SEE NOTE 3
7	8" BALL CHECK VALVE PER SPECS
8	6" DISMANTLING JOINT, DJ400, DI, FXF
9	PUMPS PER SPECS
10	8" DISMANTLING JOINT, DJ400, DI, FXF
11	8" Ø DUCTILE IRON SPOOL, FXF (PUMPS 1 & 3)
12	10"X8" DUCTILE IRON REDUCER. FXF (PUMP 2)
13A	8" KNIFE GATE VALVE PER SPECS, FXF (PUMPS 1 & 3)
13B	10" KNIFE GATE VALVE PER SPECS, FXF (PUMP 2)
14	12" DUCTILE IRON SPOOL, FxF
15	12" DUCTILE IRON SPOOL, FxPE (RE-USE EXISTING)
16	12" FLEXIBLE COUPLING WITH RESTRAINT HARNESS
17	6" 45° BEND, DUCTILE IRON, FXF
18	8" DUCTILE IRON SPOOL, FXPE

* REFERENCE SHEET M1.3 FOR SCHEDULE ITEMS NOT VISIBLE IN THIS SECTION VIEW.

SCHEDULE B - CONTROL ELEVATIONS

CONTROL POINT	DESCRIPTION	ELEV.
A	WET WELL BOTTOM	10.00
B	LOW - LOW LEVEL ALARM	12.67
C	LOW LEVEL ALARM / REDUNDANT OFF	13.17
D	PUMP OFF	13.67
E	LEAD ON	17.67
F	LAG ON	18.67
G	HIGH LEVEL ALARM / LAG - LAG ON	19.17
H	HIGH - HIGH LEVEL ALARM	19.67

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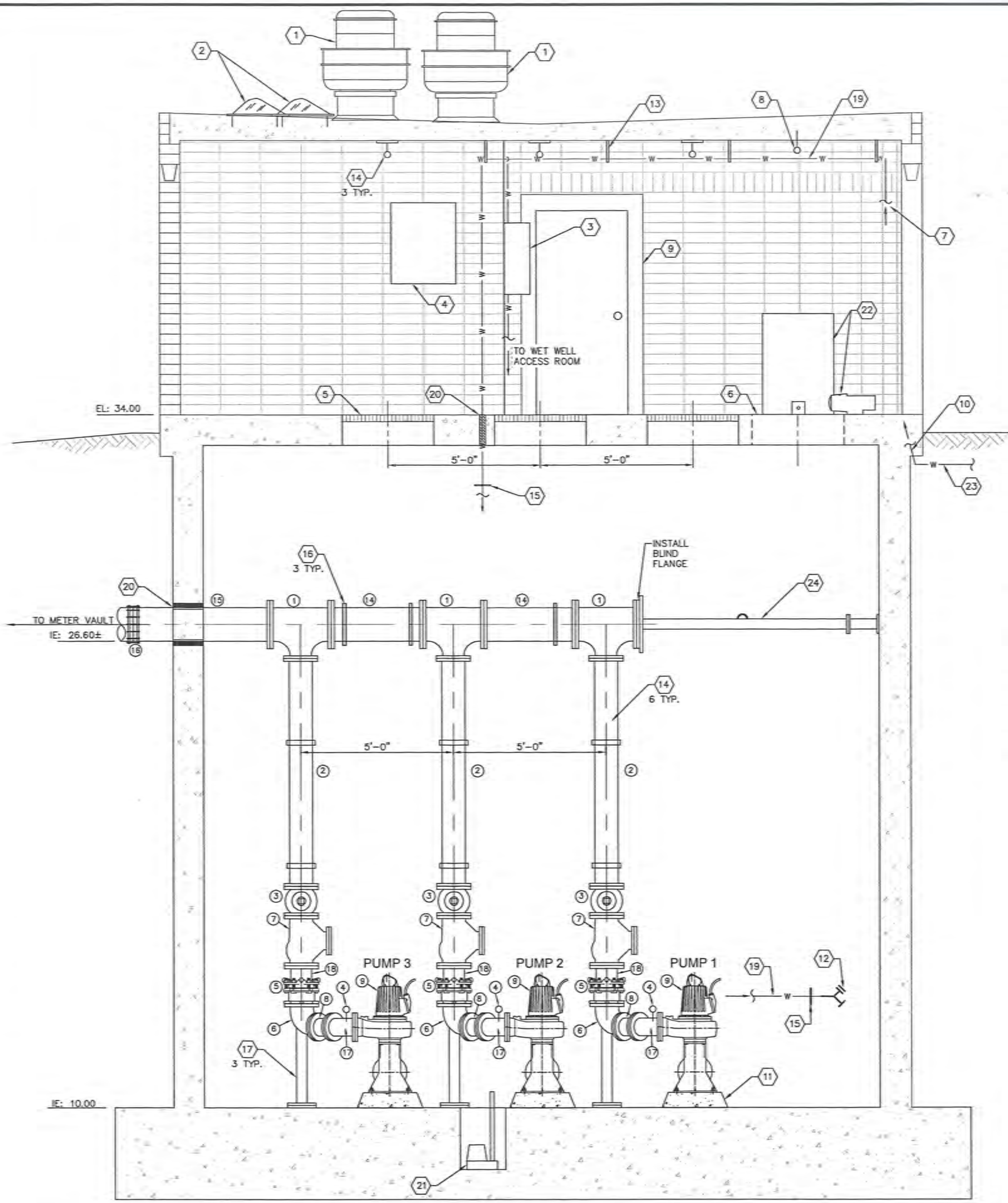
CITY OF FERNDALE
WHATCOM COUNTY, WASHINGTON
PUMP STATION NO. 3
MECHANICAL SECTIONS

DATE 6/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079B
SHEET M1.2 OF 35



B / M1.1 PUMP STATION 3 - MECHANICAL UPGRADES

SCALE 2 0 2 4 FEET

KEYED NOTES

- ⟨1⟩= NEW ROOF EXHAUST BLOWER UNIT PER DETAIL 2/C4.4
- ⟨2⟩= NEW 2'-0" x 2'-0" SKYLIGHT PER DETAIL 3/C4.1
- ⟨3⟩= EXISTING INTRINSICALLY SAFE CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
- ⟨4⟩= RELOCATED EXISTING TELEMETRY CABINET. REFERENCE ELECTRICAL PLANS FOR DETAILS.
- ⟨5⟩= NEW 3'-0" x 3'-0" FLOOR OPENINGS FITTED WITH GRATING PER DETAIL. TYPICAL OF 3. 2/S1.1
- ⟨6⟩= EXISTING 3'-0" x 3'-0" FLOOR OPENING w/ GRATE.
- ⟨7⟩= 1"ø POTABLE WATER FROM AIR GAP WATER SYSTEM.
- ⟨8⟩= EXISTING CEILING-MOUNTED LIFTING EYE.
- ⟨9⟩= NEW ACCESS DOOR (101). REFERENCE SHEET C3.3 FOR ADDITIONAL DETAILS.
- ⟨10⟩= 1"ø POTABLE WATER TO AIR GAP WATER SYSTEM.
- ⟨11⟩= NEW PUMP FOUNDATION BASE PER DETAIL 1/S1.1 (3 TYPICAL).
- ⟨12⟩= NEW ¾" HOSE BIB.
- ⟨13⟩= PIPE HANGER, 6'-0" O.C. TYPICAL.
- ⟨14⟩= TYPE 1 PIPE SUPPORT - SEE DETAIL 1/M2.1
- ⟨15⟩= TYPE 3 PIPE SUPPORT - SEE DETAIL 3/M2.1
- ⟨16⟩= TYPE 4 PIPE SUPPORT - PIPE BRACKET PER DETAIL 4/M2.1
- ⟨17⟩= TYPE 5 PIPE SUPPORT - SEE DETAIL 5/M2.1
- ⟨18⟩= FALL RESTRAINT EYE BOLT; FINAL LOCATION PER CITY STAFF. SEE DETAIL 2/S1.1
- ⟨19⟩= ¾" POTABLE WATER.
- ⟨20⟩= PIPE PENETRATION THROUGH FLOOR OR WALL PER DETAIL 5/M2.2 SEE NOTE 5.
- ⟨21⟩= SUMP PUMP SYSTEM PER DETAIL 2/M2.2
- ⟨22⟩= AIR GAP WATER SYSTEM PER DETAIL 4/M2.3
- ⟨23⟩= 1"ø POTABLE WATER FROM RPBFP ENCLOSURE
- ⟨24⟩= PIPE MANIFOLD BRACE PER DETAIL 7/M2.1

NOTES:

1. CONTRACTOR SHALL EXPOSE EXISTING SUCTION PIPE THROUGH DIVIDER WALL FOR INSPECTION BY ENGINEER. CONTRACTOR SHALL CORE & REPLACE PIPING IF DIRECTED BY ENGINEER.
2. OVERHEAD TROLLEY BEAM AND TROLLEY NOT SHOWN.
3. OVERHEAD WALKWAY IN PUMP ROOM NOT SHOWN FOR CLARITY.
4. ELECTRICAL MCC IN MOTOR ROOM NOT SHOWN FOR CLARITY.
5. RE-USE EXISTING 12-IN. WALL SPOOL IF IT MATCHES THE CENTERLINE OF THE NEW INTERIOR PIPE. IF THE NEW PIPING DOES NOT MATCH UP, THE CONTRACTOR SHALL REPLACE THE WALL SPOOL.

SCHEDULE A - PIPING MATERIALS*

ITEM	DESCRIPTION
1	12"x8" DUCTILE IRON TEE, FXF
2	8" DUCTILE IRON SPOOL, FXPE
3	8" GATE VALVE W/ HANDWHEEL OPERATOR, FXF
4	PRESSURE GAGE ASSEMBLY
5	8" RESTRAINED FLANGED COUPLING ADAPTER PER SPECS
6	6"x8" 90° BASE BEND, DUCTILE IRON, FXF, SEE NOTE 3
7	8" BALL CHECK VALVE PER SPECS
8	6" DISMANTLING JOINT, DJ400, DI, FXF
9	PUMPS PER SPECS
10	8" DISMANTLING JOINT, DJ400, DI, FXF
11	8" Ø DUCTILE IRON SPOOL, FXF (PUMPS 1 & 3)
12	10"X8" DUCTILE IRON REDUCER. FXF (PUMP 2)
13A	8" KNIFE GATE VALVE PER SPECS, FXF (PUMPS 1 & 3)
13B	10" KNIFE GATE VALVE PER SPECS, FXF (PUMP 2)
14	12" DUCTILE IRON SPOOL, FxF
15	12" DUCTILE IRON SPOOL, FxPE (RE-USE EXISTING)
16	12" FLEXIBLE COUPLING WITH RESTRAINT HARNESS
17	6" 45° BEND, DUCTILE IRON, FXF
18	8" DUCTILE IRON SPOOL, FXPE

* REFERENCE SHEET M1.2 FOR SCHEDULE ITEMS NOT VISIBLE IN THIS SECTION VIEW.

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Wilson SURVEY/ENGINEERING

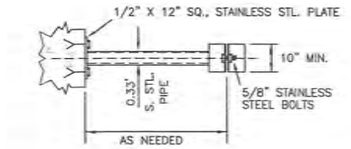
ELIZABETH ANNE STERLING, STATE OF WASHINGTON, REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY	EAS/SJW
DRAWN BY	SJW/RDN
CHECKED BY	MMM

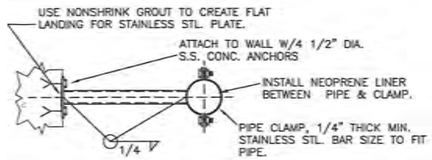
CITY OF FERNDALE
WHATCOM COUNTY, WASHINGTON

PUMP STATION NO. 3
MECHANICAL SECTIONS

DATE	6/08/2016
SCALE	AS SHOWN
JOB NUMBER	2014-079B



ELEVATION



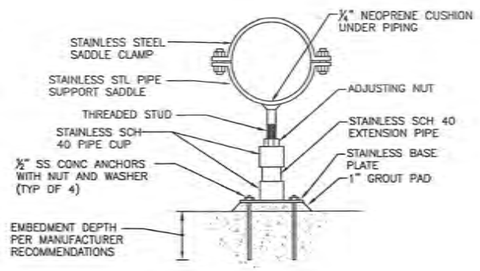
PLAN VIEW

1 / M1.2

TYPE 1 PIPE SUPPORT VERTICAL PIPE BRACE DETAIL

NOT TO SCALE

M1.3



SADDLE SIZE	½"x2"
THREADED STUD	1"x6"
CUP ID	2½"
¼" BASE PLAT	8"x8"
EXTENSION PIPE DIA	2"

NOTES:

1. TO INSURE PROPER SUPPORT AND STABILITY, AFTER FINAL HEIGHT ADJUSTMENT IS ATTAINED, APPLY TACK WELDS TO BOTH SUPPORT CUPS AND EXTENSION PIPE. USE E70XX ELECTRODE FOR WELDS.
2. ALL PARTS TO BE STAINLESS STEEL.
3. FIELD PAINT AS SPECIFIED, PER 09900

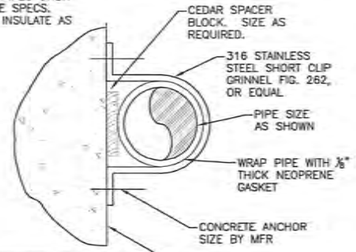
2 / C4.3

TYPE 2 PIPE SUPPORT PIPE SADDLE DETAIL

NOT TO SCALE

NOTES:

1. FOR HORIZONTAL PIPES ONLY.
2. FOR SPACING, SEE SPECS.
3. HEAT TRACE AND INSULATE AS SPECIFIED.



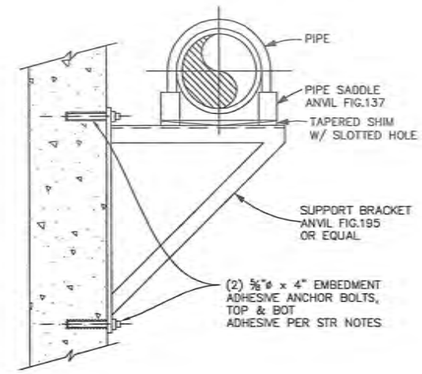
NOTES:

1. FOR HORIZONTAL PIPES ONLY.
2. FOR SPACING, SEE SPECS.
3. HEAT TRACE AND INSULATE AS SPECIFIED.

3 / M1.3

TYPE 3 PIPE SUPPORT PIPE WALL CLAMP DETAIL

NOT TO SCALE



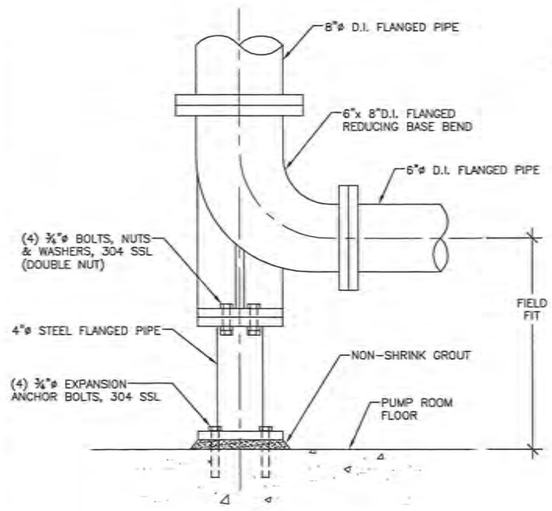
NOTES:

1. PIPE SUPPORT MATERIAL SHALL BE CARBON STEEL WITH A HOT-DIPPED GALVANIZED FINISH
2. ANCHORS SHALL BE 304 STAINLESS STEEL

4 / M1.2

TYPE 4 PIPE SUPPORT PIPE BRACKET DETAIL

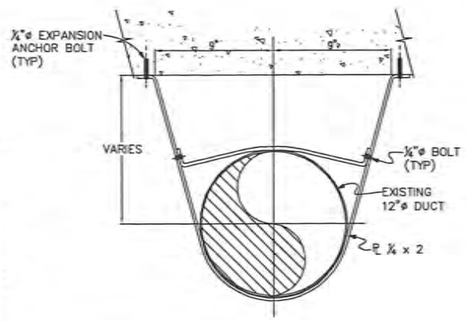
NOT TO SCALE



5 / M1.3

TYPE 5 PIPE SUPPORT PIPE ELBOW STAND DETAIL

NOT TO SCALE



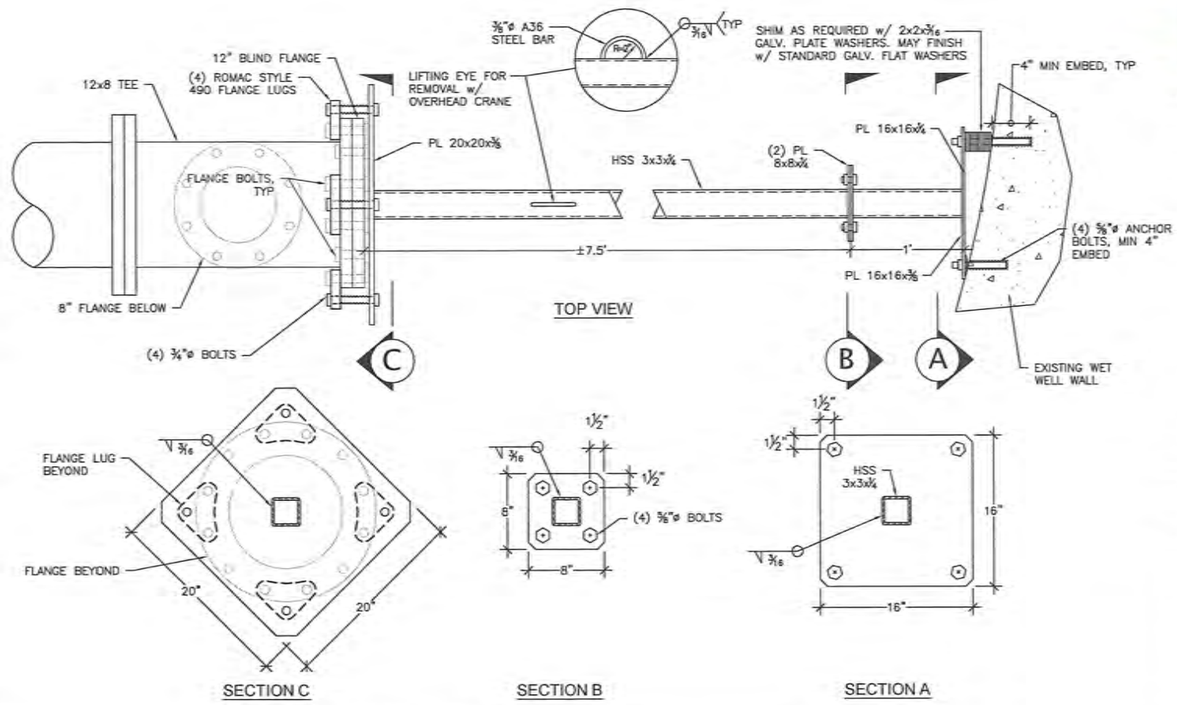
NOTES:

1. PIPE SUPPORT MATERIAL, ANCHOR BOLTS AND FASTENERS SHALL BE TYPE 304 STAINLESS STEEL.

6 / M1.1 M1.2

TYPE 1 DUCT SUPPORT WALL OR CEILING DUCT SUPPORT

NOT TO SCALE



7 / M1.3

PIPE MANIFOLD BRACE DETAILS

NOT TO SCALE

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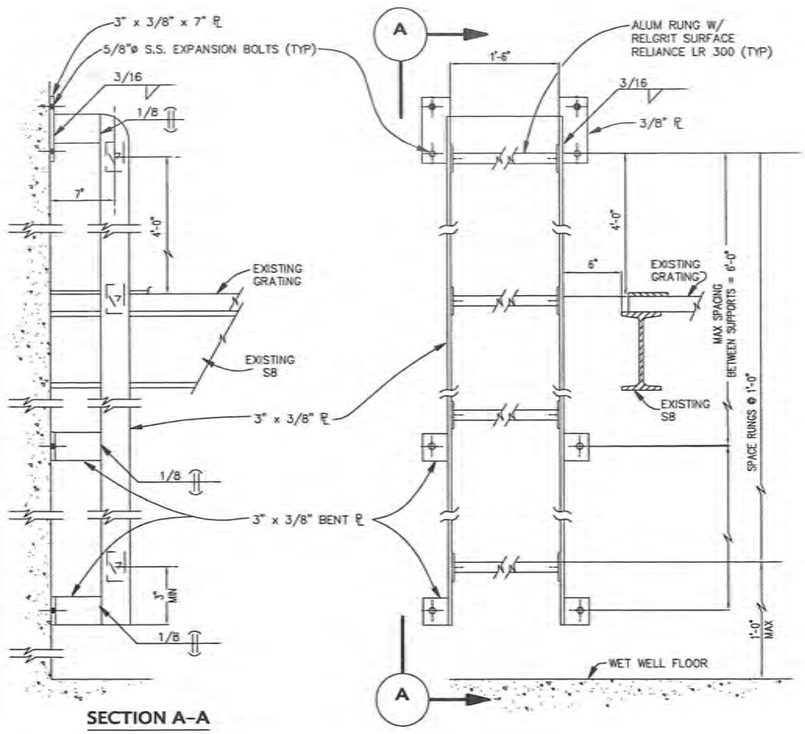
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
MECHANICAL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079A

SHEET M2.1 OF 35

H:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\PS3 dwg\M2.1-M2.3 DETAILS.dwg, 6/7/2016 1:28:30 PM, ACROPLOT 11X17 UNSCREENED.ctb, RDN

NO.	REVISIONS	BY	DATE

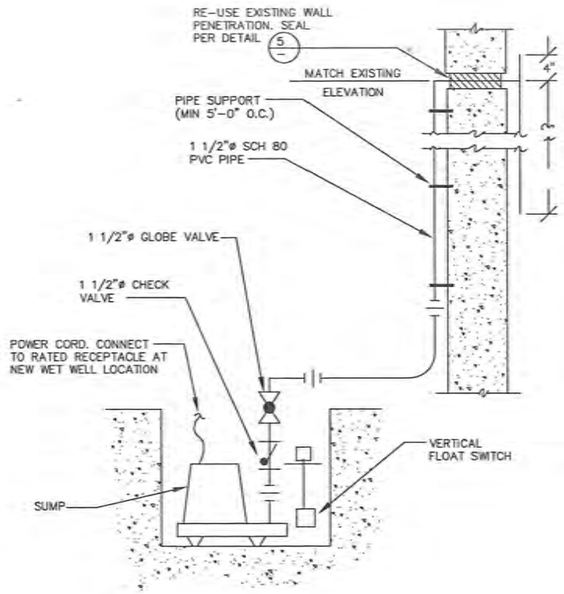


SECTION A–A

1 / M1.1 WET WELL LADDER – DETAIL

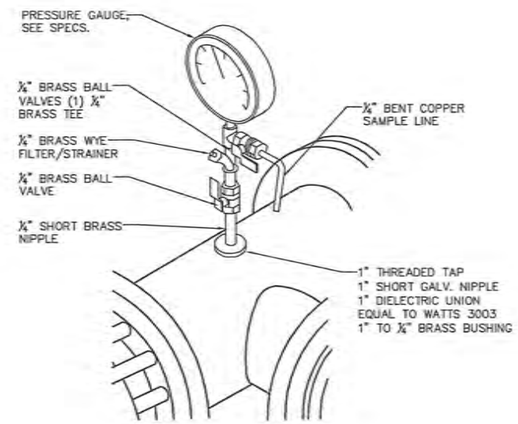
NOT TO SCALE

M1.2
M1.3



2 / M1.3 SUMP PUMP PIPING SCHEMATIC

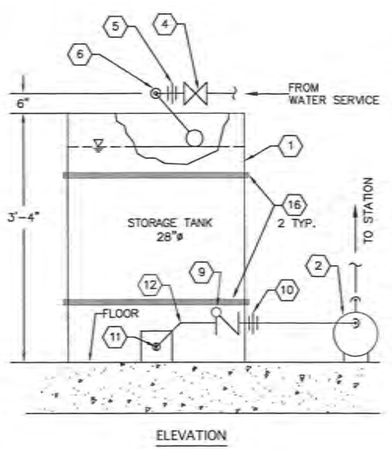
NOT TO SCALE



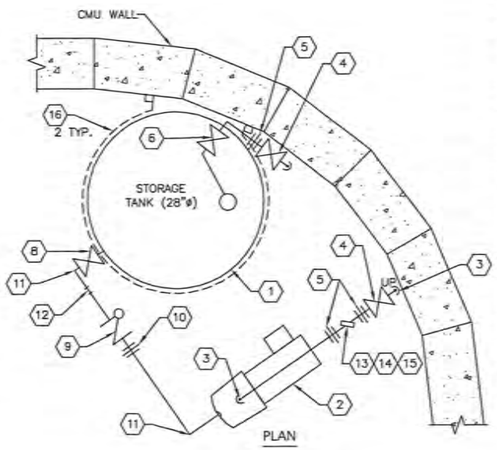
3 / M1.2 PRESSURE GAUGE ASSEMBLY

NOT TO SCALE

M1.3



ELEVATION



PLAN

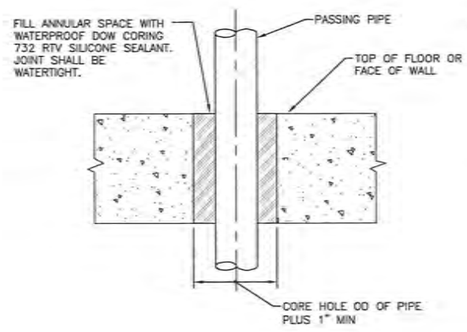
KEYED NOTES:

1. = 100 GALLON POLYETHYLENE STORAGE TANK (OPEN TOP)
2. = ½ HP JET PUMP
3. = 1"ø 90° EL
4. = 1"ø GATE VALVE
5. = 1"ø UNION
6. = 1"ø HEAVY DUTY FLOAT VALVE OUTSIDE TANK w/ ø12.5 STEM & 3"ø FLOAT INSIDE TANK
7. = 1¼"ø GATE VALVE
8. = 1¼"ø CHECK VALVE
9. = 1¼"ø UNION
10. = 1¼"ø 90° EL
11. = 1¼"ø 45° EL
12. = 1" TEE
13. = ¾"x 1" BUSHING
14. = PRESSURE GAUGE
15. = CABLE RESTRAINTS. ¾" SSL CABLE (VINYL COATED), SSL TURNBUCKLES AND SSL UNISTRUT WALL ATTACHMENTS.

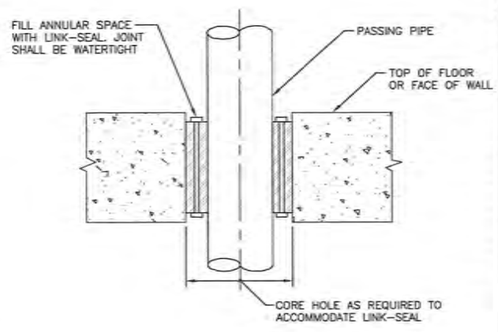
4 / M1.1 AIR GAP WATER SYSTEM

NOT TO SCALE

M1.3



½" - 2"Ø PIPE OR CONDUIT



> 2"Ø PIPE OR CONDUIT

5 / M1.3 FLOOR/WALL PENETRATION DETAIL

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 3
MECHANICAL DETAILS

DATE	SCALE	JOB NUMBER
6/08/2016	AS SHOWN	2014-079B

SHEET M2.2 OF 35

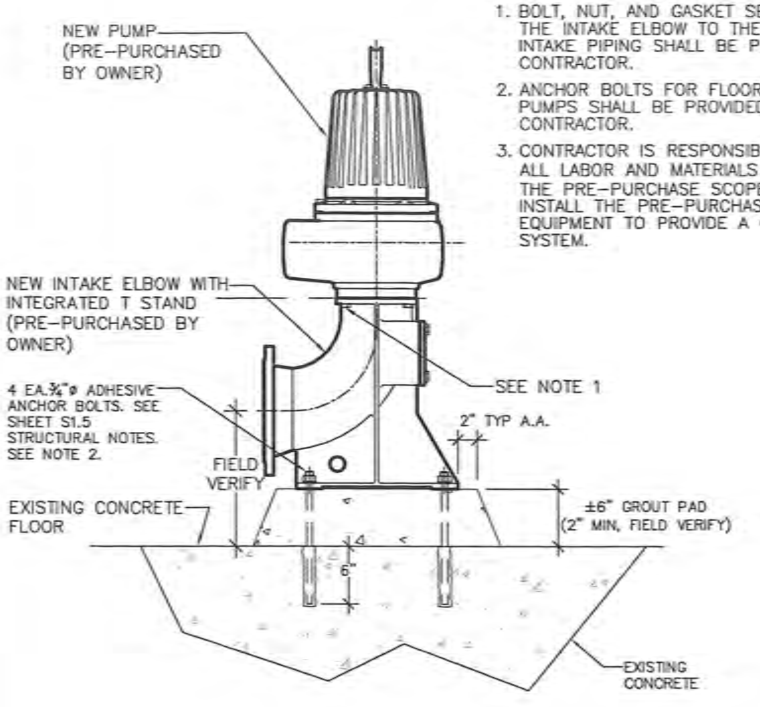
W:\2014\2014-079 - COF Pump Stations 3&3 Upgrades\Dwg\PS3 dwg\M2.1+M2.3 DETAILS.dwg, 6/7/2016 1:08:36 PM, ACADPLOT 11X17 LANDSCAPED.pc3, RDN

NO.	REVISIONS	BY	DATE

BID DOCUMENTS

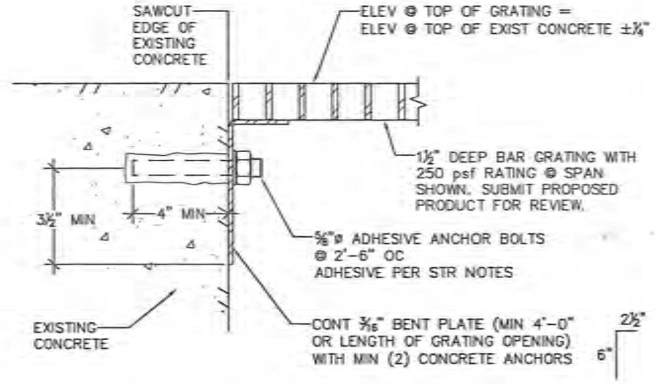
NOTES:

1. BOLT, NUT, AND GASKET SETS TO CONNECT THE INTAKE ELBOW TO THE PUMP AND THE INTAKE PIPING SHALL BE PROVIDED BY THE CONTRACTOR.
2. ANCHOR BOLTS FOR FLOOR MOUNTING OF PUMPS SHALL BE PROVIDED BY THE CONTRACTOR.
3. CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL LABOR AND MATERIALS (NOT INCLUDED IN THE PRE-PURCHASE SCOPE) REQUIRED TO INSTALL THE PRE-PURCHASED PUMP EQUIPMENT TO PROVIDE A COMPLETE PUMP SYSTEM.



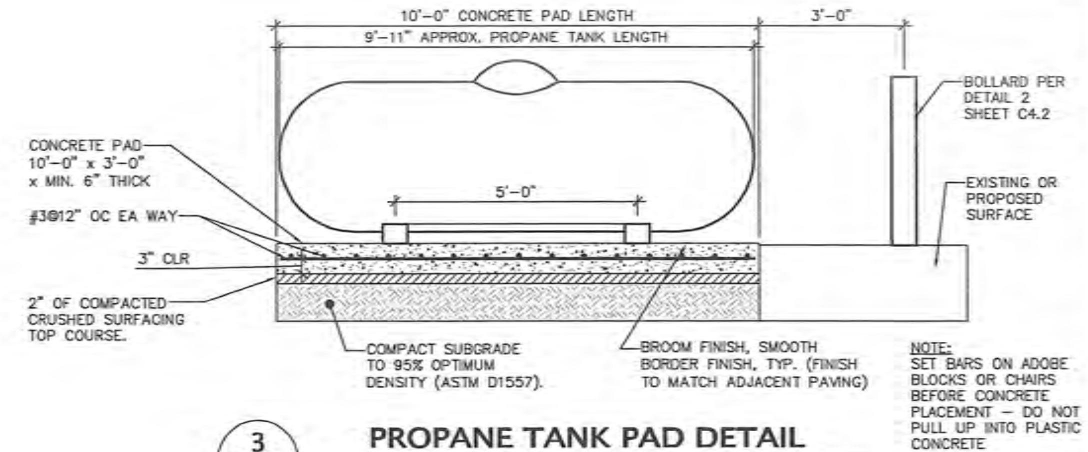
1 M1.1 M1.2 **PS#3 PUMP BASE**

NOT TO SCALE



2 M1.1 M1.2 **GRATING SUPPORT DETAIL**

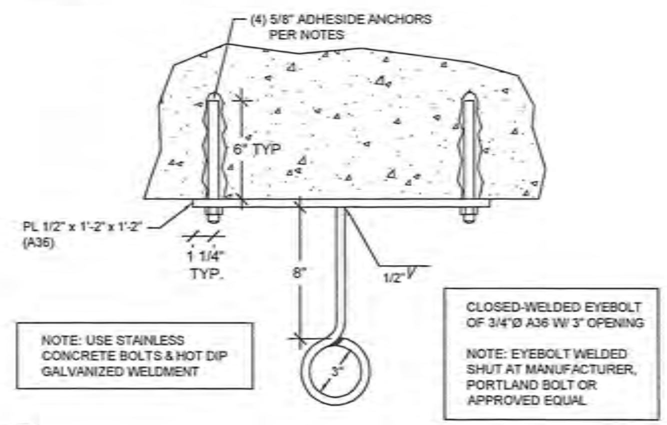
NOT TO SCALE



NOTE: SET BARS ON ADOBE BLOCKS OR CHAIRS BEFORE CONCRETE PLACEMENT – DO NOT PULL UP INTO PLASTIC CONCRETE

3 C3.1 **PROPANE TANK PAD DETAIL**

NOT TO SCALE



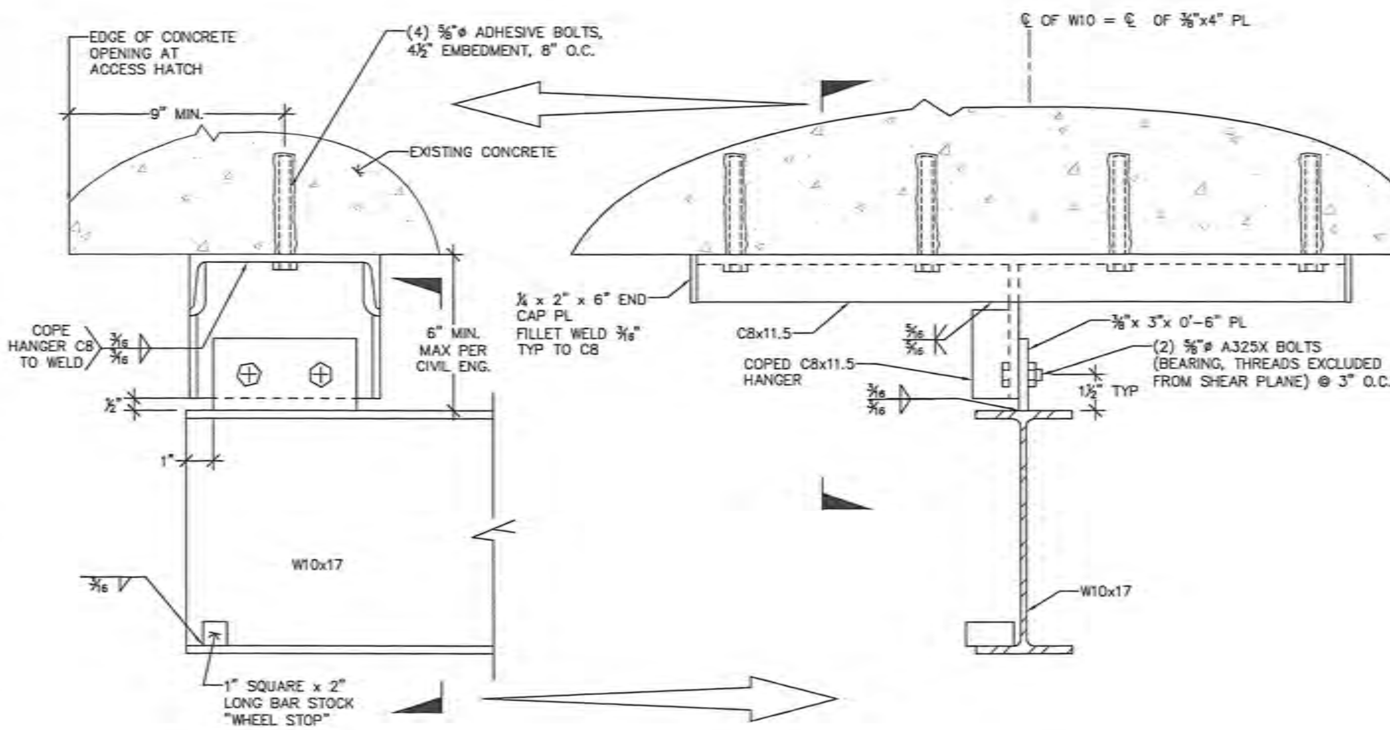
NOTE: USE STAINLESS CONCRETE BOLTS & HOT DIP GALVANIZED WELDMENT

CLOSED-WELDED EYEBOLT OF 3/4"Ø A36 W/ 3" OPENING

NOTE: EYEBOLT WELDED SHUT AT MANUFACTURER, PORTLAND BOLT OR APPROVED EQUAL

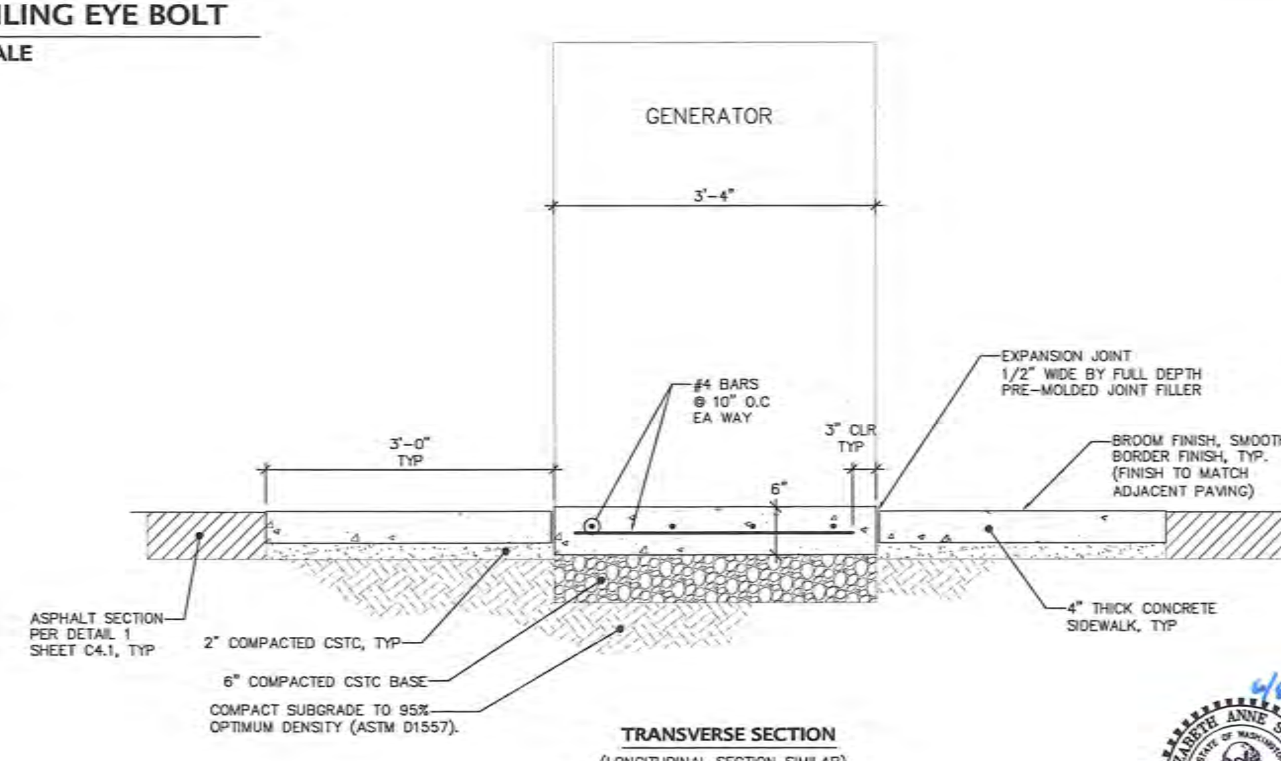
6 M1.1 M1.2 M1.3 **FALL RESTRAINT – CEILING EYE BOLT**

NOT TO SCALE



4 M1.1 M1.2 **TROLLEY BEAM HANGER**

NOT TO SCALE



TRANSVERSE SECTION

(LONGITUDINAL SECTION SIMILAR)

5 C3.1 **GENERATOR EQUIPMENT PAD DETAIL**

NOT TO SCALE

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ENGINEERING RESPONSIBILITIES:

STRUCTURE BY CHARLES WAUGH, P.E.

SITING, ELEVATIONS, AND ARRANGEMENT BY ELIZABETH STERLING, P.E.

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CHARLES B. WAUGH STATE OF WASHINGTON 18826 PROFESSIONAL ENGINEER 8 JUNE 2016

ELIZABETH ANNE STERLING STATE OF WASHINGTON REGISTERED PROFESSIONAL ENGINEER 6/8/16

DESIGNED BY EAS/SJW | DRAWN BY SJW/RDN | CHECKED BY MMM

CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 3 STRUCTURAL DETAILS

DATE 6/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079B

SHEET S1.1 OF 35

STRUCTURAL NOTES

BUILDING CODE CRITERIA

1. All construction is to comply with the 2012 International Building Code (IBC).
2. Loads:
   Catalog load allowance for generator and propane tank.
   100 psf uniform live load for cantilever platforms.
   Wind loads are negligible. Earthquake parameters are as follows:
   SS = 0.95 S1 = 0.32, Soil "E," I_e = 1.5
3. Special Inspections
   No special inspections are required. Concrete work is fully supported on grade, and the design concrete strength of 3500 psi is for reasons of durability.
4. Structural Observation
   The Structural Engineer of record will perform Structural Observations as defined in IBC Section 1702, as required. Note that Structural Observation does not constitute Special Inspection.

01000 GENERAL

1. Employ good standards of workmanship throughout. Provide all materials and perform all construction as indicated. Secure the prior written approval of the Engineer of Record (aka EOR, who is the Engineer whose name is on these drawings) for substitutions.
2. In case of conflict between these notes and the drawings, the more stringent will govern.
3. Verify all dimensions in the field.
4. These drawings and the designs herein are copyrighted by Wilson Engineering, and are for use on this project only.
5. **Do not scale drawings.**
6. The structure as shown on these drawings is designed to be stable and to resist the indicated loads in the completed condition. The drawings do not indicate the method or sequence of construction. The contractor is solely responsible for temporary bracing and shoring, and for safety programs, methods, and procedures of operation for the construction of the design.

01340 SHOP DRAWINGS AND SUBMITTALS

1. Shop drawings shall be submitted before fabrication is started. Allow two weeks for review by the EOR.
2. Shop drawings and submittals shall be clear and legible. Each submittal shall include:
   A. Name of project, fabricator's name, General Contractor, date, and unique drawing title and/or number including revision number.
   B. A blank of 4" x 4" space for Structural Engineer's review stamp.
3. Resubmittals shall be clearly identified as revisions, and all changes clearly marked. The EOR will not be responsible to find unmarked changes.

02220 FOUNDATIONS

1. Spread footings are designed for a maximum total bearing pressure of 1000 psf maximum.
2. Remove all topsoil and organic material from the area below the foundation, and use engineered fill if necessary to provide firm bearing.
3. Place concrete for footings against firm bearing soil. No geotechnical investigation has been performed for this project. Soils are assumed to be sandy-silt or silty-sands. Confirm soils types upon completion of excavation to footing elevation, and notify the engineer if any areas differ from this assumption.

03300 REINFORCED CONCRETE AND ACCESSORIES

1. Reinforcing bars shall be ASTM A615, Grade 60. Do not weld rebar.
2. Bar detailing not shown otherwise, and support of reinforcing bars in forms, shall conform to the Concrete Reinforcing Steel Institute (CRSI) Manual of Standard Practice.
3. Provide 3" minimum cover from face of bars to face of concrete.
4. All concrete shall be ready-mix. Comply with requirements of ASTM C 94 and as follows
   Aggregate Per: ASTM C33 Cement Shall be: Type I or II per ASTM C150
   Admixtures for air entrainment and water reduction shall be per ASTM C260 & ASTM C494 Type A, respectively.
5. Properties including 28-day strengths shall be as follows:

Application	f'c (psi)	w/c (max)	aggregate (max)	Air %
A. Foundation	3500	0.50	1"	6.0

6. Hold all bolts, anchors, dowels, reinforcing bars and metal inserts firmly and accurately in place before concrete is poured; do not insert ("stab") after pouring concrete.
7. Post-installed adhesive anchors bolts shall be of steel conforming to the requirements of the applicable ICC-ES report for the adhesive system. Make and clean holes with equipment per the ICC-ES report. See the drawings for embedment, or use 5" minimum.
   Accepted adhesive products include:
   A. ITW-Ramset Company: Epcon G5 System
   B. Hilti Inc: RE-500 SD System
   C. Simpson Strong-Tie Company: SET-XP Epoxy
   D. Other systems with written approval of the Engineer of Record
   For any product to be accepted, it shall have a currently valid ICC-ES report with test results indicating that it is suitable for use in cracked concrete. Use in accordance with manufacturer's recommendations, including ambient temperature and moisture conditions at time of use.

05120 STRUCTURAL STEEL

1. Materials (except as noted in drawings):
   All materials shall be new stock, unless noted otherwise.
   Channel Shapes: ASTM A36
   Plates and bars: ASTM A36 (A529, A572, A588 optional)
   Steel Pipe: ASTM A53, Grade B
   Bolts, Regular: ASTM A307
   Galvanizing: Shapes and weldments ASTM A123
   Bolts and hardware ASTM A153
2. Minimum welds:
   Welds not specified shall be 3/16" continuous fillet welds, or minimum size per AISC, whichever is greater. All weld sizes are effective sizes; increase as required if gaps exist at meeting surfaces.
3. Welding shall be by WABO Certified welders and shall be as detailed or as specified by American Welding Society Standards D1.1.
4. Field welding is not permitted.
5. All steel shall be hot dip galvanized after fabrication.
6. Checkerplate shall conform to ASTM A786 with a raised diamond pattern and a durable factory applied non-skid finish. Connect to framing with TEKS screws @ 8" O.C., OR powder actuated fasteners @ 8" O.C., diameter, length and powder charge per PAF manufacturer.

NO.	REVISIONS	BY	DATE

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CHARLES B. WAUGH
STATE OF WASHINGTON
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6 JUNE 2016

ELIZABETH ANNE STERLING
STATE OF WASHINGTON
21586
REGISTERED
PROFESSIONAL ENGINEER
6/8/16

ENGINEERING RESPONSIBILITIES:
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SITING, ELEVATIONS, AND ARRANGEMENT BY ELIZABETH STERLING, P.E.

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 3
STRUCTURAL NOTES

SHEET	DATE	SCALE	JOB NUMBER
S1.2	6/08/2016	AS SHOWN	2014-079A

OF 35

W:\2014\2014-079 - COF Pump Stations 2&3 Upgrades\Dwg\PS3 dwg\S1.1-S1.2 STRUCTURAL.dwg, 6/7/2016 1:29:11 PM, ACROPLOT 11X17 UNSORBENED.pc3, RDN

RACEWAYS AND CONDUCTORS

- MANUFACTURERS CORD/CABLE
- HEAT TAPE ON PIPING
- FLEXIBLE CONDUIT
- TWISTED SHIELDED PAIR
- S — SEWER LINE
- OE — OVERHEAD ELECTRICAL
- EE — EXISTING CONDUIT UNDERGROUND
- CONDUIT EXPOSED
- CONDUIT BELOW GRADE OR CONCEALED
- CONDUIT CAPPED
- CONDUIT BENT UP OR TOWARD
- CONDUIT BENT DOWN OR AWAY
- GROUNDING CAD WELD CONNECTION
- CONDUCTORS NOT CONNECTED
- CONDUCTORS CONNECTED
- CONDUIT SEALS CLASS 1, DIV. 1 EXPLOSION PROOF
- NEW EQUIPMENT (STANDARD LINEWEIGHT)
- EXISTING EQUIPMENT (E) (LIGHT LINEWEIGHT)
- EQUIPMENT TO BE REMOVED

CALLOUTS AND DESIGNATIONS

- A — CONDUIT CALLOUT
- A — TRENCH CALLOUT
- EF-1 — EQUIPMENT CALLOUT
- F1 — LIGHTING FIXTURE CALLOUT: SEE SCHEDULE
- X — DRAWING KEY NOTE CALLOUT
- X — DETAIL NUMBER
- XX — DETAIL IDENTIFIER
- REFERENCE DRAWING NUMBER
- LPA-1,3 — PANEL AND CIRCUIT (EXAMPLE: PANEL LPA, CIRCUITS 1 AND 3)
- PHASE/SWITCHLEG CONDUCTOR
- HOMERUN/CONDUIT
- GROUND CONDUCTOR
- NEUTRAL CONDUCTOR

LIGHTING AND RECEPTACLES

- 1 / F1 — LED LIGHTING FIXTURE. FIXTURE IDENTIFIER AND SWITCHED CIRCUIT INDICATED. REFER TO LIGHTING SCHEDULE FOR FIXTURE AND LAMP TYPE.
- 1 / F1 — LED LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK
- LIGHTING FIXTURE, EMERGENCY DUAL HEAD WITH INTEGRAL BATTERY PACK. EXIT SIGN WHERE INDICATED.
- LED EXIT SIGN
- LIGHTING FIXTURE, CEILING MOUNTED
- PC — PHOTOELECTRIC CONTROL UNIT. WALL MOUNTED
- LIGHTING FIXTURE, POLE MOUNT
- LIGHTING FIXTURE, WALL MOUNT
- 3 — DUPLEX RECEPTACLE, NUMBER INDICATES CIRCUIT. GFCI WHERE INDICATED
- 3 — FOURPLEX RECEPTACLE, NUMBER INDICATES CIRCUIT.
- 3 — DUPLEX RECEPTACLE MOUNTED 6" ABOVE COUNTER NUMBER INDICATES CIRCUIT.
- 3 — DUPLEX RECEPTACLE FLOOR MOUNTED, NUMBER INDICATES CIRCUIT.
- SPECIAL PURPOSE RECEPTACLE OR DEDICATED EQUIPMENT CONNECTION, AS NOTED.
- TELEPHONE OUTLET
- DATA OUTLET
- SPLIT TELEPHONE DATA OUTLET
- IC — INTERCOM
- 3a — SWITCH, NUMBERS REFER TO SWITCH TYPE AND SWITCHED CIRCUIT.
- J — JUNCTION BOX
- J EX — JUNCTION BOX, EXPLOSION PROOF
- T — THERMOSTAT
- H — HUMIDISTAT

ELECTRICAL AND POWER DISTRIBUTION

- PANELBOARD 208Y/120V OR 120/240V
- PANELBOARD 480Y/277V
- UTILITY METER
- 5 — MOTOR CONNECTION NUMBER INDICATES HORSEPOWER
- O.L. — THERMAL OVERLOAD RELAY
- 2 — FULL VOLTAGE NON REVERSING MOTOR STARTER NUMBER INDICATES NEMA SIZE
- REDUCED VOLTAGE SOLID STATE STARTER
- VARIABLE FREQUENCY DRIVE
- LINE REACTOR/FILTER
- G — BUS CONNECTION (N=NEUTRAL, G=GROUND)
- 75KW — HEATER, NUMBER INDICATES KW
- 50 — DISCONNECT SWITCH - HP RATED, AS INDICATED
- 50 — DISCONNECT SWITCH (FUSED)
- TRANSFORMER
- CARTRIDGE FUSE AND FUSEHOLDER
- ATS - AUTOMATIC TRANSFER SWITCH MTS - MANUAL TRANSFER SWITCH
- 200/3 — THERMAL MAG CIRCUIT BREAKER, RATING/NO. POLES
- 200/3 MCP — MOTOR CIRCUIT PROTECTOR, RATING/NO. POLES
- GROUND ROD AND WELL
- GROUNDING ELECTRODE
- PULL OUT PLUG-RECEPTACLE/MCC CONNECTION
- BATTERY
- SIDEWALK SNOWMELT

CONTROLS AND INSTRUMENTATION

NORMALLY CLOSED / NORMALLY OPEN

- TEMPERATURE SWITCH - TS
- LEVEL SWITCH - LS
- PRESSURE SWITCH - PS
- LIMIT SWITCH - LS
- CONTACT - CR = CONTROL RELAY, MS-MOTOR STARTER, OR AS INDICATED
- SWITCH - SW
- FLOW SWITCH - FS
- PB — PUSHBUTTON - PB
- TIME DELAY - TD
- HAND / OFF / AUTO — SELECTOR SWITCH. HAND-OFF-AUTO SHOWN. X'S INDICATE CONTACT SWITCHING CONVENTION.
- AM — AMMETER
- VM — VOLTMETER
- GEN — GENERATOR
- MS — MOTOR STARTER
- PFR — PHASE FAIL RELAY
- ETM — ELAPSED TIME METER
- SCT — STARTS COUNTER
- CR — CONTROL RELAY
- TDR — TIME DELAY RELAY
- SV-SOLENOID VALVE
- PT — INSTRUMENT (L=LEVEL, F=FLOW P=PRESSURE)
- R — INDICATING LIGHT, LETTER INDICATES: R-RED, G-GREEN, A-AMBER, W-WHITE, B-BLUE
- D.C. TERMINAL
- A.C. TERMINAL
- FIELD INSTRUMENT
- HORN
- SPEED POTENTIOMETER

STANDARD ABBREVIATIONS

A, AMP	AMPERE
AC	AIR COMPRESSOR
AFF	ABOVE FINISHED FLOOR
AI	ANALOG INPUT POINT (PLC)
AIC	AMPERES INTERRUPTING CAPACITY
AL	ALARM
ALT	ALTERNATOR
AO	ANALOG OUTPUT POINT (PLC)
ATS	AUTOMATIC TRANSFER SWITCH
BAT	BATTERY
BC	BATTERY CHARGER
BH	BLOCK HEATER
BP	BYPASS CONTACTOR
C	CONDUIT (RGS)
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CNT	COUNTER
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CT	CURRENT TRANSFORMER
CV	CHECK VALVE
DEM	DEMAND
DI	DIGITAL INPUT POINT (PLC)
DO	DIGITAL OUTPUT POINT (PLC)
DWG	DRAWING
E OR (E)	EXISTING DEVICE
EF	EXHAUST FAN
E.O.D.O.	ELECTRICAL OPERATED DRAW OUT
FE	FLOW ELEMENT
FS	FLOW SWITCH
FT	FLOW TRANSMITTER
FU	FUSED
FVNR	FULL VOLTAGE NON-REVERSING
G, GND	GROUND
GEN	GENERATOR
GFCI/GFI	GROUND FAULT CIRCUIT INTERRUPTER
H	HOT, HIGH
HH	HAND HOLE
HID	HIGH INTENSITY DISCHARGE
HOA	HAND-OFF-AUTO
HTR	HEATER
IC	ISOLATION CONTACTOR
ISR	INTRINSICALLY SAFE RELAY
KW	KILOWATT
KWH	KILOWATT HOUR
KWD	KILOWATT DEMAND
LC	LIGHTING CONTACTOR
LCP	LOCAL CONTROL PANEL
LE	LEVEL ELEMENT
LS	LIMIT SWITCH
LT	LEVEL TRANSMITTER
LTG	LIGHTING
M	METER
MCC	MOTOR CONTROL CENTER
MCP	MAIN CONTROL PANEL
MFR	MANUFACTURER
MOV	MOTOR OPERATED VALVE OR METAL OXIDE VARISTOR
MS	MOTOR STARTER
MTS	MANUAL TRANSFER SWITCH
N	NEUTRAL
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
OI	OPERATOR INTERFACE
OIT	OPERATOR IN TROUBLE
OL	OVERLOAD RELAY
OT	OVER TEMP
P	POWER
PB	PUSH BUTTON
PE	PHOTO ELECTRIC RELAY
PFR	PHASE FAILURE RELAY
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
POT	POTENTIOMETER
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLY VINYL CHLORIDE (CONDUIT)
RGS	RIGID GAVLANIZED STEEL (CONDUIT)
RTM	RUN TIME METER
RV	REDUCED VOLTAGE
S	SIGNAL
SA	SURGE ARRESTOR
SE	SERVICE ENTRANCE
SHT	SHEET
SS	STAINLESS STEEL
SSS	SOLID STATE STARTER
SV	SOLENOID VALVE
T	THERMOSTAT
TC	TIME CLOCK
TDR	TIME DELAY
TST	TWISTED SHIELDED THREE CONDUCTOR (TRIAD)
TYP	TYPICAL
UH	UNIT HEATER
UPS	UNINTERUPTABLE POWER SUPPLY
VS	VIBRATION SWITCH
VT	VIBRATION TRANSMITTER
VFD	VARIABLE FREQUENCY DRIVE
VSD	VARIABLE SPEED DRIVE
W	WATT
WHM	WATT HOUR METER
WP	WEATHER PROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF
XMTR	TRANSMITTER

PROJECT GENERAL NOTES:

1. THE ELECTRICAL DRAWINGS AND SCHEDULES ARE FUNCTIONAL IN NATURE AND DO NOT SPECIFY EXACT LOCATIONS OF EQUIPMENT OR EQUIPMENT TERMINATIONS. IT IS THE INTENT OF THESE DRAWINGS TO DESCRIBE AND PROVIDE FOR THE FURNISHING, INSTALLING, TESTING AND PLACING IN FULLY OPERATIONAL CONDITION ALL EQUIPMENT, MATERIALS, DEVICES AND NECESSARY APPURTENANCES TO PROVIDE A COMPLETE ELECTRICAL SYSTEM, TOGETHER WITH SUCH OTHER MISCELLANEOUS INSTALLATIONS AND EQUIPMENT SHOWN ON THE DRAWINGS. THE WORK SHALL INCLUDE ALL MATERIALS, APPLIANCES AND APPARATUS NOT SPECIFICALLY MENTIONED HEREIN OR SHOWN ON THE DRAWINGS, BUT WHICH ARE NECESSARY TO MAKE A COMPLETE, FULLY OPERATIONAL INSTALLATION OF ALL ELECTRICAL SYSTEMS SHOWN ON THE DRAWINGS.
2. THIS PROJECT INCLUDES THE INSTALLATION OF PACKAGED EQUIPMENT SYSTEM(S) OR SUB-SYSTEM(S) THAT WILL REQUIRE COORDINATION BETWEEN THE CONTRACTOR AND THE MANUFACTURER TO DETERMINE THE DETAILED INSTALLATION REQUIREMENTS. THE ENGINEER HAS SHOWN GENERAL INSTALLATION INFORMATION FOR THESE SYSTEMS BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF DESIGN. WHERE INDICATED ON THE DRAWINGS TO 'PROVIDE A COMPLETE AND OPERATIONAL SYSTEM' THE CONTRACTOR SHALL PROVIDE ALL MATERIALS, INSTALLATION, AND COORDINATION WITH THE MANUFACTURER REQUIRED SO THE EQUIPMENT IS INSTALLED AND OPERATES IN A SATISFACTORY MANNER. MINOR CHANGES IN EQUIPMENT LOCATIONS (LESS THAN 20 FEET), QUANTITY OF TERMINATIONS OR WIRES, JUNCTION BOXES, CONDUIT, ETC SHALL BE INCLUDED IN THE CONTRACT PRICE.
3. CONTRACTOR SHALL COORDINATE WITH OWNER AND UTILITY FOR REMOVAL OF EXISTING EQUIPMENT AND ANY REQUIRED PHASING TO MAINTAIN ALL REQUIRED POWER AND CONNECTIONS .
4. DISPOSE OF ALL DEMO MATERIALS NOT WANTED BY OWNER.
5. COORDINATE WITH OWNER FOR DETAILED EQUIPMENT CONNECTION REQUIREMENTS. GENERAL POWER DISTRIBUTION AND CIRCUIT DESIGNATIONS ARE SHOWN ON THE DRAWINGS.
6. ALL CONDUIT IN NEW WALLS OR CEILINGS SHALL BE CONCEALED WHERE POSSIBLE.
7. ALL ELECTRICAL SERVICE REQUIREMENTS FOR NEW UTILITY SERVICE, TRANSFORMER, METERING, TRENCHING, ETC SHALL BE COORDINATED AND INSTALLED IN STRICT ACCORDANCE WITH OKANOGAN COUNTY PUD REQUIREMENTS. ALL UTILITY INFORMATION MUST BE VERIFIED PRIOR TO BID.
8. THE NUMBER OF CONDUCTORS AND CONDUIT ROUTING WILL VARY BASED ON HOW THE CONTRACTOR ELECTS TO ROUTE AND COMBINE CIRCUITING. THE CONTRACTOR SHALL PROVIDE DETAILED REDLINE MARKUPS ON A DEDICATED SET OF CONSTRUCTION DRAWINGS TO THE ENGINEER UPON COMPLETION OF THE PROJECT FOR PREPARATION OF RECORD DRAWINGS. THIS INCLUDES ACTUAL RACEWAY ROUTING, CONDUCTOR QUANTITIES, PANEL SCHEDULES, RECEPTACLE CONFIGURATIONS AND MOUNTING ELEVATIONS, ETC.
9. ALL MATERIALS SHALL CONFORM TO THE NATIONAL ELECTRICAL CODE ARTICLE 110-14C. WIRING AND CIRCUIT BREAKERS ON THIS PROJECT ARE DESIGNED FOR 75 DEG C OPERATION ABOVE 100 AMPERES; 60 DEG C FOR 100 AMPERES AND BELOW. ALL PRODUCTS FURNISHED ON THIS PROJECT SHALL HAVE ELECTRICAL TERMINATIONS RATED FOR 60 DEG C FOR AMPACITIES OF 100 AMPERES AND BELOW, AND RATED FOR 75 DEG C FOR AMPACITIES ABOVE 100 AMPERES. ALL CONDUCTORS SHALL BE COPPER.

ELECTRICAL SHEET INDEX

E1 ELECTRICAL SYMBOLS AND ABBREVIATIONS
E2 ELECTRICAL SITE PLAN
E3 ONE LINE DIAGRAM
E4 MCC ELEVATION
E5 ELECTRICAL DEMOLITION PLAN
E6 POWER & CONTROLS PLAN
E7 LIGHTING PLAN
E8 FLOAT CONTROL PANEL
E9 TELEMETRY PANEL ADDITIONS - SH.1
E10 TELEMETRY PANEL ADDITIONS - SH.2
E11 PUMP VFD FUNCTIONAL WIRING DIAGRAM
E12 ELECTRICAL SCHEDULES
E13 ELECTRICAL DETAILS

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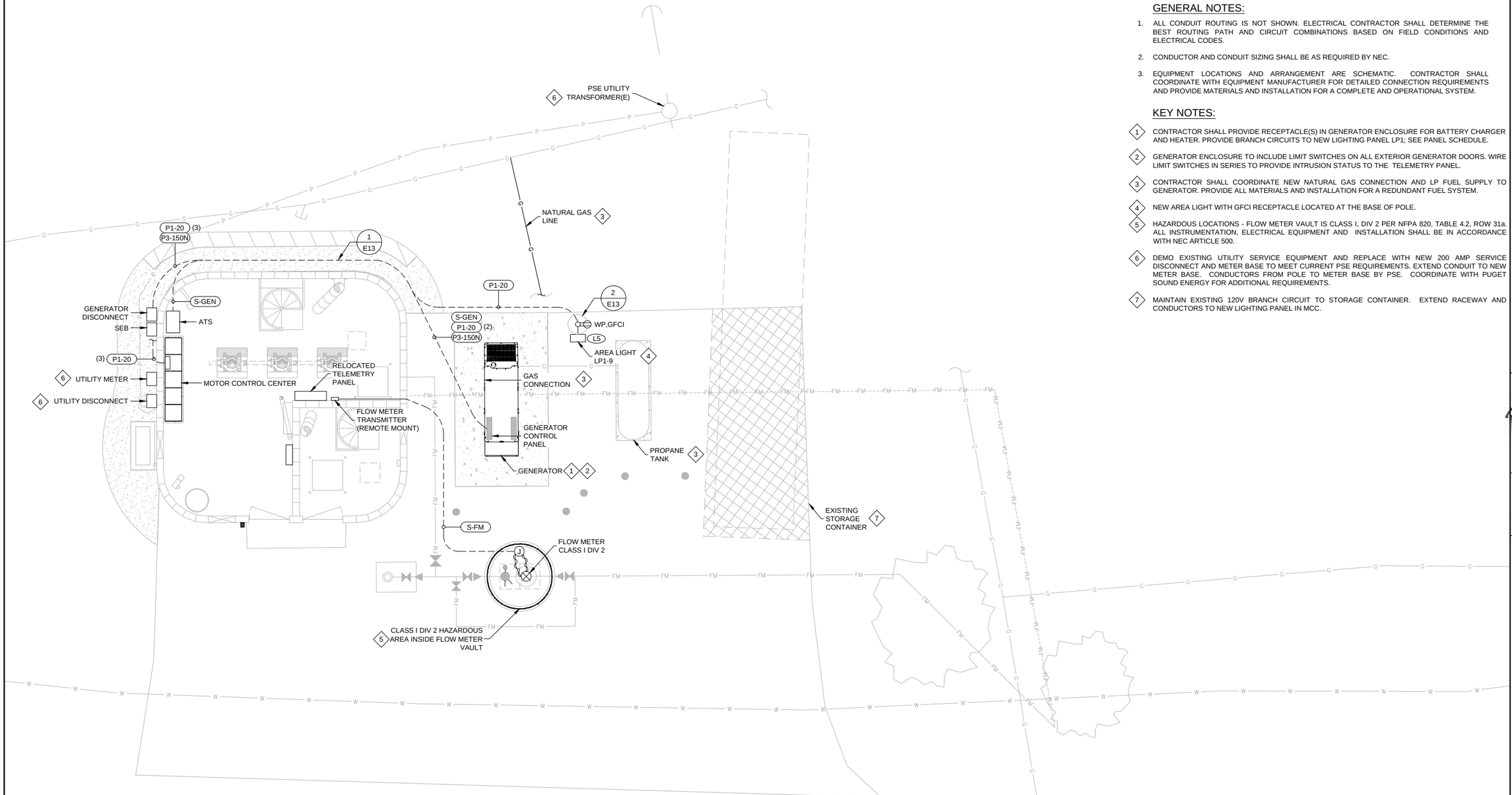
BRIAN L. ZIESMER — STATE OF WASHINGTON — 37463 — REGISTERED PROFESSIONAL ENGINEER
6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
SYMBOLS AND ABBREVIATIONS

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

SHEET E1 OF 35



ELECTRICAL SITE PLAN

SCALE: 1" = 5'

5 0 5 10
SCALE HORIZONTAL SCALE FEET

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE RECEPTACLE(S) IN GENERATOR ENCLOSURE FOR BATTERY CHARGER AND HEATER. PROVIDE BRANCH CIRCUITS TO NEW LIGHTING PANEL LP1; SEE PANEL SCHEDULE.
2. GENERATOR ENCLOSURE TO INCLUDE LIMIT SWITCHES ON ALL EXTERIOR GENERATOR DOORS. WIRE LIMIT SWITCHES IN SERIES TO PROVIDE INTRUSION STATUS TO THE TELEMETRY PANEL.
3. CONTRACTOR SHALL COORDINATE NEW NATURAL GAS CONNECTION AND LP FUEL SUPPLY TO GENERATOR. PROVIDE ALL MATERIALS AND INSTALLATION FOR A REDUNDANT FUEL SYSTEM.
4. NEW AREA LIGHT WITH GFCI RECEPTACLE LOCATED AT THE BASE OF POLE.
5. HAZARDOUS LOCATIONS - FLOW METER VAULT IS CLASS I, DIV 2 PER NFPA 820, TABLE 4.2, ROW 31a. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.
6. DEMO EXISTING UTILITY SERVICE EQUIPMENT AND REPLACE WITH NEW 200 AMP SERVICE DISCONNECT AND METER BASE TO MEET CURRENT PSE REQUIREMENTS. EXTEND CONDUIT TO NEW METER BASE. CONDUCTORS FROM POLE TO METER BASE BY PSE. COORDINATE WITH PUGET SOUND ENERGY FOR ADDITIONAL REQUIREMENTS.
7. MAINTAIN EXISTING 120V BRANCH CIRCUIT TO STORAGE CONTAINER. EXTEND RACEWAY AND CONDUCTORS TO NEW LIGHTING PANEL IN MCC.

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6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

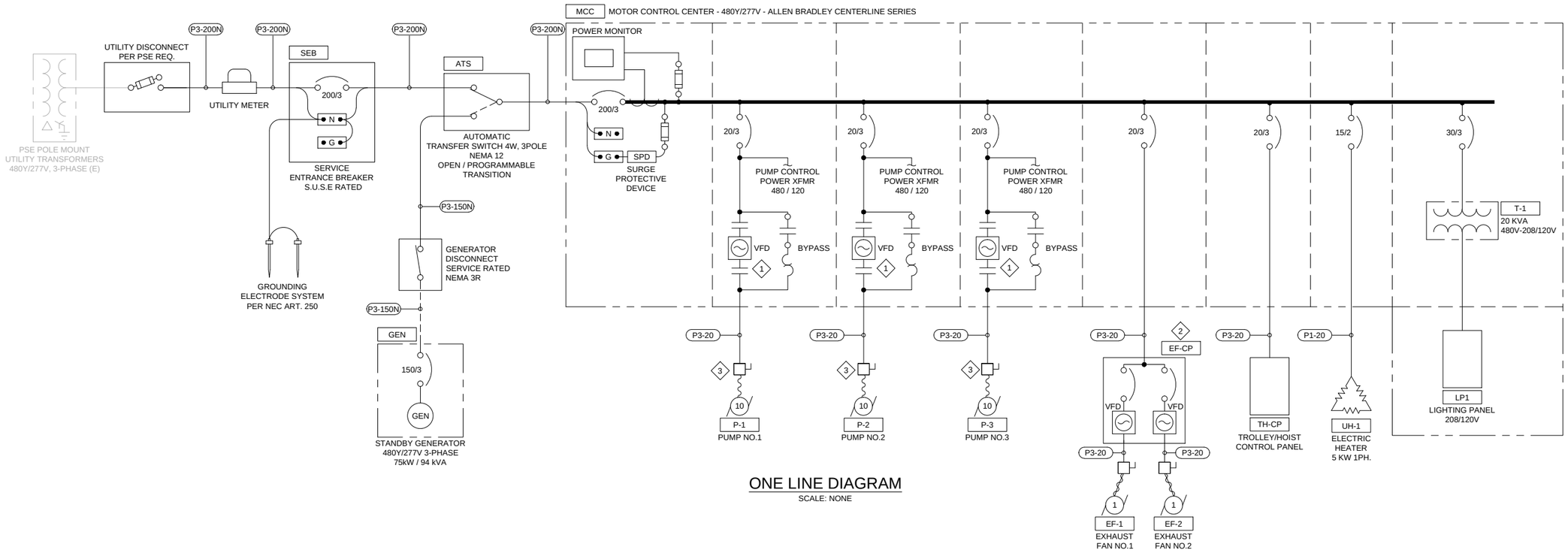
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
ELECTRICAL SITE PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

SHEET E2 OF 35

KEY NOTES:

1. VFD'S SHALL BE ALLEN BRADLEY POWERFLEX 525 SERIES WITH FULL VOLTAGE BYPASS.
2. PROVIDE VENTILATION CONTROL PANEL INCLUDING VFD'S IN NEMA 12 ENCLOSURE WITH LOCAL HOA AND MANUAL SPEED CONTROLS. SEE MECHANICAL SPECIFICATIONS.
3. DISCONNECTS NEMA 4X STAINLESS STEEL WITH AUX CONTACT.



ONE LINE DIAGRAM

SCALE: NONE

LOAD CALCULATION

EQ ID	EQUIPMENT DESCRIPTION	SUPPLY POWER	CONNECTED LOAD	HP / KVA	LOAD AMPS	DEMAND FACTOR (%)	DEMAND AMPS
P-1	PUMP NO.1	480V, 3PH	10.0	HP	14.0	125%	17.5
P-2	PUMP NO.2	480V, 3PH	10.0	HP	14.0	100%	14.0
P-3	PUMP NO.3	480V, 3PH	10.0	HP	14.0	100%	14.0
EF-1	EXHAUST FAN NO.1	480V, 3PH	1.0	HP	2.1	100%	2.1
EF-2	EXHAUST FAN NO.2	480V, 3PH	1.0	HP	2.1	100%	2.1
TR-1	TROLLEY	480V, 3PH	0.5	HP	1.1	100%	1.1
HS-1	HOIST	480V, 3PH	0.5	HP	1.1	100%	1.1
T-1	LIGHTING PANEL TRANSFORMER	480V, 3PH	20.0	kVA	24.0	52%	12.5
UH-1	ELECTRIC UNIT HEATER	480V, 3PH	5.0	kVA	7.5	100%	7.5
					79.9		71.9

LOAD CALCULATION

SCALE: NONE

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON

PUMP STATION NO.3
ONE LINE DIAGRAM

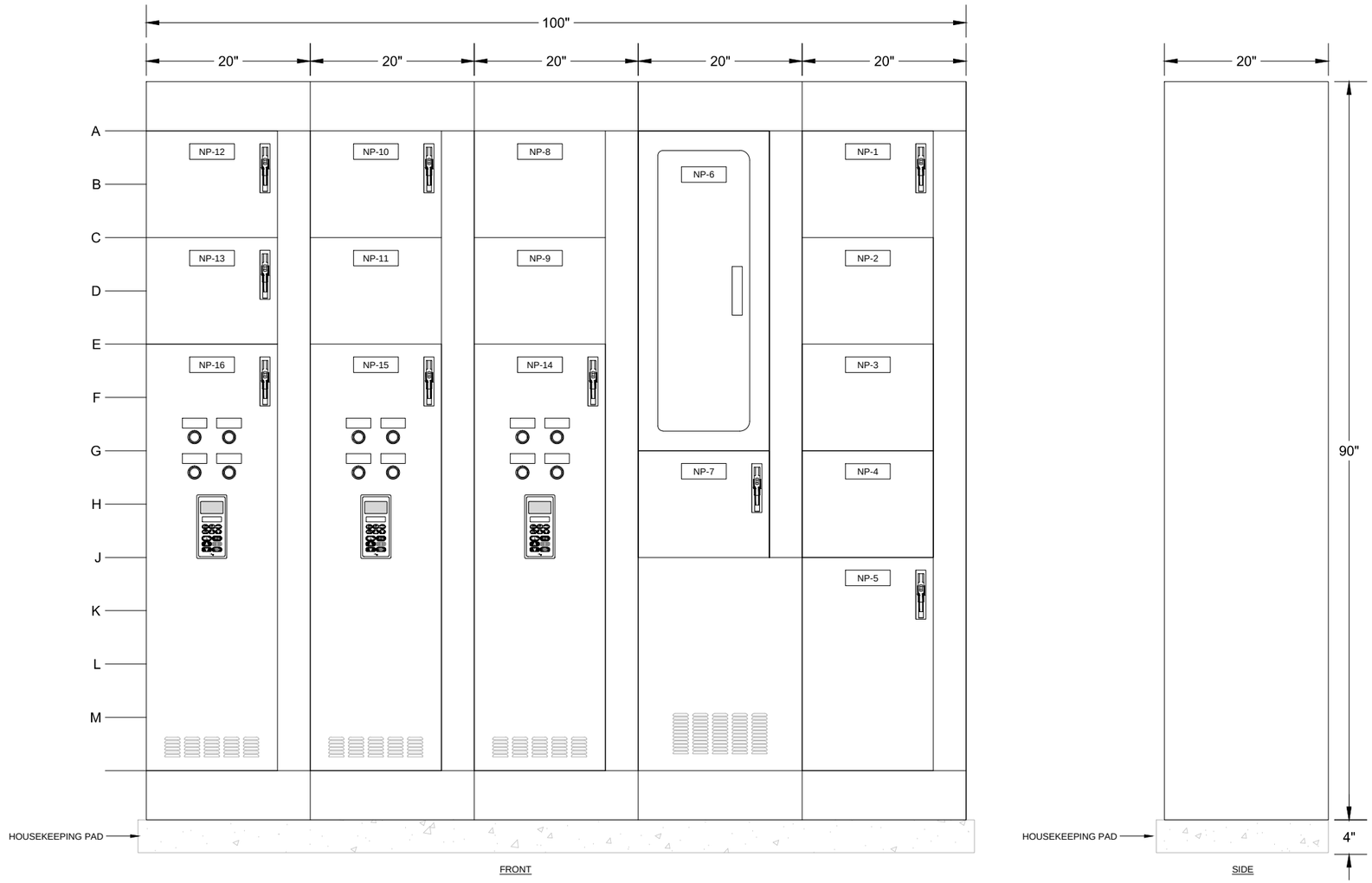
DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-0798

SHEET E3 OF 35

GENERAL NOTES:

1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE MOTOR CONTROL CENTER. FINAL DIMENSIONS, WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTRACTOR FOR A COMPLETE AND OPERATIONAL SYSTEM.
2. MOTOR CONTROL CENTER SHALL BE ALLEN BRADLEY CENTERLINE SERIES WITH POWERFLEX 525 VFD'S; SEE SPECIFICATIONS.

NAMEPLATE SCHEDULE			
EQ ID	NAMEPLATE LABEL (LINE 1 / LINE 2 / LINE 3)	EQ ID	NAMEPLATE LABEL (LINE 1 / LINE 2 / LINE 3)
NP-1	UNIT HEATER	NP-9	SPACE
NP-2	POWER / MONITOR	NP-10	TROLLEY / HOIST
NP-3	(SPACE FOR CT'S)	NP-11	SPARE
NP-4	SPACE	NP-12	SPACE
NP-5	MAIN / BREAKER	NP-13	SPACE
NP-6	LIGHTING PANEL / LP1	NP-14	PUMP NO.1 VFD / BYPASS
NP-7	20kVA / TRANSFORMER / T-1	NP-15	PUMP NO.2 VFD / BYPASS
NP-8	SPACE	NP-16	PUMP NO.3 VFD / BYPASS



FRONT

SIDE

MOTOR CONTROL CENTER - ELEVATION

SCALE: NONE

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CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.3
MCC ELEVATION

DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079B

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BID DOCUMENTS

SHEET E4 OF 35

DEMOLITION WORK:

1. ALL DEMOLITION WORK REQUIRED UNDER THIS CONTRACT IS NOT SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL INSPECT THE EXISTING SITES AND INSTALLATIONS PRIOR TO BIDDING AND SHALL MAKE HIS OWN JUDGMENT AS TO THE WORK REQUIRED TO PROVIDE COMPLETE DEMOLITION AS SHOWN OR WITHIN THE INTENT OF THE CONTRACT DOCUMENTS.
3. EXISTING EQUIPMENT, SYSTEMS, AND MATERIALS REMOVED DURING DEMOLITION SHALL BE MADE AVAILABLE FOR THIS INSPECTION AND DECISION AS TO WHETHER THE OWNER WILL RETAIN POSSESSION. ITEMS SELECTED FOR RETENTION SHALL BE TURNED OVER TO THE OWNER. THESE ITEMS SHALL BE DELIVERED TO A LOCATION ON THE PREMISES SELECTED BY THE OWNER. ALL MATERIAL NOT SELECTED FOR RETENTION BY THE OWNER AND DEBRIS SHALL BE LEGALLY DISPOSED OF BY THE CONTRACTOR.
4. SEE CIVIL AND ARCHITECTURAL DRAWINGS AND SPECIFICATIONS FOR ADDITIONAL DEMOLITION AND PHASING REQUIREMENTS.

DEMOLITION NOTES:

D1 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING MOTOR CONTROL CENTER INCLUDING SERVICE DISCONNECT, AUTOMATIC TRANSFER SWITCH, TRANSFORMER, PANELBOARD, MOTOR STARTERS, AND CIRCUIT BREAKER FOR THE 100A POWER FEED TO PUMP STATION NO.8.

D2 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING 150KW GENERATOR INCLUDING NATURAL GAS FUEL SUPPLY, WALL MOUNTED AIR-INTAKE LOUVER, EXHAUST FAN, AND EXTERIOR MUFFLER SYSTEM.

D3 REPLACE EXISTING UTILITY SERVICE EQUIPMENT. COORDINATE EQUIPMENT REQUIREMENTS WITH PUGET SOUND ENERGY.

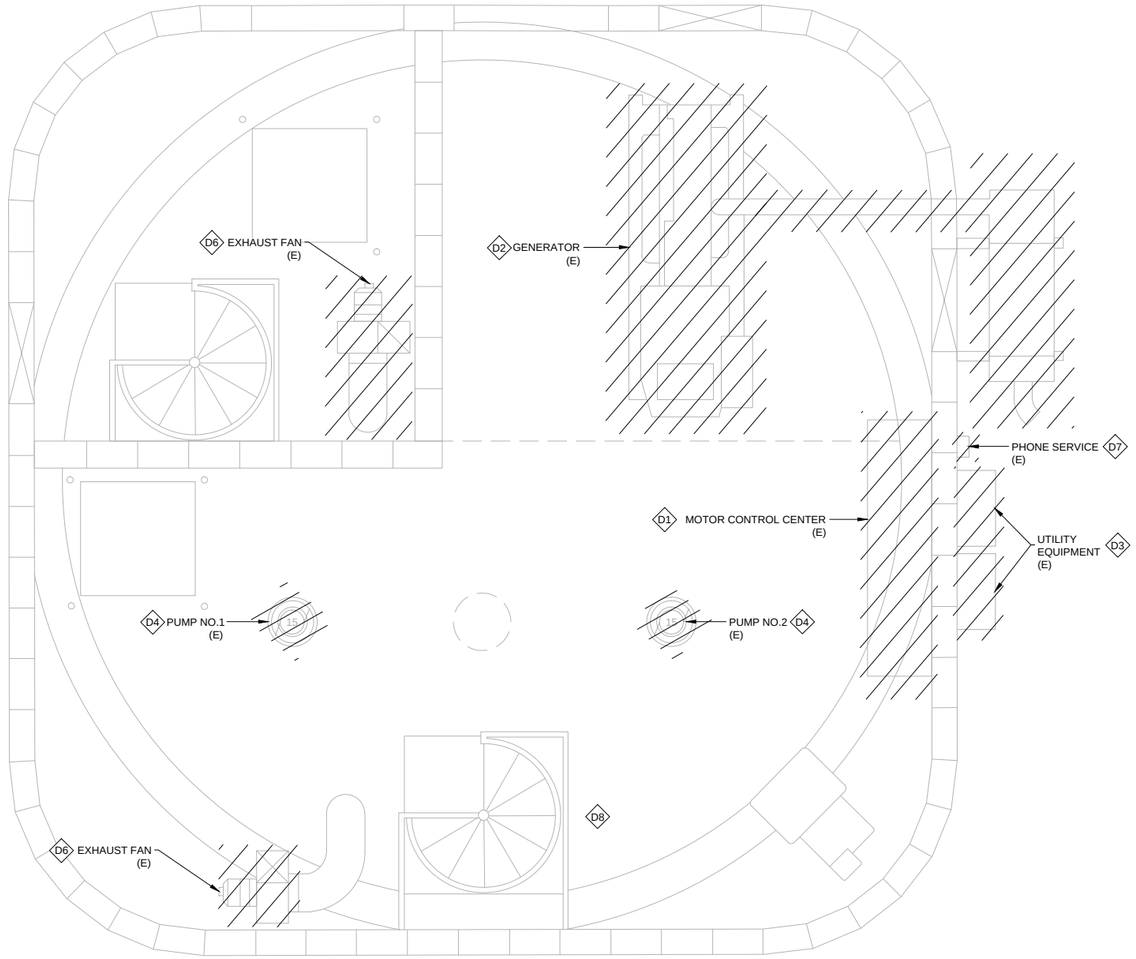
D4 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF TWO (2) EXISTING 15HP PUMPS.

D5 DEMO ALL EXISTING INTERIOR AND EXTERIOR LIGHT FIXTURES.

D6 PROVIDE COMPLETE ELECTRICAL DEMOLITION OF TWO (2) EXISTING EXHAUST FANS.

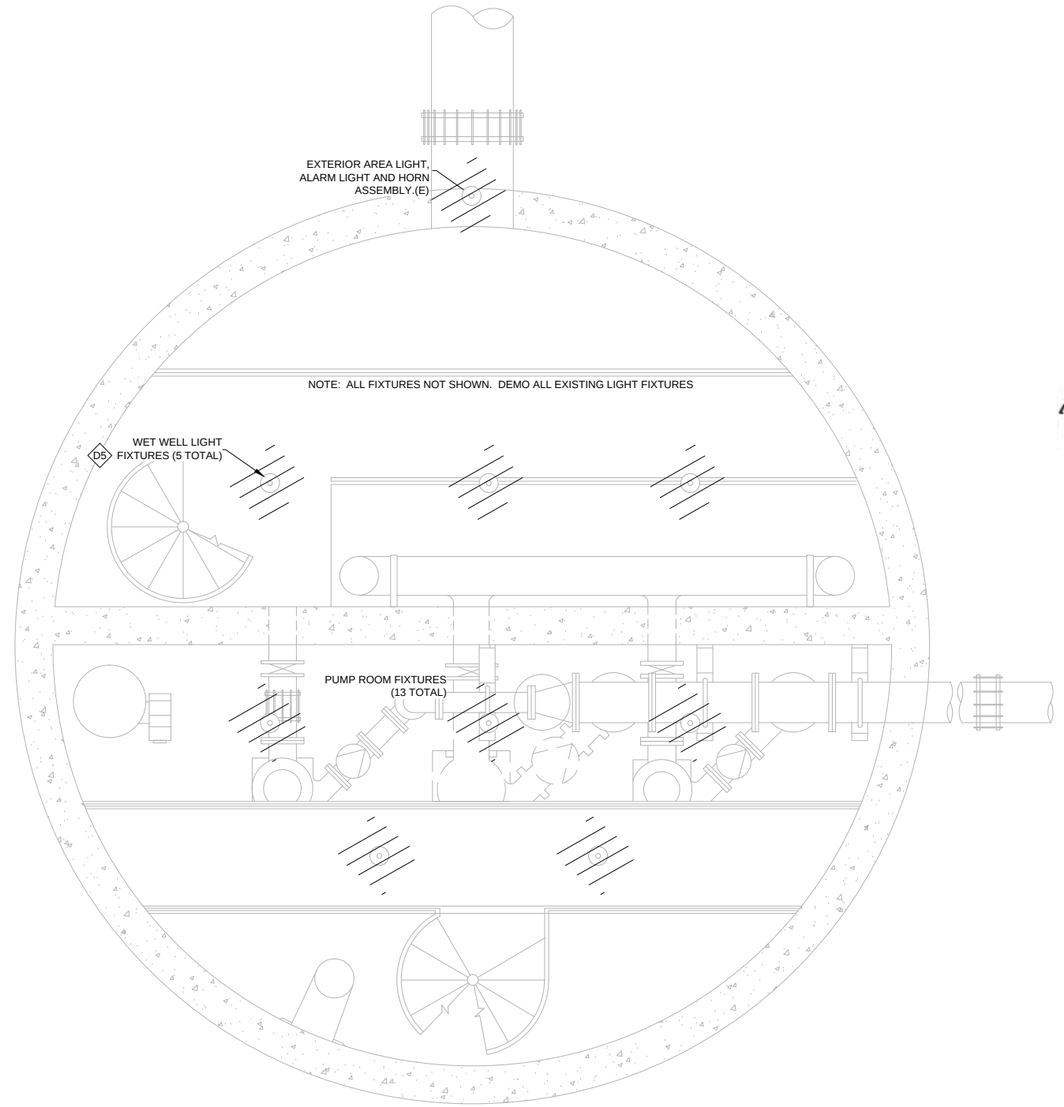
D7 PROVIDE COMPLETE DEMOLITION OF EXISTING PHONE SERVICE. PATCH AND SEAL INTERIOR / EXTERIOR WALL AS REQUIRED.

D8 REMOVE EXISTING TELEMETRY EQUIPMENT LOCATED ON ROOF. PROTECT AND REINSTALL AFTER ROOF RENOVATION.



MOTOR ROOM - DEMOLITION PLAN

SCALE: 1" = 2'



PUMP ROOM & WET WELL - DEMOLITION PLAN

SCALE: 1" = 2'

2 0 2 4
SCALE HORIZONTAL SCALE FEET

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6-8-2016

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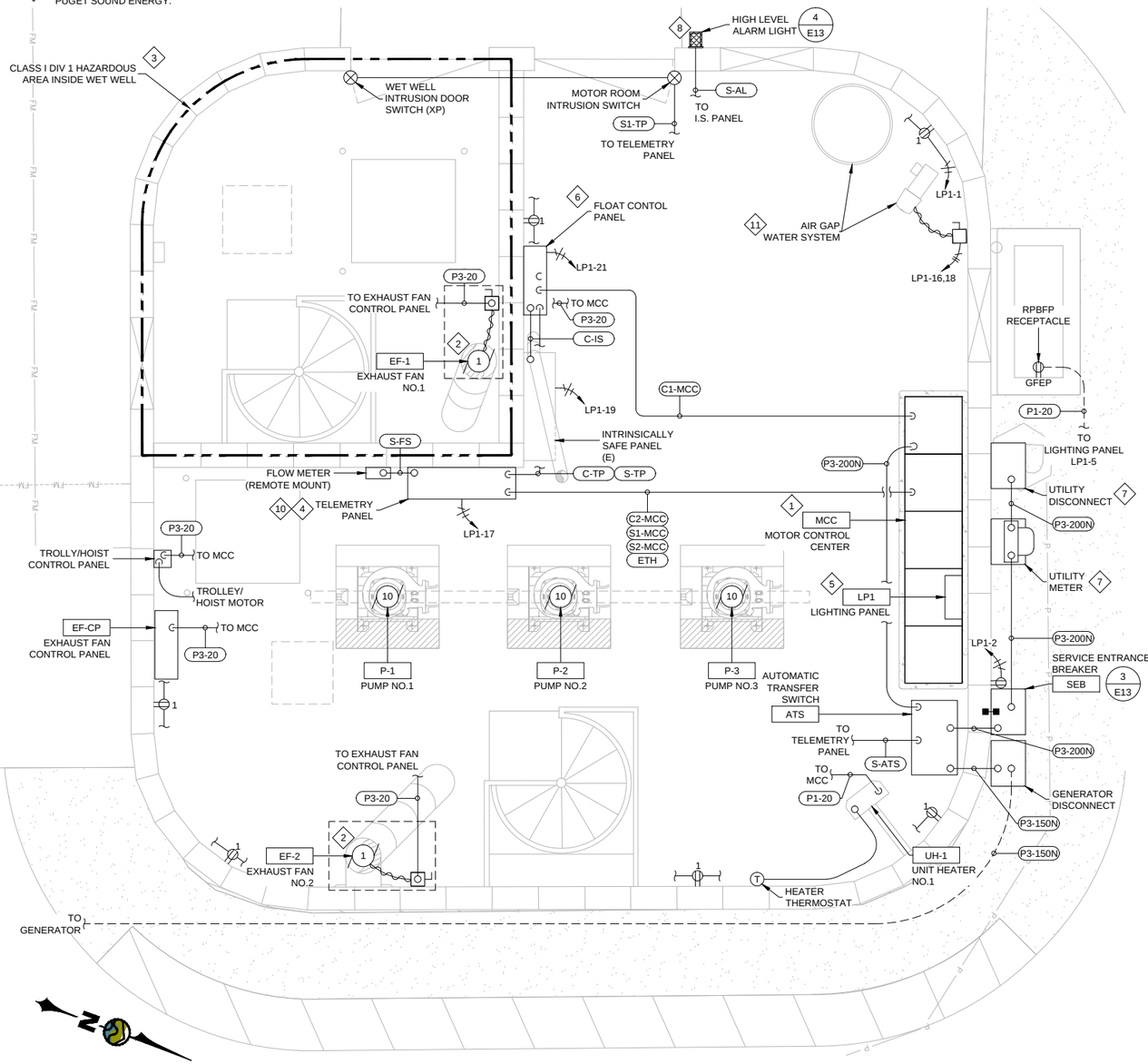
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
ELECTRICAL DEMOLITION PLAN

DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-0798

SHEET E5 OF 35

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE NEW MOTOR CONTROL CENTER AND ALL REQUIRED RACEWAY TO CONNECT ALL EQUIPMENT SHOWN ON DRAWINGS.
2. EXHAUST FAN MOTOR AND DISCONNECT LOCATED ON ROOF OF BUILDING, PROVIDE RACEWAY TO VFD LOCATED IN NEW ELECTRICAL MCC.
3. HAZARDOUS LOCATIONS - CLASS I, DIV 1 PER NFPA 820. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.
4. CONTRACTOR SHALL PROVIDE NEW ALLEN BRADLEY PANELVIEW OPERATOR INTERFACE, I/O CARD, NETWORK SWITCH AND INSTALLATION; SEE CONTROL DRAWINGS.
5. CONNECT NEW AND EXISTING ELECTRICAL EQUIPMENT TO NEW PANEL LP1 LOCATED IN MCC. PROVIDE NEW RACEWAY AS REQUIRED.
6. PROVIDE NEW NEMA 12 FLOAT CONTROL PANEL; SEE DRAWING E8.
7. PROVIDE NEW UTILITY SERVICE EQUIPMENT. COORDINATE EQUIPMENT REQUIREMENTS WITH PUGET SOUND ENERGY.
8. PROVIDE VANDAL PROOF RED LED HIGH LEVEL ALARM LIGHT. WIRE TO TELEMETRY PANEL TO INDICATE HIGH LEVEL ALARM.
9. REPLACE EXISTING WET WELL LEVEL TRANSMITTER, LEVEL FLOATS AND OPERATOR IN TROUBLE PUSH BUTTONS. REPLACE EXISTING PUMP ROOM FLOOD SWITCH AND OPERATOR IN TROUBLE PUSH BUTTON.
10. RELOCATED TELEMETRY PANEL. RECONNECT ALL EXISTING EQUIPMENT AND SIGNALS. CONNECT ALL NEW EQUIPMENT AND SIGNALS AS REQUIRED.
11. PROVIDE ELECTRICAL DISCONNECT FOR AIR GAP WATER SYSTEM.



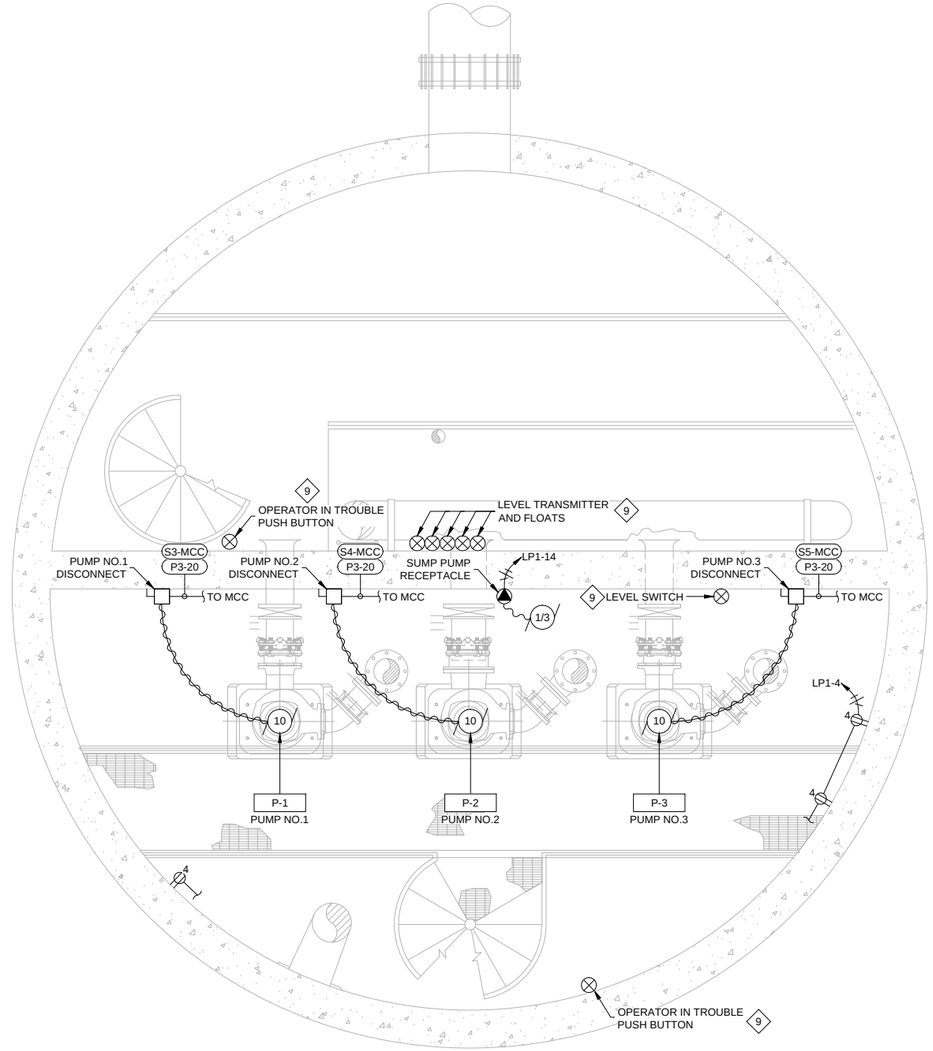
MOTOR ROOM FLOOR - POWER & CONTROLS PLAN

SCALE: 1" = 2'

SCALE HORIZONTAL SCALE FEET (2 0 2 4)

GENERAL NOTES:

1. ALL CONDUIT ROUTING IS NOT SHOWN. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
2. CONDUCTOR AND CONDUIT SIZING SHALL BE AS REQUIRED BY NEC.
3. EQUIPMENT LOCATIONS AND ARRANGEMENT ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE WITH EQUIPMENT MANUFACTURER FOR DETAILED CONNECTION REQUIREMENTS AND PROVIDE MATERIALS AND INSTALLATION FOR A COMPLETE AND OPERATIONAL SYSTEM.
4. REPLACE ALL EXISTING RECEPTACLES WITH NEW GFCI WITH WET LOCATION COVERS. PROVIDE STAINLESS STEEL COVER PLATES FOR ALL SPARE JUNCTION BOXES IN EXISTING WALLS.



PUMP ROOM & WET WELL - POWER & CONTROLS PLAN

SCALE: 1" = 2'

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Wilson SURVEY/ENGINEERING

BRIAN L. ZYLSTRA — STATE OF WASHINGTON — 37463 — REGISTERED PROFESSIONAL ENGINEER — 6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	GH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
POWER AND CONTROLS PLAN

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-079B

Z engineers
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BID DOCUMENTS

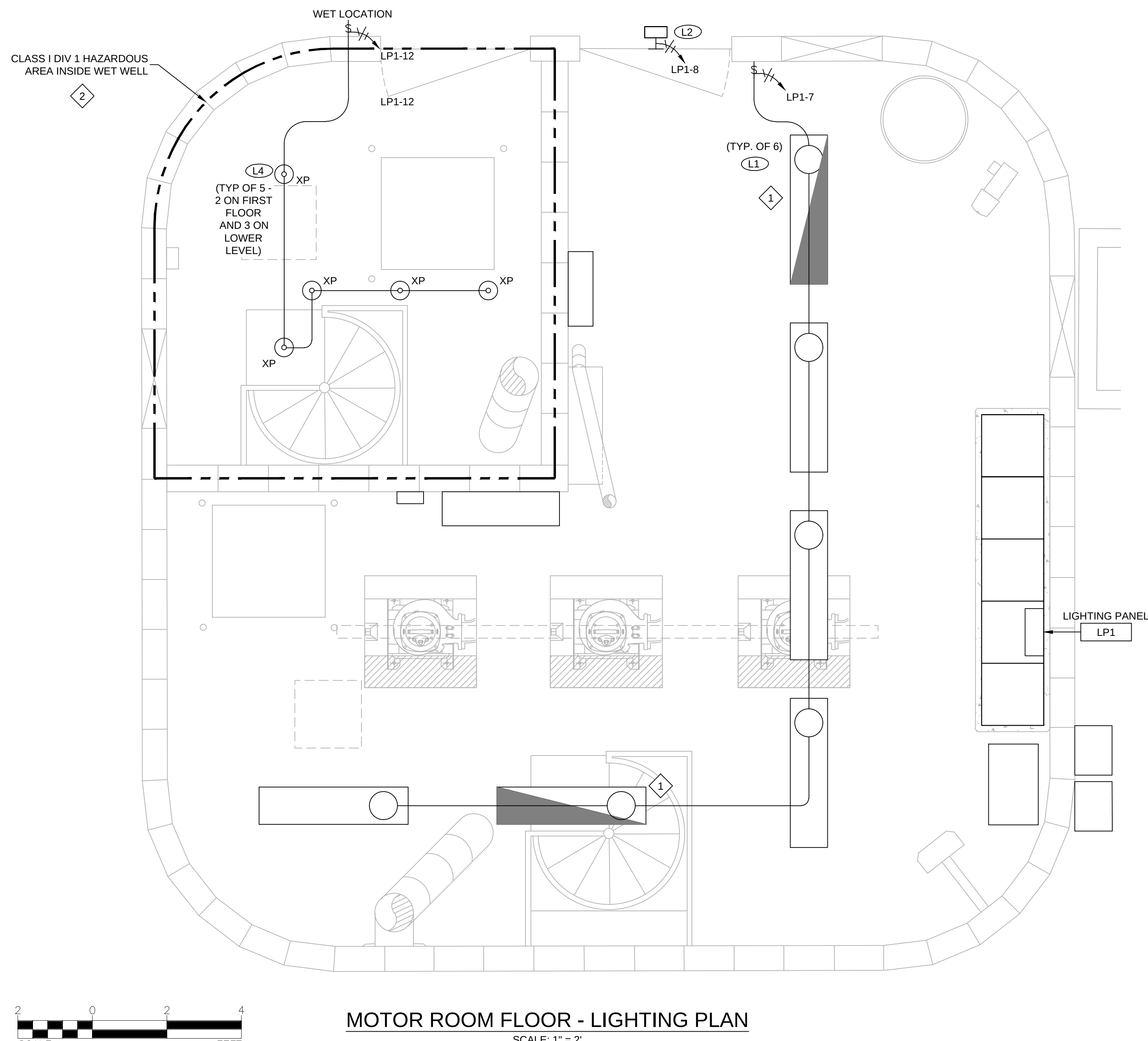
SHEET E6 OF 35

GENERAL LIGHTING NOTES:

1. DEMO ALL EXISTING LIGHTING AND REPLACE WITH NEW FIXTURES PER LIGHTING SCHEDULE. COORDINATE ALL FINAL FIXTURE LOCATIONS WITH MECHANICAL TO AVOID CONFLICTS.
2. LIGHTING CIRCUITS SHALL BE #12 AWG COPPER. ROUTING SHOWN ON PLANS IS SCHEMATIC. ROUTE ALL LIGHTING CIRCUITS TO LIGHTING PANEL, SEE SCHEDULES. ELECTRICAL CONTRACTOR SHALL DETERMINE THE BEST ROUTING PATH AND CIRCUIT COMBINATIONS BASED ON FIELD CONDITIONS AND ELECTRICAL CODES.
3. PROVIDE UNSWITCHED POWER CIRCUIT TO ALL EMERGENCY FIXTURES. CONTRACTOR MAY USE EXISTING RECESSED JBOXES AND RACEWAY WHERE IN SUITABLE CONDITION. REPLACE WHERE NECESSARY. PROVIDE STAINLESS STEEL COVER ON ALL SPARE RECESSED JBOXES.

KEY NOTES:

1. PROVIDE LIGHT FIXTURE WITH EMERGENCY BATTERY PACK WHERE INDICATED.
2. HAZARDOUS LOCATIONS - CLASS I, DIV 1 PER NFPA 820. ALL INSTRUMENTATION, ELECTRICAL EQUIPMENT AND INSTALLATION SHALL BE IN ACCORDANCE WITH NEC ARTICLE 500.



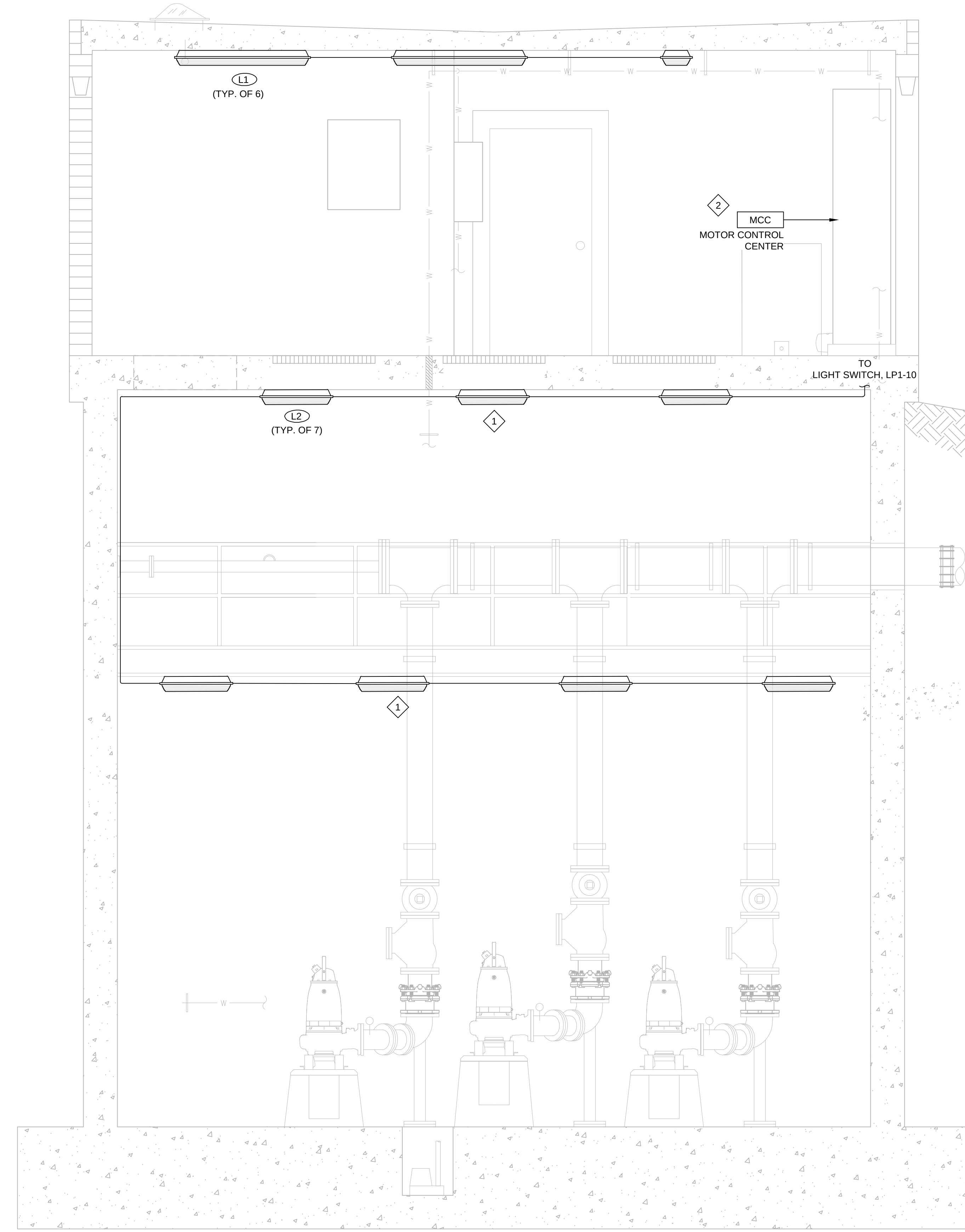
MOTOR ROOM FLOOR - LIGHTING PLAN

SCALE: 1" = 2'

FIXTURE SCHEDULE					
ID	DESCRIPTION	MOUNTING	LAMPS	VA	MANUFACTURER / PART NO.
L1	4' LED STRIP WET LOCATION	SURFACE MOUNT	LED	50	LITHONIA FEM4 LED SERIES #FEM4-4L/35 IMAFL OR EQUAL
L2	2' LED STRIP, WET LOCATION	PENDANT MOUNT/JBOX	LED	40	LITHONIA DMW2 L24-4000LM-AFL-MD-MV-40K-JSB, OR EQUAL
L3	EXTERIOR WALL SCONCE - DOORS	SURFACE MOUNT	LED	47	LITHONIA WSTM LED-2A-40K-MV-DDBXD-PE, OR EQUAL
L4	HAZARDOUS LOCATION FIXTURE	SURFACE MOUNT	MH	70	CROUSE HINDS EVLS HAZARD GARD SERIES #EVLS-A-9-2-07-1-120-IR OR EQUAL
L5	AREA LIGHT, POLE MOUNT	POLE MOUNT	LED	150	LITHONIA #DSX0-LED-40C-1000-40K-MV-DDBXD-PE, 20' POLE, OR EQUAL

LIGHTING FIXTURE SCHEDULE

SCALE: NONE



PUMP ROOM - LIGHTING PLAN

SCALE: 1" = 2'

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6-8-2016
DESIGNED BY BZ
DRAWN BY GH
CHECKED BY BZ

CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.3
LIGHTING PLAN

DATE 06/08/2016
SCALE AS SHOWN
JOB NUMBER 2014-079B

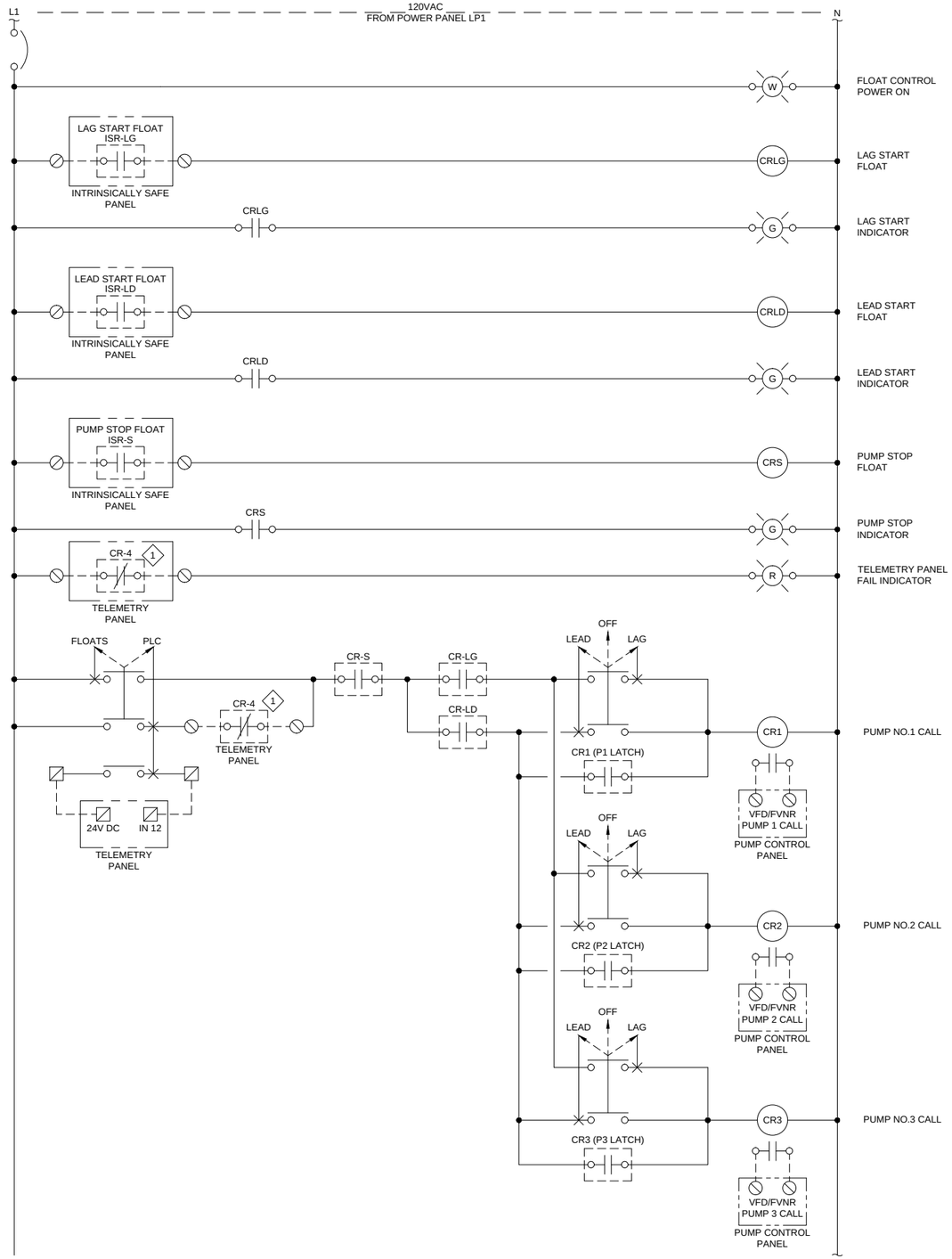
SHEET E7 OF 35

GENERAL NOTES:

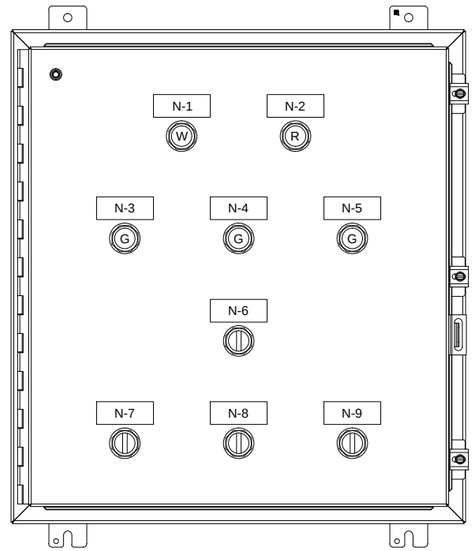
1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

1. NORMALLY CLOSED CONTACT. PLC TO KEEP OUTPUT ON (CONTACT OPEN) DURING NORMAL PLC OPERATION. IF THE PLC FAILS OR FAULTS, THE OUTPUT WILL DE-ENERGIZE AND AUTOMATICALLY ENABLE THE BACKUP FLOAT CONTROL.



PANEL NAMEPLATE SCHEDULE	
LABEL	ENGRAVING TEXT
N-1	FLOAT CONTROL PANEL / POWER (WHITE)
N-2	TELEMETRY PANEL FAIL (RED)
N-3	PUMP STOP FLOAT (GREEN)
N-4	LEAD START FLOAT (GREEN)
N-5	LAG START FLOAT (GREEN)
N-6	FLOAT / PLC
N-7	PUMP NO.1 / LEAD - OFF - LAG
N-8	PUMP NO.2 / LEAD - OFF - LAG
N-9	PUMP NO.3 / LEAD - OFF - LAG



FLOAT CONTROL PANEL - WIRING DIAGRAM & ELEVATION

SCALE: NONE

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
FLOAT CONTROL PANEL

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

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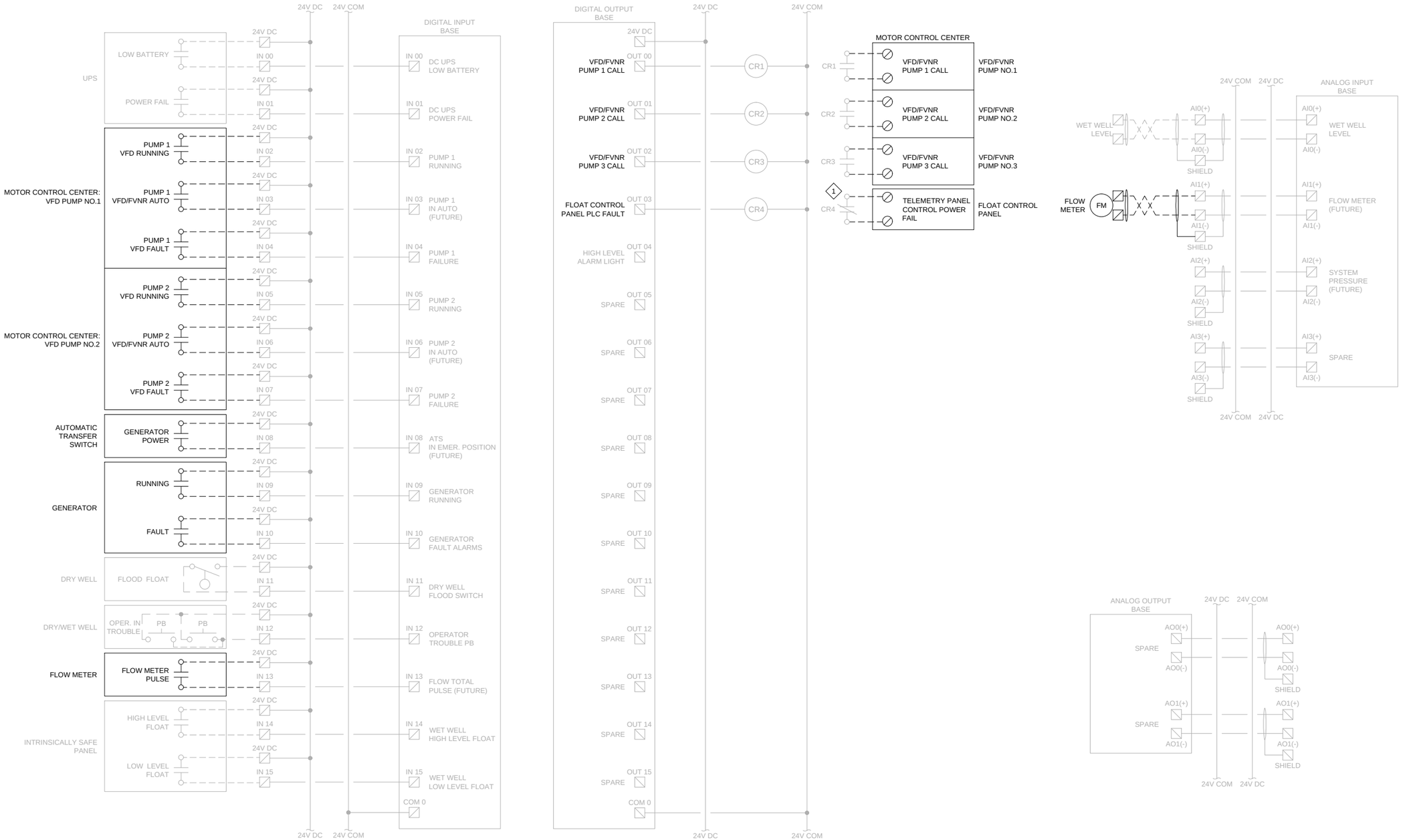
SHEET E8 OF 35

GENERAL NOTES:

1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

1. PLC OUTPUT IS ENERGIZED DURING NORMAL PLC OPERATING CONDITIONS.



TELEMETRY PANEL I/O WIRING DIAGRAMS - EXISTING

SCALE: NONE

BID DOCUMENTS

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6-8-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
TELEMETRY PANEL ADDITIONS – SH.1

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

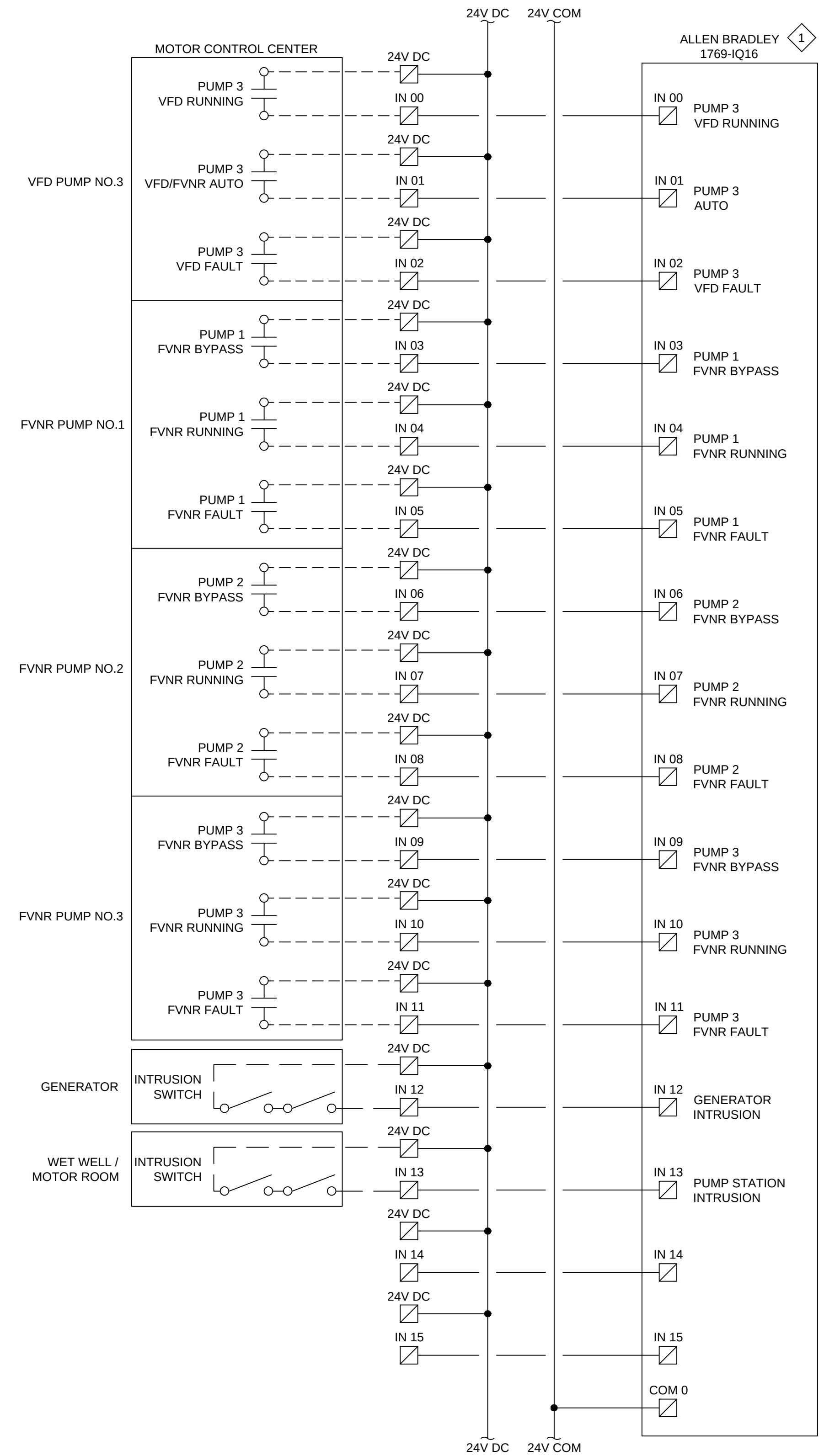
SHEET E9 OF 35

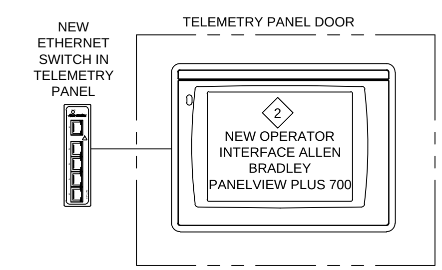
GENERAL NOTES:

1. THESE SCHEMATICS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT SHALL BE PROVIDED BY THE CONTROL PANEL SUPPLIER FOR A COMPLETE AND OPERATIONAL SYSTEM.

KEY NOTES:

1. CONTRACTOR SHALL PROVIDE NEW I/O CARD, OPERATOR INTERFACE AND 8 PORT NETWORK SWITCH. MODIFICATIONS TO EXISTING TELEMETRY PANEL AND INSTALLATION BY CITY PROGRAMMER. PROIVDE ALL MODIFICATIONS REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM. NETWORK SWITCH WILL BE CONNECTED TO ALLEN BRADLEY POWERFLEX VFD'S FOR MONITORING AND SPEED CONTROL THROUGH ETHERNET PROTOCOL.
2. PLC AND OPERATOR INTERFACE PROGRAMMING WILL BE PROVIDED BY CITY'S PROGRAMMER, L2 SYSTEMS, UNDER FORCE ACCOUNT. SEE SPECIFICATIONS.





TELEMETRY PANEL I/O WIRING DIAGRAMS - NEW

SCALE: NONE

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6-8-2016

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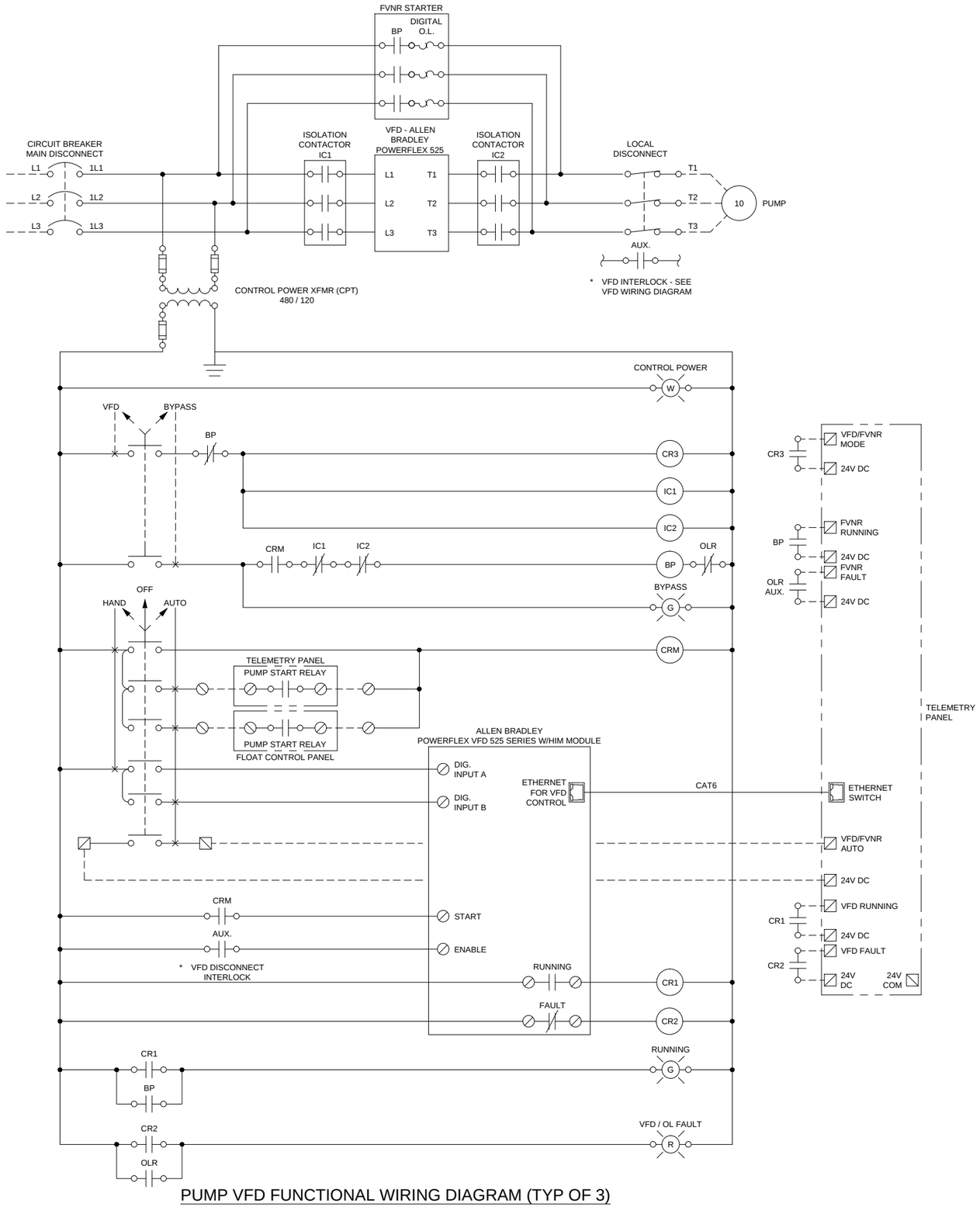
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
TELEMETRY PANEL ADDITIONS – SH.2

DATE 06/08/2016 | SCALE AS SHOWN | JOB NUMBER 2014-079B

SHEET E10 OF 35



PUMP VFD FUNCTIONAL WIRING DIAGRAM (TYP OF 3)

SCALE: NONE

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WHATCOM COUNTY WASHINGTON

PUMP STATION NO.3

PUMP VFD FUNCTIONAL WIRING DIAGRAM

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

SHEET E11 OF 35

PANEL: LP1			PANEL SCHEDULE								PROJECT: PUMP STATION NO.3	
208Y/120V, 3Ph, 4W.			100A Bus				70A M.C.B.				SURFACE MOUNTED	
CKT NO	DESCRIPTION / LOCATION	LOAD (VA)	LOAD TYPE	C.B. AMP	C.B. POLE	PHASE	C.B. POLE	C.B. AMP	LOAD TYPE	LOAD (VA)	DESCRIPTION / LOCATION	CKT NO
1	RECEPTACLES - MOTOR ROOM	1,080	R	20	1	A	1	20	R	180	RECEPTACLES - UTLITY SERVICE	2
3	RECEPTACLES	180	R	20	1	B	1	20	R	540	RECEPTACLES - DRY WELL	4
5	RECEPTACLES - RBP VALVE	1,000	H	20	1	C	1	20	R	180	RECEPTACLES - E. LOU. MT.	6
7	LIGHTS - MOTOR ROOM	200	L	20	1	A	1	20	L	50	LIGHTS - EXTERIOR	8
9	LIGHTS - GENERATOR	250	L	20	1	B	1	20	L	300	LIGHTS - DRY WELL	10
11	SPARE			20	1	C	1	20	L	250	LIGHTS - WET WELL	12
13	GENERATOR - BATTERY CHARGER	1,000	G	20	1	A	1	20	M	1,080	SUMP PUMP	14
15	GENERATOR - HEATER	1,500	H	20	1	B	2	20	M	832	AIR GAP WATER SYSTEM	16
17	TELEMETRY PANEL	1,000	G	20	1	C	---	---	M	832	---	18
19	INTRINSICALLY SAFE PANEL	1,000	G	20	1	A	1	20			SPARE	20
21	FLOAT CONTROL PANEL	1,000	G	20	1	B	1	20			SPARE	22
23	SPARE			20	1	C	1	20			SPARE	24
25	SPARE			20	1	A	1	20			SPARE	26
27	SPARE			20	1	B	1	20			SPARE	28
29	SPARE			20	1	C	1	20			SPARE	30

TOTAL CONNECTED LOAD: PH A 4,590 VA 38.3 AMPS
TOTAL CONNECTED LOAD: PH B 4,602 VA 38.4 AMPS
TOTAL CONNECTED LOAD: PH C 3,262 VA 27.2 AMPS

DATE: June 07, 2016

MAX PHASE CONNECTED LOAD: PH B 4,602 VA
TOTAL CONNECTED LOAD (3 x MAX): 13.8 kVA 38.4 AMPS

PANEL RATING: 22,000 AIC
TOTAL DEMAND LOAD: 12.7 kVA 35.3 AMPS

		CONNECTED LOADS	SUBFED LOADS [S]	TOTAL LOADS	DEMAND FACTOR	DEMAND LOAD
G	GENERAL (NON-CONTINUOUS)	4,000 VA	0 VA	4,000 VA	100%	4,000 VA
L	LIGHTING	1,050 VA	0 VA	1,050 VA	125%	1,313 VA
R	RECEPTACLES - UP TO 10 kVA	2,160 VA	0 VA	2,160 VA	100%	2,160 VA
	OVER 10 kVA		0 VA	0 VA	50%	0 VA
K	KITCHEN	0 VA	0 VA	0 VA	100%	0 VA
H	HEATING	2,500 VA	0 VA	2,500 VA	100%	2,500 VA
M	MOTORS	2,744 VA	0 VA	2,744 VA	100%	2,744 VA
LM	LARGEST MOTOR	0 VA	0 VA	0 VA	125%	0 VA
WH	WATER HEATER	0 VA	0 VA	0 VA	100%	0 VA
C	CONTINUOUS (GENERAL LOAD)	0 VA	0 VA	0 VA	125%	0 VA
N	NON-COINCIDENT	0 VA	0 VA	0 VA	0%	0 VA
	TOTAL:	12,454 VA	0 VA	12,454 VA		12,717 VA

NOTES:

1. NEMA 12 ENCLOSURE
2.
3.
4.
5.
6.

LP1 PANEL SCHEDULE

SCALE: NONE

SINGLE PHASE RACEWAY & CONDUCTORS						THREE PHASE RACEWAY & CONDUCTORS					
FEEDER ID	AMPERAGE	# OF SETS	CONDUIT	COND. EACH	GROUND COND.	FEEDER ID	AMPERAGE	# OF SETS	CONDUIT	COND. EACH	GROUND COND.
P1-20	20A	(1)	3/4"	(2) #12	(1) #12	P3-20	20A	(1)	3/4"	(3) #12	(1) #12
P1-25	25A	(1)	3/4"	(2) #12	(1) #12	P3-25	25A	(1)	3/4"	(3) #12	(1) #12
P1-30	30A	(1)	3/4"	(2) #10	(1) #10	P3-30	30A	(1)	3/4"	(3) #10	(1) #10
P1-35	35A	(1)	1"	(2)#8	(1) #10	P3-35	35A	(1)	1"	(3)#8	(1) #10
P1-40	40A	(1)	1"	(2) #8	(1) #10	P3-40	40A	(1)	1"	(3) #8	(1) #10
P1-45	45A	(1)	1"	(2)#6	(1) #10	P3-45	45A	(1)	1"	(3) #6	(1) #10
P1-50	50A	(1)	1"	(2) #6	(1) #10	P3-50	50A	(1)	1"	(3) #6	(1) #10
P1-60	60A	(1)	1"	(2) #4	(1) #10	P3-60	60A	(1)	1-1/4"	(3) #4	(1) #10
P1-70	70A	(1)	1"	(2) #4	(1) #8	P3-70	70A	(1)	1-1/4"	(3) #4	(1) #8
P1-80	80A	(1)	1-1/4"	(2) #3	(1) #8	P3-80	80A	(1)	1-1/4"	(3) #3	(1) #8
P1-90	90A	(1)	1-1/4"	(2) #2	(1) #8	P3-90	90A	(1)	1-1/4"	(3) #2	(1) #8
P1-100	100A	(1)	1-1/4"	(2) #1	(1) #8	P3-100	100A	(1)	1-1/2"	(3) #1	(1) #8
P1-125	125A	(1)	1-1/4"	(2) #1	(1) #6	P3-125	125A	(1)	1-1/2"	(3) #1	(1) #6
P1-150	150A	(1)	1-1/2"	(2) #1/0	(1) #6	P3-150	150A	(1)	2"	(3) #1/0	(1) #6
P1-175	175A	(1)	2"	(2) #2/0	(1) #6	P3-175	175A	(1)	2"	(3) #2/0	(1) #6
P1-200	200A	(1)	2"	(2) #3/0	(1) #6	P3-200	200A	(1)	2"	(3) #3/0	(1) #6
P1-225	225A	(1)	2"	(2) #4/0	(1) #4	P3-225	225A	(1)	2-1/2"	(3) #4/0	(1) #4
P1-250	250A	(1)	2-1/2"	(2) #250	(1) #4	P3-250	250A	(1)	2-1/2"	(3) #250	(1) #4
P1-300	300A	(1)	2-1/2"	(2) #350	(1) #4	P3-300	300A	(1)	3"	(3) #350	(1) #4
P1-350	350A	(1)	3"	(2)#500	(1) #3	P3-350	350A	(1)	3"	(3) #500	(1) #3
P1-400	400A	(2)	2"	(3) #3/0	(1) #3	P3-400	400A	(2)	2"	(3) #3/0	(1) #3

NOTES:
1. FEEDER ID FOLLOWED BY THE SUFFIX "N" INDICATES NEUTRAL CONDUCTOR. PROVIDE ADDITIONAL NEUTRAL CONDUCTOR SIZED TO MATCH PHASE CONDUCTORS.
2. CONDUCTOR AMPACITY BASED ON NEC TABLE 310.16.
3. CONDUIT FILL BASED ON NEC ANNEX C, TABLE C.1 FOR THHN TYPE CONDUCTORS. CONTRACTOR SHALL PROVIDE ADJUSTMENTS AS NECESSARY FOR OTHER CONDUCTOR TYPES.
4. CONTRACTOR MAY COMBINE BRANCH CIRCUITS IN COMMON RACEWAY UP TO SIX CURRENT CARRYING CONDUCTORS. ADJUSTMENT FACTORS SHALL BE APPLIED PER NEC TABLE 310.15(B)(2)(a).
5. MINIMUM CONDUIT SIZE FOR UNDERGROUND RACEWAY IS 1 INCH.

RACEWAY & CONDUCTOR SCHEDULE

SCALE: NONE

ID	VOLTAGE	CONDUIT	WIRE QTY	SIZE	DESCRIPTION
C-IS	120VAC	3/4"	8	#14 AWG	FLOATS PANEL - I.S. PANEL - LEAD/LAG/STOP FLOAT STATUS
C-TP	120VAC	3/4"	4	#14 AWG	FLOATS PANEL - TELEMETRY PANEL - OVERIDE SIGNAL
C1-MCC	120VAC	3/4"	8	#14 AWG	FLOATS PANEL - PUMP NO.1,NO.2,NO.3 - START COMMAND
C2-MCC	120VAC	3/4"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.1,NO.2,NO.3 - START COMMAND
S1-MCC	24VDC	1"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.1 VFD - AUTO/RUN/FAULT
---	---	---	8	#14 AWG	TELEMETRY PANEL - PUMP NO.2 VFD - AUTO/RUN/FAULT
---	---	---	8	#14 AWG	TELEMETRY PANEL - PUMP NO.3 VFD - AUTO/RUN/FAULT
S2-MCC	24VDC	1"	8	#14 AWG	TELEMETRY PANEL - PUMP NO.1 FVNR - AUTO/RUN/FAULT/BYPASS
---	---	---	8	#14 AWG	TELEMETRY PANEL - PUMP NO.2 FVNR - AUTO/RUN/FAULT/BYPASS
---	---	---	8	#14 AWG	TELEMETRY PANEL - PUMP NO.3 FVNR - AUTO/RUN/FAULT/BYPASS
S-FM	24VDC	1"	2	FC	FLOW METER - ELECTRODE W/EMPTY PIPE DET. & COIL FACTORY CABLE
S-ATS	24VDC	1"	10	#14 AWG	TELEMETRY PANEL - ATS/GEN - UTILITY/RUN/FAULT/INTR. STATUS
S-GEN	24VDC	1"	10	#14 AWG	GENERATOR - ATS - RUNNING/FAULT/INTRUSION/COMMAND STATUS
S-AL	24VDC	3/4"	4	#14 AWG	I.S. PANEL - ALARM LIGHT - HIGH LEVEL ALARM LIGHT
S3-MCC	24VDC	3/4"	2	#14 AWG	MCC - WELL PUMP NO.1 - DISCONNECT STATUS
S4-MCC	24VDC	3/4"	2	#14 AWG	MCC - WELL PUMP NO.2 - DISCONNECT STATUS
S5-MCC	24VDC	3/4"	2	#14 AWG	MCC - WELL PUMP NO.3 - DISCONNECT STATUS
S-FS	24VDC	3/4"	4	#14 AWG	TELEMETRY PANEL - FLOW METER NO.1 - 24VDC POWER/PULSE SIGNAL
---	---	---	1	#18 TSP	TELEMETRY PANEL - FLOW METER NO.1 - FLOW SIGNAL
S-TP	24VDC	3/4"	4	#14 AWG	FLOATS PANEL - TELEMETRY PANEL - FLOAT/PLC STATUS
S1-TP	24VDC	3/4"	4	#14 AWG	TELEMETRY PANEL - WET WELL & MOTOR ROOM INTRUSION
ETH	---	1"	3	CAT 6	TELEMETRY PANEL - PUMP NO.1,NO.2,NO.3 - COMMUNICATION CABLE

NOTE: FC=FACTORY CABLE BY EQUIPMENT MANUFACTURER

RACEWAY SCHEDULE - CONTROLS

SCALE: NONE

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6-8-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

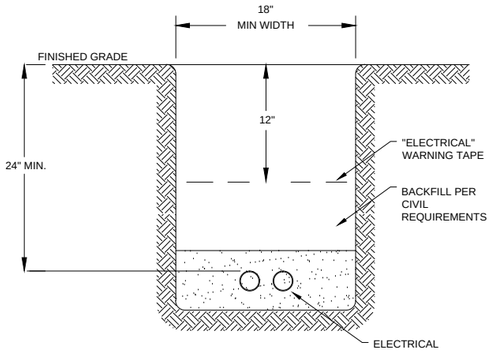
CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO.3
ELECTRICAL SCHEDULES

DATE	SCALE	JOB NUMBER
06/08/2016	AS SHOWN	2014-0798

SHEET E12 OF 35

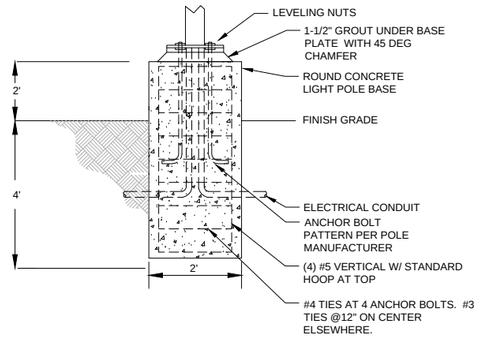


SECONDARY AND FEEDER RACEWAY
SCALE: NONE

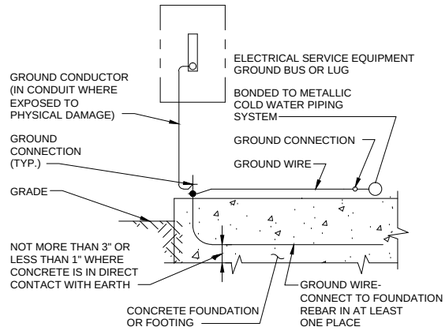
GENERAL NOTES:

1. MAINTAIN 12" MIN. SEPARATION BETWEEN WATER UTILITIES.
2. PROVIDE 2" SEPARATION BETWEEN MULTIPLE CONDUITS AND NEAREST SIDEWALL.
3. TRENCH WIDTH TO ACCOMMODATE ALL CONDUITS AND SERVICES. MINIMUM WIDTH 18".
4. BACKFILL IN ACCORDANCE WITH UTILITY AND CIVIL STANDARDS.
5. CONDUIT SHALL BE BEDDED W/SAND (3" BASE & 3" COVER MIN).

1 / --- ELECTRICAL RACEWAY AND TRENCHING DETAILS
SCALE: NONE

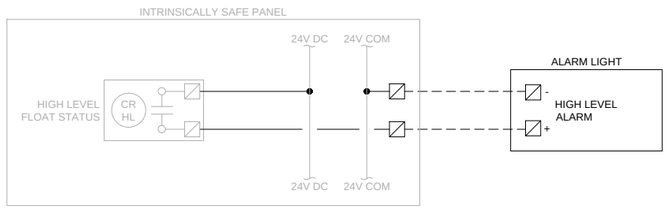


2 / --- LIGHT POLE BASE DETAIL
SCALE: NONE



GENERAL NOTE: CONTRACTOR SHALL PROVIDE ALL REQUIRED GROUNDING AND BONDING TO MEET REQUIREMENTS OF NEC ARTICLE 250.

3 / --- GROUNDING SYSTEM DETAIL
SCALE: NONE



4 / --- HIGH LEVEL ALARM LIGHT - WIRING DIAGRAM
SCALE: NONE

BID DOCUMENTS

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REGISTERED
PROFESSIONAL ENGINEER
6-8-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO.3
ELECTRICAL DETAILS

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