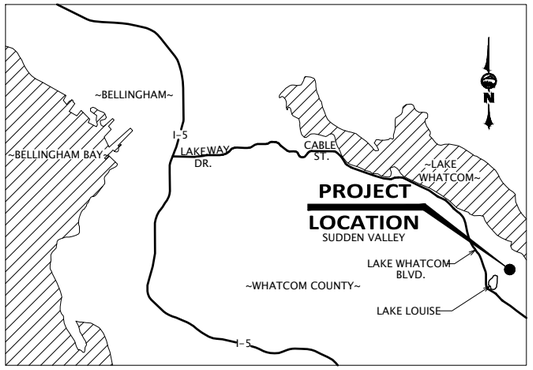
LAKE WHATCOM WATER AND SEWER DISTRICT (PROJECT #C2111)

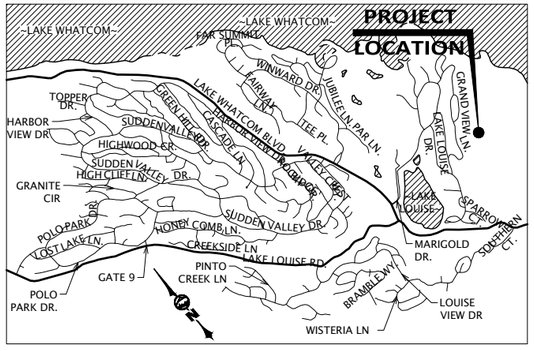
DIVISION 7 RESERVOIR REPLACEMENT PROJECT

THIS PROJECT IS FUNDED IN PART BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) AND WASHINGTON STATE EMERGENCY MANAGEMENT DIVISION (WA-EMD) THROUGH THE HAZARD MITIGATION ASSISTANCE PROGRAM.
FEMA SUBGRANT NUMBER: 4309-18.

VICINITY MAP - NOT TO SCALE



AREA MAP - NOT TO SCALE



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INDEX TO DRAWINGS

CIVIL DRAWINGS

ELECTRICAL DRAWINGS

INSTRUMENTATION & CONTROLS

Call 811 two business days before you dig

BID DOCUMENTS

WILSON ENGINEERING
WILSONENGINEERING.COM

10-26-2023

CURTIS D. SCHOENFELDER 48420 REGISTERED PROFESSIONAL ENGINEER STATE OF WASHINGTON

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
COVER SHEET

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C0.1

PAGE 1 OF 50

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
	WETLAND HATCH

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
X X	FENCE
	GATE
	GRADE
	GRAVEL
	GUARDRAIL
	JERSEY BARRIER
	LAKE/POND WATER EDGE
	LIP OF CURB
	MISC SURFACE FEATURE
	MISC TRAFFIC
	PLANTER
	PATH
	RAILROAD
	RAMP (WOOD)
	HANDRAIL
	RETAINING WALL
	ROAD STRIPING
	ROCKERY
THW THW	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
X X	FENCE
	GATE
	GRAVEL
	GUARDRAIL
	JERSEY BARRIER
	LIP OF CURB
	REBAR
	RETAINING WALL
	ROCKERY
	ROAD STRIPING
	HANDRAIL
	EDGE OF SAWCUT

UTILITIES
EXISTING PLAN LINETYPES

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

PROPOSED PLAN UTILITY LINETYPES
WATER

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

SANITARY SEWER

	DESCRIPTION
S S	SEWER
8S 8S	8" SEWER
FM FM	FORCE MAIN
DF DF	DRAIN FIELD
S S S S S	SEWER SERVICE
	SEWER STRUCTURE

STORM DRAIN

	DESCRIPTION
D D	STORM DRAIN
SD SD	STORM DRAIN
	STORM DRAIN
D D D D D	STORM SERVICE
FD FD FD FD FD	FOOTING DRAIN
	STORM STRUCTURE

MISC. UTILITIES

	DESCRIPTION
G G	GAS
P P	POWER
T T	TELEPHONE/COMMUNICATIONS

EROSION CONTROL

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

811 Call 811 two business days before you dig

BID DOCUMENTS

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)
	DONATION LAND CLAIM (EXIST.)
	EASEMENT (PROPOSED)
	EASEMENT (EXISTING)
	MEANDER LINE
OHW OHW	ORDINARY HIGH WATER LINE
MLW 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 ℄ (EXISTING)
(RIGHT OF WAY & CONSTRUCTION PLANS)	RIGHT-OF-WAY (EXISTING)
(RIGHT OF WAY & CONSTRUCTION PLANS)	RIGHT-OF-WAY (EXISTING USED)
(RIGHT OF WAY PLANS)	RIGHT-OF-WAY (PROPOSED)
(RIGHT OF WAY PLANS) (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)

DEMOLITION

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

GRADING

	DESCRIPTION
GB GB GB	GRADE BREAK
CAT CAT CAT	CATCHLINE
Cut Cut	CUT LINE
Fill Fill	FILL LINE
or	SLOPE ARROWS

SECTION/DETAIL CALL-OUTS

B(A) / CX.XC(B) — **SECTION CALL-OUTS:** (A) REPRESENTS THE SECTION LABEL, (B) INDICATES THE SHEET ON WHICH THE SECTION APPEARS.

1(A) / CX.XC(B) — **DETAIL CALL-OUTS:** (A) REPRESENTS THE DETAIL LABEL, (B) INDICATES THE SHEET ON WHICH THE DETAIL APPEARS.

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
P	P	POWER VAULT
		TRANSMISSION TOWER
		POWER CABINET OR PANEL
		POWER METER
		GUY POLE
		UTILITY POLE
		UTILITY POLE ANCHOR
		TELE RISER
TV	TV	CABLE RISER
		FIBER OPTIC RISER
F	F	FIBER OPTIC MANHOLE
T	T	TELEPHONE MANHOLE
T	T	TELEPHONE VAULT
		STEAM MANHOLE
		PARKING METER
		POST
P	P	PUMP

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
DS	DS	STORM DOWNSPOUTS

PIPE CALL-OUT

(A) (B) / 36–SS / XXXLF / (C)

PIPE CALL–OUTS: (A) REPRESENTS THE PIPE SIZE IN INCHES, (B) INDICATES THE UTILITY TYPE (C) REPRESENTS THE PIPE LENGTH IN LINEAL FEET

SYMBOLS

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

SPOT ELEVATIONS

190.00 ① TBC ② — 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

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/BOLLARD
		THRUST BLOCK
		WATER METER
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		FIRE HYDRANT
		WATER MANHOLE
	PV	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
	CONCRETE MONUMENT
	FOUND REBAR
	SET REBAR
	MONUMENT IN CASE
	TRAVERSE POINT

NOTE TO USER:
CONTENT SHOWN ON THIS PAGE IS SUBJECT TO CHANGE AND MAY DIFFER THROUGHOUT THE PLAN SET.

B(A) / CX.XC(B) — **SECTION SHEET LABELS:** (A) REPRESENTS THE SECTION LABEL, (B) INDICATES THE SHEET ON WHICH THE SECTION IS CALLED OUT.

1(A) / CX.XC(B) — **DETAIL SHEET LABELS:** (A) REPRESENTS THE DETAIL LABEL, (B) INDICATES THE SHEET(S) ON WHICH THE DETAIL IS CALLED OUT.

CX.XC (B)

ABBREVIATIONS

AB	=AS–BUILT (RECORD)
AC	=ASBESTOS CEMENT
AL	=ALIGNMENT
ANC	=UTILITY POLE ANCHOR
APPROX	=APPROXIMATE
ASPH or AC	=ASPHALT
ASSY	=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
CMU	=CONCRETE MASONRY UNIT
C.O. or CO	=CLEAN OUT
CONC, C	=CONCRETE
COR	=CORNER
CRSI	=CONCRETE REINFORCING STEEL INSTITUTE
CPP	=CORRUGATED POLYETHYLENE PIPE
CSBC	=CRUSHED SURFACING BASE COURSE
CSTC	=CRUSHED SURFACING TOP COURSE
DEG	=DEGREE
DCVA	=DOUBLE CHECK VALVE ASSEMBLY
DI or DIP	=DUCTILE IRON PIPE
DIAM	=DIAMETER
DO	=DISSOLVED OXYGEN
DR	=DIMENSION RATIO
DS	=DOWNSPOUT
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
FM	=FORCEMAIN
FNC	=FENCE
FRP	=FIBERGLASS REINFORCED PIPE
GB	=GRADE BREAK
GMET	=GAS METER
GP	=GUY POLE
GPM	=GALLONS PER MINUTE
GRVL, G	=GRAVEL
GV	=GATE VALVE
HB	=HOSE BIB
HDG	=HOT–DIP GALVANIZED
HDPE	=HIGH DENSITY POLYETHYLENE
HSS	=HOLLOW STRUCTURAL SECTION
H-V	=HORIZONTAL-VERTICAL
HWL	=HIGH WATER LEVEL
HYD	=HYDRANT
IBC	=INTERNATIONAL BUILDING CODE
IE	=INVERT ELEVATION
INFO	=INFORMATION
INV	=INVERT
IPS	=IRON PIPE SIZE
LF	=LINEAR FEET
LUM	=LUMINAIRE
LT	=LEFT
MAX	=MAXIMUM
MB	=MAIL BOX
MBR	=MEMBRANE BIO–REACTOR
MC	=MAINTENANCE CLEANING
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
PE	=POLYETHYLENE or PLAIN END
PIV	=POST INDICATOR VALVE
P/L, ℙ	=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
REINF	=REINFORCEMENT
REQ'D	=REQUIRED
RI	=RAPID INFILTRATION
RPBA	=REDUCED 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
SN	=SIGN
SPD	=STANDARD PROCTOR DENSITY
SPK	=SPIKE
SS	=SANITARY SEWER
SSCO	=SANITARY SEWER CLEAN–OUT
SSMH	=SANITARY SEWER MANHOLE
SST	=STAINLESS STEEL
STA	=STATION
S/W	=SIDEWALK
SYMM	=SYMMETRY/SYMMETRICAL
T.B.	=THRUST BLOCK
TBC	=TOP BACK OF CURB
TBD	=TO BE DETERMINED
TBM	=TEMPORARY BENCH MARK
T.O.W.	=TOP OF WALL
TYP	=TYPICAL
UNK	=UNKNOWN
UP	=UTILITY POLE
VAC	=VACATED
VC	=VERTICAL CURVE
VEG	=VEGETATION
WA	=WATER
WL	=WATERLINE
WM	=WATER METER
WS	=WATER SURFACE
WSDOT	=WASHINGTON STATE DEPARTMENT OF TRANSPORTATION
WV	=WATER VALVE
YD	=YARD DRAIN
YL	=YARD LIGHT

PLOT SETTINGS: WE AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
w:\2021\2021-130 LWWSD DIV 7 TANK\DWG\2019_2021-130 C0.2 LEGEND & ABBREVIATIONS.DWG – 10/11/2023 4:28 PM – Benton Seay

WILSON ENGINEERING
WILSONENGINEERING.COM
10-26-2023

CURTIS D. SCHEUENE ELDER — 22430 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

LEGEND & ABBREVIATIONS

SHEET C0.2 — PAGE 2 OF 50

GENERAL NOTES

1. All work and materials shall meet the requirements of the most current editions of the Lake Whatcom Water and Sewer District (District) Design and Construction Standards, Lake Whatcom Water and Sewer District Construction Contract Documents and Project Specifications (for Public Works Projects), the instructions and recommendations of the Manufacturer of the material concerned and select specifications within the Standard Specifications for Road, Bridge and Municipal Construction as prepared by Washington State Department of Transportation (WSDOT) and with all other regulatory agency requirements and permits including but not limited to work within Whatcom County right-of-way shall meet Whatcom County (County) design and construction requirements. In case of a conflict between the above standards, the more stringent shall apply. All work and materials shall be subject to the approval of the District Engineer.

2. Contractor shall obtain encroachment permits or other permissions which may be required from the County, Sudden Valley Community Association, or other entity having jurisdiction over roads and streets, prior to commencing work.

3. Contractor shall provide and maintain all Temporary Erosion Control and Sedimentation (TESC) in accordance with the most current edition of the Storm Water Management Manual for Western Washington (SWMMWW), Volume II, by the Washington State Department of Ecology, Publication Number 14-10-055. Contractor shall use required and necessary Best Management Practices (BMPS) described therein and as may be further described or detailed on the project drawings.

4. Contractor shall call 1-800-424-5555 48 hours before construction for utility locations. Contractor shall not begin excavation until utility notification period is complete.

5. A preconstruction meeting is required with the District and Contractor performing the work a minimum of 2-days before the start of construction.

6. Authority of Engineer, its appointees, assistants and inspectors, shall be per WSDOT 1-05.1. All references to the Engineer or District Engineer shall also mean its appointees, assistants and inspectors as per WSDOT 1-05.2.

7. The Contractor shall be responsible for the safety of all workers and shall comply with all appropriate state safety and health standards, codes, rules, and regulations, including, but not limited to, those promulgated under the Washington Industry Safety and Health Act RCW 49.17 (WISHA) and as set forth in Title 296 WAC (Department of Labor and Industries). In particular the Contractor's attention is drawn to the requirements of WAC 296.800 which requires employers to provide a safe and healthful workplace.

8. Inspection of work and materials shall be in accordance with WSDOT 1-05.6. Removal of unauthorized or defective work shall be in accordance with WSDOT 1-05.7.

9. The Contractor shall take all steps necessary to ensure that the existing facilities remain fully operational during all stages of construction, including but not limited to providing bypass pumping, standby storage, emergency generators and pump trucks, as necessary during service interruptions or outages.

10. No inspections or tie-ins to District's facilities shall be performed on a Friday, Weekend or District Holiday.

GENERAL NOTES | STANDARD DETAIL G1 | 3/11/2020

11. All pipe shall be bedded in bedding material meeting the requirements of WSDOT 9-03.12(3). The bedding cross-section shall be blocked with Control Density Fill (CDF) per WSDOT 2-09.3(1)E a minimum of every 800 feet and the trench drained to daylight or to a storm drain in accordance with District Standard Detail G11.

12. Backfill above the pipe zone bedding within County ROW, within the roadway section or at driveway crossings shall consist of crushed surfacing top course material meeting the requirements of WSDOT 9-03.9(3). Backfill within private roadways shall consist of material meeting the requirements of WSDOT 9-03.19. Backfill in other areas shall consist of material meeting the requirements of WSDOT 9-03.15, except as shown on the plans or details. Backfilling of trenches shall be in accordance with WSDOT 7.08.3(3).

13. Pea gravel shall not be used for pipe bedding or trench/excavation backfill material. The District may approve limited use of pea gravel where hazardous site conditions exist that pose an immediate threat to workers or public. Pea gravel, if approved for use by the Engineer, shall be a clean mixture free from organic matter meeting the following gradation (passing by weight a US standard sieve); 100% passing 1/2", 95-100% passing 3/8", 0-10% passing #8, and 0-3% passing #200.

14. Backfill shall be compacted to minimum 95% modified Proctor within traffic areas and minimum 90% modified Proctor in landscape and open areas.

15. Tracer wire installation is required on all District owned pipe, electrical conduits and communication lines/conduits. Tracer wire is also required on private side sewers. Install tracer wire per District Standard Detail E6. In addition to tracer wire, install 2-inch wide detectable marking tape 8 to 12 inches below the finish surface. Detectable marking tape shall meet the requirements of WSDOT 9-15.18 and be color coded blue for water, green for sewer, red for electrical and orange for telecommunication.

16. Public water lines and any sanitary sewer line or other non-potable conveyance system shall maintain a minimum of 10-feet horizontal separation (parallel alignment) and a minimum 18-inch vertical separation (parallel alignment and crossings at angles including perpendicular with the sewer line below the water line), measured as the closest distance between outside of pipes, in accordance with the most current editions of the Washington State Department of Health (DOH) Water System Design Manual Section 8.4.4 and the Department of Ecology (DOE) "Criteria for Sewage Works Design" Section C1-9.

When local conditions prevent these separations, with the approval of the District Engineer, installations shall follow the requirements outlined for unusual conditions in the referenced DOH and DOE manuals which includes details for specific pipe materials, pipe segment lengths, joint separation requirements, concrete encasement and/or pipe casings. If a pressure sewer cannot be installed with a minimum 18-inch separation from a water line at a crossing, then the pressure sewer shall be constructed only under the water line with ductile iron pipe or standard sewer pipe in a casing (casing material per the DOE manual) extending at least 10-feet on each side of the crossing.

17. Control Density Fill (CDF), if required, shall meet the requirements of WSDOT 2-09.3(1)E.

18. From the main to the property line, sewer pipes and water pipes shall maintain a minimum horizontal separation of 10-feet. When local conditions prevent the 10-feet separation, separation shall be per District Standard Detail G10, Water Line and Sewer Line Trench Detail, Unusual Conditions. Separation of water service lines and sewer pipes within private property shall be per District Standard Detail G9.

GENERAL NOTES | STANDARD DETAIL G2 | 3/11/2020

19. Contractor shall remove all debris and excess excavation; repair all damage, and restore the site, public or private, to pre-construction conditions.

20. Where mains or service lines are placed within a ditch area, the buried depth shall be at least 30-inches below the bottom of the ditch, measured from the crown of the pipe to the bottom of the ditch.

21. All work within Whatcom County Right Of Way (ROW) shall meet the requirements of the most current edition of the Whatcom County Development Standards, Section 512.

22. The Lake Whatcom Water and Sewer District is located within the Lake Whatcom Watershed where seasonal clearing activity limitations established by Whatcom County Code 20.51.410 are in force. Clearing activity, which includes trench excavation/backfill and other land disturbance, that will result in exposed soils exceeding 500 square feet are not permitted from October 1 through May 31.

23. References to the Uniform Plumbing Code (UPC) shall be to the edition, amendments standards and exemptions adopted by Whatcom County, as detailed in the most current edition of the Whatcom County Code, Chapter 15.04, Building Codes.

GENERAL NOTES | STANDARD DETAIL G3 | 3/11/2020

WATER SYSTEM NOTES

1. Water distribution system materials, trenching, bedding, installation, backfilling, disinfection, and testing shall meet the requirements of WSDOT 7-09.

2. All water piping and appurtenances in contact with potable water shall be certified under NSF-61 for potable water use in accordance with WAC 246-290-220.

3. Water main pipe shall be class 52 ductile iron per WSDOT 9-30.1(1) and encased in polyethylene encasement per WSDOT 9-30.1(2). Fittings for ductile iron pipe shall meet the requirements of WSDOT 9-30.2 (1).

4. Water Main Appurtenances. Valves shall have a minimum pressure rating of 200 psi. Gate valve installation shall conform to WSDOT 7-12. Gate valves shall be resilient-seated gate valves conforming to WSDOT 9-30.3(1) and AWWA C515 Standard for Resilient Seated Gate Valves. A cast iron valve box with a commercial concrete collar (18" x 18" x 6") shall be installed with each valve. An approved marking post shall be installed with each valve in accordance with WSDOT 7-12.3(1) for all valves not installed in pavement. Valves not in pavement shall have a 24" x 24" x 6" concrete collar cast around the valve box. Where a valve operating nut is more than 4-feet lower than grade, an American Flow Control Trench Adapter valve box and stem extension combination (or approved equal) must be installed.

5. Pressure reducing valves (2" and larger) shall be manufactured by Cla-Val, Watts, or approved alternate.

6. Service connections shall be installed per WSDOT 7-15. Lot corners shall be staked prior to service connection installations to assure services are installed in correct locations as shown on the approved plans.

7. The District Engineer shall witness pressure testing. Bacteriological sampling shall be conducted by a District certified operator (employee). Contractor shall provide the District Engineer 48-hours notice prior to conducting tests or sampling.

8. Water lines and appurtenances shall be pressure tested in accordance with WSDOT 7-09.3(23).

9. Before being placed into service, new water mains and repaired portions of, or extensions to, existing mains shall be flushed and disinfected by the Contractor in accordance with WSDOT 7-09.3(24) and the most current edition of the American Water Works Association (AWWA) Standard C651, Disinfecting Water Mains. As stated therein, the District requires two set of samples, either a) taken 16 hours apart or b) two samples are taken 15 minutes apart after a 16 hour rest period, satisfactorily passing bacteriological testing requirements (testing includes but is not limited to testing for total coliforms, fecal coliforms and E.coli found in the water sample) meeting current Washington State Department of Health (DOH) Standards, before connecting the new or repaired portion of main. Costs of bacteriological testing shall be borne by the Contractor. In addition, Contractor shall provide two chlorine concentration test reports to show the initial chlorine concentration is at least 50 mg/L, and to show the 24-hour residual chlorine concentration is at least 25 mg/L. All tests must be performed by a DOH-certified testing laboratory and sample-taking shall be performed by a District certified operator (employee). Bacteriological samples must be collected by the District. Chlorinated flush water must be dechlorinated and disposed of in accordance with WSDOT 7-09.3(24)A. If disposal is to the District's sanitary sewer system, Contractor shall coordinate with District staff to ensure

WATER SYSTEM NOTES | STANDARD DETAIL W1 | 3/11/2020

the rate of disposal does not overload the District's sewer system.

10. New services shall be pressure tested along with the new main. No use of water through a newly installed service shall be allowed until water main and service installation has been inspected, pressure tested, chlorinated and a satisfactory bacteria test received. After installation, the service connection shall be flushed prior to connecting the meter. No service is to be covered until the District's Inspector has inspected the initial installation. All corporations must be in an ON position and all angle valves must be in the OFF position.

11. Service flow testing shall be done after water main pressure testing. During the inspection, every service shall be turned on to its full capacity to check flow and guarantee that each service line has been flushed.

12. Water service lines on the customer side of the water meter shall meet the requirements of the Uniform Plumbing Code (UPC).

13. In accordance with District Administrative Code Section 4.3.6, all customers are required to install a Pressure Reducing Valve (PRV) downstream of the meter and dual check valve on the customer side of service to protect their plumbing systems from high pressure surges. A PRV inspection by District personnel is required prior to occupancy. See detail W11.

14. In accordance with WAC 246-290-490 and District Resolution No. 858, all cross-connections between the District's water distribution system and a consumer's water system shall be eliminated or controlled by the installation of a District approved backflow preventer commensurate with the degree of hazard. The District's Cross-Connection Control Program is available for review at the District office or on the District website (www.lwsd.org).

WATER SYSTEM NOTES | STANDARD DETAIL W2 | 3/11/2020

SEWER SYSTEM NOTES:

1. Sewer system materials, trenching, bedding, installation, backfilling, and testing shall meet the requirements of WSDOT 7-05 and WSDOT 7-17 and District standards detailed herein.

2. Gravity sewer pipe shall be ASTM D3034-SDR 35 PVC per WSDOT 9-05.12(1). In certain applications, the District may require class 52 ductile iron pipe, per WSDOT 9-30.1(1), encased in polyethylene encasement per WSDOT 9-30.1(2).

3. Pressure sewer pipe shall be class 52 ductile iron pipe per WSDOT 9-30.1(1) encased in polyethylene encasement per WSDOT 9-30.1(2) or PVC C900 class 150 per WSDOT 9-30.1(5). HDPE may be substituted with the approval of the District Engineer (pipe rating, resins, physical properties, dimensions and tolerances must be as specified in the American Water Works Associations (AWWA) Manual C901 for the specific design conditions).

4. Sewer service lines from the public sewer main to the cleanout adjacent to the building must be installed by a contractor on the District's current Bonded Side Sewer Contractor list.

5. All sewer system installations shall be inspected prior to backfill.

6. All gate valves for sewer force mains shall have a cast iron valve box with a commercial concrete collar (18" x 18" x 6") with each valve. Valves not in pavement shall have a 24" x 24" x 6" concrete collar cast around the valve box.

7. Side sewers, from main to private property line, shall meet the requirements of WSDOT 7-18. Side sewers shall have a minimum slope of 2%. Side sewers shall maintain a minimum cover of 36-inches and 30 inches under ditches. Side sewers and cleanout/test tee at property line shall be minimum 6-inches in diameter.

8. Side sewers within private property shall meet the requirements of the District Standards detailed herein. Gravity side sewers shall have a minimum slope of 2%. Minimum size for gravity sewer lines will be 4-inches for a single family residence and 6-inches for a multi-family residence up to a 4-plex. See Standard Detail S10 for requirements regarding layout (bends) and cleanouts. Sewer cleanouts shall be installed per WSDOT 7-19.

9. Grout for manholes shall be a non-shrinking cementitious grout, containing no gypsum or calcium sulfate Di-hydrate (CaSO42H2O), conforming to WSDOT 9-20.3(2), such as Rapid Set Cement All or approved equivalent. Grout shall be installed according to manufacturer's instructions. JET SET, BLUELINE, AND QUICKCRETE ARE NOT ALLOWED.

10. All sewer pipe and appurtenances shall be flushed and cleaned prior to being put into service. Debris shall not be allowed into the existing sewer system.

SEWER SYSTEM NOTES | STANDARD DETAIL S1 | 3/11/2020

11. The District Engineer shall witness testing. Contractor shall provide the District Engineer 48-hours notice prior to conducting tests or sampling.

12. Pipe shall be tested after backfill by the low-pressure air test method per WSDOT 7-17.3(2)F. PVC pipe shall have a mandrel passed through it to check for any deflections in the pipe per WSDOT 7-17.3(2)G. All sewers shall be television inspected and video delivered to the District, with all costs borne by Contractor, before acceptance. Connection to the existing system is not permitted until final acceptance.

13. Side sewers on private property shall be cleaned and tested by either a low pressure air test or exfiltration water test at the option of the Contractor, as per WSDOT 7-17.3(2)A. Water testing shall follow WSDOT 7-17.3(2)B. As stated therein, leakage shall be no more than 0.28 gph per inch diameter per 100 feet of sewer, with a hydrostatic head of 6 feet above the crown at the upper end of the test section, or above the natural ground water table at the time of test, whichever is higher. The length of pipe tested shall be limited so that the pressure at the lower end of the Section tested does not exceed 16 feet of head above the invert.

Where the test head is other than 6 feet, the maximum leakage shall not exceed the amount determined from the following equation:

Maximum leakage (in gallons per hour) = $0.28 \times (\sqrt{H}/\sqrt{6}) \times D \times (L/100)$

Where:

D = diameter (in.)

L = length of pipe (ft.)

H = test head (ft.)

Air testing may be done in lieu of a water test. An air test is acceptable when air is slowly supplied to the plugged pipe section until the internal air pressure reaches 4 psi and maintains for 5 minutes with no pressure loss.

14. Downspouts, foundation/crawl space sump pumps, yard drains, or any outside drains shall not be connected to sanitary sewer mains or services.

15. Contractor shall prepare Record Drawings of all new sanitary sewer main/lateral construction in accordance with Lake Whatcom Water and Sewer District Design Standards Section 1.2.1 (Record Drawings) and Standard Detail G-6.

SEWER SYSTEM NOTES | STANDARD DETAIL S2 | 2/23/2022

MISC NOTES:

1. ALL DEVICES REQUIRING LOCKS, INCLUDING BUT NOT LIMITED TO DOORS, GATES, ACCESS HATCHES, CONVENIENCE HATCHES, ELECTRICAL CONTROL PANELS, TELEMETRY PANELS, ETC., SHALL BE FITTED TO MATCH OWNER'S STANDARD LOCKS AND KEYS. THE OWNER SHALL PROVIDE THE KEY REQUIREMENTS TO THE CONTRACTOR.

811 Call 811 two business days before you dig

BID DOCUMENTS

WILSON ENGINEERING
WILSONENGINEERING.COM

CURTIS D. SCHEENE FELDER — PROFESSIONAL ENGINEER — STATE OF WASHINGTON — 22828 — 10-26-2023

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
GENERAL, WATER, AND SEWER NOTES

DATE	SCALE	JOB NUMBER
10-17-2023	AS SHOWN	2021-130

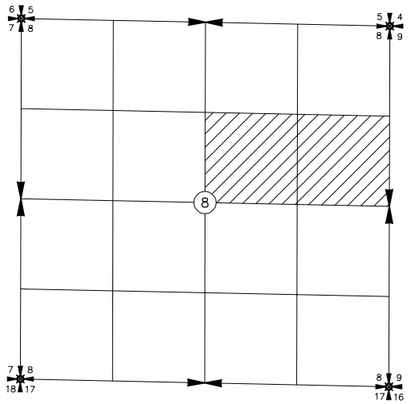
SHEET C0.3 | PAGE 3 OF 50

LAKE WHATCOM WATER AND SEWER DISTRICT

DIVISION 7 RESERVOIR SEISMIC UPGRADE AND SHAKE ALERT IMPLEMENTATION

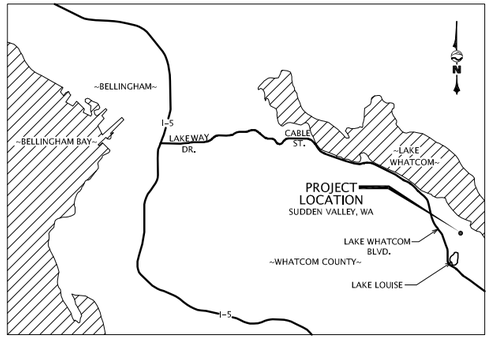
W.A.C. 332-130 COMPLIANCE SHEET

SECTIONAL INDEX DATA

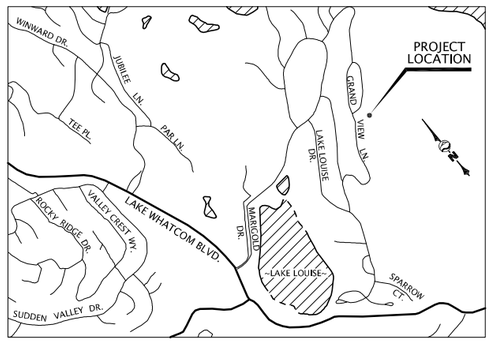


SW QTR - NE QTR, SEC. 8, TWNSHP 37 NORTH, R 4 EAST, W.M.
SE QTR - NE QTR, SEC. 8, TWNSHP 37 NORTH, R 4 EAST, W.M.

AREA MAP - NOT TO SCALE



VICINITY MAP - NOT TO SCALE



NOTICE TO USER

EFFECTIVE JANUARY 13, 2019, ALL TOPOGRAPHIC MAPS PREPARED BY A LICENSED SURVEYOR IN THE STATE OF WASHINGTON, AND SUBJECT TO THE LICENSURE AND PRACTICE REQUIREMENTS ESTABLISHED BY THE WASHINGTON STATE BOARD OF REGISTRATION FOR ENGINEERS AND LAND SURVEYORS, MUST INCLUDE THE DESCRIPTIVE NOTES AND METADATA ENUMERATED UNDER W.A.C 332-130-145 AND ITS APPURTENANT SECTIONS OF 332-130. THIS EXHIBIT IS INTENDED TO ADDRESS THE STATUTORY REQUIREMENTS STIPULATED BY THIS W.A.C DIRECTIVE.

W.A.C. 332-130-145 REQUIRED DATA

1.E: THIS SURVEY WAS PREPARED UNDER THE DIRECT SUPERVISION OF:

PAUL J. DARROW, WA PLS #50697
SR. PROJECT SURVEYOR
WILSON ENGINEERING LLC
805 DUPONT STREET, SUITE 7
BELLINGHAM, WA 98225
360-733-6100 (EXT. 1243)
pdarrow@wilsonengineering.com

2.A: BASIS OF ELEVATIONS: ELEVATION VALUES AND CONTOURS DEPICTED ON THIS SURVEY ARE BASED UPON HOLDING AS FIXED THE NAVD88 DATUM, DERIVED FROM NETWORK ADJUSTED VRS RTK OBSERVATIONS BASED UPON THE WASHINGTON STATE REFERENCE NETWORK "NWWA".

2.B: PURPOSE OF SURVEY: WILSON ENGINEERING PERFORMED THIS SURVEY DURING JUNE OF 2021, AT THE REQUEST OF LAKE WHATCOM WATER AND SEWER DISTRICT PURSUANT TO NEW RESERVOIR TANK DESIGN. THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A TITLE REPORT, AND THE DEPICTED PARCEL BOUNDARY SHOULD NOT BE CONSIDERED AUTHORITATIVE.

2.C: SOURCE OF CONTOURS: THE CONTOURS DEPICTED ON THIS SURVEY WERE DERIVED BASED ON FIELD OBSERVATIONS.

2.D: CONTOUR INTERVAL LABELING: CONTOURS AT 1-FOOT INTERVALS HAVE BEEN EXPLICITLY LABELED.

2.E: DESCRIPTION OF BENCHMARKS SET PURSUANT TO THIS SURVEY: REFER TO THE ACCOMPANYING "CONTROL TABLE" FOR COORDINATES, ELEVATION, AND DESCRIPTION OF ON-SITE CONTROL SET PURSUANT TO THIS SURVEY.

2.F: ELEVATION AND/OR CONTOUR ACCURACY: IF CONTOURS HAVE BEEN DEPICTED ON THE FACE OF THIS SURVEY, IT IS ANTICIPATED THAT 90% OF ANY MEASURED ELEVATION VALUE, IF OBSERVED RELATIVE TO THE CONTROL POINTS SPECIFICALLY ENUMERATED IN THE ACCOMPANYING CONTROL TABLE, WILL BE, IN FACT, WITHIN ONE-HALF OF THE MINOR-CONTOUR INTERVAL DEPICTED HEREON. SPECIFIC ELEVATIONS DEPICTED HEREON, IF ANY, ARE EXPECTED TO BE WITHIN ONE INTEGRAL VALUE OF THE FINAL DEPICTED SIGNIFICANT FIGURE. THAT IS, 90% OF ELEVATIONS EXPRESSED TO THE TENTH-FOOT, SHOULD BE WITHIN 0.1 FEET OF THAT VALUE, IF OBSERVED RELATIVE TO THE SURVEY CONTROL SPECIFICALLY ENUMERATED IN THE ACCOMPANYING CONTROL TABLE. IF OFF-SITE CONTROL IS EMPLOYED, EVEN CONTROL PURPORTING TO BE ON THE SAME DATUM OR BASED ON THE SAME OFF-SITE BENCHMARK, THEN NO ABSOLUTE STATEMENT REGARDING THE ACCURACY OF THE DEPICTED POINTS CAN BE MADE, AND VALUES SO OBSERVED ARE OUTSIDE OF THIS SURVEY'S AUTHORITY OR INTEREST.

2.G: STATEMENT OF USE: AS NOTED IN SECTION 2.B, THIS SURVEY WAS PREPARED FOR THE SPECIFIC PURPOSE OF NEW RESERVOIR TANK DESIGN. IN THE COURSE OF PREPARING THIS SURVEY, PURSUANT TO THIS PURPOSE, ANCILLARY DATA NECESSARY TO ACCOMPLISH THIS SURVEYS INTENDED PURPOSE MAY HAVE BEEN CAPTURED. IN THE CASE OF THIS SURVEY, BOUNDARY INFORMATION AND BUILDING ENVELOPES WERE CAPTURED, BUT THE DEPICTION OF SAME SHOULD NOT BE CONSIDERED AUTHORITATIVE.

2.H: SOURCE OF CONTROLLING BOUNDARY INFORMATION: THE OWNERSHIP BOUNDARIES DEPICTED ON THIS SURVEY ARE BASED UPON SOME, OR ALL, OF THE DOCUMENTS ENUMERATED IN THE ACCOMPANYING "REFERENCE DOCUMENTS" AS THEREIN CHARACTERIZED. BEARINGS HAVE BEEN TRANSLATED AND/OR ROTATED FROM THE RECORD VALUES IN ORDER TO CONFORM TO FOUND MONUMENTATION MEASURED IN THIS SURVEY'S COORDINATE SYSTEM.

3.A: SOURCE OF DEPICTED UTILITY INFORMATION: UTILITY LINES DEPICTED ON THIS SURVEY ARE BASED UPON PAINT MARKS SET BY APPLIED PROFESSIONAL SERVICES ON JUNE 16, 2021.

3.B: ACCURACY OF DEPICTED UTILITY INFORMATION: WILSON ENGINEERING DOES NOT PROVIDE FOR-HIRE UTILITY LOCATION AND/OR MARKING SERVICES, AND CAN NOT INDEPENDENTLY ASCERTAIN THE ACCURACY OF ANY DEPICTED UTILITY THAT WAS NOT DIRECTLY OBSERVED IN THE COURSE OF THIS SURVEY.

3.C: STATEMENT OF LIMITATIONS REGARDING UTILITY-DEPICTION ACCURACY: LAKE WHATCOM WATER AND SEWER DISTRICT HAS BEEN NOTIFIED THAT WILSON CAN NOT, AND DOES NOT, GUARANTEE THE ACCURACY, AT ANY LEVEL, OF DEPICTED UTILITIES BASED ON THIRD-PARTY PAINT MARKS OR RECORD INFORMATION.

CONTROL NOTES

HORIZONTAL DATUM:
NAD83(2011) WASHINGTON STATE PLANE (NORTH ZONE)

BASIS OF COORDINATES: COORDINATION AND MENSURATION ARE LOCAL GROUND VALUES, DERIVED FROM NETWORK ADJUSTED VRS RTK OBSERVATIONS BASED UPON THE WASHINGTON STATE REFERENCE NETWORK "NWWA". WSE CONTROL POINT #101 , A MAG NAIL IN ASPHALT AT THE INTERSECTION OF GRAND VIEW LANE AND SWALLOW CIRCLE, IS HELD AS THE BASIS OF COORDINATES. SAID MONUMENT HAS THE FOLLOWING POSITION:

NORTHING = 627,972.37 USFT
EASTING = 1,281,682.73 USFT

BASIS OF BEARINGS: BEARINGS ARE NAD83(2011) WASHINGTON STATE PLANE (NORTH ZONE), DERIVED FROM NETWORK ADJUSTED VRS RTK OBSERVATIONS BASED UPON THE WASHINGTON STATE REFERENCE NETWORK "NWWA".

THE DERIVED INVERSE BETWEEN MONUMENTS #101 AND #100, A REBAR AND CAP SET IN THE NORTHWESTERLY SHOULDER IN FRONT OF #50 GRAND VIEW LANE, IS **SOUTH 35° 25' 18" WEST**, AT A DISTANCE OF **374.35 USFT**. THE POSITION FOR #100 IS:

NORTHING = 627,667.31 USFT
EASTING = 1,281,465.76 USFT

VERTICAL DATUM:
NAVD88 DATUM

PROJECT BENCHMARK: PROJECT BENCHMARK IS A REBAR AND CAP, WSE CONTROL POINT #103 AS SHOWN HEREON, HAVING AN ELEVATION OF 669.14 (NAVD88).

ON-SITE SURVEY CONTROL TABLE

POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
100	627,667.31	1,281,465.76	621.47	Z RPC 905
101	627,972.37	1,281,682.73	625.93	Z MAG NAVD88
103	627,728.52	1,281,751.80	669.14	REBAR AND CAP
104	627,643.27	1,281,809.66	672.88	HUB AND NAIL
105	627,628.37	1,281,681.70	679.53	HUB AND TACK
106	627,723.10	1,281,908.67	680.70	REBAR AND CAP
107	627,886.92	1,282,032.45	692.52	REBAR AND CAP

SURVEYOR'S NOTES

1. THIS TOPOGRAPHIC SURVEY BASEMAP IS INTENDED TO BE USED FOR PLANNING AND DESIGN PURPOSES. BOUNDARY AND RIGHT-OF-WAY LINES SHOWN ARE DERIVED FROM MAPS OF RECORD AND DO NOT PURPORT TO DEFINE OWNERSHIPS. ALL MONUMENTS SHOWN HEREON WERE VISITED DURING THE COURSE OF THIS SURVEY UNLESS OTHERWISE NOTED.

2. ANGULAR AND LINEAR MEASUREMENTS WERE COLLECTED USING A COMBINATION OF GPS AND CONVENTIONAL METHODOLOGIES. PRIMARY CONTROL WAS COLLECTED USING A TRIMBLE R10-2 SURVEY-GRADE GPS RECEIVER 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.

REFERENCE DOCUMENTS

1. PLAT OF SUDDEN VALLEY, DIVISION 7 - VOL. 10 OF PLATS, PG. 63
2. PLAT OF SUDDEN VALLEY, DIVISION 20 - VOL. 11 OF PLATS, PG. 39
3. WATER TANK AND ACCESS ROAD EASEMENT, AFN 1971-1106257
4. WATER AND SEWER EASEMENT, AFN 2100301393
5. PUGET SOUND ENERGY EASEMENT, AFN 2019-0903798
6. ACCESS, UTILITIES, AND RESERVOIR EASEMENT, AFN 2023-0501567

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 LAKE WHATCOM WATER AND SEWER DISTRICT IN 2021.

PAUL JONATHAN DARROW, P.L.S. NO. 50697 DATE 01/08/24

ABBREVIATIONS USED

AFN	=	AUDITOR'S FILE NUMBER
℄	=	CENTERLINE
CONC	=	CONCRETE
CPP	=	CORRUGATED POLYETHYLENE PIPE
E	=	EAST
ELEV	=	ELEVATION
INV	=	INVERT
MON	=	MONUMENT
N	=	NORTH
NE	=	NORTHEAST
NW	=	NORTHWEST
R/W	=	RIGHT-OF-WAY
S	=	SOUTH
SE	=	SOUTHEAST
SW	=	SOUTHWEST
TYP	=	TYPICAL
W	=	WEST
WAC	=	WASHINGTON CODE
WSE	=	WILSON SURVEY/ENGINEERING

LEGEND - SIZE & SCALE MAY VARY

- 100 = MAJOR CONTOUR
- = MINOR CONTOUR
- = EXISTING PROPERTY LINE
- = EXISTING R/W CENTERLINE
- = EXISTING EASEMENT
- = EXISTING GRAVEL EDGE
- = EXISTING ASPHALT EDGE
- = EXISTING CONCRETE EDGE
- = EXISTING BUILDING
- = EXISTING CONC. BLOCK WALL
- = EXISTING ROCK WALL
- W W = EXISTING WATER LINE
- P P = EXISTING BURIED POWER LINE
- T T = EXISTING BURIED TELEPHONE/COMM
- S S = EXISTING BURIED SANITARY SEWER
- = FOUND REBAR
- = TRAVERSE POINT
- (P) = POWER METER
- P = EXISTING POWER VAULT
- = EXISTING POWER JUNCTION BOX
- T = EXISTING TELE/COMM PEDESTAL
- = EXISTING WATER VALVE
- = EXISTING WATER METER
- W = EXISTING WATER MANHOLE
- W = EXISTING WATER VAULT
- = EXISTING WATER BLOWOFF
- = EXISTING SANITARY SEWER MANHOLE
- 2" = EXISTING 2" (ETC) CONIFEROUS TREE
- 2" = EXISTING 2" (ETC) DECIDUOUS TREE
- = EXISTING BOLLARD
- = EXISTING GATE POST

811 Call 811 two business days before you dig

BID DOCUMENTS

WILSON ENGINEERING
WILSONENGINEERING.COM

JONATHAN DARROW — 50697 — REGISTERED PROFESSIONAL LAND SURVEYOR — STATE OF WASHINGTON — 1/8/24

DESIGNED BY	DRAWN BY	CHECKED BY
	CLM/JCS	PJD

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
W.A.C. 332-130 COMPLIANCE SHEET

DATE	SCALE	JOB NUMBER
01-08-24	AS SHOWN	2021-130

SHEET C0.4 PAGE 4 OF 50

PLOT SETTINGS: RICOH 8X11- B&W.pc3, Letter, Portrait, 1:1.05, WE APWA_UNSCREENED.ctb
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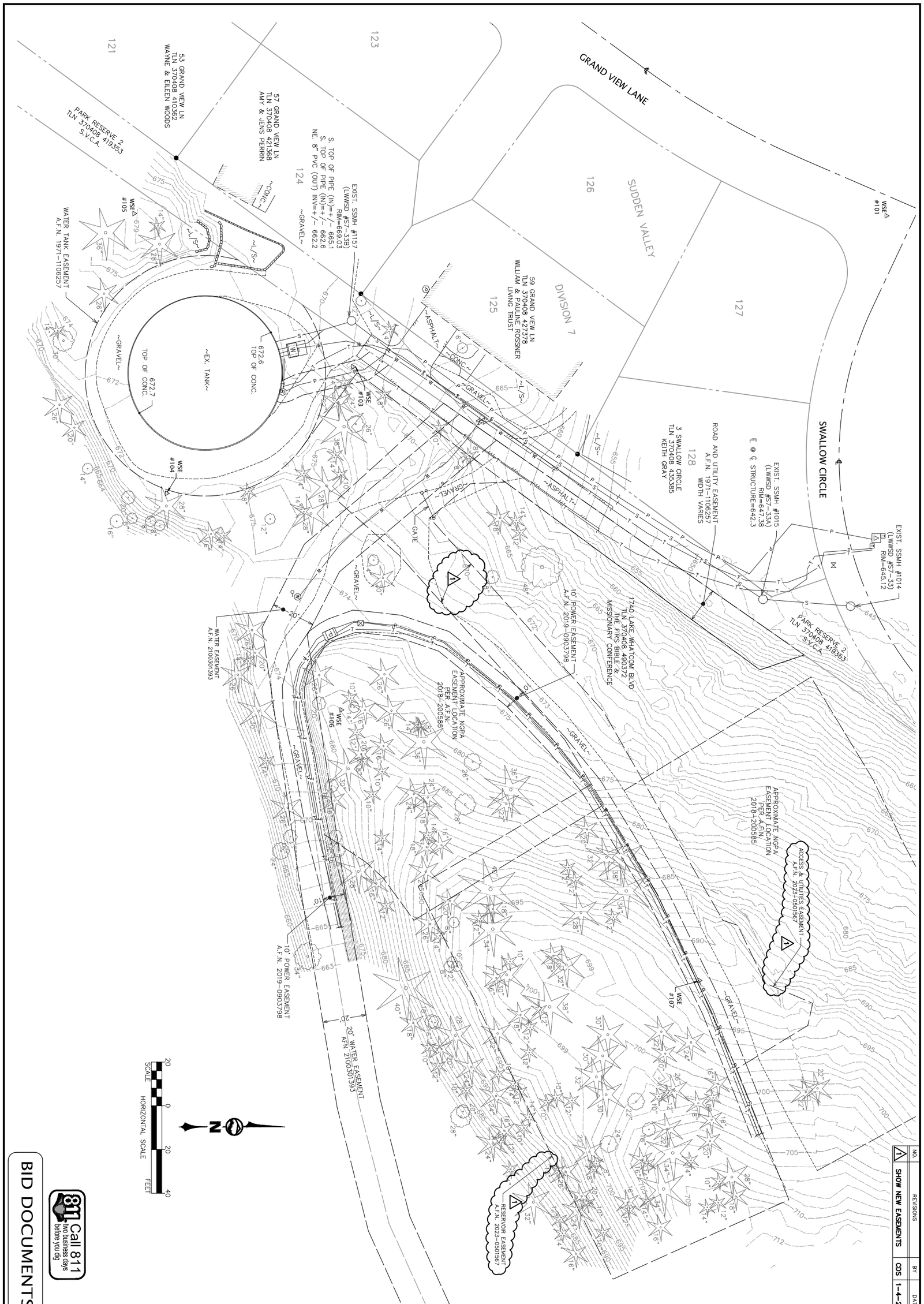

BID DOCUMENTS

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NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

SHEET	DATE	LAKE WHATCOM WATER AND SEWER DISTRICT	DESIGNED BY
C1.1	01-08-24	WHATCOM COUNTY WASHINGTON	
PAGE	SCALE	DIVISION 7 RESERVOIR REPLACEMENT PROJECT	DRAWN BY
5 OF 50	AS SHOWN		CLM/JGS
	JOB NUMBER	EXISTING CONDITIONS	CHECKED BY
	2021-130		PJD

JONATHAN DAWSON — STATE OF WASHINGTON — 18215 — REGISTERED PROFESSIONAL LAND SURVEYOR

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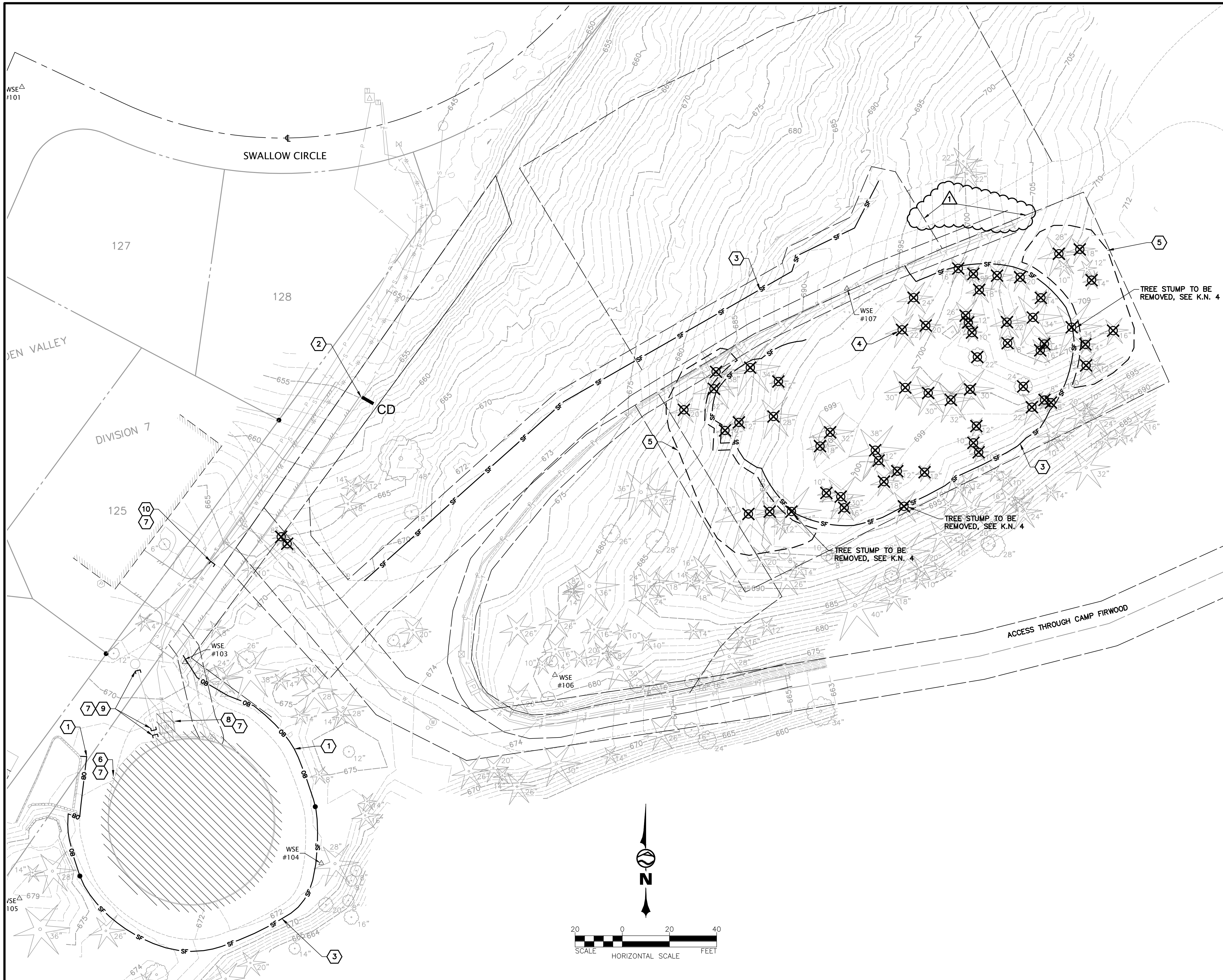

NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

KEYED NOTES

1. = ORANGE BARRIER FENCING (1/C2.3)
2. = GEOTEXTILE ENCASED CHECK DAM (2/C2.3)
3. = FILTER FABRIC FENCE (3/C2.3)
4. = FELLED TREES TO BE LIMBED AND CUT TO 25-FT LENGTHS AND REMOVED, TYP. REMOVE STUMPS IN AREA TO BE GRADED. LOGS TO BE DELIVERED AND STACKED AT LOCATION NEAR ENTRANCE TO THE FIRS AS DIRECTED BY THE OWNER.
5. = LEAVE STUMPS & STANDING TRUNKS.
6. = EXISTING TANK TO BE DEMOLISHED, EXISTING CONCRETE FOUNDATION TO BE BROKEN UP INTO 1-FT NOMINAL PIECES TO ALLOW FOR DRAINAGE AND BURIED IN PLACE.
7. = DEMOLITION AFTER BOTH PROPOSED TANKS ARE FULLY OPERATIONAL AND HAVE SUCCESSFULLY COMPLETED TESTING AND STARTUP. SEE ELECTRICAL SHEETS FOR ELECTRICAL DEMO.
8. = REMOVE TOP LID/HATCH OF VAULT STRUCTURE. REMOVE INTERIOR FITTINGS, VALVES, & OTHER APPURTENANCES. SALVAGE ANY EQUIPMENT TO DISTRICT AS REQUESTED, OTHERWISE CONTRACTOR TO HAUL & DISPOSE. PLUG ALL PIPE ENDS W/ 2-FT MIN. CDF OR PROVIDE WATER TIGHT CAP/PLUG FITTINGS. FILL VAULT W/ SITE EXCAVATION SPOILS.
9. = CUT AND CAP/PLUG (WATERTIGHT) EX TANK DRAIN-SEWER PIPING AT TANK AND MANHOLE. PIPING IS C.I. NEAR TANK AND CLAY TO SSMH.
10. = CUT AND CAP/PLUG (WATERTIGHT) EX 10" C.I. WATERMAIN

SHEET NOTES:

1) SEE SHEET C1.1 FOR COMPLETE EXISTING CONDITIONS

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LAKE WHATCOM WATER AND SEWER DISTRICT

WHATCOM COUNTY — WASHINGTON

DIVISION 7 RESERVOIR REPLACEMENT PROJECT

DEMO, TREE REMOVAL AND SWPPP PLAN

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C2.1

STORMWATER POLLUTION PREVENTION PLAN NOTES

SWPPP NARRATIVE

PROJECT DESCRIPTION: THE DIVISION 7 RESERVOIR PROJECT INVOLVES CONSTRUCTING 2 ~238,000 GALLON CONCRETE RESERVOIRS ~300 FT FROM THE EXISTING 1M GALLON WELDED STEEL RESERVOIR. APPROXIMATELY 375 LF OF 12-INCH WATERMAIN WILL BE INSTALLED ON-SITE. APPROXIMATELY 120 LF OF 8-INCH STORM PIPE WILL BE INSTALLED ON-SITE, AND APPROXIMATELY 30 LF OF SEWER PIPE WILL BE INSTALLED ON-SITE.

EXISTING SITE CONDITIONS: THE SITE IS CURRENTLY DEVELOPED WITH THE EXISTING RESERVOIR. THE LOCATION OF THE PROPOSED RESERVOIRS IS CURRENTLY FORESTED AND VEGETATED.

ADJACENT AREAS: ADJACENT AREAS INCLUDE RESIDENTIAL AREAS AND UNDEVELOPED LAND. EROSION AND SEDIMENTATION CONTROL BMPS WILL BE INSTALLED AS NECESSARY TO LIMIT EROSION AND SEDIMENT LEAVING THE PROJECT AREAS.

SOILS: SEE THE GEOTECHNICAL REPORT INCLUDED IN THE SPECIFICATIONS. SOILS CONSIST OF GLACIAL DEPOSITS, WEATHERED TO HIGHLY WEATHERED SILTSTONE AND SANDSTONE, AND SANDSTONE.

EROSION AND SEDIMENT CONTROL BMPS: ANTICIPATED BMPS THAT WILL BE UTILIZED INCLUDE: ORANGE BARRIER FENCING, GEOTEXTILE ENCASED CHECK DAM, STREET SWEEPING, PRESERVING NATURAL VEGETATION, PERMANENT SEEDING & PLANTING, AND FILTER FENCING. OTHER BMPS MAY BE UTILIZED TO MINIMIZE EROSION AND SEDIMENTATION TRANSPORT AS CONSTRUCTION SCHEDULES AND WEATHER CONDITIONS DICTATE.

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

MAINTENANCE: THE BMPS SHALL BE INSPECTED DAILY AND AFTER RAINFALL EVENTS. THE BMPS WILL BE MAINTAINED UNTIL THE RISK OF EROSION HAS PASSED AND THE AREA IS PERMANENTLY STABILIZED.

CALCULATIONS: NOT APPLICABLE.
NON-ESC BMPS REQUIRED: NONE NOTED.

SWPPP 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 WESTERN WASHINGTON, VOLUME II, CHAPTER 4, "BEST MANAGEMENT PRACTICES STANDARDS AND SPECIFICATIONS."
2. EXTENT: THE EXTENT OF EROSION AND SEDIMENTATION CONTROL MEASURES IS DEPENDANT 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. THE EROSION AND SEDIMENTATION CONTROL MEASURES DESCRIBED IN THESE PLANS ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THE CONTRACTOR SHALL UPGRADE THESE ESC FACILITIES FOR UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DO NOT LEAVE THE SITE.
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. ENTRANCES: WHEREVER UNPAVED CONSTRUCTION VEHICLE ACCESS ROUTES INTERSECT PAVED ROADS, PROVISION SHALL BE MADE TO MINIMIZE THE TRANSPORT OF SEDIMENT (MUD) ONTO THE PAVED ROAD. IF SEDIMENT IS TRANSPORTED ONTO A ROAD SURFACE, THE ROADS ADJACENT TO THE CONSTRUCTION SITE SHALL BE CLEANED ON A DAILY BASIS. STREET WASHING SHALL BE ALLOWED ONLY AFTER OTHER METHODS TO PREVENT THE TRANSPORT OR TO REMOVE THE SEDIMENTS ARE UNSUCCESSFUL.
8. SITE RUNOFF:PRIOR TO LEAVING THE SITE, STORMWATER RUNOFF SHALL PASS THROUGH A SEDIMENT POND OR TRAP, OR OTHER APPROPRIATE BMPS.
9. ADJACENT PROPERTIES: PROPERTIES ADJACENT TO THE PROJECT SHALL BE PROTECTED FROM SEDIMENT DEPOSITION.
10. CLEANUP: THE CONTRACTOR SHALL CLEANUP ALL AREAS AFFECTED BY THEIR ACTIVITIES TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE BY THE END OF EACH WORKING DAY OR MORE FREQUENTLY IF REQUIRED BY THE OWNER'S REPRESENTATIVE. THIS INCLUDES REMOVAL OF ALL DUST, MUD, ROCKS, ASPHALT DEBRIS, REUSE FROM THE STREETS, SIDEWALKS, DRIVEWAYS, CATCH BASINS AND ANY OTHER AREAS AFFECTED BY THE CONSTRUCTION ACTIVITIES. FAILURE TO CLEANUP TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE WILL NECESSITATE A SHUTDOWN OF THE PROJECT UNTIL CLEANUP IS PROPERLY PERFORMED. DAILY CLEANUP IS AN INTEGRAL PART OF EROSION AND POLLUTION CONTROL.
11. 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.
12. 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 AT LEAST ONCE EVERY SEVEN DAYS AND WITHIN 24 HOUR AFTER ANY STORM EVENT OF GREATER THAN 0.5-INCHES OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL FACILITIES ON INACTIVE SITES SHALL BE INSPECTED AND MAINTAIN A MINIMUM OF ONCE A MONTH OR WITHIN 24 HOURS FOLLOWING A STORM EVENT.
13. REPORTS: THE CONTRACTOR SHALL DESIGNATE ONE EMPLOYEE WHO WILL BE ON-SITE CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL). THIS PERSON WILL BE RESPONSIBLE FOR ENSURING COMPLIANCE WITH ALL LOCAL, STATE AND FEDERAL EROSION AND SEDIMENT CONTROL AND SPILL CONTROL/PREVENTION REQUIREMENTS. THIS PERSON SHALL PROVIDE A CONTACT PHONE NUMBER THAT HE/SHE CAN BE REACHED AT 24 HOURS A DAY TO RESPOND TO EMERGENCIES, INQUIRES AND DIRECTIVES REGARDING TEMPORARY EROSION AND SEDIMENTATION CONTROL AND SPILL CONTROL. THE CESCL SHALL PREPARE AND MAINTAIN REPORTS SUMMARIZING THE SCOPE OF INSPECTIONS, THE PERSONNEL CONDUCTING THE INSPECTION, THE DATES OF THE INSPECTION, MAJOR OBSERVATIONS RELATING TO THE IMPLEMENTATION OF THE STORMWATER POLLUTION PREVENTION PLAN, AND ACTIONS TAKEN AS A RESULT OF THESE INSPECTIONS.
14. OTHER REQUIREMENTS: THE ENGINEER, OWNER, WHATCOM COUNTY, DEPARTMENT OF ECOLOGY, OR OTHER AGENCIES MAY REQUIRE BMPS IN ADDITION TO WHAT IS SHOWN ON THIS PLAN IN ORDER TO PREVENT VIOLATIONS OF SURFACE WATER QUALITY AND GROUND WATER QUALITY. THE CONTRACTOR SHALL IMPLEMENT THE BMPS AS REQUIRED.

PROJECT BMPS

THE FOLLOWING BMPS SHALL BE IMPLEMENTED 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 C103: HIGH VISIBILITY FENCE. CONTRACTOR SHALL INSTALL HIGH VISIBILITY FENCE IN LOCATIONS NOTED ON PLANS.

BMP C105: STABILIZED CONSTRUCTION ENTRANCE. CONTRACTOR SHALL INSTALL AND MAINTAIN CONSTRUCTION ENTRANCE TO SITE.

BMP C120: PERMANENT SEEDING & PLANTING. CONTRACTOR SHALL COMPLETE REQUIRED LANDSCAPING AS RAPIDLY AS POSSIBLE.

BMP C122/123: COVER MEASURES. CONTRACTOR SHALL EMPLOY NETS, BLANKETS, OR SHEETING A NEEDED TO REDUCE EROSION WHILE PLANTS ESTABLISH.

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 C151/154: CONCRETE HANDLING. CONTRACTOR SHALL PREVENT CONCRETE WASH FROM RUNNING OFF-SITE.

BMP C233: FILTER FENCE. CONTRACTOR SHALL INSTALL FENCE IN LOCATIONS NOTED ON PLANS.

BMP C235: WATTLES. CONTRACTOR SHALL INSTALL WATTLES AS NEEDED.

STREET SWEEPING: CONTRACTOR SHALL SWEEP ADJACENT ASPHALT AND CONCRETE SURFACES CLEAN OF DIRT AND SEDIMENT AT THE END OF EACH WORK DAY.

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10-26-2023

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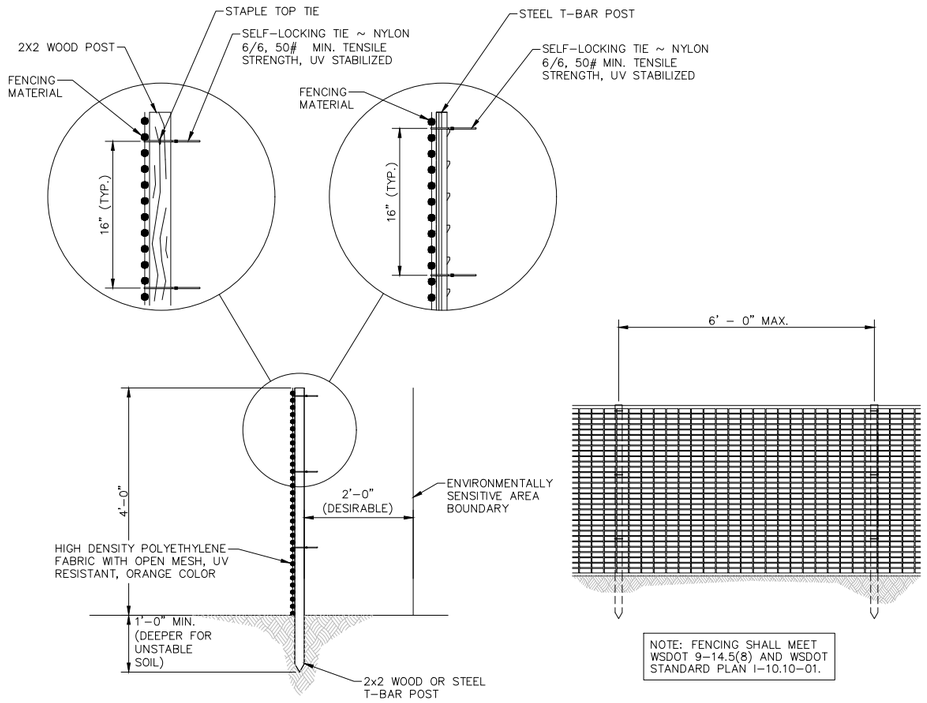
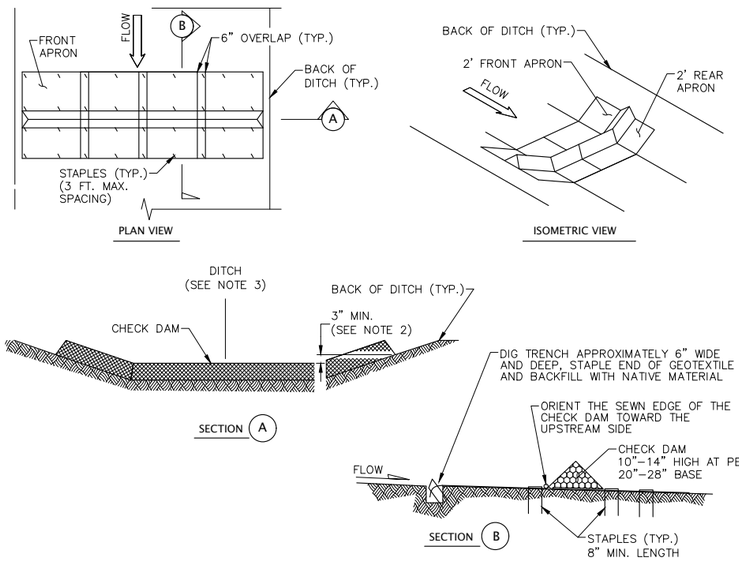
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
SWPPP NOTES

DATE 10-11-2023
SCALE AS SHOWN
JOB NUMBER 2021-130
SHEET C2.2



1 ORANGE BARRIER FENCING
NOT TO SCALE



BMP C208 – GEOTEXTILE ENCASED CHECK DAM

PURPOSE: GEOTEXTILE ENCASED CHECK DAMS MAY BE USED AS CHECK DAMS, FOR PERIMETER PROTECTION, FOR TEMPORARY SOIL STOCKPILE PROTECTION, FOR DROP INLET PROTECTION, OR AS A TEMPORARY INTERCEPTOR DIKE.

INSTALLATION: INSTALL WITH ENDS CURVED UP TO PREVENT WATER FROM FLOWING AROUND ENDS. THE FABRIC FLAPS AND CHECK DAM UNITS ARE ATTACHED TO THE GROUND WITH WIRE STAPLES. WIRE STAPLES SHOULD BE NO. 11 GAUGE AND SHOULD BE 200MM TO 300MM IN LENGTH. WHEN MULTIPLE UNITS ARE INSTALLED, THE SLEEVE OF FABRIC AT THE END OF THE UNIT SHALL OVERLAP THE ABUTTING UNIT AND BE STAPLED. CHECK DAMS SHOULD BE LOCATED AND INSTALLED AS SOON AS CONSTRUCTION WILL ALLOW AND SHOULD BE PLACED PERPENDICULAR TO THE FLOW OF WATER. WHEN USED AS CHECK DAMS, THE LEADING EDGE MUST BE SECURED WITH ROCKS, SANDBAGS, OR A SMALL KEY SLOT AND STAPLES. IN THE CASE OF GRASS-LINED DITCHES AND SWALES, CHECK DAMS AND ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN THE GRASS HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE UNLESS THE SLOPE OF THE SWALE IS GREATER THAN 4 PERCENT. THE AREA BENEATH THE CHECK DAMS SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER DAM REMOVAL.

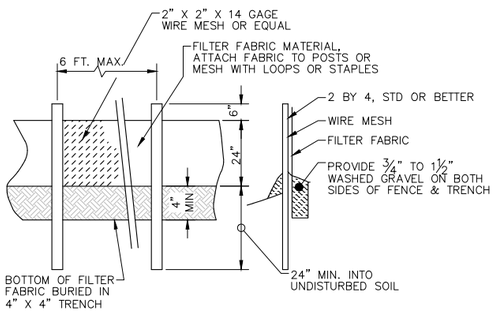
MAINTENANCE: CHECK DAMS SHALL BE MONITORED FOR PERFORMANCE AND SEDIMENT ACCUMULATION DURING AND AFTER EACH RUNOFF PRODUCING RAINFALL. SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE HALF THE HEIGHT OF THE DAM. ANTICIPATE SUBMERGENCE AND DEPOSITION ABOVE THE TRIANGULAR SILT DAM AND EROSION FROM HIGH FLOWS AROUND THE EDGES OF THE DAM. IMMEDIATELY REPAIR ANY DAMAGE OR ANY UNDERCUTTING OF THE DAM.

NOTES:

1. GEOTEXTILE ENCASED CHECK DAMS SHALL MEET THE REQUIREMENTS OF STANDARD SPECIFICATIONS 8-01.3(6)A AND 9-14.5(4).
2. INSTALL THE SLOPED ENDS OF THE CHECK DAM A MINIMUM OF 3" HIGHER THAN THE TOP OF THE CHECK DAM IN THE CHANNEL TO ENSURE THAT WATER FLOWS OVER THE DAM AND NOT AROUND IT.
3. FLAT BOTTOM DITCH DESIGN SHOWN, CHECK DAM INSTALLATION DETAILS ARE SIMILAR FOR "V" BOTTOM DITCHES.
4. PERFORM MAINTENANCE IN ACCORDANCE WITH STANDARD SPECIFICATION 8-01.3(15).

NOTE:
THE CONTRACTOR SHALL BE RESPONSIBLE FOR UPDATING COVERAGE UNDER THE DOE'S "CONSTRUCTION STORMWATER GENERAL PERMIT". CONTACT LINDA MATLOCK AT DOE (360-407-6437, EMAIL: LMAT461@ECY.WA.GOV) FOR ADDITIONAL INFORMATION.

2 GEOTEXTILE ENCASED CHECK DAM
NOT TO SCALE



BMP C233 – SILT (FILTER FABRIC) FENCE

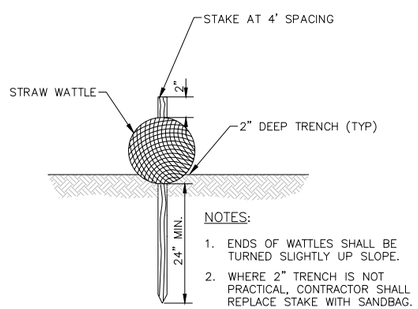
PURPOSE: USE OF A SILT FENCE REDUCES THE TRANSPORT OF COARSE SEDIMENT FROM A CONSTRUCTION SITE BY PROVIDING A TEMPORARY PHYSICAL BARRIER TO SEDIMENT AND REDUCING THE RUNOFF VELOCITIES OF OVERLAND FLOW.

INSTALLATION: USE DOWN SLOPE OF DISTURBED AREAS AS SHOWN ON THE PLAN AND AS NEEDED TO RESPOND TO SITE SPECIFIC CONDITIONS. GEOTEXTILE SHALL MEET WSDOT 9-33.2(1) TABLE 6. HIGH VISIBILITY FENCING SHALL MEET WSDOT 9-14.5(9). 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 4 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.

3 FILTER FABRIC FENCE
NOT TO SCALE



NOTES:

1. ENDS OF WATTLES SHALL BE TURNED SLIGHTLY UP SLOPE.
2. WHERE 2" TRENCH IS NOT PRACTICAL, CONTRACTOR SHALL REPLACE STAKE WITH SANDBAG.

4 STRAW WATTLE DETAIL
NOT TO SCALE

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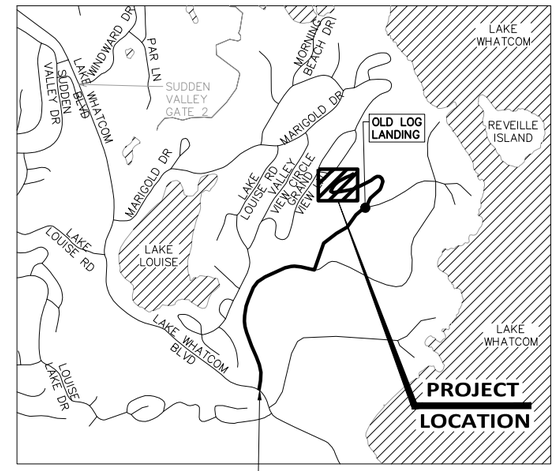
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
SWPPP DETAILS

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C2.3 | PAGE 8 OF 50



PROJECT CONSTRUCTION ACCESS:
CAMP FIRWOOD
1740 LAKE WHATCOM BLVD, BELLINGHAM

SITE ACCESS
NOT TO SCALE

STOCKPILE PLAN
30 0 30 60
SCALE HORIZONTAL SCALE FEET

SHEET NOTES:
1. EXCAVATED MATERIAL SHALL BE STOCK-PILED AT THE DESIGNATED TEMPORARY PROJECT STOCK PILE LOCATIONS AS SHOWN, OR SHALL BE IMMEDIATELY HAULED OFF-SITE AND DISPOSED TO A LOCATION OBTAINED AND PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ALL STATE AND COUNTY REGULATIONS.
2. EXCAVATED MATERIALS THAT ARE STOCKPILED SHALL BE STABILIZED WITH TOPSOIL OR WOODCHIP MULCH AND EROSION CONTROL FABRIC. THE TEMPORARY STOCKPILE LOCATION CAN BE USED FOR UP TO 1-YEAR AND UNTIL THE EXISTING TANK IS DEMOLISHED. IF THE CONTRACTOR USES THE TEMPORARY STOCK PILE SITE, THE STOCK PILE SITE AND ACCESS ROAD TO THE SITE, MUST BE RESTORED TO PRE-CONSTRUCTION CONDITIONS. NO TREES > 8-INCH DIAMETER SHALL BE REMOVED. PROTECT TREES WITH ECOBLOCK BARRIER, OR SIMILAR, AS NEEDED.
3. SEE SHEET C.1. FOR COMPLETE EXISTING CONDITIONS.

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NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

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1-8-2024

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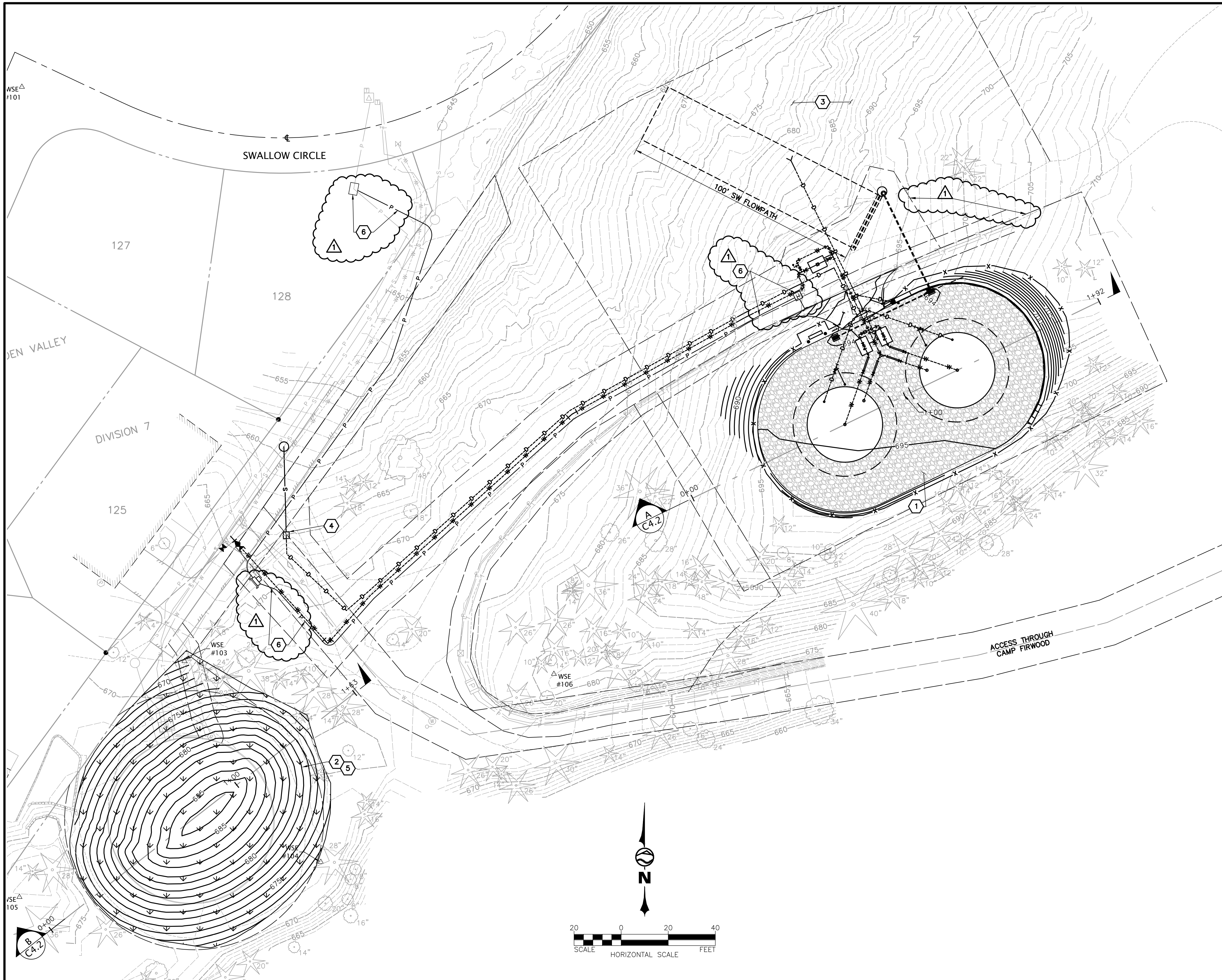
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
ACCESS, STAGING AND STOCKPILING PLAN

DATE 10-17-2023
SCALE AS SHOWN
JOB NUMBER 2021-130
SHEET C3.1
PAGE 9 OF 50



NO.	REVISIONS	BY	DATE
1	SHOW ELECTRICAL & NEW EASEMENTS	CDS	1-4-2024

KEYED NOTES

1. = PROPOSED TANK SITE AREA
2. = EXISTING TANK AREA, FILLED, GRADED AND RESTORED TO NATIVE VEGETATION AFTER EXISTING TANK IS DEMOLISHED. DEMOLITION TO FOLLOW AFTER BOTH PROPOSED TANKS ARE FULLY OPERATIONAL AND HAVE SUCCESSFULLY COMPLETED TESTING AND STARTUP.
3. = EXISTING CONSERVATION EASEMENT FOR FULL DISPERSION AREA FROM ROAD TO TOWER
4. = TANK COMBINED OVERFLOW/DRAIN AIR GAP STRUCTURE, DRAINS TO SEWER.
5. = SITE PLAN AT THE EXISTING TANK SITE REPRESENTS FINAL GRADE IF CONTRACTOR ELECTS TO USE THE PROJECT'S DESIGNATED TEMPORARY STOCKPILE LOCATION. SEE ALTERNATE FINISHED GRADE PROFILE ON B/C4.2
6. = SEE ELECTRICAL DRAWINGS FOR NEW ELECTRICAL WIRING & APPURTENANCES

SHEET NOTES:

1) SEE SHEET C1.1 FOR COMPLETE EXISTING CONDITIONS

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1-8-2024

DESIGNED BY: CDS

DRAWN BY: EJH/LMH

CHECKED BY: MMM

LAKE WHATCOM WATER AND SEWER DISTRICT

WHATCOM COUNTY, WASHINGTON

DIVISION 7 RESERVOIR REPLACEMENT PROJECT

OVERALL SITE PLAN

DATE: 10-17-2023

SCALE: AS SHOWN

JOB NUMBER: 2021-130

SHEET: C4.1

PLOT SETTINGS: RICOH 8X11- B&W.pc3, Letter, Portrait, 1:1.05, WE APWA_UNSCREENED.ctb
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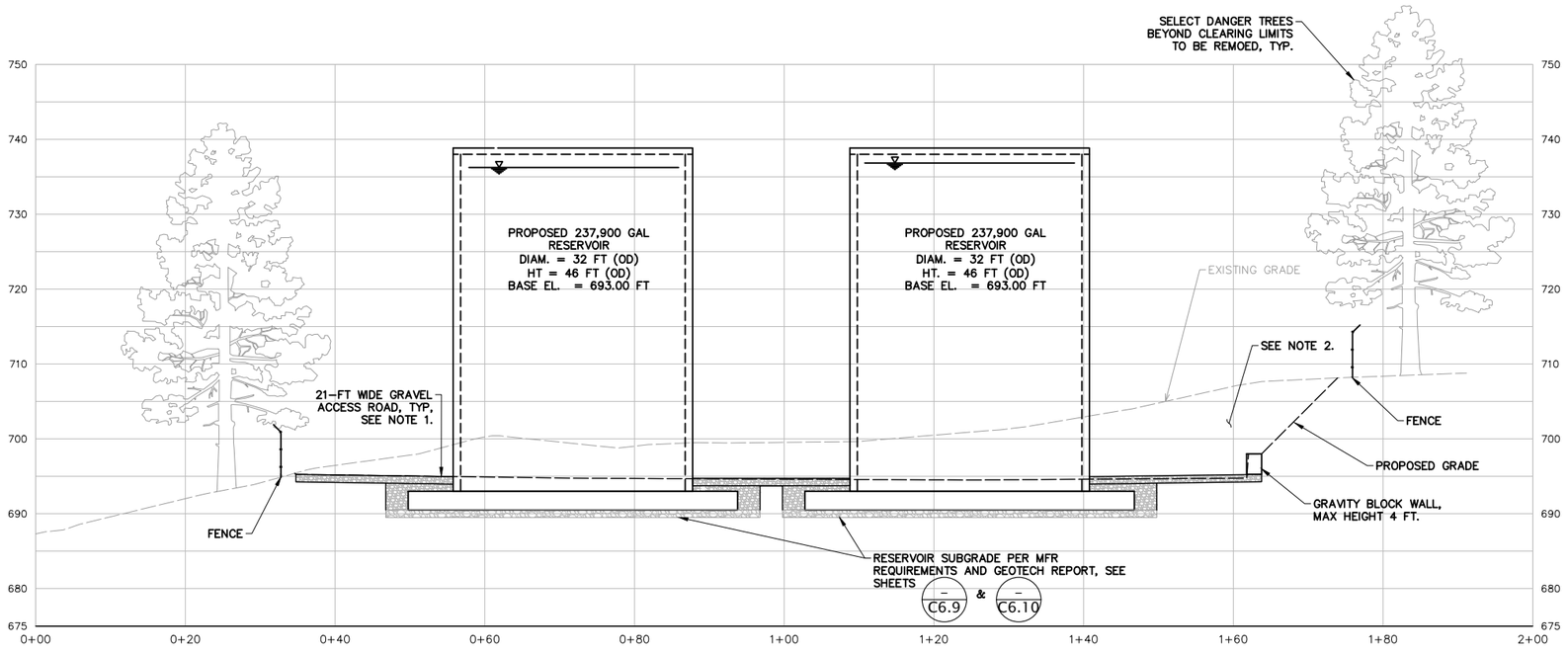
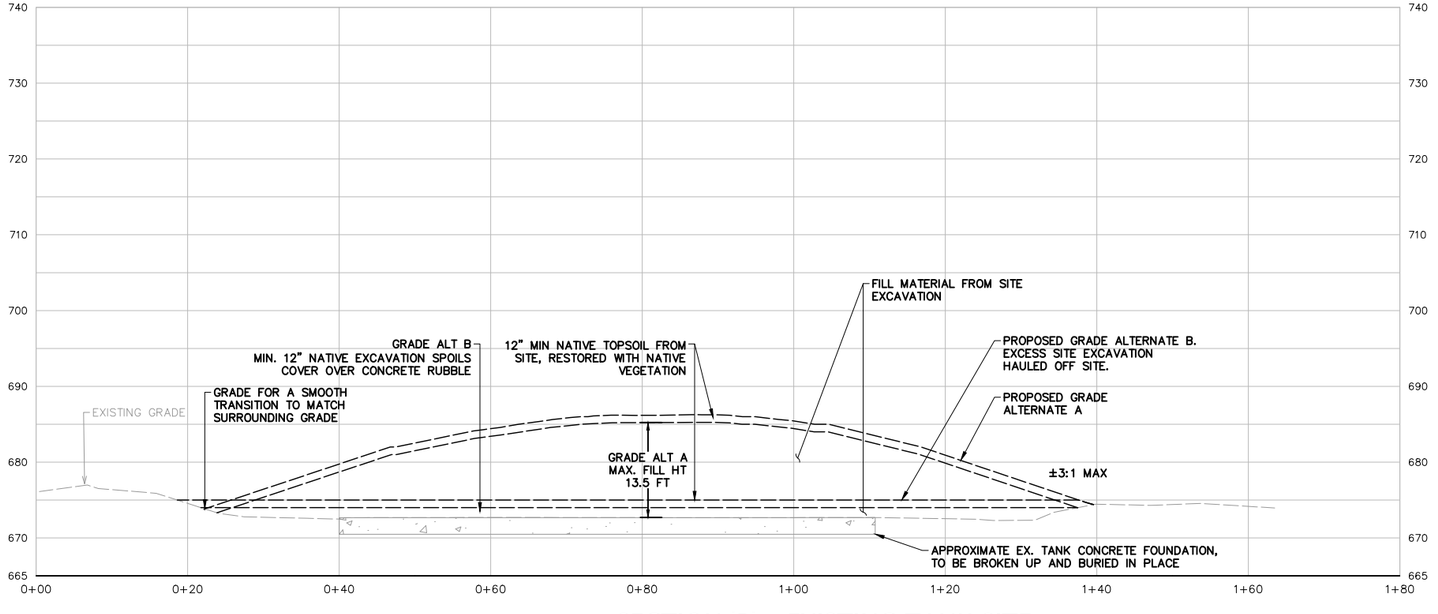
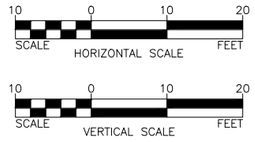


A / C4.1 SECTION 'A' – PROPOSED TANK SITE PROFILE



SECTION 'B' – EXISTING TANK SITE RESTORATION PROFILE & ALTERNATE FINISHED GRADE PROFILE

B / C4.1



NOTES:

1. CRUSHED GRAVEL SURFACING MATERIAL EITHER IMPORTED CSBC PER WSDOT 9-03.9(3), OR PROCESSED/CRUSHED SANDSTONE ROCK EXCAVATED FROM SITE. MINIMUM THICKNESS 1-FT. COORDINATE REQUIREMENTS ADJACENT THE TANK WITH MFR AS SHOWN PER "TYPICAL BURIED TANK SECTION" DETAIL ON C6.10
2. EXCAVATED MATERIAL SHALL BE STOCK-PILED AT THE DESIGNATED TEMPORARY PROJECT STOCKPILE LOCATION AS SHOWN ON OR SHALL BE IMMEDIATELY HAULED OFF-SITE AND DISPOSED TO A LOCATION OBTAINED AND PROVIDED BY THE CONTRACTOR IN ACCORDANCE WITH ALL STATE AND COUNTY REGULATIONS. C3.1

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BID DOCUMENTS

WILSON ENGINEERING
WILSONENGINEERING.COM
10-26-2023

DESIGNED BY CDS
DRAWN BY EJH/LMH
CHECKED BY MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR PROFILES

DATE 10-11-2023
SCALE AS SHOWN
JOB NUMBER 2021-130
SHEET C4.2
PAGE 11 OF 50

NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

SWALLOW CIRCLE

DIVISION 7

SEE SHEET C4.4

ACCESS THROUGH CAMP FIRWOOD

N

20 0 20 40
SCALE HORIZONTAL SCALE FEET

KEYED WATER NOTES

(1) = 12" DI WATER LINE

(7) = HOT-TAP CONNECTION TO EXISTING 10" DI, 10" TAPPING SLEEVE, FL 10"x12" REDUCER, FL 12" GATE VALVE, FLxMJ

(8) = 12" DI 90 DEG BEND, MJxMJ

(9) = 12" DI 11.25 DEG BEND, MJxMJ, WITH MEGALUG RESTRAINTS. CONTRACTOR TO INSTALL UNCUT FULL LENGTH STICKS OF PIPE ON EITHER SIDE OF THE BEND.

(12) = WATER ALIGNMENT. SEE PROFILE PER A / C4.6

(14) = COMBINED TRENCH, PER 1 / C5.5

(15) = 10" AVT EZ VALVE, OR EQUAL. CLOSE VALVE, TERMINATE EX. PIPE W/ FULL PRESSURE RATED FITTING AND PLUG OR BLIND FLANGE. INSTALL DEAD END THRUST BLOCKING. COORDINATE WITH DEMO NOTES SHEET C2.1

KEYED OVERFLOW & DRAIN NOTES

(2) = 8" PVC DRAIN LINE

(3) = AIR GAP STRUCTURE, DRAIN TO SAN. SEWER, TYPE 1 MODIFIED CATCH BASIN PER 1 / C5.3

(4) = NEW SSMH LWWSD S7-33C 48" DIAM. SANITARY SEWER SADDLE MANHOLE, PER 3 / C5.3

(5) = 8" PVC SANITARY SEWER

(6) = TRANSITION TO 8" DI PIPE 5' MIN PRIOR TO DAYLIGHTING AT AIR GAP DISCHARGE

(10) = 8" PVC 45 DEG BEND

(11) = 8" PVC 90 DEG BEND

(13) = DRAIN ALIGNMENT. SEE PROFILE PER B / C4.6

(16) = VAULTS DRAIN TO DAYLIGHT

KEYED MISC. NOTES

(17) = NOTE: GRADING PLAN REPRESENTS GRADING PROFILE ALTERNATE A. GRADING PLAN FOR ALTERNATE B NOT SHOWN, SEE B / C4.2 FOR PROFILE

(18) = GRADING & DRAINAGE PLAN FOR STORM DRAINS & DISPERSION TRENCH, SEE – / C4.7

SHEET NOTES:

1) SEE SHEET C1.1 FOR COMPLETE EXISTING CONDITIONS

2) THRUST BLOCKING IS NOT CALLED OUT BUT SHALL BE INSTALLED PER DETAILS ON – / C5.1 APPLIES TO BOTH WATER AND OVERFLOW DRAIN PIPING

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WILSONENGINEERING.COM

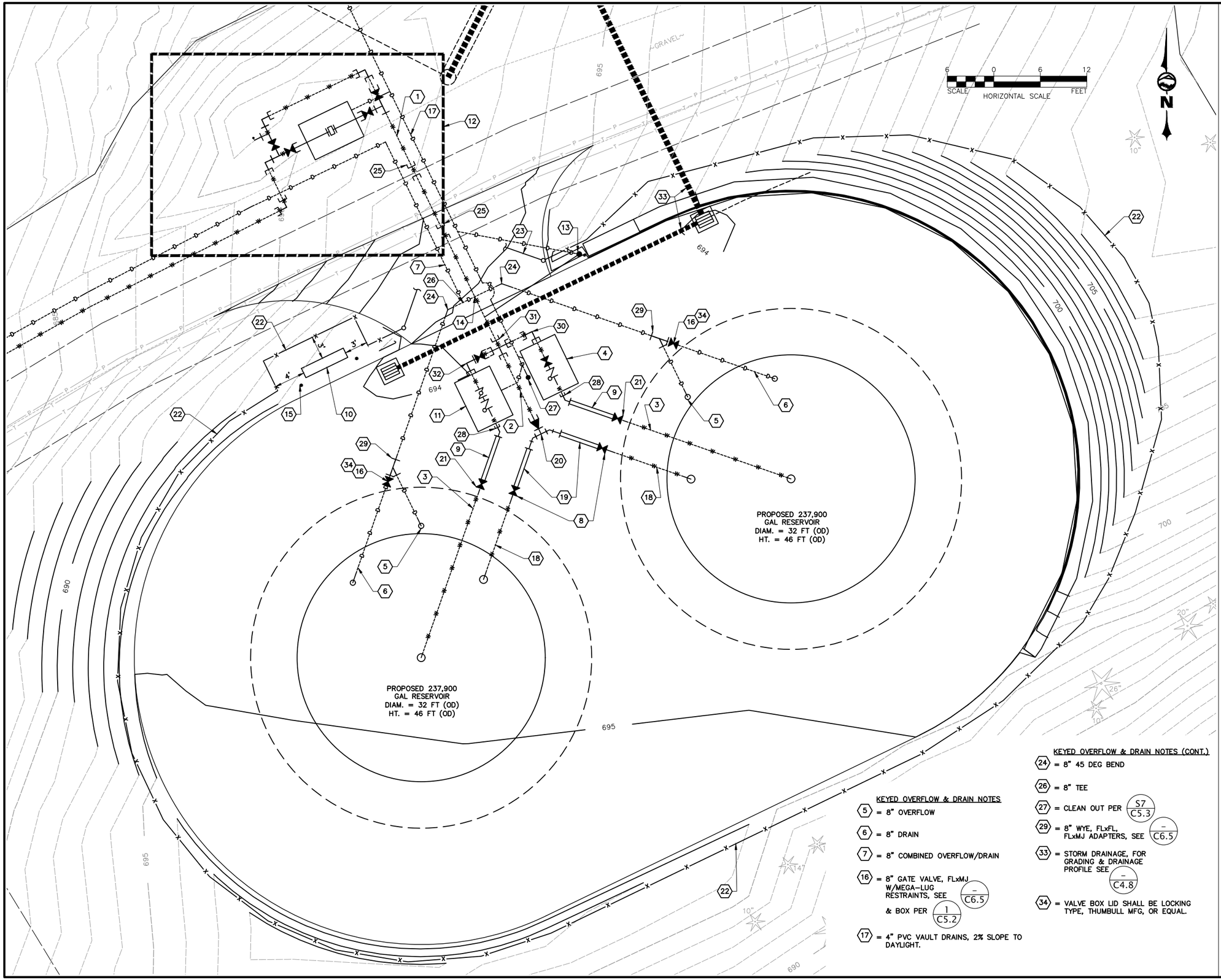
SCHENELDER CURTIS STATE OF WASHINGTON 42420 REGISTERED PROFESSIONAL ENGINEER
1-8-2024

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR, WATER, OVERFLOW AND DRAIN PIPE PLAN

DATE	SCALE	JOB NUMBER
10-17-2023	AS SHOWN	2021-130

SHEET C4.3
PAGE 12 OF 50



KEYED WATER NOTES

1 = WATER MAIN, 12" DI INLET/OUTLET

2 = 12" DI INLET

3 = 12" DI OUTLET

4 = OUTLET VALVE VAULT PER 3/C4.5

8 = 8" GATE VALVE, FLxMJ W/MEGA-LUG RESTRAINTS, SEE -/C6.4 & BOX PER 1/C5.2

9 = 12" FLEXIBLE EXPANSION JOINT, FLxFL

11 = OUTLET VALVE VAULT w/SEISMIC VALVE PER 2/C4.5

13 = COMBINATION AIR RELEASE/AIR VACUUM VALVE ASSEMBLY, PER PLACE VALVE BOX AS SHOWN. PROVIDE 2" PERF PIPE AT BOTTOM OF METER BOX AND TIGHT LINE CONNECTION TO COMMON 4" VAULT DRAIN LINE TO DAYLIGHT W8/C5.1

14 = 12" MIN. SEPARATION BETWEEN WATER AND DRAIN LINES, BACKFILL w/CDF

18 = 8" DI INLET

19 = 8" FLEXIBLE EXPANSION JOINT, FLxFL

20 = 12"x8" RED FLxMJ, 8" TEE FLxFL, (2) 45 DEG BEND FLxFL

21 = 12" GATE VALVE, FLxMJ W/MEGA-LUG RESTRAINTS, SEE -/C6.4 & BOX PER 1/C5.2

25 = 12" 11.25 DEG VERT BEND, MJxMJ, w/MEGALUG RESTRAINT

28 = 12" 45 DEG BEND FLxMJ

30 = 12" 90 DEG BEND, MJxMJ

31 = 12" CROSS, MJxMJ

32 = 12" 90 DEG BEND MJxFL, 12" GATE VALVE, FLxMJ

KEYED MISC. NOTES

10 = CONTROL PANEL, SEE ELEC/CONTROL SHEETS

12 = RESERVOIR SITE PLAN DETAIL PER -/C4.8

15 = BOLLARDS (TYP.) PER 4/C5.2

22 = 6-FT HIGH CHAINLINK FENCE, WSDOT TYPE 3 W/3-STRAND BARBED WIRE (TOTAL HEIGHT OF 7-FT)

23 = 20-FT OF DOUBLE CHAIN LINK GATE (WSDOT L-30.10-02 WITH 3-STRAND BARBED WIRE).

SHEET NOTES:

1) THRUST BLOCKING IS NOT CALLED OUT BUT SHALL BE INSTALLED PER DETAILS ON -/C5.1 APPLIES TO BOTH WATER AND OVERFLOW DRAIN PIPING

KEYED OVERFLOW & DRAIN NOTES

5 = 8" OVERFLOW

6 = 8" DRAIN

7 = 8" COMBINED OVERFLOW/DRAIN

16 = 8" GATE VALVE, FLxMJ W/MEGA-LUG RESTRAINTS, SEE -/C6.5 & BOX PER 1/C5.2

17 = 4" PVC VAULT DRAINS, 2% SLOPE TO DAYLIGHT.

KEYED OVERFLOW & DRAIN NOTES (CONT.)

24 = 8" 45 DEG BEND

26 = 8" TEE

27 = CLEAN OUT PER S7/C5.3

29 = 8" WYE, FLxFL, FLxMJ ADAPTERS, SEE -/C6.5

33 = STORM DRAINAGE, FOR GRADING & DRAINAGE PROFILE SEE -/C4.8

34 = VALVE BOX LID SHALL BE LOCKING TYPE, THUMBULL MFG, OR EQUAL.

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CURTIS D. SCHENEMAN FEDER — STATE OF WASHINGTON — 22820 — REGISTERED PROFESSIONAL ENGINEER
10-26-2023

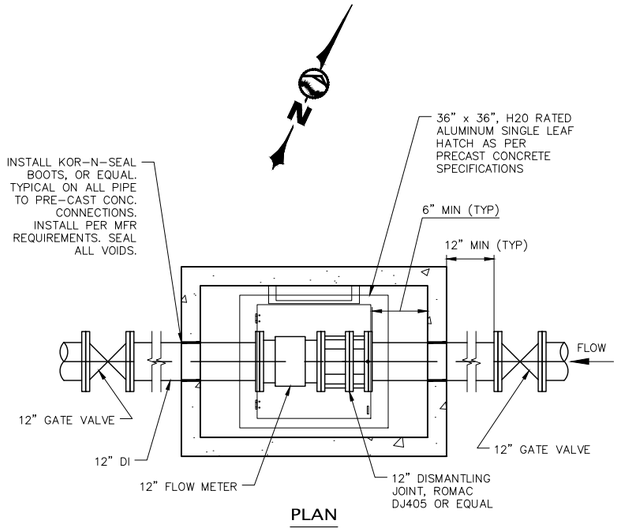
DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY, WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WATER RESERVOIR SITE PLAN

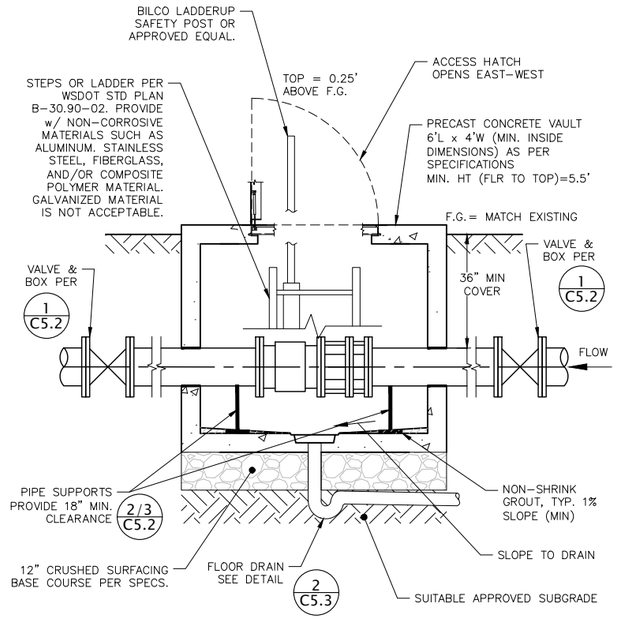
DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C4.4
PAGE 13 OF 50

PLOT SETTINGS: WE AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
W:\2021\2021-130 LWWSD DIV 7 TANK\DWG\V2019_2021-130 C4.1 OVERALL SITE PLAN.DWG - 10/11/2023 4:30 PM - Benton Seay



PLAN

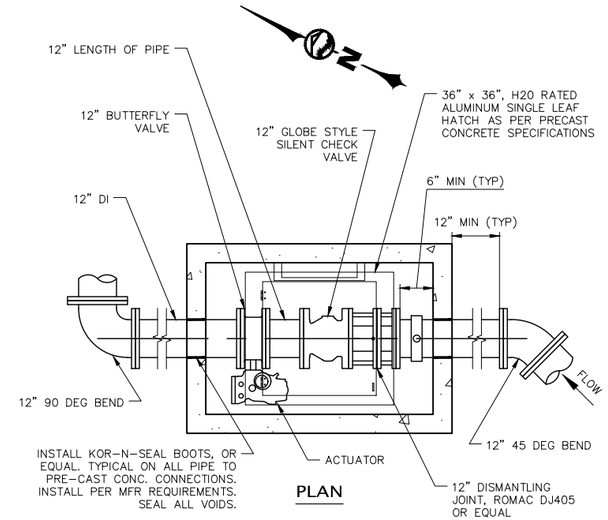


SECTION

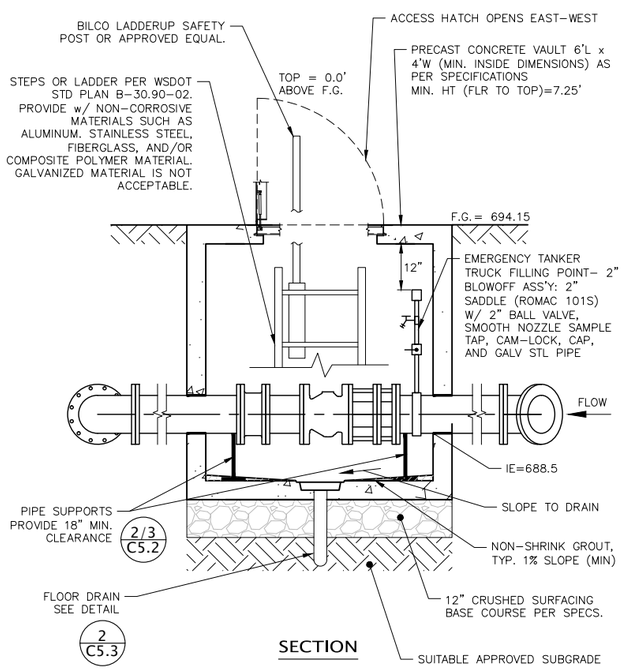
FLOW METER VALVE VAULT DETAIL

1/C4.4

NOT TO SCALE



PLAN

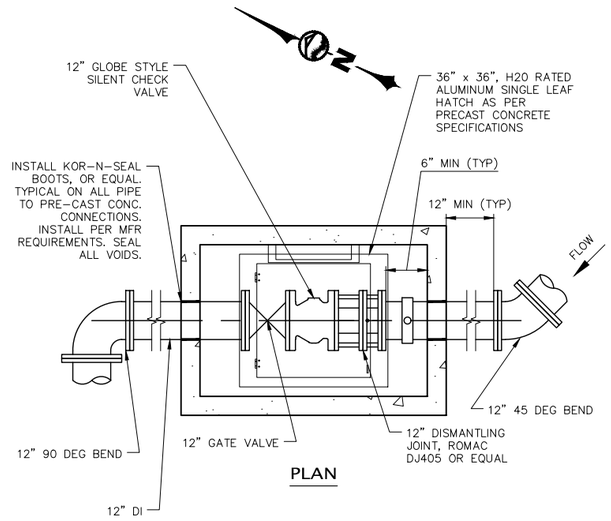


SECTION

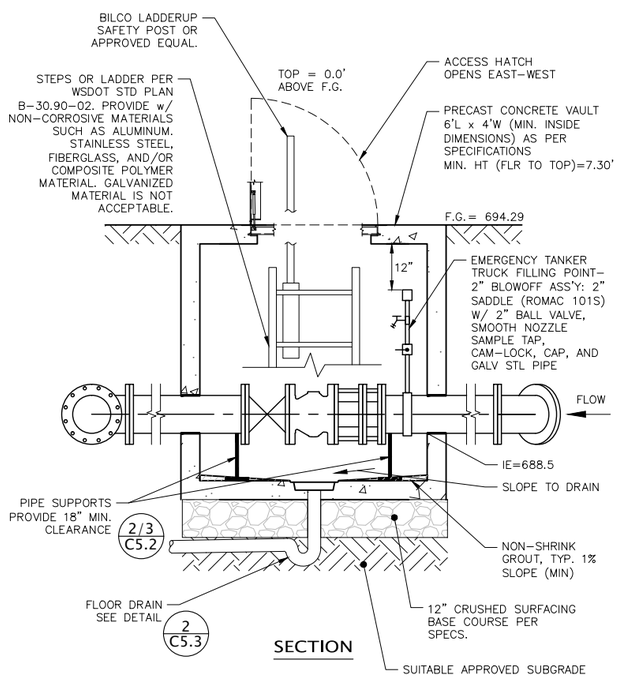
OUTLET VALVE VAULT WITH SEISMIC VALVE DETAIL

2/C4.4

NOT TO SCALE



PLAN



SECTION

OUTLET VALVE VAULT

3/C4.4

NOT TO SCALE

SHEET NOTE:

1. **ALL THREE VAULTS SHALL HAVE INTRUSION SWITCHES AND ALARMS. COORDINATE WITH ELECTRICAL AND CONTROL DRAWINGS.**

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10-26-2023

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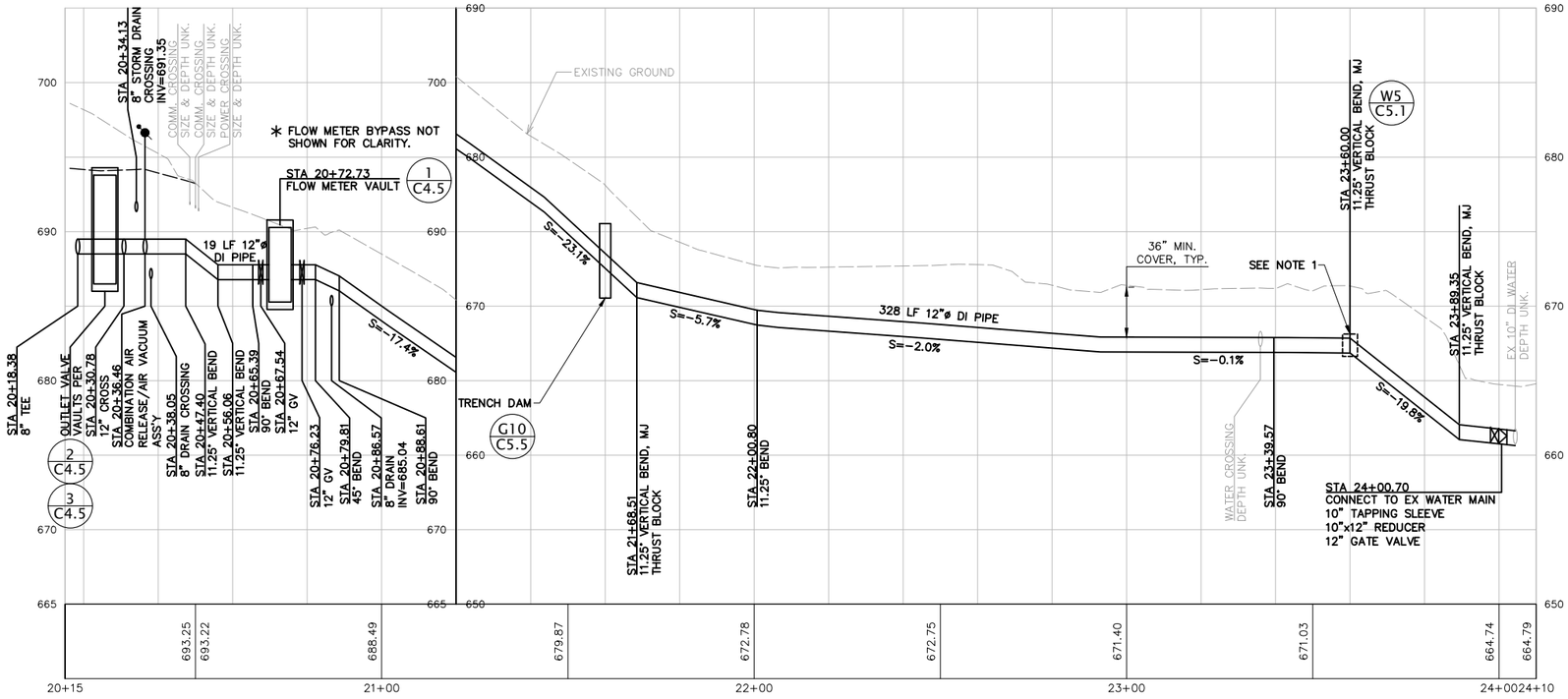
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY, WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WATER VAULTS – PLANS AND SECTIONS

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

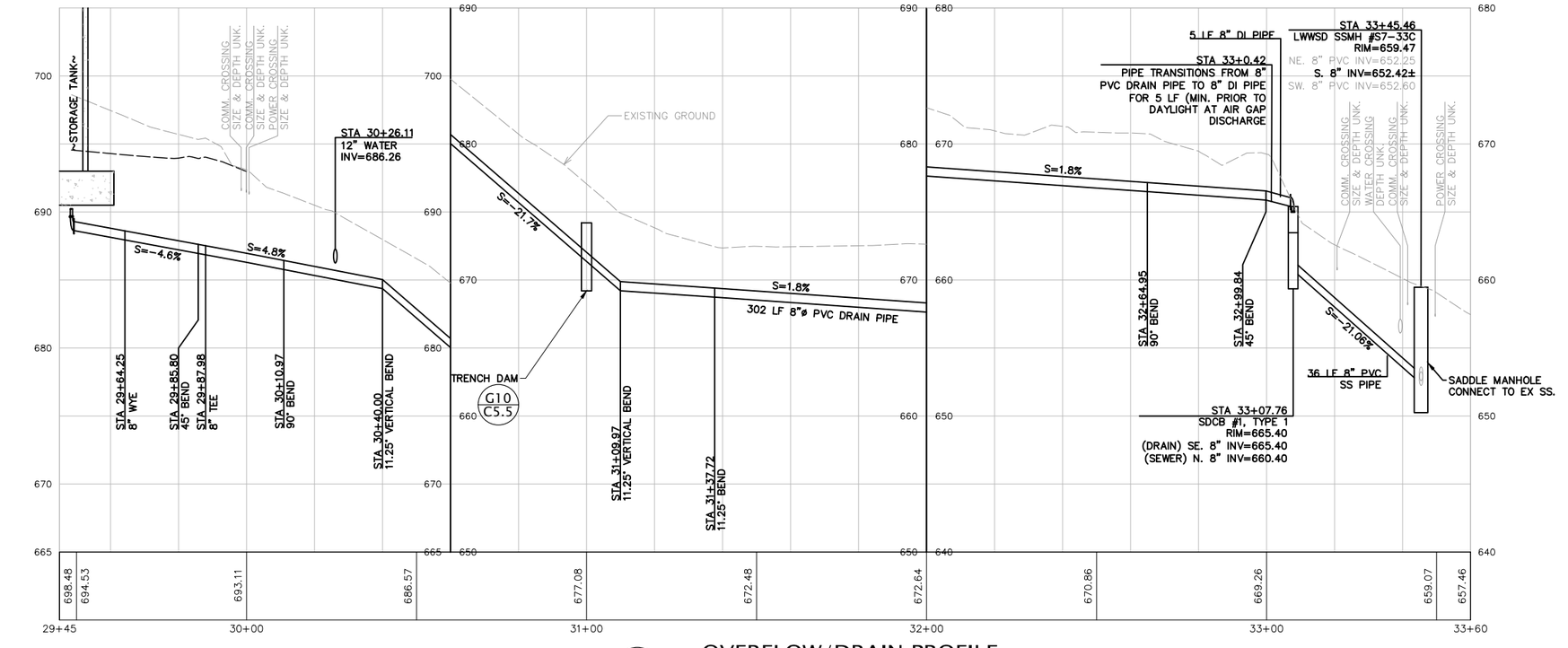
SHEET C4.5 | PAGE 14 OF 50



WATER PROFILE

A C4.3

NOTES:
1. IF ROCK PREVENTS INSTALLATION OF CONVEX THRUST BLOCKING, INSTALL MEGA-LUG RESTRAINTS AND RESTRAINED JOINTS ONE JOINT OR MIN. 14 LF EACH WAY OF FITTING.
2. MINIMUM SLOPE REQUIRED FOR 8" DRAIN PIPE IS 1.2% FOR THIS PROJECT ANY REQUIRED DEVIATIONS FROM THE DESIGN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.



OVERFLOW/DRAIN PROFILE

B C4.3

20 0 20 40
SCALE HORIZONTAL SCALE FEET

5 0 5 10
SCALE VERTICAL SCALE FEET

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CURTIS D. SCHENEMAN ELDER — 48420 — REGISTERED PROFESSIONAL ENGINEER — STATE OF WASHINGTON
10-26-2023

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CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WHATCOM COUNTY WASHINGTON
WATER, OVERFLOW AND DRAIN PROFILE

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C4.6
PAGE 15 OF 50

NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

ABBREVIATIONS:
BW = BOTTOM OF WALL
TW = TOP OF WALL

KEYED NOTES

1. = TYPE 1 CATCH BASIN (1/C5.4)
2. = 26 LF DISPERSION TRENCH (2/C5.4)
3. = 6" PVC STORM DRAIN
4. = CEMENT CONCRETE APRON W/ ROUGH BROOM FINISH (2/C5.5)
5. = EXISTING ROAD RUNOFF FLOWS AS SHEET FLOW TO A FULL DISPERSION AREA TO NORTH.
6. = GRAVEL SUFACING, TYP.
7. = CONCRETE WATER RESERVOIR
8. = 8" DIA. PVC STORM DRAIN
9. = PROPOSED CUT AREA
10. = TYPE 2 CATCH BASIN (3/C5.4)
11. = PROPOSED FILL AREA TO BE RESTORED PER TYPICAL FOREST RESTORATION PLANTING DETAIL (1/C4.9)
12. = GRAVITY BLOCK WALL, MAX HEIGHT 4-FT, PER (1/C5.6)
13. = NOT USED
14. = TOPOGRAPHIC SURVEY LIMITS
15. = STORM ALIGNMENT STORM PROFILE PER (A/C4.8)
16. = SURFACE FLOW DIRECTION
17. = WALL DRAIN, DRAIN 2% SLOPE TO CATCH BASIN.

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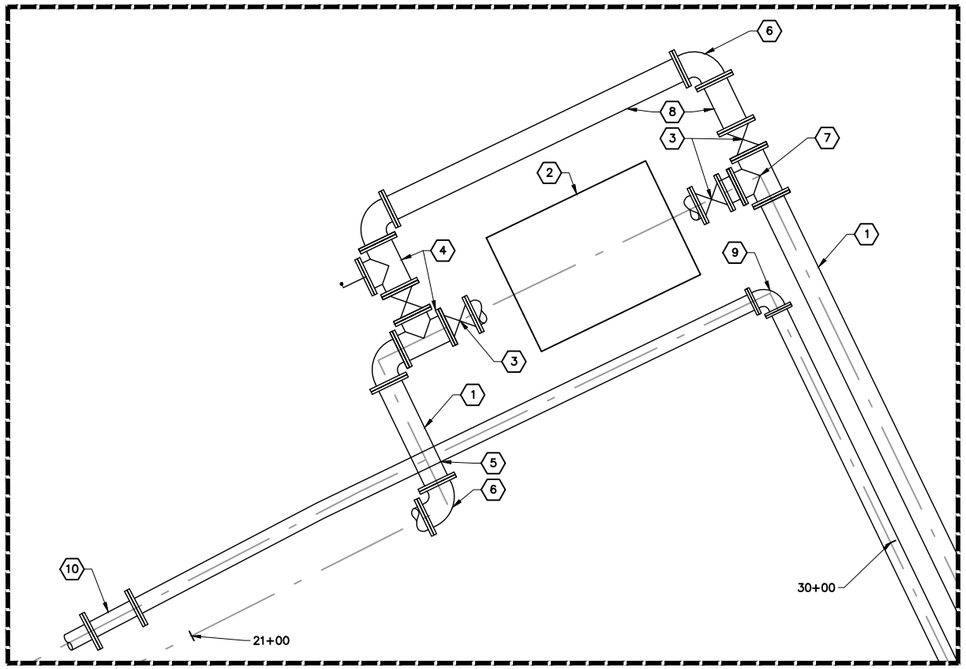
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
GRADING AND DRAINAGE PLAN

DATE 10-17-2023
SCALE AS SHOWN
JOB NUMBER 2021-130
SHEET C4.7
PAGE 16 OF 50

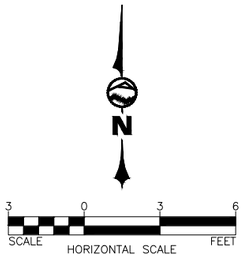


KEYED WATER NOTES

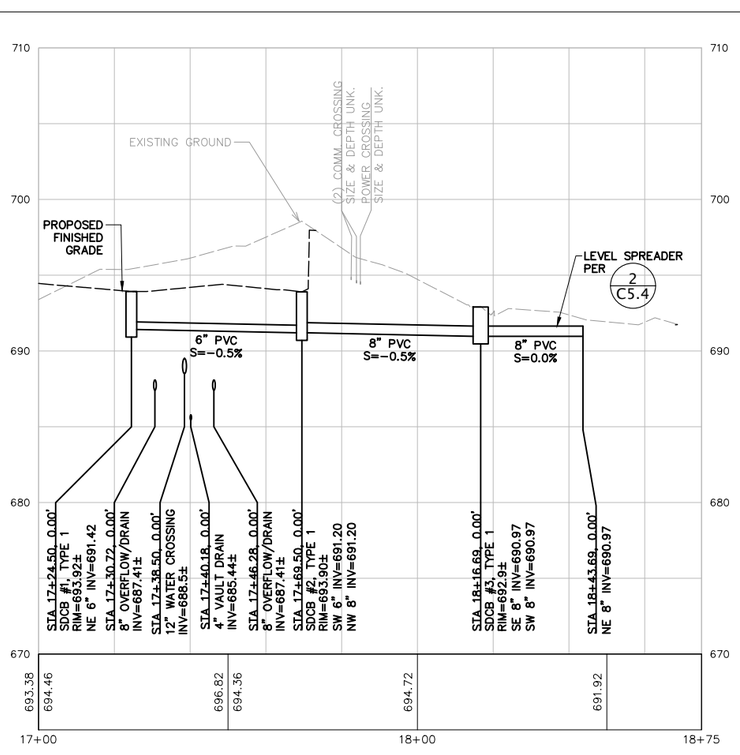
1. = WATER MAIN, 12" DI INLET/OUTLET
2. = FLOW METER VAULT PER 1/C4.5
3. = 12" GATE VALVE, FLxMJ, & BOX PER 1/C5.2
4. = 2–12" TEE, FL
2–12" 90 DEG BEND, FLxMJ
1–12" GV, FL
2" BLOWOFF ASSY PER W7/C5.1
5. = 12" MIN. SEPARATION BETWEEN WATER AND DRAIN LINES, BACKFILL w/CDF
6. = 12" 90 DEG BEND, MJxMJ, T.B.
7. = 12" TEE, FL
12" FLxMJ ADAPTER W/MEGA–LUG RESTRAINT
8. = 12" DI METER VAULT BYPASS PIPING

KEYED OVERFLOW & DRAINAGE NOTES

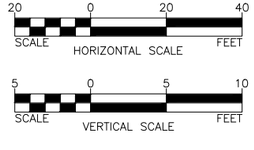
9. = 8" 90 DEG BEND, T.B.
10. = 8" 11.25 DEG VERTICAL BEND, T.B.



RESERVOIR SITE PLAN DETAIL
C4.4



STORM DRAIN PROFILE
A/C4.7



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CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT

WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT

STORMWATER PLAN & PROFILE AND RESERVOIR SITE PLAN DETAIL

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C4.8

PAGE 17 OF 50

NO.	REVISIONS	BY	DATE
1	SHOW NEW EASEMENTS	CDS	1-4-2024

SWALLOW CIRCLE

127

128

DEN VALLEY

DIVISION 7

125

ACCESS THROUGH CAMP FIRWOOD

KEYED NOTES

1. = FILL AREA TO BE RESTORED WITH NATIVE VEGETATION PER 1/-
2. = EXISTING TANK AREA TO BE RESTORED WITH NATIVE VEGETATION AFTER DEMOLITION PER 1/-
3. = SITE PLAN AT THE EXISTING TANK SITE REPRESENTS FINAL GRADE IF CONTRACTOR ELECTS TO USE THE PROJECTS DESIGNATED TEMPORARY STOCKPILE LOCATIONS. SEE ALTERNATE FINISHED GRADE PROFILE ON B/C4.2

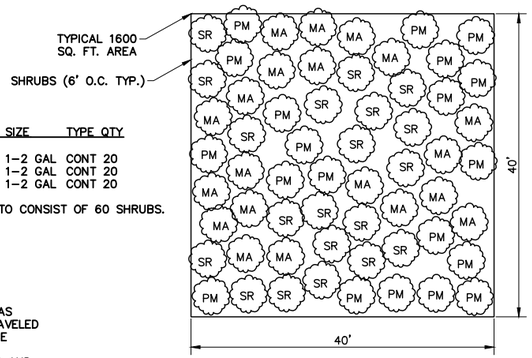
COMMON NAME		SCIENTIFIC NAME	SIZE	TYPE	QTY
WESTERN SWORD FERN	PM	POLYSTICHUM MUNITUM	1-2 GAL	CONT	20
RED ELDERBERRY	SR	SAMBUCUS RACEMOSA	1-2 GAL	CONT	20
OREGON GRAPE	MA	MAHONIA AQUIFOLIUM	1-2 GAL	CONT	20

TYPICAL PLANTING COMPOSITION IN A 1600 SQ. FT. AREA TO CONSIST OF 60 SHRUBS.

REFER TO SPECIFICATION FOR FURTHER PLANTING DETAILS.

NOTES:

1. DISTRUBED AREAS OUTSIDE OF GRAVELED AREAS SHALL BE RESTORED WITH TOPSOIL, MULCH AND PLANTINGS PER THE SPECIFICATIONS



1 TYPICAL FOREST RESTORATION PLANTING DETAIL
NOT TO SCALE

SCALE: 1" = 20' HORIZONTAL SCALE

SHEET NOTES:

1) SEE SHEET C1.1 FOR COMPLETE EXISTING CONDITIONS

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LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESTORATION PLAN

SHEET	DATE	SCALE	JOB NUMBER
C4.9	10-17-2023	AS SHOWN	2021-130

PAGE 18 OF 50

PLOT SETTINGS: RICOH 8X11- B&W.pc3, Letter, Portrait, 1:1.05, WE APWA_LINSCREENED.ctb
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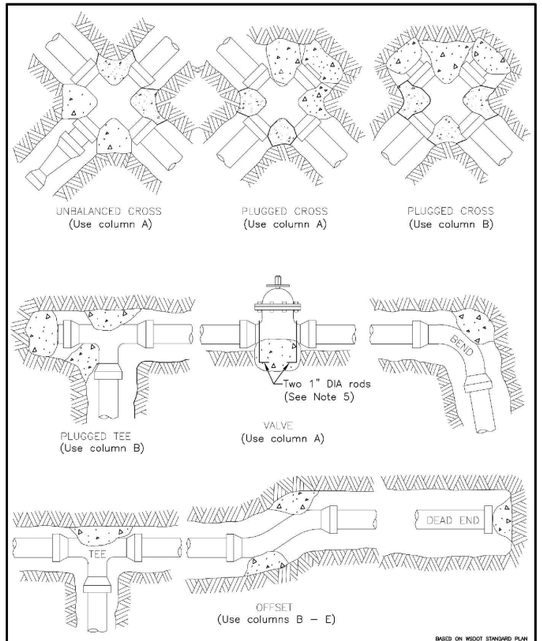


BASED ON WSDOT STANDARD PLAN B-30.40-00 DATED 6/8/06.

CONCRETE THRUST BLOCK
Sheet 1 of 2

STANDARD DETAIL
W3
3/11/2020

NOTES:

1. Contractor may substitute restrained joints & fittings with the approval of the district engineer. Calculation of the restrained pipe required length on each side of fittings for max pressure and soil type are required. Calculations shall be sealed by a professional engineer and submitted for review and approval.
2. Contractor to provide blocking adequate to withstand full test pressure.
3. Divide thrust by safe bearing load to determine required area (in square feet) of concrete to distribute load.
4. Areas to be adjusted for other pressure conditions.
5. Provide two 1" minimum diameter rods on valves up through 10" diameter. Valves larger than 10" require special tie rod design.

Size	Test Pressure PSI	Thrust at Fittings in Pounds A Tee and Dead Ends	B 90° Bend	C 45° Bend	D 22.5° Bend	E 11.25° Bend
4"	250	3,140	4,440	2,405	1,225	615
6"	250	7,070	9,995	5,410	2,760	1,385
8"	250	12,565	17,770	9,620	4,905	2,465
10"	250	19,635	27,770	15,030	7,660	3,850
12"	250	28,275	39,985	21,640	11,030	5,545
14"	250	38,485	54,425	29,455	15,015	7,545
16"	250	50,265	71,085	38,470	19,615	9,855

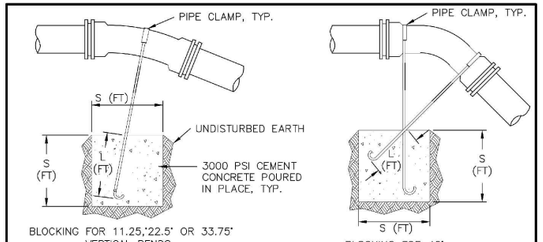
Soil Type	Safe Bearing Load PSF
Muck, peat, etc.*	0
Soft clay	1,000
Sand	2,000
Sand and gravel	3,000
Sand and gravel cemented with clay	4,000
Hard shale	10,000

*Restrained joints required in all cases.

BASED ON WSDOT STANDARD PLAN B-30.40-00 DATED 6/8/06.

CONCRETE THRUST BLOCK
Sheet 2 of 2

STANDARD DETAIL
W4
5/1/2014



DIMENSION TABLE							
PIPE DIAM.	TEST PRESSURE (PSI)	BEND ANGLE	CONCRETE VOLUME (Cubic-Ft)	CUBE SIZE "S" (FT)	TIE ROD DIAM. (IN)	DEPTH OF RODS IN CONCRETE "L" (IN)	PIPE CLAMP SIZE (DxW)
4"	300	11.25°	8	2.0	5/8"	18"	3/8" X 2"
		22.5°	11	2.2		24"	
		33.75°	17	2.6			
		45°	30	3.1			
6"	300	11.25°	11	2.2	5/8"	24"	1/2" X 2-1/2"
		22.5°	25	2.9			
		33.75°	41	3.5			
		45°	68	4.1			
8"	300	11.25°	16	2.5	5/8"	24"	1/2" X 2-1/2"
		22.5°	47	3.6			
		33.75°	70	4.1	3/4"		
		45°	123	5.0			
12"	250	11.25°	32	3.2	5/8"	24"	3/4" X 3"
		22.5°	88	4.5	7/8"		
		33.75°	132	5.1			
		45°	232	6.1		30"	

NOTE:

1. TIE RODS SHALL BE STAINLESS STEEL, DIAMETER AS SPECIFIED.
2. PIPE CLAMP SHALL BE GALVANIZED. BAR AND HARDWARE SHALL BE STAINLESS STEEL.
3. APPROVAL OF LOCATION FROM THE DISTRICT IS REQUIRED PRIOR TO INSTALLATION.

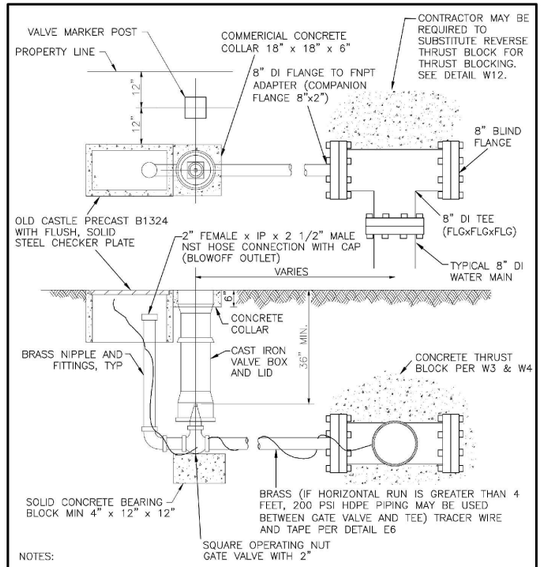
GALVANIZED STEEL BAR, PER TABLE

PIPE CLAMP

BASED ON ALDERWOOD WATER & WASTEWATER STANDARD WD-12 11-2018

CONCRETE THRUST BLOCK
FOR CONVEX VERTICAL BENDS

STANDARD DETAIL
W5
3/11/2020

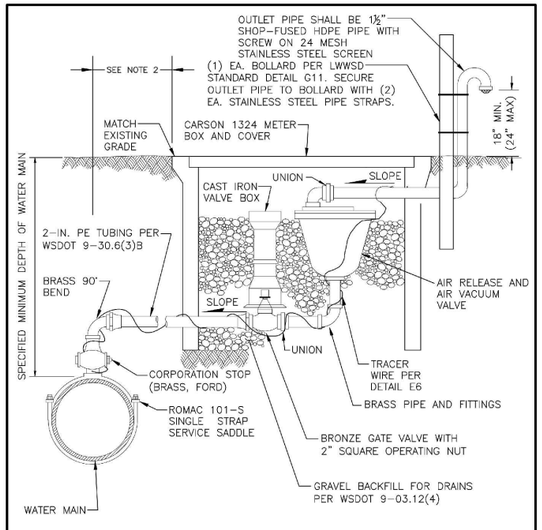


NOTES:

1. Valve and piping to valve shall be 2" unless otherwise noted on plans.
3. Locate blowoff outlet near property corner if possible.
4. An 8-inch gate valve (FLxMJ) is required on the tee if future water main extension is possible.

2 INCH BLOWOFF ASSEMBLY

STANDARD DETAIL
W7
3/11/2020



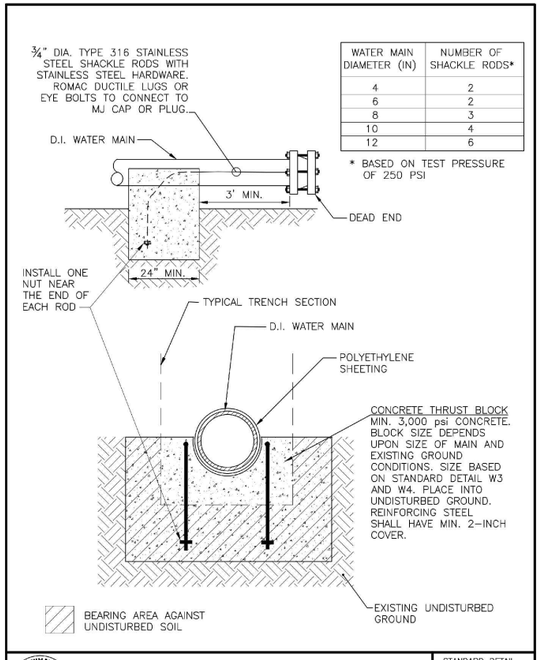
NOTES:

1. The Air/Vacuum Release Valves shall be 2-inch APCO Series 145C combination air-release/vacuum relief valve, single body, double orifice. Locate at the high point of the main, tap top of main.
2. Air/Vacuum Release assembly shall be installed along the right-of-way at location staked by engineer.

BASED ON WSDOT STANDARD PLAN B-90.30-00 DATED 6/8/06.

COMBINATION
AIR RELEASE / AIR VACUUM
VALVE ASSEMBLY

STANDARD DETAIL
W8
3/11/2020



WATER MAIN DIAMETER (IN)	NUMBER OF SHACKLE RODS*
4	2
6	2
8	3
10	4
12	6

* BASED ON TEST PRESSURE OF 250 PSI

REVERSE THRUST BLOCK
NOT TO SCALE

STANDARD DETAIL
W12
3/11/2020

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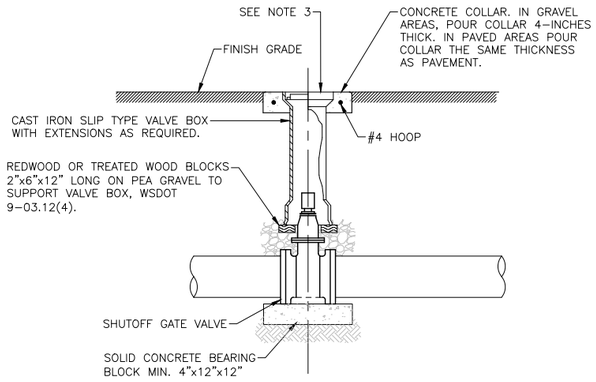
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WATER DETAILS

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

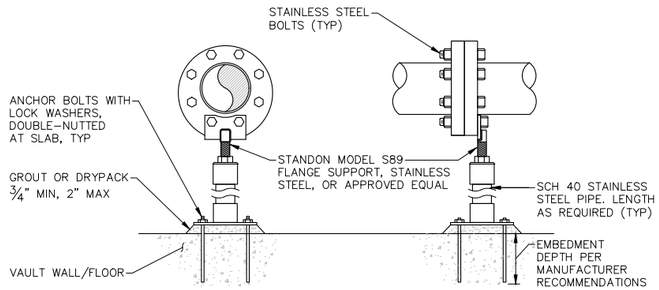
SHEET C5.1 | PAGE 19 OF 50



NOTES:

1. FOR SURFACE RESTORATION AND TYPICAL TRENCH DETAIL SEE LWWSD STD DET G4.
2. WSDOT REFERENCE PER LATEST EDITION.
3. LOCKING VALVE BOX LIDS, TRUMBULL OR EQUAL, SHALL BE INSTALLED WERE IDENTIFIED ON PLAN.

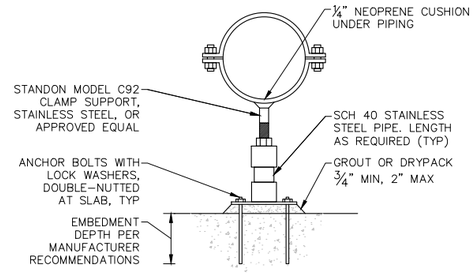
1 BURIED GATE VALVE DETAIL
NOT TO SCALE



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. BOLTS & ANCHOR BOLTS SHALL BE TYPE 316 STAINLESS STEEL. ALL OTHER PARTS TO BE TYPE 304 STAINLESS STEEL

2 PIPE SUPPORT, FLANGE TYPE
NOT TO SCALE

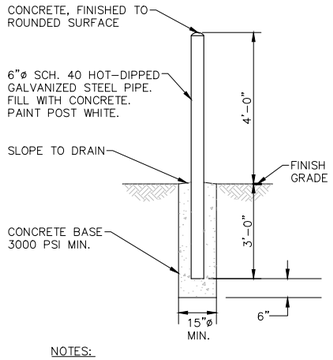


NOTES:

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. BOLTS & ANCHOR BOLTS SHALL BE TYPE 316 STAINLESS STEEL. ALL OTHER PARTS TO BE TYPE 304 STAINLESS STEEL

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

3 PIPE SUPPORT, SADDLE TYPE
NOT TO SCALE



NOTES:

1. INSTALL POST SO THAT IT IS VERTICAL AND FIRMLY EMBEDED.
2. CONFIRM ALL FINAL LOCATIONS W/ OWNER PRIOR TO INSTALLATION.

4 BOLLARD
NOT TO SCALE

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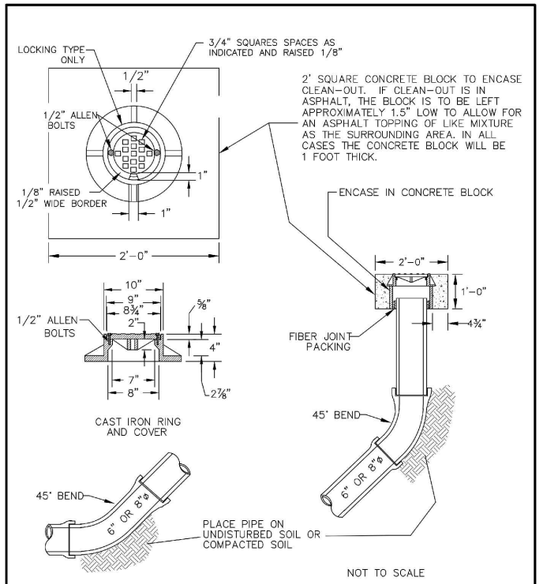
SCHEENE E. CURTIS 42429 REGISTERED PROFESSIONAL ENGINEER STATE OF WASHINGTON

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WATER DETAILS

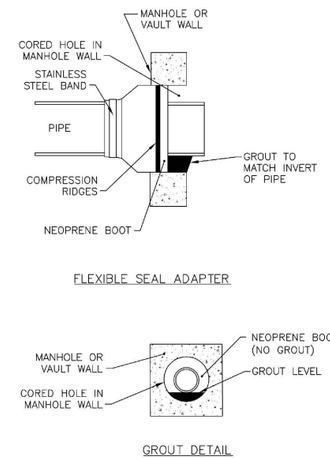
DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C5.2
PAGE 20 OF 50



SEWER MAIN CLEANOUT

STANDARD DETAIL S7 5/1/2014

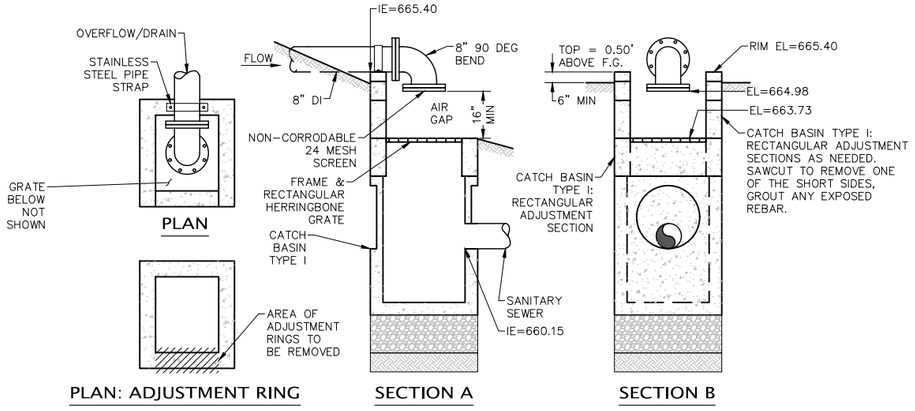


NOTES:

1. ALL MANHOLE CONNECTIONS SHALL BE 100% WATERTIGHT.
2. ALL PIPE SHALL EXTEND 2" INTO MANHOLE.
3. NEOPRENE BOOT ON THE FLEXIBLE SEAL ADAPTER SHALL BE A MINIMUM OF ⅜" THICK PER ASTM C-443, AND SHALL BE HELD IN PLACE WITH AN INTERNAL EXPANDING STAINLESS STEEL BAND SUCH AS "KOR-N-SEAL" OR APPROVED EQUAL.
4. DEFLECTION AT THE ADAPTER MUST NOT EXCEED MANUFACTURER'S RECOMMENDATION. IF SLOPE OF PIPE AT PENETRATION EXCEEDS RECOMMENDED DEFLECTION, CAST OR CORE HOLE AT AN ANGLE SUCH THAT DEFLECTION DOES NOT EXCEED MANUFACTURER'S RECOMMENDATION.

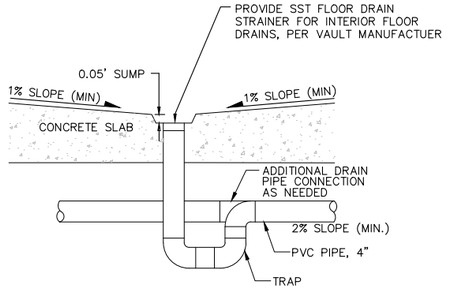
MANHOLE PIPE PENETRATION DETAILS

STANDARD DETAIL S20 9/20/2017



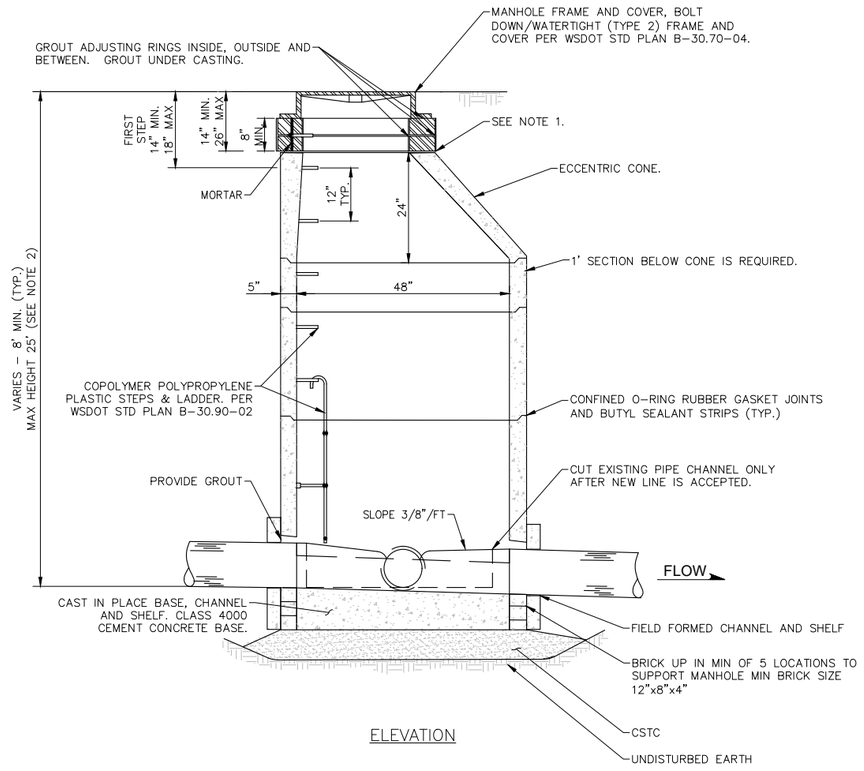
1 TYPE 1 MODIFIED CATCH BASIN/AIR GAP STRUCTURE

NOT TO SCALE



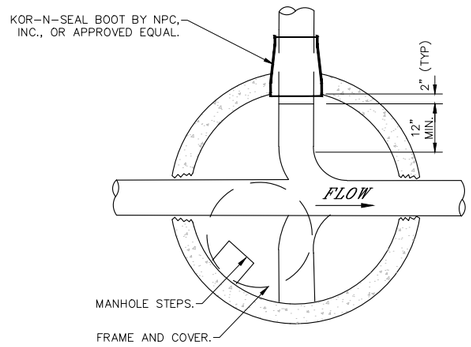
2 TYPICAL VAULT/FLOOR DRAIN

NOT TO SCALE



3 SADDLE MANHOLE

NOT TO SCALE



NOTES:

1. PRECAST REINFORCEMENT GRADE RINGS SET IN CEMENT GROUT, MAXIMUM 2 GRADE RINGS ALLOWED ON NEW MANHOLES. METAL RISER RINGS SHALL NOT BE INSTALLED.
2. MANHOLES 5'-7' DEEP MUST BE FLAT SLAB TOPS PER WSDOT STD PLAN B-30.90-02, ELIMINATE ECCENTRIC CONE SECTION.

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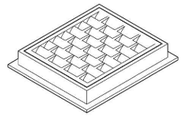
LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY, WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
OVERFLOW, DRAIN AND SEWER DETAILS

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C5.3 | PAGE 21 OF 50

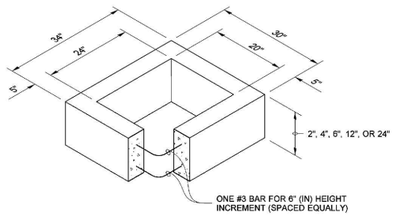
DRAWN BY: FERN LIDDELL



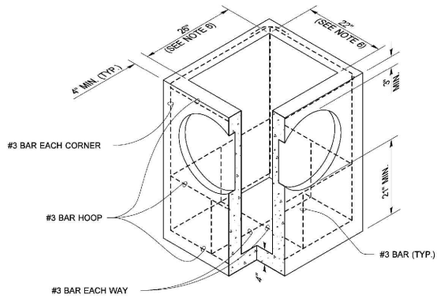
FRAME AND VANED GRATE

PIPE ALLOWANCES	
PIPE MATERIAL	MAXIMUM INSIDE DIAMETER (INCHES)
REINFORCED OR PLAIN CONCRETE	12"
ALL METAL PIPE	15"
CPSSP ✱ (STD. SPEC. SECT. 9-05.20)	12"
SOLID WALL PVC (STD. SPEC. SECT. 9-05.12(1))	15"
PROFILE WALL PVC (STD. SPEC. SECT. 9-05.12(2))	15"

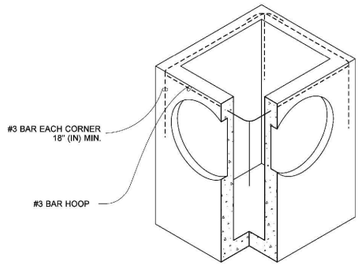
✱ CORRUGATED POLYETHYLENE STORM SEWER PIPE



RECTANGULAR ADJUSTMENT SECTION



PRECAST BASE SECTION



(SEE NOTE 1)

ALTERNATIVE PRECAST BASE SECTION

NOTES

1. As acceptable alternatives to the rebar shown in the **PRECAST BASE SECTION**, fibers (placed according to the Standard Specifications), or wire mesh having a minimum area of 0.12 square inches per foot shall be used with the minimum required rebar shown in the **ALTERNATIVE PRECAST BASE SECTION**. Wire mesh shall not be placed in the knockouts.
2. The knockout diameter shall not be greater than 20" (in). Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with **Standard Specification Section 9-04.3**.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5' (ft).
4. The frame and grate may be installed with the flange down, or integrally cast into the adjustment section with flange up.
5. The Precast Base Section may have a rounded floor, and the walls may be sloped at a rate of 1 : 24 or steeper.
6. The opening shall be measured at the top of the **Precast Base Section**.
7. All pickup holes shall be grouted full after the basin has been placed.

JULIE HEILMAN STATE OF WASHINGTON 41810 REGISTERED PROFESSIONAL ENGINEER

Julie Heilman 2020.09.01 07:52:50 -07'00'

CATCH BASIN TYPE 1

STANDARD PLAN B-5.20-03

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Roark, Steve Digitally signed by Roark, Steve Date: 2020.09.09 09:45:23 -07'00'
STATE DESIGN ENGINEER
Washington State Department of Transportation

1

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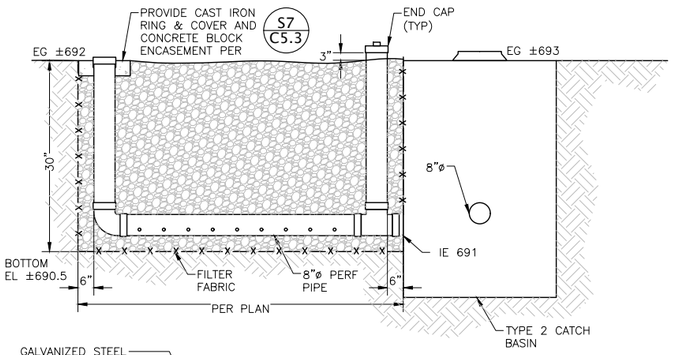
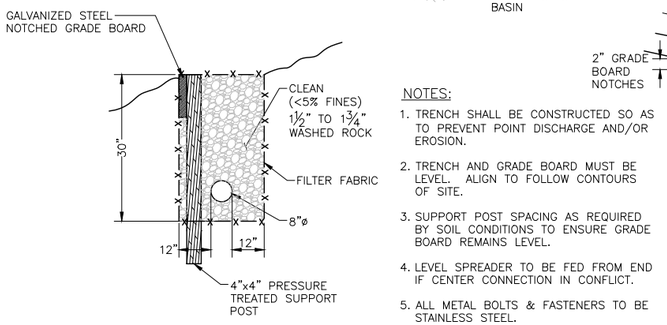
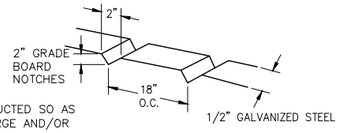
BID DOCUMENTS







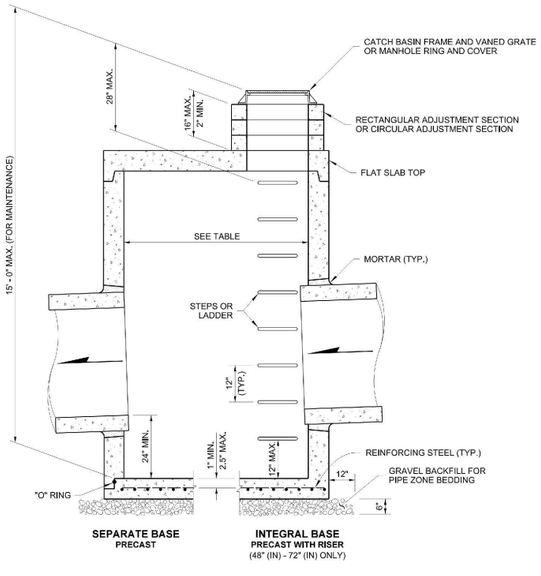
NOTES:

1. TRENCH SHALL BE CONSTRUCTED SO AS TO PREVENT POINT DISCHARGE AND/OR EROSION.
2. TRENCH AND GRADE BOARD MUST BE LEVEL. ALIGN TO FOLLOW CONTOURS OF SITE.
3. SUPPORT POST SPACING AS REQUIRED BY SOIL CONDITIONS TO ENSURE GRADE BOARD REMAINS LEVEL.
4. LEVEL SPREADER TO BE FED FROM END IF CENTER CONNECTION IN CONFLICT.
5. ALL METAL BOLTS & FASTENERS TO BE STAINLESS STEEL.

2 LEVEL SPREADER DISPERSION TRENCH

NOT TO SCALE

DRAWN BY: FERN LIDDELL



CATCH BASIN DIMENSIONS				
CATCH BASIN DIAMETER	MIN. WALL THICKNESS	MIN. BASE THICKNESS	MAXIMUM KNOCKOUT SIZE	MINIMUM DISTANCE BETWEEN KNOCKOUTS
48"	4"	6"	36"	8"
54"	4.5"	8"	42"	8"
60"	5"	8"	48"	8"
72"	6"	8"	60"	12"
84"	8"	12"	72"	12"
96"	8"	12"	84"	12"
120"	10"	12"	96"	12"
144"	12"	12"	108"	12"

PIPE ALLOWANCES					
CATCH BASIN DIAMETER	PIPE MATERIAL WITH MAXIMUM INSIDE DIAMETER				
	CONCRETE	ALL METAL	CPSSP ① PP ④	SOLID WALL PVC ②	PROFILE WALL PVC ③
48"	24"	30"	24"	30"	30"
54"	30"	36"	30"	36"	36"
60"	36"	42"	36"	42"	42"
72"	42"	54"	42"	48"	48"
84"	54"	60"	54"	48"	48"
96"	60"	72"	60"	48"	48"
120"	66"	84"	60"	48"	48"
144"	78"	96"	60"	48"	48"

① Corrugated Polyethylene Storm Sewer Pipe (See **Standard Specification Section 9-05.20**)
② (See **Standard Specification Section 9-05.12(1)**)
③ (See **Standard Specification Section 9-05.12(2)**)
④ Polypropylene Pipe (See **Standard Specification Section 9-05.24**)

NOTES

1. No steps are required when height is 4' or less.
2. The bottom of the precast catch basin may be sloped to facilitate cleaning.
3. The rectangular frame and grate may be installed with the flange up or down. The frame may be cast into the adjustment section.
4. Knockouts shall have a wall thickness of 2" (in) minimum to 2.5" (in) maximum. Provide a 1.5" (in) minimum gap between the knockout wall and the outside of the pipe. After the pipe is installed, fill the gap with joint mortar in accordance with **Standard Specification Section 9-04.3.**

JULIE HEILMAN STATE OF WASHINGTON 41810 REGISTERED PROFESSIONAL ENGINEER

Heilman, Julie Feb 20 2018 12:49 PM cosign

CATCH BASIN TYPE 2

STANDARD PLAN B-10.20-02

SHEET 1 OF 1 SHEET

APPROVED FOR PUBLICATION
Cummins, Jeff Mar 2 2018 10:01 AM cosign
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Washington State Department of Transportation

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CURTIS D. SCHENEMAN EDER STATE OF WASHINGTON 46420 REGISTERED PROFESSIONAL ENGINEER

10-26-2023

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WHATCOM COUNTY WASHINGTON

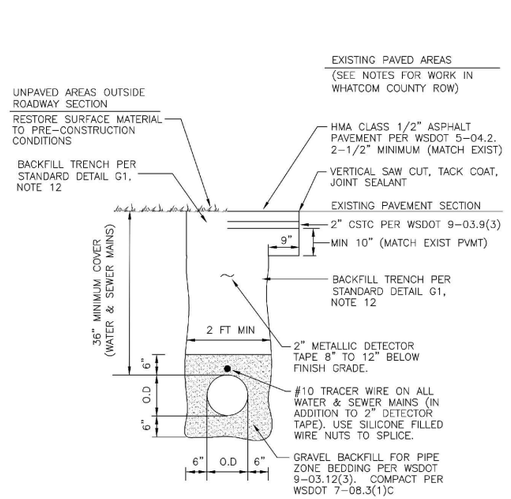
STORMWATER DETAILS

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C5.4 PAGE 22 OF 50

PLOT SETTINGS: W: AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
W:\2021\2021-130 LWWSD DIV 7 TANK\DWG\V2019_2021-130 C5.1 DETAILS.DWG — 10/11/2023 4:31 PM — Benton Seay

NO.	REVISIONS	BY	DATE
1	ADD NOTE TO TRENCHING DETAIL	CDS	1-4-2024

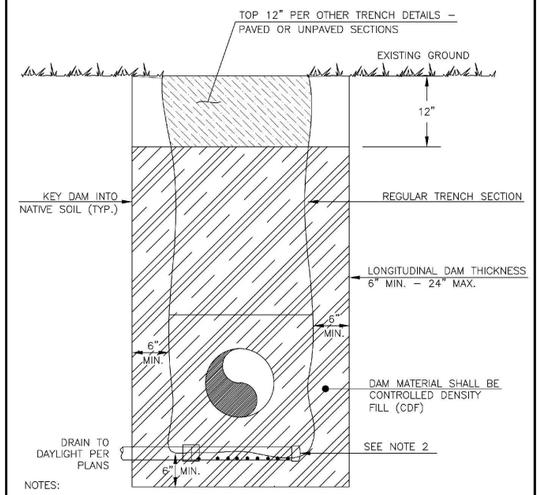


NOTES:

1. With respect to trench repairs and pavement overlays, in the event of conflict between this detail and Whatcom County Standard Drawing Numbers 512.F-1 and 512.F-2, the more stringent standard shall apply.

2. Standard utility locations within county-maintained public road prisms as shown in the 2012.09.25 version of Whatcom County Standard Drawing No. 512.D-1 shall apply.

TYPICAL TRENCH AND BACKFILL DETAIL | STANDARD DETAIL G4 | 3/11/2020

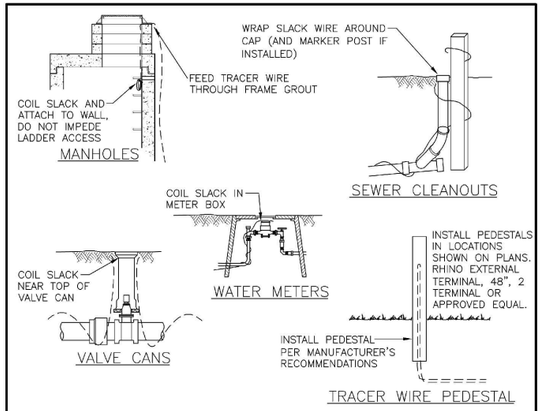


NOTES:

1. TRENCH DAMS SHALL BE LOCATED AS PER GENERAL NOTES OR PER PROJECT PLAN AND PROFILE SHEETS.

2. INSTALL 4 INCH PVC CAP, PERFORATED DRAIN PIPE WITH HOLES FACING DOWN, COUPLER, AND SOLID PVC PIPE 1 TO 2 FEET OUTSIDE THE LIMITS OF THE CDF ON THE UPHILL SIDE OF THE TRENCH DAM. INSTALL DRAIN ROCK (WSDOT 9-03.12(4)) 6 INCHES ON ALL SIDES OF PERFORATED PIPE. SEPARATE DRAIN ROCK FROM OTHER MATERIAL USING GEOTEXTILE FOR UNDERGROUND DRAINAGE PER WSDOT 9-33.2, TABLES 1&2, MODERATE SURVIVABILITY, CLASS C.

TRENCH DAM WITH DRAIN | STANDARD DETAIL G10 | 3/11/2020



NOTES:

1. Tracer wire installation is required on all District owned pipe and communication lines. Tracer wire is also required on private side sewers and water service lines.

2. Tracer wire shall be 10 AWG insulated copper wire rated for direct burial in wet locations. Use green insulation for sewer, blue insulation for water, and orange insulation for fiber/communication related utilities.

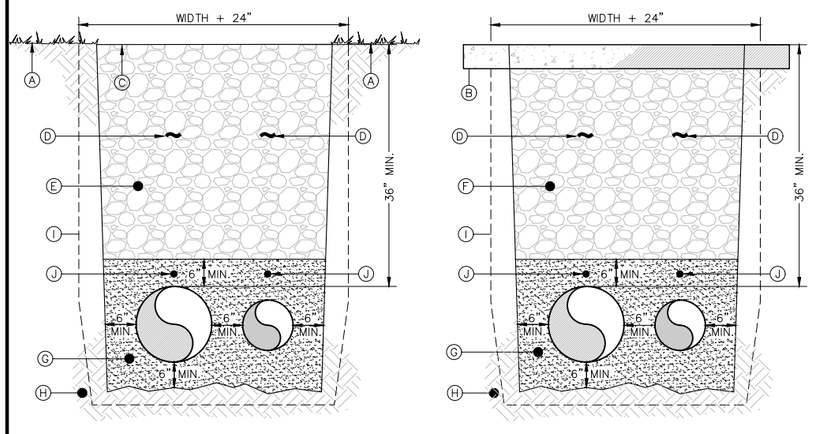
3. Install tracer wire in continuous lengths (no splices) between surface access points. Any direct bury splices shall be approved and inspected by the District Engineer prior to cover. Splices shall be made with silicone filled wire nuts rated for direct burial in wet locations such as "Ideal Underground Wire Connectors", "Ideal Mudbug Connectors," "Copperhead Snakebite Connectors," or "3M DBR Direct Bury Splice Kit."

4. Tape tracer wire to pipe at 10-foot intervals.

5. Provide at least 2-feet of coiled tracer wire slack at surface access points.

6. Wrap tracker wire on the outside of valve cans, tape secure.

TRACER WIRE | STANDARD DETAIL E6 | 3/11/2020



KEYED NOTES:

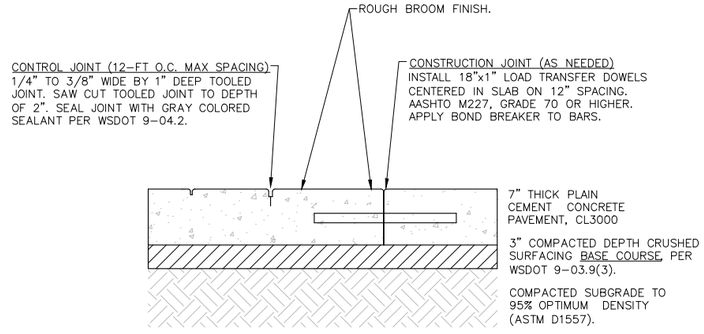
- (A) STABILIZE EXPOSED AREAS w/TOPSOIL/FOREST DUFF FROM SITE
- (B) NEW SURFACING PER PLAN OR RESTORE EXISTING GRAVEL ACCESS w/4 INCHES MIN. THICKNESS OF PERMEABLE BALLAST PER WSDOT 9-03.9(2).
- (C) RESTORE SURFACE MATERIAL TO PRE-CONSTRUCTION CONDITIONS
- (D) 2" METALLIC DETECTOR TAPE 8" TO 12" BELOW FINISH GRADE.
- (E) NATIVE BACKFILL MATERIAL, FREE OF WOOD WASTE, DEBRIS, CLODS OR ROCKS GREATER THAN 6 INCHES IN ANY DIMENSION (WSDOT 9-03.15) COMPACTED TO 90% MAX. DENSITY .
- (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. USE SILOCONE FILLED WIRE NUTS TO SPLICE

NOTE:

IF POWER CONDUIT IS LOCATED IN SAME TRENCH, MAINTAIN 6-IN MIN SEPARATION WITH OTHER UTILITIES. REFER TO ELECTRICAL DRAWINGS AND SPECS FOR OTHER REQUIREMENTS

1 TYPICAL WATER & DRAIN PIPE TRENCHING & BACKFILL

NOT TO SCALE



2 CEMENT CONCRETE APRON

NOT TO SCALE

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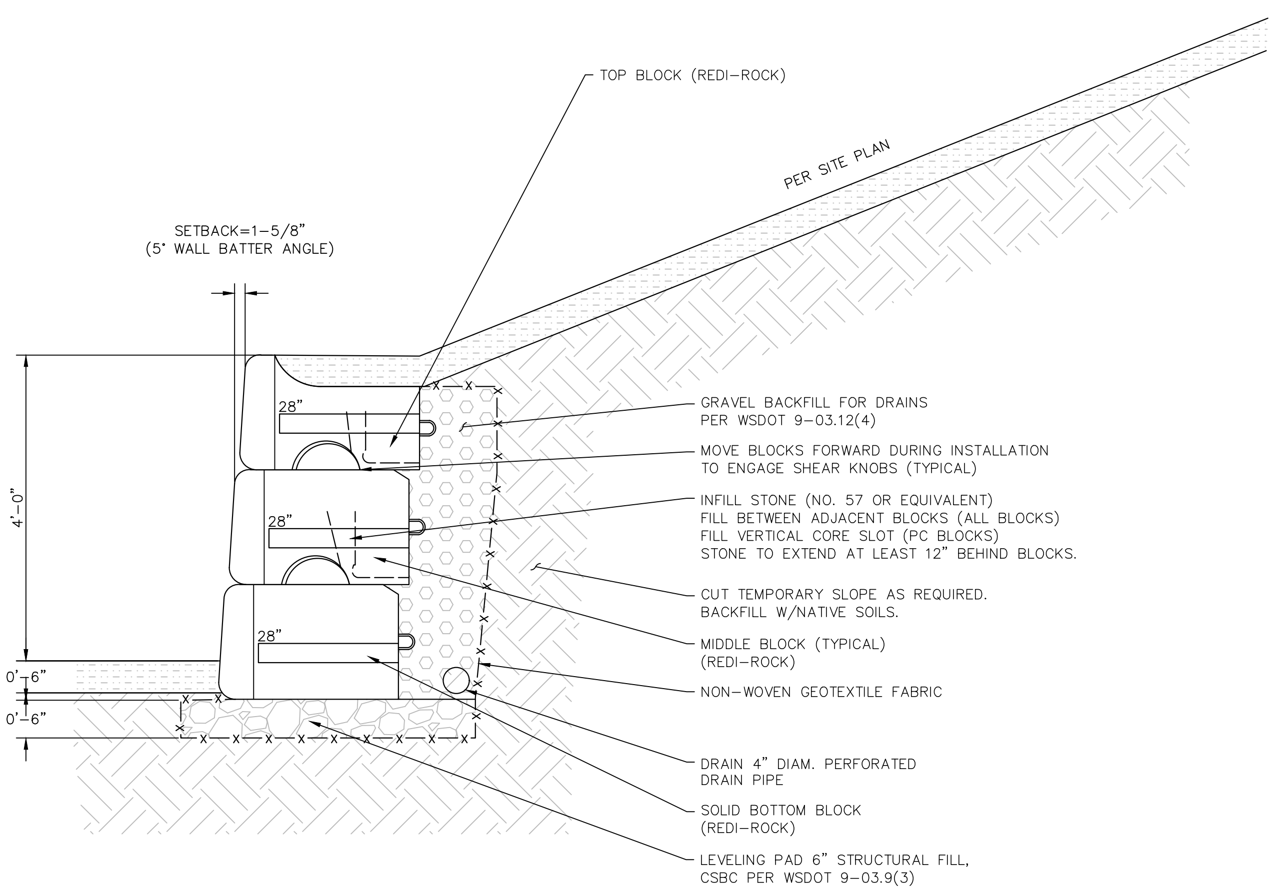
1-8-2024

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
GENERAL MISC. DETAILS

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C5.5 | PAGE 23 OF 50

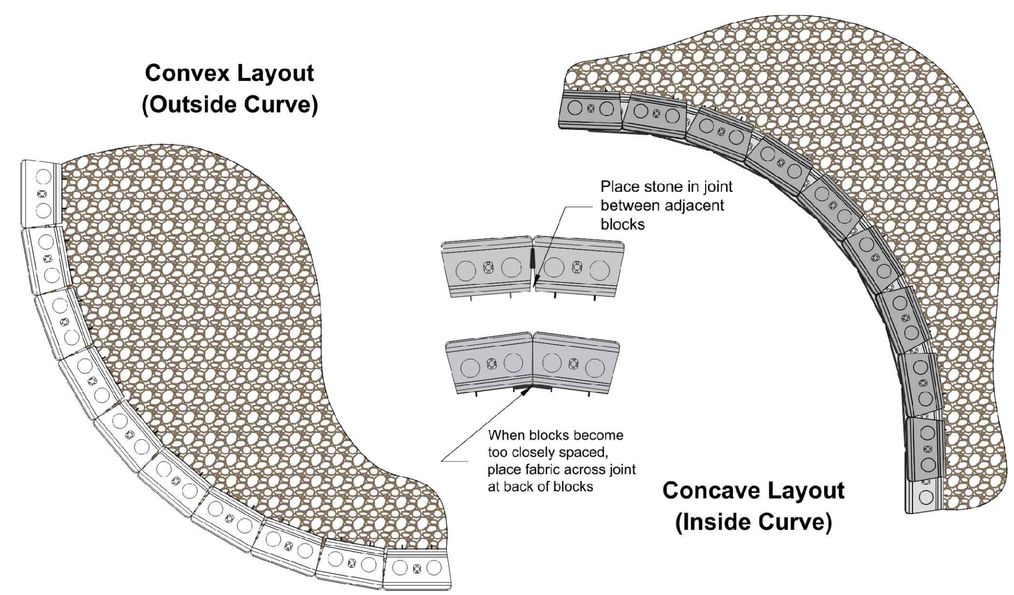


* MODIFIED REDI-ROCK WALL SECTION STD DETAIL.

GRAVITY BLOCK WALL SECTION

1 — NOT TO SCALE

Layout for Convex Curves and Radial Corners

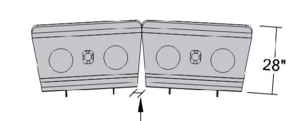


Minimum radius for bottom row

Number of courses	Height of wall	Radius from face of block	Distance between blocks*
1	1'-6" (0.46 m)	14'-6" (4.42 m)	0.13" (3 mm)
2	3'-0" (0.91 m)	14'-8" (4.47 m)	0.21" (5 mm)
3	4'-6" (1.37 m)	14'-10" (4.52 m)	0.28" (7 mm)
4	6'-0" (1.83 m)	15'-0" (4.57 m)	0.36" (9 mm)
5	7'-6" (2.29 m)	15'-2" (4.62 m)	0.43" (11 mm)
6	9'-0" (2.74 m)	15'-4" (4.67 m)	0.50" (13 mm)
7	10'-6" (3.20 m)	15'-6" (4.72 m)	0.57" (15 mm)
8	12'-0" (3.66 m)	15'-8" (4.78 m)	0.63" (16 mm)
9	13'-6" (4.11 m)	15'-10" (4.83 m)	0.70" (18 mm)
10	15'-0" (4.57 m)	16'-0" (4.88 m)	0.76" (19 mm)
11	16'-6" (5.03 m)	16'-2" (4.93 m)	0.83" (21 mm)
12	18'-0" (5.49 m)	16'-4" (4.98 m)	0.88" (22 mm)
13	19'-6" (5.94 m)	16'-6" (5.03 m)	0.95" (24 mm)
14	21'-0" (6.40 m)	16'-8" (5.08 m)	1.01" (26 mm)

* Distance between blocks is measured at the back of 28" (710 mm) blocks and 24" (610 mm) behind the form parting line (back edge of face texture) for 41" (1030 mm) blocks. This distance is intended to be a guide only. Minimum radius is controlling.

14'-6" (4.42 m) is the minimum radius for Redi-Rock blocks. It occurs when all the blocks are placed tight together. A larger radius is required on the bottom row of a Redi-Rock wall to account for the batter between courses of blocks and still provide enough space to construct the top row of blocks.



* REDI-ROCK STD DETAIL "CONCAVE AND CONVEX CURVES RADIAL CORNERS GRAVITY LAYOUT".

GRAVITY BLOCK WALL CURVE LAYOUT

2 — NOT TO SCALE

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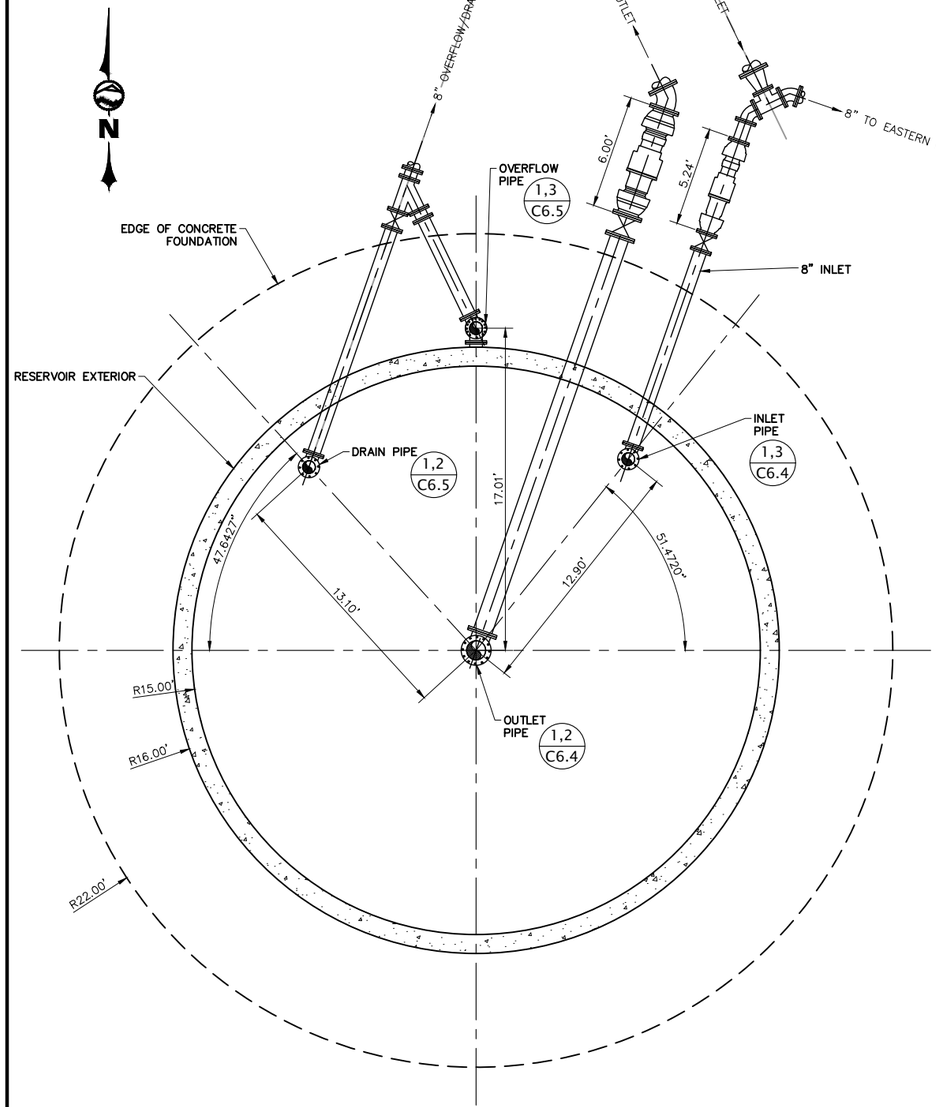
WHATCOM COUNTY — WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
GENERAL MISC. DETAILS

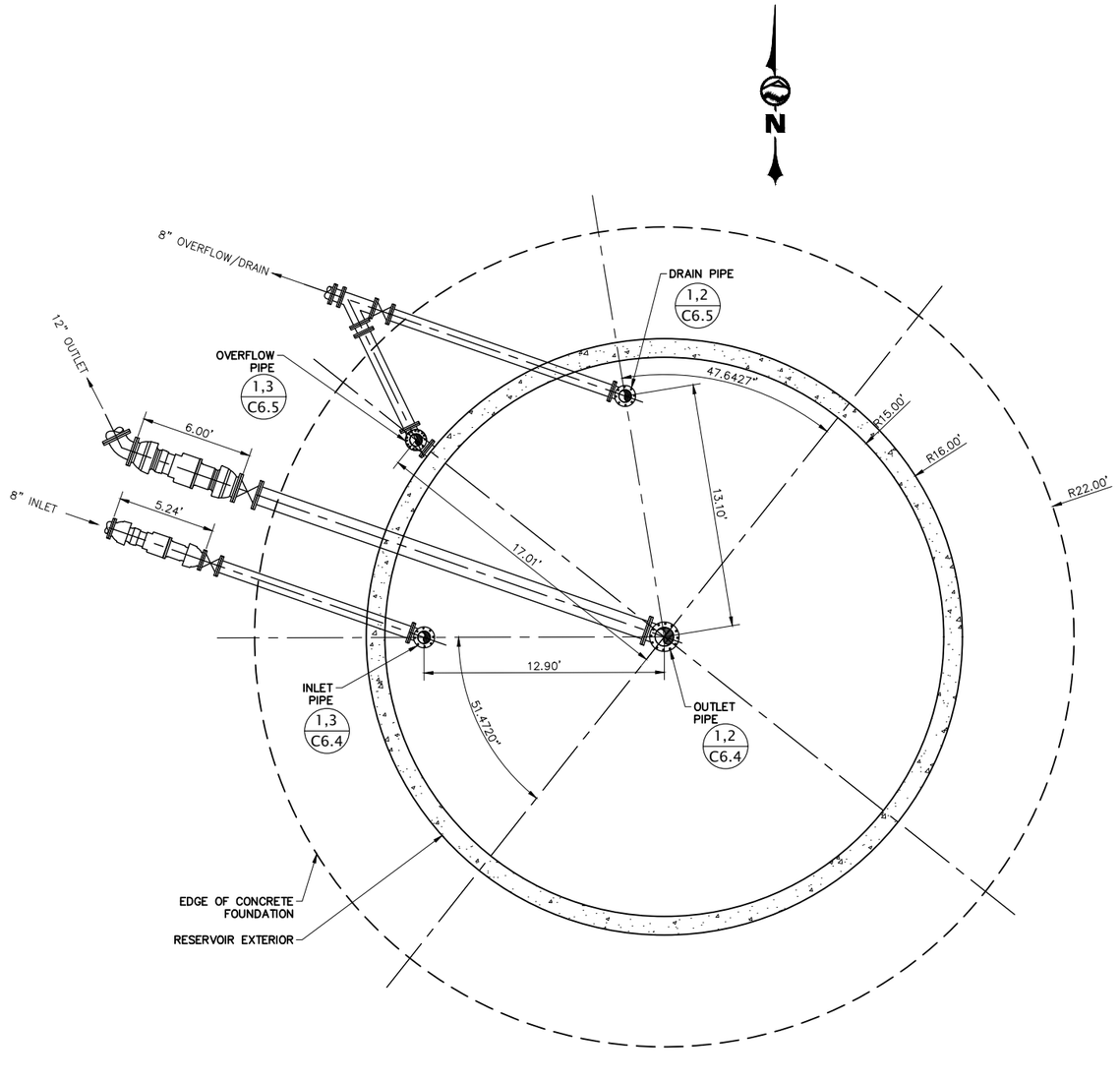
DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C5.6

PLOT SETTINGS: WE AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
W:\2021\2021-130 LWWSD DIV 7 TANK\DWG\V2019_2021-130 C5.1 DETAILS.DWG - 10/11/2023 4:31 PM - Benton Seay



1 TANK FLOOR PLAN: WESTERN TANK



2 TANK FLOOR PLAN: EASTERN TANK

SCALE 4 0 4 8 FEET
HORIZONTAL SCALE

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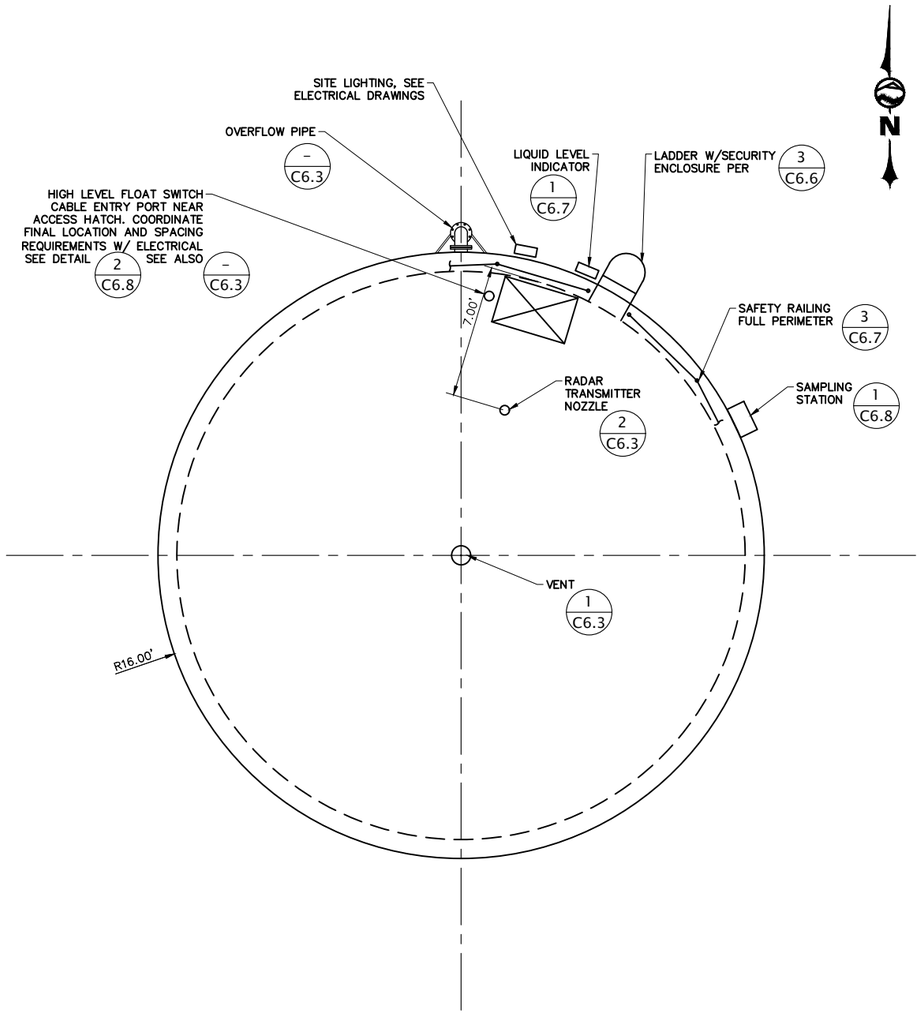
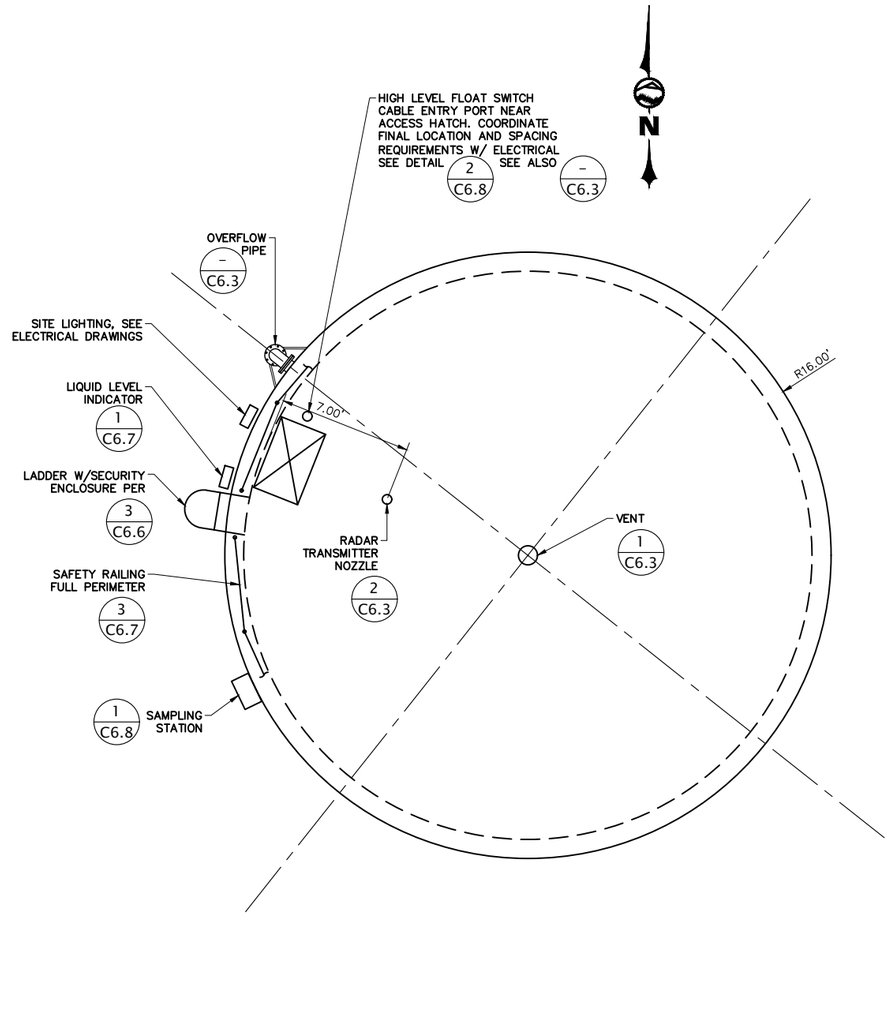
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR FLOOR PLAN

DATE 10-11-2023
SCALE AS SHOWN
JOB NUMBER 2021-130

SHEET C6.1
PAGE 25 OF 50



1 TANK ROOF PLAN: WESTERN TANK



2 TANK ROOF PLAN: EASTERN TANK

4 0 4 8
SCALE HORIZONTAL SCALE FEET

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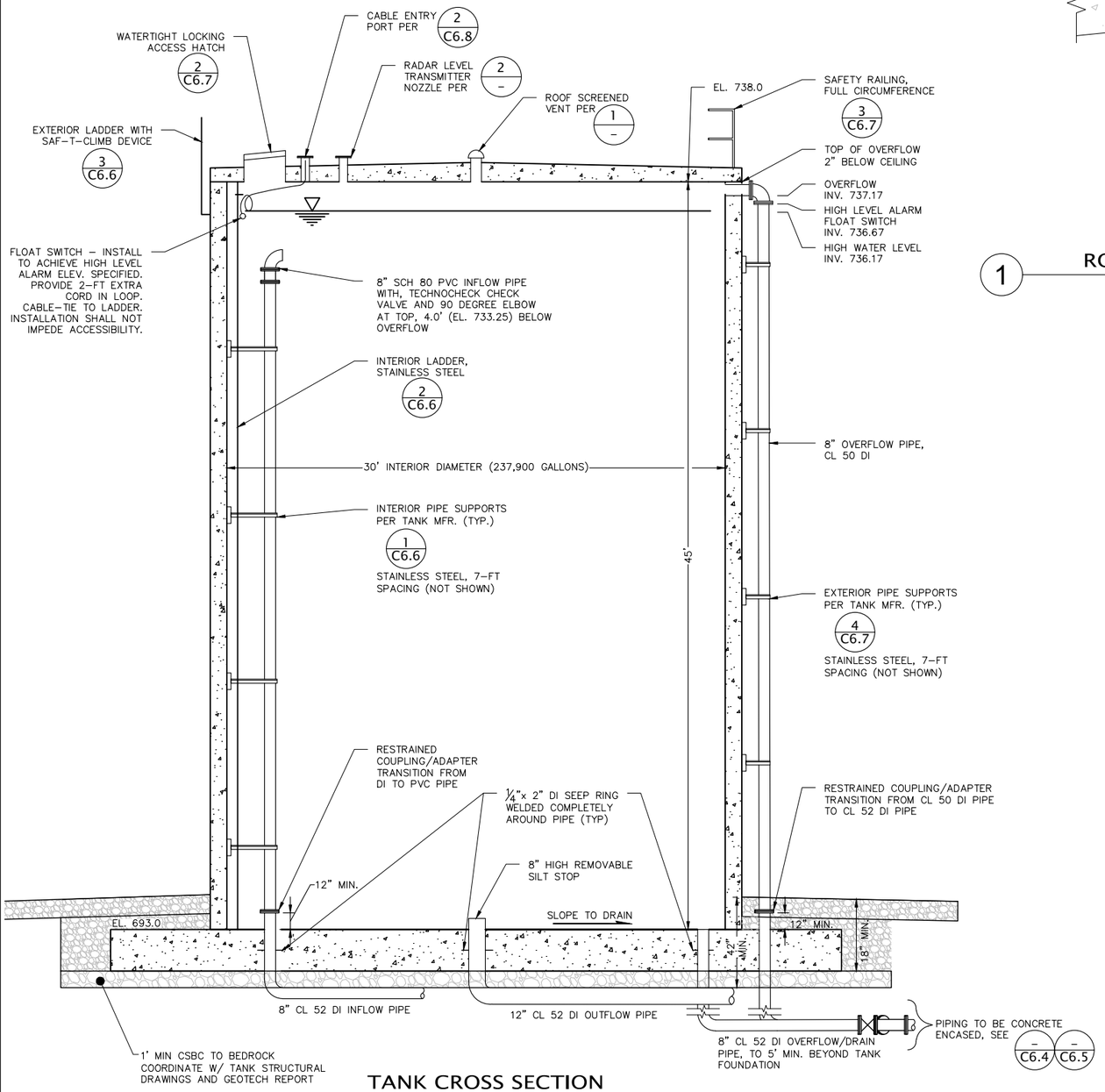
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR ROOF PLAN

DATE 10-11-2023
SCALE AS SHOWN
JOB NUMBER 2021-130

SHEET C6.2
PAGE 26 OF 50



TANK CROSS SECTION
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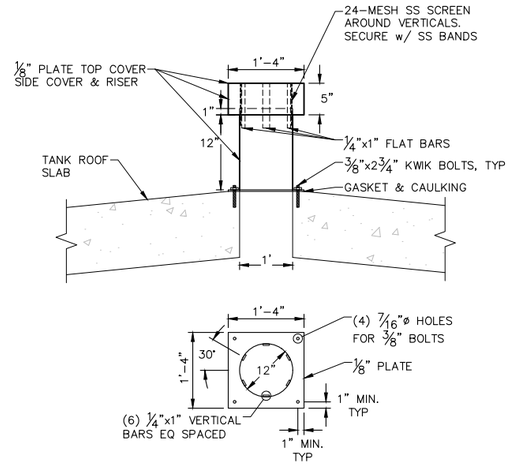
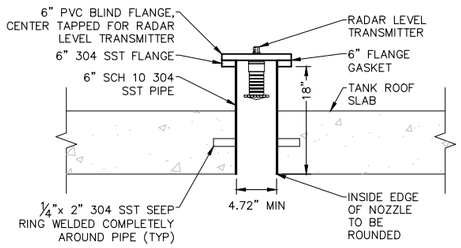


* ALL FASTENERS SHALL BE STAINLESS STEEL

1 ROOF SCREENED VENT DETAIL
NOT TO SCALE



* SEE ELECTRICAL & CONTROL DRAWINGS & SPECS FOR TRANSMITTER & ELECTRICAL CONDUIT DETAILS

2 RADAR TRANSMITTER NOZZLE DETAIL
NOT TO SCALE

STORAGE TANK NOTES

1. CONSTRUCTION PROCEDURES – ALL WORK AND MATERIALS SHALL CONFORM WITH THE LATEST EDITION OF THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION.
2. THE TANKS SHALL BE 30.0 FEET INSIDE DIAMETER BY 45.0 FEET HIGH (239,700 GALLONS EACH GROSS) AND SHALL BE CONSTRUCTED AT THE LOCATION SHOWN ON THE PLANS. STRUCTURAL DRAWINGS, SEALED BY A PROFESSIONAL ENGINEER, SHALL BE REQUIRED FROM THE CONTRACTOR. THE DESIGN OF THE TANK SHALL BE IN ACCORDANCE WITH UBC, LATEST EDITION, AND RECOMMENDED STANDARDS FOR WATERWORKS BY GREAT LAKES–UPPER MISSISSIPPI RIVER BOARD OF STATE SANITARY ENGINEERS.
3. THE TANKS SHALL BE PLACED ON A LEVEL PAD STRIPPED OF VEGETATION AND GRADED TO A SIZE LARGER THAN THE TANK DIAMETER AND PER SITE GRADING. COMPACTION OF THE PAD SHALL BE PER THE TANK SUPPLIER AND GEOTECHNICAL REPORT RECOMMENDATIONS. THE AREA AROUND THE PAD SHALL BE GRADED TO ASSURE POSITIVE DRAINAGE OF RAIN RUNOFF AWAY FROM THE PAD, IN ACCORDANCE WITH GRADING PLAN.
4. THE CONCRETE ROOF SLAB OF THE TANK SHALL HAVE A MINIMUM OF TWO (2) PERCENT SLOPE FROM THE APEX TO ENSURE PROPER RUNOFF. AIR VENTS SHALL BE CONSTRUCTED AT EACH LOCATION SHOWN AND AS SHOWN IN THE DETAILS. THE AIR VENTS SHALL BE CONSTRUCTED SO THAT NO FALLING PARTICLES MAY ENTER THE TANK. THE VENTS WILL BE SIZED TO SAFELY VENT THE TANK DURING PUMPING OR WITHDRAWING WATER AT A MAXIMUM RATE OF 2,400 GPM WITHOUT USING THE OVERFLOW AS A VENT.
5. A ROOF ACCESS HATCH TO THE INSIDE OF THE TANK SHALL BE PROVIDED. THE ENTRY COVER SHALL BE STAINLESS STEEL, CAPABLE OF BEING SECURED SHUT BY A SEPARATE OWNER–PROVIDED LOCK, AND HAVE A HANDLE FOR LIFTING. THE ENTRY SHALL BE POURED IN PLACE WITH THE CONCRETE ROOF SLAB. THE ACCESS HATCH ENTRY SHALL HAVE A MINIMUM SIDE LENGTH OF THIRTY (30) INCHES. THE ACCESS HATCH SHALL EXTEND SIX (6) INCHES MINIMUM ABOVE THE ROOF AND BE FITTED WITH A WATERTIGHT GASKET.
6. AN OVERFLOW PIPE, CL 50 DI PIPE, AND 8 INCHES IN DIAMETER SHALL BE PLACED IN THE WALL OF THE TANK IMMEDIATELY UNDER THE ROOF SLAB. THE PIPE SHALL EXTEND DOWNWARD ON THE SIDE OF THE TANK AND WYE INTO THE DRAIN PIPE.
7. THE FLOOR OF THE TANK SHALL BE CONSTRUCTED WITH A SLOPE OF ¼ INCH PER FOOT TO THE DRAIN CASTING LOCATED AS SHOWN ON THE PLAN.
8. ALL PIPE AND FITTINGS WITHIN FIVE (5) FEET OF THE TANK SHALL BE CLASS 52 DUCTILE IRON AS NOTED ON THE PLANS. FITTINGS UNDER THE TANK AND TO A POINT 5 FEET BEYOND SHALL BE RESTRAINED JOINTS BY MECHANICAL JOINT AND MEGA–LUG, OR APPROVED EQUAL. DUCTILE IRON PIPE SHALL EXTEND THROUGH THE BOTTOM OF THE TANK TO FLOOR LEVEL.
9. BEFORE BEING PLACED IN SERVICE THE TANKS SHALL BE CLEANED AND DISINFECTED IN ACCORDANCE WITH AWWA C652–86 STANDARDS.
10. THE LADDER OF NON–CORROSIVE MATERIALS ON THE INSIDE SHALL EXTEND FROM THE FLOOR TO THE ROOF OF THE TANK.
11. AN EXTERIOR LEVEL INDICATOR SHALL BE INSTALLED. INDICATOR SHALL BE CONSTRUCTED OF STAINLESS STEEL FLOATS, GUIDES, AND HARDWARE AND INCLUDE AN EXTERIOR GAUGE BOARD MARKED IN FEET.
12. UPON PREPARATION OF SUBGRADE AND PRIOR TO POURING CONCRETE, CONTRACTOR SHALL NOTIFY OWNER AND TANK SUPPLIER FOR SUBGRADE CHECK.
13. ALL COATINGS, CONCRETE FORM RELEASE AND CURING AGENTS, LINERS, OR OTHER MATERIALS, IF ANY, IN CONTACT WITH POTABLE WATER SHALL BE CERTIFIED BY NSF INTERNATIONAL OR UNDERWRITERS LABORATORIES TO MEET ANSI/NSF STANDARD 61.
14. THE CL 50 DI OVERFLOW PIPE SHALL BE CEMENT MORTAR LINED INTERIOR AND EPOXY PRIMED EXTERIOR READY FOR FINAL COATING OF EPOXY PER SPECS.
15. TANKS SHALL INCLUDE PENETRATIONS FOR SAMPLING STATION PIPING. SEE –/C6.2 FOR LOCATIONS AND 1/C6.8 FOR DETAILS.

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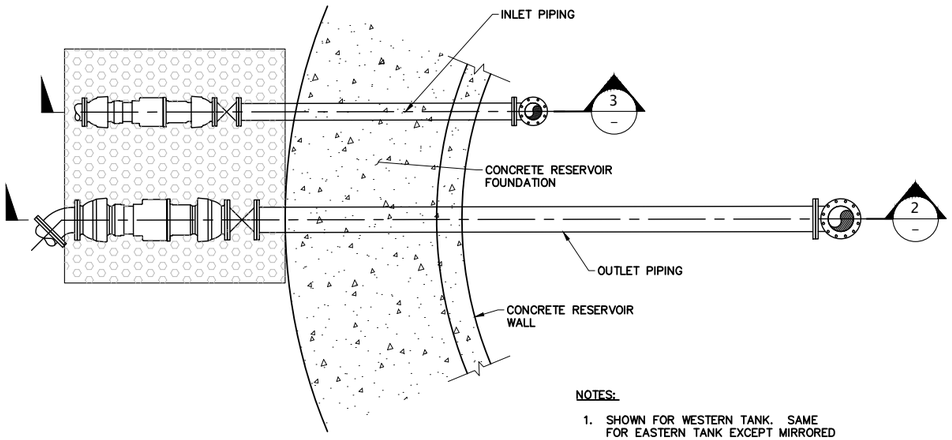
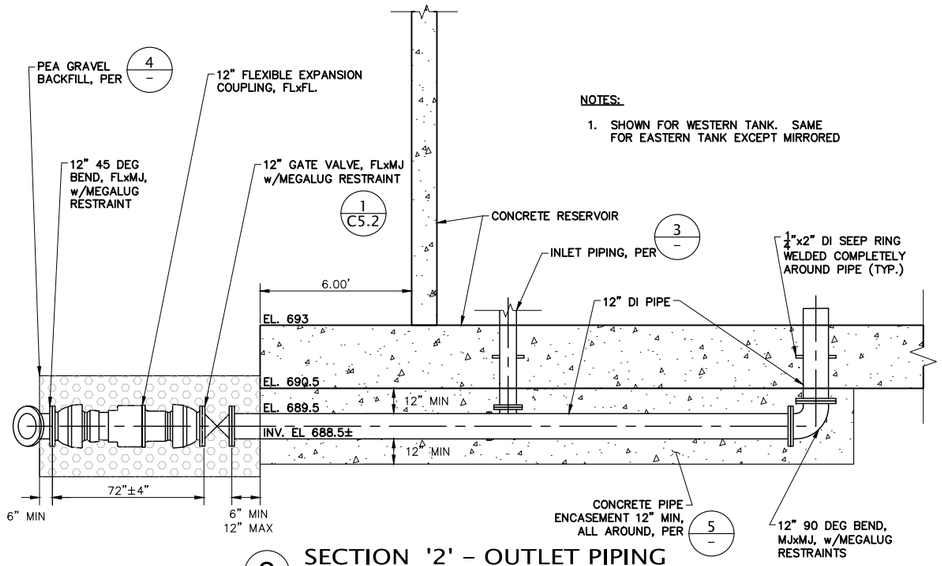
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR ELEVATION AND DETAILS

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C6.3 | PAGE 27 OF 50



1 OUTLET & INLET PIPING PLAN
NOT TO SCALE



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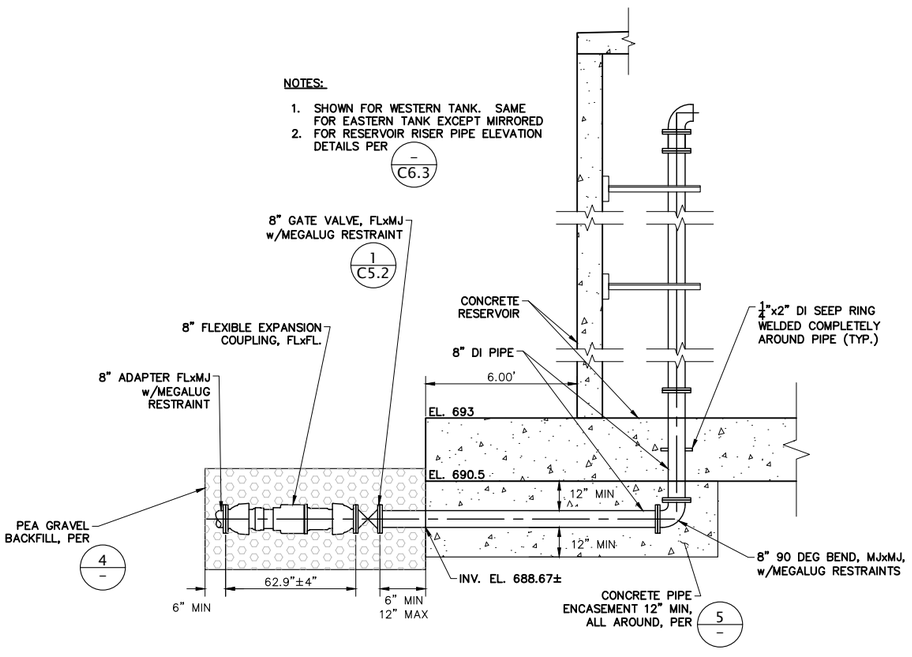

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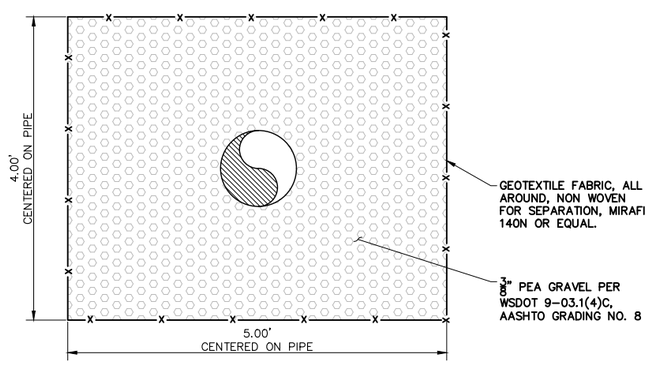
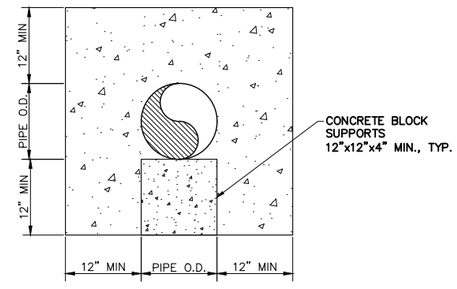


4 PEA GRAVEL BACKFILL
NOT TO SCALE



5 CONCRETE PIPE ENCASEMENT
NOT TO SCALE

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RESERVOIR INLET AND OUTLET PIPING

DATE 10-11-2023
SCALE AS SHOWN
JOB NUMBER 2021-130

SHEET C6.4
PAGE 28 OF 50

PLOT SETTINGS: WE AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
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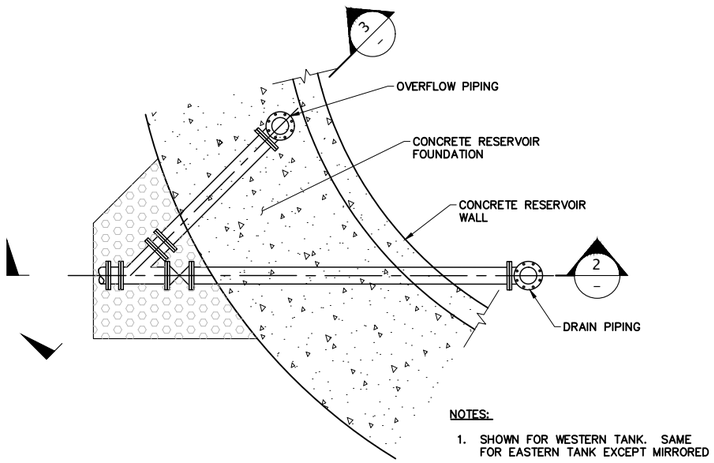
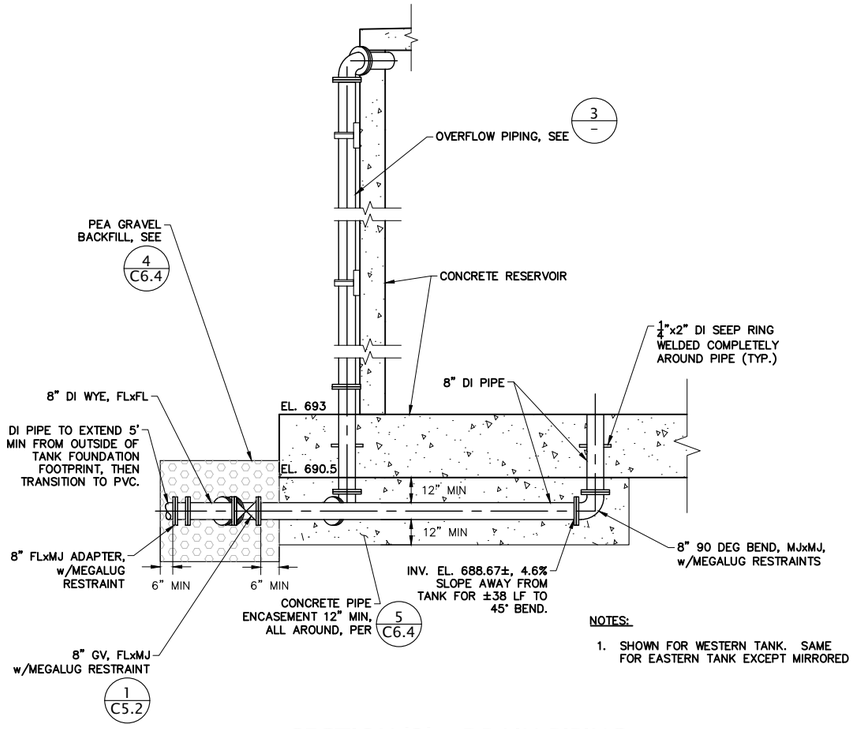


1 OVERFLOW & DRAIN PIPING PLAN
NOT TO SCALE



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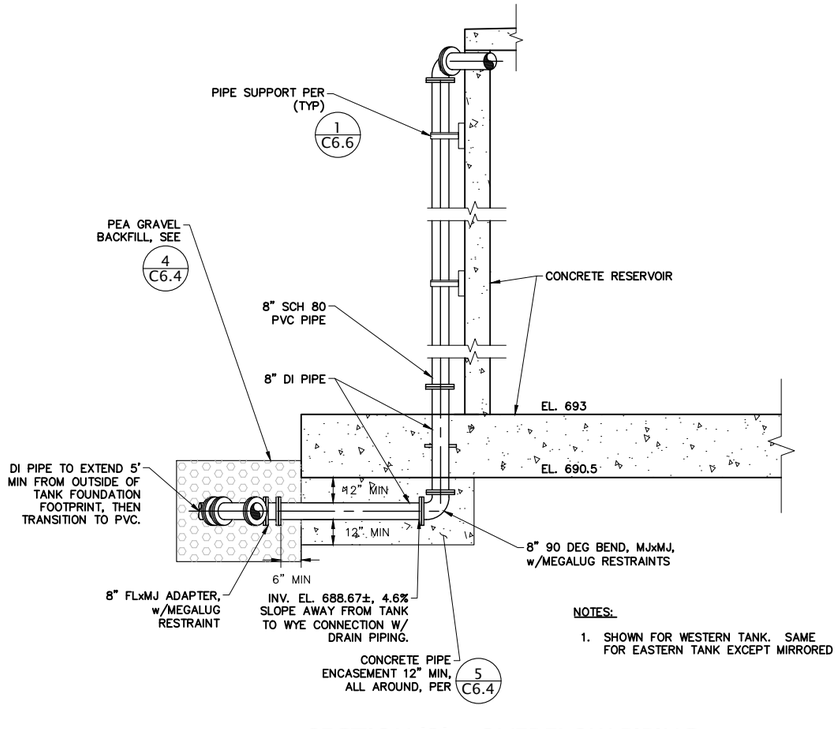

3 SECTION '3' – OVERFLOW PIPING
NOT TO SCALE

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RESERVOIR OVERFLOW AND DRAIN DETAILS

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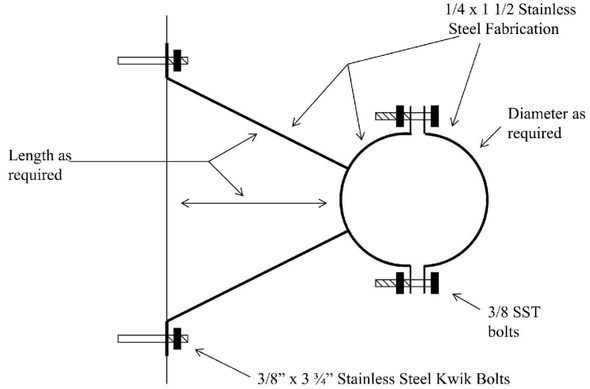
SCALE AS SHOWN
JOB NUMBER 2021-130

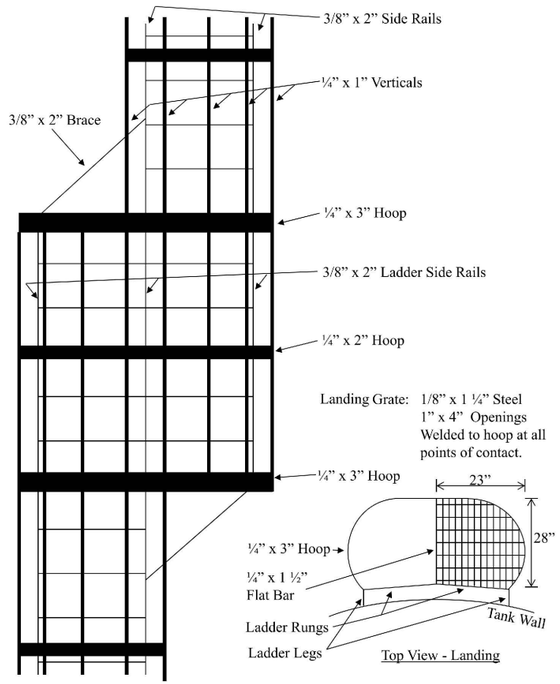
SHEET C6.5
PAGE 29 OF 50



Brackets to be Stainless Steel fabrication

*BAKER SILO STANDARD DETAIL

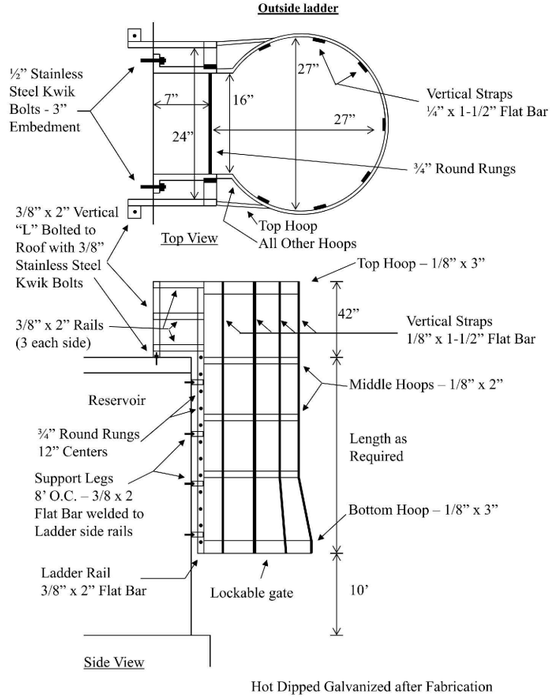
1 INTERIOR PIPE SUPPORTS
NOT TO SCALE



Front View - Cage

Hot Dip Galvanized after Fabrication

CAGE OFFSET



Hot Dipped Galvanized after Fabrication

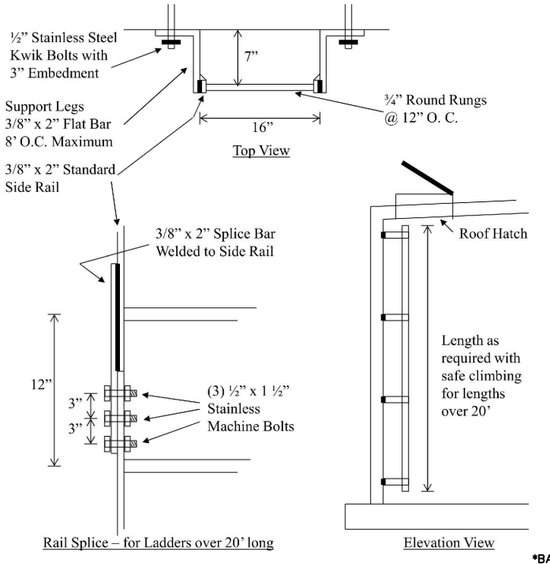
CAGE DETAIL

*BAKER SILO STANDARD DETAIL

3 EXTERIOR LADDER DETAIL
NOT TO SCALE

*INTRUSION SWITCHES & ALARMS SHALL BE COORDINATED W/ ELECTRICAL AND CONTROLS DRAWINGS.

LADDER TO BE STAINLESS STEEL



*BAKER SILO STANDARD DETAIL, MODIFIED FOR MATERIAL

2 INTERIOR LADDER DETAIL
NOT TO SCALE

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SHEET C6.6
PAGE 30 OF 50

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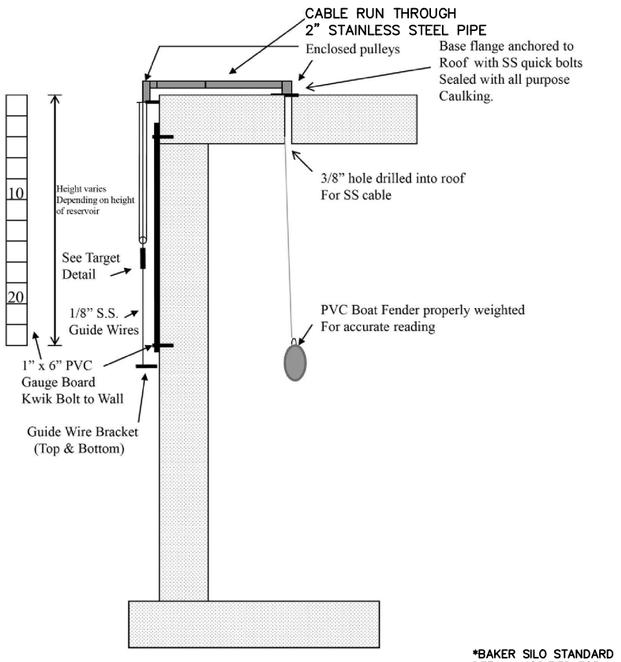

*BAKER SILO STANDARD DETAIL, MODIFIED FOR CABLE PIPE MATERIAL

1 LEVEL GAUGE DETAIL
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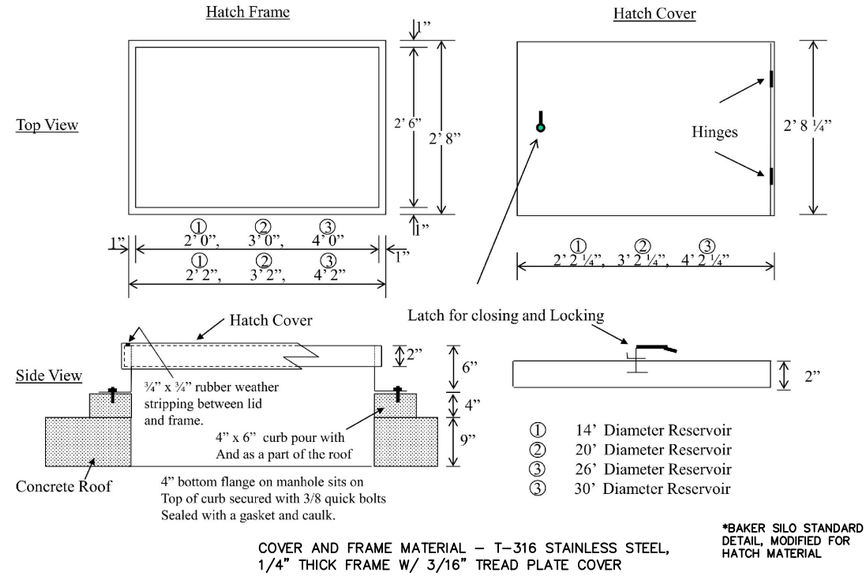


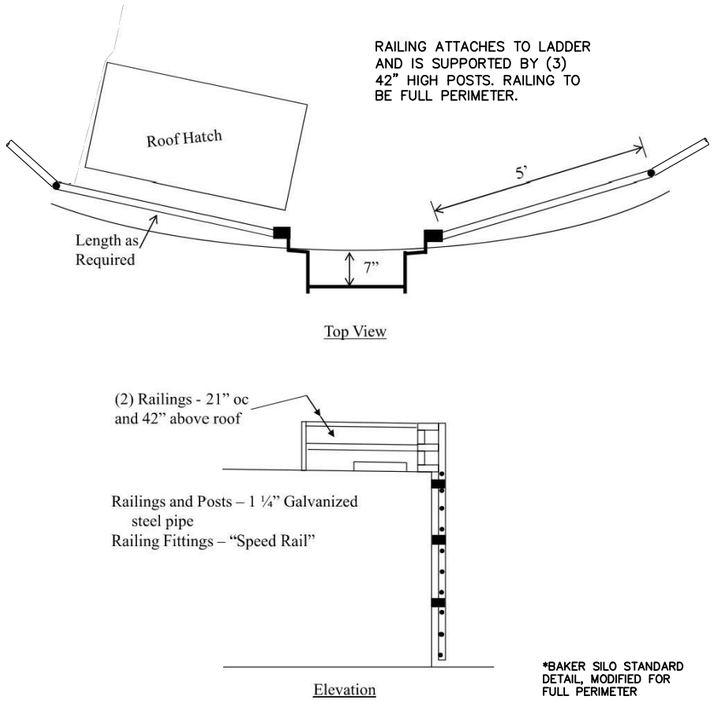
* INTRUSION SWITCHES & ALARMS SHALL BE COORDINATED W/ ELECTRICAL AND CONTROLS DRAWINGS.

* COORDINATE HIGH LEVEL FLOAT SWITCH CABLE PENETRATION W/ ELECTRICAL DRAWINGS & SPECIFICATIONS.

COVER AND FRAME MATERIAL – T-316 STAINLESS STEEL, 1/4" THICK FRAME W/ 3/16" TREAD PLATE COVER

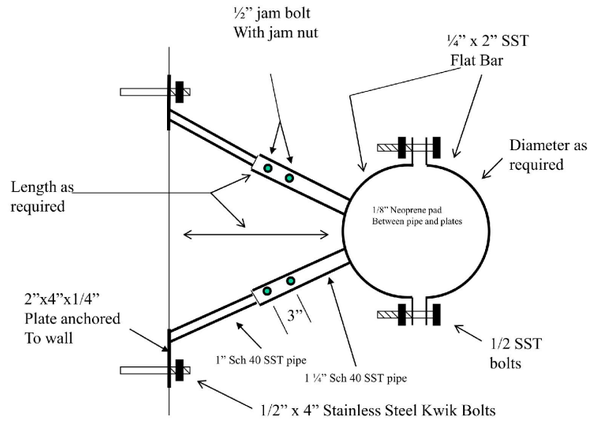
*BAKER SILO STANDARD DETAIL, MODIFIED FOR HATCH MATERIAL

2 ACCESS HATCH DETAIL
NOT TO SCALE



*BAKER SILO STANDARD DETAIL, MODIFIED FOR FULL PERIMETER

3 SAFETY RAILING DETAIL
NOT TO SCALE



Brackets to be SST fabrication

*BAKER SILO STANDARD DETAIL

4 EXTERIOR PIPE SUPPORTS
NOT TO SCALE

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LAKE WHATCOM WATER AND SEWER DISTRICT

WHATCOM COUNTY WASHINGTON

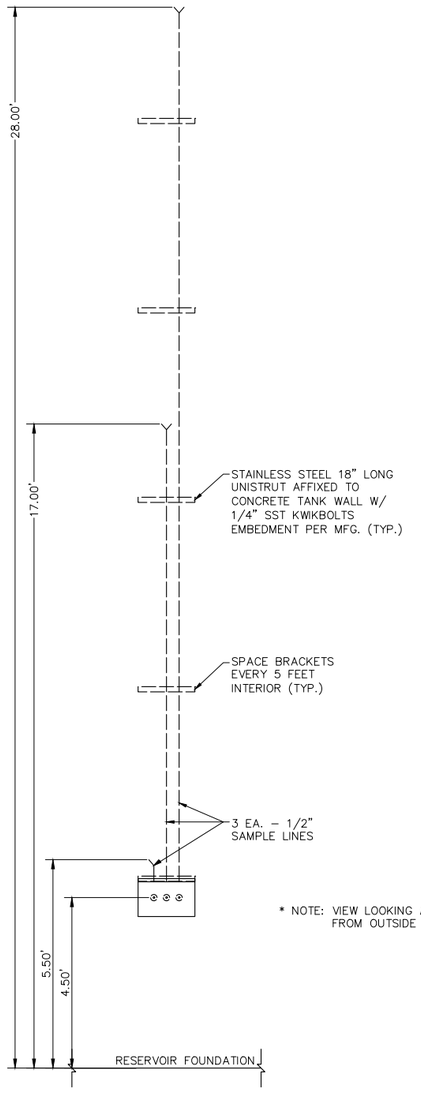
DIVISION 7 RESERVOIR REPLACEMENT PROJECT

RESERVOIR DETAILS

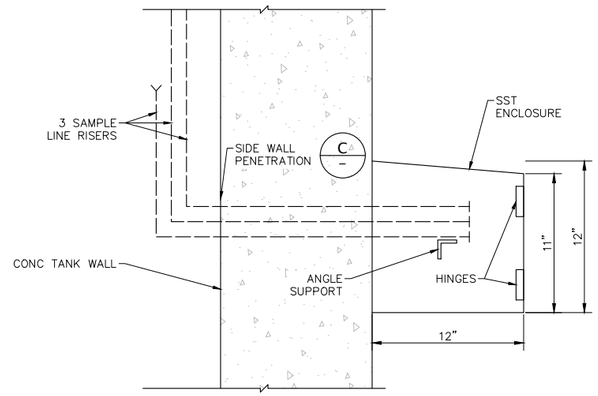
DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C6.7

PAGE 31 OF 50



A SAMPLE LINE INSTALLATION HEIGHTS
NOT TO SCALE



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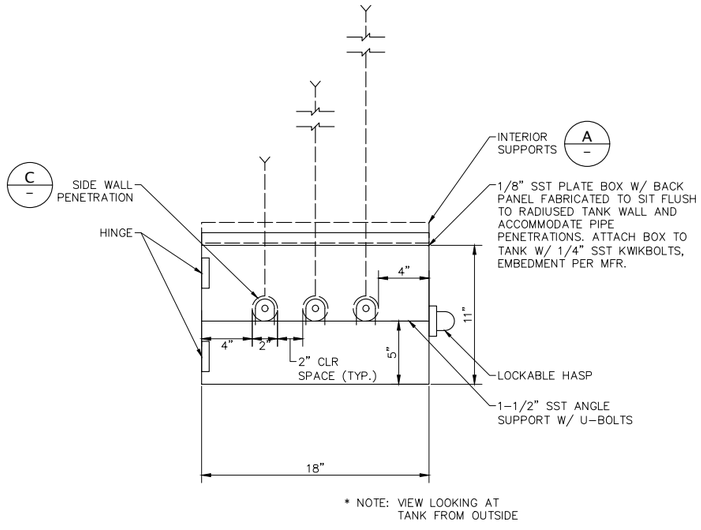
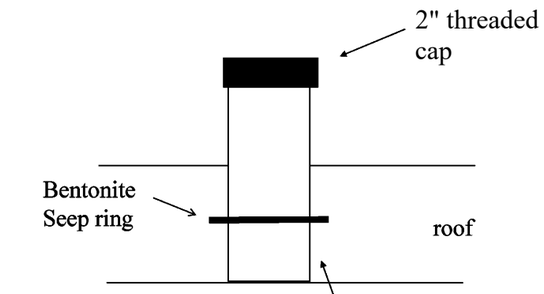


B SAMPLE LINE
NOT TO SCALE

1 RESERVOIR SAMPLE STATION DETAILS
NOT TO SCALE

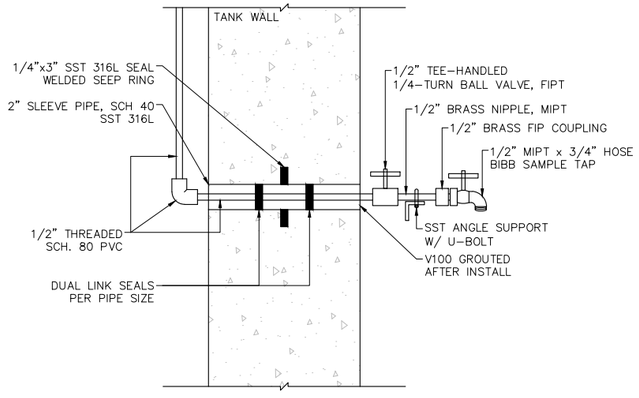
Level sensor probe in roof



* BAKER SILO STANDARD DETAIL

* COORDINATE FINAL LOCATION, SPACING REQUIRED FROM ACCESS HATCH, AND PIPE HEIGHT W/ ELECTRICAL DRAWINGS.

2 CABLE ENTRY PORT
NOT TO SCALE



C SIDE WALL PENETRATION
NOT TO SCALE

811 Call 811 two business days before you dig

BID DOCUMENTS

WILSON ENGINEERING
WILSONENGINEERING.COM

10-26-2023

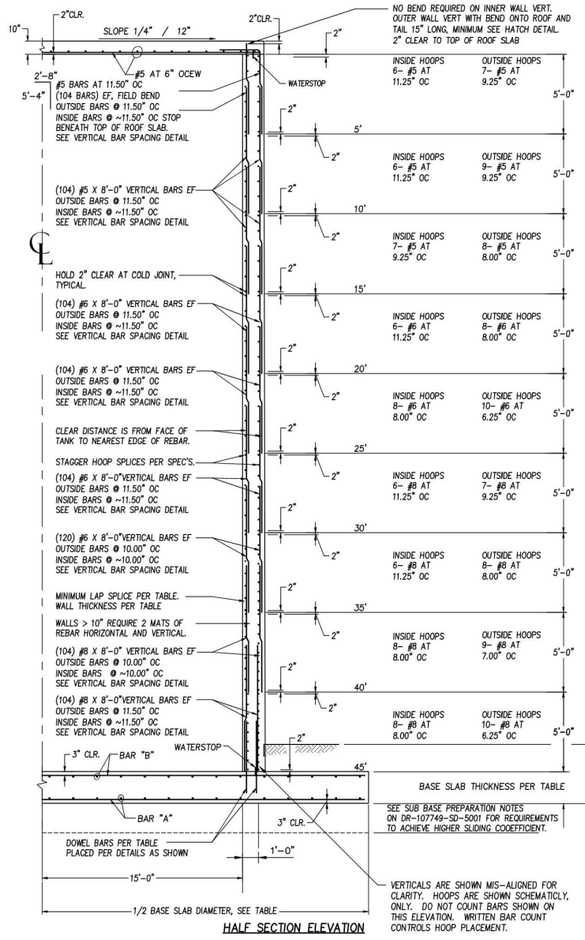
DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
RESERVOIR DETAILS

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C6.8
PAGE 32 OF 50

PLOT SETTINGS: WE AutoCAD PDF (General Documentation).pc3, WILSON 11X17, Portrait, 1:2, WE APWA_SCREENED.ctb
W:\2021\2021-130 LWWSD DIV 7 TANK\DWG\V2019_2021-130 C6.1 RESERVOIR.DWG – 10/11/2023 4:33 PM – Benton Seay

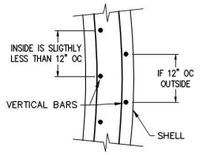


HALF SECTION ELEVATION

NOTE:
FOR COMPLETE WALL REINFORCING DETAILS SEE DWG DR-107749-SD-5001

EF = EACH FACE

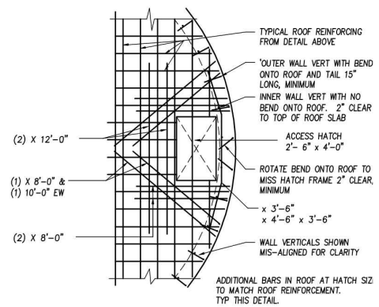
SHELL HEIGHT	BASE SLAB DIAMETER	BASE SLAB THICKNESS	BAR "A" BOTTOM	RADIAL* STEEL	BAR "B" TOP	DOWEL BARS & EMBEDMENT	MIN. WALL THICK.	STATIC SOIL BEARING PSF	DYNAMIC SOIL BEARING PSF	NOMINAL VOLUME GAL
45	44'-0"	30"	#8 @ 9" 43'-6"ø	N/A	#5 @ 9" 43'-6"ø	#8 @ 8.00" 60" (27" INTO BASE SLAB) (152) BARS EA FACE	12"	2382	4610	232,700



VERTICAL REINFORCING LAYOUT IS FOR THE OUTSIDE FACE, TYPICAL. INSIDE VERTICALS ARE THE SAME BARS, MATCH OUTSIDE BAR SPACING. INNER VERTS MAY BE OFFSET FROM THE OUTER VERTS TO ALLOW FOR PLACING CLEARANCE.

VERTICAL BAR SPACING DETAIL

NTS



HATCH REINFORCEMENT LAYOUT

NTS

REQUIRED SOILS CAPACITY

STATIC: SEE STATIC COLUMN ABOVE
DYNAMIC: SEE DYNAMIC COLUMN ABOVE PLUS OVERBURDEN WEIGHT

REBAR SPLICE CRITERIA:

LAP SPLICE DISTANCE (INCHES)		
BAR SIZE	ALL ROOF BARS, ALL VERTICAL BARS, ALL BAR "A"	ALL HOOPS BAR "B"
#5	18	19
#6	21	28
#8	44	46

ALL LAP SPLICES ARE CLASS B

NON-CONTACT LAP SPLICES ARE ACCEPTABLE. THE MAXIMUM SPACE BETWEEN NON-CONTACT VERTICAL BARS SHALL BE 6". THE MINIMUM SPACE SHALL BE 1".

DOWEL EMBEDMENT CRITERIA:

SEE TABLE FOR SPECIFIC DOWEL EMBEDMENT LENGTHS.

SLAB DEPTH CONTROLS DOWEL BAR BOND LENGTH WHICH ALTERS THE NUMBER OF DOWELS REQUIRED

STRUCTURAL NOTES:

1. STRUCTURAL DESIGN IS IN ACCORDANCE WITH THE CURRENT EDITION OF THE INTERNATIONAL BUILDING CODE, IBC, ASCE 7, ACI 350 AND ACI 350.3.

2. FOUNDATION:

   IN ACCORDANCE WITH IBC 2018 SECTION 1803.5.12 A GEOTECHNICAL INVESTIGATION SHALL BE CONDUCTED. IF APPLICABLE INVESTIGATION DOES NOT MEET THE SOIL LOADING REQUIREMENTS AS STATED ON THIS DRAWING, CONSULT THE ENGINEER.

   GEOTECHNICAL REPORT USED FOR DESIGN:
   GEOENGINEERS REPORT OF GEOTECHNICAL ENGINEERING SERVICES, LAKE WHATCOME WATER AND SEWER DISTRICT, DIVISION 7 RESERVOIR SIESMIC UPGRADE, BELLINGHAM WA. DATED JUNE 30, 2022. FILE NUMBER 0430-14-00.

3. LOADS:

ROOF LIVE LOAD	40 PSF
GROUND SNOW LOAD	45.5 PSF, ROOF SNOW LOAD 46 PSF
SNOW CRITERIA	C_e=1.0, C_t=1.2, I_s=1.2
FLUID WEIGHT DETERMINED AT	62.4 PCF
CONCRETE WEIGHT DETERMINED AT	150 PCF
WIND LOAD DETERMINED AT 125 MPH,	EXP "D"

   SEISMIC CRITERIA
   Ss = 0.966, S_{ds}=0.773
   S1 = 0.341, S_{d1}=0.341, I_e=1.50
   SITE CLASS "C" PER GEOTECHNICAL REPORT
   SEISMIC FORCE RESISTING SYSTEM: "FLAT-BOTTOMED TANK, GROUND SUPPORTED CONCRETE TANK"
   SEISMIC DESIGN CATEGORY = D
   SEISMIC, WIND AND STRUCTURE DESIGN CATEGORY PER ASCE 7, CATEGORY IV FACILITY
   ANALYSIS PROCEDURE:EQUIVILANT LATERAL FORCE
   RESPONSE MODIFICATION FACTOR = 2
   V_s=SEISMIC DESIGN BASE SHEAR = 1272 kip
   SEISMIC RESPONSE COEFFICIENTS: C_s=0.580, S_{ds}=0.773, S_{oc}=0.162

4. CONCRETE:

   CONCRETE MATERIALS, REINFORCING MATERIALS, BENDING, PLACEMENT OF REINFORCING AND CONCRETE PLACEMENT SHALL BE IN ACCORDANCE WITH IBC, CHAPTER 19 AND ACI-RELATED DOCUMENTS.

   CONCRETE SHALL HAVE THE FOLLOWING VALUES – COMPRESSIVE STRENGTH OF 4500 PSI, SLUMP OF 3.5 – 4.5", AIR ENTRAINMENT OF 4.5 – 7.5% W/C RATIO OF 0.42±. SLUMP MAY BE INCREASED TO IMPROVE WORKABILITY BY INCORPORATING WATER REDUCING AGENTS AND PLASTICIZERS. FOLLOW MANUFACTURER'S INSTRUCTIONS WHEN INCLUDING THESE ADMIXTURES. MAXIMUM SLUMP UNDER THESE CONDITIONS SHALL BE 9". NOTE THAT PLASTICIZERS WILL CAUSE A REDUCTION IN AIR ENTRAINED SO COORDINATE WITH BATCH PLANT. USE OTHER ADMIXTURES PER MANUFACTURERS' SPECIFICATIONS.
   THE MAXIMUM AGGREGATE SIZE FOR THE BASE SLAB SHALL BE 1 1/2". THE MAXIMUM AGGREGATE SIZE FOR THE WALLS AND ROOF SHALL BE ABOUT 3/4".

   NOTE THAT THE INTERFACE BETWEEN THE WALL AND BASE SLAB SHALL BE ROUGHENED TO AN AMPLITUDE OF APPROXIMATELY 1/4".

   REINFORCING BARS SHALL BE GRADE 60, (60 KSI) CONFORMING TO ASTM SPECIFICATION A615. SPLICES SHOULD BE STAGGERED HORIZONTALLY (CENTER OF LAP TO CENTER OF LAP) BY NOT LESS THAN ONE LAP LENGTH OR 3 FT AND SHOULD NOT COINCIDE IN VERTICAL ARRAYS MORE FREQUENTLY THAN EVERY THIRD BAR RING.

   MINIMUM CLEAR DISTANCES FOR REBAR PLACEMENT ARE AS SHOWN. BAR POSITION MAY BE UP TO 1" FURTHER FROM BUT NOT CLOSER TO THE FORMED SURFACES OR SOIL INTERFACE. PLACE HORIZONTAL BARS ON PLASTIC CHAIRS OR DOBIES BEFORE PLACING CONCRETE.

   REINFORCING BARS THAT ARE BEING WELDED SHALL BE ASTM A 706, GRADE 60.

   DOWEL BARS SHALL BE PLACED DURING OR IMMEDIATELY FOLLOWING THE BASE SLAB POUR. NO HOOKS REQUIRED ON VERTICAL BARS.

5. SPECIAL INSPECTION:

   WHEN REQUIRED BY THE LOCAL JURISDICTION, SPECIAL INSPECTION SHALL BE IN ACCORDANCE WITH IBC CHAPTER 17. IT SHALL INCLUDE THE SIZE AND PLACEMENT OF THE REINFORCING STEEL, PLACEMENT AND TESTING OF THE CONCRETE. SPECIAL INSPECTIONS SHALL BE PROVIDED BY THE OWNER'S REPRESENTATIVE OR TESTING AGENCY.

   TANK ACCESSORIES SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS' SPECIFICATIONS AND ASSOCIATED INDUSTRY STANDARDS.

6. BACKFILL:

   BACKFILLING SHALL NOT COMMENCE UNTIL AT LEAST 7 DAYS AFTER THE FINAL CONCRETE POUR (ROOF OR TOP LIFT AS APPLICABLE) HAS BEEN COMPLETED.

   NATIVE SOILS SHALL NOT BE USED WITHOUT GEOTECH APPROVAL.

7. FORM REMOVAL:

   WALL FORMS MAY GENERALLY BE REMOVED AFTER 12 HOURS 'CUMULATIVE CURING TIME' PER ACI 350, SECTION 6.2

8. MITIGATION OF SETTLEMENT EFFECTS ON TANK ATTACHMENTS, INCLUDING PIPING, IS THE RESPONSIBILITY OF THE RESERVOIR OWNER. ANVIL DOES NOT ASSUME ANY DIRECT OR INFERRED LIABILITY FOR ANY DAMAGE OF TANK ATTACHMENTS DUE TO SETTLEMENT.

9. DIAGONAL BARS TO BE PROVIDED AT ALL WALL AND ROOF PENETRATIONS NOT SHOWN ON DRAWINGS.

GREGORY A. VAN HAGEN — STATE OF WASHINGTON — 20228888 — REGISTERED PROFESSIONAL ENGINEER

08/17/2022

SOILS REPORT CHECKED ☑YES ☐NO

SPECIAL TANK DESIGN FOR LWWSD DIV 7 RESERVOIR BELLINGHAM, WA 98229

CONTRACTOR CONTACT INFORMATION :

BAKER SILO LLC.
concrete water reservoirs & storage tanks
P.O. BOX 979
LYNDEN, WA. 98264
(360) 354-4940

ANVIL CORPORATION
1675 W. BAKERVIEW RD.
BELLINGHAM, WA. 98226
(360) 671-1450

REV.	DATE	DESCRIPTION	BY	CHKD	ENGR	CLIENT	DWG. NO.	REFERENCE DRAWINGS
0	08/22	ISSUE FOR CONSTRUCTION	ENS	GVW				

BAKER SILO, LLC
30 FT DIAMETER RESERVOIR
ELEVATION, DETAIL & NOTES

SCALE	JOB NO.	ACCT. CODE	AREA	DRAWING NO.	REV
Noted	107749	547-22		DR-107749-SD-5030	0

811 Call 811 two business days before you dig

BID DOCUMENTS

1 30 FT DIAMTER RESERVOIR ELEVATION, DETAIL & NOTES
NOT TO SCALE

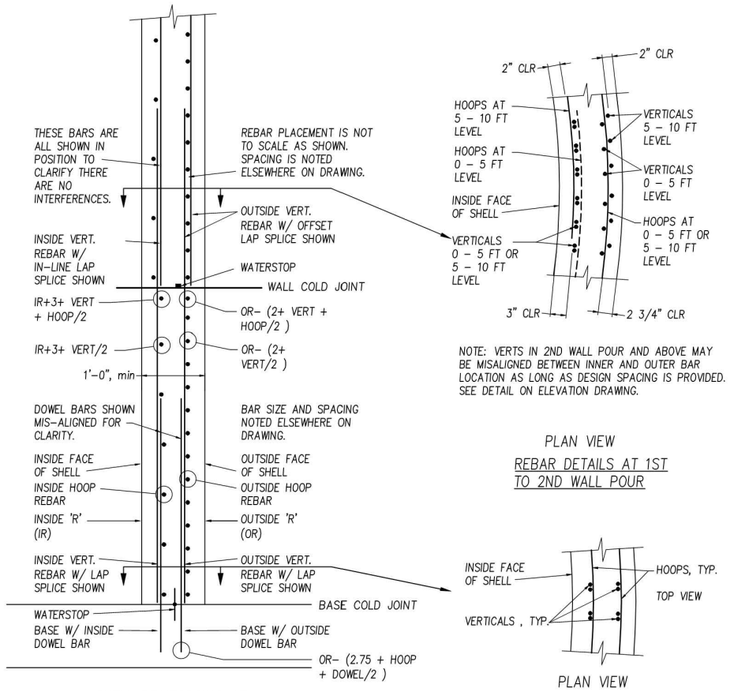
WILSON ENGINEERING
WILSONENGINEERING.COM
10-26-2023
DANIEL SCHERENE FELDER — STATE OF WASHINGTON — 22830 — REGISTERED PROFESSIONAL ENGINEER — CIVIL

DESIGNED BY	DRAWN BY	CHECKED BY
CDS	EJH/LMH	MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
BAKER SILO STRUCTURAL PLANS – 1

DATE	SCALE	JOB NUMBER
10-11-2023	AS SHOWN	2021-130

SHEET C6.9 PAGE 33 OF 50



SHELL REINFORCING AT BASE DETAILS

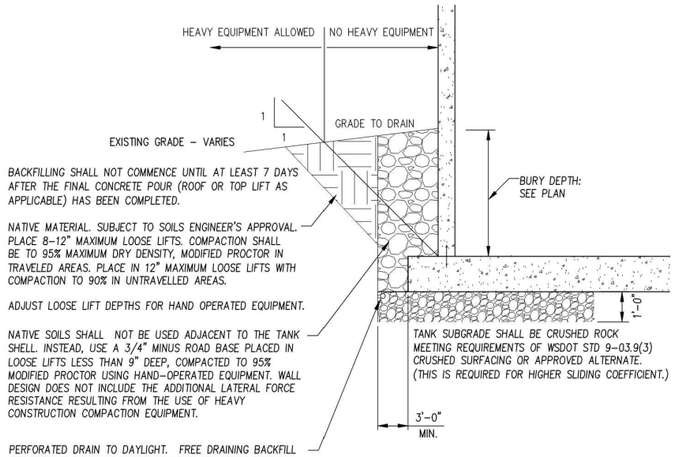
NOTE: VERTS IN 2ND WALL POUR AND ABOVE MAY BE MISALIGNED BETWEEN INNER AND OUTER BAR LOCATION AS LONG AS DESIGN SPACING IS PROVIDED. SEE DETAIL ON ELEVATION DRAWING.

PLAN VIEW

REBAR DETAILS AT 1ST TO 2ND WALL POUR

PLAN VIEW

VERTICAL TO DOWEL SPLICE DETAILS



TYPICAL BURIED TANK SECTION

NTS

REQUIRED VERIFICATIONS AND INSPECTIONS – CONCRETE CONSTRUCTION	CONTINUOUS	PERIODIC
INSPECT REINFORCING STEEL AND PLACEMENT		X
VERIFY USE OF REQUIRED DESIGN MIX		X
AT THE TIME FRESH CONCRETE IS SAMPLED TO FABRICATION SPECIMENS FOR STRENGTH TESTS, PERFORM SLUMP AND AIR CONTENT TESTS, AND DETERMINE THE TEMPERATURE OF THE CONCRETE.	X	
INSPECT FORMWORK FOR SHAPE, LOCATION, AND DIMENSION OF THE CONCRETE MEMBER BEING FORMED		X

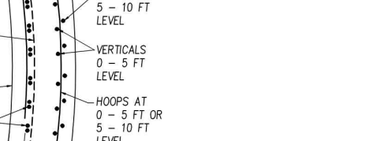
PROVIDE A MINIMUM OF 6 CYLINDERS PER EACH 50 CY OR 6 CYLINDERS PER DAY AS APPLIES BASED ON STANDARD 4"ø x 8" CYLINDERS TEST 6 CYLINDERS/50 CY AS FOLLOWS: 1 @ 7 DAYS, 3 @ 28 DAYS, 2 @ 56 DAYS. NOTIFY ENGINEER IF THIS IS NOT PROVIDED. VERIFY REBAR SIZE AND PLACEMENT PER APPROVED PLANS. INSPECTIONS SHALL BE PERFORMED BY QUALIFIED PERSONNEL FROM AN APPROVED AGENCY.

REQUIRED VERIFICATIONS AND INSPECTIONS – SOILS	CONTINUOUS	PERIODIC
VERIFY MATERIALS BELOW SHALLOW FOUNDATIONS ARE ADEQUATE TO ACHIEVE THE DESIGN BEARING CAPACITY		X
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACH PROPER MATERIAL		X
PERFORM CLASSIFICATION AND TESTING OF COMPACTED FILL MATERIALS		X
VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF COMPACTED FILL	X	
PRIOR TO PLACEMENT OF COMPACTED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X

BAKER SILO, LLC IS NOT RESPONSIBLE FOR THE SOILS AND SITE PREPARATION FOR THE PAD BENEATH THE RESERVOIR. THEY RELY ON THE OWNER/OWNER'S CONTRACTOR TO PROVIDE A SUITABLE BUILDING SURFACE THAT COMPLIES WITH THE REQUIREMENTS CONTAINED IN THE SOILS REPORT AND OTHER SUCH PROJECT DEFINING DOCUMENTS, INCLUDING VERIFICATION OF THESE CRITERIA BY INSPECTION REPORTS. WHEN BAKER SILO IS CALLED ON–SITE TO START WORK, THEY EXPECT THAT THE SOILS AND SUB–BASE HAS BEEN SATISFACTORILY PREPARED AND APPROVED FOR THEIR WORK TO COMMENCE.

REFER TO IBC 2018, CHAPTER 17 FOR SPECIAL INSPECTION EXPLANATIONS

WHEN SPECIAL INSPECTION IS REQUIRED, SPECIAL INSPECTORS SHALL BE PROVIDED BY WABO APPROVED SPECIAL INSPECTION AGENCY. IF DEFICIENCIES ARE FOUND DURING INSPECTION NOTIFY THE ENGINEER OF RECORD IMMEDIATELY.



GREENSTREAK 703

WATER STOP

NTS

WATERSTOP NOTES:

1. AT THE INTERSECTION BETWEEN THE BASE SLAB AND WALL, USE GREENSTREAK 703 PLACED INSIDE REBAR MATS.
2. AT COLD JOINTS BETWEEN WALL POURS, USE VOLCLAY WATERSTOP RX–101 OR RX–102, DEPENDING ON AVAILABILITY. PLACE NEAR CENTER OF WALL.
3. INSTALL ALL WATERSTOP MATERIAL PER MANUFACTURER'S INSTRUCTIONS.

GREGORY A. VAN WAGNER, STATE OF WASHINGTON, 020844, REGISTERED PROFESSIONAL ENGINEER

08/17/2022

SPECIAL TANK DESIGN FOR LWWSD DIV 7 RESERVOIR BELLINGHAM, WA 98229

CONTRACTOR CONTACT INFORMATION :

BAKER SILO LLC.
concrete water reservoirs & storage tanks

P.O. BOX 979
LYNDEN, WA. 98264
(360) 354-4940

ANVIL CORPORATION
1675 W. BAKERVIEW RD.
BELLINGHAM, WA. 98226
(360) 671-1450

REV.	DATE	DESCRIPTION	BY	CHKD	ENGR	CLIENT	DWG. NO.	REFERENCE DRAWINGS
0	08/22	ISSUE FOR CONSTRUCTION	ENS	GVW				

BAKER SILO, LLC
RESERVOIR
TYPICAL DETAILS

SCALE	JOB NO.	ACCT. CODE	AREA	DRAWING NO.	REV.
Noted	107749	547–22		DR–107749–SD–5001	0

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BID DOCUMENTS

1 RESERVOIR TYPICAL DETAILS
NOT TO SCALE

WILSON ENGINEERING
WILSONENGINEERING.COM
10-26-2023

DESIGNED BY CDS | DRAWN BY EJH/LMH | CHECKED BY MMM

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
WASHINGTON
BAKER SILO STRUCTURAL PLANS – 2

DATE 10-11-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C6.10 | PAGE 34 OF 50

NOTES (APPLICABLE TO ALL ELECTRICAL DRAWINGS):

1. ALL SYSTEMS, EQUIPMENT, DEVICES, RACEWAYS, CABLES, ETC. INDICATED ARE NEW UNLESS SPECIFICALLY NOTED AS EXISTING.
2. ALL WIRING SHALL BE ENCLOSED WITHIN A RACEWAY SYSTEM.
3. THE ELECTRICAL WORK SHALL INCLUDE ALL WORK SHOWN ON THE DRAWINGS, DETAILS, DIAGRAMS, SCHEDULES, ETC., AND AS DESCRIBED IN THE SPECIFICATIONS.
3. PLAN DRAWINGS ARE DIAGRAMMATIC IN FORM AND DO NOT ATTEMPT TO SHOW COMPLETE DETAILS OR LIST EVERY ITEM OF THE ELECTRICAL SYSTEM, EQUIPMENT, OR BUILDING CONSTRUCTION; HOWEVER, THE ROUTING OF RACEWAYS AND CIRCUITS, THE LOCATIONS OF EQUIPMENT, DEVICES AND FIXTURES REPRESENT THE DESIRED FINISHED ARRANGEMENT.
5. OBTAIN APPROVAL FROM ENGINEER PRIOR TO PROCEEDING WITH ALTERNATE CONDUIT ROUTES.
6. RACEWAYS AND CABLES THROUGHOUT THE FACILITY SHALL BE RUN CONCEALED. WHERE DUE TO CONSTRUCTION, IT IS NOT POSSIBLE TO ROUTE RACEWAYS & CABLES CONCEALED, RACEWAYS MAY BE RUN EXPOSED. EXPOSED RACEWAYS SHALL BE RUN AS NEATLY & UNOBTRUSIVELY AS POSSIBLE, SUPPORTED AS REQUIRED, PARALLEL OR AT RIGHT ANGLES TO CEILINGS, WALLS & STRUCTURAL MEMBERS.
7. RACEWAYS SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:
   A. INTERIOR & EXTERIOR ABOVE GRADE - GALVANIZED RIGID STEEL CONDUIT (GRS).
   B. EXTERIOR BELOW GRADE CONDUITS SHALL BE PVC COATED GRS (HOT DIPPED GAVANIZED STEEL CONDUIT WITH THREADED ENDS AND PVC COATING). ALL OTHER CONDUITS SHALL BE GRS, EXCEPT TELEPHONE CONDUIT SHALL BE PVC, SCHEDULE 80. DIRECT BURIED A MINIMUM OF 24" BELOW GRADE.
   C. ALL PORTIONS OF CONDUITS WITH CONTAIN GROUNDING ELECTRODE CONDUCTORS SHALL BE PVC SCHEDULE 80.
8. RACEWAYS SHALL BE SIZED SO THAT THE CABLE FILL DOES NOT EXCEED 40%, EXCEPT, MINIMUM CONDUIT SIZES SHALL BE AS FOLLOWS, UNLESS NOTED OTHERWISE:
   A. 3/4" - BRANCH CIRCUITS AND SYSTEM RACEWAYS, EXCEPT AS NOTED BELOW.
   B. 1" - UNDERGROUND CONDUITS.
9. DEVICE BOXES SHALL BE STAINLESS STEEL AND SIZES SHALL BE SIZED IN ACCORDANCE WITH NEC FOR BOX FILL, EXCEPT MINIMUM SHALL BE AS FOLLOWS, UNLESS SPECIFICALLY NOTED OTHERWISE:
   A. POWER & LIGHTING - 4" x 4" x 1 1/2"
10. FLEXIBLE CONDUIT SHALL BE INTERLOCKING SINGLE STRIP, HOT DIPPED GALVANIZED AND SHALL HAVE A POLYVINYLE CHLORIDE JACKET EXTRUDED OVER THE OUTSIDE TO FORM A FLEXIBLE WATERTIGHT RACEWAY. ALL FITTINGS SHALL BE STAINLESS STEEL.
11. TELECOMMUNICATIONS CONDUITS SHALL BE PROVIDED WITH PULL ROPES BELOW GRADE AND PULL STRINGS ABOVE GRADE. EXISTING CONDUITS TO BE USED SHALL BE FISHED AND CLEANED PRIOR TO INSTALLATION OF CABLES.
12. BELOW GRADE SERVICE & FEEDER CABLE SHALL BE 1/C COPPER (UNLESS SPECIFICALLY NOTED OTHERWISE) WITH 600V TYPE XHHW INSULATION.
13. BRANCH CIRCUIT CABLES, EQUIPMENT GROUND CABLES AND ABOVE GRADE FEEDER CABLES SHALL BE 1/C COPPER, #12 AWG UNLESS NOTED OTHERWISE, WITH 600V TYPE XHHW OR THHN/THWN INSULATION.
14. IN ADDITION TO THE CIRCUIT CONDUCTORS INDICATED, CONTRACTOR SHALL PROVIDE AN EQUIPMENT GROUND CABLE (SIZED THE SAME AS THE LARGEST CIRCUIT CONDUCTOR UNLESS SPECIFICALLY NOTED OTHERWISE) WITHIN EACH RACEWAY WITH THE CIRCUIT CONDUCTORS.
15. VERIFY ALL EQUIPMENT, DEVICE, ETC. LOCATIONS WITH THE ENGINEER PRIOR TO ROUGH-IN. THE OWNER RESERVES THE RIGHT TO RELOCATE ITEMS, ETC. WITHIN 10' OF THE LOCATION INDICATED, PRIOR TO INSTALLATION, WITHOUT INCREASE IN COST.
16. POWER, FIRE ALARM, SECURITY, TELECOMMUNICATIONS & UTILITY SYSTEMS INTERRUPTIONS (WHETHER TO THE ENTIRE SYSTEM OR TO INDIVIDUAL PANELS, EQUIPMENT, DEVICES, ETC.) SHALL BE KEPT TO AN ABSOLUTE MINIMUM, AND SHALL NOT BE DONE WITHOUT PRIOR APPROVAL & SCHEDULING WITH THE OWNER & ENGINEER A MINIMUM OF 14 DAYS IN ADVANCE AND CONFIRMED 48 HOURS IN ADVANCE.
17. LABELING & NAMEPLATES:
   A. REFER TO SPECIFICATIONS FOR PANELS, DISCONNECT SWITCHES, STARTERS, ETC. NAMEPLATES AND LABELING.

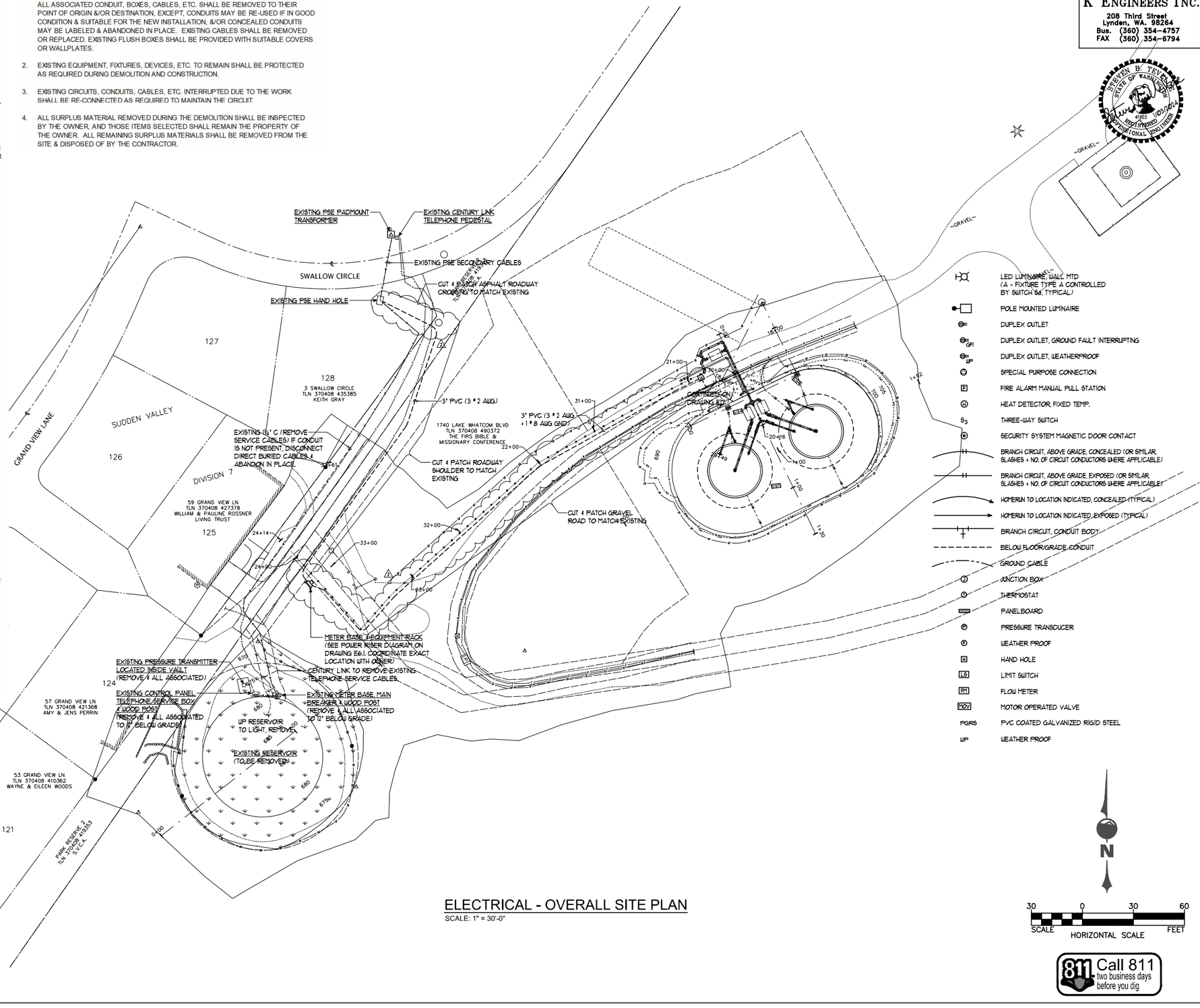
DEMOLITION NOTES (APPLICABLE TO ALL ELECTRICAL DRAWINGS):

1. CONTRACTOR SHALL REMOVE ALL EXISTING EQUIPMENT, DEVICES, ETC. WHERE INDICATED. EXISTING DEVICES NOT SHOWN ON THE DRAWINGS SHALL REMAIN. ALL ASSOCIATED CONDUIT, BOXES, CABLES, ETC. SHALL BE REMOVED TO THEIR POINT OF ORIGIN &/OR DESTINATION, EXCEPT, CONDUITS MAY BE RE-USED IF IN GOOD CONDITION & SUITABLE FOR THE NEW INSTALLATION, &/OR CONCEALED CONDUITS MAY BE LABELED & ABANDONED IN PLACE. EXISTING CABLES SHALL BE REMOVED OR REPLACED. EXISTING FLUSH BOXES SHALL BE PROVIDED WITH SUITABLE COVERS OR WALLPLATES.
2. EXISTING EQUIPMENT, FIXTURES, DEVICES, ETC. TO REMAIN SHALL BE PROTECTED AS REQUIRED DURING DEMOLITION AND CONSTRUCTION.
3. EXISTING CIRCUITS, CONDUITS, CABLES, ETC. INTERRUPTED DUE TO THE WORK SHALL BE RE-CONNECTED AS REQUIRED TO MAINTAIN THE CIRCUIT.
4. ALL SURPLUS MATERIAL REMOVED DURING THE DEMOLITION SHALL BE INSPECTED BY THE OWNER, AND THOSE ITEMS SELECTED SHALL REMAIN THE PROPERTY OF THE OWNER. ALL REMAINING SURPLUS MATERIALS SHALL BE REMOVED FROM THE SITE & DISPOSED OF BY THE CONTRACTOR.

NO.	REVISIONS	BY	DATE
1	RELOCATE POWER METER	STV	12/20/2023
2	RELOCATE METER & ROUTING.	STV	1/03/2024

K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

STEVEN B. TEVELDE — STATE OF WASHINGTON — 41903 — REGISTERED PROFESSIONAL ENGINEER — 10/20/23



ELECTRICAL - OVERALL SITE PLAN

SCALE: 1" = 30'-0"

811 Call 811 two business days before you dig

WILSON ENGINEERING
WILSONENGINEERING.COM

DESIGNED BY STV | DRAWN BY KL | CHECKED BY STV

LAKE WHATCOM WATER AND SEWER DISTRICT
BELLINGHAM DIVISION 7 RESERVOIR REPLACEMENT PROJECT WASHINGTON
ELECTRICAL – OVERALL SITE PLAN, LEGEND & NOTES

DATE 10-20-2023 | SCALE 1" = 30'-0" | JOB NUMBER 2184

SHEET E1.1R2 | PAGE 35 OF 50

NO.	REVISIONS	BY	DATE
1	RELOCATE POWER METER	STV	12/20/2023

K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

STEVEN B. TEVELDE
STATE OF WASHINGTON
41903
REGISTERED PROFESSIONAL ENGINEER
12/20/2023

FLOW METER VAULT
FLOW METER
FLOW METER CABLE
LIQUID TIGHT FLEX
INTRUSION SWITCH (MOUNT TO MONITOR VAULT LID)
1" PGRS (FLOW METER CABLE)
¾" PGRS (2 # 14 AWG + 1 # 14 AWG GND)
CONTINUED ON DRAWING E1!
2" PGRS (3 # 2 AWG + 1 # 8 AWG GND)
CONCRETE PAD
ELECTRICAL ENCLOSURE (SEE DETAILS ON DRAWING E2.1)
POWER PANEL
CONTROL PANEL
JUNCTION BOXES (6' x 6', MIN. ALL EXTERIOR RUNS OF CONDUIT ENTERING THE BOX SHALL BE SEALED 100% WATERTIGHT INSIDE THE CONDUIT. ALL FLEXIBLE CONNECTIONS SHALL BE MADE TO THE SIDE OF THE BOX & NOT THE BOTTOM. PROVIDE ¼" SCREENED HOLE IN BOTTOM OF BOX TO ALLOW WATER TO DRAIN)
WEST TO EAST
¾" PGRS (2 # 14 AWG + 1 # 14 AWG GND)
¾" PGRS (8 # 14 AWG + 1 # 14 AWG GND)
¾" PGRS (3 # 12 AWG + 1 # 12 AWG GND)
WEST TO EAST
¾" PGRS (2 # 14 AWG + 1 # 14 AWG GND)
¾" PGRS (2 # 12 AWG + 1 # 12 AWG GND)
¾" PGRS (2 # 14 AWG + 1 # 14 AWG GND)
¾" PGRS (4 # 14 AWG + 1 # 14 AWG GND)
1" PGRS (1-LEVEL TRANSDUCER CABLE)
LIQUID TIGHT FLEX
INTRUSION SWITCH
VALVE VAULT
LIQUID TIGHT FLEX
INTRUSION SWITCH
VALVE VAULT
WEST TO EAST
1" PGRS (1-LEVEL TRANSDUCER CABLE
¾" PGRS (4 # 14 AWG + 1 # 14 AWG GND)
¾" PGRS (2 # 12 AWG + 1 # 12 AWG GND)
¾" PGRS (2 # 14 AWG + 1 # 14 AWG GND)
ROUTE TO TOP OF RESERVIOR, TYPICAL.
1" LIQUID TIGHT FLEX (1 # 14 AWG 80 CORD W/GND & 1 FLOAT CABLE)
FLOAT CABLE
TO HIGH LEVEL FLOAT
1" PGRS (1-LEVEL TRANSDUCER CABLE)
TANK ACCESS HATCH
1" LIQUID TIGHT (1-LEVEL TRANSDUCER CABLE)
TO LEVEL TRANSDUCER PROBE
ROUTE TO TOP OF RESERVIOR, TYPICAL.
INTRUSION SWITCH
1" LIQUID TIGHT FLEX (1 # 14 AWG 80 CORD W/GND & 1 FLOAT CABLE)
FLOAT CABLE
TO HIGH LEVEL FLOAT
1" PGRS (1-LEVEL TRANSDUCER CABLE)
TANK ACCESS HATCH
1" LIQUID TIGHT (1-LEVEL TRANSDUCER CABLE)
TO LEVEL TRANSDUCER PROBE

N

SCALE 4 0 4 8 FEET
HORIZONTAL SCALE

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ELECTRICAL - PARTIAL TANKS SITE PLAN

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

WILSON ENGINEERING
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DESIGNED BY STV
DRAWN BY KL
CHECKED BY STV

LAKE WHATCOM WATER AND SEWER DISTRICT
BELLINGHAM DIVISION 7 RESERVOIR REPLACEMENT PROJECT WASHINGTON

ELECTRICAL – PARTIAL TANKS SITE PLAN

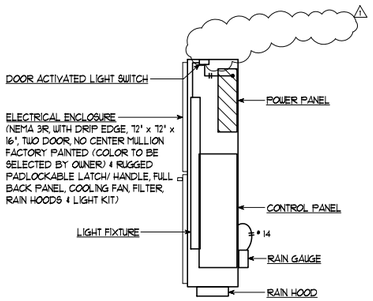
DATE 10-20-2023
SCALE 1/4" = 1'-0"
JOB NUMBER 2184

SHEET E1.2 R1
PAGE 36 OF 50

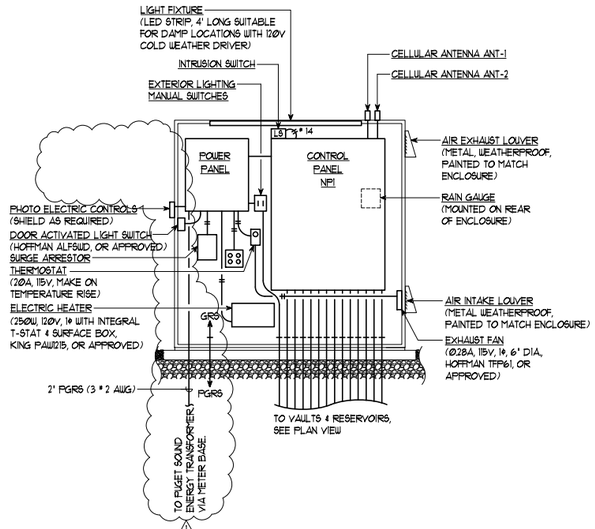
NO.	REVISIONS	BY	DATE
1	RELOCATE POWER METER	STV	12/20/2023

K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

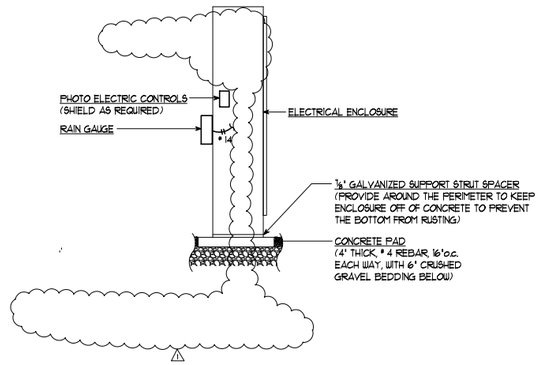
STEVEN B. TEVIS — STATE OF WASHINGTON — 41903 — REGISTERED PROFESSIONAL ENGINEER — 12/20/2023



TOP VIEW



SECTION



ELEVATION

ELECTRICAL ENCLOSURE

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

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LAKE WHATCOM WATER AND SEWER DISTRICT
BELLINGHAM WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
ELECTRICAL – DETAILS

DATE 10-20-2023 | SCALE AS NOTED | JOB NUMBER 2184

SHEET E2.1R2

NO.	REVISIONS	BY	DATE
1	RELOCATE POWER METER	STV	12/20/2023

K ENGINEERS INC.
208 Third Street
Lynden, WA. 98264
Bus. (360) 354-4757
FAX (360) 354-6794

STEVEN B. TEVELDE — STATE OF WASHINGTON — 41903 — REGISTERED PROFESSIONAL ENGINEER — 12/20/2023

WILSON ENGINEERING
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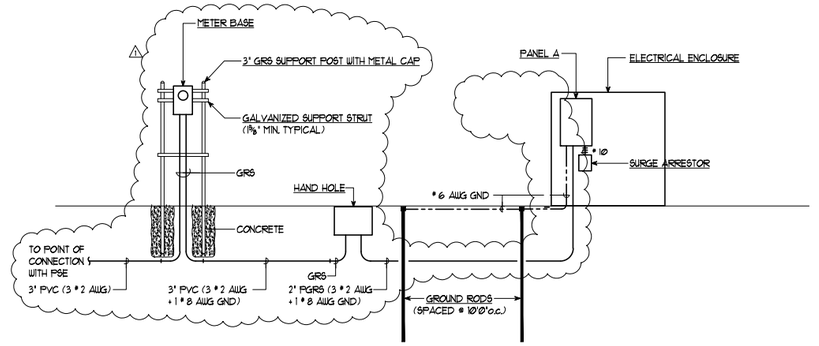
LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	VOLTS	MANUFACTURER & CAT. NO. (OR APPROVED EQUAL)	LAMP(S)	LOADS WATTS	LOADS VA
A	EXTERIOR TRAPEZOIDAL SCONCE, LED, 18W MAX, 1200 LUMENS MIN., TYPE 3 DISTRIBUTION, 12" x 6" x 7"D, SUITABLE FOR WET LOCATIONS, INTEGRAL ALUMINUM HEAT SINK, DIECAST ALUMINUM HOUSING (BRONZE), INTEGRAL PHOTOELECTRIC CONTROL, SPECULAR ALUMINUM REFLECTOR AND CUTOFF OPTICS.	120	GARDCO 111L-16L-350-NW-G3-3-PCB-BZ	LED 4000K (INTEGRAL)	18	18
B						
C						

NOTES:

1. CONTRACTOR & LIGHTING FIXTURE SUPPLIER SHALL VERIFY DESCRIPTION, MOUNTING REQUIREMENTS, CATALOG NUMBERS, ETC. MATCH. ADVISE ENGINEER OF ANY CONFLICTS OR DESCREPANCIES.



ELECTRICAL - POWER SYSTEM RISER DIAGRAM

SCALE: NONE

METER BASE

VOLTAGE: 120/240V, 1 PH, 3 W
ENCLOSURE: NEMA 3R
MOUNTING: SURFACE
CONTINUOUS RATING: 100 A
PER PUGET SOUND ENERGY REQUIREMENTS
SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT

ELECTRICAL ENCLOSURE

ELECTRICAL LOAD CALCULATION	CONN. LOAD (VA) EXIST.	NEW	TOTAL	DEMAND FACTOR	DEMAND LOAD (VA)
Lighting	0.0	66.0	66.0	1.25	82.5
Gen. Purpose Outlets (First 10 KVA)	0.0	360.0	360.0	1.00	360.0
Gen. Purpose Outlets (Remainder)	0.0	0.0	0.0	0.50	0.0
Special Purpose Outlets	0.0	0.0	0.0	1.00	0.0
Mechanical Equipment	0.0	1332.2	1332.2	1.00	1332.2
Kitchen Equipment & Appliances	0.0	0.0	0.0	1.00	0.0
Miscellaneous	0.0	0.0	0.0	1.00	0.0
25% Largest Motor					125.0
TOTAL LOAD	0.0	1758.2	1758.2		1899.7
TOTAL AMPS	0.0	7.3	7.3		7.9

PANEL A

VOLTAGE: 120/240V, 1 PH, 3 W
TYPE: PANELBOARD
ENCLOSURE: NEMA 1
MOUNTING: SURFACE

BUSSING: MANUFACTURER'S STANDARD
CONTINUOUS RATING: 100 A
FULL AIC RATING: 10,000 A
SERIES AIC RATING: NONE

MAIN: CIRCUIT BREAKER
CONTINUOUS RATING: 70 A
FULL AIC RATING: 10,000 A
SERIES AIC RATING: NONE
LOCATION: BOTTOM

FEEDER/BRANCH CIRCUIT DEVICES: BOLT-ON CIRCUIT BREAKERS
FULL AIC RATING: 10,000 A
SERIES AIC RATING: NONE

SPECIAL PROVISIONS:
MASTER NAMEPLATE
GROUND BAR
SUITABLE FOR USE AS SERVICE ENTRANCE EQUIPMENT

INSIDE ELECTRICAL ENCLOSURE

ELECTRICAL LOAD CALCULATION	CONN. LOAD (VA) EXIST.	NEW	TOTAL	DEMAND FACTOR	DEMAND LOAD (VA)
Lighting	0.0	66.0	66.0	1.25	82.5
Gen. Purpose Outlets (First 10 KVA)	0.0	360.0	360.0	1.00	360.0
Gen. Purpose Outlets (Remainder)	0.0	0.0	0.0	0.50	0.0
Special Purpose Outlets	0.0	0.0	0.0	1.00	0.0
Mechanical Equipment	0.0	1332.2	1332.2	1.00	1332.2
Kitchen Equipment & Appliances	0.0	0.0	0.0	1.00	0.0
Miscellaneous	0.0	0.0	0.0	1.00	0.0
25% Largest Motor					125.0
TOTAL LOAD	0.0	1758.2	1758.2		1899.7
TOTAL AMPS	0.0	7.3	7.3		7.9

CONN. LOAD (VA)	FEEDER/BRANCH CIRCUIT DESCRIPTION	NOTE	BKR AMP/P	CKT NO	BUS (PHASE)	CKT NO	BKR AMP/P	FEEDER/BRANCH CIRCUIT DESCRIPTION	NOTE	CONN. LOAD (VA)
36.0	LTG - TANKS		20/1	1	A	2	20/1	CONTROL PANEL		800.0
0.0	SPARE		20/1	3	B	4	20/1	SPARE		0.0
390.0	LTG & OUTLETS - ELECTRICAL ENCLOSURE		20/1	5	A	6	20/1	SPARE		0.0
32.2	EXHAUST FAN - ELECTRICAL ENCLOSURE		20/1	7	B	8	20/1	SPARE		0.0
500.0	HEATER - ELECTRICAL ENCLOSURE		20/1	9	A	10	20/1	SPARE		0.0
0.0	SPARE		20/1	11	B	12	20/1	SPARE		0.0
0.0			SPACE	13	A	14	SPACE			0.0
0.0			SPACE	15	B	16	SPACE			0.0
0.0			SPACE	17	A	18	SPACE			0.0
0.0			SPACE	19	B	20	SPACE			0.0
0.0			SPACE	21	A	22	SPACE			0.0
0.0			SPACE	23	B	24	SPACE			0.0
0.0			SPACE	25	A	26	SPACE			0.0
0.0	SURGE ARRESTOR		30/2	27	B	28	SPACE			0.0
0.0			|	29	A	30	SPACE			0.0
			MAIN CIRCUIT BREAKER							

DESIGNED BY STV | DRAWN BY KL | CHECKED BY STV

LAKE WHATCOM WATER AND SEWER DISTRICT
BELLINGHAM DIVISION 7 RESERVOIR REPLACEMENT PROJECT WASHINGTON
ELECTRICAL – RISER DIAGRAM, LIGHTING & PANEL SCHEDULES

DATE 10-20-2023 | SCALE AS NOTED | JOB NUMBER 2184

SHEET E6.1 RI | PAGE 38 OF 50

DRAWING NAME	DESCRIPTION	DRAWING TYPE
D-01	BILL OF MATERIALS	
D-02	BILL OF MATERIALS	
D-03	BILL OF MATERIALS	
D-04	BILL OF MATERIALS	
P-00	TELEMETRY PANEL	PANEL LAYOUT DIAGRAM
N-00	NETWORK DIAGRAM	COMMUNICATIONS LAYOUT
C-00	TELEMETRY PANEL, POWER DISTRIBUTION	CONTROL WIRING DIAGRAM
C-01	TELEMETRY PANEL, PLC DIGITAL INPUTS	CONTROL WIRING DIAGRAM
C-02	TELEMETRY PANEL, PLC DIGITAL OUTPUTS	CONTROL WIRING DIAGRAM
C-03	TELEMETRY PANEL, PLC ANALOG INPUTS	CONTROL WIRING DIAGRAM
C-04	TELEMETRY PANEL, PLC ANALOG OUTPUTS	CONTROL WIRING DIAGRAM

WIRING SPECIFICATIONS

(MAIN SUPPLY SOURCE)

VAC POWER	STRANDED COPPER, MTW, BLACK W/ PHASES COLORED
VAC CONTROL	STRANDED COPPER, MTW, RED
VAC NEUTRAL	STRANDED COPPER, MTW, WHITE
GROUND	STRANDED COPPER, MTW, GREEN
VDC CONTROL	STRANDED COPPER, MTW, BLUE
VDC COMMON	STRANDED COPPER, MTW, WHITE W/ BLUE STRIPE
VDC ANALOG	TWISTED SHIELDED PAIR, BLACK AND CLEAR

(EXTERNAL SUPPLY SOURCE, ENERGIZED WITH MAIN DISCONNECT OFF)

FOREIGN CONTROL	STRANDED COPPER, MTW, YELLOW
FOREIGN GROUNDED NEG.	STRANDED COPPER, MTW, WHITE W/ YELLOW STRIPE

WIRE SIZED AT MINIMUM PER UL508A, TABLES 28.1 AND 38.1
FIELD WIRING SHALL BE COPPER WIRE WITH MINIMUM 60 DEG. C INSULATION RATING UNDER 100 AMPS, 75 DEG. C INSULATION RATING 100 AMPS OR MORE
TORQUE SCREWS AT FIELD WIRING AND FUSED TERMINAL BLOCKS TO 7 LB. IN., TORQUE SCREWS AT CIRCUIT BREAKERS TO 21 LB. IN., OR TORQUE AS INDICATED ON LABEL NEAR TERMINALS.

CONTROL PANEL LABELS

THE FOLLOWING LABELS WILL BE PLACED WITHIN THE CONTROL PANEL IF LISTED IN THE CONTROL PANEL LAYOUT (P) DRAWING

1. QCC NAMEPLATE (FRONT DOOR)
2. MAIN POWER NAMEPLATE (INTERIOR)
3. FIELD WIRING SPECIFICATION (INTERIOR)
4. NON-UL COMPONENT (NEAR NON-UL ITEM)
5. MULTIPLE POWER SOURCES (FRONT DOOR)
6. INSTANTANEOUS TRIP CIRCUIT BREAKER (2 LABELS NEAR DEVICE)
7. HIGH FAULT SCCR BRANCH CIRCUIT TRIP (NEAR CB)
8. INTRINSICALLY SAFE FIELD WIRING (NEAR I.S. FIELD TERMINALS)
9. INTERFACE TO HAZARDOUS LOCATIONS (2 LABELS ON FRONT DOOR)
10. 208, 240, OR 480 VAC LABEL (FRONT DOOR)
11. UPS POWER (FRONT DOOR)
12. NON-UL LOW VOLTAGE COMPONENT, EXTERNALLY POWERED (NEAR FUSE)
13. SUITABLE FOR USE AS SERVICE EQUIPMENT (NEAR MAIN POWER NAMEPLATE)

LEGEND

- (60) BILL OF MATERIALS ITEM NO.
- – – – – WIRING BY OTHERS
- ▲ EQUIPMENT BY OTHERS
- (1) MAIN DISCONNECT AND BRANCH CIRCUIT PROTECTION PROVIDED IN THE FIELD BY OTHERS
- (2) INSTALL IN ACCORDANCE WITH ARTICLE 504 OF THE N.E.C. CABLE LENGTH SHALL NOT EXCEED 1,000 FT.

REV.	DESCRIPTION	BY	DATE
C	90% REVIEW	J. YAO	7/21/23
B	DISTRICT REVIEW	N. DEBOLDT	6/8/23
A	VALVE & INTRUSION I/O	N. DEBOLDT	5/17/23

Quality Controls Corporation
5015 208th St. SW, Suite 1-B
Lynnwood, WA 98036
(425) 778-8280
www.Quality-Controls.com

DRAWN BY: N. DEBOLDT
APPD. BY: J. YAO
DATE: 2/1/23
END USER: LAKE WHATCOM W&S DISTRICT
CUSTOMER: WILSON ENGINEERING
CONSULTANT: QCC

Division 7 Reservoir Replacement Project
Instrumentation & Controls
Drawing List

QCC PROJECT NO. P2125
DWG. NO. D-00

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WILSONENGINEERING.COM

GEORGE DEBOLDT STATE OF WASHINGTON 20122768 REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY | DRAWN BY | CHECKED BY

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
INSTRUMENTATION & CONTROLS – DRAWING LIST

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET D-00 | PAGE 39 OF 50

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BID DOCUMENTS

Item No	Name / Tag No.	Qty.	Description	Manufacturer	Man. Part No.	Vendor
FIELD INSTRUMENTATION						
1.0	Flow Meter	1	Magnetic Inductive Flowmeter, DN300 | 12" PROMAG W 400 CSA Cl. 1 Div 2 Approval Cl. 150, Stainless steel fixed flange ASME B16.5 Liner: Hard Rubber St. Steel 1.4571|316 Ti Electrodes IP 68 (NEMA 4X/6P) Remote Transmitter, 75 ft cable NSF 61 drinking water approval	Endress+Hauser	5W4C80- C6CLHP5DHA1S GA+AACQI7L4	Field Instruments & Controls
2.0	Radar Level Transmitter - West Tank	1	Radar Level Transmitter **CA**: Approval: CSA C/US General Purpose **P**: PS/Output: 2-wire HART, HART/Bluetooth config **BN**: Antenna: 80mm/3.0", 20m liquid, -40 - 176 degF **VCE**: Rear Process Connection: 1" mNPT PVDF, 1/2" fNPT conduit connection **XR0**: Front Process Connection: None **A**: Cable Length: 150ft	Endress + Hauser	FMR20- CAPBNVCEXR0A	Field Instruments & Controls
2.1	Radar Level Transmitter - East Tank	1	Radar Level Transmitter **CA**: Approval: CSA C/US General Purpose **P**: PS/Output: 2-wire HART, HART/Bluetooth config **BN**: Antenna: 80mm/3.0", 20m liquid, -40 - 176 degF **VCE**: Rear Process Connection: 1" mNPT PVDF, 1/2" fNPT conduit connection **XR0**: Front Process Connection: None **A**: Cable Length: 115ft	Endress + Hauser	FMR20- CAPBNVCEXR0A	Field Instruments & Controls
3.0	Tipping Bucket Rain Gauge	1	Tipping Bucket Rain Gauge, 0.01" Accuracy, 24VDC Reed Switch Output	HyQuest Solutions	TB3	Kisters
4.0	Float Switch - Water	2	Float Switch: Non-Mercury, Polypropylene casing, Internal Weight, NO & NC Contact, **60** Ft. Cable	Anchor Scientific	GSI60NONC	H.D. Fowler

REV.	DESCRIPTION	BY	DATE
C	90% REVIEW	J. YAO	7/21/23
B	DISTRICT REVIEW	N. DEBOLDT	6/8/23
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Lynnwood, WA 98036
(425) 778-8280
www.Quality-Controls.com

DRAWN BY: N. DEBOLDT	END USER: LAKE WHATCOM W&S DISTRICT
APPD. BY: J. YAO	CUSTOMER: WILSON ENGINEERING
DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Bill of Materials

QCC PROJECT NO. P2125

DWG. NO. D-01

WILSON ENGINEERING
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GEORGE DEBOLDT — STATE OF WASHINGTON — 20122768 — REGISTERED PROFESSIONAL ENGINEER

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LAKE WHATCOM WATER AND SEWER DISTRICT

WHATCOM COUNTY WASHINGTON

DIVISION 7 RESERVOIR REPLACEMENT PROJECT

BILL OF MATERIALS

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET D-01 | PAGE 40 OF 50

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BID DOCUMENTS

Item No	Name / Tag No.	Qty.	Description	Manufacturer	Man. Part No.	Vendor
5.0	Limit Switch	6	Limit Switch: NEMA 4, Spring Return, 1 N.O. - 1 N.C.	Eaton	E50AR1	Platt Electric
5.1	Limit Switch	6	Limit Switch Lever Arm: 2", Metal Roller	Eaton	E50KL549	Platt Electric
6.0	Limit Switch - Ladder	2	Door Switch: Surface Mount, SPDT	Sentrol	2707A-L	JMAC
CONTROL PANEL INSTRUMENTATION						
21.0	Enclosure - Wall Mount Type 4X SS	1	Enclosure: NEMA 4, 304SS, 48"H x 36"W x 12"D	Saginaw	SCE-48EL3612LPPL	Saginaw Controls
21.1	Enclosure - Wall Mount Type 4X SS	1	Backpanel: 45.0"H x 33.0"W, Steel, White	Saginaw	SCE-42P36	Saginaw Controls
26.0	LT-0005	1	Light Fixture: LED, 285 mm (11.2"), **with** Power Cable, On/Off Switch	Banner	WLB32ZC285PBQMB	WESCO
26.1	ZS-0005	1	Light Switch: Door Activated	Hoffman	ALFSWD	North Coast Electric
33.0	RECP-0006	1	Receptacle: Panel Interface Port, Type 12/4/4X, 120VAC Outlet and RJ-45	Automation Direct	ZP-PSA-16-101	Quantum Automation
35.0	SPD-0002	1	Surge Suppressor: 120 VAC Nominal Voltage, Status Indication, Base Included	Phoenix	2907918	Stoneway
36.0	UPS-0009	1	Uninterruptible Power Supply: TRIO Series, Integrated 24VDC Power Supply, 120VAC Input, 20A, Battery Required	Phoenix	2906367	Stoneway
36.1	BATT-0012A/B/C/D	4	UPS Battery: SLA, 12VDC, 18AH	Interstate Battery	SLA1116	Interstate Batteries
40.0	CB-0001	1	Circuit Breaker: 20A, 1 Pole, Thermal Magnetic UL489	Eaton	FAZ-C20/1-NA-SP	Platt Electric
40.1	CB-0010 CB-0011	2	Circuit Breaker: 10A, 1 Pole, Thermal Magnetic UL489	Eaton	FAZ-C10/1-NA-SP	Platt Electric
40.2	CB-0006 CB-0007 CB-0008 CB-0014	4	Circuit Breaker: 5A, 1 Pole, Thermal Magnetic UL489	Eaton	FAZ-C5/1-NA-SP	Platt Electric
40.3	CB-XXXX	6	Circuit Breaker: 2A, 1 Pole, Thermal Magnetic UL489	Eaton	FAZ-C2/1-NA-SP	Platt Electric

REV.	DESCRIPTION	BY	DATE
C	90% REVIEW	J. YAO	7/21/23
B	DISTRICT REVIEW	N. DEBOLDT	6/8/23
A	VALVE & INTRUSION I/O	N. DEBOLDT	5/17/23

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DRAWN BY: N. DEBOLDT	END USER: LAKE WHATCOM W&S DISTRICT
APPD. BY: J. YAO	CUSTOMER: WILSON ENGINEERING
DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Bill of Materials

QCC PROJECT NO. P2125

DWG. NO. D-02

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BID DOCUMENTS

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GEORGE DEBOLDT — STATE OF WASHINGTON — 20122768 — REGISTERED PROFESSIONAL ENGINEER

DESIGNED BY | DRAWN BY | CHECKED BY

LAKE WHATCOM WATER AND SEWER DISTRICT
WHATCOM COUNTY WASHINGTON
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
BILL OF MATERIALS

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET D-02 | PAGE 41 OF 50

PLOT SETTINGS: RICOH 8X11- B&W.pc3, Letter, Portrait, 1:1.05, WE APWA_UNSCREENED.ctb
W:\2021\2021-130 LWWSD DIV 7 TANK\DWG\XREF\ADDL SHEETS.DWG - 10/17/2023 2:41 PM - Benton Seoy

Item No	Name / Tag No.	Qty.	Description	Manufacturer	Man. Part No.	Vendor
61.0	PB-0117	1	Pushbutton: Mushroom Head, 30.5 mm, Maintained, Red, NEMA 4X, 1 N.C. Contact	Allen-Bradley	800H-FRXT6D4	North Coast Electric
62.0	SS-0014, 0112	2	Hand Switch: 2 Position, 30.5 mm, Black Knob, NEMA 4X, 1 N.O. - 1 N.C. Contact	Allen-Bradley	800H-HR2A	North Coast Electric
71.0	CR-0004	1	Control Relay: 120VAC, DPDT, Indicator Light	Idec	RJ2S-CL-A120	Industrial Controls Supply
71.1	CR-XXXX	7	Control Relay: 24VDC, DPDT, Indicator Light	Idec	RJ2S-CL-D24	Industrial Controls Supply
71.2	CR-0121	2	Control Relay: 24VAC, DPDT, Indicator Light	Idec	RJ2S-CL-A24	Industrial Controls Supply
71.3	Control Relay - DPDT Slim	10	Relay Socket: DPDT Blade, DIN Rail Mount	Idec	SJ2S-07LW	Industrial Controls Supply
75.0	Terminals	90	Terminals: 600V, 25A, #12-#30 AWG	Allen-Bradley	1492-J3	North Coast Electric
75.1	Terminals	11	Terminals: Grounding, #12-#30 AWG	Allen-Bradley	1492-JG3	North Coast Electric
76.0	Terminals - Fused	34	Terminal: Fused, 1/4" x 1-1/4", Indicating 24 VDC LED	Allen-Bradley	1492-H5	North Coast Electric
76.1	Fuses	22	Fuses: 1/4 Amp, 1/4"x 1-1/4", Glass, Fast Acting	Bussmann	AGC-1/4-R	Industrial Controls Supply
76.2	Fuses	12	Fuses: 1/8 Amp, 1/4"x 1-1/4", Glass, Fast Acting	Bussmann	AGC-1/8-R	Industrial Controls Supply
78.0	Fuses - Drawer	1	Utility Box: DIN Mount, Drawer	Wago	709-591	Industrial Controls Supply
79.0	Ground Bar	1	Ground Bar: 12 terminal, copper alloy, Wire range #6 - #14 AWG.	Electric Motion	EM4251-12-SS-O	Electric Motion
80.0	PLC-0013	1	Programmable Logic Controller: CompactLogix, 2 Ethernet and 1 USB Ports, 24VDC Embedded 16 DC Inputs, 16 DC Digital Outputs, 4 High-Speed Counters, 4 High-Speed Counter Outputs, 4 Universal Analog Inputs, 2 Analog Outputs 8 I/O Expansion	Allen-Bradley	1769-L24ER-QBFC1B	North Coast Electric
82.0	PLC DI	1	Digital Input Module: 16 Inputs, 24 VDC	Allen-Bradley	1769-IQ16	North Coast Electric

REV.	DESCRIPTION	BY	DATE
C	90% REVIEW	J. YAO	7/21/23
B	DISTRICT REVIEW	N. DEBOLDT	6/8/23
A	VALVE & INTRUSION I/O	N. DEBOLDT	5/17/23

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APPD. BY: J. YAO	CUSTOMER: WILSON ENGINEERING
DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Bill of Materials

QCC PROJECT NO. P2125

DWG. NO. D-03

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DIVISION 7 RESERVOIR REPLACEMENT PROJECT
BILL OF MATERIALS

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET D-03 | PAGE 42 OF 50

Item No	Name / Tag No.	Qty.	Description	Manufacturer	Man. Part No.	Vendor
83.0	PLC AI	1	Analog Input Module: 4 Isolated Inputs, 0/4-20 mA	Allen-Bradley	1769-IF4I	North Coast Electric
90.0	OIT-0014	1	Graphic Terminal, Standard Model, 5.7 in. Display, TFT Color, TouchScreen, Single Ethernet,18-30 V DC	Allen-Bradley	2711P-T6C21D8S	North Coast Electric
91.0	ETH-0015	1	Ethernet Switch: Unmanaged, Five 10/100BaseTX RJ-45 Ports, 10-30 VDC	Phoenix	1085039	Stoneway Electric
95.0	CELL-0016	1	Sierra Wireless AirLink RV55, LTE Cat 4, Input 7-36VDC ** Activate under LWWSD Private Network Account. **	Sierra Wireless	RV50X	Astral Communications

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Division 7 Reservoir Replacement Project

Bill of Materials

QCC PROJECT NO. P2125

DWG. NO. D-04

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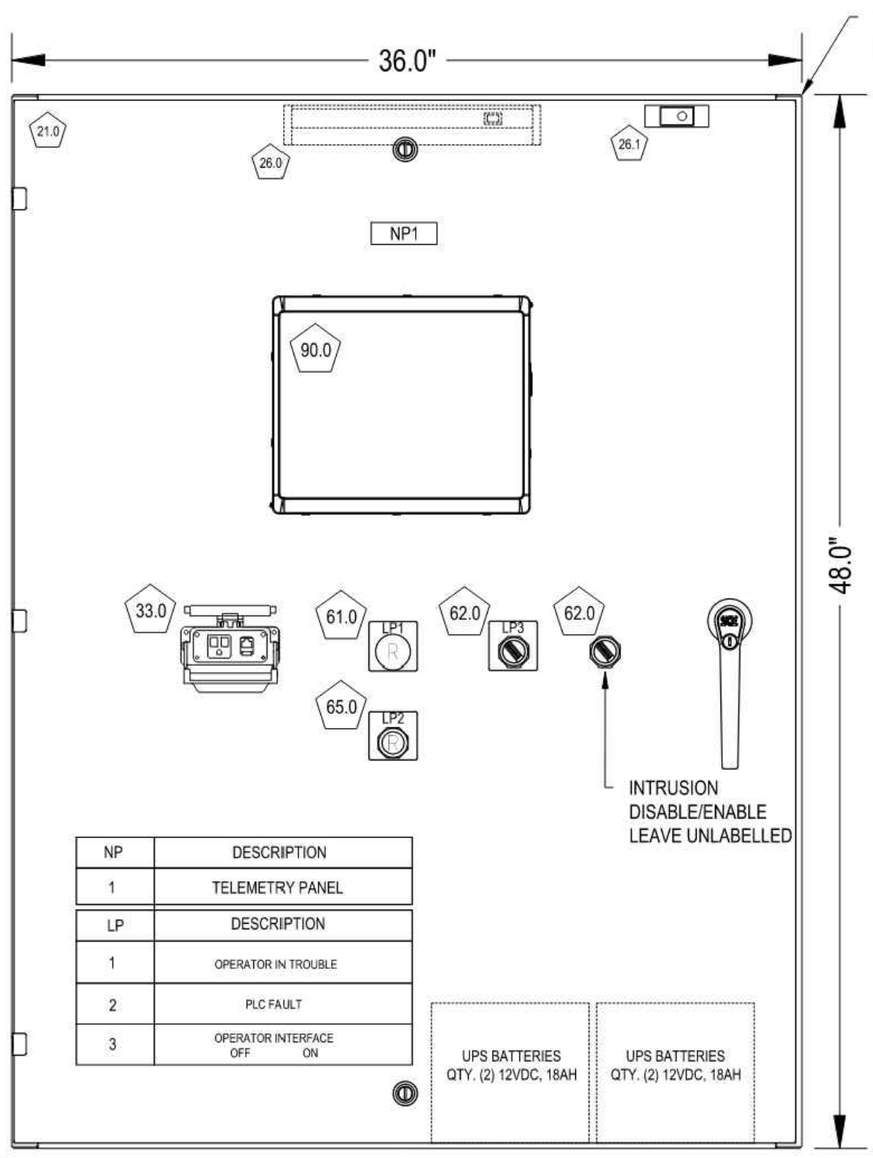
DIVISION 7 RESERVOIR REPLACEMENT PROJECT

BILL OF MATERIALS

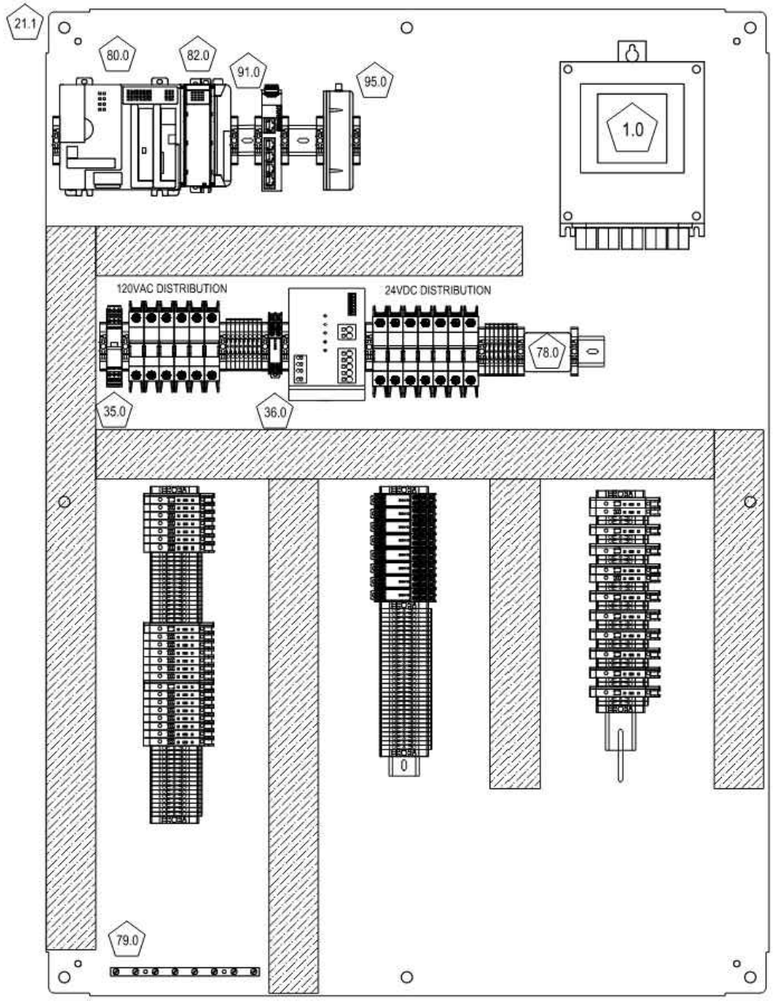
DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET D-04 | PAGE 43 OF 50



NP	DESCRIPTION
1	TELEMETRY PANEL

LP	DESCRIPTION
1	OPERATOR IN TROUBLE
2	PLC FAULT
3	OPERATOR INTERFACE OFF ON



LABELS: ①②③⑪

ENVIRONMENTAL TYPE 4/12, USE TYPE 4/12 CONDUIT HUBS & FITTINGS TO MAINTAIN RATING.

REV.	DESCRIPTION	BY	DATE
C	90% DESIGN REVIEW	J. YAO	7/21/23
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DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Telemetry Panel

Panel Layout Diagram

QCC PROJECT NO. P2125

DWG. NO. P-00

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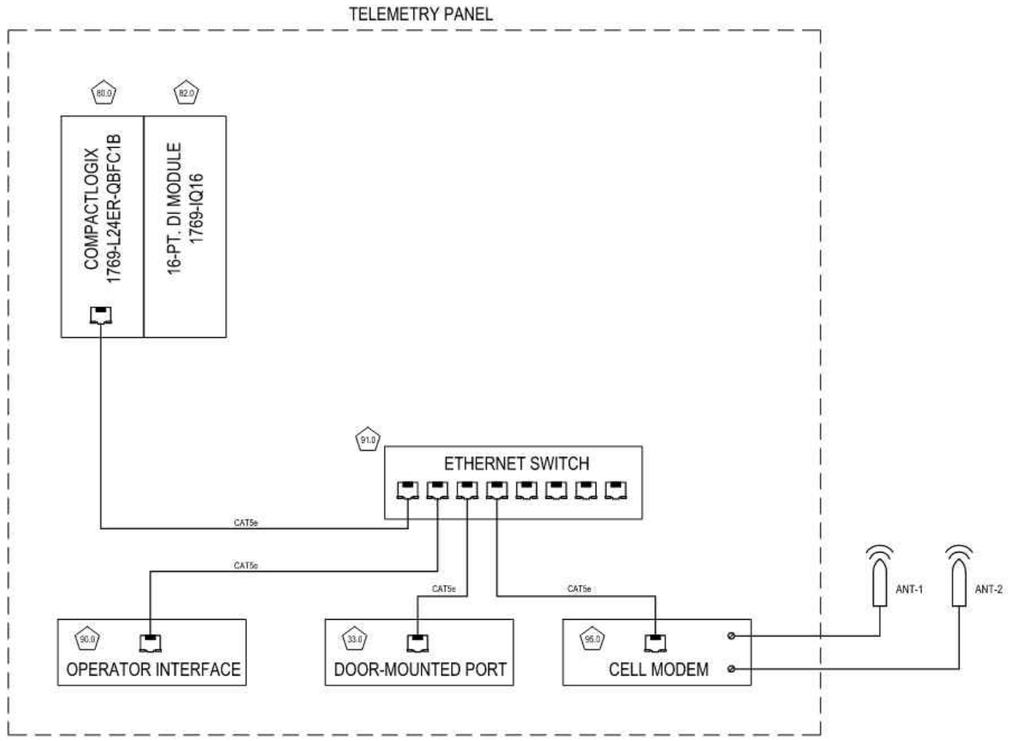
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
TELEMETRY PANEL – PANEL LAYOUT DIAGRAM

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET P-00 | PAGE 44 OF 50



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CUSTOMER: WILSON ENGINEERING
CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Network Diagram

Communications Layout

QCC PROJECT NO. P2125
DWG. NO. N-00

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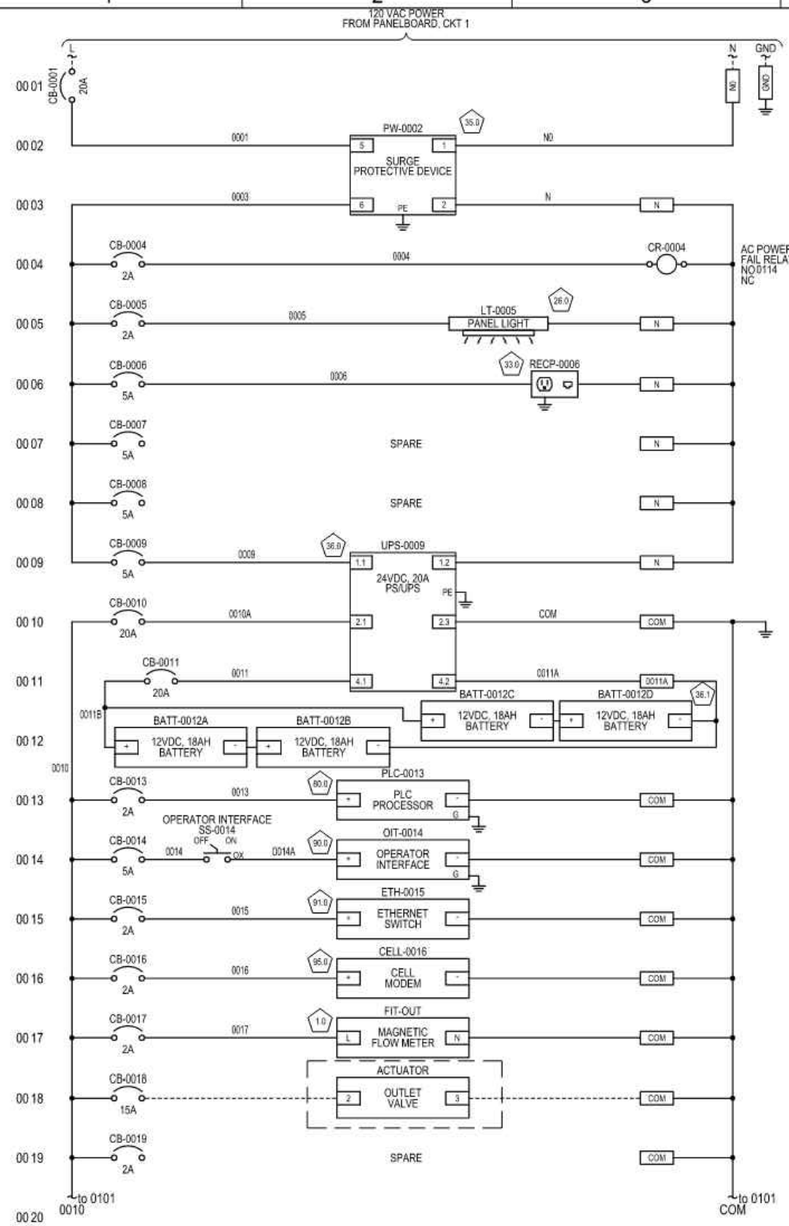
DIVISION 7 RESERVOIR REPLACEMENT PROJECT
NETWORK DIAGRAM – COMMUNICATIONS LAYOUT

DATE 10-17-2023
SCALE AS SHOWN
JOB NUMBER 2021-130

SHEET N-00
PAGE 45 OF 50



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DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Telemetry Panel, Power Distribution

Control Wiring Diagram

QCC PROJECT NO. P2125

DWG. NO. C-00

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DIVISION 7 RESERVOIR REPLACEMENT PROJECT
TELEMETRY PANEL, POWER DISTRIBUTION – CONTROL WIRING DIAGRAM

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C-00 | PAGE 46 OF 50

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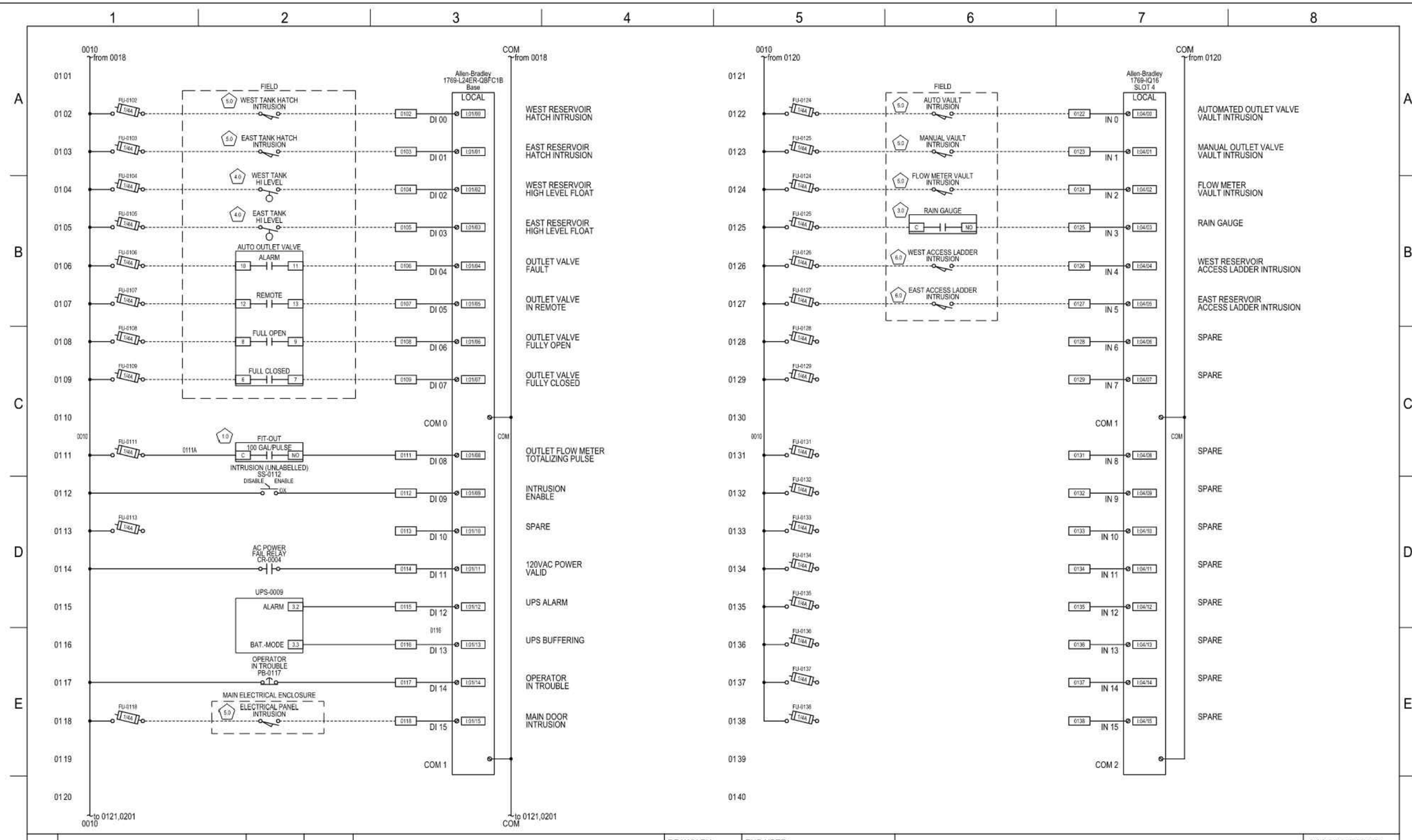

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Division 7 Reservoir Replacement Project

Telemetry Panel, PLC Digital Inputs

Control Wiring Diagram

QCC PROJECT NO. P2125

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DIVISION 7 RESERVOIR REPLACEMENT PROJECT

TELEMETRY PANEL, PLC DIGITAL INPUTS – CONTROL WIRING DIAGRAM

DATE	SCALE	JOB NUMBER
10-17-2023	AS SHOWN	2021-130

SHEET C-01

PAGE 47 OF 50

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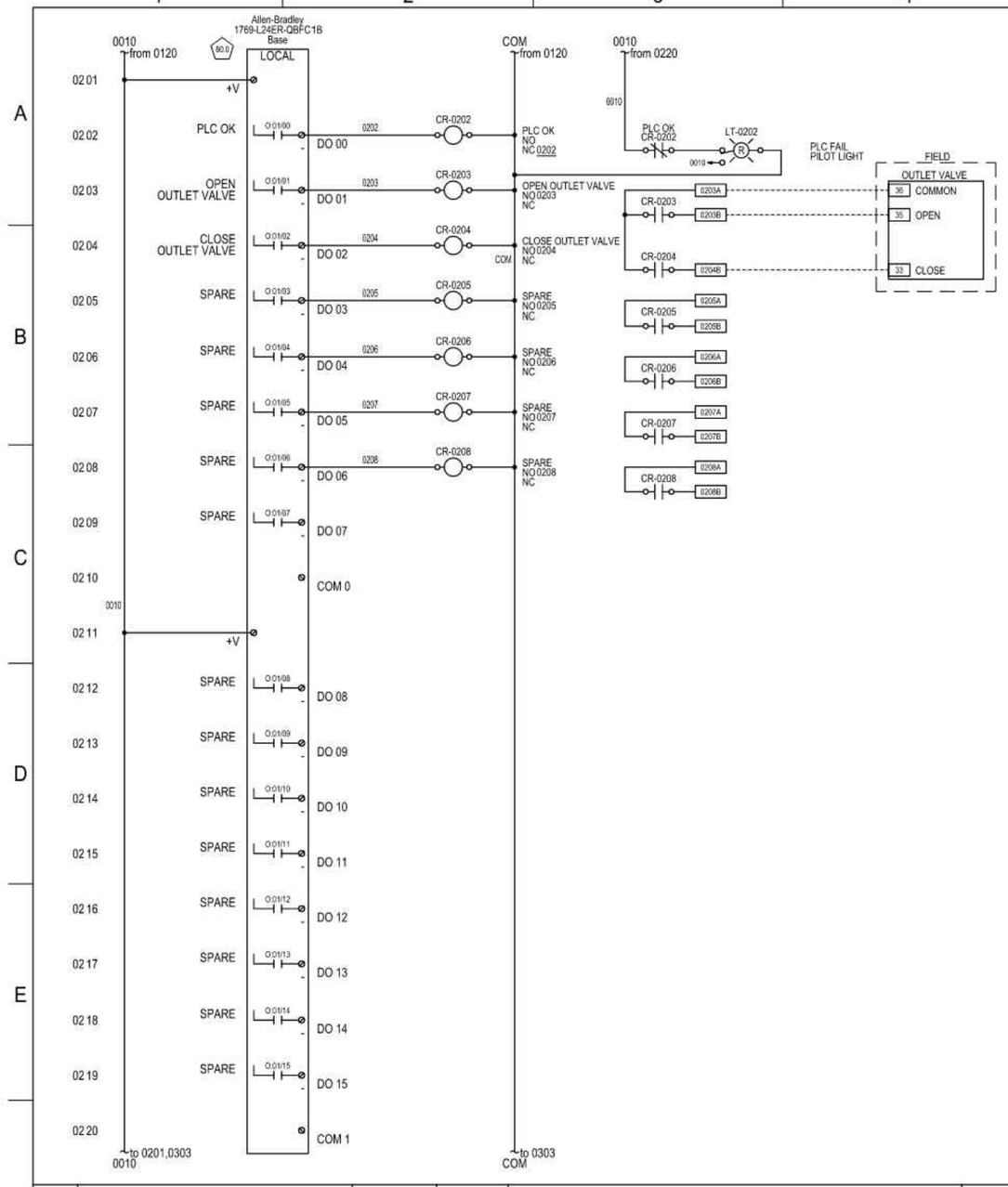

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Division 7 Reservoir Replacement Project

Telemetry Panel, PLC Digital Outputs

Control Wiring Diagram

QCC PROJECT NO. P2125

DWG. NO. C-02

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DIVISION 7 RESERVOIR REPLACEMENT PROJECT

TELEMETRY PANEL, PLC DIGITAL OUTPUTS – CONTROL WIRING DIAGRAM

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C-02 | PAGE 48 OF 50

PLOT SETTINGS: RICOH 8X11- B&W.pc3, Letter, Portrait, 1:1.05, WE APWA_UNSCREENED.ctb
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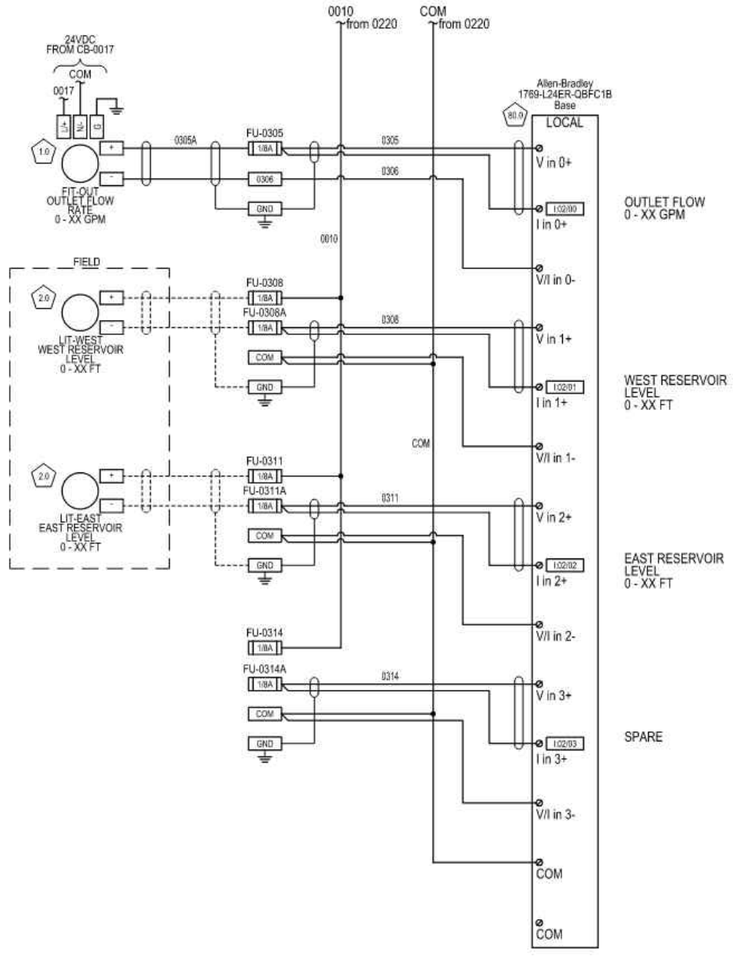

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A	VALVE & INTRUSION I/O	N. DEBOLDT	5/17/23

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DATE: 2/1/23	CONSULTANT: QCC

Division 7 Reservoir Replacement Project

Telemetry Panel, PLC Analog Inputs

Control Wiring Diagram

QCC PROJECT NO. P2125

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TELEMETRY PANEL, PLC ANALOG INPUTS – CONTROL WIRING DIAGRAM

DATE 10-17-2023 | SCALE AS SHOWN | JOB NUMBER 2021-130

SHEET C-03 | PAGE 49 OF 50

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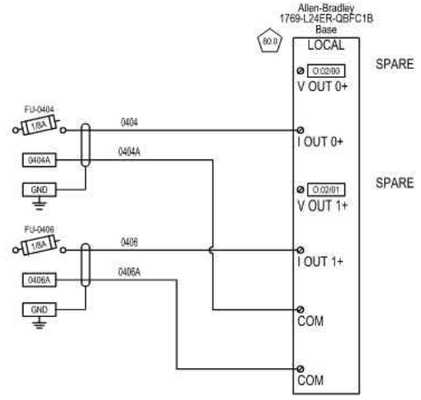

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APPD. BY:	J. YAO
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CUSTOMER:	WILSON ENGINEERING
CONSULTANT:	QCC

Division 7 Reservoir Replacement Project

Telemetry Panel, PLC Analog Outputs

Control Wiring Diagram

QCC PROJECT NO. P2125

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TELEMETRY PANEL, PLC ANALOG OUTPUTS – CONTROL WIRING DIAGRAM

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SHEET C-04 | PAGE 50 OF 50