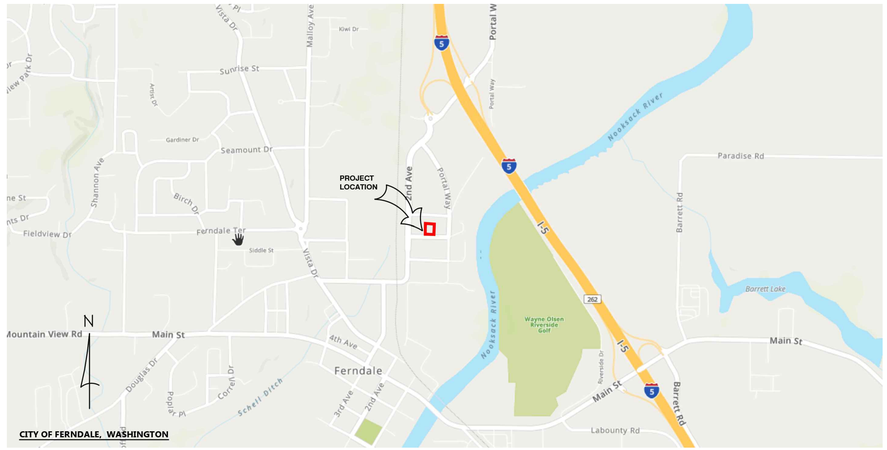
1964 SOMERSET ST DEVELOPMENT

CIVIL CONSTRUCTION PLANS

CITY OF FERNDALE, WASHINGTON



VICINITY MAP

PARCEL # 390220 202169
A PORTION OF SECTION 20, TOWNSHIP 39
NORTH, RANGE 2 EAST, W.M.

CITY OF FERNDALE, WASHINGTON

CONTRACT DRAWINGS FOR:

DJ & DJ CONTRACTING INC.
2010 HARKSELL ROAD
FERNDALE, WASHINGTON 98248

CONSULTING ENGINEER:

AXE ENGINEERING SERVICES, LLC
KARIS VAN DIEST, PE
851 COHO WAY #306
BELLINGHAM, WASHINGTON 98225
Tel. 360.922.0549

LEGEND

EXISTING	PROPOSED	
160		MAJOR CONTOUR
161		MINOR CONTOUR
		PROPERTY LINE
		CENTER LINE
		RIGHT OF WAY
		EASEMENT
D	SD	STORM LINE
		STORM DRAIN CATCH BASIN
W	WA	WATER LINE
	FW	FIRE LINE
		FIRE HYDRANT
		WATER VALVE
		WATER METER
S	SS	SEWER LINE
		SEWER MANHOLE
		SEWER CLEANOUT
		CONCRETE
		ASPHALT
		GRAVEL
		PERMEABLE PAVEMENT

DETAIL NUMBER
DETAIL SHEET NUMBER

SECTION LETTER
SECTION SHEET NUMBER

ABBREVIATIONS

CBI	CATCH BASIN INSERT
EG	EXISTING GROUND
ELEV	ELEVATION
EXST	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FG	FINISHED GRADE
FT	FEET
IE	INVERT ELEVATION
LF	LENGTH FEET
MAX	MAXIMUM
MIN	MINIMUM
PIV	POST INDICATOR VALVE
RPBA	REDUCED PRESSURE BACKFLOW ASSEMBLY
SDCB	STORM DRAIN CATCH BASIN
SDCO	STORM DRAIN CLEAN OUT
TYP	TYPICAL

SHEET INDEX

APPROVED
03/19/2025
BY
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

I HEREBY CERTIFY THAT THE CONSTRUCTION OF SOMERSET STREET DEVELOPMENT HAS BEEN INSPECTED BY AXE ENGINEERING SERVICES, LLC AND TO THE BEST OF MY KNOWLEDGE, HAVE BEEN CONSTRUCTED IN CONFORMANCE WITH THE CITY OF FERNDALE DEVELOPMENT STANDARDS, THE CITY OF FERNDALE MUNICIPAL CODE, SUBSEQUENT STANDARDS ADOPTED BY REFERENCE THEREIN, AND STANDARD ENGINEERING PRACTICE

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

RECORD DRAWING - 02/24/2025

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360.922.0549
www.axeengineering.com

ENGINEERING Services
CIVIL • STORMWATER • STRUCTURES
axeengineering.com

KARIS ANN VAN DIEST — STATE OF WASHINGTON — 22028719 — REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
COVER, VICINITY MAP & INDEX

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

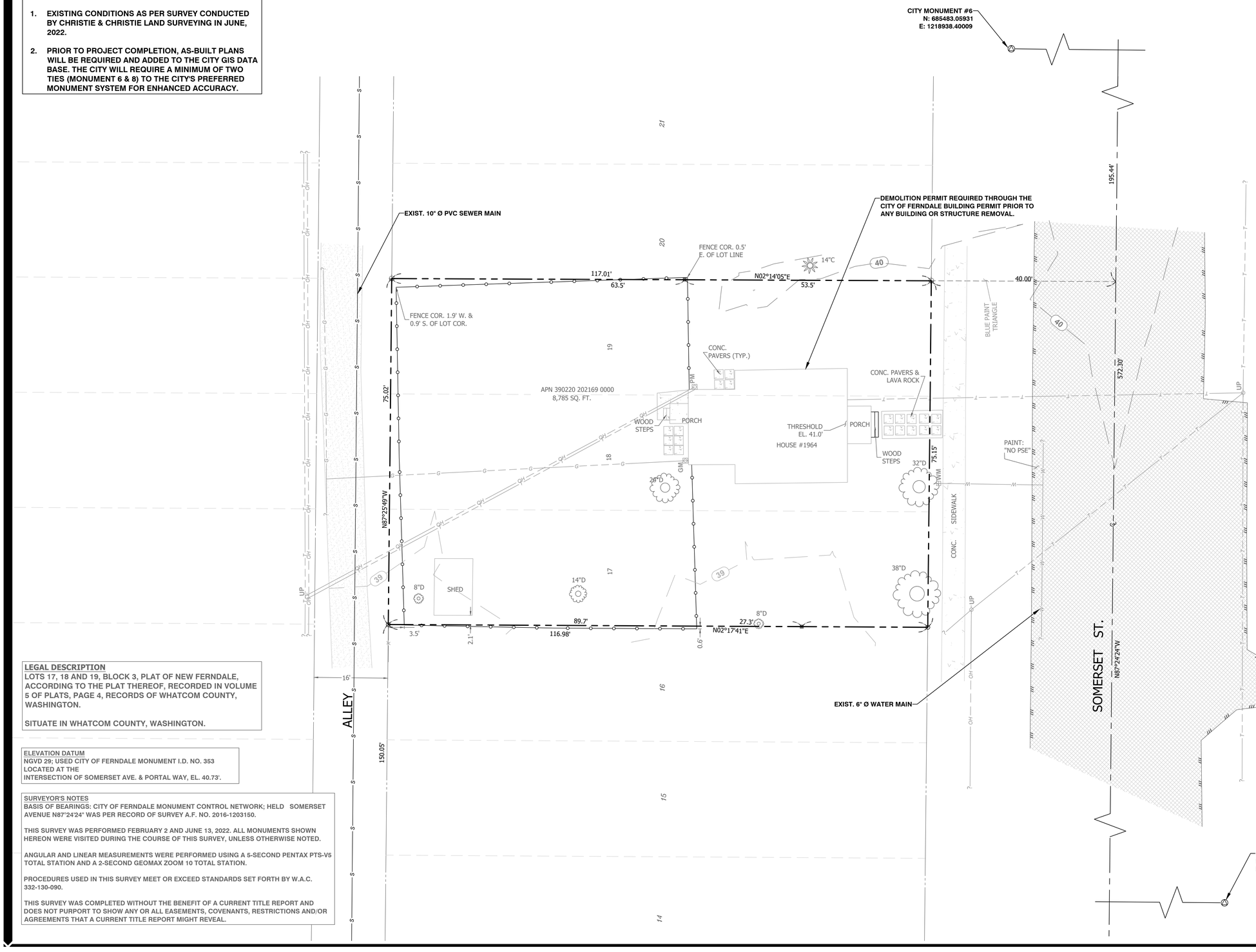
PROJECT # 22037

SHEET # C1 OF 10 REV # REC

00756.001 03/19/25 RH

NOTES:

1. EXISTING CONDITIONS AS PER SURVEY CONDUCTED BY CHRISTIE & CHRISTIE LAND SURVEYING IN JUNE, 2022.
2. PRIOR TO PROJECT COMPLETION, AS-BUILT PLANS WILL BE REQUIRED AND ADDED TO THE CITY GIS DATA BASE. THE CITY WILL REQUIRE A MINIMUM OF TWO TIES (MONUMENT 6 & 8) TO THE CITY'S PREFERRED MONUMENT SYSTEM FOR ENHANCED ACCURACY.



LEGAL DESCRIPTION
LOTS 17, 18 AND 19, BLOCK 3, PLAT OF NEW FERNDALE, ACCORDING TO THE PLAT THEREOF, RECORDED IN VOLUME 5 OF PLATS, PAGE 4, RECORDS OF WHATCOM COUNTY, WASHINGTON.

SITUATE IN WHATCOM COUNTY, WASHINGTON.

ELEVATION DATUM
NGVD 29; USED CITY OF FERNDALE MONUMENT I.D. NO. 353 LOCATED AT THE INTERSECTION OF SOMERSET AVE. & PORTAL WAY, EL. 40.73'.

SURVEYOR'S NOTES
BASIS OF BEARINGS: CITY OF FERNDALE MONUMENT CONTROL NETWORK; HELD SOMERSET AVENUE N87°24'24" WAS PER RECORD OF SURVEY A.F. NO. 2016-1203150.

THIS SURVEY WAS PERFORMED FEBRUARY 2 AND JUNE 13, 2022. ALL MONUMENTS SHOWN HEREON WERE VISITED DURING THE COURSE OF THIS SURVEY, UNLESS OTHERWISE NOTED.

ANGULAR AND LINEAR MEASUREMENTS WERE PERFORMED USING A 5-SECOND PENTAX PTS-V5 TOTAL STATION AND A 2-SECOND GEOMAX ZOOM 10 TOTAL STATION.

PROCEDURES USED IN THIS SURVEY MEET OR EXCEED STANDARDS SET FORTH BY W.A.C. 332-130-090.

THIS SURVEY WAS COMPLETED WITHOUT THE BENEFIT OF A CURRENT TITLE REPORT AND DOES NOT PURPORT TO SHOW ANY OR ALL EASEMENTS, COVENANTS, RESTRICTIONS AND/OR AGREEMENTS THAT A CURRENT TITLE REPORT MIGHT REVEAL.

APPROVED
03/19/2025
BY
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING - 02/24/2025

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360.332.0549
www.axeengineering.com

ENGINEERING Services
CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

KARIS ANN VAN DIEST
STATE OF WASHINGTON
22028719
REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
EXISTING CONDITIONS

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C2 OF 10 REV # REC

00756.002 03/19/25 RH

STORMWATER POLLUTION PREVENTION (SWPP) NOTES:

THIS STORMWATER POLLUTION PREVENTION PLAN IS PROVIDED IN GENERAL ACCORDANCE WITH THE TERMS OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT FOR CONSTRUCTION ACTIVITIES. THE CONTRACTOR IS ADVISED THAT THE PROJECT AREA MAY DRAIN TO WETLANDS AND/OR STATE WATERS AND THAT THE CONTRACTOR IS RESPONSIBLE TO PROTECT THE RECEIVING WATERS FROM DELETERIOUS EFFECTS OF CONSTRUCTION.

THE CONTRACTOR IS REQUIRED TO HAVE A COPY OF THE SWPP PLAN ONSITE AT ALL TIMES.

THE CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING THE EROSION AND SEDIMENT CONTROL BMPs SHOWN OR DESCRIBED IN THE CONTRACT DOCUMENTS.

THE FOLLOWING DESCRIBES HOW THE CONSTRUCTION SWPP PLAN MAY ADDRESS EACH OF THE 13 REQUIRED ELEMENTS. REFER TO THE PROJECT CONSTRUCTION PLANS FOR A VICINITY MAP, SWPP SITE PLAN, CONVEYANCE SYSTEMS, EROSION AND SEDIMENT CONTROL MEASURES, AND EROSION AND SEDIMENT CONTROL DETAILS. THE BMPs SHOWN ON THE SWPP SITE PLAN ARE THE MINIMUM REQUIREMENTS FOR THE ANTICIPATED SITE CONDITIONS. THE SWPP PLAN SHALL BE MODIFIED BY THE CONTRACTOR USING THE FOLLOWING SUGGESTED BMPs AS REQUIRED TO MEET THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION AND TO PREVENT VIOLATION OF SURFACE WATER QUALITY, GROUND WATER QUALITY, OR SEDIMENT MANAGEMENT STANDARDS. THE CONTRACTOR SHALL MAINTAIN THESE BMPs UNTIL ALL CONSTRUCTION IS APPROVED AND/OR THE SITE HAS BEEN PERMANENTLY STABILIZED.

THE BMP's NOTED ON THIS SHEET MAY BE FOUND IN THE WASHINGTON STATE DEPARTMENT OF ECOLOGY *STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON VOLUME II, CONSTRUCTION STORMWATER POLLUTION PREVENTION*.

ELEMENT #1: PRESERVE VEGETATION/MARK CLEARING LIMITS

1. BEFORE BEGINNING LAND DISTURBING ACTIVITIES, INCLUDING CLEARING AND GRADING, CLEARLY MARK ALL CLEARING LIMITS, SENSITIVE AREAS AND THEIR BUFFERS, AND TREES THAT ARE TO BE PRESERVED WITHIN THE CONSTRUCTION AREA.
   - PLASTIC, METAL, OR FABRIC FENCE MAY BE USED TO MARK THE CLEARING LIMITS.

2. RETAIN THE DUFF LAYER, NATIVE TOPSOIL, AND NATURAL VEGETATION IN AN UNDISTURBED STATE TO THE MAXIMUM DEGREE PRACTICABLE.
   - IF IT IS NOT PRACTICAL TO RETAIN THE DUFF LAYER IN PLACE, THEN STOCKPILE IT ON-SITE, COVER IT TO PREVENT EROSION, AND REPLACE IT IMMEDIATELY WHEN YOU FINISH DISTURBING THE SITE.

SUGGESTED BMPs:
BMP C101 : PRESERVING NATURAL VEGETATION
BMP C102: BUFFER ZONES
BMP C103: HIGH VISIBILITY PLASTIC OR METAL FENCE
BMP C233: SILT FENCE

ELEMENT #2: ESTABLISH CONSTRUCTION ACCESS

1. LIMIT CONSTRUCTION VEHICLE ACCESS AND EXIT TO ONE ROUTE, IF POSSIBLE.
   - MINIMIZE CONSTRUCTION SITE ACCESS POINTS ALONG LINEAR PROJECTS, SUCH AS ROADWAYS. STREET WASHING MAY REQUIRE LOCAL JURISDICTION APPROVAL.

2. STABILIZE ACCESS POINTS WITH A PAD OF QUARRY SPALLS, CRUSHED ROCK, OR OTHER EQUIVALENT BMPs, TO MINIMIZE TRACKING OF SEDIMENT ONTO PUBLIC ROADS.

3. LOCATE WHEEL WASH OR TIRE BATHS ON SITE, IF THE STABILIZED CONSTRUCTION ENTRANCE IS NOT EFFECTIVE IN PREVENTING TRACKING SEDIMENT ONTO ROADS.

4. IF SEDIMENT IS TRACKED OFF SITE, CLEAN THE AFFECTED ROADWAY THOROUGHLY AT THE END OF EACH DAY, OR MORE FREQUENTLY AS NECESSARY (FOR EXAMPLE, DURING WET WEATHER). REMOVE SEDIMENT FROM ROADS BY SHOVELING, SWEEPING, OR PICKUP AND TRANSPORT THE SEDIMENT TO A CONTROLLED SEDIMENT DISPOSAL AREA.

5. CONDUCT STREET WASHING ONLY AFTER SEDIMENT IS REMOVED IN ACCORDANCE WITH THE ABOVE.

6. CONTROL STREET WASH WASTEWATER BY PUMPING BACK ON-SITE, OR OTHERWISE PREVENT IT FROM DISCHARGING INTO SYSTEMS TRIBUTARY TO WATERS OF THE STATE.

SUGGESTED BMPs:
BMP C105: STABILIZED CONSTRUCTION ENTRANCE/EXIT
BMP C106: WHEEL WASH
BMP C107: CONSTRUCTION ROAD / PARKING AREA STABILIZATION

ELEMENT #3: CONTROL FLOW RATES

1. PROTECT PROPERTIES AND WATERWAYS DOWNSTREAM OF DEVELOPMENT SITES FROM EROSION AND THE ASSOCIATED DISCHARGE OF TURBID WATERS DUE TO INCREASES IN THE VELOCITY AND PEAK VOLUMETRIC FLOW RATE OF STORMWATER RUNOFF FROM THE PROJECT SITE.

2. WHERE NECESSARY TO COMPLY WITH THE ABOVE, CONSTRUCT STORMWATER RETENTION OR DETENTION FACILITIES AS ONE OF THE FIRST STEPS IN GRADING. ASSURE THAT DETENTION FACILITIES FUNCTION PROPERLY BEFORE CONSTRUCTING SITE IMPROVEMENTS (E.G., IMPERVIOUS SURFACES).

IF PERMANENT INFILTRATION PONDS ARE USED FOR FLOW CONTROL DURING CONSTRUCTION, PROTECT THESE FACILITIES FROM SILTATION DURING THE CONSTRUCTION PHASE.

SUGGESTED BMPs:
BMP C203: WATER BARS
BMP C207: CHECK DAMS
BMP C209: OUTLET PROTECTION
BMP C235: WATTLES
BMP C240: SEDIMENT TRAP
BMP C241: TEMPORARY SEDIMENT POND

ELEMENT #4: INSTALL SEDIMENT CONTROLS

1. DESIGN, INSTALL, AND MAINTAIN EFFECTIVE EROSION CONTROLS AND SEDIMENT CONTROLS TO MINIMIZE THE DISCHARGE OF POLLUTANTS.

2. CONSTRUCT SEDIMENT CONTROL BMPs (SEDIMENT PONDS, TRAPS, FILTERS, ETC.) AS ONE OF THE FIRST STEPS IN GRADING. THESE BMPs SHALL BE FUNCTIONAL BEFORE OTHER LAND DISTURBING ACTIVITIES TAKE PLACE.

3. MINIMIZE SEDIMENT DISCHARGES FROM THE SITE. THE DESIGN, INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROLS MUST ADDRESS FACTORS SUCH AS THE AMOUNT, FREQUENCY, INTENSITY AND DURATION OF PRECIPITATION, THE NATURE OF RESULTING STORMWATER RUNOFF, AND SOIL CHARACTERISTICS, INCLUDING THE RANGE OF SOIL PARTICLE SIZES EXPECTED TO BE PRESENT ON THE SITE.

4. DIRECT STORMWATER RUNOFF FROM DISTURBED AREAS THROUGH A SEDIMENT POND OR OTHER APPROPRIATE SEDIMENT REMOVAL BMP, BEFORE THE RUNOFF LEAVES A CONSTRUCTION SITE OR BEFORE DISCHARGE TO AN INFILTRATION FACILITY. RUNOFF FROM FULLY STABILIZED AREAS MAY BE DISCHARGED WITHOUT A SEDIMENT REMOVAL BMP, BUT MUST MEET THE FLOW CONTROL PERFORMANCE STANDARD IN ELEMENT #3, BULLET #1.

5. LOCATE BMPs INTENDED TO TRAP SEDIMENT ON-SITE IN A MANNER TO AVOID INTERFERENCE WITH THE MOVEMENT OF JUVENILE SALMONIDS ATTEMPTING TO ENTER OFF-CHANNEL AREAS OR DRAINAGES.

6. WHERE FEASIBLE, DESIGN OUTLET STRUCTURES THAT WITHDRAW IMPOUNDED STORMWATER FROM THE SURFACE TO AVOID DISCHARGING SEDIMENT THAT IS STILL SUSPENDED LOWER IN THE WATER COLUMN.

SUGGESTED BMPs:
BMP C231: BRUSH BARRIER
BMP C232: GRAVEL FILTER BERM
BMP C233: SILT FENCE
BMP C234: VEGETATED STRIP
BMP C235: WATTLES
BMP C240: SEDIMENT TRAP

ELEMENT #5: STABILIZE SOILS

1. STABILIZE EXPOSED AND UNWORKED SOILS BY APPLICATION OF EFFECTIVE BMPs THAT PREVENT EROSION. APPLICABLE BMPs INCLUDE, BUT ARE NOT LIMITED TO: TEMPORARY AND PERMANENT SEEDING, SODDING, MULCHING, PLASTIC COVERING, EROSION CONTROL FABRICS AND MATTING, SOIL APPLICATION OF POLYACRYLAMIDE (PAM), THE EARLY APPLICATION OF GRAVEL BASE ON AREAS TO BE PAVED, AND DUST CONTROL.

2. CONTROL STORMWATER VOLUME AND VELOCITY WITHIN THE SITE TO MINIMIZE SOIL EROSION.

3. CONTROL STORMWATER DISCHARGES, INCLUDING BOTH PEAK FLOW RATES AND TOTAL STORMWATER VOLUME, TO MINIMIZE EROSION AT OUTLETS AND TO MINIMIZE DOWNSTREAM CHANNEL AND STREAM BANK EROSION.

4. SOILS MUST NOT REMAIN EXPOSED AND UNWORKED FOR MORE THAN THE TIME PERIODS SET FORTH BELOW TO PREVENT EROSION:
   - DURING THE DRY SEASON (MAY 1 - SEPT. 30): 7 DAYS
   - DURING THE WET SEASON (OCTOBER 1 - APRIL 30): 2 DAYS

5. STABILIZE SOILS AT THE END OF THE SHIFT BEFORE A HOLIDAY OR WEEKEND IF NEEDED BASED ON THE WEATHER FORECAST.

6. STABILIZE SOIL STOCKPILES FROM EROSION, PROTECTED WITH SEDIMENT TRAPPING MEASURES, AND WHERE POSSIBLE, BE LOCATED AWAY FROM STORM DRAIN INLETS, WATERWAYS AND DRAINAGE CHANNELS.

7. MINIMIZE THE AMOUNT OF SOIL EXPOSED DURING CONSTRUCTION ACTIVITY.

8. MINIMIZE THE DISTURBANCE OF STEEP SLOPES.

9. MINIMIZE SOIL COMPACTION AND, UNLESS INFEASIBLE, PRESERVE TOPSOIL.

SUGGESTED BMPs/BMPs TO BE USED:
BMP C120: TEMPORARY AND PERMANENT SEEDING
BMP C121: MULCHING
BMP C122: NETS AND BLANKETS
BMP C123: PLASTIC COVERING
BMP C124: SODDING
BMP C125: TOPSOILING/COMPOSTING
BMP C126: POLYACRYLAMIDE FOR SOIL EROSION PROTECTION
BMP C130: SURFACE ROUGHENING
BMP C131: GRADIENT TERRACES
BMP C140: DUST CONTROL

ELEMENT #6: PROTECT SLOPES

1. DESIGN AND CONSTRUCT CUT-AND-FILL SLOPES IN A MANNER TO MINIMIZE EROSION. APPLICABLE PRACTICES INCLUDE, BUT ARE NOT LIMITED TO, REDUCING CONTINUOUS LENGTH OF SLOPE WITH TERRACING AND DIVERSIONS, REDUCING SLOPE STEEPNESS, AND ROUGHENING SLOPE SURFACES (FOR EXAMPLE, TRACK WALKING).

2. DIVERT OFF-SITE STORMWATER (RUN-ON) OR GROUND WATER AWAY FROM SLOPES AND DISTURBED AREAS WITH INTERCEPTOR DIKES, PIPES AND/OR SWALES. OFF-SITE STORMWATER SHOULD BE MANAGED SEPARATELY FROM STORMWATER GENERATED ON THE SITE.

3. AT THE TOP OF SLOPES, COLLECT DRAINAGE IN PIPE SLOPE DRAINS OR PROTECTED CHANNELS TO PREVENT EROSION.
   - TEMPORARY PIPE SLOPE DRAINS MUST HANDLE THE PEAK VOLUMETRIC FLOW RATE CALCULATED USING A 10 MINUTE TIME STEP FROM A TYPE 1A, 10-YEAR, 24-HOUR FREQUENCY STORM FOR THE DEVELOPED CONDITION. ALTERNATIVELY, THE 10-YEAR, 1-HOUR FLOW RATE PREDICTED BY AN APPROVED CONTINUOUS RUNOFF MODEL, INCREASED BY A FACTOR OF 1.6, MAY BE USED. THE HYDROLOGIC ANALYSIS MUST USE THE EXISTING LAND COVER CONDITION FOR PREDICTING FLOW RATES FROM TRIBUTARY AREAS OUTSIDE THE PROJECT LIMITS. FOR TRIBUTARY AREAS ON THE PROJECT SITE, THE ANALYSIS MUST USE THE TEMPORARY OR PERMANENT PROJECT LAND COVER CONDITION, WHICHEVER WILL PRODUCE THE HIGHEST FLOW RATES. IF USING THE WESTERN WASHINGTON HYDROLOGY MODEL (WWHM) TO PREDICT FLOWS, BARE SOIL AREAS SHOULD BE MODELED AS "LANDSCAPED" AREA.

4. PLACE EXCAVATED MATERIAL ON THE UPHILL SIDE OF TRENCHES, CONSISTENT WITH SAFETY AND SPACE CONSIDERATIONS.

5. PLACE CHECK DAMS AT REGULAR INTERVALS WITHIN CONSTRUCTED CHANNELS THAT ARE CUT DOWN A SLOPE.

SUGGESTED BMPs:
BMP C120: TEMPORARY AND PERMANENT SEEDING
BMP C121: MULCHING
BMP C122: NETS AND BLANKETS
BMP C123: PLASTIC COVERING
BMP C124: SODDING
BMP C130: SURFACE ROUGHENING
BMP C131: GRADIENT TERRACES
BMP C200: INTERCEPTOR DIKE AND SWALE
BMP C201: GRASS-LINED CHANNELS
BMP C203: WATER BARS
BMP C204: PIPE SLOPE DRAINS
BMP C205: SUBSURFACE DRAINS
BMP C206: LEVEL SPREADER
BMP C207: CHECK DAMS
BMP C208: TRIANGULAR SILT DIKE (GEOTEXTILE-ENCASED CHECK DAM)

ELEMENT #7: PROTECT DRAIN INLETS

1. PROTECT ALL STORM DRAIN INLETS MADE OPERABLE DURING CONSTRUCTION SO THAT STORMWATER RUNOFF SHALL NOT ENTER THE CONVEYANCE SYSTEM WITHOUT FIRST BEING FILTERED OR TREATED TO REMOVE SEDIMENT.

2. CLEAN OR REMOVE AND REPLACE INLET PROTECTION DEVICES WHEN SEDIMENT HAS FILLED ONE-THIRD OF THE AVAILABLE STORAGE (UNLESS A DIFFERENT STANDARD IS SPECIFIED BY THE PRODUCT MANUFACTURER).

SUGGESTED BMPs:
BMP C220: STORM DRAIN INLET PROTECTION

ELEMENT #8: STABILIZE CHANNELS AND OUTLETS

1. DESIGN, CONSTRUCT, AND STABILIZE ALL ON-SITE CONVEYANCE CHANNELS TO PREVENT EROSION FROM THE FOLLOWING EXPECTED PEAK FLOWS:
   - CHANNELS MUST HANDLE THE PEAK VOLUMETRIC FLOW RATE CALCULATED USING A 10 MINUTE TIME STEP FROM A TYPE 1A, 10-YEAR, 24-HOUR FREQUENCY STORM FOR THE DEVELOPED CONDITION. ALTERNATIVELY, THE 10-YEAR, 1-HOUR FLOW RATE INDICATED BY AN APPROVED CONTINUOUS RUNOFF MODEL, INCREASED BY A FACTOR OF 1.6, MAY BE USED. THE HYDROLOGIC ANALYSIS MUST USE THE EXISTING LAND COVER CONDITION FOR PREDICTING FLOW RATES FROM TRIBUTARY AREAS OUTSIDE THE PROJECT LIMITS. FOR TRIBUTARY AREAS ON THE PROJECT SITE, THE ANALYSIS MUST USE THE TEMPORARY OR PERMANENT PROJECT LAND COVER CONDITION, WHICHEVER WILL PRODUCE THE HIGHEST FLOW RATES. IF USING THE WESTERN WASHINGTON HYDROLOGY MODEL (WWHM) TO PREDICT FLOWS, BARE SOIL AREAS SHOULD BE MODELED AS "LANDSCAPED" AREA.

2. PROVIDE STABILIZATION, INCLUDING ARMORING MATERIAL, ADEQUATE TO PREVENT EROSION OF OUTLETS, ADJACENT STREAM BANKS, SLOPES AND DOWNSTREAM REACHES AT THE OUTLETS OF ALL CONVEYANCE SYSTEMS.

SUGGESTED BMPs:
BMP C202: CHANNEL LINING
BMP C122: NETS AND BLANKETS
BMP C207: CHECK DAMS
BMP C209: OUTLET PROTECTION

ELEMENT #9: CONTROL POLLUTANTS

1. DESIGN, INSTALL, IMPLEMENT AND MAINTAIN EFFECTIVE POLLUTION PREVENTION MEASURES TO MINIMIZE THE DISCHARGE OF POLLUTANTS.

2. HANDLE AND DISPOSE OF ALL POLLUTANTS, INCLUDING WASTE MATERIALS AND DEMOLITION DEBRIS THAT OCCUR ON-SITE IN A MANNER THAT DOES NOT CAUSE CONTAMINATION OF STORMWATER.

3. PROVIDE COVER, CONTAINMENT, AND PROTECTION FROM VANDALISM FOR ALL CHEMICALS, LIQUID PRODUCTS, PETROLEUM PRODUCTS, AND OTHER MATERIALS THAT HAVE THE POTENTIAL TO POSE A THREAT TO HUMAN HEALTH OR THE ENVIRONMENT. ONSITE FUELING TANKS MUST INCLUDE SECONDARY CONTAINMENT. SECONDARY CONTAINMENT MEANS PLACING TANKS OR CONTAINERS WITHIN AN IMPERVIOUS STRUCTURE CAPABLE OF CONTAINING 110% OF THE VOLUME CONTAINED IN THE LARGEST TAKE WITHIN THE CONTAINMENT STRUCTURE. DOUBLE-WALLED TANKS DO NOT REQUIRE ADDITIONAL SECONDARY CONTAINMENT.

4. CONDUCT MAINTENANCE, FUELING, AND REPAIR OF HEAVY EQUIPMENT AND VEHICLES USING SPILL PREVENTION AND CONTROL MEASURES. CLEAN CONTAMINATED SURFACES IMMEDIATELY FOLLOWING ANY SPILL INCIDENT.

5. DISCHARGE WHEEL WASH OR TIRE BATH WASTEWATER TO A SEPARATE ON-SITE TREATMENT SYSTEM THAT PREVENTS DISCHARGE TO SURFACE WATER, SUCH AS CLOSED-LOOP RECIRCULATION OR UPLAND APPLICATION, OR TO THE SANITARY SEWER, WITH LOCAL SEWER DISTRICT APPROVAL.

6. APPLY FERTILIZERS AND PESTICIDES IN A MANNER AND AT APPLICATION RATES THAT WILL NOT RESULT IN LOSS OF CHEMICAL TO STORMWATER RUNOFF. FOLLOW MANUFACTURERS' LABEL REQUIREMENTS FOR APPLICATION RATES AND PROCEDURES.

7. USE BMPs TO PREVENT CONTAMINATION OF STORMWATER RUNOFF BY pH MODIFYING SOURCES. THE SOURCES FOR THIS CONTAMINATION INCLUDE, BUT ARE NOT LIMITED TO: BULK CEMENT, CEMENT KILN DUST, FLY ASH, NEW CONCRETE WASHING AND CURING WATERS, WASTE STREAMS GENERATED FROM CONCRETE GRINDING AND SAWING, EXPOSED AGGREGATE PROCESSES, DEWATERING CONCRETE VAULTS, CONCRETE PUMPING AND MIXER WASHOUT WATERS.

8. ADJUST THE pH OF STORMWATER IF NECESSARY TO PREVENT VIOLATIONS OF WATER QUALITY STANDARDS.

9. ASSURE THAT WASHOUT OF CONCRETE TRUCKS IS PERFORMED OFF-SITE OR IN DESIGNATED CONCRETE WASHOUT AREAS ONLY. DO NOT WASH OUT CONCRETE TRUCKS ONTO THE GROUND, OR INTO STORM DRAINS, OPEN DITCHES, STREETS, OR STREAMS. DO NOT DUMP EXCESS CONCRETE ON-SITE, EXCEPT IN DESIGNATED CONCRETE WASHOUT AREAS. CONCRETE SPILLAGE OR CONCRETE DISCHARGE TO SURFACE WATERS OF THE STATE IS PROHIBITED.

10. OBTAIN WRITTEN APPROVAL FROM ECOLOGY BEFORE USING CHEMICAL TREATMENT OTHER THAN CO2 OR DRY ICE TO ADJUST pH.

SUGGESTED BMPs:
BMP C151: CONCRETE HANDLING
BMP C152: SAWCUTTING AND SURFACING POLLUTION PREVENTION
BMP C153: MATERIAL DELIVERY, STORAGE AND CONTAINMENT
BMP C154: CONCRETE WASHOUT AREA
BMP C250: CONSTRUCTION STORMWATER CHEMICAL TREATMENT
BMP C251: CONSTRUCTION STORMWATER FILTRATION
BMP C252: HIGH pH NEUTRALIZATION USING CO2
BMP C253: pH CONTROL FOR HIGH pH WATER

ELEMENT #10: CONTROL DE-WATERING

1. DISCHARGE FOUNDATION, VAULT, AND TRENCH DE-WATERING WATER, WHICH HAS SIMILAR CHARACTERISTICS TO STORMWATER RUNOFF AT THE SITE, INTO A CONTROLLED CONVEYANCE SYSTEM BEFORE DISCHARGE TO A SEDIMENT TRAP OR SEDIMENT POND.

2. DISCHARGE CLEAN, NON-TURBID DE-WATERING WATER, SUCH AS WELL-POINT GROUND WATER, TO SYSTEMS TRIBUTARY TO, OR DIRECTLY INTO SURFACE WATERS OF THE STATE, AS SPECIFIED IN ELEMENT #8, PROVIDED THE DE-WATERING FLOW DOES NOT CAUSE EROSION OR FLOODING OF RECEIVING WATERS. DO NOT ROUTE CLEAN DEWATERING WATER THROUGH STORMWATER SEDIMENT PONDS. NOTE THAT "SURFACE WATERS OF THE STATE" MAY EXIST ON A CONSTRUCTION SITE AS WELL AS OFF SITE; FOR EXAMPLE, A CREEK RUNNING THROUGH A SITE.

3. HANDLE HIGHLY TURBID OR OTHERWISE CONTAMINATED DEWATERING WATER SEPARATELY FROM STORMWATER.

4. OTHER TREATMENT OR DISPOSAL OPTIONS MAY INCLUDE:
a) INFILTRATION.
b) TRANSPORT OFF-SITE IN A VEHICLE, SUCH AS A VACUUM FLUSH TRUCK, FOR LEGAL DISPOSAL IN A MANNER THAT DOES NOT POLLUTE STATE WATERS.
c) ECOLOGY-APPROVED ON-SITE CHEMICAL TREATMENT OR OTHER SUITABLE TREATMENT TECHNOLOGIES.
d) SANITARY OR COMBINED SEWER DISCHARGE WITH LOCAL SEWER DISTRICT APPROVAL, IF THERE IS NO OTHER OPTION.
e) USE OF A SEDIMENTATION BAG THAT DISCHARGES TO A DITCH OR SWALE FOR SMALL VOLUMES OF LOCALIZED DEWATERING.

SUGGESTED BMPs:
BMP C203: WATER BARS
BMP C236: VEGETATIVE FILTRATION

ELEMENT #11: MAINTAIN BMPs

1. MAINTAIN AND REPAIR ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BMPs AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION IN ACCORDANCE WITH BMP SPECIFICATIONS.

2. REMOVE ALL TEMPORARY EROSION AND SEDIMENT CONTROL BMPs WITHIN 30 DAYS AFTER ACHIEVING FINAL SITE STABILIZATION OR AFTER THE TEMPORARY BMPs ARE NO LONGER NEEDED.

SUGGESTED BMPs:
BMP C150: MATERIALS ON HAND
BMP C160: CERTIFIED EROSION AND SEDIMENT CONTROL LEAD

ELEMENT #12: MANAGE THE PROJECT

1. PHASE DEVELOPMENT PROJECTS TO THE MAXIMUM DEGREE PRACTICABLE AND TAKE INTO ACCOUNT SEASONAL WORK LIMITATIONS.

2. INSPECTION AND MONITORING - INSPECT, MAINTAIN AND REPAIR ALL BMPs AS NEEDED TO ASSURE CONTINUED PERFORMANCE OF THEIR INTENDED FUNCTION. PROJECTS REGULATED UNDER THE CONSTRUCTION STORMWATER GENERAL PERMIT MUST CONDUCT SITE INSPECTIONS AND MONITORING IN ACCORDANCE WITH SPECIAL CONDITION S4 OF THE CONSTRUCTION STORMWATER GENERAL PERMIT.

3. MAINTAINING AN UPDATED CONSTRUCTION SWPPP - MAINTAIN, UPDATE, AND IMPLEMENT THE SWPPP.

4. PROJECTS THAT DISTURB ONE OR MORE ACRES MUST HAVE SITE INSPECTIONS CONDUCTED BY A CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL). PROJECT SITES DISTURBING LESS THAN ONE ACRE MAY HAVE A CESCL OR A PERSON WITHOUT CESCL CERTIFICATION CONDUCT INSPECTIONS. BY THE INITIATION OF CONSTRUCTION, THE SWPPP MUST IDENTIFY THE CESCL OR INSPECTOR, WHO MUST BE PRESENT ON-SITE OR ON-CALL AT ALL TIMES.

5. THE CESCL OR INSPECTOR (PROJECTS SITES LESS THAN ONE ACRE) MUST HAVE THE SKILLS TO ASSESS THE:
   - SITE CONDITIONS AND CONSTRUCTION ACTIVITIES THAT COULD IMPACT THE QUALITY OF STORMWATER.
   - EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES USED TO CONTROL THE QUALITY OF STORMWATER DISCHARGES.

6. THE CESCL OR INSPECTOR MUST EXAMINE STORMWATER VISUALLY FOR THE PRESENCE OF SUSPENDED SEDIMENT, TURBIDITY, DISCOLORATION, AND OIL SHEEN. THEY MUST EVALUATE THE EFFECTIVENESS OF BMPs AND DETERMINE IF IT IS NECESSARY TO INSTALL, MAINTAIN, OR REPAIR BMPs TO IMPROVE THE QUALITY OF STORMWATER DISCHARGES.

BASED ON THE RESULTS OF INSPECTION, CONSTRUCTION SITE OPERATORS MUST CORRECT THE PROBLEMS IDENTIFIED BY:
   - REVIEWING THE SWPPP FOR COMPLIANCE WITH THE 13 CONSTRUCTION SWPPP ELEMENTS AND MAKING APPROPRIATE REVISIONS WITHIN 7 DAYS OF THE INSPECTION.
   - IMMEDIATELY BEGINNING THE PROCESS OF FULLY IMPLEMENTING AND MAINTAINING APPROPRIATE SOURCE CONTROL AND/OR TREATMENT BMPs AS SOON AS POSSIBLE, ADDRESSING THE PROBLEMS NOT LATER THAN WITHIN 10 DAYS OF THE INSPECTION. IF INSTALLATION OF NECESSARY TREATMENT BMPs IS NOT FEASIBLE WITHIN 10 DAYS, THE CONSTRUCTION SITE OPERATOR MAY REQUEST AN EXTENSION WITHIN THE 10-DAY RESPONSE PERIOD.
   - DOCUMENTING BMP IMPLEMENTATION AND MAINTENANCE IN THE SITE LOG BOOK (SITES LARGER THAN 1 ACRE)

7. THE CESCL OR INSPECTOR MUST INSPECT ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES, ALL BMPs, AND ALL STORMWATER DISCHARGE POINTS AT LEAST ONCE EVERY CALENDAR WEEK AND WITHIN 24 HOURS OF ANY DISCHARGE FROM THE SITE. (FOR PURPOSES OF THIS CONDITION, INDIVIDUAL DISCHARGE EVENTS THAT LAST MORE THAN ONE DAY DO NOT REQUIRE DAILY INSPECTIONS. FOR EXAMPLE, IF A STORMWATER POND DISCHARGES CONTINUOUSLY OVER THE COURSE OF A WEEK, ONLY ONE INSPECTION IS REQUIRED THAT WEEK.) THE CESCL OR INSPECTOR MAY REDUCE THE INSPECTION FREQUENCY FOR TEMPORARY STABILIZED, INACTIVE SITES TO ONCE EVERY CALENDAR MONTH.

SUGGESTED BMPs:
BMP C150: MATERIALS ON HAND
BMP C160: CERTIFIED EROSION AND SEDIMENT CONTROL LEAD
BMP C162: SCHEDULING

ELEMENT #13: PROTECT LOW IMPACT DEVELOPMENT BMPs

1. PROTECT ALL BIORETENTION AND RAIN GARDEN BMPs FROM SEDIMENTATION THROUGH INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL BMPs ON PORTIONS OF THE SITE THAT DRAIN INTO THE BIORETENTION AND/OR RAIN GARDEN BMPs. RESTORE THE BMPs TO THEIR FULLY FUNCTIONING CONDITION IF THEY ACCUMULATE SEDIMENT DURING CONSTRUCTION. RESTORING THE BMP MUST INCLUDE REMOVAL OF SEDIMENT AND ANY SEDIMENT-LADEN BIORETENTION/RAIN GARDEN SOILS, AND REPLACING THE REMOVED SOILS WITH SOILS MEETING THE DESIGN SPECIFICATIONS.

2. PREVENT COMPACTING BIORETENTION AND RAIN GARDEN BMPs BY EXCLUDING CONSTRUCTION EQUIPMENT AND FOOT TRAFFIC. PROTECT COMPLETED LAWN AND LANDSCAPED AREAS FROM COMPACTION DUE TO CONSTRUCTION EQUIPMENT.

3. CONTROL EROSION AND AVOID INTRODUCING SEDIMENT FROM SURROUNDING LAND USES ONTO PERMEABLE PAVEMENTS. DO NOT ALLOW MUDDY CONSTRUCTION EQUIPMENT ON THE BASE MATERIAL OR PAVEMENT. DO NOT ALLOW SEDIMENT-LADEN RUNOFF ONTO PERMEABLE PAVEMENTS OR BASE MATERIALS.

4. PAVEMENT FOULED WITH SEDIMENTS OR NO LONGER PASSING AN INITIAL INFILTRATION TEST MUST BE CLEANED USING PROCEDURES IN ACCORDANCE WITH THIS MANUAL OR THE MANUFACTURER'S PROCEDURES.

5. KEEP ALL HEAVY EQUIPMENT OFF EXISTING SOILS UNDER LID FACILITIES THAT HAVE BEEN EXCAVATED TO FINAL GRADE TO RETAIN THE INFILTRATION RATE OF THE SOILS.

SUGGESTED BMPs:
BMP C102: BUFFER ZONE
BMP C103: HIGH VISIBILITY FENCE
BMP C200: INTERCEPTOR DIKE AND SWALE
BMP C201: GRASS-LINED CHANNELS
BMP C207: CHECK DAMS
BMP C208: TRIANGULAR SILT DIKE (GEOTEXTILE-ENCASED CHECK DAM)
BMP C231: BRUSH BARRIER
BMP C233: SILT FENCE
BMP C234: VEGETATED STRIP

APPROVED
03/19/2025
BY [signature]
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

RECORD DRAWING - 02/24/2025

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360 - 922 - 0549
www.axeengineering.com

AXE ENGINEERING Services
CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

KARIS ANN VANDIES
STATE OF WASHINGTON
32873 [?]
REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
SWPP NOTES

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C3 OF 10
REV # REC

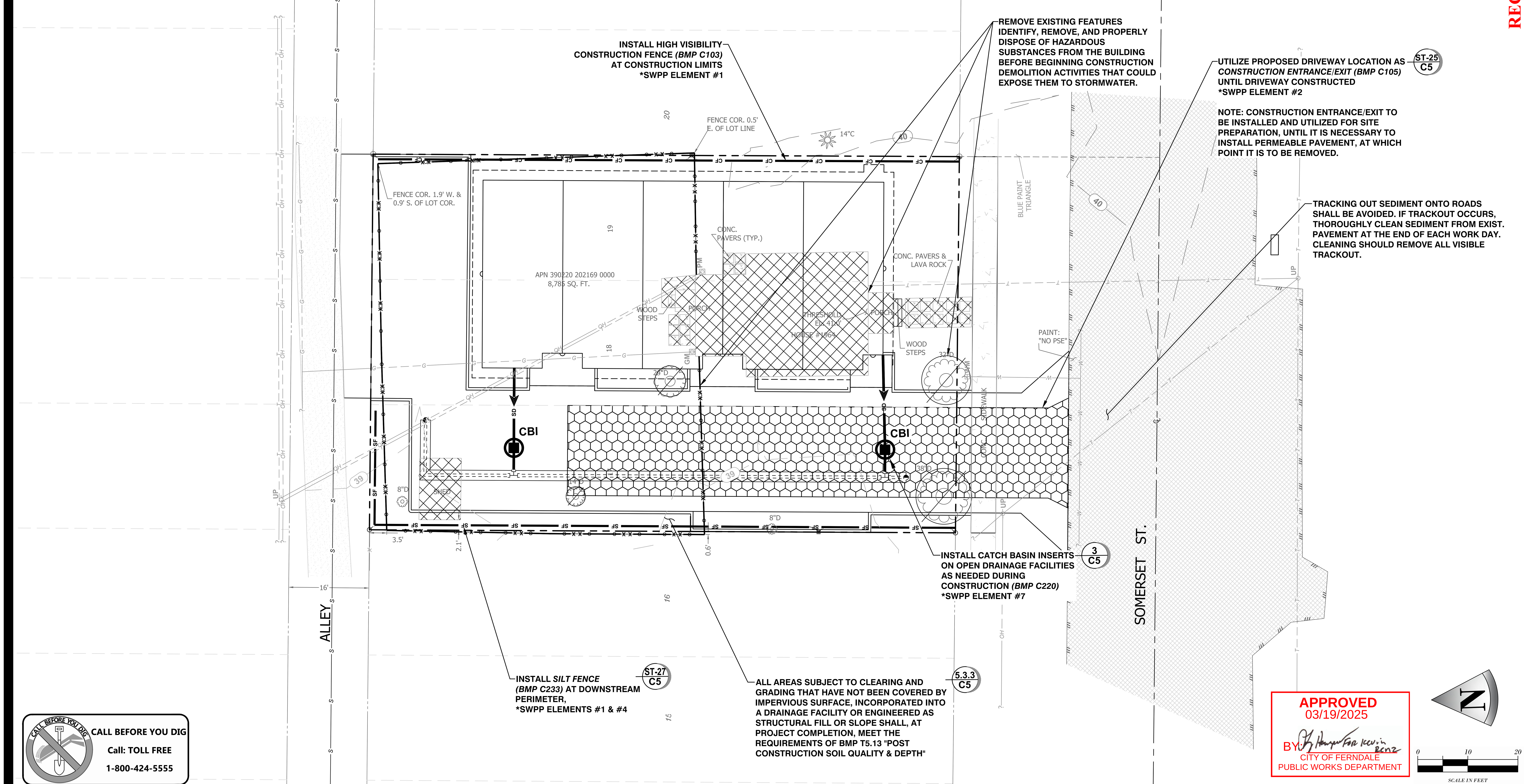
00756.003 03/19/25 RH

SWPP LEGEND

Symbol	Meaning
—x x—x x—	DEMOLITION
—SF—SF—	SILT FENCE
—CF—CF—	HIGH VISIBILITY CONSTRUCTION FENCE
○ CBI	CATCHBASIN INSERT

NOTES:

1. USE *BMP C150: MATERIALS ON HAND* & *BMP C162: SCHEDULING* DURING CONSTRUCTION AS NEEDED
*SWPP ELEMENTS #11 & #12
2. USE *BMP C123: PLASTIC COVERING* & *BMP C140: DUST CONTROL* TO STABILIZE SOILS & PROTECT SLOPES DURING CONSTRUCTION AS NEEDED
*SWPP ELEMENTS #5 & #6
3. USE *BMP C151: CONCRETE HANDLING* & *BMP C152: SAWCUTTING AND SURFACING POLLUTION PREVENTION* DURING CONSTRUCTION AS NEEDED
*SWPP ELEMENT #9
4. USE *BMP C154: CONCRETE WASHOUT AREA* DURING CONSTRUCTION AS NEEDED
*SWPP ELEMENT #9
5. NATIVE SOIL'S INFILTRATIVE CAPACITY IS TO BE PROTECTED FROM OVERCOMPACTION DURING CONSTRUCTION. IT IS NOT RECOMMENDED THAT THE NATIVE SOIL IS EXCAVATED UNTIL IMMEDIATELY PRIOR TO INSTALLATION OF THE PERMEABLE PAVEMENT SECTION. PROTECT PERMEABLE PAVEMENT FROM CLOGGING UNTIL AFTER CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
6. SUBGRADE MUST BE INSPECTED AND COMPACTION SHALL BE TESTED BY A SOILS PROFESSIONAL PRIOR TO BMP INSTALLATION TO VERIFY SOIL CONDITIONS
7. PRIOR TO AND POST INSTALLATION OF PERMEABLE PAVEMENT, INFILTRATION TESTING IS TO BE PERFORMED BY A GEOTECHNICAL PROFESSIONAL AFTER THE COMPACTION IS COMPLETE.
8. COMPACT THE SUBGRADE TO THE MINUMUM COMPACTION NECESSARY FOR STRUCTURAL STABILITY. TWO GUIDELINES CURRENTLY USED TO SPECIFY SUBGRADE COMPACTION ARE "FIRM AND UNYIELDING" (QUALITATIVE), AND 90- 92% STANDARD PROCTOR (QUANTITATIVE). SUBGRADE SHOULD NOT BE SUBJECT TO COMPACTION BEYOND THE QUALITATIVE AND QUANTITATIVE LEVELS IDENTIFIED HEREIN. DO NOT ALLOW CONSTRUCTION TRAFFIC AND EQUIPMENT ONTO THE SUBGRADE EXCEPT WHEN CONSTRUCTION ACCESS ON SUBGRADE IS REQUIRED FOR THE PAVEMENT SECTION INSTALLATION. FOLLOW BACK DUMPING APPROACH AS NOTED BELOW.
9. TO PREVENT COMPACTION WHEN INSTALLING THE AGGREGATE BASE, THE FOLLOWING STEPS (BACK-DUMPING) SHOULD BE FOLLOWED: 1) THE AGGREGATE BASE IS DUMPED ONTO THE SUBGRADE FROM THE EDGE OF THE INSTALLATION AND AGGREGATE IS THEN PUSHED OUT ONTO THE SUBGRADE; 2) TRUCKS THEN DUMP SUBSEQUENT LOADS FROM ON TOP OF THE AGGREGATE BASE AS THE INSTALLATION PROGRESSES.



APPROVED
03/19/2025
BY [signature] FOR KEVIN RENZ
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING - 02/24/2025

00756.004 03/19/25 RH

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360 - 922 - 0549
www.axeengineering.com

AXE ENGINEERING Services — CIVIL • STORMWATER • STRUCTURAL — axeengineering.com

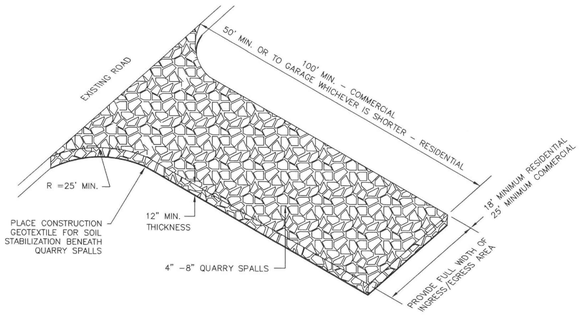
KARIS ANN VAN DIEST — STATE OF WASHINGTON — 2028719 — REGISTERED PROFESSIONAL ENGINEER — 02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
SWPP & DEMOLITION PLAN

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C4 OF 10
REV # REC



NOVEMBER 29, 2016

CITY OF FERNDALE WASHINGTON

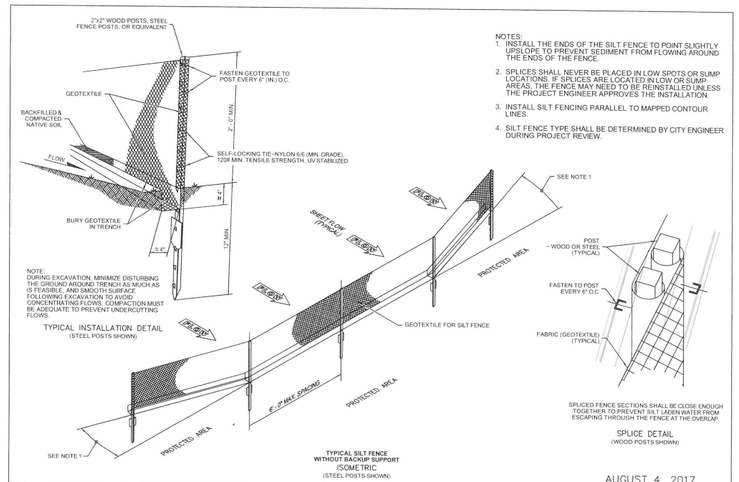
APPROVED

Public Works Director — 8/11/17 Date

TEMPORARY CONSTRUCTION ENTRANCE

STANDARD DETAIL ST-25

NOT TO SCALE



AUGUST 4, 2017

CITY OF FERNDALE WASHINGTON

APPROVED

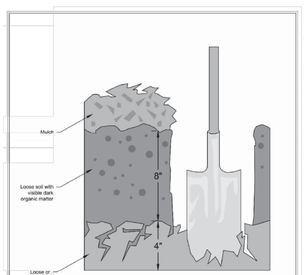
Public Works Director — 8/11/17 Date

SILT FENCE

STANDARD DETAIL ST-27

NOT TO SCALE

BMP T5.13 - POST CONSTRUCTION SOIL QUALITY AND DEPTH



Reprinted from Guidelines and Resources For Implementing Soil Quality and Depth BMP T5.13 in WDOE Stormwater Management Manual for Western Washington. 2015. Washington Organic Recycling Council

NOT TO SCALE

Figure V-5.3.3
Planting Bed Cross-Section

Revised January 2016

DEPARTMENT OF ECOLOGY State of Washington

ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACE, INCORPORATED INTO A DRAINAGE FACILITY OR ENGINEERED AS STRUCTURAL FILL OR SLOPE SHALL, AT PROJECT COMPLETION, SHALL DEMONSTRATE THE FOLLOWING:

SOIL QUALITY:
A TOPSOIL LAYER WITH A MINIMUM ORGANIC MATTER CONTENT OF 10% DRY WEIGHT IN PLANTING BEDS, AND 5% ORGANIC MATTER CONTENT IN TURF AREAS, AND A PH FROM 6.0 AND 8.0 OR MATCHING THE pH OF THE UNDISTURBED SOIL, USE COMPOST AND OTHER MATERIALS THAT MEET THE COMPOST GUIDELINES.

SOIL DEPTH:
THE TOPSOIL LAYER SHALL HAVE A MINIMUM DEPTH OF EIGHT INCHES EXCEPT WHERE TREE ROOTS LIMIT THE DEPTH OF INCORPORATION OF AMENDMENTS NEEDED TO MEET THE CRITERIA. SUBSOILS BELOW THE TOPSOIL LAYER SHOULD BE SCARIFIED AT LEAST 4 INCHES WITH SOME INCORPORATION OF THE UPPER MATERIAL TO AVOID STRATIFIED LAYERS WHERE FEASIBLE. PLANTING BEDS SHOULD HAVE 2 INCHES OF ORGANIC MATERIAL AS WELL.

COMPOST GUIDELINES:
MUST MEET THE DEFINITION OF "COMPOSTED MATERIAL" IN WAC 173-350-100 AND COMPLIES WITH TESTING PARAMETERS AND OTHER STANDARDS IN WAC 173-350-220. MUST BE PRODUCED AT A PERMITTED COMPOSTING FACILITY. ORGANIC MATTER CONTENT SHALL BE 40% TO 65%. CARBON TO NITROGEN RATIO OF MUST BE LESS THAN THAN 25:1. THE C:N RATIO MAY BE UP TO 35:1 FOR PLANTINGS COMPOSED ENTIRELY OF PUGET SOUND LOWLAND NATIVE SPECIES AND UP TO 40:1 FOR COARSE COMPOST TO BE USED AS A SURFACE MULCH (NOT IN A SOIL MIX).

IMPLEMENTATION OPTIONS

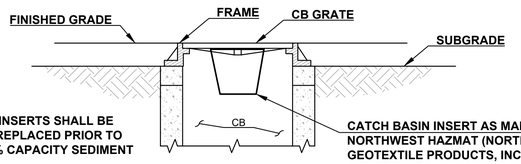
1) LEAVE AS MUCH NATIVE VEGETATION AND SOIL AS POSSIBLE AND PROTECT FROM COMPACTION DURING CONSTRUCTION.

2) AMEND EXISTING SITE TOPSOIL OR SUBSOIL EITHER AT DEFAULT RATES OR AT A CUSTOM CALCULATED RATES BASED ON TESTS OF THE SOIL AND AMENDMENT.

3) IN AREAS REQUIRING CLEARING AND GRADING REMOVE AND STOCKPILE THE DUFF LAYER AND TOPSOIL ON SITE IN A DESIGNATED, CONTROLLED AREA, NOT ADJECT TO PUBLIC RESOURCES AND CRITICAL AREAS. REPLACE IT PRIOR TO PLANTING AND AMEND IF NEEDED TO MEET THE ORGANIC MATTER OR DEPTH REQUIREMENTS.

4) IMPORT TOPSOIL MIX OF SUFFICIENT ORGANIC CONTENT AND DEPTH TO MEET THE REQUIREMENTS.

MORE THAN ONE METHOD MAY BE USED ON DIFFERENT PORTIONS OF THE SAME SITE.



NOTE:

CATCH BASIN INSERTS SHALL BE CLEANED OR REPLACED PRIOR TO REACHING 33% CAPACITY SEDIMENT LOAD.

CATCH BASIN INSERT AS MANUFACTURED BY
NORTHWEST HAZMAT (NORTHWEST LININGS & GEOTEXTILE PRODUCTS, INC.)
NWH TYPE OS OR EQUIVALENT
NORTHWEST LININGS & GEOTEXTILE PRODUCTS, INC.
21000 77TH AVE. S
KENT, WA 98032
(253) 872-0244

3 / C4 **CATCH BASIN INLET PROTECTION**
DOE MANUAL BMP C220 *N.T.S.*

APPROVED
03/19/2025
BY
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

RECORD DRAWING - 02/24/2025

BY	DATE	REVISIONS

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360-220-0549
www.axeengineering.com

AXE ENGINEERING Services
CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

KARLA ANN VAN DIEST — STATE OF WASHINGTON — 22028719 — REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
SWPP DETAILS

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

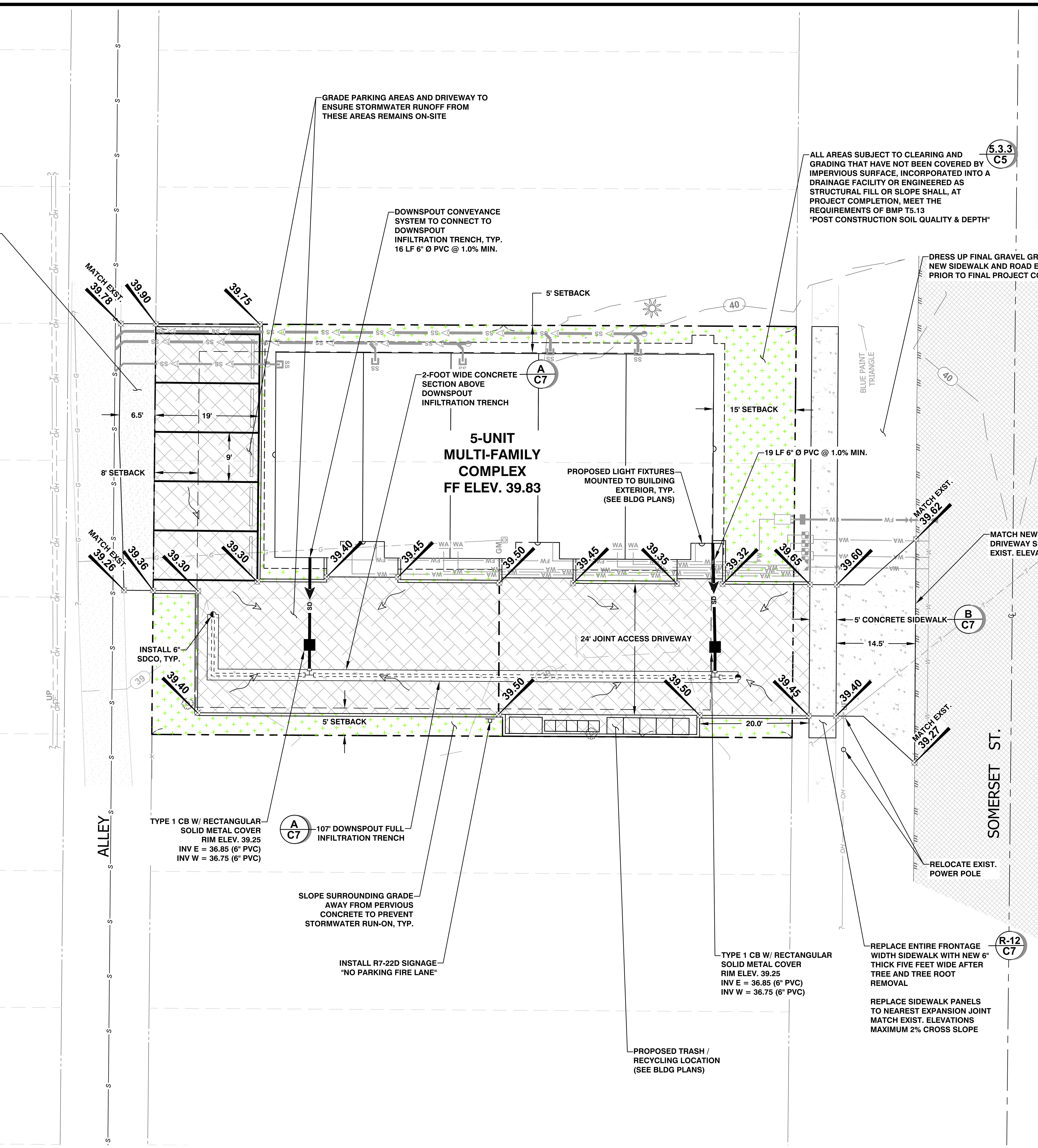
SHEET # C5 OF 10 REV # REC

00756.005 03/19/25 RH

GRADING LEGEND

- STORMWATER SHEET FLOW
- TOP OF PAVEMENT SPOT ELEVATIO
- GRADE BREAK
- CONCRETE
- PERMEABLE PAVEMENT
- LAWN / LANDSCAPING (BMP T5.13)

RECORD DRAWING - 02/24/2025



ALL IMPROVEMENTS IN THE ALLEY AND OR CITY RIGHT OF WAY WILL BE A MINIMUM 3" CRUSHED SURFACE BASE COURSE OVER 12" OF PIT RUN GRAVEL COMPACTED TO 95% OF MAXIMUM DENSITY
GRADE PARKING AREAS AND DRIVEWAY TO ENSURE STORMWATER RUNOFF FROM THESE AREAS REMAINS ON-SITE
DOWNSPOUT CONVEYANCE SYSTEM TO CONNECT TO DOWNSPOUT INFILTRATION TRENCH, TYP. 16 LF 6" Ø PVC @ 1.0% MIN.
ALL AREAS SUBJECT TO CLEARING AND GRADING THAT HAVE NOT BEEN COVERED BY IMPERVIOUS SURFACE, INCORPORATED INTO A DRAINAGE FACILITY OR ENGINEERED AS STRUCTURAL FILL OR SLOPE SHALL, AT PROJECT COMPLETION, MEET THE REQUIREMENTS OF BMP T5.13 "POST CONSTRUCTION SOIL QUALITY & DEPTH"
5.3.3 C5
DRESS UP FINAL GRAVEL GRADING BETWEEN THE NEW SIDEWALK AND ROAD EDGE AS NEEDED PRIOR TO FINAL PROJECT COMPLETION
5' SETBACK
MATCH EXIST. 39.78
39.90
39.75
40
2-FOOT WIDE CONCRETE SECTION ABOVE DOWNSPOUT INFILTRATION TRENCH
A C7
15' SETBACK
PROPOSED MAILBOX LOCATION PER CITY DTL R-1
BLUE PAINT TRIANGLE
6.5'
19'
9'
8' SETBACK
5-UNIT MULTI-FAMILY COMPLEX FF ELEV. 39.83
PROPOSED LIGHT FIXTURES MOUNTED TO BUILDING EXTERIOR, TYP. (SEE BLDG PLANS)
19 LF 6" Ø PVC @ 1.0% MIN.
MATCH EXIST. 39.62
MATCH NEW CONCRETE DRIVEWAY SURFACE TO EXIST. ELEVATION
MATCH EXIST. 39.26
39.36
39.30
39.30
39.40
39.45
39.50
39.45
39.35
39.32
39.65
39.60
5' CONCRETE SIDEWALK
B C7
14.5'
24' JOINT ACCESS DRIVEWAY
INSTALL 6" SDCO, TYP.
39.40
39.50
39.50
39.45
39.40
5' SETBACK
20.0'
MATCH EXIST. 39.27
SOMERSET ST.
ALLEY
TYPE 1 CB W/ RECTANGULAR SOLID METAL COVER RIM ELEV. 39.25 INV E = 36.85 (6" PVC) INV W = 36.75 (6" PVC)
A C7
107' DOWNSPOUT FULL INFILTRATION TRENCH
SLOPE SURROUNDING GRADE AWAY FROM PERVIOUS CONCRETE TO PREVENT STORMWATER RUN-ON, TYP.
INSTALL R7-22D SIGNAGE "NO PARKING FIRE LANE"
PROPOSED TRASH / RECYCLING LOCATION (SEE BLDG PLANS)
TYPE 1 CB W/ RECTANGULAR SOLID METAL COVER RIM ELEV. 39.25 INV E = 36.85 (6" PVC) INV W = 36.75 (6" PVC)
RELOCATE EXIST. POWER POLE
REPLACE ENTIRE FRONTAGE WIDTH SIDEWALK WITH NEW 6" THICK FIVE FEET WIDE AFTER TREE AND TREE ROOT REMOVAL
R-12 C7
REPLACE SIDEWALK PANELS TO NEAREST EXPANSION JOINT MATCH EXIST. ELEVATIONS MAXIMUM 2% CROSS SLOPE

NOTES:

1. NATIVE SOIL'S INFILTRATIVE CAPACITY IS TO BE PROTECTED FROM OVERCOMPACTION DURING CONSTRUCTION. IT IS NOT RECOMMENDED THAT THE NATIVE SOIL IS EXCAVATED UNTIL IMMEDIATELY PRIOR TO INSTALLATION OF THE PERMEABLE PAVEMENT SECTION. PROTECT PERMEABLE PAVEMENT FROM CLOGGING UNTIL AFTER CONSTRUCTION IS COMPLETE AND THE SITE IS STABILIZED.
2. SUBGRADE MUST BE INSPECTED BY A SOILS PROFESSIONAL PRIOR TO BMP INSTALLATION TO VERIFY SOIL CONDITIONS.
3. AFTER GRADING, THE EXISTING SUBGRADE SHALL NOT BE COMPACTED OR SUBJECTED TO EXCESSIVE CONSTRUCTION EQUIPMENT TRAFFIC.
4. IMMEDIATELY BEFORE BASE AGGREGATE AND CONCRETE PLACEMENT, REMOVE ANY ACCUMULATION OF FINE MATERIAL FROM EROSION WITH LIGHT EQUIPMENT AND SCARIFY SOIL TO A MINIMUM DEPTH OF 6 INCHES.
5. EROSION AND INTRODUCTION OF SEDIMENT SHALL BE STRICTLY CONTROLLED DURING AND AFTER CONSTRUCTION TO PREVENT CLOGGING OF THE VOID SPACES IN THE BASE MATERIAL AND PERMEABLE SURFACE.
6. PUBLIC WORKS WILL INSPECT AND RECORD THE INSTALLATION OF CONVEYANCE AND STRUCTURES ASSOCIATED WITH THE INFILTRATION FACILITIES AS SHOWN ONLY. SOILS OBSERVATIONS, VERIFICATION OF IMPORT MATERIALS REQUIRED AND PLACEMENT OF SAID COMPONENTS REQUIRED FOR THE INFILTRATION FACILITIES WILL BE INSPECTED BY THE ENGINEER OF RECORD OR A LICENSED GEO-TECHNICAL FIRM AT THE DIRECTION OF THE ENGINEER OF RECORD AS NEEDED FOR THE ENGINEER OF RECORD TO CERTIFY THE FACILITY TO THE CITY AT PROJECT COMPLETION.

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
03/19/2025
BY [signature]
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

N

0 10 20
SCALE IN FEET

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360 - 922 - 0549
www.axeengineering.com
AXE ENGINEERING Services — CIVIL • STORMWATER • STRUCTURAL — axeengineering.com

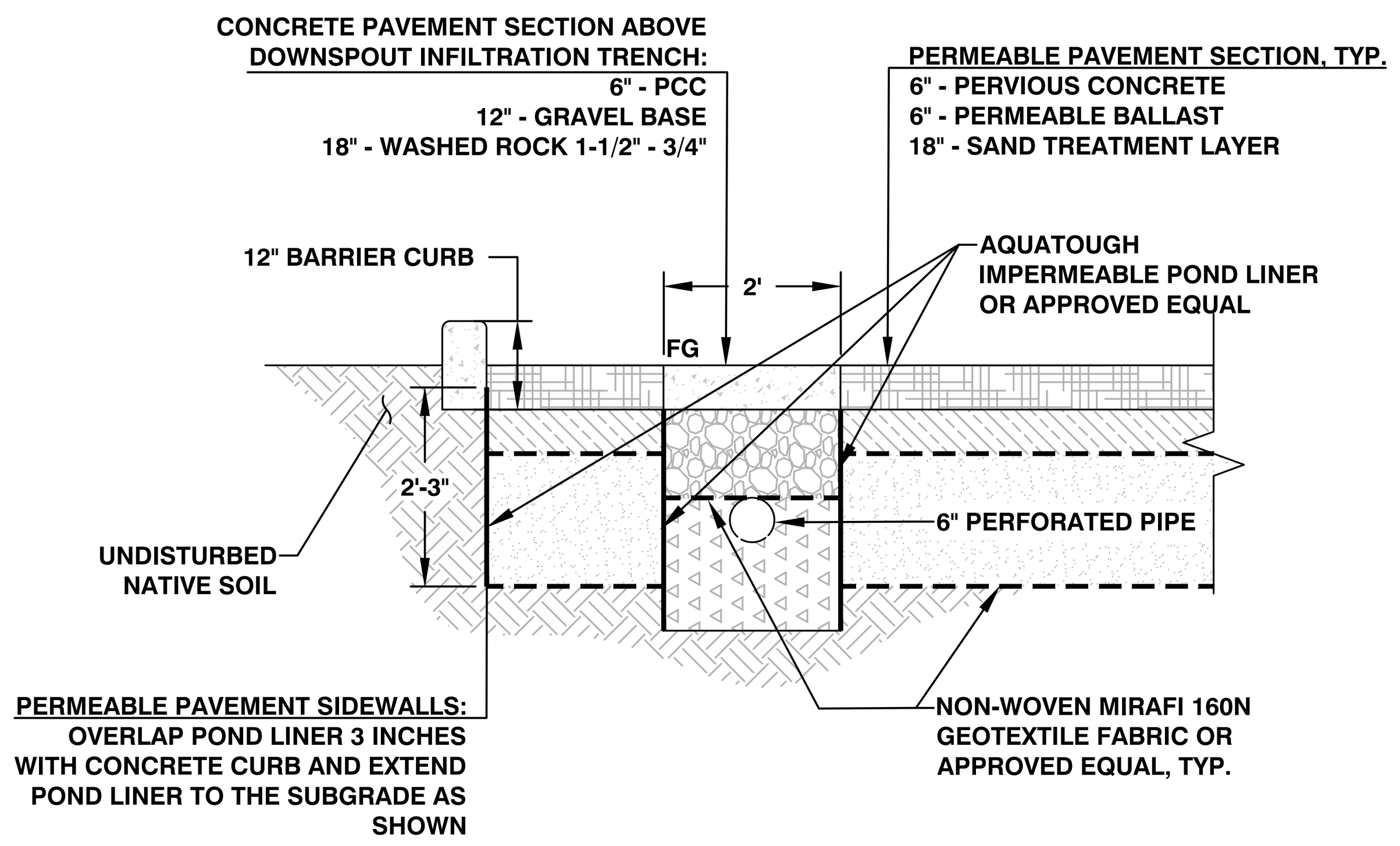
KARIS ANN VAN DIEST — STATE OF WASHINGTON — 2028719 — REGISTERED PROFESSIONAL ENGINEER — 02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
GRADING & DRAINAGE PLAN

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C6 OF 10
REV # REC


CONCRETE PAVEMENT SECTION ABOVE DOWNSPOUT INFILTRATION TRENCH:
6" - PCC
12" - GRAVEL BASE
18" - WASHED ROCK 1-1/2" - 3/4"
PERMEABLE PAVEMENT SECTION, TYP.
6" - PERVIOUS CONCRETE
6" - PERMEABLE BALLAST
18" - SAND TREATMENT LAYER
12" BARRIER CURB
2'
FG
AQUATOUGH IMPERMEABLE POND LINER OR APPROVED EQUAL
2'-3"
6" PERFORATED PIPE
UNDISTURBED NATIVE SOIL
PERMEABLE PAVEMENT SIDEWALLS: OVERLAP POND LINER 3 INCHES WITH CONCRETE CURB AND EXTEND POND LINER TO THE SUBGRADE AS SHOWN
NON-WOVEN MIRAFI 160N GEOTEXTILE FABRIC OR APPROVED EQUAL, TYP.

A / C6 PERMEABLE PAVEMENT / INFILTRATION TRENCH SECTION

0 1" = 2' 4'

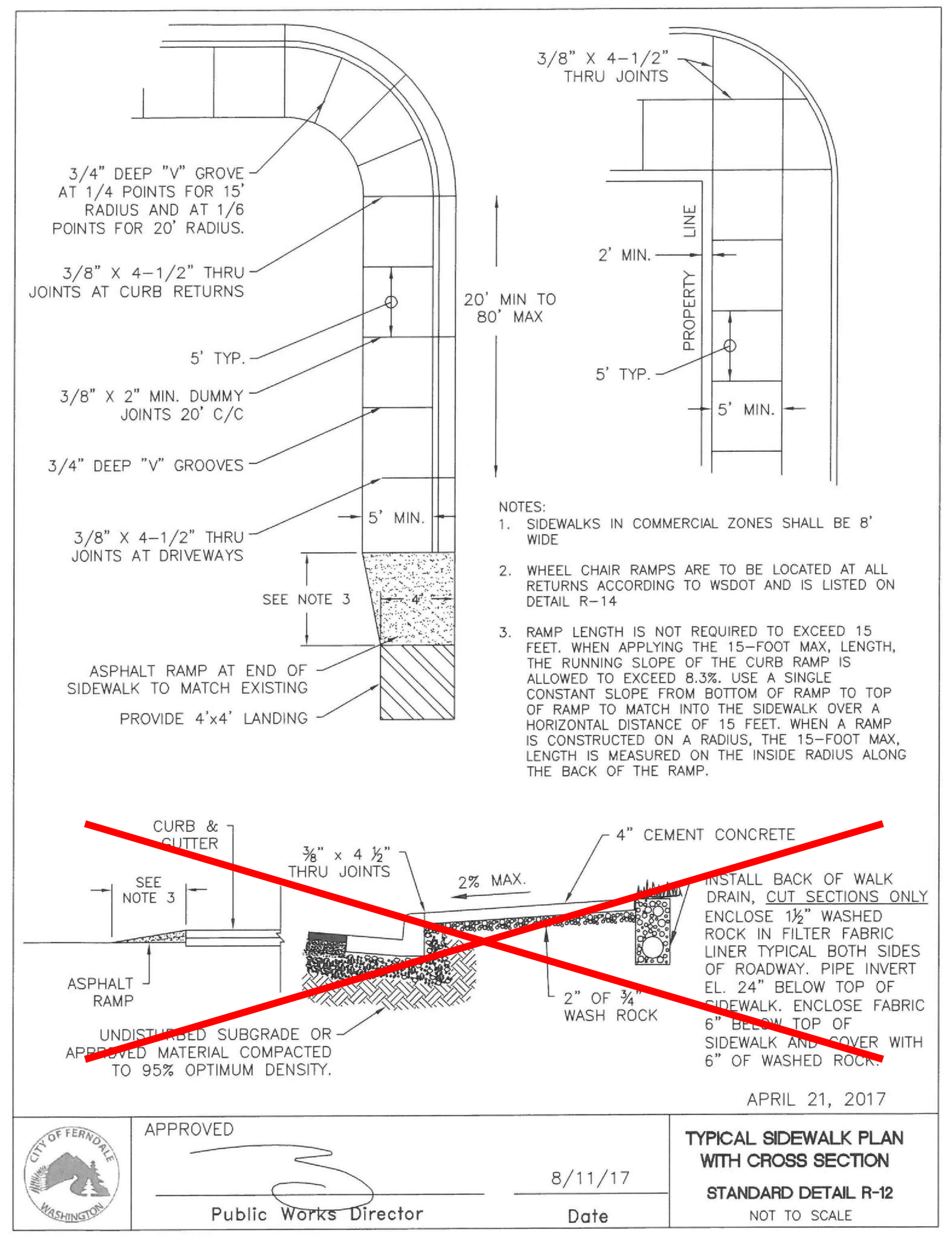
NOTES:

1. INSTALL NON-WOVEN MIRAFI 160N GEOTEXTILE FABRIC OR APPROVED EQUAL ABOVE AND BELOW SAND TREATMENT LAYER.
2. 18" SAND TREATMENT LAYER: INSTALL 18-INCH SAND MEDIUM LAYER PER THE FOLLOWING SAND MEDIUM SPECIFICATIONS LISTED IN BMP T8.10, IN VOLUME V-CHAPTER 6-PAGES 810-811 OF THE DOE MANUAL: THE SAND MEDIUM MUST CONSIST OF SAND MEETING THE SIZE GRADATION (BY WEIGHT) GIVEN IN TABLE V-6.1 BELOW. THE CONTRACTOR MUST OBTAIN A GRAIN SIZE ANALYSIS FROM THE SUPPLIER TO CERTIFY THAT THE SAND MEETS THE NO. 100 AND NO. 200 SIEVE REQUIREMENTS.

Table V-6.1: Sand Medium Specification

Sieve Number	Percent Passing
4	95-100
8	70-100
16	40-90
30	25-75
50	2-25
100	<4
200	<2

Source: (King County Department of Natural Resources, 1998)


3/8" X 4-1/2" THRU JOINTS
3/4" DEEP "V" GROVE AT 1/4 POINTS FOR 15' RADIUS AND AT 1/6 POINTS FOR 20' RADIUS.
3/8" X 4-1/2" THRU JOINTS AT CURB RETURNS
20' MIN TO 80' MAX
2' MIN.
PROPERTY LINE
5' TYP.
3/8" X 2" MIN. DUMMY JOINTS 20' C/C
3/4" DEEP "V" GROOVES
5' MIN.
3/8" X 4-1/2" THRU JOINTS AT DRIVEWAYS
SEE NOTE 3
ASPHALT RAMP AT END OF SIDEWALK TO MATCH EXISTING
PROVIDE 4'x4' LANDING
NOTES:
1. SIDEWALKS IN COMMERCIAL ZONES SHALL BE 8' WIDE
2. WHEEL CHAIR RAMPS ARE TO BE LOCATED AT ALL RETURNS ACCORDING TO WSDOT AND IS SHOWN ON DETAIL R-14
3. RAMP LENGTH IS NOT REQUIRED TO EXCEED 15 FEET, WHEN APPLYING THE 15-FOOT MAX. LENGTH, THE RUNNING SLOPE OF THE CURB RAMP IS ALLOWED TO EXCEED 8.3%. USE A SINGLE CONSTANT SLOPE FROM BOTTOM OF RAMP TO TOP OF RAMP TO MATCH INTO THE SIDEWALK OVER A HORIZONTAL DISTANCE OF 15 FEET. WHEN A RAMP IS CONSTRUCTED ON A RADIUS, THE 15-FOOT MAX. LENGTH IS MEASURED ON THE INSIDE RADIUS ALONG THE BACK OF THE RAMP.
CURB & GUTTER
3/8" x 4 1/2" THRU JOINTS
4" CEMENT CONCRETE
SEE NOTE 3
2% MAX.
INSTALL BACK OF WALK DRAIN, CUT SECTIONS ONLY. ENCLOSE 1 1/2" WASHED ROCK IN FILTER FABRIC LINER TYPICAL BOTH SIDES OF ROADWAY. PIPE INVERT EL. 24" BELOW TOP OF SIDEWALK. ENCLOSE FABRIC 6" BELOW TOP OF SIDEWALK AND COVER WITH 6" OF WASHED ROCK.
ASPHALT RAMP
UNDISTURBED SUBGRADE OR APPROVED MATERIAL COMPACTED TO 95% OPTIMUM DENSITY.
2" OF 3/4 WASH ROCK
APRIL 21, 2017
APPROVED
Public Works Director
8/11/17
Date
TYPICAL SIDEWALK PLAN WITH CROSS SECTION
STANDARD DETAIL R-12
NOT TO SCALE

TENCATE Mirafi

TENCATE GEOSYNTHETICS
Americas

Mirafi® 160N

DRAINAGE | EROSION PROTECTION | FILTRATION | SEPARATION

Mirafi® 160N is a nonwoven geotextile composed of polypropylene fibers, which are formed into a stable network such that the fibers retain their relative position. Mirafi® 160N is inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids. Mirafi® 160N meets AASHTO M288 Class 2 for Elongation > 50%.

TenCate Geosynthetics Americas Laboratories are accredited by Geosynthetic Accreditation Institute – Laboratory Accreditation Program (GAI-LAP). NTPEP Listed

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value	
			MD	CD
Grab Tensile Strength	ASTM D4632	lbs (N)	160 (712)	160 (712)
Grab Tensile Elongation	ASTM D4632	%	50	50
Trapezoid Tear Strength	ASTM D4533	lbs (N)	60 (267)	60 (267)
CBR Puncture Strength	ASTM D6241	lbs (N)	410 (1825)	
			Maximum Opening Size	
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve (mm)	70 (0.212)	
			Minimum Roll Value	
Permittivity	ASTM D4491	sec^{-1}	1.5	
Flow Rate	ASTM D4491	$gal/min/ft^2$ ($l/min/m^2$)	110 (4481)	
			Minimum Test Value	
UV Resistance (at 500 hours)	ASTM D4355	% strength retained	70	

Physical Properties	Unit	Roll Size
Roll Dimensions (width x length)	ft (m)	15 x 300 (4.5 x 91)
Roll Area	yd^2 (m^2)	500 (418)

365 South Holland Drive, Pendergrass, GA 30567
Tel 706 693 2226
Tel 888 795 0808
Fax 706 693 4400
www.tencate.com

FGS000361
ETQR#####

HD Fowler Company Submittal - PULINER30 67732

EXPERIENCE THE CARLISLE DIFFERENCE

CARLISLE SYNTEC SYSTEMS

AquaTough RUBBER POND LINERS

Installation

Installation procedures vary as to the type of application employed and the specific job requirements. When installed correctly, it is difficult to find a more efficient water barrier. Surfaces on or against where the AquaTough membrane is to be applied must be smooth, free of fins, sharp edges, loose and foreign materials, oil and grease. AquaTough can be easily repaired in the field by the owner without specialized tools or training. Consult current specifications and details for complete installation information.

J-Tear Protection:

Amongst top competitors, Carlisle's AquaTough membranes are the only brand that will give you the added benefit of consistent J-Tear protection. When the J-Tear test is successful the sheet will tear in the direction of the cut for a short distance and then it will change direction and attempt to curve back on itself—as it does with Carlisle's AquaTough membrane.

This direction change is important during the membrane installation process. As the installer works around protrusions, the J-tear stops the membrane from tearing as they install the sheet.

Review Carlisle specifications and details for complete installation information.

Overview

Carlisle's AquaTough™ rubber pond liner is a nominal 45-mil-thick, non-reinforced Ethylene Propylene Diene Terpolymer (EPDM) based elastomeric waterproofing liner for use in water garden and pond applications. The membrane is specifically formulated for long term use in buried or exposed geomembrane applications. AquaTough has been formulated to be compatible with aquatic life. It is recommended that customers test AquaTough before use to ensure it is compatible with the specific aquatic species for the proposed application. Carlisle's fish friendly AquaTough rubber pond liners combine design flexibility, long-term durability and easy installation, making them an ideal choice for a variety of waterscape applications.

Features and Benefits

- Superb elongation and lay flat characteristics
- Excellent low temperature impact resistance
- Exceptional resistance to solar UV, ozone, and oxidation
- Low water vapor permeance and water absorption
- Quick seaming process - no specialized or expensive tools required
- Limited Lifetime warranty available
- Large prefabricated panels available in custom sizing
- Unmatched J-Tear protection

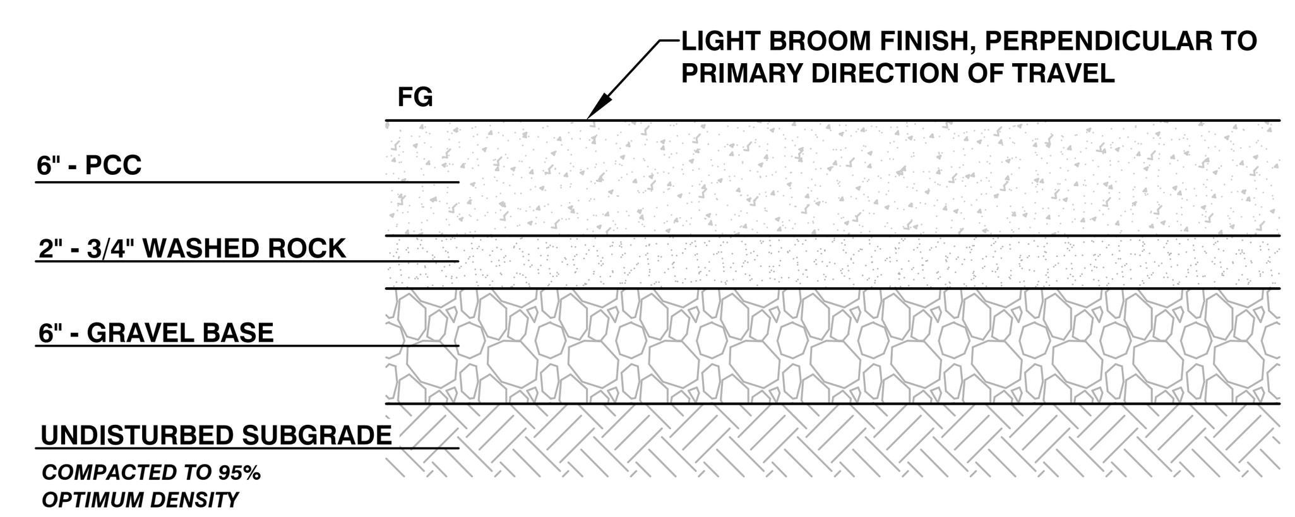
Sizes Available

	45-mil
Width	5 – 50 feet (1.5 – 15.2 meters)
Length	50 – 200 feet (15.2 – 61 meters)
Weight	0.28 lbs/ft² (1.37 kg/m²)
Specific Gravity	1.19 g/cc

SCAN HERE TO VIEW THE J-TEAR TEST COMPARISON VIDEO

800-479-6832 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7053 | www.carlislesyntec.com

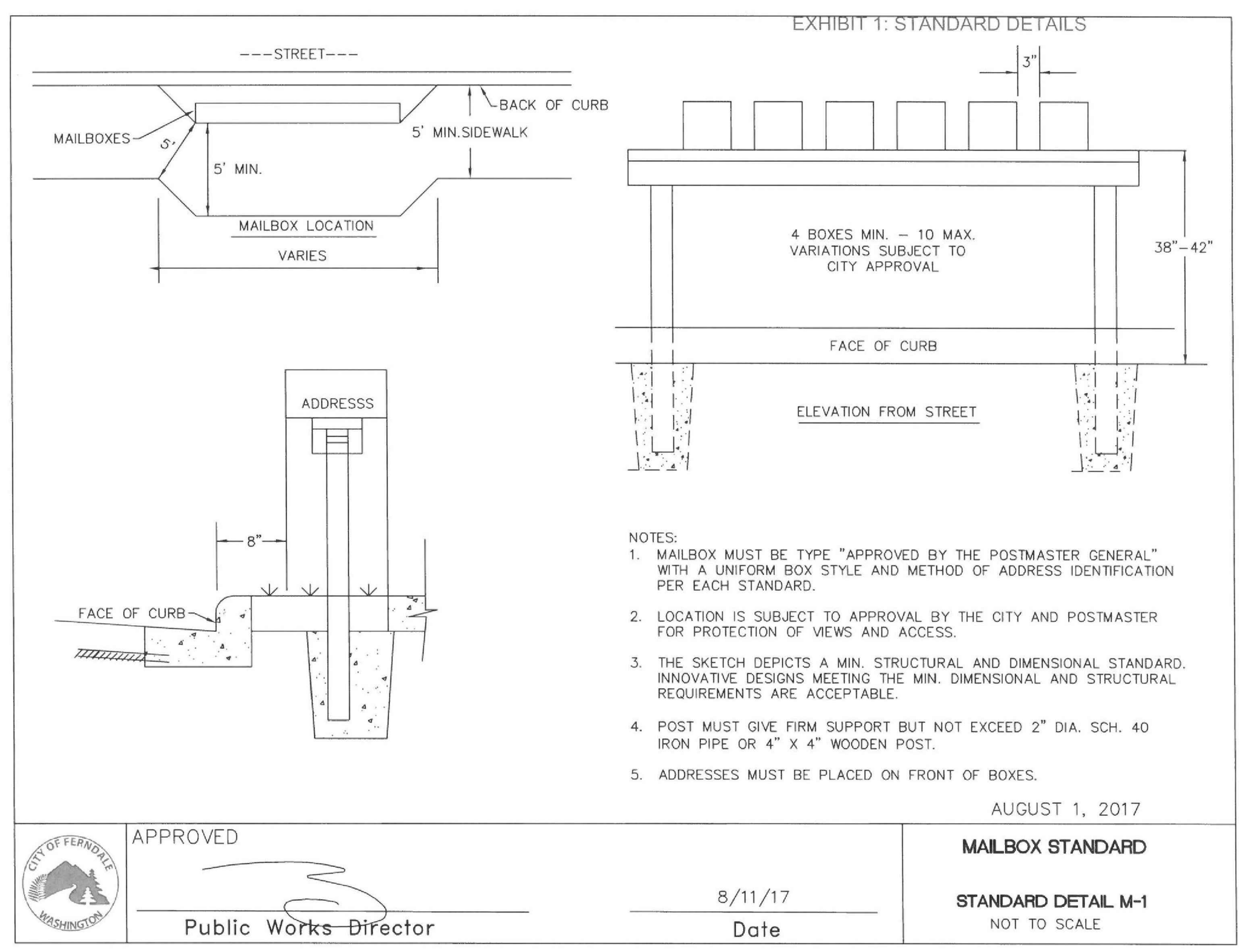
RECORD DRAWING - 02/24/2025

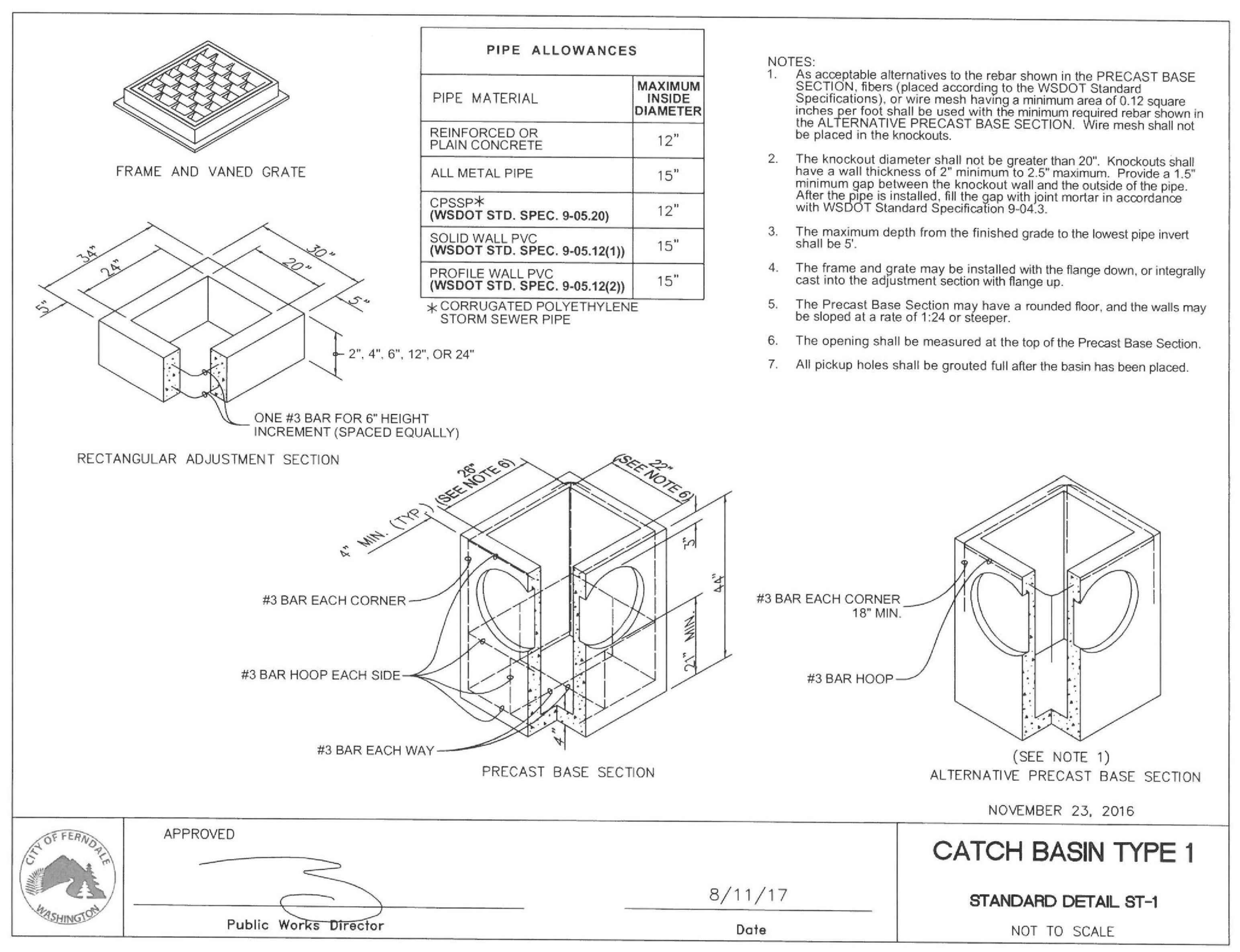


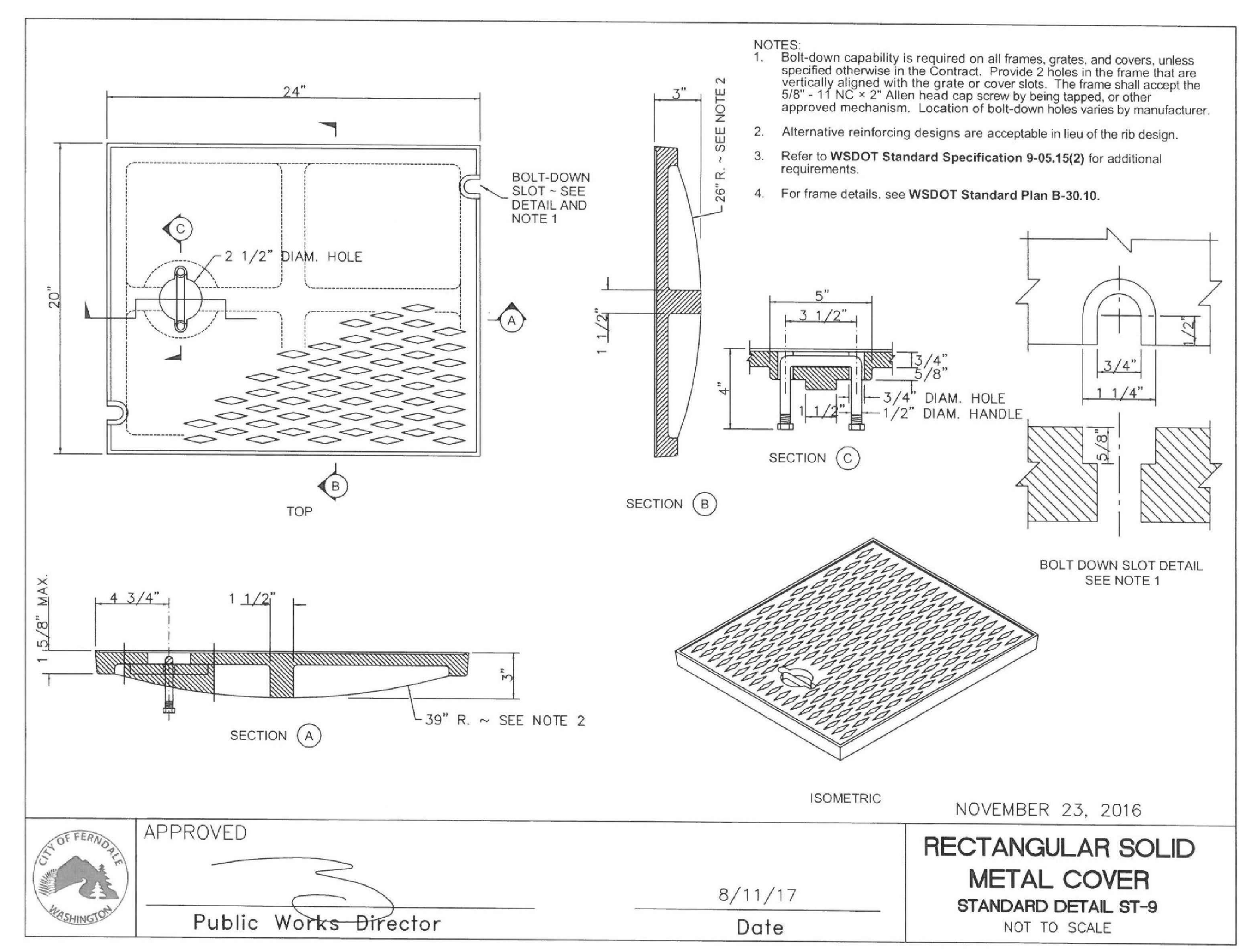
B / C6 CONCRETE SIDEWALK SECTION
NTS

APPROVED
03/19/2025
BY [signature] FOR KEVIN RENZ
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

EXHIBIT 1: STANDARD DETAILS


STREET
BACK OF CURB
MAILBOXES
5' MIN. SIDEWALK
5' MIN.
MAILBOX LOCATION VARIES
4 BOXES MIN. - 10 MAX. VARIATIONS SUBJECT TO CITY APPROVAL
38"-42"
FACE OF CURB
ELEVATION FROM STREET
ADDRESS
FACE OF CURB
NOTES:
1. MAILBOX MUST BE TYPE "APPROVED BY THE POSTMASTER GENERAL" WITH A UNIFORM BOX STYLE AND METHOD OF ADDRESS IDENTIFICATION PER EACH STANDARD.
2. LOCATION IS SUBJECT TO APPROVAL BY THE CITY AND POSTMASTER FOR PROTECTION OF VIEWS AND ACCESS.
3. THE SKETCH DEPICTS A MIN. STRUCTURAL AND DIMENSIONAL STANDARD. INNOVATIVE DESIGNS MEETING THE MIN. DIMENSIONAL AND STRUCTURAL REQUIREMENTS ARE ACCEPTABLE.
4. POST MUST GIVE FIRM SUPPORT BUT NOT EXCEED 2" DIA. SCH. 40 IRON PIPE OR 4" X 4" WOODEN POST.
5. ADDRESSES MUST BE PLACED ON FRONT OF BOXES.
AUGUST 1, 2017
APPROVED
Public Works Director
8/11/17
Date
MAILBOX STANDARD
STANDARD DETAIL M-1
NOT TO SCALE


FRAME AND VANED GRATE
RECTANGULAR ADJUSTMENT SECTION
2", 4", 6", 12", OR 24"
ONE #3 BAR FOR 6" HEIGHT INCREMENT (SPACED EQUALLY)
PIPE ALLOWANCES
PIPE MATERIAL | MAXIMUM INSIDE DIAMETER
REINFORCED OR PLAIN CONCRETE | 12"
ALL METAL PIPE | 15"
CPSSP* (WSDOT STD. SPEC. 9-05.20) | 12"
SOLID WALL PVC (WSDOT STD. SPEC. 9-05.12(1)) | 15"
PROFILE WALL PVC (WSDOT STD. SPEC. 9-05.12(2)) | 15"
* CORRUGATED POLYETHYLENE STORM SEWER PIPE
NOTES:
1. As acceptable alternatives to the rebar shown in the PRECAST BASE SECTION, fibers (placed according to the WSDOT 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". Knockouts shall have a wall thickness of 2" minimum to 2.5" maximum. Provide a 1.5" 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 WSDOT Standard Specification 9-04.3.
3. The maximum depth from the finished grade to the lowest pipe invert shall be 5'.
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.
#3 BAR EACH CORNER
#3 BAR HOOP EACH SIDE
#3 BAR EACH WAY
PRECAST BASE SECTION
#3 BAR EACH CORNER 18" MIN.
#3 BAR HOOP
(SEE NOTE 1)
ALTERNATIVE PRECAST BASE SECTION
NOVEMBER 23, 2016
APPROVED
Public Works Director
8/11/17
Date
CATCH BASIN TYPE 1
STANDARD DETAIL ST-1
NOT TO SCALE


NOTES:
1. Bolt-down capability is required on all frames, grates, and covers, unless specified otherwise in the Contract. Provide 2 holes in the frame that are vertically aligned with the grate or cover slots. The frame shall accept the 5/8" - 11 NC × 2" Allen head cap screw by being tapped, or other approved mechanism. Location of bolt-down holes varies by manufacturer.
2. Alternative reinforcing designs are acceptable in lieu of the rib design.
3. Refer to WSDOT Standard Specification 9-05.15(2) for additional requirements.
4. For frame details, see WSDOT Standard Plan B-30.10.
24"
BOLT-DOWN SLOT - SEE DETAIL AND NOTE 1
2 1/2" DIAM. HOLE
TOP
SECTION B
SECTION C
3/4" DIAM. HOLE
1/2" DIAM. HANDLE
BOLT DOWN SLOT DETAIL SEE NOTE 1
SECTION A
39" R. ~ SEE NOTE 2
ISOMETRIC
NOVEMBER 23, 2016
APPROVED
Public Works Director
8/11/17
Date
RECTANGULAR SOLID METAL COVER
STANDARD DETAIL ST-9
NOT TO SCALE

00756.007 03/19/25 RH

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360 - 922 - 0549
www.axeengineering.com

AXE ENGINEERING Services
CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

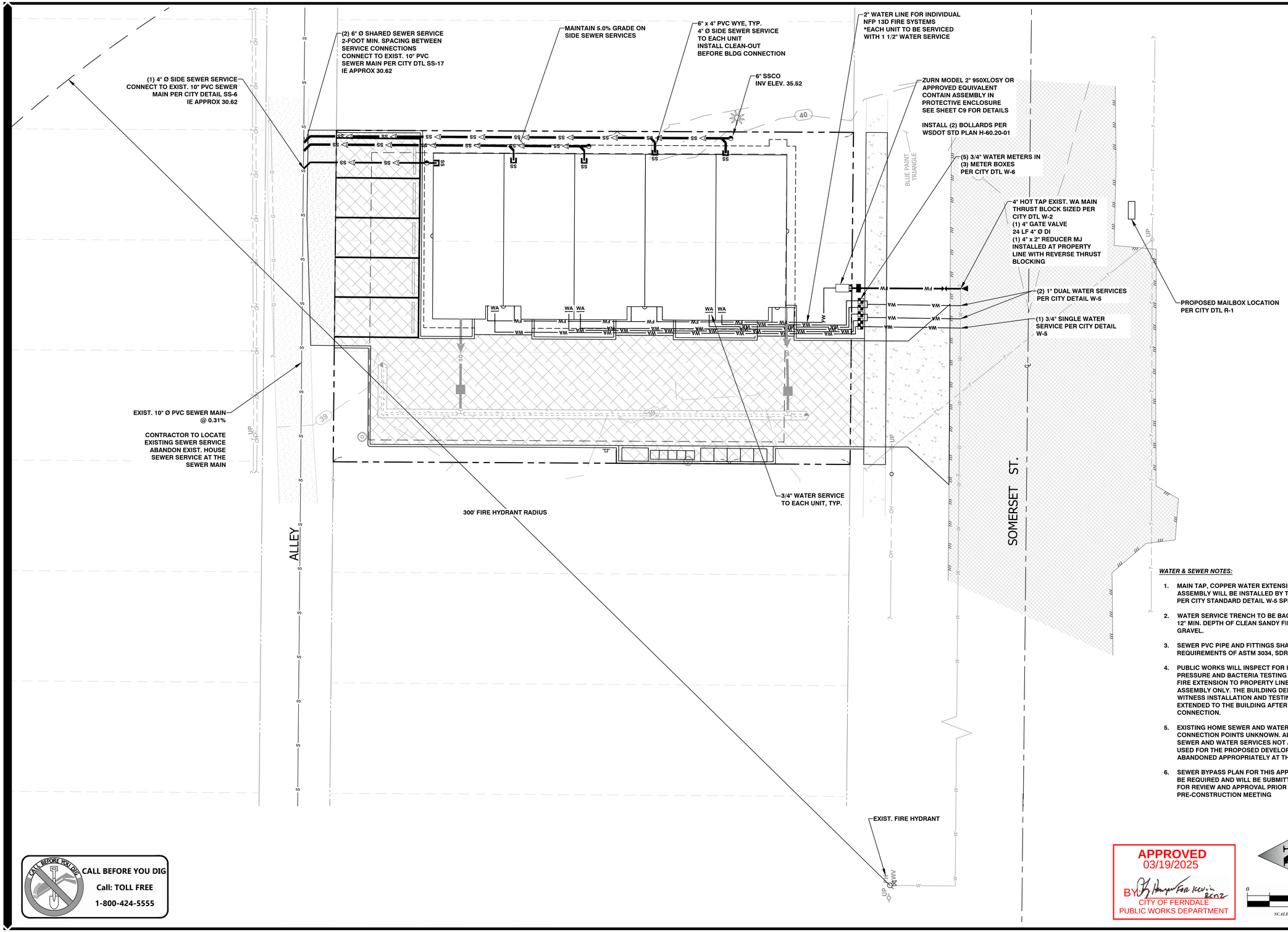
KARIS ANN VAN DIEST, STATE OF WASHINGTON, 2028719, REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
GRADING & DRAINAGE DETAILS

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # **C7** OF 10
REV # REC



WATER & SEWER NOTES:

1. MAIN TAP, COPPER WATER EXTENSION, AND METER ASSEMBLY WILL BE INSTALLED BY THE APPLICANT PER CITY STANDARD DETAIL W-5 SPECIFICATIONS.
2. WATER SERVICE TRENCH TO BE BACKFILLED WITH 12" MIN. DEPTH OF CLEAN SANDY FILL OR PEA GRAVEL.
3. SEWER PVC PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM 3034, SDR35.
4. PUBLIC WORKS WILL INSPECT FOR INSTALLATION, PRESSURE AND BACTERIA TESTING OF THE 4" DI FIRE EXTENSION TO PROPERTY LINE AND RPBA ASSEMBLY ONLY. THE BUILDING DEPARTMENT WILL WITNESS INSTALLATION AND TESTING OF ALL LINES EXTENDED TO THE BUILDING AFTER THE RPBA CONNECTION.
5. EXISTING HOME SEWER AND WATER SERVICE CONNECTION POINTS UNKNOWN. ALL EXISTING SEWER AND WATER SERVICES NOT ABLE TO BE USED FOR THE PROPOSED DEVELOPMENT WILL BE ABANDONED APPROPRIATELY AT THE PUBLIC MAIN.
6. SEWER BYPASS PLAN FOR THIS APPLICATION WILL BE REQUIRED AND WILL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO THE SITE PRE-CONSTRUCTION MEETING

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

APPROVED
03/19/2025
BY
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

N

0 10 20
SCALE IN FEET

RECORD DRAWING - 02/24/2025

BY	DATE	REVISIONS

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360-255-0549
www.axeengineering.com

ENGINEERING Services
CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

KARIS ANN VAN DIEST
STATE OF WASHINGTON
22028719
REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
WATER & SEWER PLAN

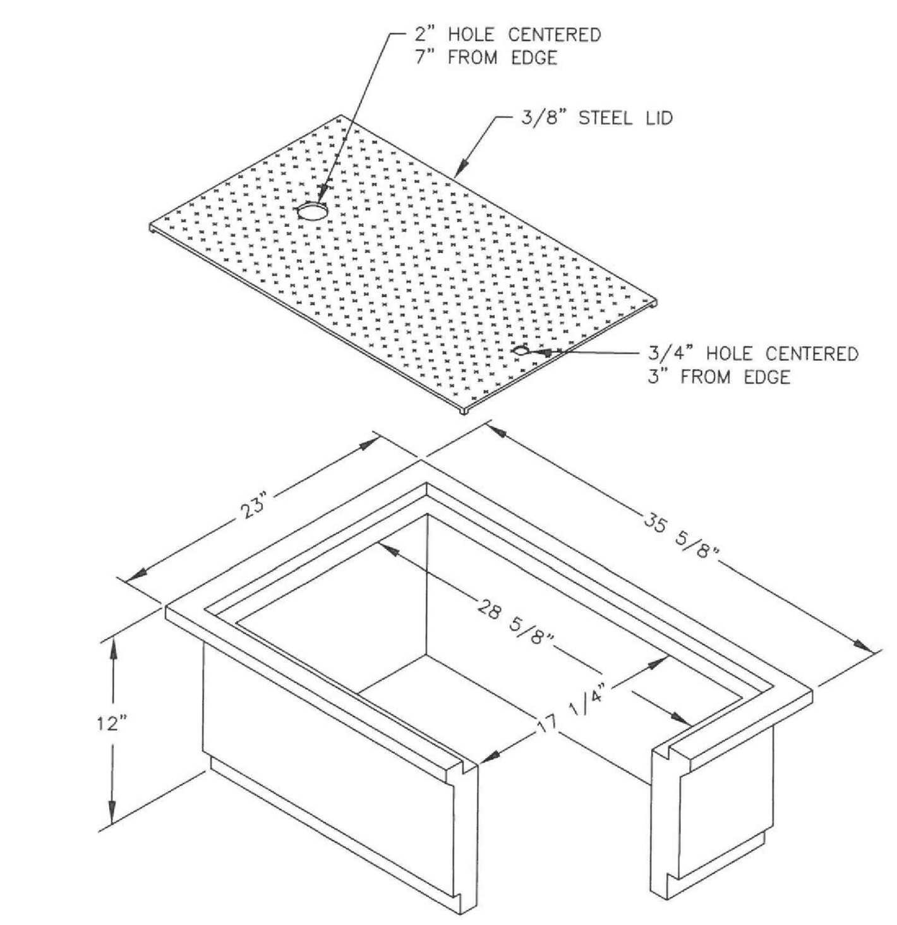
DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C8 OF 10 REV # REC

00756.008 03/19/25 RH

RECORD DRAWING - 02/24/2025

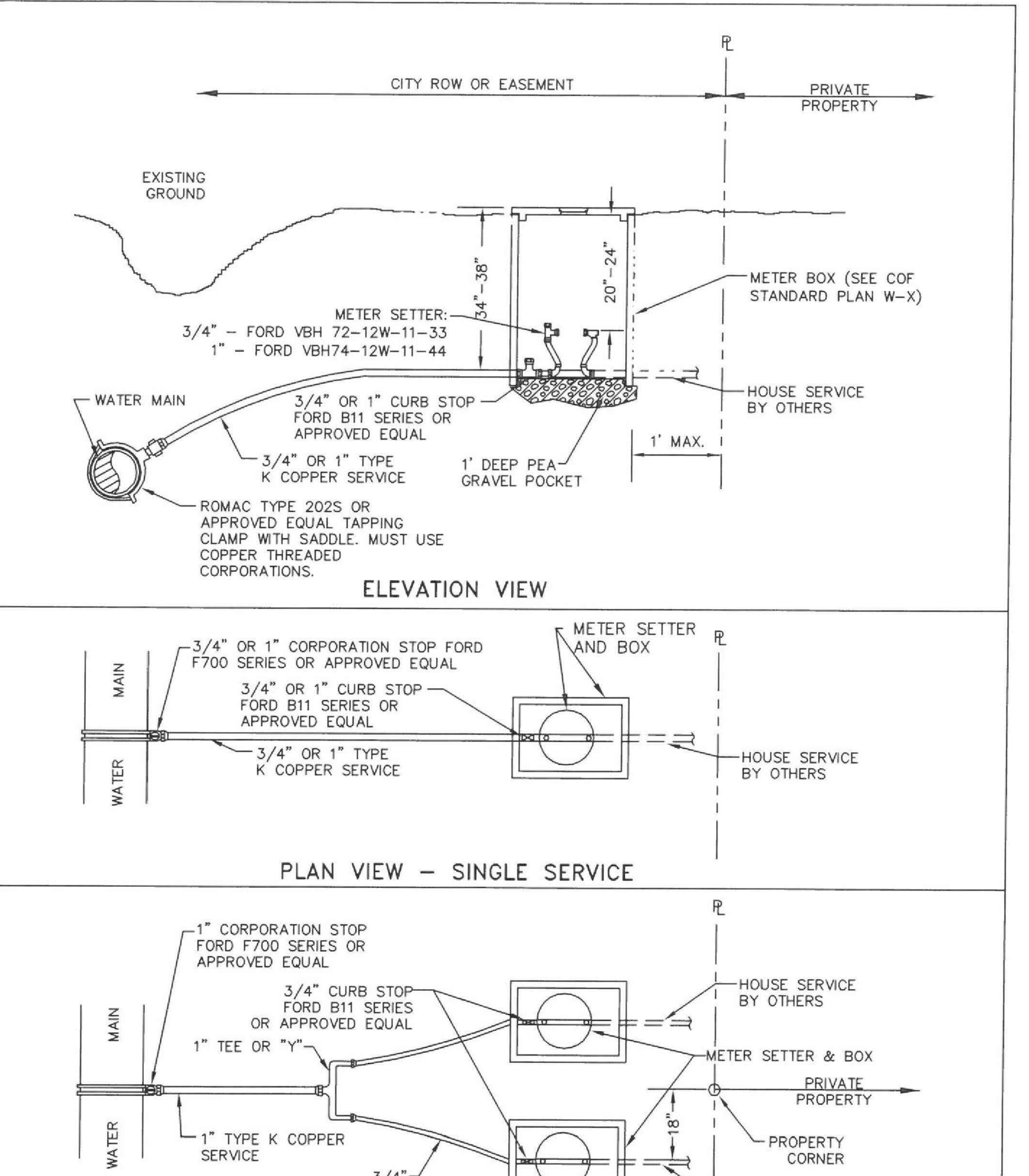


NOTES:
1. FOGTITE No. 2 METER BOX OR APPROVED EQUAL.
2. FOR USE WITH WATER SERVICE IN PLANTER/LANDSCAPE AREA OR OUTSIDE OF SIDEWALK.

NOVEMBER 23, 2016

APPROVED
Public Works Director — 8/11/17 Date

¾" AND 1" CONCRETE METER BOX
STANDARD DETAIL W-6
NOT TO SCALE



NOTES:
1. METER(S) TO BE FURNISHED AND INSTALLED BY COF.
2. WATER SERVICE TRENCH TO BE BACKFILLED WITH 12" MIN. DEPTH OF CLEAN SANDY FILL.

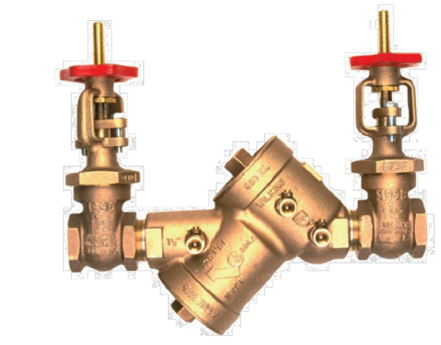
NOVEMBER 23, 2016

APPROVED
Public Works Director — 8/11/17 Date

TYPICAL ¾" AND 1" WATER SERVICE
STANDARD DETAIL W-5
NOT TO SCALE

ZURN Model 950XLOSY
Double Check Valve Assembly with OS&Y Gate Valves

Application
Designed for installation on fire protection water lines to protect against both backsiphonage and backpressure of polluted water into the potable water supply. Assembly shall provide protection where a potential health hazard does not exist.



Standards Compliance
- UL® Classified

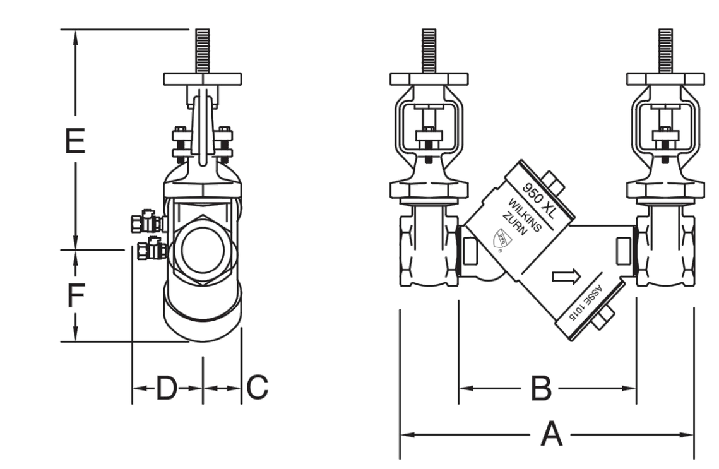
Materials

Main valve body	Cast Bronze ASTM B 584
Access covers	Cast Bronze ASTM B 584
Internals	Stainless Steel, 300 Series
Elastomers	Silicone (FDA approved) Buna Nitrile (FDA approved)
Polymers	Noryl™, NSF Listed
Springs	Stainless steel, 300 series

Features
Sizes: 3/4, 1", 1 1/2", 2"

Maximum working water pressure	175 PSI
Maximum working water temperature	180°F
Hydrostatic test pressure	350 PSI
End connections Threaded	ANSI B1.20.1

Accessories
☐ Repair kit (rubber only)
☐ Relief valve (P1000A)
☐ QT- SET Quick Test Fitting Set



Dimensions & Weights (do not include pkg.)

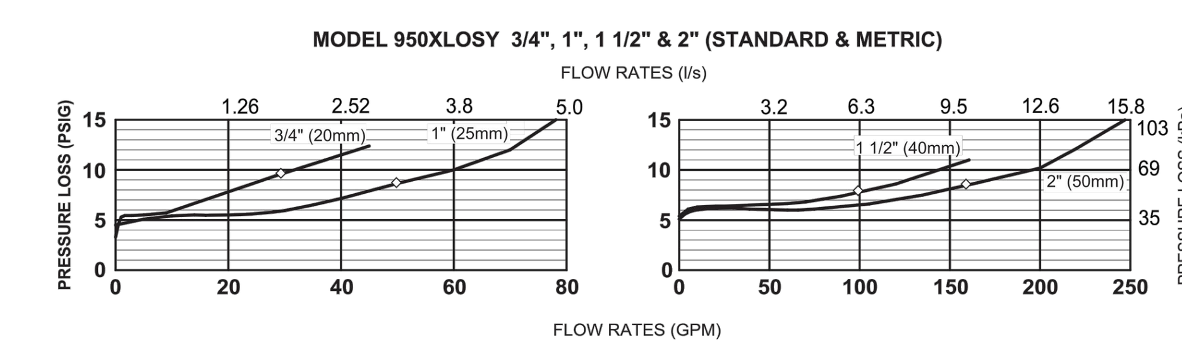
MODEL 950XLOSY SIZE		DIMENSIONS (approximate)														WEIGHT			
		A		B LESS GATE VALVES		C		D		E OPEN		E CLOSED		F		WITH GATE VALVES		LESS GATE VALVES	
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kg	lbs.	kg
3/4	20	11 3/4	299	7	178	1 1/2	38	3	76	7 1/2	191	6 1/4	159	3	76	12	5.5	5	2.3
1	25	12	305	7	178	1 1/2	38	3	76	8	203	6 1/2	165	3	76	13	5.9	8	3.6
1 1/2	40	16 3/8	416	10 9/16	268	2	51	3 1/2	89	9 3/4	248	7 13/16	198	4 1/2	114	31	14.1	16	7.3
2	50	16 3/4	416	10 9/16	268	2	51	3 1/2	89	11 3/16	300	8 15/16	227	4 1/2	114	38	17.3	16	7.3

Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | Zurn Industries Limited
7900 Goreway Drive, Unit 10, Brampton, Ontario L6T 5W6, 877-892-5216
www.zurn.com

Rev. D
Date: 12/19
Document No. BF-950XLOSY
Product No. Model 950XLOSY

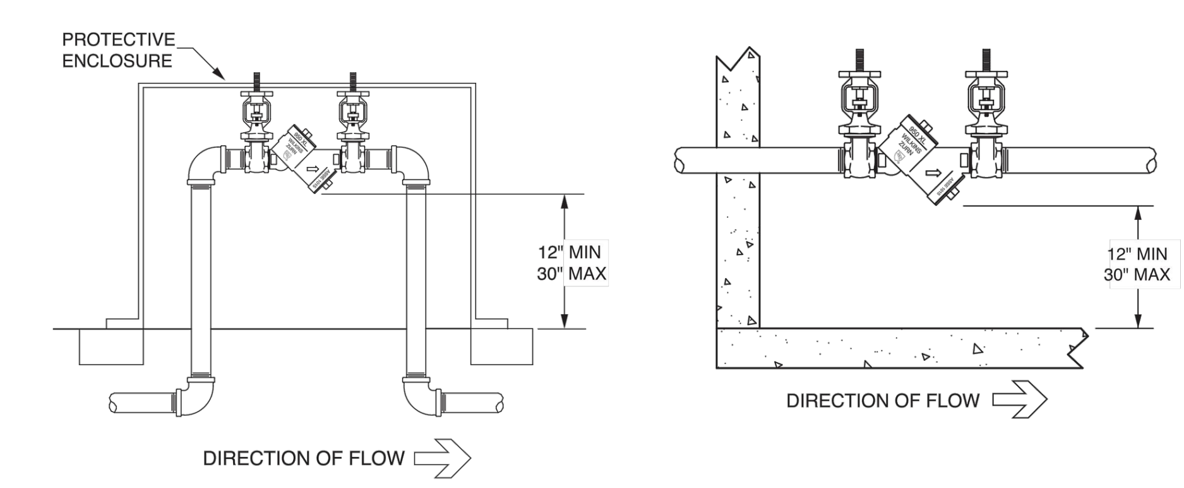
Page 1 of 2

Flow Characteristics



Typical Installation
Local codes shall govern installation requirements. To be installed in accordance with the manufacturer's instructions and the latest edition of the Uniform Plumbing Code. Unless otherwise specified, the assembly shall be mounted at a minimum of 12" (305mm) and a maximum of 30" (762mm) above adequate drains with sufficient side clearance for testing and maintenance. The installation shall be made so that no part of the unit can be submerged.

Capacity thru Schedule 40 Pipe				
Pipe size	5 ft/sec	7.5 ft/sec	10 ft/sec	15 ft/sec
1/8"	1	1	2	3
1/4"	2	2	3	5
3/8"	3	4	6	9
1/2	5	7	9	14
3/4"	8	12	17	25
1"	13	20	27	40
1 1/4"	23	35	47	70
1 1/2"	32	48	63	95
2"	52	78	105	167

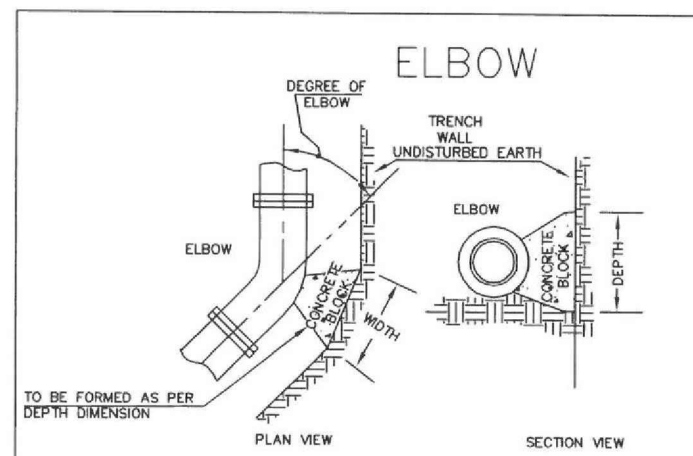


OUTDOOR INSTALLATION — INDOOR INSTALLATION

Specifications
The Double Check Backflow Preventer shall be UL® Classified, and supplied with full port, UL® Classified OS & Y gate valves. The assembly shall incorporate removable seat rings. The main body and access covers shall be bronze (ASTM B 584), the seat rings and all internal polymers shall be NSF® Listed Noryl™ and the seat disc elastomers shall be silicone.
The first and second checks shall be accessible for maintenance without removing the device from the line. The Double Check Backflow Preventer shall be a Zurn Wilkins Model 950XLOSY.

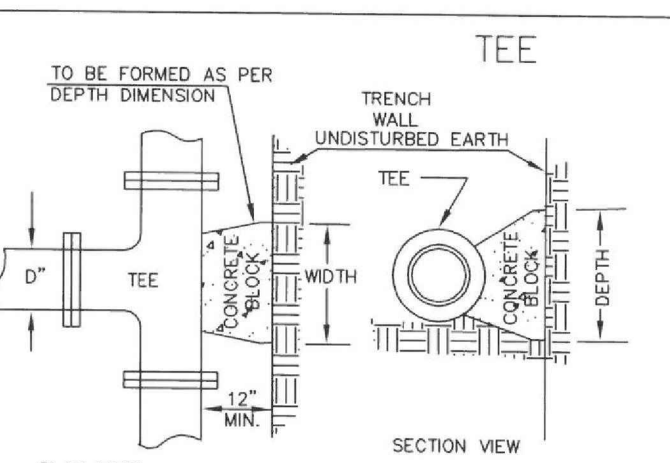
Zurn Industries, LLC | Wilkins
1747 Commerce Way, Paso Robles, CA U.S.A. 93446 Ph. 855-663-9876, Fax 805-238-5766
In Canada | Zurn Industries Limited
7900 Goreway Drive, Unit 10, Brampton, Ontario L6T 5W6, 877-892-5216
www.zurn.com

Page 2 of 2



100 P.S.I. OPERATING PRESSURE

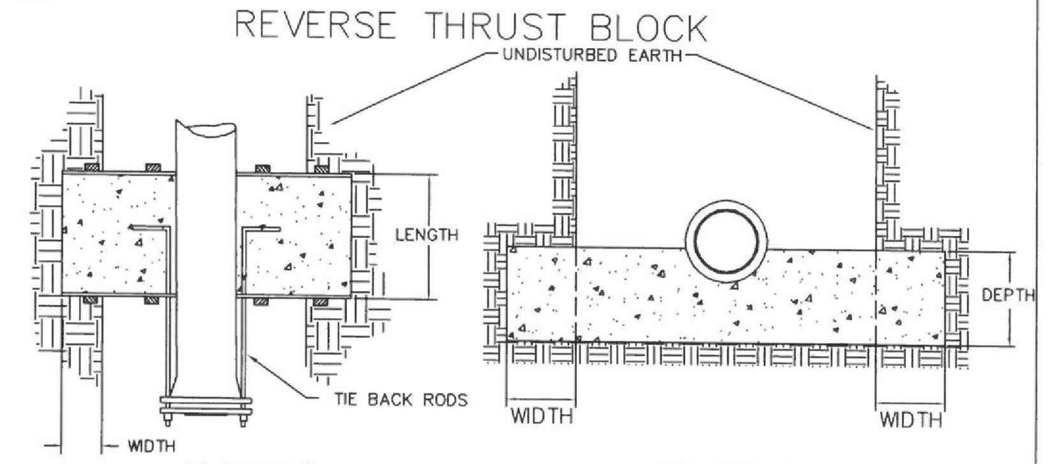
SIZE	11 ¼°		22 ½°		45°		90°	
	W	D	W	D	W	D	W	D
6"	1'–0"	1'–0"	1'–0"	1'–0"	1'–6"	1'–6"	2'–3"	1'–6"
8"	1'–3"	1'–3"	1'–3"	1'–3"	1'–9"	1'–9"	3'–0"	2'–0"
10"	1'–9"	1'–6"	1'–9"	1'–6"	2'–3"	2'–3"	3'–6"	2'–6"
12"	2'–0"	1'–9"	2'–0"	1'–9"	2'–9"	2'–6"	4'–0"	3'–0"
16"	2'–9"	2'–3"	2'–9"	2'–3"	4'–0"	3'–0"	6'–3"	3'–6"
20"	3'–6"	2'–9"	3'–6"	2'–9"	4'–6"	4'–0"	8'–6"	4'–0"
24"	4'–6"	3'–0"	4'–6"	3'–0"	5'–6"	5'–0"	9'–9"	5'–0"



SIZE	WIDTH	DEPTH
6"	1'–10"	1'–10"
8"	2'–6"	2'–6"
10"	3'–4"	3'–0"
12"	4'–3"	3'–4"
16"	6'–4"	4'–0"
20"	7'–10"	5'–0"
24"	9'–5"	6'–0"

250 PSI TEST PRESSURE,
2000 PSF SAFE BEARING LOAD

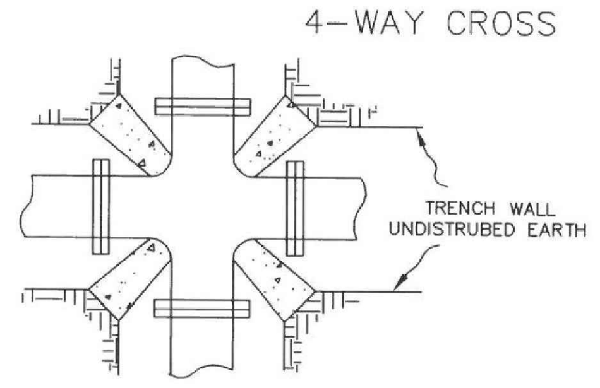
REVERSE THRUST BLOCK



"D"	WIDTH	DEPTH	LENGTH	*VOL.	#OF RODS	ROD DIA.
6"	1'–6"	1'–6"	12"	7.5	2	½"
8"	2'–0"	2'–0"	18"	20.0	2	⅝"
10"	2'–6"	2'–6"	24"	37.5	2	¾"
12"	2'–9"	2'–9"	24"	44.0	4	¾"
16"						
20"						
24"						

*VOL. = Approx. Volume of Blocking Material Required in cu. ft.
RODS: A36 STEEL MINIMUM

4–WAY CROSS



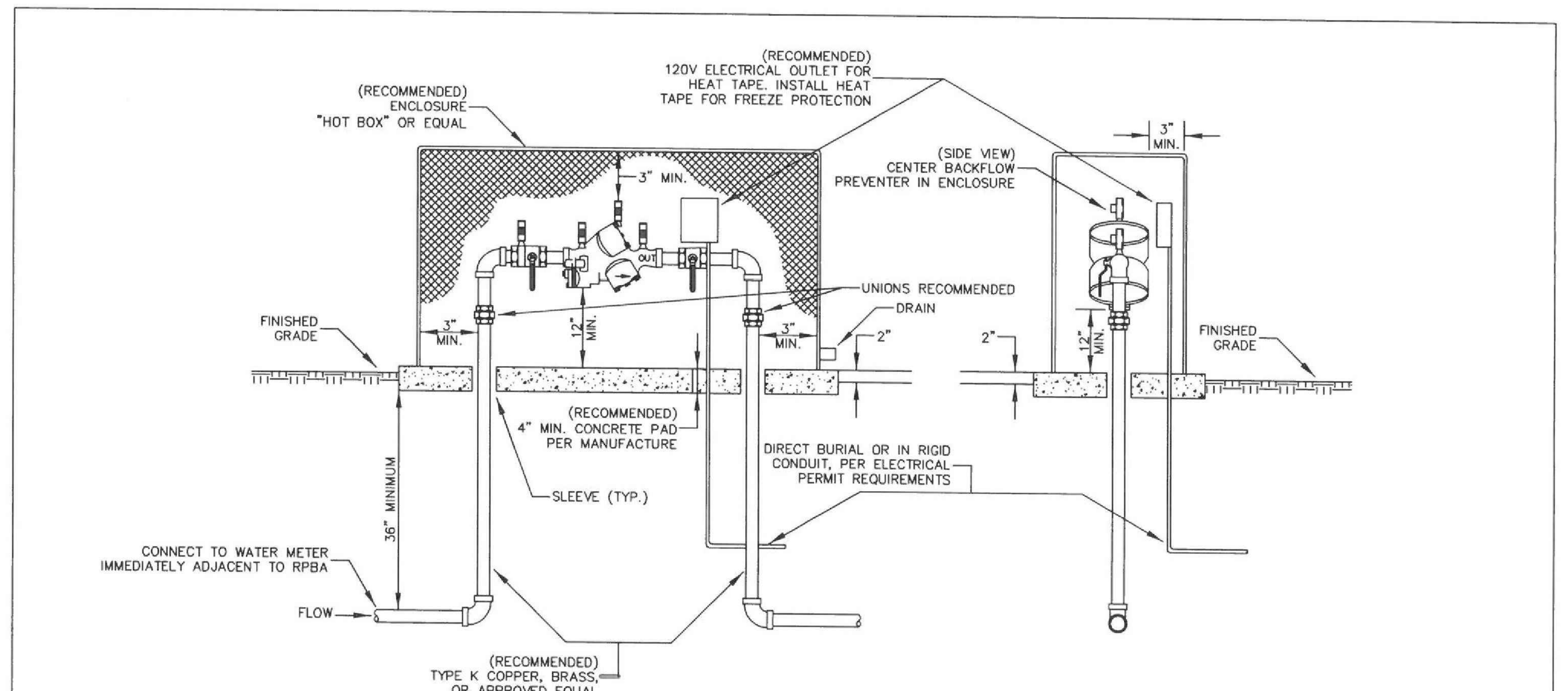
SIZE	WIDTH	DEPTH
6"	1'–0"	1'–0"
8"	1'–3"	1'–3"
10"	1'–6"	1'–6"
12"	1'–9"	1'–9"
16"	2'–3"	2'–6"
20"	2'–6"	3'–6"
24"	3'–0"	4'–0"

250PSI TEST PRESSURE,
2000 PSF SAFE BEARING LOAD

NOVEMBER 23, 2016

APPROVED
Public Works Director — 8/11/17 Date

THRUST BLOCKING DETAIL
STANDARD DETAIL W-2
NOT TO SCALE



NOTES
1. PROVIDE CITY APPROVED SUPPORT FOR ASSEMBLIES LARGER THAN 2" DIAMETER.
2. OWNER SHALL FURNISH, INSTALL AND MAINTAIN THE RPBA AND ALL PIPING AND APPURTENANCES SHOWN ON THIS PLAN.
3. THE ASSEMBLY MUST BE PROTECTED FROM FREEZING, OTHER SEVERE WEATHER, AND FROM ACCIDENTAL DAMAGE.
4. DRAIN SHALL BE SIZED IN ACCORDANCE WITH AWWA CROSS CONNECTION CONTROL MANUAL 6–8.
5. RPBA MUST BE ON WASHINGTON STATE DOH APPROVED LIST, MUST BE TESTED UPON INSTALLATION BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER, AND MUST BE TESTED ANNUALLY THEREAFTER.
6. RPBA MUST BE TESTED IF MOVED OR REPAIRED.

NOVEMBER 23, 2016

APPROVED
Public Works Director — 8/11/17 Date

REDUCED PRESSURE BACKFLOW ASSEMBLY
STANDARD DETAIL W-19
NOT TO SCALE

APPROVED 03/19/2025
BY: [signature]
CITY OF FERNDALE PUBLIC WORKS DEPARTMENT

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

REVISIONS	DATE	BY

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360 - 922 - 0549
www.axeengineering.com

KARIS ANN VAN DIEST — STATE OF WASHINGTON — 2028719 — REGISTERED PROFESSIONAL ENGINEER — 02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
WATER DETAILS

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C9 OF 10
REV # REC

BEDDING SPECIFICATIONS FOR PVC PIPE

THE FOLLOWING SUPPLEMENTAL SPECIFICATIONS ARE TO BE USED IN CONJUNCTION WITH THE WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE AND MUNICIPAL CONSTRUCTION, CURRENT EDITION:

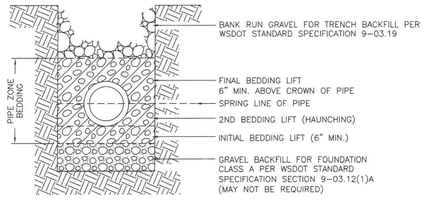
BEDDING FOR SEWERS, DRAINS AND CULVERTS FOR PVC PIPE–

BEDDING MATERIAL FOR PVC PIPE SHALL BE PEA GRAVEL CONFORMING TO THE FOLLOWING SPECIFICATIONS:

PEA GRAVEL – PEA GRAVEL BEDDING SHALL BE A CLEAN MIXTURE FREE FROM ORGANIC MATTER AND CONFORMING TO THE FOLLOWING GRADATION WHEN TESTED IN ACCORDANCE WITH ASTM D422:

U.S. STANDARD SIEVE SIZE	PERCENTAGE PASSING, BY WT.
3/4"	100
3/8"	95–100
#8	0–10
#200	0–3

BACKFILL – WHENEVER A TRENCH IS EXCAVATED IN THE EXISTING OR PROPOSED ROADWAY, SIDEWALK OR OTHER AREAS WHERE SETTLEMENT WOULD BE DETRIMENTAL, THE ENTIRE TRENCH ABOVE THE PIPE ZONE SHALL BE BACKFILLED WITH BANK RUN GRAVEL BACKFILL TO 95% OF MAXIMUM DENSITY.

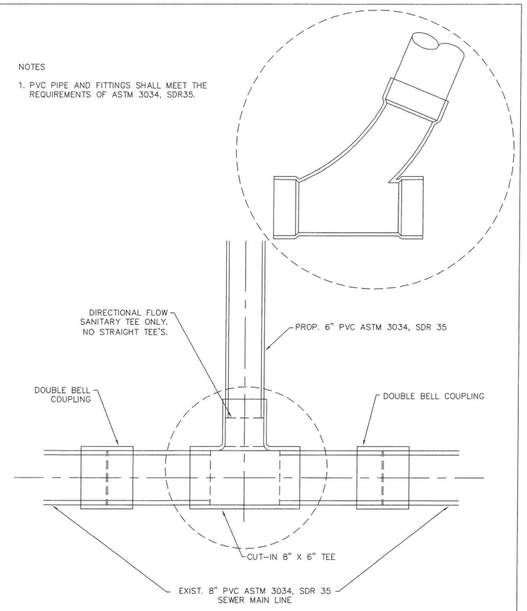


NOVEMBER 23, 2016

APPROVED
Public Works Director
8/11/17
Date

PVC PIPE ZONE BEDDING
STANDARD DETAIL SS-1
NOT TO SCALE

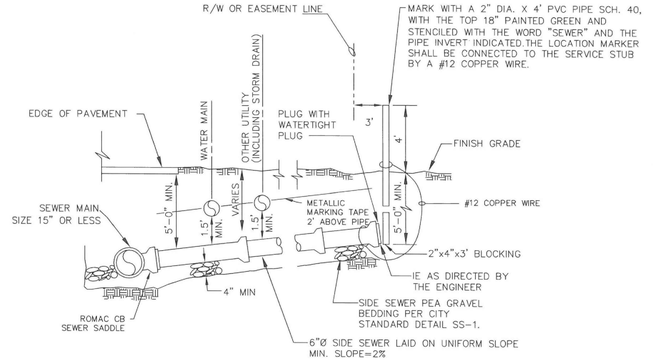
NOTES
1. PVC PIPE AND FITTINGS SHALL MEET THE REQUIREMENTS OF ASTM 3034, SDR35.



APRIL 18, 2017

APPROVED
Public Works Director
8/11/17
Date

PROPOSED SEWER SERVICE PVC CUT-IN TEE
STANDARD DETAIL SS-17
NOT TO SCALE

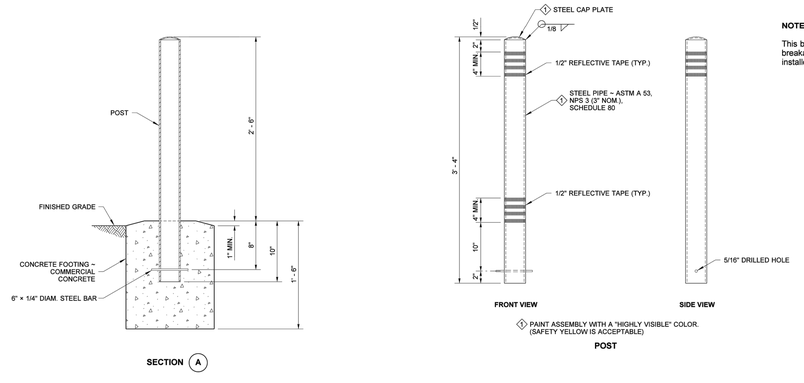


NOVEMBER 25, 2016

APPROVED
Public Works Director
8/11/17
Date

SANITARY SEWER SERVICE CONNECTION 15" OR LESS
STANDARD DETAIL SS-6
NOT TO SCALE

DRAWN BY: BILL BERENS



NOTE
This bollard does not have an effective breakaway design feature and cannot be installed within the Design Clear Zone.

BAKOTICH, PASCO III — STATE OF WASHINGTON — 24553 — REGISTERED PROFESSIONAL ENGINEER
EXPIRES JUNE 19, 200

BOLLARD TYPE 2
STANDARD PLAN H-60.20-01
SHEET 1 OF 1 SHEET
APPROVED FOR PUBLICATION
Pasco Bakotich III 07-03-08
STATE DESIGN ENGINEER — DATE
Washington State Department of Transportation

RECORD DRAWING - 02/24/2025

BY	DATE	REVISIONS

AXE ENGINEERING SERVICES, LLC
"CUTTING THROUGH PROJECT BARRIERS"
851 COHO WAY #306
BELLINGHAM, WA 98225
360-422-0549
www.axeengineering.com

AXE ENGINEERING Services — CIVIL • STORMWATER • STRUCTURAL
axeengineering.com

KRISTA ANN VAN DIEST — STATE OF WASHINGTON — 22026719 — REGISTERED PROFESSIONAL ENGINEER
02/24/2025

CITY OF FERNDALE, WA
1964 SOMERSET ST DEVELOPMENT
CIVIL CONSTRUCTION PLANS
SEWER DETAILS

APPROVED
03/19/2025
BY: for KVD
CITY OF FERNDALE
PUBLIC WORKS DEPARTMENT

CALL BEFORE YOU DIG
Call: TOLL FREE
1-800-424-5555

DATE: 02/24/2025
DESIGN: KVD
DRAWN: MDS
SCALE: AS SHOWN

PROJECT # 22037

SHEET # C10 OF 10 REV # REC

00756.010 03/19/25 RH