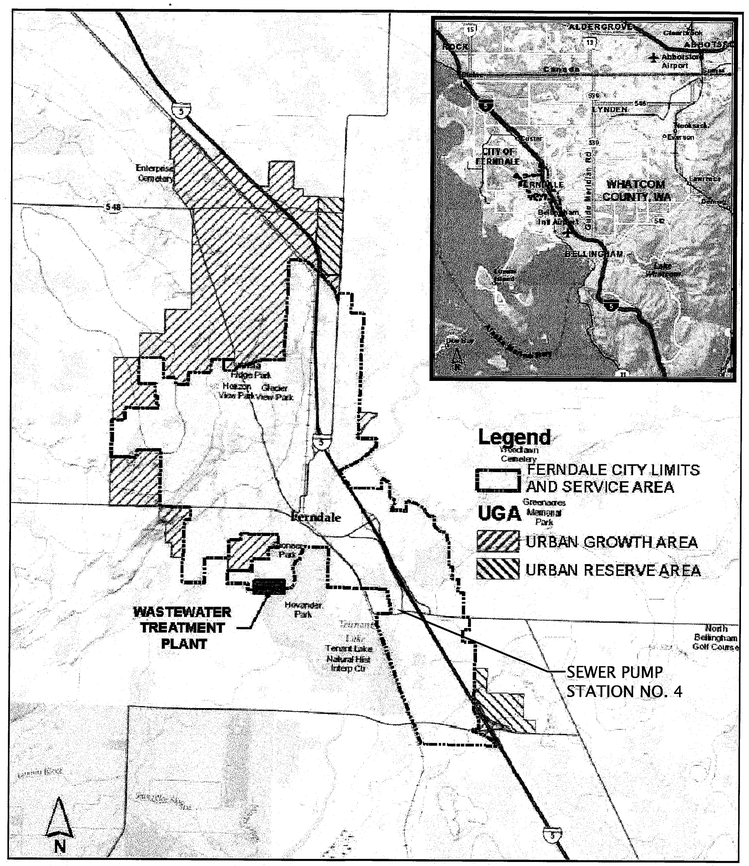
CITY OF FERNDALE, WA

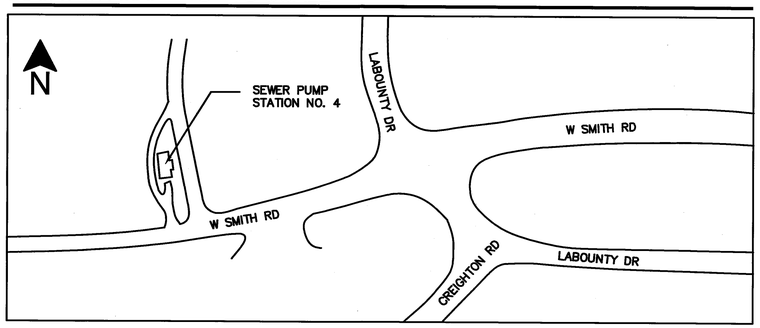
PUMP STATION NO. 4 UPGRADE – CITY PROJECT No. SS2014-05

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	JGC	01/27/15

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 8" TO 12" 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 INFORMATION NOT SHOWN ON THE PLANS AND THE LOCATION OF ALL SIDE SEWER CONNECTIONS TO THE MAIN LINE.
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.

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.
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. CONTRACTOR IS NOT ALLOWED TO COMPLETELY CLOSE ANY STREET TO TRAFFIC. THE NUMBER OF OPEN LANES OF TRAFFIC TO BE MAINTAINED IN EACH AREA IS ONE LANE. TRAFFIC SHALL BE MAINTAINED ACCORDING TO WSDOT SECTION 1-07.23, AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

CONTROL NOTES

1. BASIS OF COORDINATES: FOUND SURFACE MONUMENT "FERN12" IN THE NORTHWEST CORNER OF SMITH ROAD AND LABOUNTY ROAD INTERSECTION 2' EAST OF CURB LINE AT THE SOUTH END OF SIDEWALK.

   NORTHING = 673,760.111 USFT
   EASTING = 1,222,546.506 USFT
   ELEV. = 31.27'

2. BASIS OF BEARINGS: BEARINGS ARE NAD83/91 PER THE CITY OF FERNDALE SURVEY MONUMENT NETWORK OF 2001. HELD DERIVED INVERSE BETWEEN THE ABOVE-MENTIONED CONTROL POINT "FERN12" AND "FERN11" SAID BEARING BEING N 60°49'52" W, A DISTANCE OF 3355.21'. THE FOLLOWING COORDINATES WERE HELD FOR "FERN11":

   NORTHING = 675,395.391 USFT
   EASTING = 1,219,616.779 USFT
   ELEV. = 47.47'

3. BASIS OF ELEVATIONS: ELEVATIONS ARE NGVD29 PER THE CITY OF FERNDALE SURVEY MONUMENT NETWORK OF 2001. HELD PUBLISHED ELEVATION FOR "FERN12" OF

   31.27'.

   SITE BENCHMARK: "FERN12"

4. SITE CONTROL POINTS:

NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
109	673643.2000	1222241.7800	18.29	SET BERNTSEN SPIKE
200	673742.1010	1222494.3148		MON DISTURBED
900	673864.6910	1222551.0011		CASED MONUMENT
901	673760.1111	1222546.5061	31.27	BSM "FERN12"
902	673701.8033	1222610.5694		CASED MONUMENT
903	673697.3295	1222597.2083		CASED MONUMENT
904	673641.2292	1222429.9737		CASED MONUMENT
905	674494.2165	1222306.0238		REBAR / CAP
906	674613.5978	1222568.9920		CASED MONUMENT
907	675395.3910	1219616.7788	47.47	BSM "FERN11"
908	673590.4221	1222062.6952		CASED MONUMENT

INDEX TO DRAWINGS

ADDENDA ITEMS, CHANGE ORDERS AND CONSTRUCTION ADJUSTMENTS HAVE BEEN POSTED TO THIS SET

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

RECORD DRAWINGS

WILSON ENGINEERING, LLC
805 DUPONT STREET
BELLINGHAM, WA 98225
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www.wilsonengineering.com
Wilson SURVEY/ENGINEERING

JEFFREY G. CHRISTENSEN STATE OF WASHINGTON 36886 REGISTERED PROFESSIONAL ENGINEER 1-27-16

DESIGNED BY	DRAWN BY	CHECKED BY
JGC	ROG	AWL

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
COVER SHEET

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET C1.1 OF 22

4/7/16 #8 00597.100

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
- THW — 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
- TV — CABLE TELEVISION (AERIAL)
- TV — CABLE TELEVISION (BURIED)
- C — SURVEILLANCE CAMERA (BURIED
- FO — FIBER OPTIC LINE (AERIAL)
- FO — FIBER OPTIC LINE (BURIED)
- OHT — TELEPHONE (AERIAL)
- T — TELEPHONE (BURIED)
- SC — TRAFFIC SIGNAL CONDUIT LINE
- OHP — POWER (AERIAL)
- P — POWER (BURIED)
- UT — UTILITY (AERIAL)
- UT — UTILITY (BURIED)
- PDB — POWER DUCT BANK (BURIED)
- DF — DRAIN FIELD
- S — SANITARY SEWER
- FM — SANITARY SEWER (FORCE MAIN)
- SD — STORM DRAINAGE
- CULVERT (@ WIDTH)
- CULVERT
- RW — RECLAIMED WATER
- IRR — IRRIGATION
- W — WATER
- 8W — 8" WATER
- OF — OVERFLOW
- STE — STEAM
- G — GAS
- GAS TANK/STRUCTURE
- O — OIL
- AIR — AIR LINE
- BURIED UTILITY APPROX. EXTENTS
- MISC UTILITY (BURIED)

PROPOSED PLAN UTILITY LINETYPES

WATER — DESCRIPTION
- W — WATER
- 8W — 8" WATER
- IRR — IRRIGATION
- RW — RECLAIMED WATER
- PW — POTABLE WATER
- W — WATER SERVICE
- WATER STRUCTURE
- FDC — FIRE DEPARTMENT CONNECTION
- FP — FIRE PROTECTION LINE

SANITARY SEWER
- S — SEWER
- 8S — 8" SEWER
- FM — FORCE MAIN
- DF — DRAIN FIELD
- S — SEWER SERVICE
- SEWER STRUCTURE

STORM DRAIN
- D — STORM DRAIN – SUBJECT PIPE
- STORM DRAIN – OTHER PIPE
- D — STORM SERVICE
- FD — FOOTING DRAIN
- STORM STRUCTURE

MISC. UTILITIES
- G — GAS
- P — POWER
- T — TELEPHONE/COMMUNICATIONS

GRADING
- GB — GRADE BREAK
- or — SLOPE ARROWS

EROSION CONTROL — DESCRIPTION
- TSD — EROSION TRIANGULAR SILT DIKE
- CB — EROSION CONTROL COMPOST BERM
- EROSION CONTROL MINOR CONTOUR
- 100 — EROSION CONTROL MAJOR CONTOUR
- OB — ORANGE BARRIER FENCE
- SF — SILT FENCE
- SW — STRAW WATTLE
- EROSION CONTROL FLOWLINE
- SB — STRAW BALE
- IP — INLET PROTECTION
- CD — CHECK DAM

DEMOLITION — DESCRIPTION
- SURFACE FEATURE OR UTILITY TO BE REMOVED
- SAWCUT
- CLR — CLEARING LIMIT
- TREE OR BUSH TO BE REMOVED

SURVEY PLAN LINETYPES — DESCRIPTION
- CENTERLINE (EXISTING)
- CENTERLINE (CONSTRUCTION)
- CENTERLINE (PROPOSED)
- CONTOUR (EXISTING MINOR)
- 100 — CONTOUR (EXISTING INDEX)
- 100 — HYDRO CONTOUR (EXISTING INDEX)
- CONTOUR (PROPOSED INDEX)
- CONTOUR (PROPOSED MINOR)
- CAT — CATCHLINE
- Cut — CUT LINE
- DONATION LAND CLAIM (EXIST.)
- EASEMENT (PROPOSED)
- EASEMENT (EXISTING)
- Fill — FILL LINE
- MEANDER LINE
- OHW — ORDINARY HIGH WATER LINE
- MLW — 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 & CONSTRUCTION PLANS) — RIGHT-OF-WAY ℄ (EXISTING)
- (RIGHT OF WAY & CONSTRUCTION PLANS) — RIGHT-OF-WAY (EXISTING)
- (RIGHT OF WAY PLANS) — RIGHT-OF-WAY (EXISTING USED)
- (RIGHT OF WAY PLANS) — RIGHT-OF-WAY (PROPOSED)
- (RIGHT OF WAY PLANS) — 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)

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
- ⌀ =DIAMETER
- Δ =DELTA
- ℄ =CENTERLINE
- FL =FLOWLINE
- PL =PROPERTY LINE

SPOT ELEVATIONS
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

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RECORD DRAWINGS

NO.	REVISIONS	BY	DATE
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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)
- FL =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, PL =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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00597.002 4/7/16 #8

JEFFREY G. CHRISTENSEN — STATE OF WASHINGTON — 36886 — REGISTERED PROFESSIONAL ENGINEER
1-27-16

DESIGNED BY	DRAWN BY	CHECKED BY
JGC	ROG	AWL

CITY OF FERNDALE
WHATCOM COUNTY — WASHINGTON

PUMP STATION NO. 4
LEGEND & ABBREVIATIONS

DATE	SCALE	JOB NUMBER	SHEET	OF
01/27/2016	AS SHOWN	2013-037	C1.2	22

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	JGC	01/27/15

~GRASSY FIELD~

UTILITY EASEMENT BOUNDARY

~GRAVEL~

~ASPHALT~

SCALE 5 0 5 10 HORIZONTAL SCALE FEET

SSMH 2117

12" GRAVITY SEWER

INV= 15.83

ELECTRICAL PANELS

12" WATER MAIN

~CONC~

FUEL VENT PIPE

DIESEL TANK

12" GRAVITY SEWER

SWITCH BOX

~ASPHALT~

RIGHT-OF-WAY

12" CMP CULVERT

ACCESS GATE

~CONC~ CONDUIT

GENERATOR

WELL "A"

8" FORCE MAIN

C/L FENCE

BOLLARD (TYP)

BOLLARD (TYP)

POTABLE WATER TEST STATION

INV= 15.56

UTILITY EASEMENT BOUNDARY

~GRAVEL~

WELL "B"

~GRASSY FIELD~

~GRASSY FIELD~

WELL "A"
RIM=23.1
12" INLET (NE) IE=7.4
FM #1 TOP=12.1
FM #2 TOP=12.1
SUMP=2.3

WELL "B"
RIM=23.0
FM #1 TOP=12.1
FM #2 TOP=12.1
TOP OF GATE VALVES=13.6
SUMP=10.1

SS MH 2117
RIM=19.0
8" PVC (N) IE=7.95
12" (S) IE=7.6
12" (W) IE=7.5

REMOVE EXISTING 110 GALLON (26"ø x 48"L) BURIED FUEL TANK AND DISPOSE OF TANK, 2" FUEL LINE, FUEL VENT PIPING, DAY TANK, FUEL PUMP AND MISCELLANEOUS ACCESSORIES AT AN APPROVED DISPOSAL SITE. DRAIN AND LAWFULLY DISPOSE OF EXISTING FUEL. REQUIRES OBSERVATION AND COORDINATION WITH DEPARTMENT OF ECOLOGY. CONTRACTOR IS TO PREPARE AND SUBMIT AN INTENT TO CLOSE UNDERGROUND STORAGE TANK 30-DAY NOTICE (FORM: ECY 020-95) TO THE DEPARTMENT OF ECOLOGY. IN addition, CONTRACTOR IS TO PERFORM AN UNDERGROUND STORAGE TANK SITE ASSESSMENT. SITE ASSESSMENT IS TO INCLUDE FIELD SCREENING AND COLLECTION OF SOIL SAMPLE ANALYTICAL RESULTS, AND PREPARATION/SUBMITTAL OF A UST SITE ASSESSMENT REPORT WITH DOE's UST SITE CHECK/SITE ASSESSMENT CHECKLIST.

RECORD DRAWINGS

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Wilson SURVEY/ENGINEERING

JEFFREY G. CHRISTENSEN STATE OF WASHINGTON 36866 REGISTERED PROFESSIONAL ENGINEER
1-27-16

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JGC	ROG	AWL

CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 4
ORIGINAL SITE PLAN
PRIOR TO CONSTRUCTION ACTIVITIES

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET C2.1 OF 22

00597.003 4/7/16 SH

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4' DIA. MANHOLE.
RIM = 20.18'
8" PVC (N) IE= 7.95
12" (S) IE= 7.6
12" (W) IE= 7.5 AB

EXTERNAL MANHOLE AND WET WELL JOINTS SEALED WITH MASTIC SEAL. IN ADDITION, EXTERIOR WATERPROOF COATING PER 09900 SERVICE CONDITION C APPLIED. AB

CLOUDED PORTION OF 12" SEWER REMOVED AND DOWNSTREAM SIDE PLUGGED WITH 24" OF CEMENT. AB

4' DIA. MANHOLE WITH 12" CONCRETE BASE. MANHOLE INTERCEPTED EXISTING 12" SEWER.
RIM = 24.42'
12" PVC (E) IE=7.45
15" PVC (SW) IE=7.35 AB

PROPOSED 15" GRAVITY SEWER PIPE SLOPE = 0.8% LENGTH = 12' AB

RETAINING WALL PERFORATED DRAIN PIPE AB

RADIO ANTENNA MOUNTED ON 20' MAST AB

NEW POWER POLE, SERVICE DISCONNECT AND SUPPORT STRUCTURE AB

EAST ALLAN-BLOCK RETAINING WALL 41.3 LF AB

8'x16' STEEL PLATES. TOP OF PLATES AT ELEV 18.5'± AB

REVERSE THRUST BLOCK. AB
CONTRACTOR TO SUBMIT SKETCHES AND PLANS OF PROPOSED CONNECTION FOR REVIEW, COMMENT AND APPROVAL

CONNECT NEW 12" D.I. WATER MAIN TO EXISTING 12" WATER MAIN. PROVIDE FITTINGS AS NEEDED. AB

45° EL, RESTRAINED JOINT AB

12" GRAVITY SEWER

PUMP STATION CONTROL PANEL

ELECT. VAULT

GENERATOR

14% SLOPE (MAX)

8' DIA. WET WELL
RIM = 24.5
15" PVC (NE) IE=7.25 AB

1~ 12" 11.25° BEND, RESTRAINED JOINT & THRUST BLOCK W/ 3 SQFT MIN. BEARING AREA AB

REVERSE THRUST BLOCK AB

ENSURE 18" CLEARANCE BETWEEN WATER MAIN AND FORCE MAIN. WATERLINE TO BE ABOVE SEWER MAIN. AB

12% SLOPE (MAX)

45° EL DISCOVERED. ALIGNMENT OF FORCE MAIN IS UNKNOWN BEYOND THIS POINT. AB

THRUST BLOCKS AB

CLEANOUT / BYPASS VAULT.
TOC = 22.25' AB

WELL "B" VALVE VAULT
TOC = 24.5 AB

CONNECT NEW 12" D.I. WATER MAIN TO EXISTING 12" WATER MAIN. PROVIDE FITTINGS AS NEEDED. AB

8" DI 45° EL WITH THRUST BLOCK PROVIDING 4 SQFT MIN. BEARING AREA. AB

WEST ALLAN-BLOCK RETAINING WALL, 18.6 LF AB

1~ 12" STRAIGHT BARREL, RESTRAINED JOINTS, & THRUST BLOCK W/ 5 SQFT MIN. BEARING AREA AB

REVERSE THRUST BLOCK. AB

WELL "A" FLOW METER VAULT
TOC = 24.5 AB

18" DIAM VERTICAL CONC PIPE DISCOVERED AB

NEW 12" WATER MAIN ROUTED AROUND PUMP STATION AB

EXISTING 12" INLET FROM SSMH PLUGGED WITH CEMENT. AB

NEW 8" D.I. FORCE MAIN CONNECTED TO EXISTING 8" C900 FORCE MAIN. AB

COMBINED THRUST BLOCK FOR 45° ELBOW AND 22.5° ELBOW. AB

RECORD DRAWINGS

SCALE HORIZONTAL SCALE
5 0 5 10 FEET

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STATE OF WASHINGTON
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1-27-16

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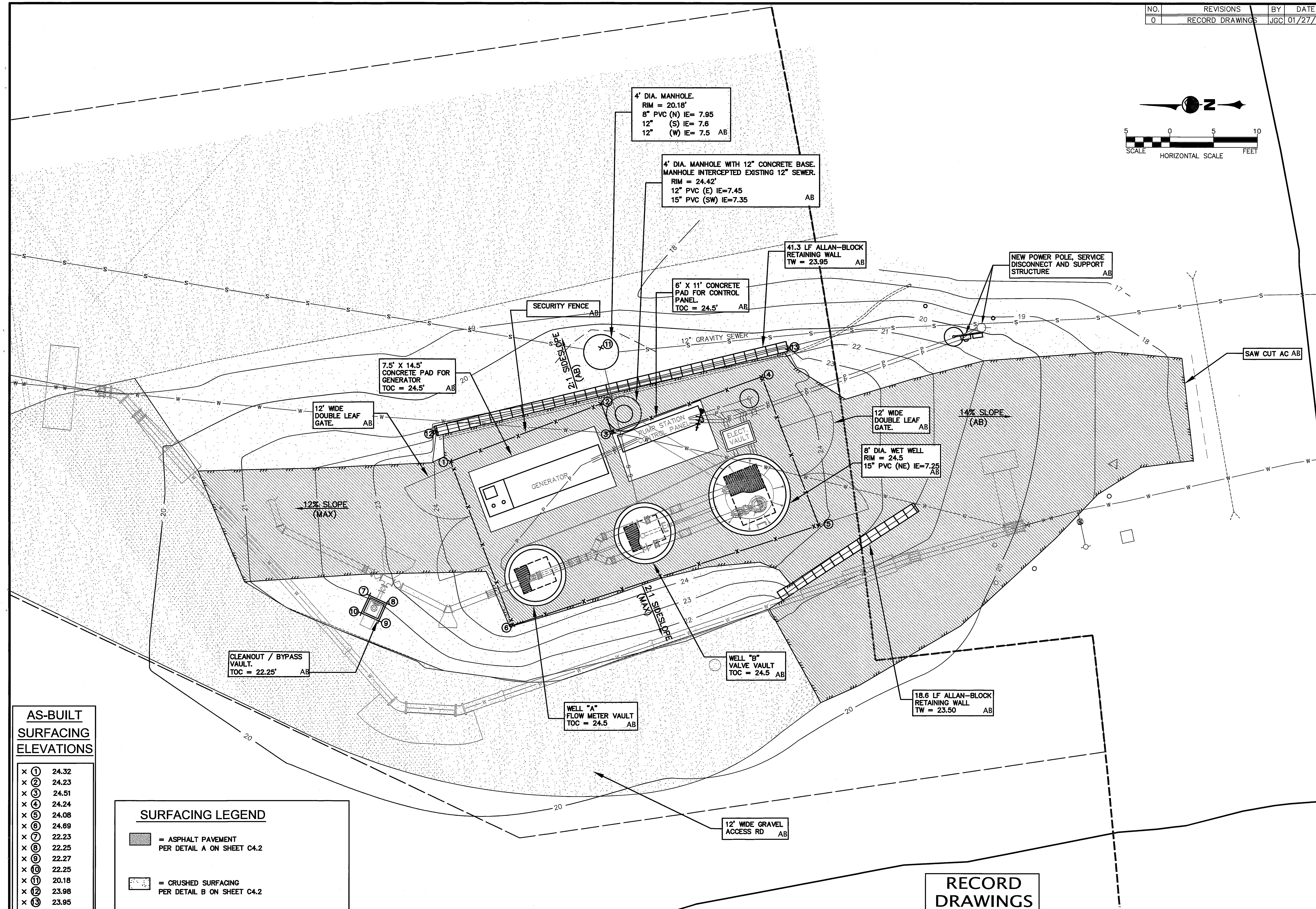
CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
PROPOSED PIPING SITE PLAN

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET C2.2 OF 22

#5 of 11 #s



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AS-BUILT SURFACING ELEVATIONS

× ①	24.32
× ②	24.23
× ③	24.51
× ④	24.24
× ⑤	24.08
× ⑥	24.69
× ⑦	22.23
× ⑧	22.25
× ⑨	22.27
× ⑩	22.25
× ⑪	20.18
× ⑫	23.98
× ⑬	23.95

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JEFFREY G. CHRISTNER, STATE OF WASHINGTON, 36886, REGISTERED PROFESSIONAL ENGINEER
1-27-16

DESIGNED BY JGC
DRAWN BY ROG
CHECKED BY AWL

CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 4
PROPOSED SITE GRADING AND DRAINAGE

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037
SHEET C2.3 OF 22

00597.005 4/7/16 stt

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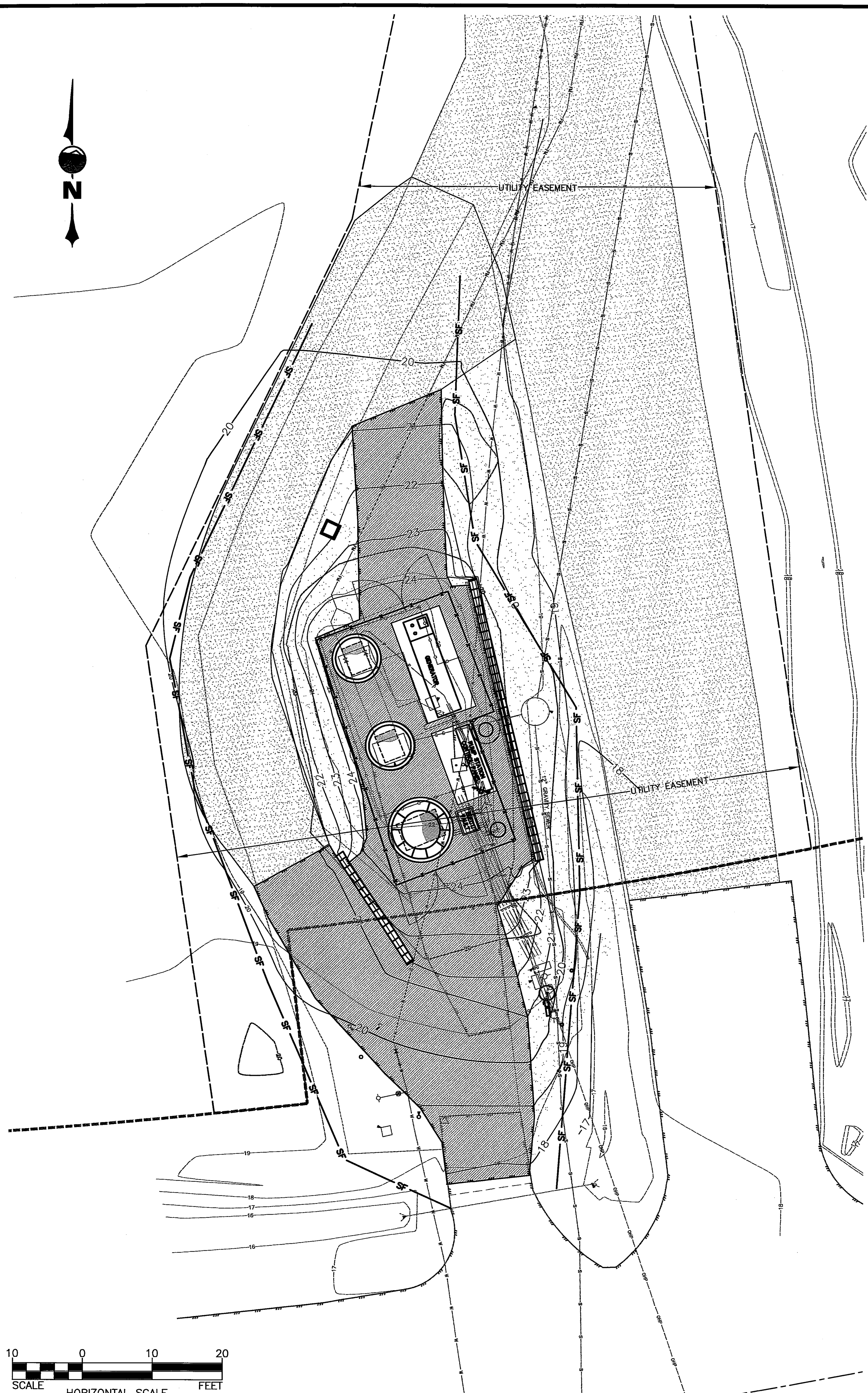


TESC PLAN

NARRATIVE

EROSION AND SEDIMENT CONTROL BMPS: ANTICIPATED BMPS THAT WILL BE UTILIZED INCLUDE: MINIMIZING VEGETATION REMOVAL, TEMPORARY COVER MEASURES, PERMANENT SEEDING & PLANTING, SURFACE ROUGHING, AND FILTER FENCING. OTHER BMPS MAY BE UTILIZED TO MINIMIZE EROSION AND SEDIMENT TRANSPORT AS CONSTRUCTION SCHEDULES AND WEATHER CONDITIONS DICTATE.

TEMPORARY STABILIZATION: ALL DISTURBED AREAS SHALL BE STABILIZED IF IN THE EVENT OF RAIN. ALL DISTURBED AREAS SHALL BE STABILIZED IF UNWORKED FOR SEVEN DAYS.

PERMANENT STABILIZATION: ALL DISTURBED AREAS OUTSIDE OF ROADWAY SHOULDERS AND PARKING AREAS WILL BE PERMANENTLY LANDSCAPED OR SEEDED AND RESTORED TO THEIR EXISTING CONDITIONS.

CONVEYANCE BYPASS: PROVISION FOR BYPASS OF STORMWATER CONVEYANCE SHALL BE PROVIDED. BYPASS SHALL BE INSTALLED FOR THE DURATION OF THE WORK. MATERIALS FOR BYPASS NEED NOT BE INSTALLED WHILE WORK IS IN PROGRESS AT A PARTICULAR LOCATION, BUT MATERIALS AND EQUIPMENT FOR IMMEDIATE INSTALLATION SHALL BE ON HAND. BYPASS SHALL BE IN PLACE WHILE SITE IS UNATTENDED FOR GREATER THAN 12 HOURS. A TRENCH MAY BE DUG FOR THE BYPASS PRIOR TO INSTALLATION OF BYPASS IF NECESSARY AND FEASIBLE. ANY PIPING USED FOR BYPASS SHALL BE OF A DIAMETER AT LEAST ⅔ OF THE EXISTING PIPE/CULVERT DIAMETER.

MAINTENANCE: THE BMPS SHALL BE INSPECTED AS NEEDED (MINIMUM OF ONCE EVERY THREE DAYS) AND DURING/AFTER RAINFALL EVENTS. THE BMPS WILL BE MAINTAINED UNTIL THE RISK OF EROSION HAS PASSED AND THE AREA IS PERMANENTLY STABILIZED.

GENERAL NOTES

1. BMPS: BEST MANAGEMENT PRACTICES (BMPS) REFERRED TO ON THIS PLAN AND IN THESE NOTES SHALL BE CONSTRUCTED AND MAINTAINED AS DESCRIBED IN DEPARTMENT OF ECOLOGY'S STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN, CHAPTER II-5, "STANDARDS AND SPECIFICATIONS FOR BEST MANAGEMENT PRACTICES FOR EROSION AND SEDIMENT CONTROL."
2. EXTENT: THE EXTENT OF EROSION AND SEDIMENTATION CONTROL MEASURES IS DEPENDENT ON WEATHER CONDITIONS, SITE SLOPES, LENGTH OF TIME GROUND IS LEFT EXPOSED, AND THE AREA OF EXPOSED GROUND. THE CONTRACTOR SHALL AT ALL TIMES MINIMIZE THE RISK OF SITE EROSION BY CAREFUL SCHEDULING AND BY IMPLEMENTING AND MAINTAINING BMPS UNTIL THE SITE IS PERMANENTLY STABILIZED.
3. UNWORKED SOILS: ALL EXPOSED AND UNWORKED SOILS SHALL BE STABILIZED BY SUITABLE AND TIMELY APPLICATION OF BMPS.
4. VEGETATION: EXISTING VEGETATION SHALL BE PRESERVED WHERE ATTAINABLE.
5. SLOPES: CUT AND FILL SLOPES SHALL BE CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION. SLOPES SHALL BE STABILIZED AS SOON AS POSSIBLE.
6. OUTLETS: STABILIZATION ADEQUATE TO PREVENT EROSION OF OUTLETS AND ADJACENT STREAM BANKS SHALL BE PROVIDED AT THE OUTLETS OF ALL CONVEYANCE SYSTEMS.
7. INLETS: ALL EXISTING AND PROPOSED STORM DRAIN INLETS SHALL BE PROPERLY MAINTAINED AND PROTECTED FROM SILTATION.
8. ENTRANCES: PROVISION SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SOIL ONTO THE PAVED ROAD. IF SOIL IS TRANSPORTED ONTO A ROAD SURFACE, THE ROADS ADJACENT TO THE CONSTRUCTION SITE SHALL BE CLEANED ON A WEEKLY BASIS. STREET WASHING SHALL BE ALLOWED ONLY IF WASHWATER IS INFILTRATED IN THE RIGHT OF WAY.
9. TEMPORARY CONSTRUCTION ENTRANCE: IN PLACE OF A CONSTRUCTED CONSTRUCTION ENTRANCE, 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.
10. SITE RUNOFF: PRIOR TO FLOWING OFF THE SITE, STORMWATER RUNOFF SHALL PASS THROUGH A SILT FENCE OR EQUAL BMP.
11. ADJACENT PROPERTIES: PROPERTIES ADJACENT TO THE PROJECT SHALL BE PROTECTED FROM SEDIMENT DEPOSITION.
12. DOWNSTREAM WATERWAYS & PROPERTY: PROPERTIES AND WATERWAYS DOWNSTREAM FROM THE CONSTRUCTION SITE SHALL BE PROTECTED FROM EROSION DUE TO ANY TEMPORARY CHANGES IN VOLUME, VELOCITY, AND PEAK FLOW OF STORMWATER RUNOFF FROM THE PROJECT SITE.
13. REMOVAL OF 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 OR STABILIZED ON-SITE. DISTURBED SOIL AREAS RESULTING FROM REMOVAL SHALL BE PERMANENTLY STABILIZED.
14. INSPECTIONS: ALL BMPS SHALL BE INSPECTED, MAINTAINED, AND REPAIRED BY THE CONTRACTOR AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. ALL ON-SITE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED REGULARLY AS NEEDED (AT LEAST ONCE EVERY SEVEN DAYS) AND DURING/WITHIN 24 HOURS AFTER ANY STORM EVENT OF GREATER THAT 0.5-INCHES OF RAIN PER 24-HOUR PERIOD.
15. REPORTS: THE CONTRACTOR SHALL PREPARE AND MAINTAIN REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATES OF THE INSPECTION, MAJOR OBSERVATIONS ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS.
16. OTHER REQUIREMENTS: THE ENGINEER, OWNER, CITY OF FERNDALE, DEPARTMENT OF ECOLOGY, OR OTHER AGENCIES MAY REQUIRE BMPS IN ADDITION TO WHAT IS SHOWN ON THIS PLAN IF NECESSARY TO PREVENT VIOLATIONS OF SURFACE WATER QUALITY. THE CONTRACTOR SHALL IMPLEMENT THE BMPS AS REQUIRED.
17. IF AREA OF DISTURBANCE WILL EXCEED 1.0 ACRES, CONTRACTOR SHALL COMPLY WITH NPDES CONSTRUCTION GENERAL PERMIT REQUIREMENTS INCLUDING, BUT NOT LIMITED TO: FILING OF N.O.I. PUBLIC NOTICE, PREPARATION AND MAINTENANCE OF A SWPPP, MONITORING, REPORTING AND FILING OF A N.O.T.

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.

LEGEND

—— SF —— = SILT FENCE BMP C-233

BMP C233 – SILT (FILTER FABRIC) FENCE

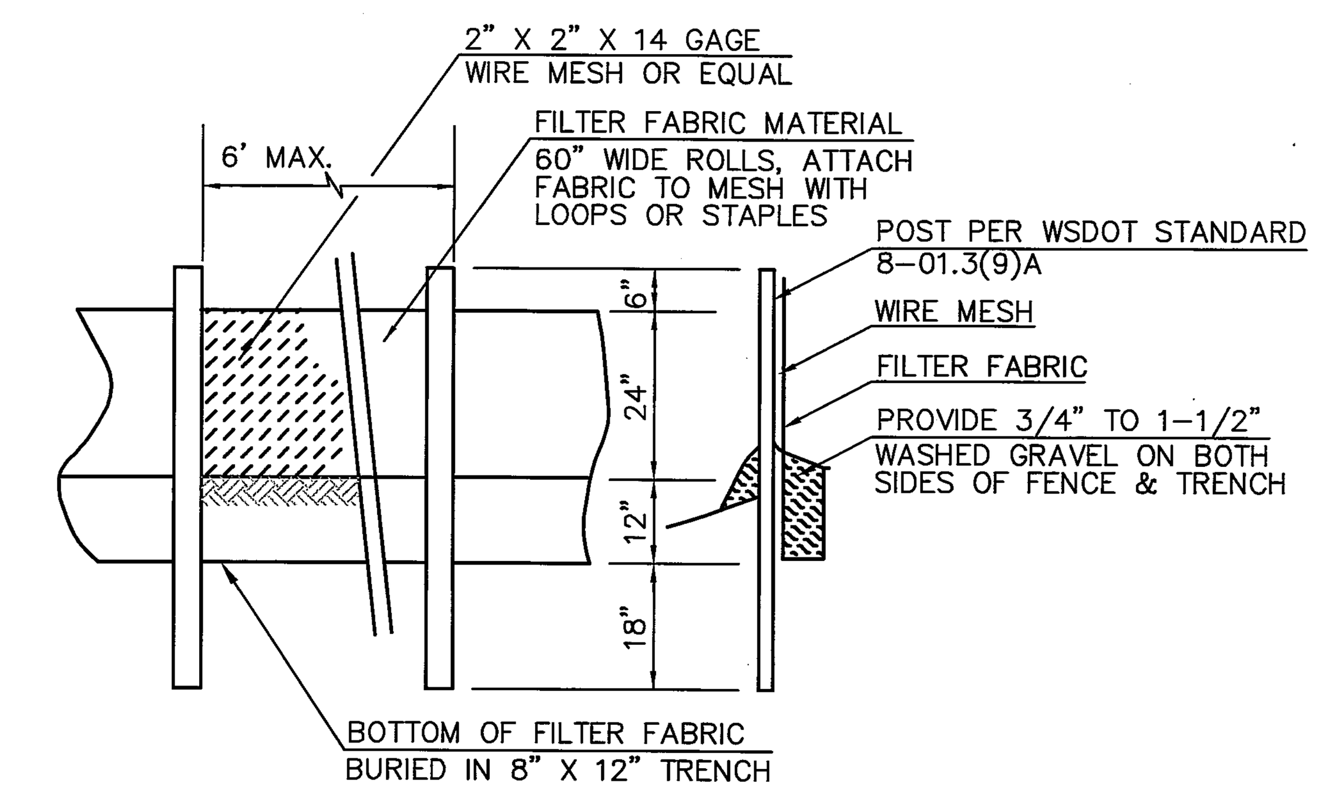
PURPOSE: USE OF A SILT FENCE REDUCES THE TRANSPORT OF COARSE SEDIMENT FROM A CONSTRUCTION SITE BY PROVIDING A TEMPORARY PHYSICAL BARRIER TO SEDIMENT AND REDUCING THE RUNOFF VELOCITIES OF OVERLAND FLOW.

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

IN PLACE OF A CONSTRUCTED CONSTRUCTION ENTRANCE, 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.

RECORD DRAWINGS

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
TESC PLAN, DETAILS & NOTES

SHEET C2.4 OF 22
DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037

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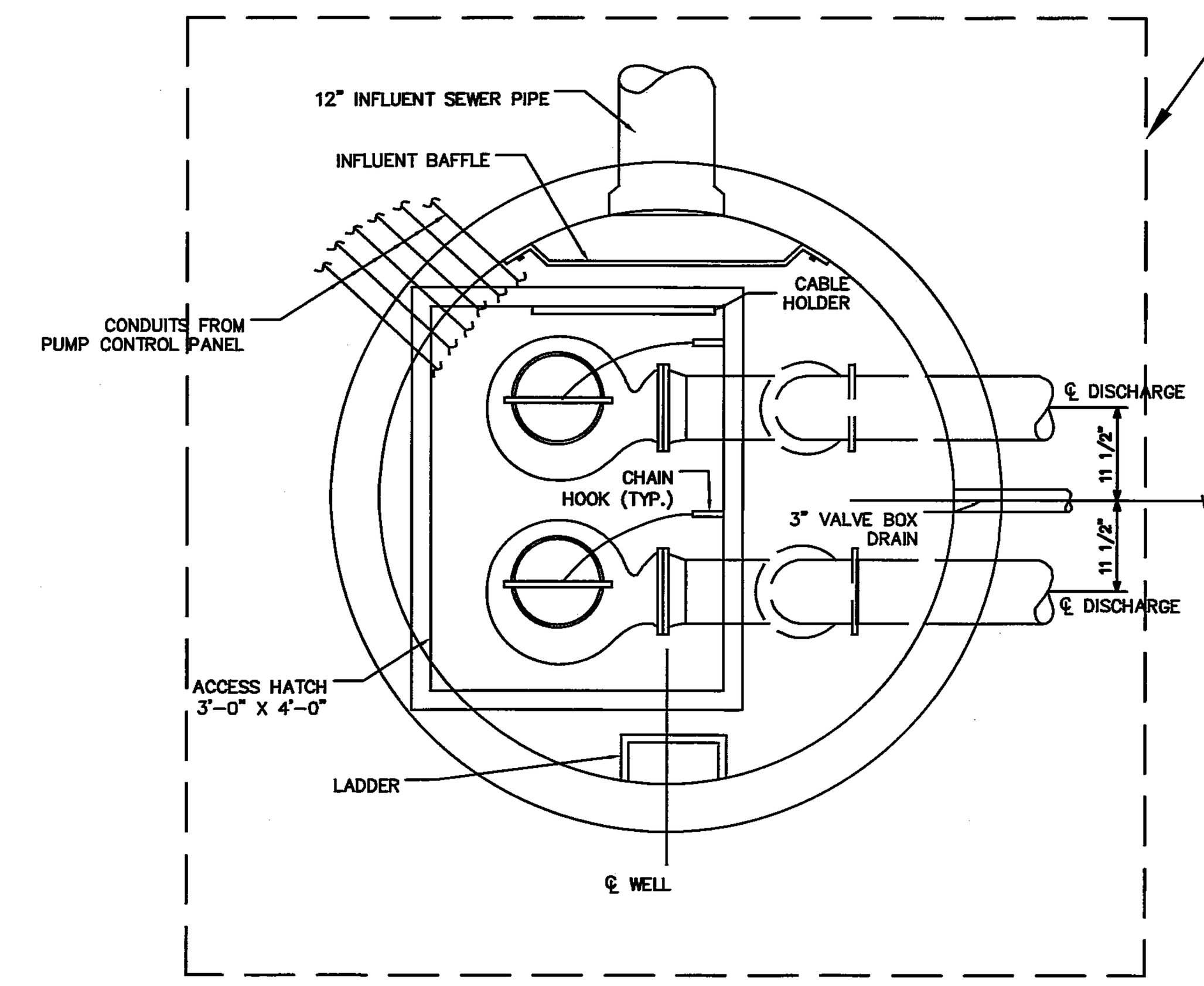
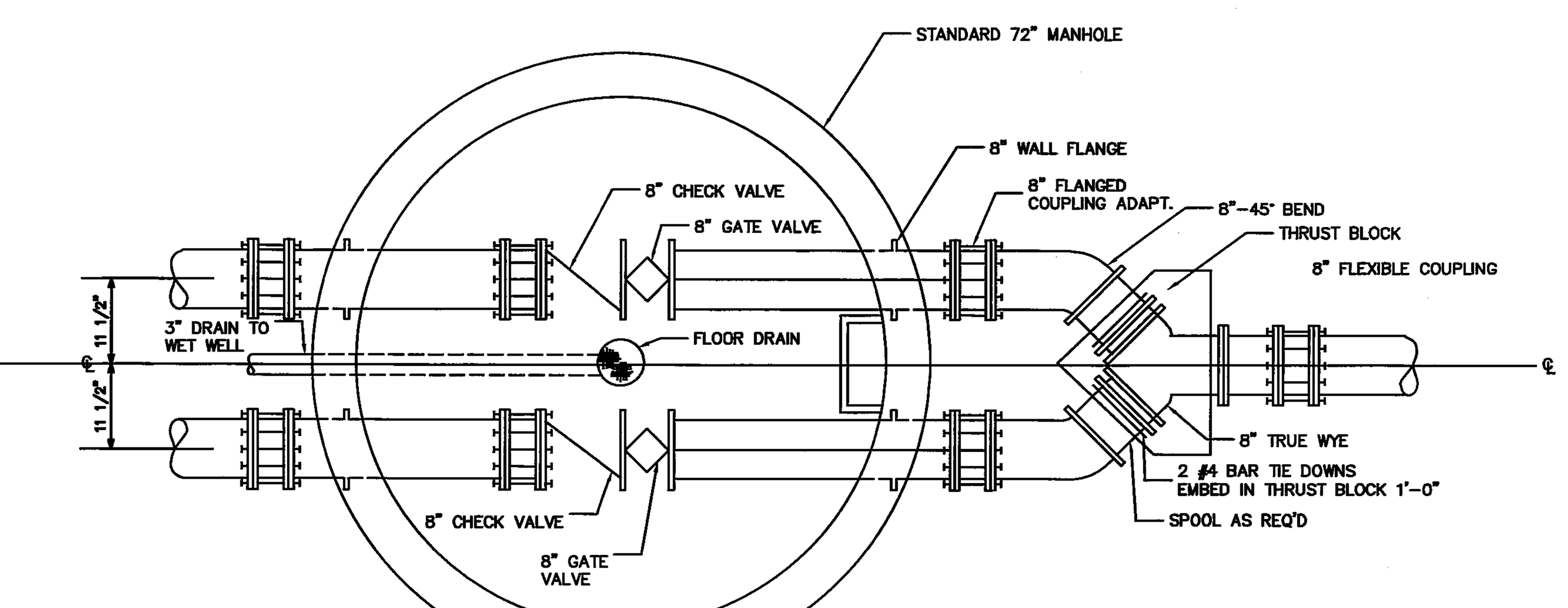


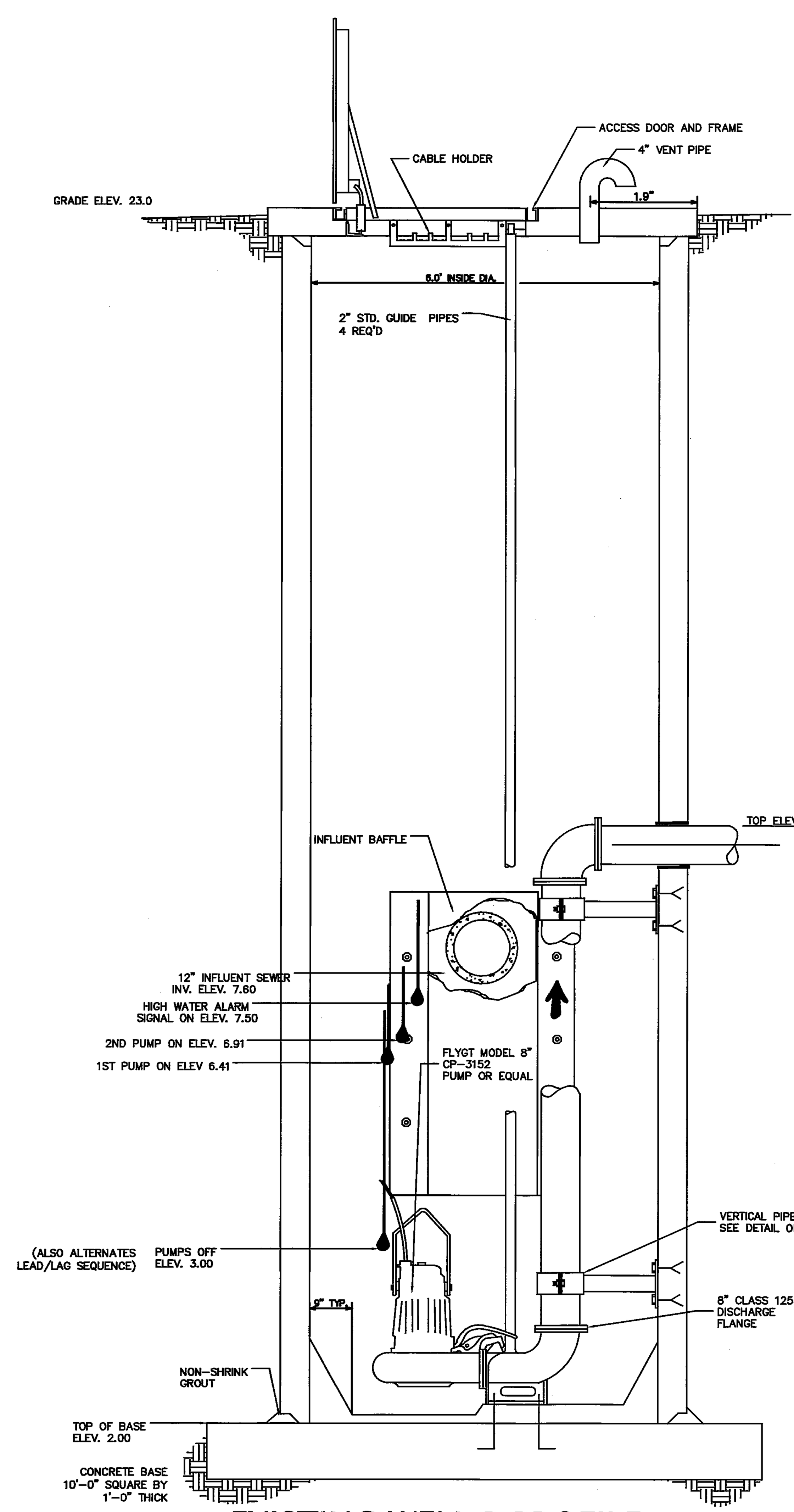
EXISTING WELL B PLAN

2 0 2 4
SCALE FEET



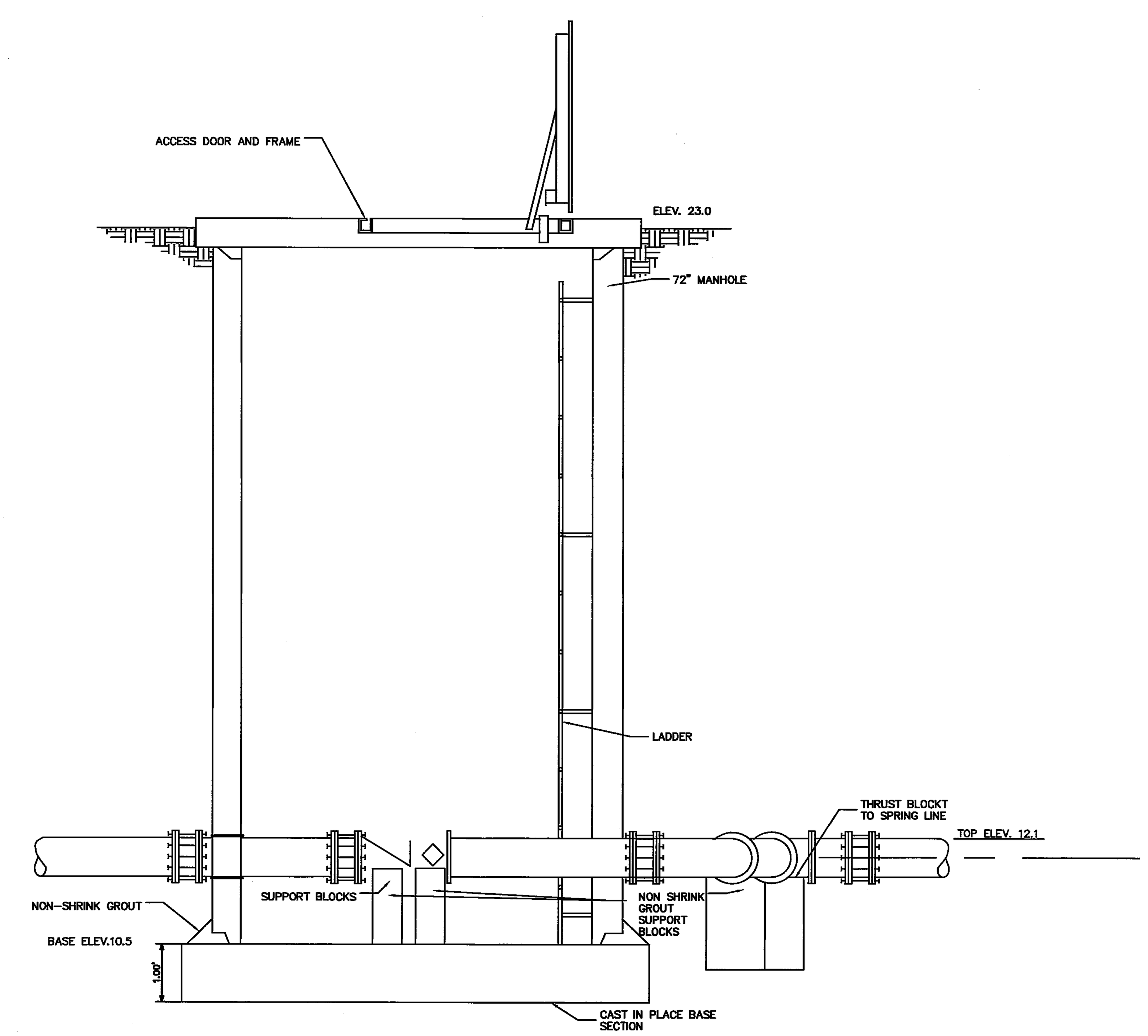
EXISTING WELL A PLAN

2 0 2 4
SCALE FEET



EXISTING WELL B PROFILE

2 0 2 4
SCALE FEET



EXISTING WELL A PROFILE

2 0 2 4
SCALE FEET

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Wilson
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36886
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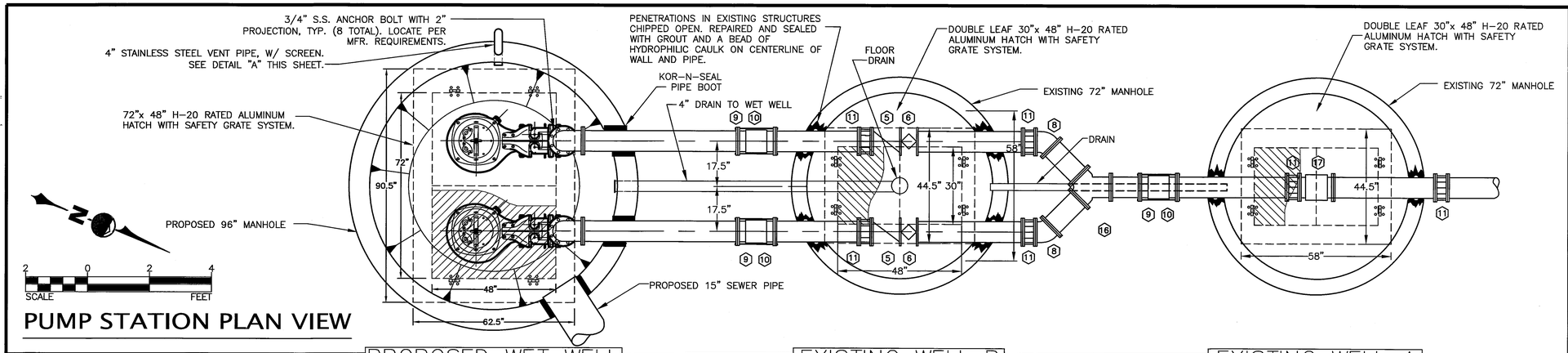
DESIGNED BY JGC
DRAWN BY CJP
CHECKED BY AWL

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
EXISTING PLAN AND PROFILE LAYOUT

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037

SHEET C3.1
OF 22



PUMP STATION PLAN VIEW

NO.	REVISIONS	BY	DATE
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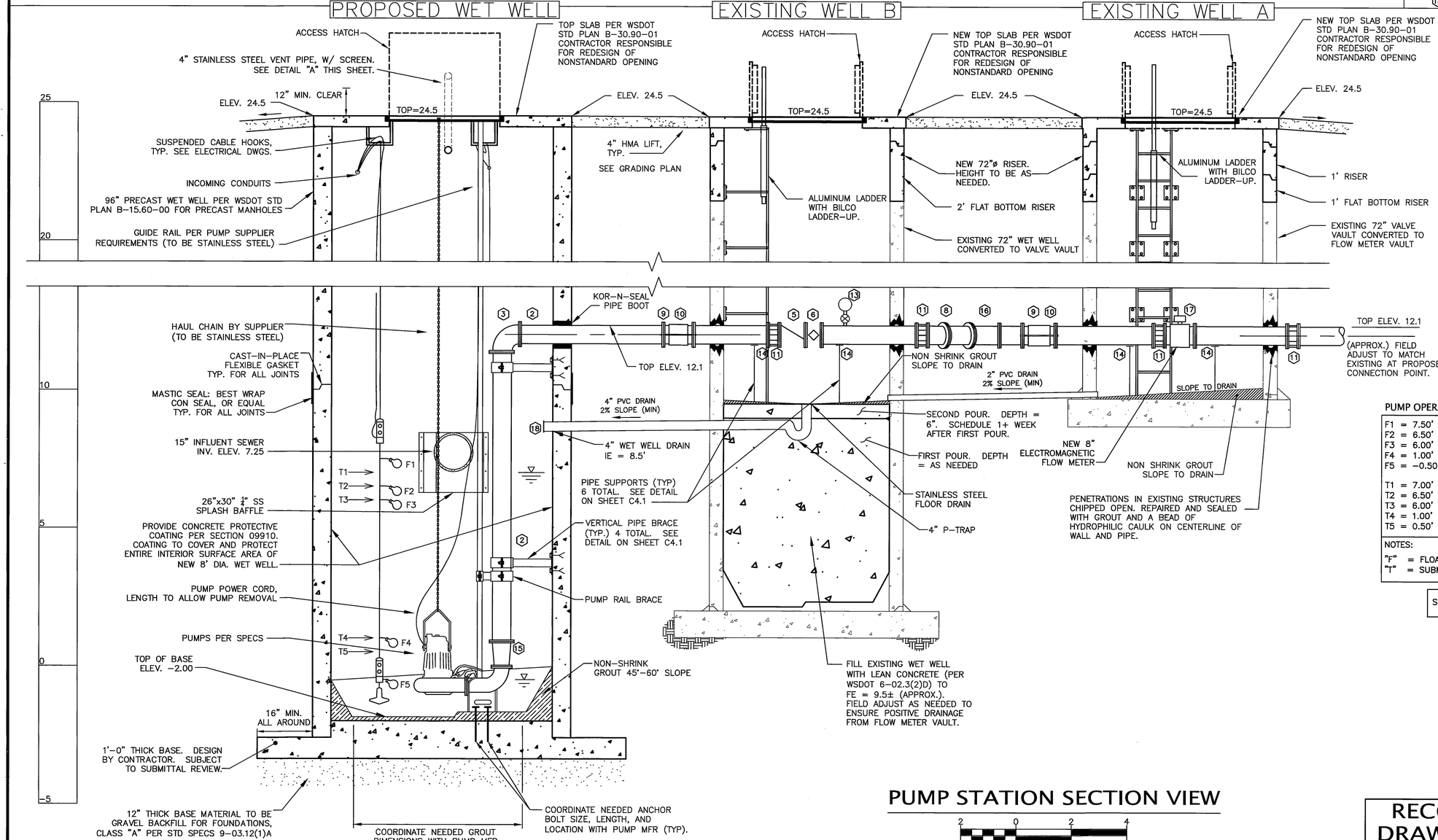
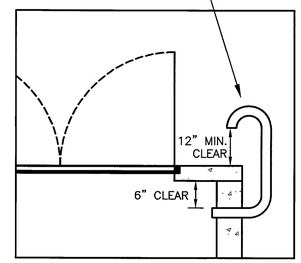
1. 8" D.I. SPOOL, FxMJ
2. 8" D.I. SPOOL, FxF
3. 8" D.I. 90° BEND, FxF
4. NOT USED
5. 8" CHECK VALVE, FxF
6. 8" GATE VALVE, FxF
7. 8" D.I. 22½ ° BEND, FLxFL
8. 8" D.I. 45° BEND, FLxFL
9. 8" BOLTED FLEX COUPLING, ROMAC STYLE "501" OR EQUAL.
10. 8" ROMAC STYLE "611" PIPE RESTRAINING SYSTEM OR EQUAL (200 PSI MINIMUM RESTRAINT)
11. 8" FLANGED COUPLING ADAPTOR (RESTRAINED)
12. 8" D.I. PIPE, FORCE MAIN, MJ
13. PRESSURE GAGE, ISOLATOR, & SHUTOFF VALVE
14. ADJUSTABLE PIPE SUPPORTS (6 TOTAL)
15. 8"x6" D.I. REDUCER (NOMINAL) FOR PUMP DISCHARGE, FxF. CONFIRM SIZE WITH PUMP MFR.
16. 8" TRUE WYE
17. 8" ELECTROMAGNETIC FLOW METER
18. 4" FLAP GATE FOR DRAIN PIPE.



PUMP STATION SECTION VIEW

2 0 2 4
SCALE FEET



DETAIL "A"

PUMP OPERATION LEVELS

F1	= 7.50'	HWL ALARM AND REDUNDANT BOTH PUMPS ON
F2	= 6.50'	LAG PUMP ON
F3	= 6.00'	LEAD PUMP ON
F4	= 1.00'	PUMP(S) OFF
F5	= -0.50	LWL ALARM AND REDUNDANT PUMP(S) OFF
T1	= 7.00'	HWL ALARM AND REDUNDANT BOTH PUMPS ON
T2	= 6.50'	PUMPS ON
T3	= 6.00'	LEAD PUMP ON
T4	= 1.00'	PUMP(S) OFF
T5	= 0.50'	LWL ALARM AND REDUNDANT PUMP(S) OFF

NOTES:
"F" = FLOAT CONTROL
"T" = SUBMERSIBLE TRANSDUCER CONTROL (PLC CONTROL)

SINGLE PUMP DESIGN FLOW: 1250 GPM

RECORD DRAWINGS

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Wilson SURVEY/ENGINEERING

JEFFREY G. CRITTENDEN STATE OF WASHINGTON 36886 REGISTERED PROFESSIONAL ENGINEER
1-27-16

DESIGNED BY JGC | DRAWN BY ROG | CHECKED BY CJP

CITY OF FERNDALE
WASHINGTON
WHATCOM COUNTY

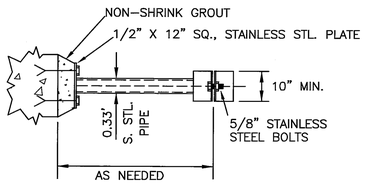
PUMP STATION NO. 4
PROPOSED PLAN AND PROFILE LAYOUT

DATE 01/27/2016 | SCALE AS SHOWN | JOB NUMBER 2013-037

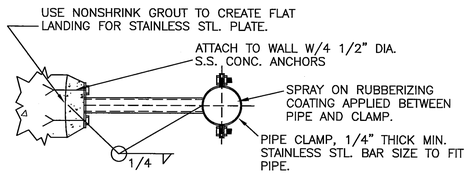
SHEET C3.2 | OF 22

00597.008 4/7/16 SH

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	JGC	01/27/15



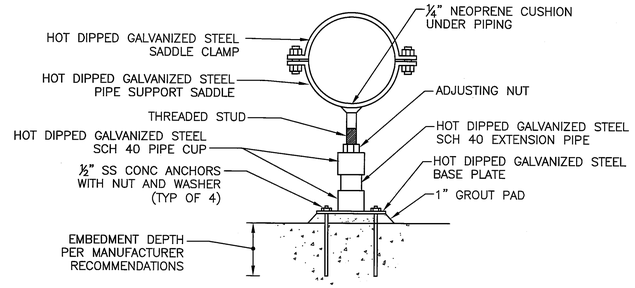
ELEVATION



PLAN VIEW

A VERTICAL PIPE BRACE

A / * — NOT TO SCALE



SADDLE SIZE	½"x2"
THREADED STUD	1"x6"
CUP ID	2½"
¼" BASE PLAT	6"x6"
EXTENSION PIPE DIA	2"

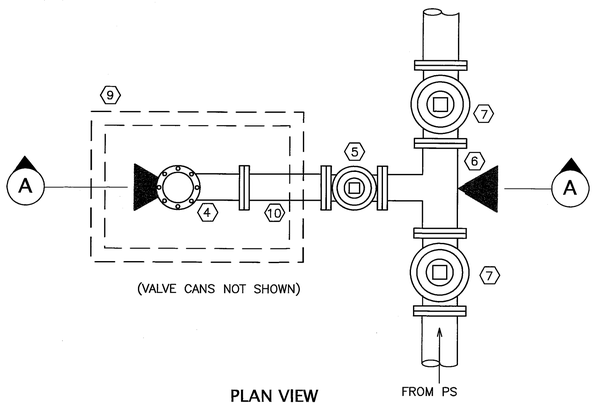
NOTES:

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

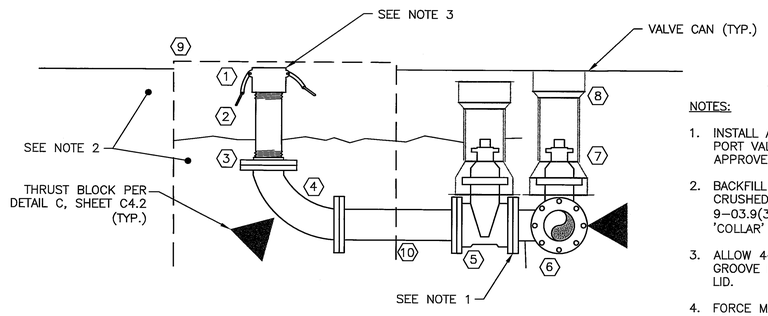
B PIPE SUPPORT DETAIL

B / *

1. 6-IN. STAINLESS STEEL FEMALE CAM & GROOVE BY 6-IN. FNPT ADAPTER
2. 6-IN. DUCTILE IRON PIPE
3. 6-IN. D.I. FLANGE TO 6-IN. FNPT ADAPTER (COMPANION FLANGE)
4. 6-IN. D.I. LONG RADIUS BEND (FL)
5. 6-IN. GATE VALVE (FL)
6. D.I. TEE (FL) – SEE NOTE 4
7. 8-IN. GATE VALVE (FLXMJ) – SEE NOTE 4
8. CAST IRON VALVE BOX
9. H20 LOADING CONCRETE METER BOX WITH CAST ITON LID. LID TO BE LOCKABLE WITH PAD LOCK
10. 8" DI SPOOL (FxMJ)



PLAN VIEW



SECTION A-A

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. FORCE MAIN IS 8-IN. D.I. SNORKEL WILL REQUIRE AN 8x6 TEE AND TWO 8-IN. GATE VALVES (FLxMJ).

C BYPASS PUMPING PORT ASSEMBLY

C / * — NOT TO SCALE

RECORD DRAWINGS

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00617.009 4/7/16 GH

GREG G. CHRISTENSEN — STATE OF WASHINGTON — 36556 — REGISTERED PROFESSIONAL ENGINEER — 1-27-16

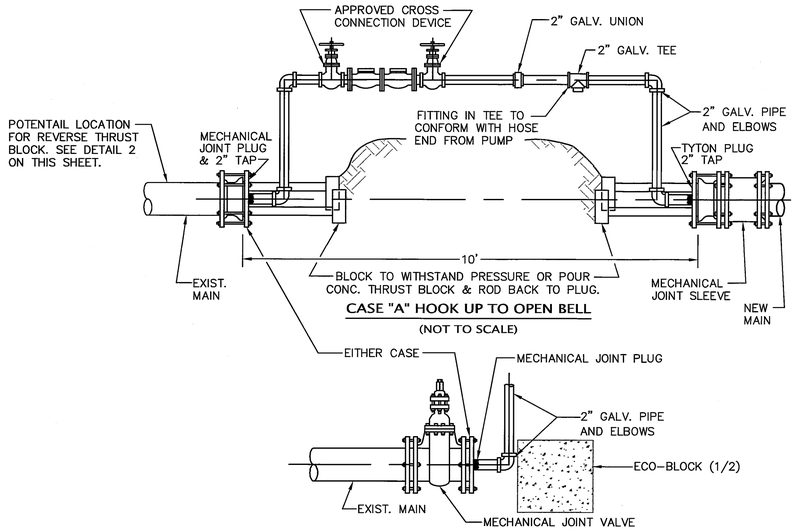
DESIGNED BY	DRAWN BY	CHECKED BY
JGC	ROG	AWL

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 4
DETAILS

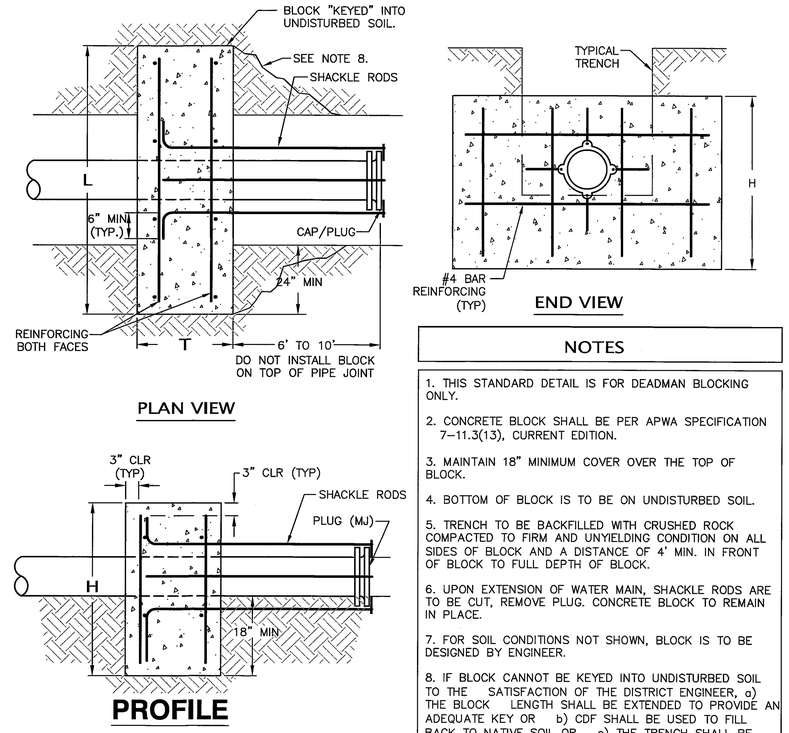
DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET C4.1 OF 22



1 TEMPORARY CONNECTION

NOT TO SCALE



NOTES

1. THIS STANDARD DETAIL IS FOR DEADMAN BLOCKING ONLY.
2. CONCRETE BLOCK SHALL BE PER APWA SPECIFICATION 7-11.3(13), CURRENT EDITION.
3. MAINTAIN 18" MINIMUM COVER OVER THE TOP OF BLOCK.
4. BOTTOM OF BLOCK IS TO BE ON UNDISTURBED SOIL.
5. TRENCH TO BE BACKFILLED WITH CRUSHED ROCK COMPACTED TO FIRM AND UNYIELDING CONDITION ON ALL SIDES OF BLOCK AND A DISTANCE OF 4' MIN. IN FRONT OF BLOCK TO FULL DEPTH OF BLOCK.
6. UPON EXTENSION OF WATER MAIN, SHACKLE RODS ARE TO BE CUT, REMOVE PLUG. CONCRETE BLOCK TO REMAIN IN PLACE.
7. FOR SOIL CONDITIONS NOT SHOWN, BLOCK IS TO BE DESIGNED BY ENGINEER.
8. IF BLOCK CANNOT BE KEYED INTO UNDISTURBED SOIL TO THE SATISFACTION OF THE DISTRICT ENGINEER, a) THE BLOCK LENGTH SHALL BE EXTENDED TO PROVIDE AN ADEQUATE KEY OR b) CDF SHALL BE USED TO FILL BACK TO NATIVE SOIL OR c) THE TRENCH SHALL BE BACKFILLED AND COMPACTED TO FIRM AND UNYIELDING CONDITION A MINIMUM DISTANCE OF 15 FEET IN FRONT OF THE BLOCK TO THE SATISFACTION OF THE DISTRICT ENGINEER.
9. SEE STANDARD DETAIL W-07 FOR ADDITIONAL SHACKLE ROD INFORMATION.

SIZING TABLE

PIPE DIA	T (min)	H (min)	SHACKLE RODS	REINFORCING
6"	18"	36"	(4) 5/8" dia	#4 @ 10" OC EW
8"	18"	42"	(4) 3/4" dia	#4 @ 12" OC EW
10"	24"	52"	(6) 3/4" dia	#4 @ 12" OC EW
12"	24"	54"	(6) 7/8" or (8) 3/4" dia	#4 @ 8" OC EW
14"	24"	56"	(8) 7/8" or (10) 3/4" dia	#4 @ 6" OC EW
16"	30"	58"	(10) 7/8" dia	#4 @ 5" OC EW

BLOCK SIZES GOOD TO MAXIMUM 300psi TEST PRESSURE

MIN. BLOCK LENGTH (L)

	SOIL CONDITION					
PIPE ø	SOFT CLAY	SILT	SANDY SILT	SAND	SANDY CLAY	HARD CLAY
6"	84"	72"	72"	72"	72"	72"
8"	108"	84"	75"	75"	75"	75"
10"	132"	104"	77"	77"	77"	77"
12"	180"	138"	82"	80"	80"	80"
14"	228"	174"	102"	82"	82"	82"
16"	288"	216"	126"	100"	84"	84"

2 REVERSE THRUST BLOCK DETAIL

NOT TO SCALE

RECORD DRAWINGS

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	JGC	01/27/15

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1-27-16

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4 ADDENDUM No.1
WATER MAIN CONNECTION DETAILS

DATE 01/27/2016 | SCALE AS SHOWN | JOB NUMBER 2013-037

SHEET C4.1A | OF 22

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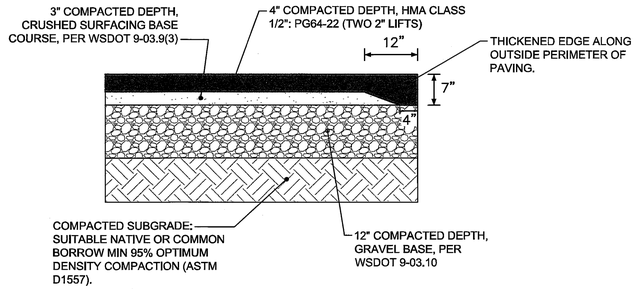
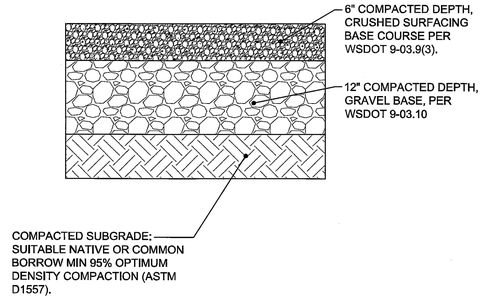
NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	JGC	01/27/15



STANDARD ASPHALT SECTION

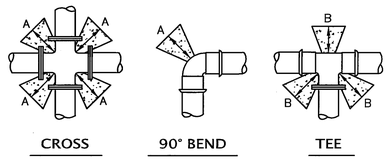
A TYPICAL ASPHALT CONCRETE PAVEMENT SECTION

* NOT TO SCALE



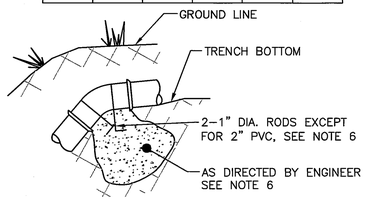
B TYPICAL GRAVEL ACCESS SECTION

* NOT TO SCALE



(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.

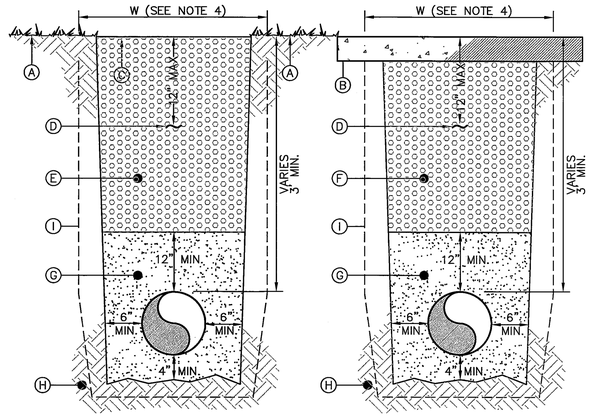
5. THE CONTRACTOR SHALL INSTALL BLOCKING WHICH IS ADEQUATE TO WITHSTAND FULL TEST PRESSURE AS WELL AS TO CONTINUOUSLY WITHSTAND OPERATING PRESSURE UNDER ALL CONDITIONS OF SERVICE.

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.

C WATERLINE AND FORCEMAIN THRUST BLOCKING SCHEDULE

* NOT TO SCALE



UNPAVED AREAS PAVED AREAS

TRENCH NOTES:

A. HYDROSEED EXPOSED AREAS.

B. NEW SIDEWALK OR PAVEMENT

C. NEW LANDSCAPED SURFACE.

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.

NATIVE BACKFILL MATERIAL (8" MAX.) COMPACTED TO 90% MAX. DENSITY PERMITTED OUTSIDE OF 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 PER WSDOT STANDARD SPECIFICATIONS.

FLEXIBLE PIPE NOTES:

1) PROVIDE UNIFORM SUPPORT UNDER BARRELS.

2) HAND TAMP UNDER HAUNCHES.

3) COMPACT BEDDING MATERIAL TO 95% MAX. DENSITY; DIRECTLY OVER PIPE, HAND TAMP ONLY.

4) SEE "EXCAVATION AND PREPARATION OF TRENCH" IN SANITARY SEWERS SECTION OF THE STANDARD WSDOT/APWA SPECIFICATIONS FOR TRENCH WIDTH "W" AND TRENCHING OPTIONS. THE PIPE ZONE WILL BE THE ACTUAL TRENCH WIDTH. THE MINIMUM CONCRETE WIDTH SHALL BE 1-1/2 I.D. + 18".

5) ROCKS OR LUMPS LARGER THAN 1" PER FOOT OF PIPE DIAMETER SHALL NOT BE USED IN THE BACKFILL MATERIAL.

6) SEE "BEDDING MATERIAL FOR FLEXIBLE PIPE" IN AGGREGATES SECTION OF THE WSDOT/APWA STANDARD SPECIFICATIONS FOR THE MATERIAL SPECIFICATIONS.

D TYPICAL PIPE TRENCHING & BACKFILL

* NOT TO SCALE

RECORD DRAWINGS

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Wilson SURVEY/ENGINEERING

JEFFREY G. CRIJ NYER — STATE OF WASHINGTON — 36886 — REGISTERED PROFESSIONAL ENGINEER — 1-27-16

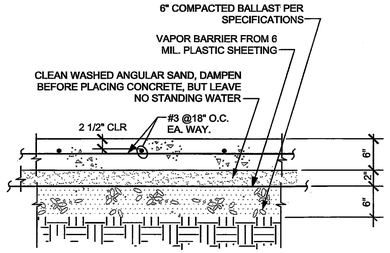
DESIGNED BY	DRAWN BY	CHECKED BY
JGC	ROG	AWL

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
DETAILS

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET C4.2 OF 22

4p 9/14/16



NOTES:
1. PLACE SLAB ON FIRM BEARING MATERIAL.
2. OMIT VAPOR BARRIER AT SIMILAR OUTDOOR SLABS.

A / S4.0 **Concrete Pad for Generator**

Scale: N.T.S.

STRUCTURAL NOTES

BUILDING CODE CRITERIA

1 All construction is to be in accordance with the minimum provisions of the 2009 International Building Code (IBC). Where these plans and specifications do not state specifically otherwise the provisions of the UBC shall apply.
2 These drawings show the design of a foundation for a pre-manufactured metal building, as well as basic design criteria for which the metal building shall be designed. Wilson Engineering is not responsible for the design of the metal building. The manufacturer shall have on staff or retain a Professional Engineer for the design of the building itself. The design shall be based on the loads given below.
3 Design Roof (Snow) Load: 25 PSF
4 Lateral Loads:

Seismic Loading		Wind Loading (3 s gust)		
Site Class	D	Basic Wind Speed	90	MPH
S ds	1.14	Exposure	C	
S d1	0.33	Kzt (ASCE 7-10)	1.1	
Importance Factor		1.5		

5 Special Inspections
No Special Inspections are required for this project. Footing concrete requires f'c ≤ 2500 psi for structure; higher strengths have been specified for other reasons. Special inspection is not required.
6 Structural Observation
The Structural Engineer of record will perform Structural Observations as defined by the IBC, if required.

01000 GENERAL

1 Employ good standards of workmanship throughout. Provide all materials and perform all construction as indicated. Secure architect's approval for substitutions.
2 See specifications for detailed material and methods. In case of conflict between applicable codes, these notes, and the drawings, the more stringent will govern.
3 Verify all dimensions in the field, and upon discovery of any discrepancies between the drawings and/or field conditions notify Wilson Engineering.
4 Use these drawings in conjunction with the architectural and other drawings. They are not to stand alone. These drawings and the designs herein are copyrighted by Wilson Engineering, and are for use on this project only. They may not be copied or used for any other project or purpose other than as originally intended without written approval from Wilson Engineering.
5 Do not scale drawings.
6 Use typical details and schedules wherever applicable.
7 The drawings do not indicate the method of construction. The contractor is solely responsible for design and supply of all erection bracing and shoring, and for safety programs, methods, and procedures of operation for the construction of the design shown on these drawings.

02220 FOUNDATIONS & EARTHWORK

1 Spread footings are designed for a maximum total pressure of 1500 PSF.
2 Remove all topsoil and organic material from building area, including exterior slabs and walks attached to building.
3 Place footings against firm, undisturbed bearing soil or approved fill, as identified in soils report prepared by GeoTest Services Inc., June 19, 2013.

03150 CONCRETE ACCESSORIES & HARDWARE

1 Adhesive-installed anchor bolts shall be steel of a grade appropriate to the application, with epoxy or polymer resin adhesive of consistency appropriate to the application. Anchors shall have a current ICC-ES report stating that they are approved for use in cracked concrete.
Accepted products include:
A. Simpson Strong-Tie IXP anchor with Set-XP adhesive
B. Hilti HAS threaded rods with Hilti HIT-RE 500-SD system adhesive
2 Expansion anchor-bolts shall be steel wedge-type bolts, with hold diameter equal to bolt diameter. Dry location bolts shall be cad-plated; bolts in exterior locations and wet locations shall be stainless steel. Anchors shall have a current ICC-ES report stating that they are approved for use in cracked concrete. Accepted products include:
A. Simpson "Strong-Bolt"
B. Hilti "HSL-3"
C. ITW Red Head "Tru-Bolt+" Seismic Wedge
4 Expansion or epoxy anchor bolts shall have minimum embedment of 12 bolt diameters, unless noted otherwise on drawings. The hole diameter and preparation shall be per manufacturer's instructions; thoroughly clean holes before installing bolts.
5 Cast-in-place anchor bolts set in concrete or masonry shall conform to ASTM F1554-07 Grade 36, with Supplement S1 and shall be either headed steel bolts with rolled or cut threads and a standard washer, or threaded steel rod with a standard nut and washer at the embedded end. Do not use "J" bolts without nuts and washer at the embedded end.
6 Embedment (to the closest face of the washer) for cast-in-place anchors shall not be less than 7 inches.
7 For further information regarding anchors at building column base plates, consult the metal building manufacturer.

03300 REINFORCED CONCRETE

1 Reinforcing shall be ASTM A615, Gr. 60, except that #3 bars may be Gr. 40.
Welded Wire Fabric: Do not use WWF in slabs, use rebar per details
2 Bar detailing not shown otherwise, and support of reinforcing bars shall conform to the CRSI Manual of Standard Practice. Reinforcing which is marked "continuous" shall extend as far as possible in the concrete and terminate in a 12-diameter bend or per typical corner details, as appropriate. Shop fabricate all bends. Lap all continuous bars 48 dia., wire tie all lap splices. Welding of reinforcing is not permitted.
3 Concrete Materials:
Stone aggregate per ASTM C33, ASTM C150 Type Type I or II Cement
Use ASTM C260 air entraining admixture for outdoor exposure conditions
Water-reducing ASTM C494 Type A is permitted
All concrete shall be ready-mix. Comply with requirements of ASTM C 94.
Concrete 28 day strengths and other properties shall be as follows:

Applications	f'c (max)	w/c (max)	aggregate Content	Air (psi)
Slabs and Footings	3500	0.45	3/4"	6.0 % ± 1.5 %

4 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.
5 See architectural drawings for all slab finish details, exact location of depressed slab areas, threshold requirements, floor drains, and slopes.
Walkways and sidewalks are not shown on the structural drawings; see architectural drawings for locations, dimensions, finishes, and elevations. Reinforce per typical details, these drawings.

RECORD DRAWINGS

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CBW	SJW	JGC

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 4
TYPICAL DETAILS

DATE	SCALE	JOB NUMBER
1/27/16	AS SHOWN	2013-037

SHEET S1.1 OF 22

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

- a / F1 — FLUORESCENT LIGHTING FIXTURE. FIXTURE IDENTIFIER AND SWITCHED CIRCUIT INDICATED. REFER TO LIGHTING SCHEDULE FOR FIXTURE AND LAMP TYPE.
- a / F1 — FLUORESCENT LIGHTING FIXTURE WITH EMERGENCY BATTERY PACK
- LIGHTING FIXTURE, EMERGENCY DUAL HEAD WITH INTEGRAL BATTERY PACK. EXIT SIGN WHERE INDICATED.
- LED EXIT SIGN
- INCANDESCENT, COMPACT FLUORESCENT OR H.I.D. LIGHTING FIXTURE, CEILING MOUNTED
- 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 XP — JUNCTION BOX, EXPLOSION PROOF
- T — THERMOSTAT

CALLOUTS AND DESIGNATIONS

- A — CONDUIT CALLOUT
- A — TRENCH CALLOUT
- EF-1 — EQUIPMENT CALLOUT
- F1 — LIGHTING FIXTURE CALLOUT: SEE SCHEDULE
- X — DRAWING KEY NOTE CALLOUT
- DETAIL NUMBER
- 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
- 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
- CT - CURRENT TRANSFORMER

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
- TIME DELAY CONTACT - TR = TIME DELAY RELAY
- SWITCH - SW
- FLOW SWITCH - FS
- PB — PUSHBUTTON - PB
- 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
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
IS	INTRINSICALLY SAFE
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
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
ZS	LIMIT SWITCH

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	BZ	01/27/16

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, QUANTITY OF TERMINATIONS OR WIRES, JUNCTION BOXES, CONDUIT, ETC SHALL BE INCLUDED IN THE CONTRACT PRICE.

3. CONTRACTOR SHALL COORDINATE WITH OWNER FOR REMOVAL OF EXISTING EQUIPMENT AND ANY REQUIRED PHASING TO MAINTAIN FACILITY OPERATIONS .

4. DISPOSE OF ALL DEMO MATERIALS NOT WANTED BY OWNER.

5. 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.

6. 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.

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1-27-2016

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CHECKED BY BZ

CITY OF FERNDALE

WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 4

ELECTRICAL SYMBOLS AND ABBREVIATIONS

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037
SHEET E1 OF E11

00597.013 4/7/16

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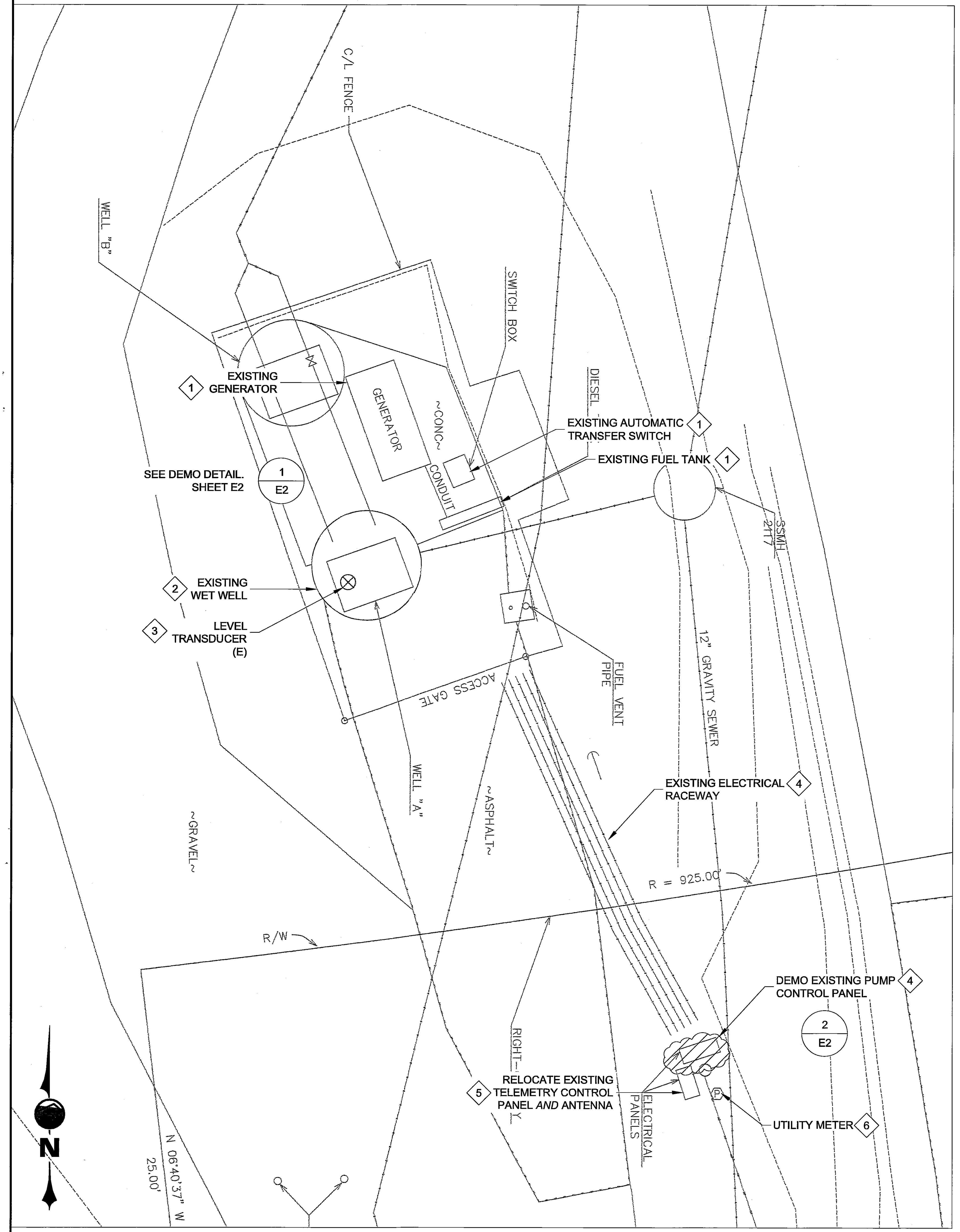
0	RECORD DRAWINGS	BZ	01/27/16

ELECTRICAL DEMOLITION NOTES:

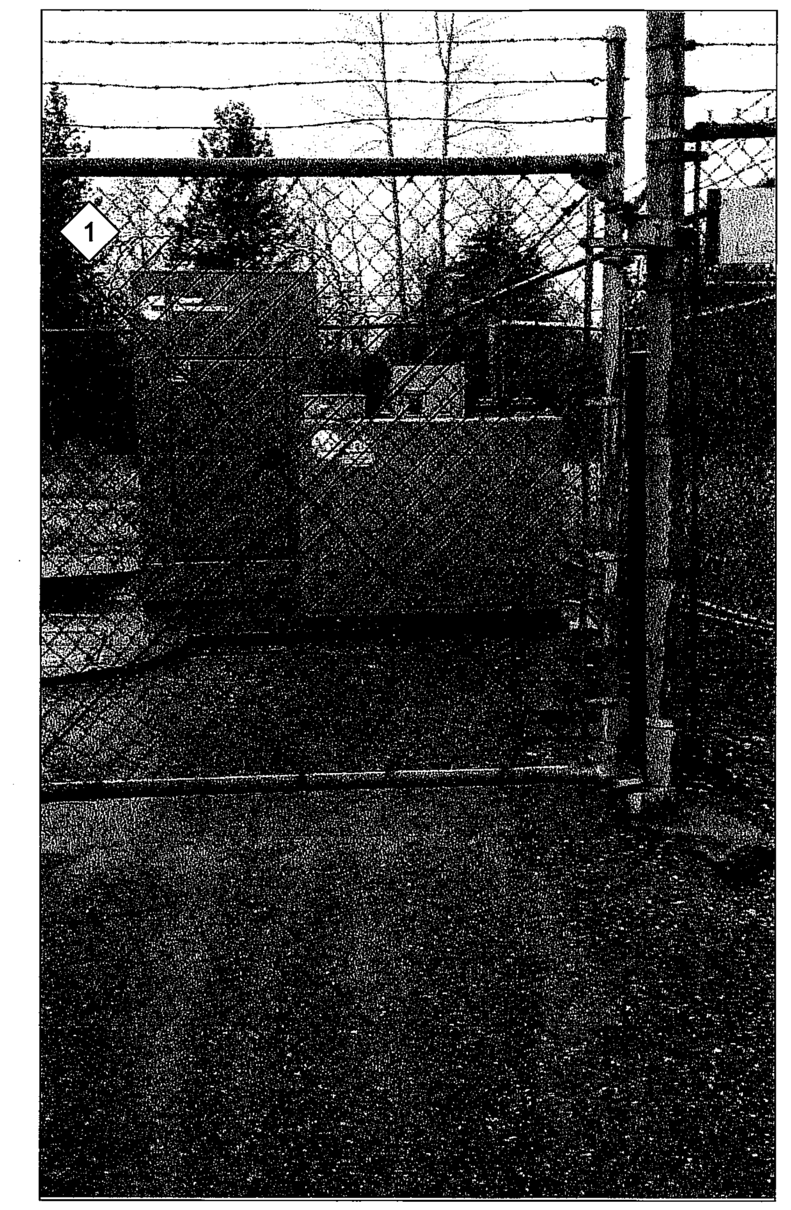
1. PROVIDE COMPLETE DEMOLITION OF ALL EXISTING EQUIPMENT INCLUDING WET WELL PUMPING SYSTEM, PUMP CONTROL PANEL, INSTRUMENTATION, CONDUIT AND WIRING.
2. RETURN ALL DEMO EQUIPMENT TO OWNER. LEGALLY DISPOSE OF ALL DEMO MATERIALS NOT WANTED BY OWNER.
3. COORDINATE WITH OWNER TO MAINTAIN OPERATIONS DURING CONSTRUCTION PERIOD. SEE CIVIL SPECIFICATIONS.



ELECTRICAL DEMO PLAN

SCALE: 1" = 5' AT FULL SCALE

5 0 5 10
SCALE HORIZONTAL SCALE FEET



DEMO NOTES:

1. PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING GENERATOR, DIESEL FUEL TANK, AND AUTOMATIC TRANSFER SWITCH.
2. PROVIDE COMPLETE DEMOLITION OF EXISTING WET WELL PUMPS AND INSTRUMENTATION.
3. REMOVE EXISTING LEVEL TRANSDUCER. MAINTAIN AND PROTECT, RETURN TO OWNER FOR FUTURE USE.

1/E2 ELECTRICAL EQUIPMENT DEMO DETAIL

SCALE: NONE

DEMO NOTES:

4. PROVIDE COMPLETE ELECTRICAL DEMOLITION OF EXISTING PUMP CONTROL PANEL AND ELECTRICAL RACEWAY.
5. RELOCATE EXISTING TELEMETRY PANEL TO NEW EQUIPMENT ENCLOSURE. PROVIDE NEW TELEMETRY ANTENNA MOUNTING PER DETAIL ON SHEET E5. PROVIDE NEW ANTENNA CABLE AND RACEWAY, ROUTE TO NEW TELEMETRY PANEL LOCATION.
6. DEMO EXISTING METER BASE AND 100 AMP SERVICE DISCONNECT. PROVIDE NEW METER BASE, FUSED DISCONNECT AHEAD OF METER BASE, AND POLE RISER PER PSE REQUIREMENTS. PROVIDE NEW UNDERGROUND SERVICE RACEWAY FROM NEW METER BASE ON POLE TO NEW SERVICE DISCONNECT IN EQUIPMENT ENCLOSURE; SEE SHEETS E3, E5. COORDINATE WITH PUGET SOUND ENERGY FOR ELECTRICAL SERVICE UPGRADE.

2/E2 POWER POLE DEMO DETAIL

SCALE: NONE

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00527.014 4/7/16 #5

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WHATCOM COUNTY WASHINGTON

PUMP STATION NO. 4
ELECTRICAL DEMOLITION

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037

SHEET E2 OF E11

NO.	REVISIONS	BY	DATE
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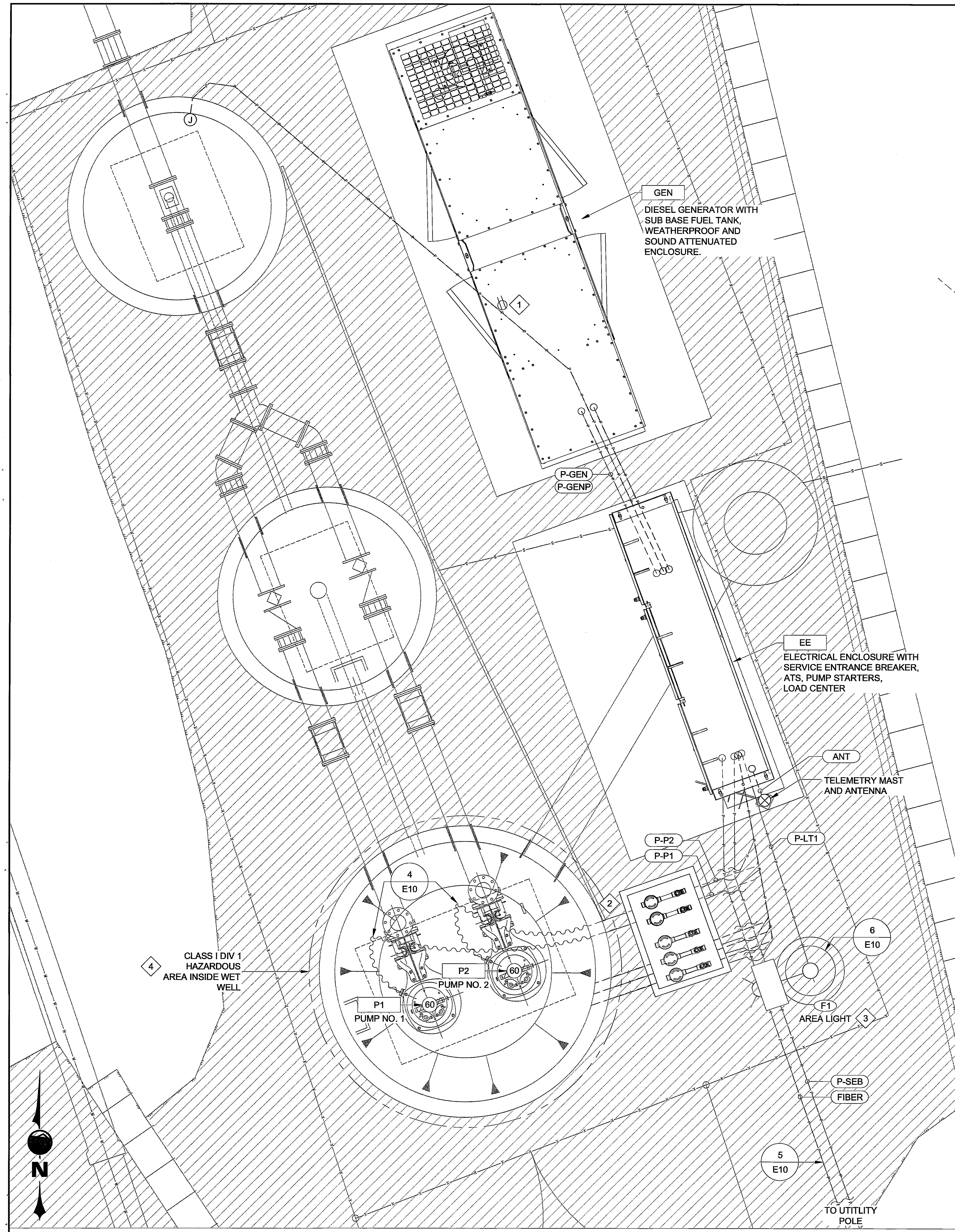


ELECTRICAL POWER PLAN

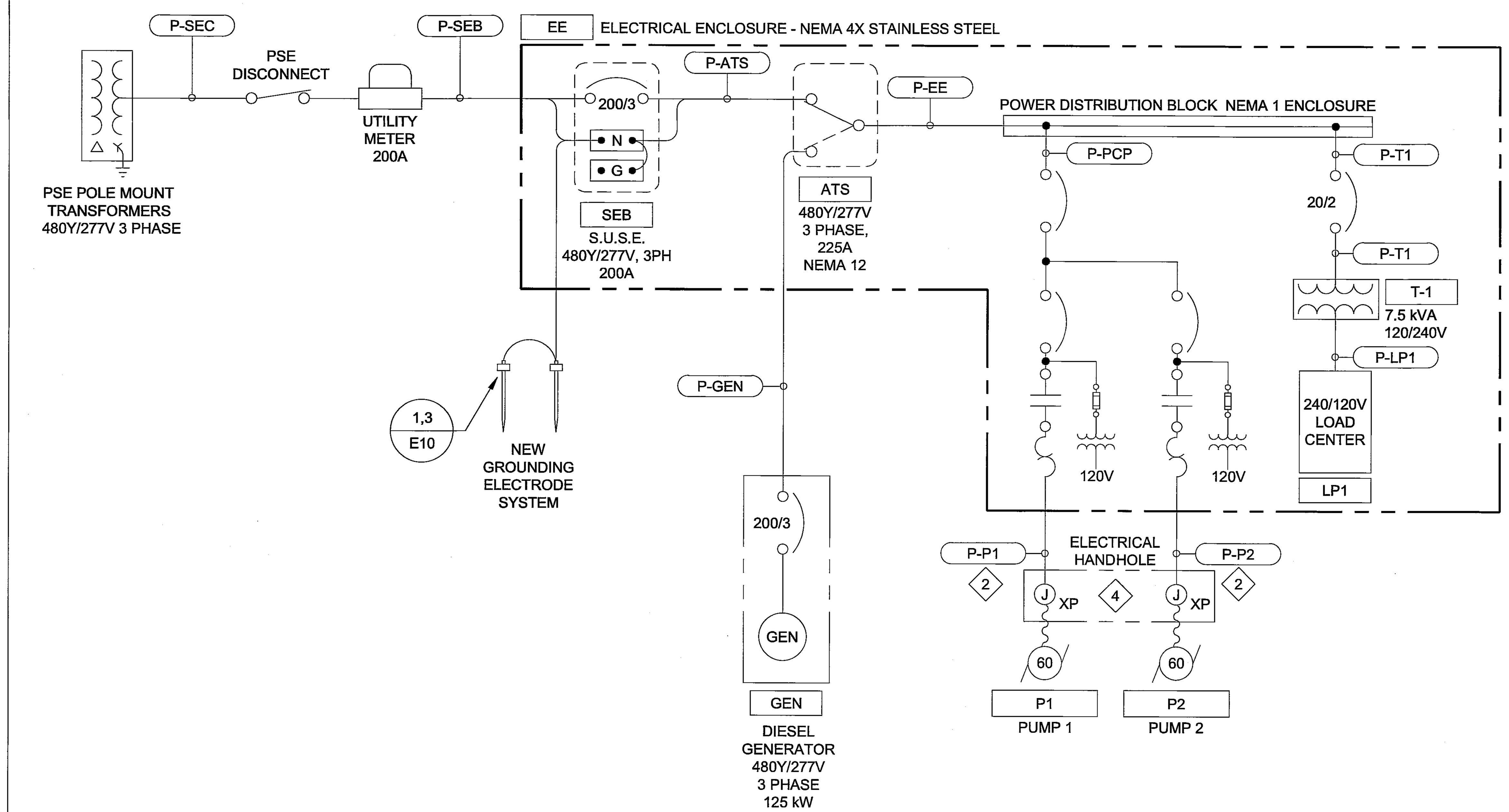
SCALE: 1" = 2' AT FULL SCALE

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. THESE DRAWINGS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE AND CONTROL SYSTEM. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT, AND BILL OF MATERIALS ARE INCLUDED IN THE PROJECT O&M MANUAL PROVIDED BY PROCESS SOLUTION INC., PROJECT #Q647210.

KEY NOTES:

1. PROVIDE RECEPTACLE IN GENERATOR ENCLOSURE FOR BATTERY CHARGER AND BLOCK HEATER.
2. OVERSIZE CONDUITS TO WET WELL FOR PUMP CABLES.
3. COORDINATE FINAL LOCATION OF AREA LIGHT FIXTURE DURING CONSTRUCTION.
4. HAZARDOUS LOCATIONS - WET WELL AND HANDHOLE ARE CLASS I, DIV 1 PER NFPA 820, TABLE 4.2, ROW16a. 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.



ONE LINE DIAGRAM

SCALE: NONE

LOAD CALCULATION - 480 VAC, 3 PHASE								
EQUIPMENT NO.	DESCRIPTION	KVA/HP	AMPS	DEMAND FACTOR	DEMAND LOAD AMPS	DEMAND FACTOR	GENERATOR LOAD AMPS
P1	PUMP 1 - FLYGT MODEL NP 3202 HT	60 HP	69.0	1.25	86.3	1.25	86.3
P2	PUMP 2 - FLYGT MODEL NP 3202 HT	60 HP	69.0	1.00	69.0	1.00	69.0
LP1	LOAD CENTER	7.5 KVA	15.6	0.65	10.1	0.65	10.1
TOTAL			153.6		165.4		165.4

LOAD CALCULATION

SCALE: NONE

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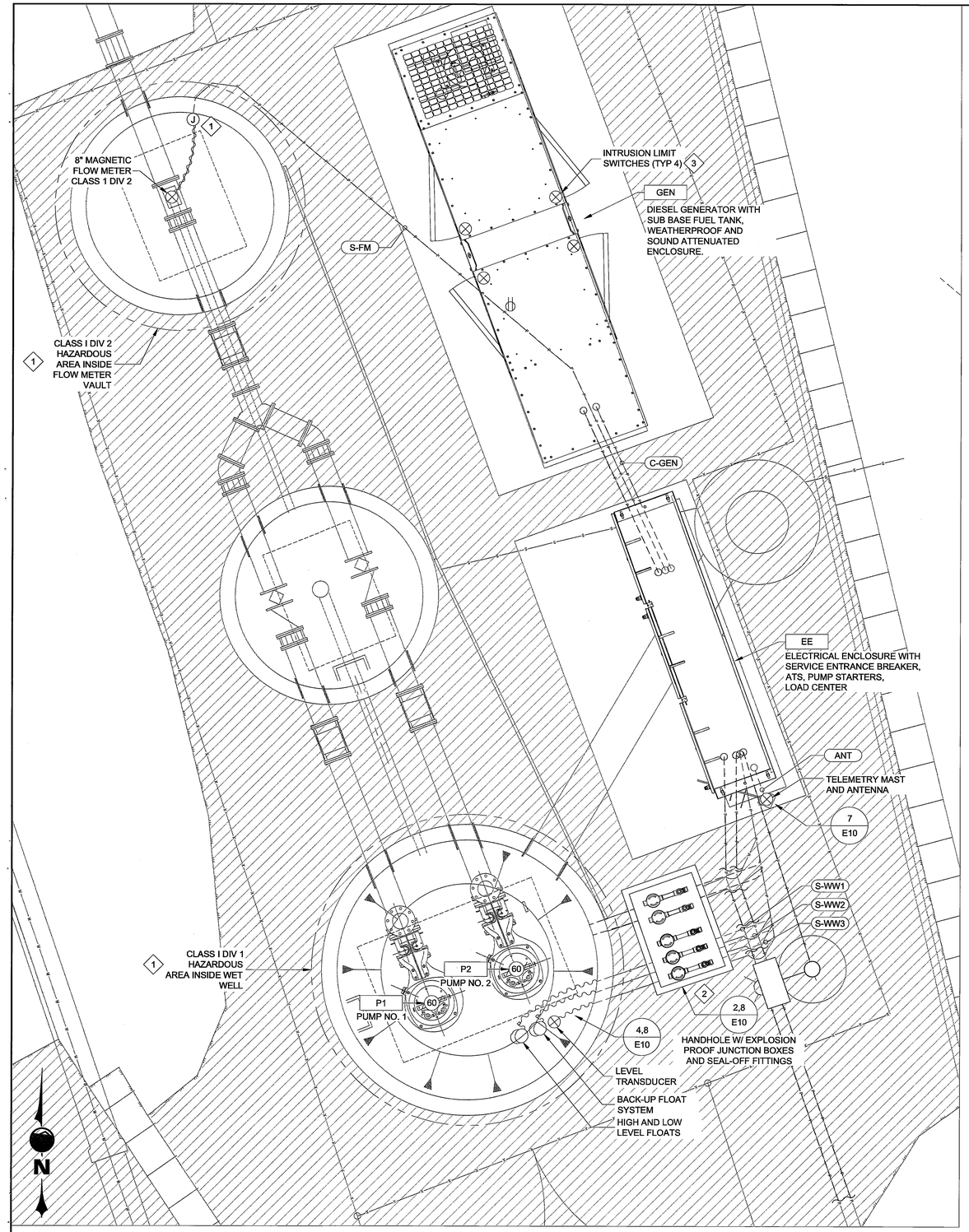
CITY OF FERNDALE

WHATCOM COUNTY, WASHINGTON

PUMP STATION NO. 4
POWER PLAN AND SCHEDULES

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037
SHEET E3 OF E11

0097.015 4/7/16 H



2 0 2 4
SCALE HORIZONTAL SCALE FEET

INSTRUMENTATION & CONTROL PLAN

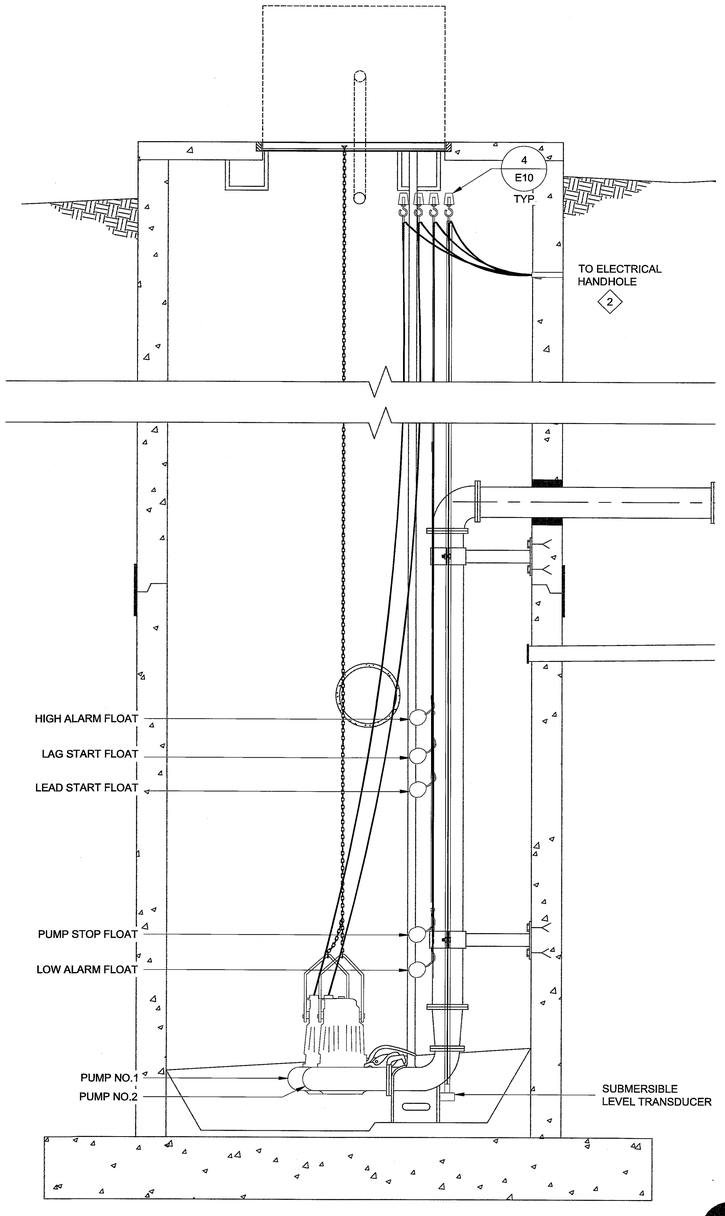
SCALE: 1" = 2' AT FULL SCALE

KEY NOTES:

1. HAZARDOUS LOCATIONS - WET WELL IS CLASS I, DIV 1 PER NFPA 820, TABLE 4.2, ROW16a. 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.
2. FIELD COORDINATE HAND HOLE LOCATION. HANDHOLE SHALL BE TRAFFIC RATED AND SIZED PER NEC. SIZE CONDUITS PER NEC TO ACCOMMODATE PUMP AND INSTRUMENTATION CABLES.
3. PROVIDE LIMIT SWITCHES FOR EACH GENERATOR DOOR. WIRE LIMIT SWITCHES IN SERIES TO PROVIDE ONE INTRUSION STATUS TO THE TELEMETRY PANEL PLC.

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. 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.
3. THESE DRAWINGS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE AND CONTROL SYSTEM. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT, AND BILL OF MATERIALS ARE INCLUDED IN THE PROJECT O&M MANUAL PROVIDED BY PROCESS SOLUTION INC., PROJECT #Q647210.



WET WELL ELEVATION

SCALE: NONE

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WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
INSTRUMENTATION AND CONTROL PLAN

DATE 01/27/2016 | SCALE AS SHOWN | JOB NUMBER 2013-037

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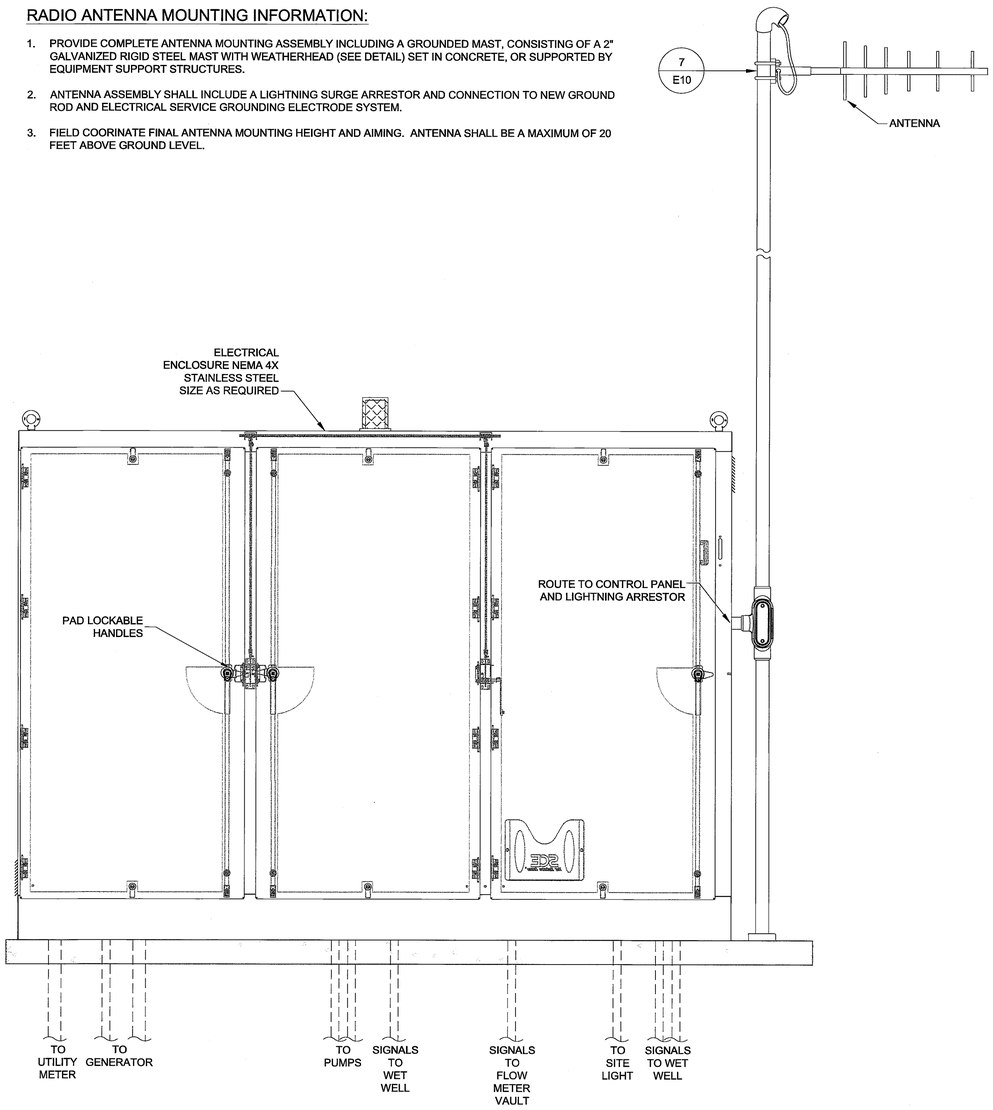
RADIO ANTENNA MOUNTING INFORMATION:

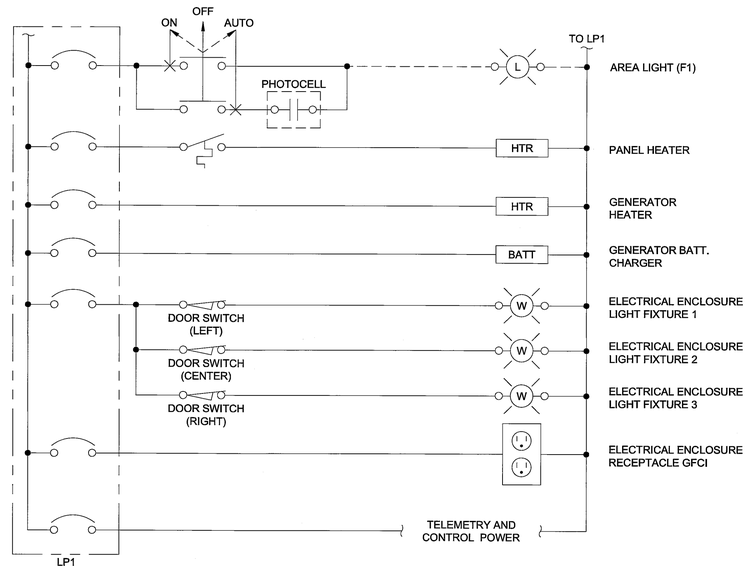
1. PROVIDE COMPLETE ANTENNA MOUNTING ASSEMBLY INCLUDING A GROUNDED MAST, CONSISTING OF A 2" GALVANIZED RIGID STEEL MAST WITH WEATHERHEAD (SEE DETAIL) SET IN CONCRETE, OR SUPPORTED BY EQUIPMENT SUPPORT STRUCTURES.
2. ANTENNA ASSEMBLY SHALL INCLUDE A LIGHTNING SURGE ARRESTOR AND CONNECTION TO NEW GROUND ROD AND ELECTRICAL SERVICE GROUNDING ELECTRODE SYSTEM.
3. FIELD COORINATE FINAL ANTENNA MOUNTING HEIGHT AND AIMING. ANTENNA SHALL BE A MAXIMUM OF 20 FEET ABOVE GROUND LEVEL.



ELECTRICAL ENCLOSURE - EXTERIOR ELEVATION
SCALE: NONE

GENERAL NOTES:

1. THESE DRAWINGS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE AND CONTROL SYSTEM. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT, AND BILL OF MATERIALS ARE INCLUDED IN THE PROJECT O&M MANUAL PROVIDED BY PROCESS SOLUTION INC., PROJECT #Q647210.



ELECTRICAL ENCLOSURE - WIRING DIAGRAM
SCALE: NONE

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1-27-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
ELECTRICAL ENCLOSURE ELEVATION

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET E5 OF E11

4/7/14 L10-00596

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	BZ	01/27/16

PANEL NAMEPLATE SCHEDULE

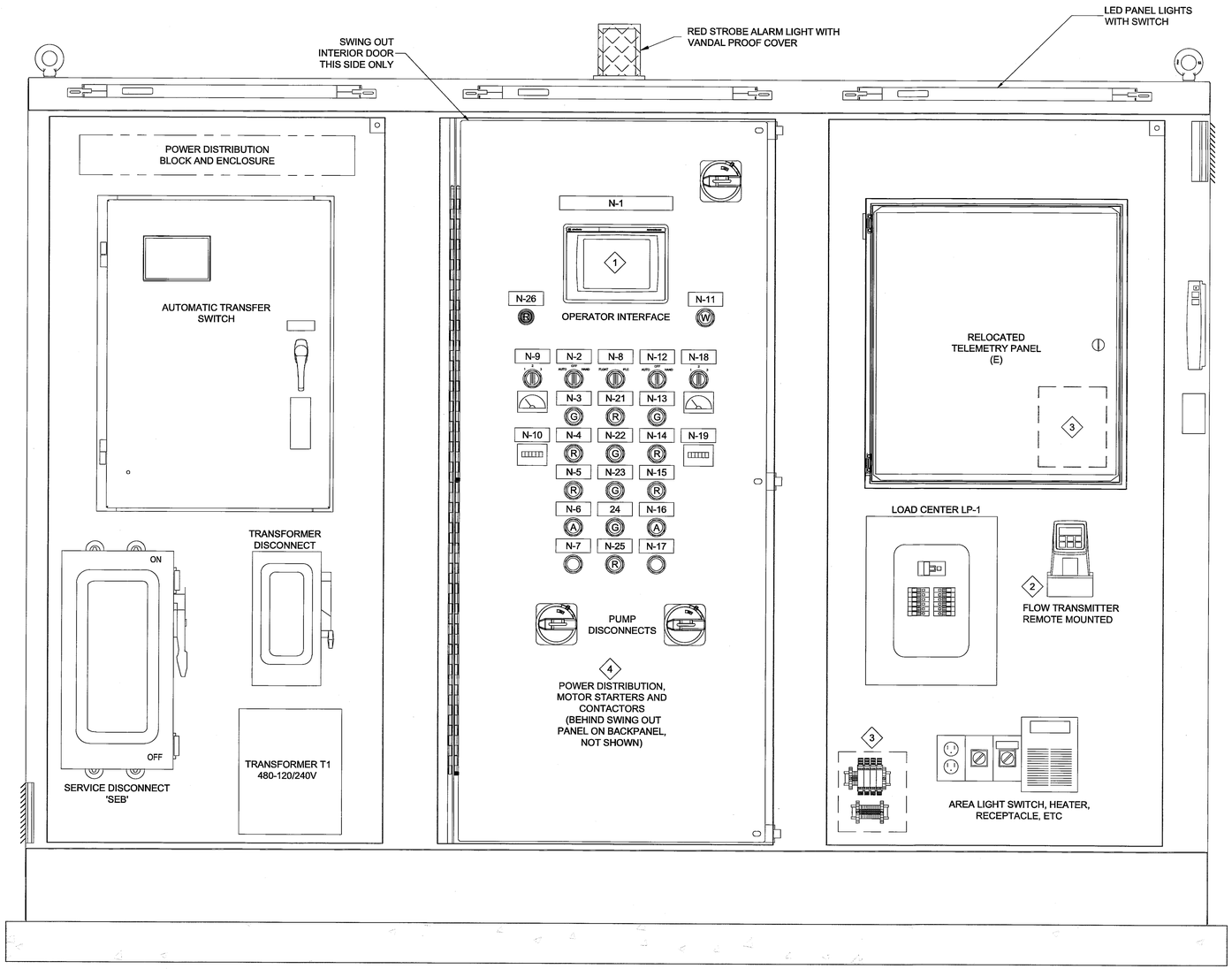
LABEL	ENGRAVING TEXT	LABEL	ENGRAVING TEXT	LABEL	ENGRAVING TEXT
N-1	CITY OF FERNDALE PUMP STATION NO.4	N-11	POWER STATUS (WHITE)	N-21	HIGH LEVEL FLOAT (RED)
N-2	PUMP NO.1 HAND OFF AUTO	N-12	PUMP NO.2 HAND OFF AUTO	N-22	LAG START FLOAR (GREEN)
N-3	PUMP NO.1 RUNNING (GREEN)	N-13	PUMP NO.2 RUNNING (GREEN)	N-23	LEAD START FLOAT (GREEN)
N-4	PUMP NO.1 FAIL (RED)	N-14	PUMP NO.2 FAIL (RED)	N-24	PUMP STOP FLOAT (GREEN)
N-5	PUMP NO.1 OVERTEMP (RED)	N-15	PUMP NO.2 OVERTEMP (RED)	N-25	LOW LEVEL FLOAT (RED)
N-6	PUMP NO.1 SEAL FAIL (AMBER)	N-16	PUMP NO.2 SEAL FAIL (AMBER)	N-26	OPERATOR IN TROUBLE (RED)
N-7	PUMP NO.1 RESET	N-17	PUMP NO.2 RESET		
N-8	PUMP CONTROL / FLOAT - PLC	N-18	PUMP NO.2 AMMETER/SELECTOR		
N-9	PUMP NO.1 AMMETER/SELECTOR	N-19	PUMP NO.2 ETM		
N-10	PUMP NO.1 ETM	N-20	—		

KEY NOTES:

1. ALLEN BRADLEY PANELVIEW PLUS 6 700. OPERATOR INTERFACE PROGRAMMED BY CITY'S PROGRAMMER, L2 SYSTEMS, UNDER FORCE ACCOUNT. SEE SPECIFICATIONS.
2. FLOW METER FM APPROVED FOR CLASS I, DIV 2 HAZARDOUS AREA.
3. WIRE ALL NEW INSTRUMENTATION TO INTRINSICALLY SAFE AREA IN ELECTRICAL ENCLOSURE AND TO TELEMETRY CONTROL PANEL.
4. PROVIDE POWER DISTRIBUTION, STARTERS FOR DUPLEX PUMP CONTROL SYSTEM. PANEL BUILDER SHALL PROVIDE DETAILED DESIGN BASED ON FUNCTIONAL WIRING DIAGRAMS FOR A COMPLETE AND OPERATIONAL SYSTEM.

GENERAL NOTES:

1. THESE DRAWINGS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE AND CONTROL SYSTEM. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT, AND BILL OF MATERIALS ARE INCLUDED IN THE PROJECT O&M MANUAL PROVIDED BY PROCESS SOLUTION INC., PROJECT #Q647210.



ELECTRICAL ENCLOSURE - ELEVATION

SCALE: NONE

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1-27-2016

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
ELECTRICAL ENCLOSURE ELEVATION

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET E6 OF E11

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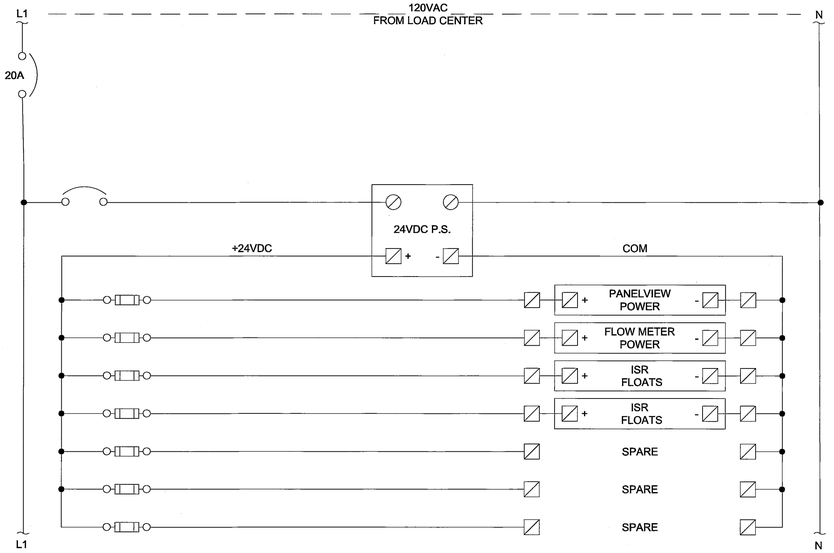
0	RECORD DRAWINGS	BZ	01/27/16

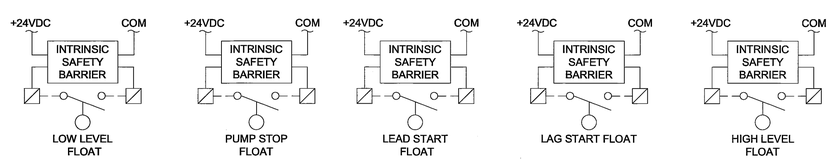
GENERAL NOTES:

1. THESE DRAWINGS SHOW ONLY FUNCTIONAL REQUIREMENTS OF THE ELECTRICAL ENCLOSURE AND CONTROL SYSTEM. DETAILED WIRING DIAGRAMS, PANEL SIZING AND LAYOUT, AND BILL OF MATERIALS ARE INCLUDED IN THE PROJECT O&M MANUAL PROVIDED BY PROCESS SOLUTION INC., PROJECT #Q647210.



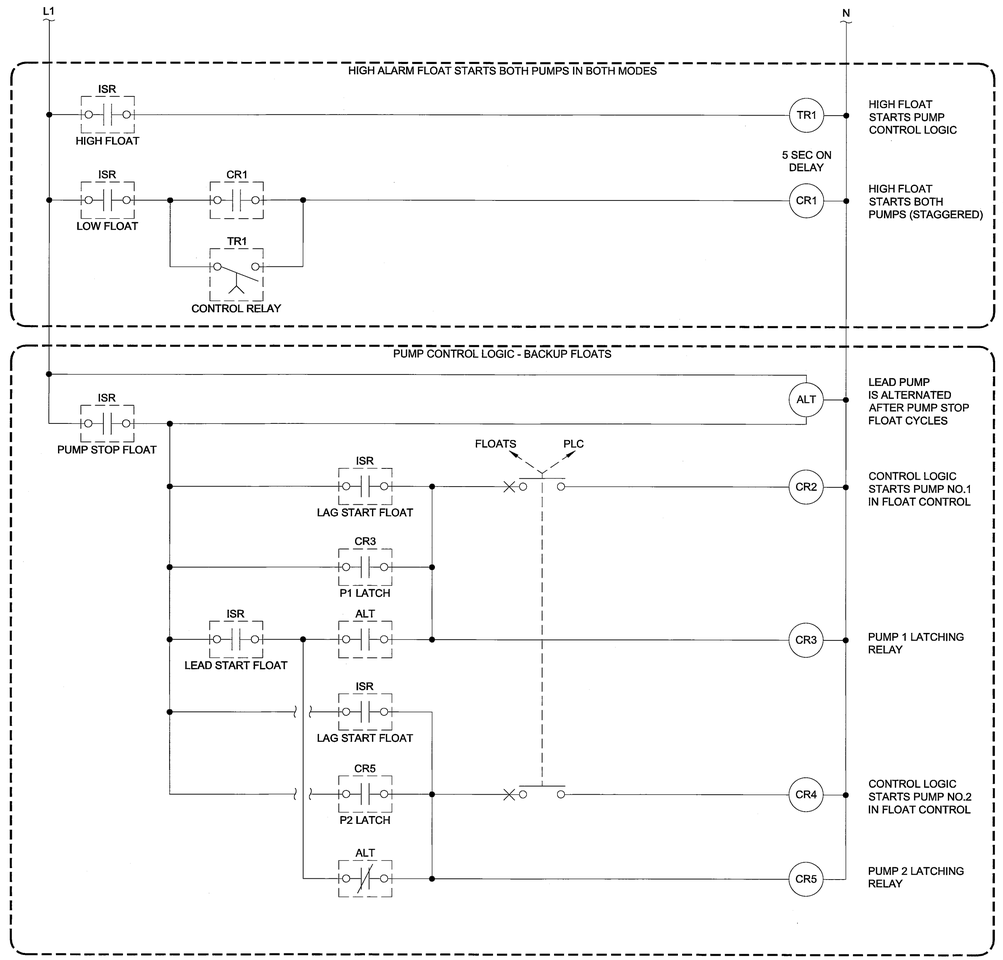
CONTROL POWER WIRING DIAGRAMS

SCALE: NONE



INTRINSICALLY SAFE FLOAT SWITCHES - WIRING DIAGRAM

SCALE: NONE



FLOAT CONTROL - WIRING DIAGRAM

SCALE: NONE

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Wilson SURVEY/ENGINEERING

BRIAN L. ZIESER
STATE OF WASHINGTON
37463
REGISTERED PROFESSIONAL ENGINEER
1-27-2016

DESIGNED BY: BZ
DRAWN BY: GH
CHECKED BY: BZ

CITY OF FERNDALE
WHATCOM COUNTY
WASHINGTON

PUMP STATION NO. 4
PUMP CONTROL WIRING DIAGRAMS

DATE: 01/27/2016
SCALE: AS SHOWN
JOB NUMBER: 2013-037

SHEET: E7
OF: E11

0597.019 4/11/16 SH

NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	BZ	01/27/16

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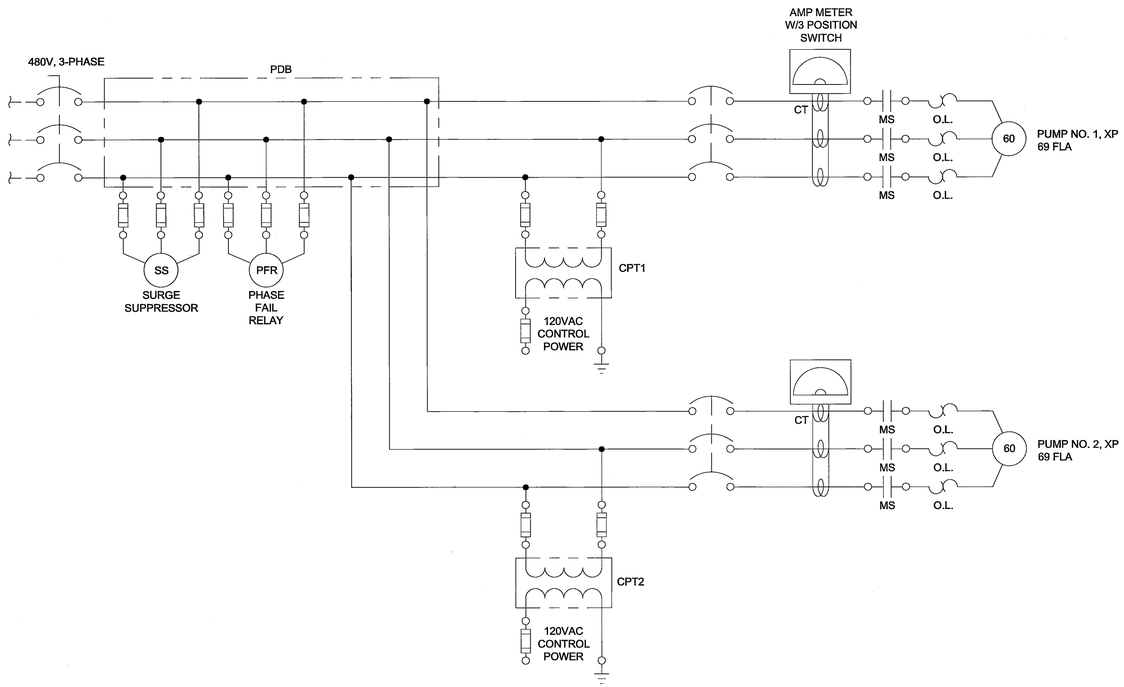
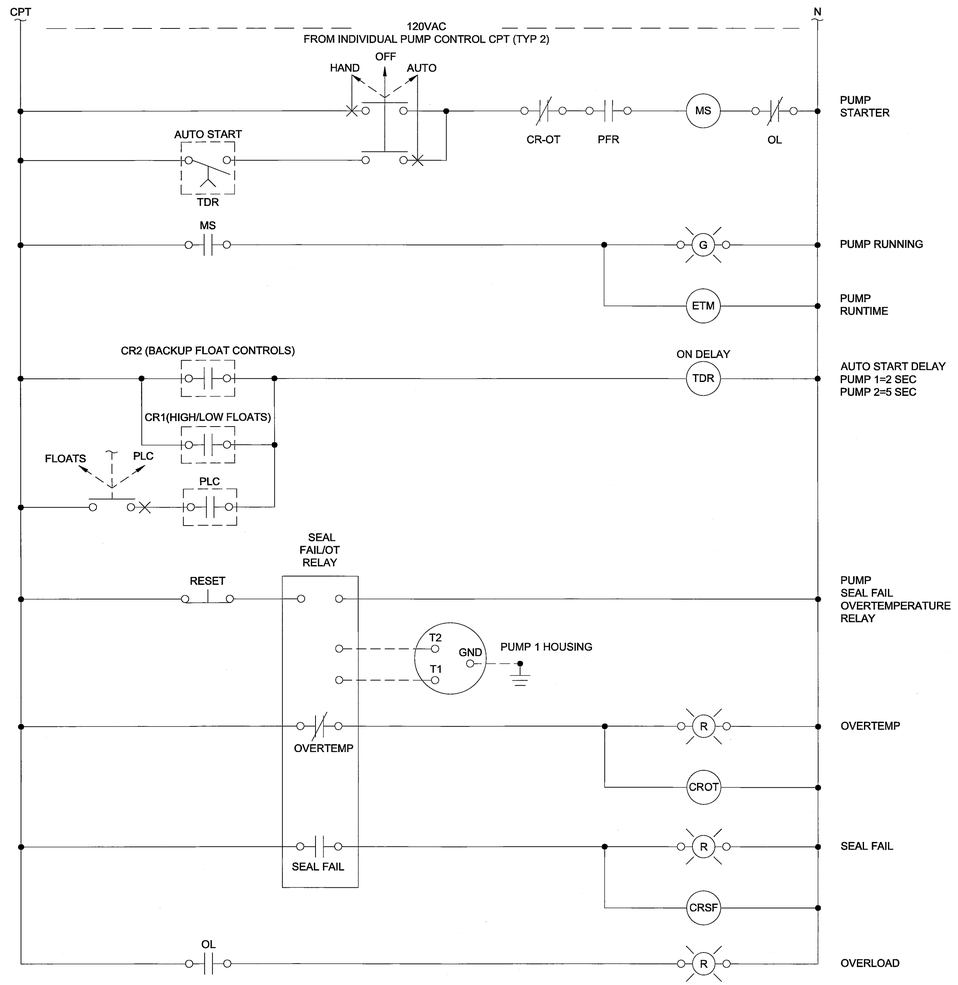


PUMP POWER WIRING DIAGRAM
SCALE: NONE



PUMP CONTROL WIRING DIAGRAM (TYPICAL FOR EACH OF 2 PUMPS)
SCALE: NONE

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BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
PUMP STATION NO. 4
PUMP WIRING DIAGRAM

DATE	SCALE	JOB NUMBER
01/27/2016	AS SHOWN	2013-037

SHEET E8 OF E11

05817.020 4/7/16 SH

GENERAL NOTES:

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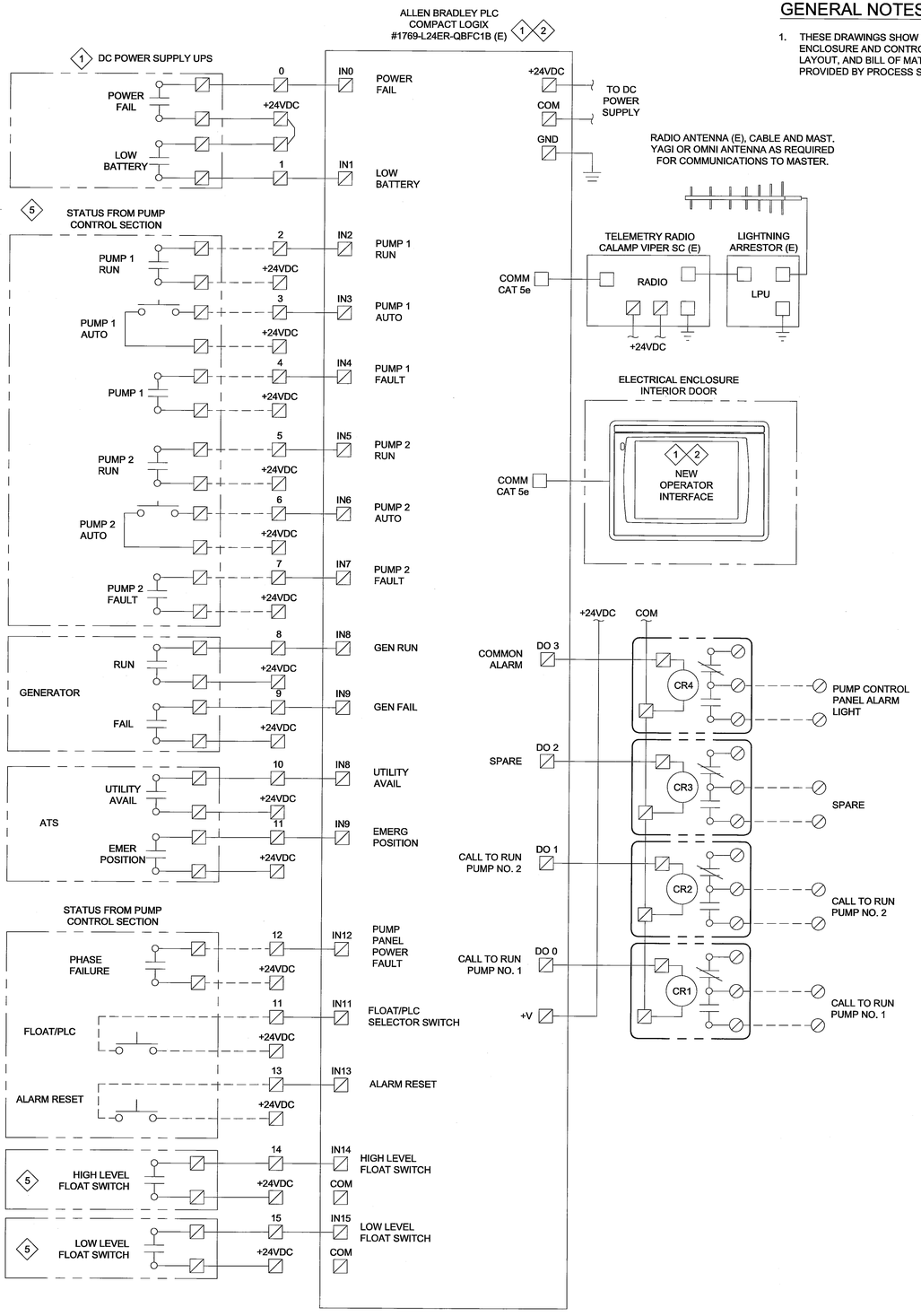
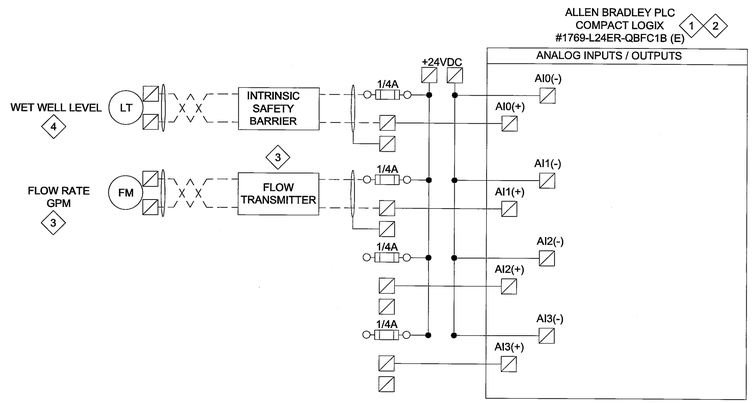
KEY NOTES:

1. EXISTING TELEMETRY CONTROL PANEL AND RADIO SYSTEM. RELOCATE TO NEW EQUIPMENT ENCLOSURE. CONNECT ALL NEW INSTRUMENTATION AND SIGNALS TO TELEMETRY CONTROL PANEL PER WIRING DIAGRAMS AND ELECTRICAL PLANS. NEW OPERATOR INTERFACE. PROGRAM PLC AND OPERATOR INTERFACE FOR AUTOMATIC CONTROL OF PUMP STATION.
2. PLC AND OPERATOR INTERFACE PROGRAMMING WILL BE PROVIDED BY CITY'S PROGRAMMER, L2 SYSTEMS, UNDER FORCE ACCOUNT. SEE SPECIFICATIONS.
3. FLOW METER SYSTEM FM APPROVED FOR CLASS I, DIV 2 HAZARDOUS AREA.
4. LEVEL TRANSDUCER FM APPROVED FOR CLASS I, DIV 1 HAZARDOUS AREA.
5. PROVIDE INTERPOSING RELAYS TO CONNECT AS SIGNALS SHOWN TO PLC, AS REQUIRED.
6. PROVIDE 16 POINT DIGITAL INPUT WIRING EXPANSION MODULE AND INSTALL IN EXISTING PANEL. COORDINATE WITH PROGRAMMER FOR INSTALLATION.

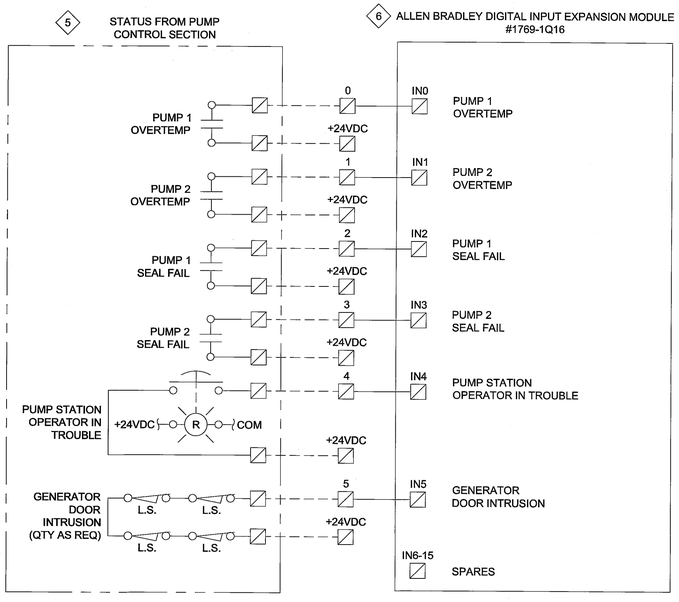
NO.	REVISIONS	BY	DATE
0	RECORD DRAWINGS	BZ	01/27/16



TELEMETRY PANEL DIGITAL I/O WIRING DIAGRAM
SCALE: NONE



TELEMETRY PANEL ANALOG I/O WIRING DIAGRAM
SCALE: NONE



TELEMETRY PANEL DIGITAL EXPANSION I/O WIRING DIAGRAM
SCALE: NONE

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WHATCOM COUNTY
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PUMP STATION NO. 4
TELEMETRY PANEL WIRING DIAGRAMS

DATE 01/27/2016 | SCALE AS SHOWN | JOB NUMBER 2013-037

SHEET E9 OF E11

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Sht 4 of 11 Q647210

NO.	REVISIONS	BY	DATE
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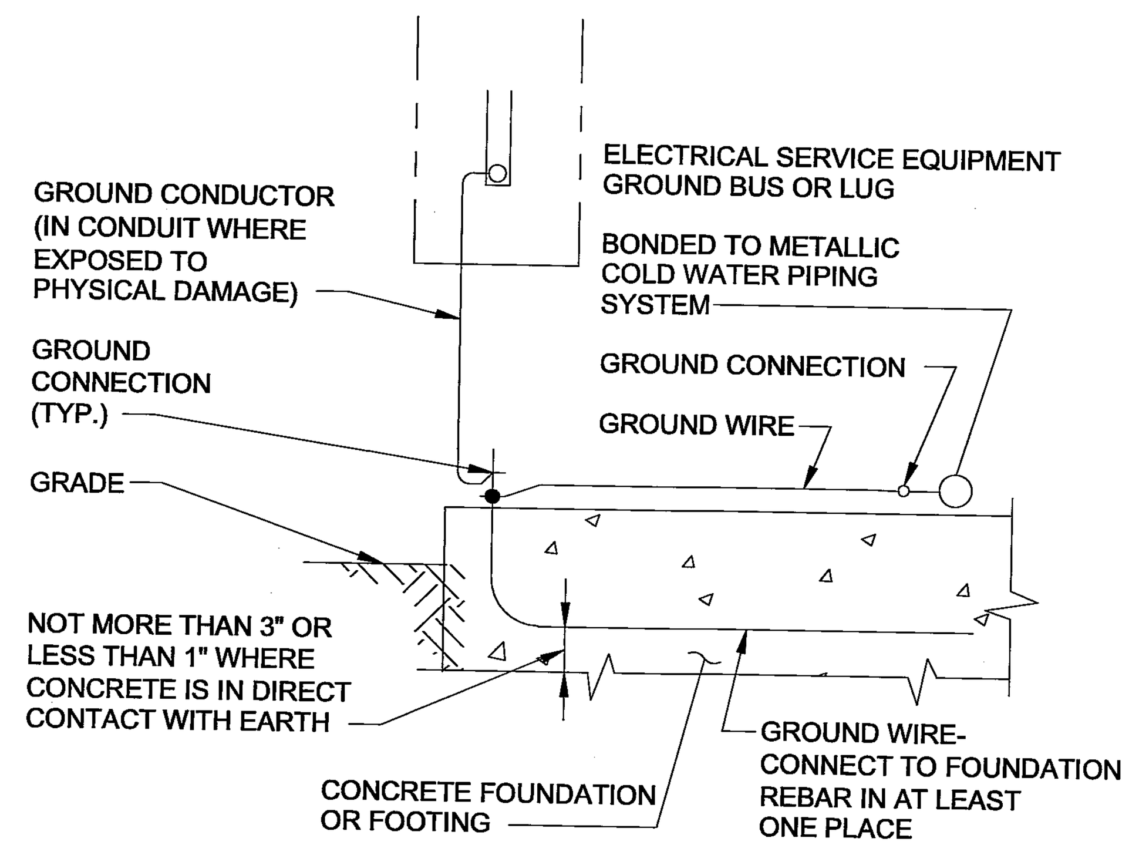
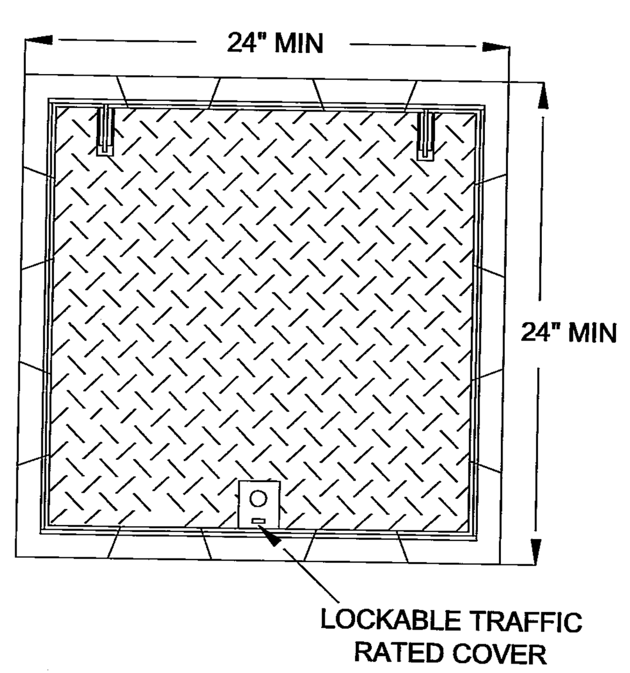
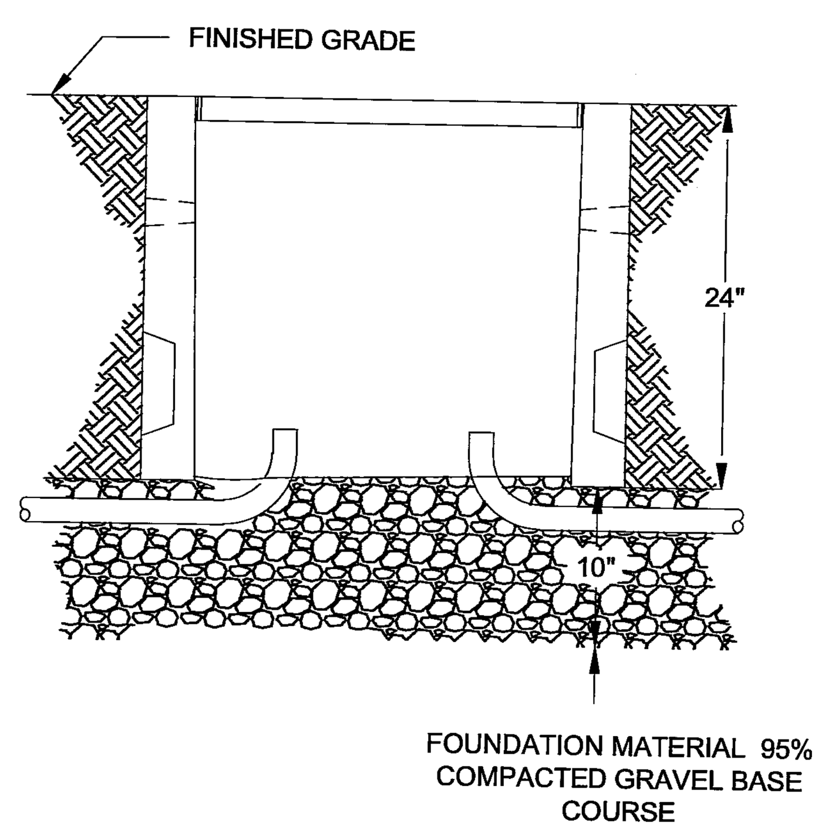


GENERAL NOTE: CONTRACTOR SHALL PROVIDE ALL REQUIRED GROUNDING AND BONDING TO MEET REQUIREMENTS OF NEC ARTICLE 250.

1 GROUNDING SYSTEM DETAIL
SCALE: NONE

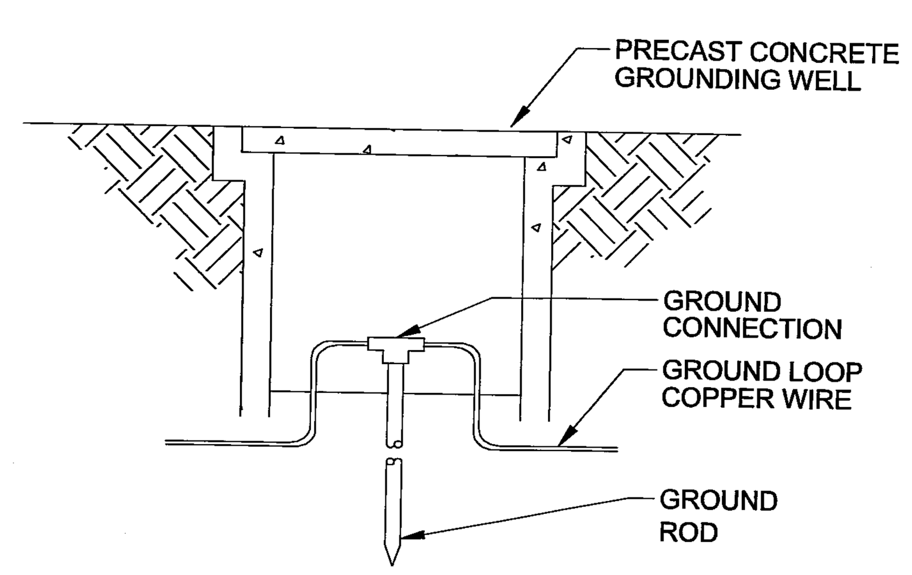




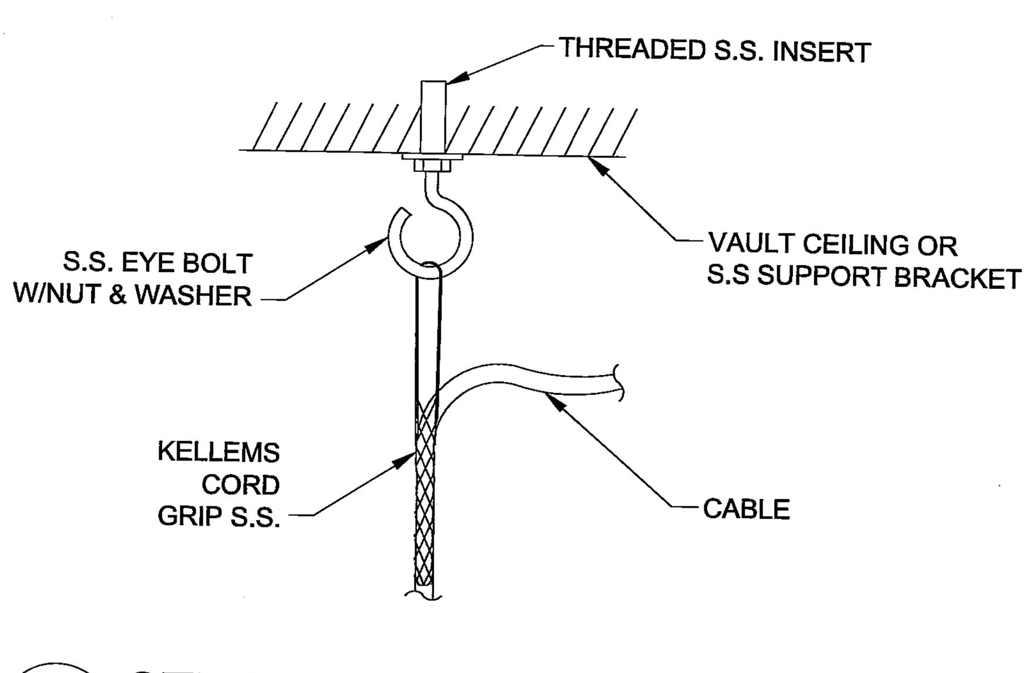
TYPICAL HANDHOLE PLAN
SCALE: NONE

TYPICAL HANDHOLE ELEVATION
SCALE: NONE

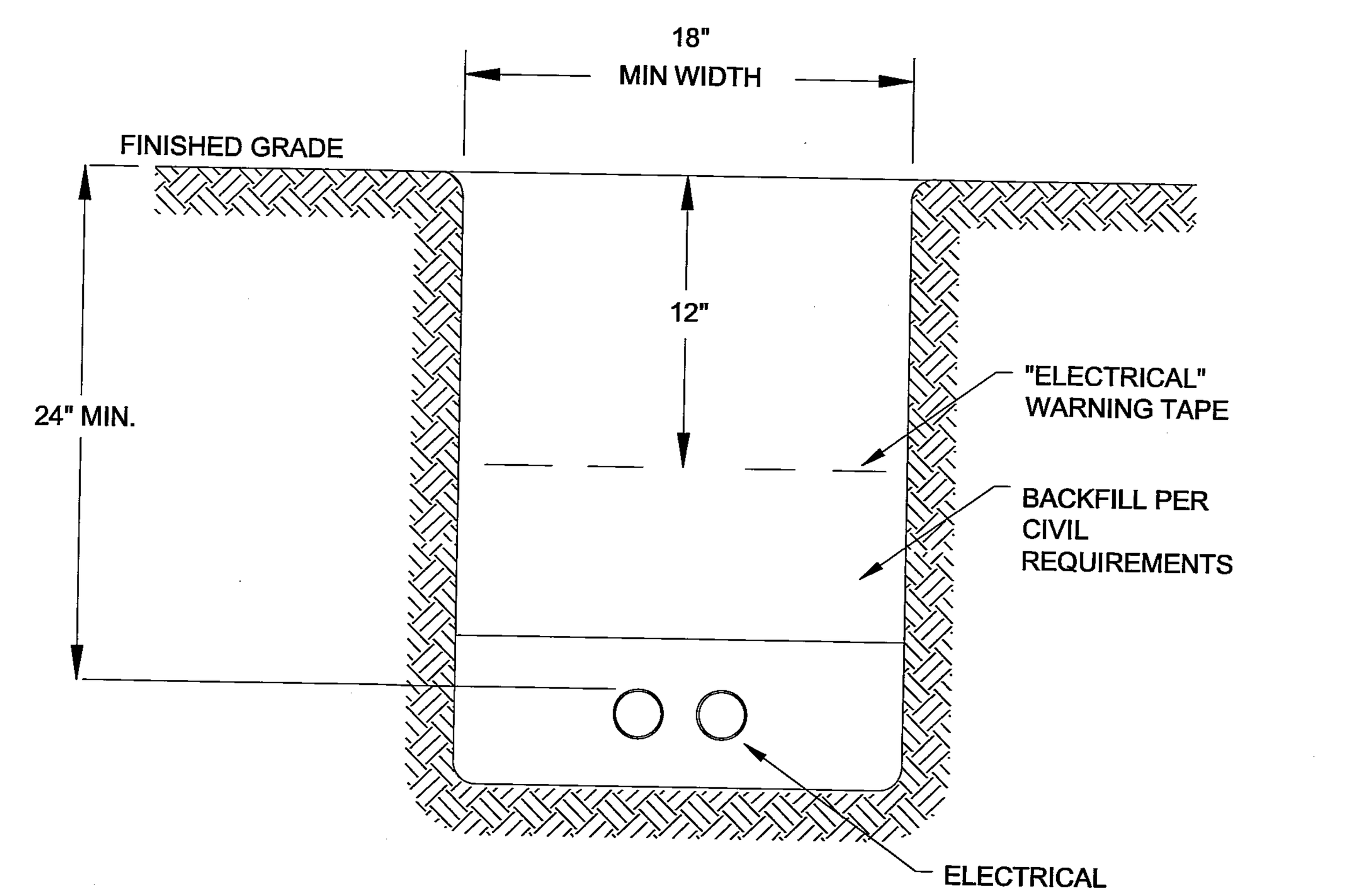
2 ELECTRICAL HANDHOLE DETAIL
SCALE: NONE



3 GROUND ROD DETAIL
SCALE: NONE



4 STRAIN RELIEF DETAIL
SCALE: NONE

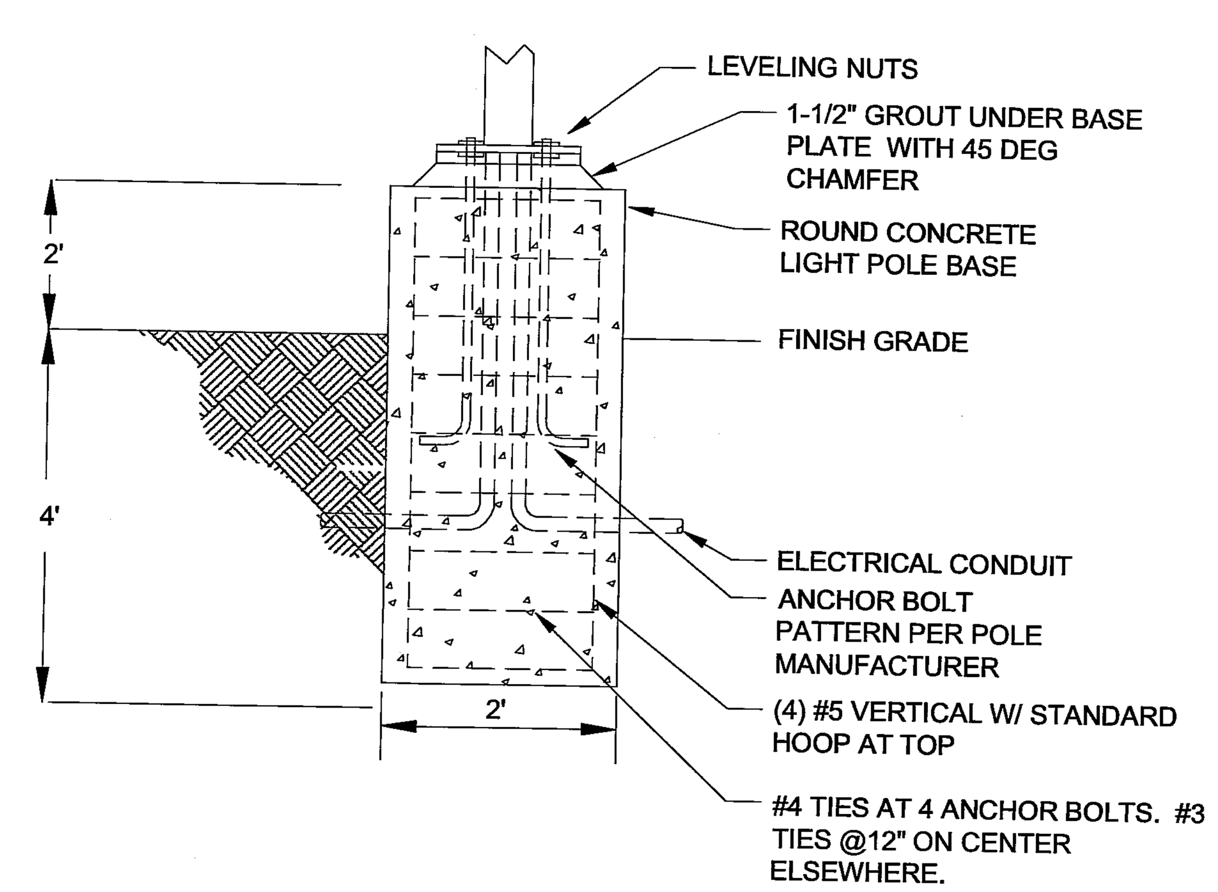


SECONDARY AND FEEDER RACEWAY
SCALE: NONE

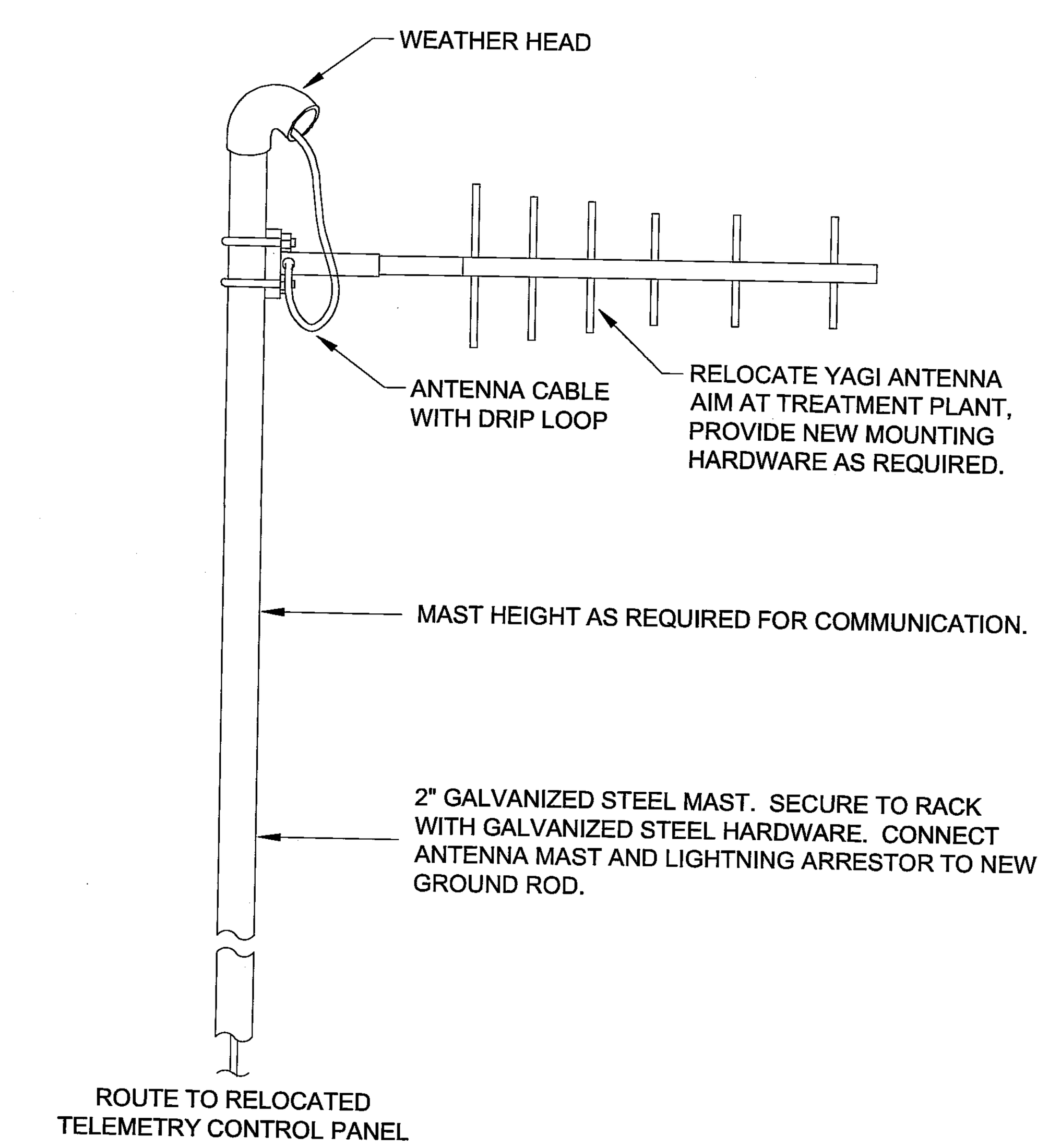
GENERAL NOTES:

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).

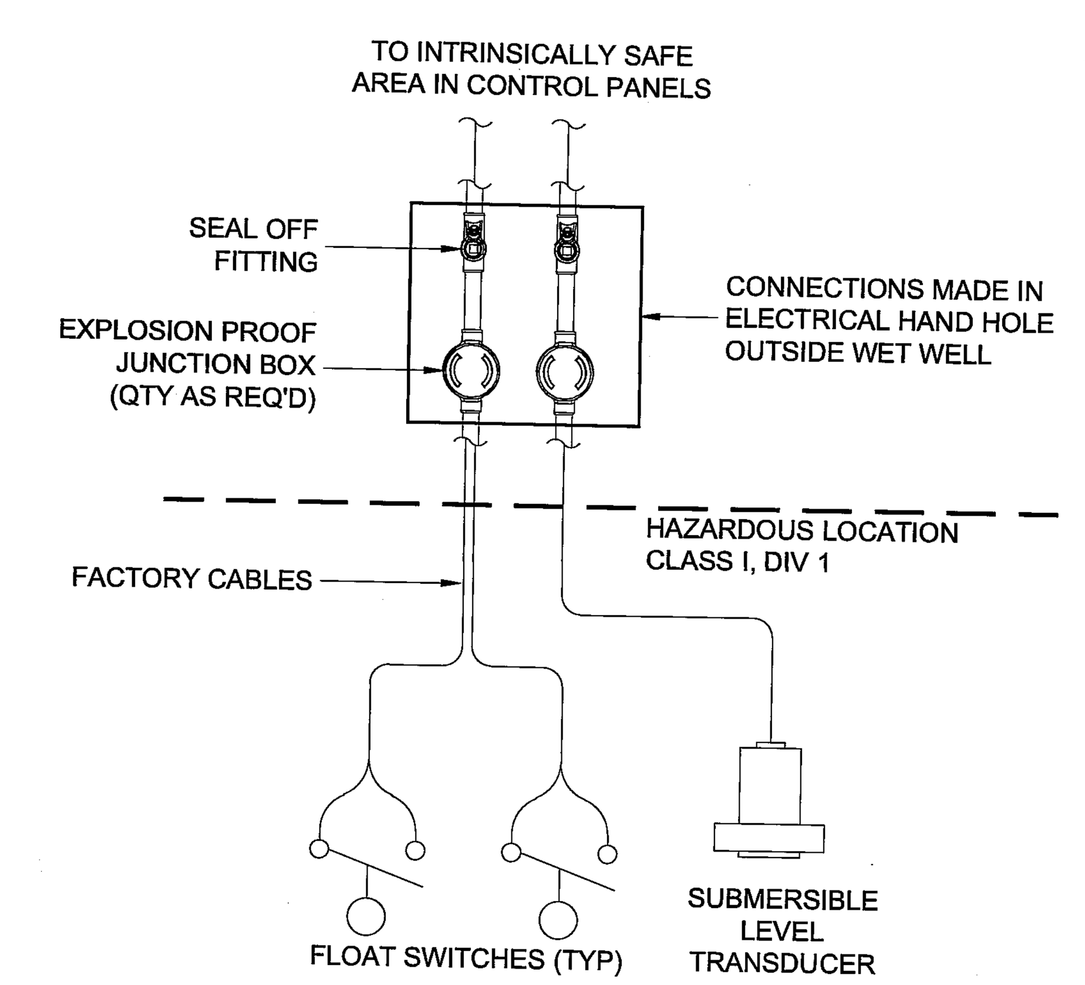
5 ELECTRICAL RACEWAY AND TRENCHING DETAILS
SCALE: NONE



6 LIGHT POLE BASE DETAIL
SCALE: NONE



7 TELEMETRY ANTENNA MOUNTING DETAIL
SCALE: NONE



8 INTRINSICALLY SAFE RELAY CONNECTION DETAIL
SCALE: NONE

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CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
ELECTPUMP STATION NO. 4
ELECTRICAL DETAILS

DATE 01/27/2016
SCALE AS SHOWN
JOB NUMBER 2013-037

SHEET E10 OF E11

00597.022 4/11/16

NO.	REVISIONS	BY	DATE
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ID	VOLTAGE	CONDUIT	WIRE QTY	SIZE	DESCRIPTION
P-SEB	480/277V	3"	4	#3/0 AWG	SECONDARY - METER BASE TO SERVICE DISCONNECT
P-GEN	480/277V	2"	4	#3/0 AWG	GENERATOR TO AUTOMATIC TRANSFER SWITCH
P-ATS	480/277V	2"	4	#3/0 AWG	SERVICE ENTRANCE BREAKER TO AUTOTRANSFER SWITCH
P-EE	480V	2"	3	#3/0 AWG	ELECTRICAL ENCLOSURE POWER
P-PCP	480V	2"	3	#3/0 AWG	PUMP CONTROL POWER
P-P1	480V	1-1/2"	3	#3 AWG	PUMP NO. 1 MOTOR LEADS
P-P2	480V	1-1/2"	3	#3 AWG	PUMP NO. 2 MOTOR LEADS
P-T1	480V	1/2"	2	#12 AWG	TRANSFORMER T1 POWER
P-GENP	120/240V	1"	4	#12 AWG	GENERATOR BLOCK HEATER/BATTERY CHARGER POWER
P-LT1	120/240V	1"	2	#12 AWG	AREA LIGHT POWER
P-LP1	120/240V	1"	3	#8 AWG	LIGHTING PANEL LP1 POWER
P-TEL	120/240V	1/2"	2	#12 AWG	TELEMETRY PANEL POWER
P-FM	24VDC	1/2"	2	#14 AWG	FLOW METER - REMOTE MOUNT POWER
C-ATS	24VDC	1"	8	#14 AWG	AUTOMATIC TRANSFER SWITCH/GENERATOR STATUS
C-GEN	24VDC	1"	10	#14 AWG	GENERATOR - RUNNING FAIL STATUS, GEN CONTROL, INTRUSION
C-TEL	24VDC	1"	AS REQ'D	#14 AWG	PUMP STATION DIGITAL I/O
S-FM	24VDC	1"	2	FC	FLOW METER - ELECTRODE AND COIL FACTORY CABLE
S-TEL	24VDC	1"	AS REQ'D	#18 TSP	PUMP STATION ANALOG I/O
S-WW1	24VDC	1"	1	#18 TSP	WET WELL LEVEL TRANSDUCER
S-WW2	24VDC	1"	6	#14 AWG	WET WELL FLOATS (BCKUP FLOAT CONTROL)
S-WW3	24VDC	1"	4	#14 AWG	WET WELL FLOATS (HIGH AND LOW LEVEL ALARM)
ANT	—	2"	1	COAX	TELEMETRY RADIO ANTENNA CABLE
ETH	—	1/2"	1	CAT 6	PANELVIEW COMMUNICATION CABLE
FIBER	—	2"	—	—	SPARE - (FUTURE FIBER)

*NOTE: PROVIDE EQUIPMENT GROUNDING PER NEC 250.

CONDUIT SCHEDULE
SCALE: NONE

LIGHTING SCHEDULE							
ID	DESCRIPTION	MOUNTING	LAMPS	VOLTAGE	LUMENS	WATTS	MANUFACTURER
F1	AREA LIGHT, POLE MOUNT	10' POLE	60 LED	120	14,461	134	LITHONIA CSX1 LED, OR EQUAL.

LIGHTING SCHEDULE
SCALE: NONE

PANEL: LP1					PANEL SCHEDULE					PROJECT: City Of Ferndale Pump Station No.4		
120/240V, 1Ph, 3W.					100A Bus			40A 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	RECEPTACLE - PANEL MOUNT	180	R	20	1	A	1	20	H	1,000	GENERATOR - BATTERY CHARGER	2
3	PANEL HEATER	250	H	20	1	B	1	20	G	1,500	GENERATOR - COOLANT HEATER	4
5	PANEL LIGHTING	64	L	20	1	A	1	20	L	500	SITE LIGHTING	6
7	PUMP CONTROL	1,000	C	20	1	B	1	20			SPARE	8
9	SPARE			20	1	A	1	20			SPARE	10
11	SPARE			20	1	B					SPACE	12
13	SPACE					A					SPACE	14
15	SPACE					B					SPACE	16

TOTAL CONNECTED LOAD: PH A 1,744 VA 14.5 AMPS — DATE: April 16, 2015
TOTAL CONNECTED LOAD: PH B 2,750 VA 22.9 AMPS

MAX PHASE CONNECTED LOAD: PH B 2,750 VA — PANEL RATING: 10,000 AIC
TOTAL CONNECTED LOAD (2 x MAX): 5.5 kVA 22.9 AMPS — TOTAL DEMAND LOAD: 4.9 kVA 20.4 AMPS

		CONNECTED LOADS	SUBFED LOADS [S]	TOTAL LOADS	DEMAND FACTOR	DEMAND LOAD
G	GENERAL (NON-CONTINUOUS)	1,500 VA	0 VA	1,500 VA	100%	1,500 VA
L	LIGHTING	564 VA	0 VA	564 VA	125%	705 VA
R	RECEPTACLES - UP TO 10 kVA	180 VA	0 VA	180 VA	100%	180 VA
	OVER 10 kVA		0 VA	0 VA	50%	0 VA
K	KITCHEN	0 VA	0 VA	0 VA	100%	0 VA
H	HEATING	1,250 VA	0 VA	1,250 VA	100%	1,250 VA
M	MOTORS	0 VA	0 VA	0 VA	100%	0 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)	1,000 VA	0 VA	1,000 VA	125%	1,250 VA
N	NON-COINCIDENT	0 VA	0 VA	0 VA	0%	0 VA
	TOTAL:	4,494 VA	0 VA	4,494 VA		4,885 VA

LIGHTING PANEL SCHEDULE
SCALE: NONE

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1-27-2016

DESIGNED BY	DRAWN BY	CHECKED BY
BZ	CH	BZ

CITY OF FERNDALE
WHATCOM COUNTY WASHINGTON
ELECTPUMP STATION NO. 4
ELECTRICAL SCHEDULES

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