

PUD NO. 1 OF WHATCOM COUNTY (OWNER):  
ALEC STRAND (PM)  
1705 TRIGG RD  
FERNDALE, WA 98248  
360.384.4288

BROWN & KYSAR (ENGINEER/APPLICANT):  
BYRON WOLTERS DORF, PE  
1315 SE GRACE AVE., SUITE 201  
BATTLEGROUND, WA 98604  
360.687.3966

PACIFIC SURVEY & ENGINEERING (SURVEYOR):  
ADAM MORROW  
909 SQUALICUM WAY, STE 111  
BELLINGHAM, WA 98225  
360.671.7387

ELEMENT SOLUTIONS (WETLAND SPECIALIST):  
JEFF NINNEMANN  
909 SQUALICUM WAY, STE 111  
BELLINGHAM, WA 98225  
360.671.9172

SITE ADDRESS:  
WEST OF WATER TREATMENT PLANT NO. 1  
5431 FERNDAL RD  
FERNDAL, WA 98248

CITY OF FERNDALE ZONING DESIGNATION:  
PRIVATE/INSTITUTIONAL (PI)

LEGAL DESCRIPTION:  
LOT 1 P U D NO 1 LLA AS REC AF 1970600201-EXC  
PTN DAF-TR IN GOVT LOT 7 DAF-BEG AT A CONC  
MON MARKING W 1/4 COR-TH S 01 DEG 58'50" E  
1332.80 FT TO SW COR OF GOVT LOT 7-TH N 01 DEG  
58'50" W ALG W L OF GOVT LOT 7 272.67 FT TO POB  
MARKED BY A 3/4 INCH.

APPROXIMATE AREAS:	
PROPERTY AREA:	5.83 AC
WETLAND BUFFER IMPACT:	55,784 SF
WETLAND ENHANCEMENT:	33,778 SF
FLOODPLAIN CUT MITIGATION:	79,288 SF
STORMWATER POND:	11,921 SF

BASELINE SURVEY WAS PROVIDED BY PACIFIC SURVEY & ENGINEERING (PSE) ON MARCH 29, 2019.  
TOPOGRAPHIC SURVEY WAS PERFORMED AND PREPARED IN ACCORDANCE WITH WAC 332-130-145

HORIZONTAL DATUM: NAD 83/91 WASHINGTON STATE PLAN NORTH ZONE (GRID)  
VERTICAL DATUM: NGVD29  
PRIMARY BENCHMARK: PAINTED SQUARE AT LOADING BAY OF INTAKE FACILITY  
TBM NO. 159.11-45 - ELEVATION - 29.94'

WETLANDS AND ORDINARY HIGH WATER ALONG THE WEST BANK OF THE NOOKSACK RIVER  
DELINEATED IN THE FIELD IN JANUARY 2019 BY ELEMENT SOLUTIONS. FIELD DELINEATIONS  
SURVEYED BY PACIFIC SURVEYING AND ENGINEERING IN JANUARY 2019. WETLAND DELINEATION PER  
DEED RESTRICTION AF# 2150800068.

ADDITIONAL SURVEY INFORMATION IS AVAILABLE UPON REQUEST.

PUMP STATION NO. 1 SUBSTATION PROJECT INVOLVES THE REPLACEMENT OF THE EXISTING SUBSTATION THAT CURRENTLY SERVES THE WATER TREATMENT PLANT NO. 1 (WTP1), OWNED BY PUD NO. 1 OF WHATCOM COUNTY (WPUD1). SUBSTATION FENCING IS DESIGNED TO ALLOW WPUD1 PERSONNEL TO REFUEL THE DIESEL GENERATOR WITHOUT ACTUALLY ENTERING THE SUBSTATION. STRUCTURAL ELEMENTS OF THE SUBSTATION INCLUDE PERIMETER FENCING AND FOUNDATIONS FOR ELECTRICAL EQUIPMENT, METAL-CLAD CONTROL BUILDING, AND DIESEL GENERATOR WITH FUEL TANK.

THIS WORK COMPLIES WITH THE SITE PLAN REVIEW RESPONSE LETTER ISSUED 07-12-2019, APPROVED SITE PLAN DATED 02-24-2020, AND WITH CRITICAL AREAS REPORT DATED 09-11-2019.

THE PROJECT AREA LIES WITHIN THE 100-YEAR FLOOD PLAIN DESIGNATED BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) AND WILL REQUIRE ELECTRICAL EQUIPMENT TO BE 1' ABOVE FLOOD ELEVATIONS. AS A RESULT, ADDITIONAL FILL WILL BE REQUIRED TO RAISE THE SUBSTATION SITE SO THAT STRUCTURES AND ELECTRICAL EQUIPMENT WILL NOT BE AFFECTED DURING THE 100-YEAR FLOOD EVENT. EQUAL AMOUNTS OF CUT WILL BE REQUIRED FOR THE ADDITIONAL FILL SO THAT FLOOD ELEVATIONS DO NOT RISE DUE TO CONSTRUCTION. THE MITIGATED CUT AREA AND DEPTH ARE DESCRIBED WITHIN THESE CONSTRUCTION PLANS IN ORDER TO BE COMPLIANT WITH THE NET RISE IN FLOOD ELEVATIONS. (AB) NO-NET-RISE CONDITION CONFIRMED BY VOLUMETRIC ANALYSIS PERFORMED 11/29/2023.

PERMANENT ROAD ACCESS TO THE SUBSTATION WILL BE APPROXIMATELY 200' NORTH OF WTP1 OFF FERNDALE ROAD. THE ACCESS ROAD WILL LOOP AROUND INSIDE THE SUBSTATION AND PROVIDE A HAMMER HEAD TURN-AROUND FOR FIRE APPARATUS OUTSIDE SUBSTATION FENCING. ASPHALT PAVING APPROXIMATELY 25' BY 20' IS REQUIRED FOR CONNECTING THE GRAVELED ACCESS ROAD TO FERNDALE ROAD.

STORMWATER MANAGEMENT FOR THE SITE WILL INCLUDE A ROADSIDE DITCH TO CONVEY RUN-OFF TO A BIORETENTION POND FOR TREATMENT, DETENTION, AND INFILTRATION. RUN-OFF FROM THE GRAVELED ACCESS ROAD WILL SHED TO THE NORTH AND BE TREATED BY A COMPOST AMENDED VEGETATED FILTER STRIP (CAVFS). EMERGENCY OVERFLOW MANHOLES AND A POND RISER ASSEMBLY WILL DIRECT EXCESS STORMWATER TO THE NEARBY MITIGATED WETLANDS. TEMPORARY MEASURES SHALL BE INSTALLED PRIOR TO ANY CONSTRUCTION ACTIVITIES ACCORDING TO PROJECT STORMWATER POLLUTION AND PREVENTION PLAN (SWPPP), PROJECT PLANS, AND STORMWATER MANAGEMENT MANUAL.

EXISTING BUFFERS FOR THE MITIGATED WETLAND NORTH OF THE SUBSTATION WILL BE AFFECTED BY CONSTRUCTION ON WPU01 PROPERTY. AS A RESULT, ENHANCEMENT OF THE EXISTING BUFFER ON CITY OF FERNDALE PROPERTY WILL BE REQUIRED IN ACCORDANCE WITH THE CRITICAL AREAS REPORT AND LANDSCAPE PLANS.

WORK PERFORMED IN CITY ROW AND ON PRIVATE PROPERTY REQUIRES PROJECT CERTIFICATION BY THE ENGINEER OF RECORD (EOR) IN CONFORMANCE WITH THE APPROVED PLANS AND SPECIFICATIONS IN ORDER FOR THE CITY TO PROVIDE PROJECT ACCEPTANCE.

THE CONTRACTOR IS RESPONSIBLE FOR CONFORMING TO PROJECT PLANS & SPECIFICATIONS. ALL WORK PERFORMED WILL BE IN COMPLIANCE WITH THE CITY OF FERNDALE MUNICIPAL CODE (FMC) AND CURRENT EDITION OF THE "STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION" PUBLISHED BY WASHINGTON STATE DEPARTMENT OF TRANSPORTATION (WSDOT).

TEMPORARY EROSION CONTROL SYSTEMS SHALL BE INSTALLED PRIOR TO ALL CONSTRUCTION ACCORDING TO THE STORMWATER MANAGEMENT PLAN AND CONSTRUCTION STORMWATER POLLUTION & PREVENTION PLAN (SWPPP).

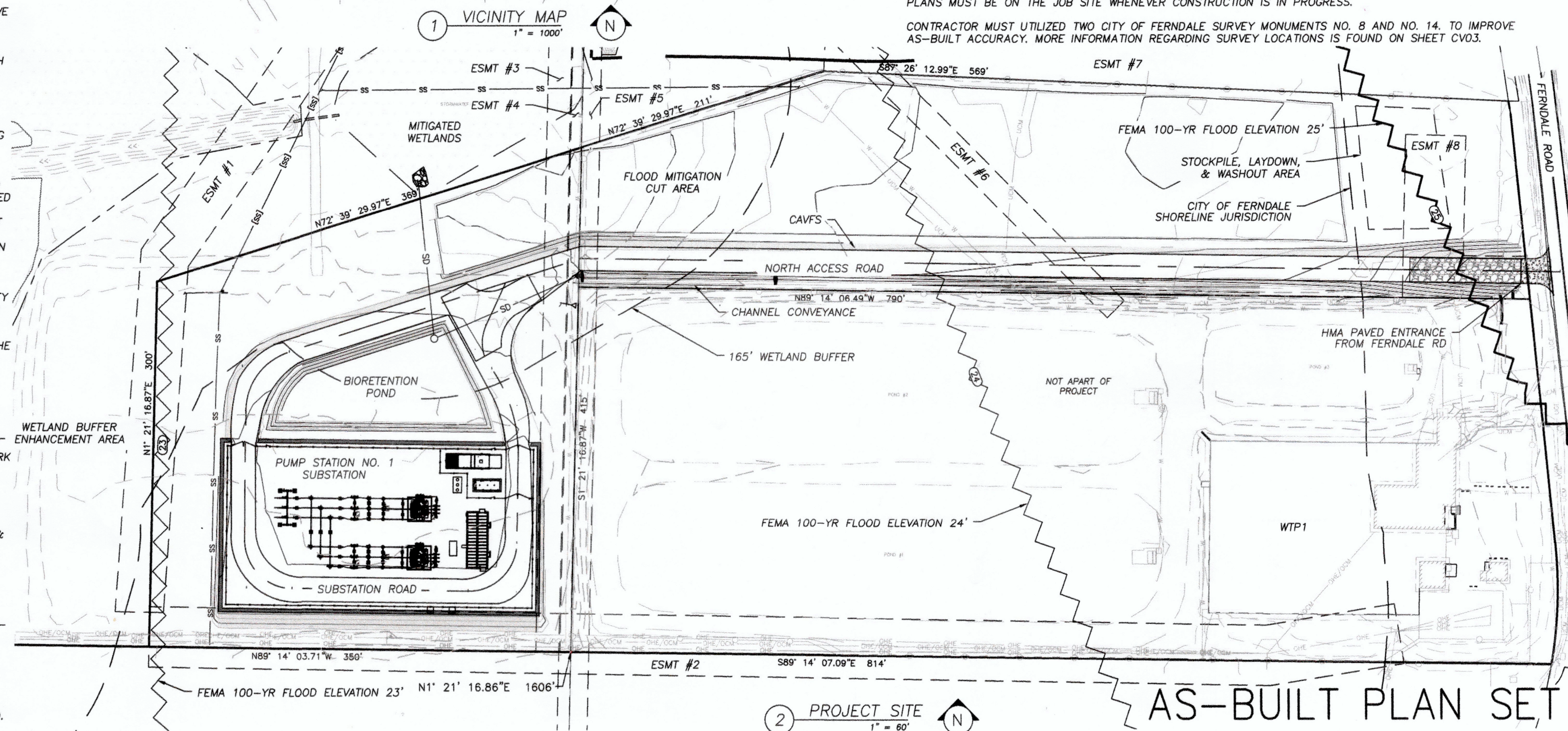
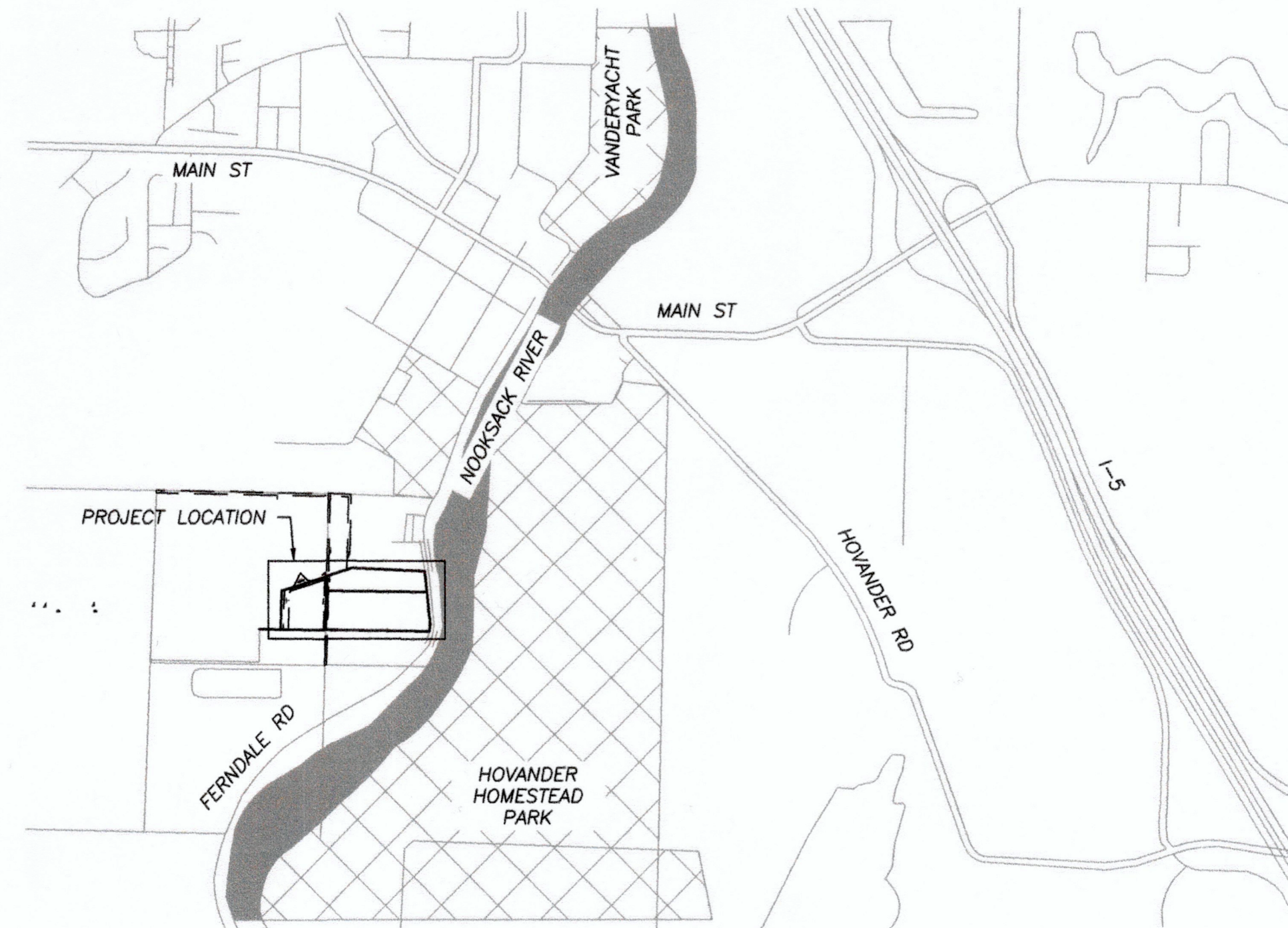
CONSTRUCTION ACTIVITIES INVOLVING EARTHWORK AND FOUNDATIONS SHALL FOLLOW RECOMMENDATIONS FOUND IN THE GEOTECHNICAL REPORT.

TOPOGRAPHIC SURVEY; PACIFIC SURVEYING & ENGINEERING. P.U.D. NO. 1 OF WHATCOM COUNTY;  
WATER TREATMENT PLANT NO. 1, FERNDALE WA. JOB #: 2018348. UPDATED MARCH 28, 2019.

CITY OF FERNDALE CRITICAL AREAS REPORT, WETLAND DELINEATION AND STREAM ASSESSMENT;  
ELEMENT SOLUTIONS. DATED SEPTEMBER 11, 2019.

LIMITED INFILTRATION AND GEOTECHNICAL ASSESSMENT; ASSOCIATED EARTH SCIENCES INCORPORATED.  
PROJECT NO. 190047E001. DATED MAY 7, 2019.

SW  $\frac{1}{4}$  OF SECTION 29 AND SE  $\frac{1}{4}$  OF SECTION 30, T39N, R2E W.M.  
TAX PARCEL: 390230481179



UNDERGROUND UTILITY LOCATIONS AS SHOWN ARE PER  
LOCATES PROVIDED BY PUBLIC UTILITY LOCATE AND  
OBSERVED EVIDENCE OF ABOVE GROUND STRUCTURES.  
BROWN & KY SAR INC. MAKES NO CERTIFICATION AS TO  
THE LOCATION OF ANY UNDERGROUND UTILITIES.



EASEMENT #	WIDTH/USE	AF #
1	40' SANITARY SEWER	970523192
2	50' PUGET SOUND ENERGY	1990600779
3	20' WATERLINE	970523191
4	10' TELEPHONE	1424841
5	CONDEMNATION NO. 47833	1419236
6	20' WATERLINE	989781
7	50' ACCESS AND UTILITIES	1970600201
8	TEMPORARY WORK AREA	2018-1101555

**APPROVED**  
02/15/2024


BY: *[Signature]*  
CITY OF FERNDALE  
PUBLIC WORKS DEPARTMENT

AREA LEFT BLANK FOR CITY  
APPROVAL STAMP

CV01 CIVIL COVER SHEET  
CV02 SITE PLAN  
CV03 SURVEY  
CV04 EROSION CONTROL PLAN  
CV05 ACCESS ROAD PLAN & PROFILE  
CV06 SUBSTATION ROAD PLAN & PROFILE  
CV07 SUBSTATION NORTH-SOUTH PLAN & PROFILE  
CV08 SUBSTATION EAST-WEST PLAN & PROFILE  
CV09 STORM DRAIN PLAN & PROFILE  
CV10 WATER & DRAINAGE DETAILS  
CV11 ROAD SECTION DETAILS  
CV12 EROSION CONTROL DETAILS  
CV13 WETLAND & FLOODPLAIN MITIGATION AREAS

RELATED DOCUMENTS:  
STORMWATER MANAGEMENT PLAN  
CONSTRUCTION STORMWATER  
POLLUTION PREVENTION PLAN  
NPDES NOI COVERAGE WAR308863  
LANDSCAPE PLANS  
ELECTRICAL PLANS  
STRUCTURAL PLANS

ROBERTSON PICK ENGINEERING (RPE) HAS BEEN RETAINED TO PROVIDE CONSTRUCTION CERTIFICATION OF SITE/CIVIL IMPROVEMENTS ASSOCIATED WITH THE APPROVED PLANS PROVIDED AND SEALED BY BYRON WOLTERSDORF, P.E. ON SEPTEMBER 22, 2020, AND APPROVED BY THE CITY OF FERNDALE ON OCTOBER 8, 2020. RPE HAS NOT BEEN INVOLVED IN DESIGN, INSPECTION, OR CONSTRUCTION OF ANY OF THE PROJECTS. AS SUCH, RPE HAS REVIEWED THE APPROVED PLANS, AVAILABLE INSPECTION REPORTS, CONSTRUCTION PHOTOGRAPHS, TESTING REPORTS, AS-CONSTRUCTED RED-LINE PLANS FROM THE CONTRACTOR, AS-CONSTRUCTED SURVEY LOCATION AND ELEVATION DATA, AND AERIAL PHOTOGRAPHS. TO THE BEST OF RPE'S KNOWLEDGE, THE IMPROVEMENTS HAVE BEEN CONSTRUCTED IN GENERAL CONFORMANCE WITH THE ABOVE-MENTIONED PLANS.

  
CRAIG BOZARTH, P.E.

I HEREBY CERTIFY THAT PACIFIC SURVEYING & ENGINEERING, INC. HAS PROVIDED AS-BUILT INFORMATION TO ROBERTSON FICK ENGINEERING FOR THE PUMP STATION #1 SUBSTATION PROJECT. THIS INFORMATION WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND REPRESENTS ACTUAL AS-BUILT CONSTRUCTION CONDITIONS LOCATED ON OR BEFORE NOVEMBER, 2023.

ADAM MORROW, P.L.S.

AS-BUILT PLANS ARE REQUIRED FOR PROJECT COMPLETION, THEREFORE A COPY OF APPROVED & STAMPED PLANS MUST BE ON THE JOB SITE WHENEVER CONSTRUCTION IS IN PROGRESS.

CONTRACTOR MUST UTILIZED TWO CITY OF FERNDALE SURVEY MONUMENTS NO. 8 AND NO. 14. TO IMPROVE AS-BUILT ACCURACY. MORE INFORMATION REGARDING SURVEY LOCATIONS IS FOUND ON SHEET CV03.



1. LIMITS OF CONSTRUCTION AND TEMPORARY EROSION CONTROL BMPs SHALL BE INSTALLED PRIOR TO ALL CONSTRUCTION ACCORDING TO THE PROJECT PLANS, STORMWATER MANAGEMENT PLAN, NPDES PERMIT, AND CONSTRUCTION SWPPP. ONE CERTIFIED EROSION AND SEDIMENT CONTROL LEAD (CESCL) MUST BE DESIGNATED PRIOR TO CONSTRUCTION START.
2. CONTRACTOR SHALL DEVELOP AND IMPLEMENT A SITE SAFETY AND HEALTH PLAN PREPARED WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY STANDARDS AND GUIDELINES, INCLUDING BUT NOT LIMITED TO, OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA), AND THE WASHINGTON INDUSTRIAL SAFETY AND HEALTH ACT (WSHA). THE PLAN SHALL COVER ONSITE AND OFFSITE PERSONNEL FROM POTENTIAL HAZARDS PARTICULAR TO THE SITE AND THE CONTRACTOR SHALL ASSIGN AN INDIVIDUAL TO SERVE AS A SITE SAFETY OFFICER AT THE JOB SITE AT ALL TIMES DURING WORK.
3. ALL WORK SHALL CONFORM TO THE CURRENT CITY OF FERNDALE STANDARDS, PROJECT PLANS & SPECIFICATIONS, AND PERMIT CONDITIONS. ALL NECESSARY PERMITS WILL BE OBTAINED PRIOR TO CONSTRUCTION AND WORK WILL COMPLY WITH ALL APPLICABLE FEDERAL AND STATE REGULATIONS.
4. CONTRACTOR SHALL HOLD A PRE-CONSTRUCTION MEETING WITH CITY OFFICIALS, OWNERS AND DESIGN TEAM PRIOR TO COMMENCEMENT.
5. PLANT LANDSCAPE BUFFER ACCORDING TO LANDSCAPE PLANS, TREES ARE NOT TO BE PLANTED ADJACENT TO THE SUBSTATION.
6. HAMMERHEAD TURNAROUND WITH 20' WIDTHS TO MEET FMC DETAIL R-5A SHALL FIT INSIDE THE INTERSECTION AS SHOWN.
7. CONTRACTOR IS TO CONTROL DUST WITHIN THE WORK AREA AND FROM MIGRATING OFF SITE THROUGH THE IMPLEMENTATION OF BMP C140: DUST CONTROL.
8. ALL TESTING SHALL BE PERFORMED BY A CERTIFIED INDEPENDENT TESTING LAB HIRED BY THE CONTRACTOR WITH THE RESULTS BEING SUPPLIED TO BROWN & KYSTAR, INC. AND PUD NO. 1 OF WHATCOM COUNTY. THE CONTRACTOR SHALL PAY THE COST OF ALL TESTING.

NOTE: QUANTITIES SHOWN ARE FOR ESTIMATING PURPOSES ONLY, SEE GRADING NOTE 6.

**VOLUME CALCULATIONS FOR EARTHWORK**

BIORETENTION POND	651 CY
FLOODPLAIN CUT AREA	3,062 CY
CHANNEL CUTS	17 CY
NET VOLUME	0 CY

**Key Features and Notes:**

- REMOVE EXISTING FENCE
- EXISTING CITY OF FERNDAL WATER LINE
- CUT AREA FOR FLOOD MITIGATION, SEE GRADING NOTE 5
- BMP T7.40 CAVFS
- CITY OF FERNDAL SHORELINE JURISDICTION
- STOCKPILE, LAYDOWN, & WASHOUT AREA
- (AB) EXTENDED FENCING
- NORTH ACCESS ROAD
- GRASS-LINED CHANNEL
- (AB) 20' GATE
- ASPHALTIC CONCRETE PAVED ENTRANCE FROM FERNDAL ROAD, APPROXIMATELY 25' X 20'
- WATER TREATMENT PLANT NO. 1
- EXIS SUBS
- FEMA 100-YR FLOOD CONTOURS
- PUMP STATION NO. 1 SUBSTATION
- SUBSTATION ROAD
- BIORETENTION UNDERDRAIN WITH BRANCHES SPACED 15' O.C.
- EAST-WEST SURFACE PROFILE 4, SEE 5/CV08
- EAST-WEST SURFACE PROFILE 3, SEE 4/CV08
- SUBSTATION LANDSCAPING, SEE LANDSCAPE PLANS
- PERIMETER FENCING, SEE ELECTRICAL PLANS
- EAST-WEST SURFACE PROFILE 2, SEE 3/CV08
- EAST-WEST SURFACE PROFILE 1, SEE 2/CV08
- BMP T7.40 CAVFS
- EMERGENCY OVERFLOW CULVERT C WITH POND RISER ASSEMBLY, SEE 3/CV09
- OUTLET PROTECTION (TYP.), SEE 1/CV12
- INSTALL CHECK DAMS ACCORDING TO 4/CV12, SPACE AS NOTED ON CV04
- CULVERT (2/CV09) & CATCH BASIN A (1/CV10)
- (AB) HYDRANT GATE VALVE AT MAIN PER 2/CV10
- INSTALL FIRE HYDRANT APPX. 20' FROM ROAD CL, SEE 2/CV10
- ROAD INTERSECTION FITS COF STANDARD DETAIL R-5A 60' HAMMERHEAD TURN-AROUND

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PREVENTING WATER POLLUTION DUE FROM CONSTRUCTION MATERIALS, METHODS, DUSTS, OR EQUIPMENT.
2. ALL AREAS TO BE GRADED SHALL BE STRIPPED OF ORGANIC TOP SOIL AND STOCKPILED IN DESIGNATED AREAS AS SHOWN. UPON FINAL GRADING, PLACE STOCKPILED TOP SOIL BACK ONTO COMPACTED AND EXPOSED SUBGRADE UNLESS NOTED OTHERWISE.
3. ALL UNSUITABLE SOIL SUCH AS SOFT ORGANIC SOILS AND SATURATED SOILS MUST BE REMOVED TO REDUCE EMBANKMENT SETTLEMENT.
4. CUT AND FILL SLOPES SHALL NOT BE GREATER THAN 1 UNIT VERTICAL IN 3 UNITS HORIZONTAL (33%).
5. CUT AREA FOR FLOOD MITIGATION CONSISTS OF STRIPPING TOPSOIL AND STOCKPILING IN DESIGNATED AREA. TOP SURFACE OF SOIL IN THE STRIPPED AREA TO REACH DESIGN CONTOURS AS SHOWN. RETURN STRIPPED TOPSOIL TO SCARIFIED SUBGRADE IMMEDIATELY AFTER CUT VOLUME IS REACHED. SEE SHEET CV13 FOR MORE INFORMATION.
6. ANY STATED CUT AND FILL QUANTITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS ADVISED TO DETERMINE THEIR OWN TAKEOFF AND QUANTITIES FOR BIDDING AND CONSTRUCTION. ACTUAL EARTHWORK QUANTITIES MAY VARY DEPENDING ON CONTRACTORS METHODS OF OPERATION, COMPACTION, SHRINKAGE, STRIPPING DEPTHS, AND ACCURACY OF EARTHWORK TAKEOFF. WHEN SIGNING THE PROJECT CONSTRUCTION CONTRACT, THE CONTRACTOR AGREES THAT THEIR COST FOR CONSTRUCTION OF THE GRADING IMPROVEMENTS AND DISPOSAL OF EXCESS MATERIAL IS INCLUDED AND THERE WILL BE NO ADDITIONAL CHARGE FOR THIS ITEM. GRADING DESIGN IS BASED ON THE SURVEY INFORMATION AND FINISH DESIGNED ROUGH GRADING ELEVATIONS ALL EXISTING INCLUSIONS OF NON-STRUCTURAL OR ORGANIC SOILS AND STRIPPINGS SHALL BE OVER-EXCAVATED AS NECESSARY TO COMPETENT MATERIAL.
7. IF SEEPS OR SPRINGS ARE ENCOUNTERED DURING SITE GRADING, NOTIFY THE ENGINEER. THE GEOTECHNICAL ENGINEER SHALL MAKE RECOMMENDATIONS IN THE FIELD FOR APPROPRIATE SUBSURFACE DRAINAGE.
8. SITE PREPARATION, SOIL STRIPPING, AND GRADING SHALL BE OBSERVED AND DOCUMENTED BY AN EXPERIENCED GEOTECHNICAL ENGINEER OR DESIGNATED REPRESENTATIVE TO VERIFY THAT ALL UNSUITABLE MATERIALS ARE REMOVED AND SUITABLE COMPACTION AND SITE DRAINAGE IS ACHIEVED.
9. IF FILL PLACEMENT IS REQUIRED TO MODIFY SITE GRADES, THE SURFACE AREA SHALL BE APPROPRIATELY PREPARED AS DESCRIBED IN THE PLANS & REPORTS. SURFACE SOILS SHOULD THEN BE SCARIFIED AND COMPACTED PRIOR TO ADDITIONAL FILL PLACEMENT. ENGINEERED STRUCTURAL FILL SHALL BE PLACED IN LOOSE LIFTS NOT EXCEEDING 12-INCHES IN DEPTH AND COMPACTED USING STANDARD CONVENTIONAL COMPACTION EQUIPMENT. THE SOIL MOISTURE CONTENT SHALL BE WITHIN TWO PERCENTAGE POINTS OF OPTIMUM CONDITIONS, A FIELD DENSITY AT LEAST EQUAL TO 95 PERCENT OF MAXIMUM

10. COMPACTION OF ENGINEERED STRUCTURAL FILL SHALL BE VERIFIED BY NUCLEAR GAUGE FIELD COMPACTION TESTING PERFORMED IN ACCORDANCE WITH ASTM D2922-91 AND ASTM D3017-88 (93). FIELD COMPACTION TESTING SHALL BE PERFORMED FOR EACH VERTICAL FOOT OF ENGINEERED FILL PLACED. ENGINEERED FILL PLACEMENT SHALL BE OBSERVED BY AN EXPERIENCED GEOTECHNICAL ENGINEER OR DESIGNATED REPRESENTATIVE.
11. IF ADEQUATE COMPACTIONS IS NOT ACHIEVABLE WITH CLEAN NATIVE SOILS, IMPORT STRUCTURAL FILL CONSISTING OF WELL-GRADED GRANULAR MATERIAL WITH A MAXIMUM PARTICLE SIZE OF 3-INCHES AND NO MORE THAN 10 PERCENT PASSING THE NO. 200.
12. REPRESENTATIVE SAMPLES OF PROPOSED ENGINEERED STRUCTURAL FILL MATERIAL SHALL BE SUBMITTED FOR LABORATORY ANALYSIS AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT. EXISTING ON SITE MATERIAL MAY BE SUBMITTED FOR TESTING TO BE USED FOR STRUCTURAL FILL REQUIREMENTS.
13. DESIGNATED STOCKPILES FOR FUTURE USE SHALL BE PLACED WHERE TOP SOIL HAS BEEN REMOVED. SIDE SLOPES OF STOCK PILE SHALL NOT BE GREATER THAN 1 UNIT VERTICAL IN 2 UNITS HORIZONTAL (50%). COVER PILE WITH PLASTIC AND SANDBAGS (BMM C123), SEE 2/CV12. ANY STOCKPILE SOILS EXPOSED TO WET WEATHER SHALL BE DRIED, REPLACED, OR AMENDED BY THE CONTRACTOR PRIOR TO PLACEMENT.
14. ALL GRADING SHALL BE COMPLETED TO ALLOW SUFFICIENT TIME OF RE-VEGETATION FOR EROSION CONTROL BEFORE THE ONSET OF WET WEATHER, OCTOBER 31. EARTHWORK PERFORMED OUTSIDE THESE DATES SHALL IMPLEMENT ADDITIONAL EROSION CONTROL MEASURES AS NEEDED.
15. EARTHWORK SHOULD BE PERFORMED IN SMALL AREAS TO MINIMIZE EXPOSURE TO WET WEATHER. EXCAVATION AND REMOVAL OF UNSUITABLE SOILS SHOULD BE FOLLOWED PROMPTLY BY THE PLACEMENT AND COMPACTION OF CLEAN ENGINEERED FILL. THE SIZE AND TYPE CONSTRUCTION EQUIPMENT MAY BE LIMITED TO PREVENT SOIL DISTURBANCE. UNDER SOME CIRCUMSTANCE, IT MAY BE NECESSARY TO EXCAVATE SOILS WITH A TRACKHOE TO MINIMIZE SUBGRADE DISTURBANCE CAUSED BY EQUIPMENT TRAFFIC.
16. THE GROUND SURFACE WITHIN THE CONSTRUCTION AREA SHOULD BE GRADED TO PROMOTE RUN-OFF OF SURFACE WATER AND TO PREVENT PONDING OF WATER. GROUND SURFACE SHOULD BE SEALED BY A SMOOTH DRUM VIBRATORY ROLLER, OR EQUIVALENT, AND UNDER NO CIRCUMSTANCES SHOULD BE LEFT UN-COMPACTED AND EXPOSED TO MOISTURE. SOIL WHICH BECOMES TOO WET FOR COMPACTION SHOULD BE REMOVED AND REPLACED WITH CLEAN GRANULAR MATERIALS.
17. SITE GRADING SHALL BE COMPLETED IN ACCORDANCE WITH APPENDIX J OF THE 2012 INTERNATIONAL BUILDING CODE.

1. MATERIAL USED AS ENGINEERED FILL SHALL SATISFY SECTION 9-03.14(3) OF WSDOT STANDARD SPECIFICATIONS FOR ROAD, BRIDGE, AND MUNICIPAL CONSTRUCTION. ENGINEERED FILL MATERIAL TO CONSIST OF GRANULAR OR NONGRANULAR SOIL AND/OR AGGREGATE WHICH IS FREE OF DELETERIOUS MATERIAL. THE MATERIAL SHALL NOT CONTAIN MORE THAN 3 PERCENT ORGANIC MATERIAL BY WEIGHT. THE PLASTICITY INDEX SHALL BE DETERMINED USING TEST METHOD AASHTO T 89 AND AASHTO T 90. SOIL PLASTICITY TO SATISFY REQUIREMENTS LISTED IN ABOVE LISTED SECTION. ENGINEERED FILL SHALL NOT CONTAIN MATERIAL GREATER THAN 12 INCHES IN DIAMETER.
2. MATERIAL USED FOR ALL ROAD SURFACES SHALL MEET THE GRADATION AND REQUIREMENTS LISTED IN TABLE 1. MATERIAL USED FOR ROAD SUBGRADES SHALL CONSIST OF 1 1/4-INCH MINUS ROCK SIMILAR TO WSDOT 9-03.9(3), AT LEAST 12" THICK. GEOGRID MATERIAL UNDERNEATH ROAD SUBGRADE SHALL BE TENSAR 1100BX OR EQUIVALENT.
3. ROAD SURFACE MATERIAL WITHIN THE SUBSTATION SHALL HAVE A MINIMAL ELECTRICAL RESISTIVITY OF 3,000 OHM METERS WHEN TESTED IN ACCORDANCE WITH BPA'S LABORATORY ROCK RESISTIVITY TEST PROCEDURE, ELM-004, AND MEET THE REQUIREMENTS LISTED IN TABLE 1. THIS RESISTIVE MATERIAL SHALL HAVE A MINIMUM THICKNESS OF 4" WHEREVER LOCATED IN THE SUBSTATION SITE.

SIEVE	PERCENT PASSING
3/4"	100
1/2"	80-100
NO. 4	46-66
NO. 8	37-67
NO. 40	8-24
NO. 200	10 MAX.
% FRACTURE (ONE FACE)	75 MIN.
SAND EQUIVALENT	40 MIN.

— C — C — CUT LIMITS  
 — F — F — FILL LIMITS  
 — — — — — EXISTING CONTOURS  
 — — — — — FINAL CONTOURS  
 — SD — STORM DRAIN  
 — X — SILT FENCE

TOTAL FILL VOLUME FROM DEVELOPMENT	3,730 CY
STRUCTURAL FILL	3,260 CY
SWITCH ROCK FILL (30% VOIDS)	470 CY
TOTAL CUT VOLUME FOR MITIGATION	3,730 CY
BIORETENTION POND	651 CY
FLOODPLAIN CUT AREA	3,062 CY
CHANNEL CUTS	17 CY
NET VOLUME	0 CY

(AB) PER VOLUMETRIC  
ANALYSIS PERFORMED  
11/29/23, NET VOLUME  
OF EARTHWORK IS -38  
C.Y. (CUT)



## GENERAL NOTES

1. UTILITIES OTHER THAN THOSE SHOWN MAY EXIST ON THIS SITE. ONLY THOSE UTILITIES WITH EVIDENCE OF THEIR INSTALLATION VISIBLE AT GROUND SURFACE ARE SHOWN. UNDERGROUND UTILITY LOCATIONS SHOWN ARE APPROXIMATE ONLY. UNDERGROUND CONNECTIONS ARE SHOWN AS STRAIGHT LINES BETWEEN SURFACE UTILITY LOCATIONS BUT MAY CONTAIN BENDS OR CURVES NOT SHOWN. SOME UNDERGROUND LOCATIONS SHOWN MAY HAVE BEEN TAKEN FROM PUBLIC RECORDS. BROWN & KYSAR INC. ASSUMES NO LIABILITY FOR THE ACCURACY OF UTILITIES SHOWN.

2. SANITARY SEWER EASEMENT #1, AF #970523192, DOES NOT MATCH EXISTING SEWER ALIGNMENT AND THE EASEMENT HAS BEEN REWRITTEN. SEWER PIPE HAS BEEN BURIED TO DEPTHS GREATER THAN 20 FEET. UTILITY EASEMENTS #3 & #6 HAVE ALSO BEEN RELOCATED TO FIT EXISTING CONDITIONS.

3. PROJECT AREA IS A VACANT GRASS FIELD THAT HAS BEEN PREVIOUSLY FILLED TO DEPTHS RANGING FROM 2.5 FEET TO 5 FEET. MAXIMUM SLOPE INCLINATIONS AT THE SITE ARE UP TO APPROXIMATELY 5 PERCENT.

4. SEEPAGE WAS ENCOUNTERED IN 4 OF 6 TEST PITS AT DEPTHS RANGING FROM 8 TO 11 FEET. EXPECT HIGHER SEASONAL GROUNDWATER ELEVATIONS. IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION, NOTIFY ENGINEER WITHIN 24 HOURS. SEASONAL HIGH GROUNDWATER ELEVATIONS WERE DETERMINED TO BE 15' ABOVE MSL.

5. EXISTING IRRIGATION EQUIPMENT IN PROJECT AREA SHALL BE SALVAGED AND RETURNED TO THE CITY OF FERRDALE PUBLIC WORKS DEPARTMENT. EQUIPMENT CONSISTS OF 1.5 INCH TO 2 INCH PVC IRRIGATION LINES AT DEPTHS OF 6 INCHES TO 1 FOOT.

6. TOPSOIL SHALL BE STRIPPED OF AND STOCKPILED IN A DESIGNATED LOCATION PRIOR TO ANY EARTHWORK. UPON COMPLETION, TOPSOIL SHALL BE REPLANTED ON EXPOSED AND PROPERLY COMPACTED SUBGRADE UNLESS OTHERWISE NOTED.

7. CONSTRUCTION WILL AFFECT FEMA 100-YR FLOOD PLAIN AND EXISTING WETLAND BUFFERS. MITIGATION EFFORTS FOR CRITICAL AREAS IS DESCRIBED WITHIN CONSTRUCTION PLANS AND WILL BE IMPLEMENTED AS PART OF THE PROJECT.

## SURVEY DATA

BASELINE SURVEY WAS PROVIDED BY PACIFIC SURVEY & ENGINEERING (PSE) ON MARCH 29, 2019  
TOPOGRAPHIC SURVEY WAS PERFORMED AND PREPARED IN ACCORDANCE WITH WAC 332-130-145

HORIZONTAL DATUM: NAD 83/91 WASHINGTON STATE PLAN NORTH ZONE (GRID)  
VERTICAL DATUM: NGVD29  
PRIMARY BENCHMARK: PAINTED SQUARE AT LOADING BAY OF INTAKE FACILITY  
TBM NO. 159.11-45 - ELEVATION - 29.94'

WETLANDS AND ORDINARY HIGH WATER ALONG THE WEST BANK OF THE NOOKSACK RIVER DELINEATED IN THE FIELD IN JANUARY 2019 BY ELEMENT SOLUTIONS. FIELD DELINEATIONS SURVEYED BY PACIFIC SURVEYING AND ENGINEERING IN JANUARY 2019. WETLAND DELINEATION PER DEED RESTRICTION AF# 2150800068.

100-YR FLOOD ELEVATIONS REFERENCE FEMA FIRM MAP NO. 53073C1180E, DATED JANUARY 18, 2019

PROJECT LIES WITHIN S30 T39N R2E W.M.

ADDITIONAL SURVEY INFORMATION IS AVAILABLE UPON REQUEST.

CONTRACTOR MUST UTILIZE TWO CITY OF FERNDALE MONUMENTS, #8 AND #14, FOR AS-BUILT ACCURACY. MONUMENT DETAILS ARE LISTED BELOW AND COORDINATES ARE FOUND IN THE CONSTRUCTION BINDER.

FERDALE MONUMENT NO. 8: SURFACE MONUMENT IN NEWLY PLANTED GRASS AT THE SOUTH END AND ON THE EAST SIDE OF THE NEW SIDEWALK AT FERDALE CITY COUNCIL CHAMBERS BUILDING. THERE IS AN AREA BETWEEN THE NEW WALK AND THE EXISTING OLD ASPHALT THAT CAN BE FILLED IN WITH A CONCRETE MONUMENT.  
STATE: WA, ZONE: N, STATION: FERDALE-08, GIVEN FEET - NORTH: 678623.10124 EAST: 1217288.96818 PT.NO.: 8, CALC.  
LATITUDE: 48-50-49.467298, LONGITUDE: 122-35-26.269150. CONVERGENCE ANGLE: - 1-18-30.035974, SCALE FACTOR: 1.000023380879.

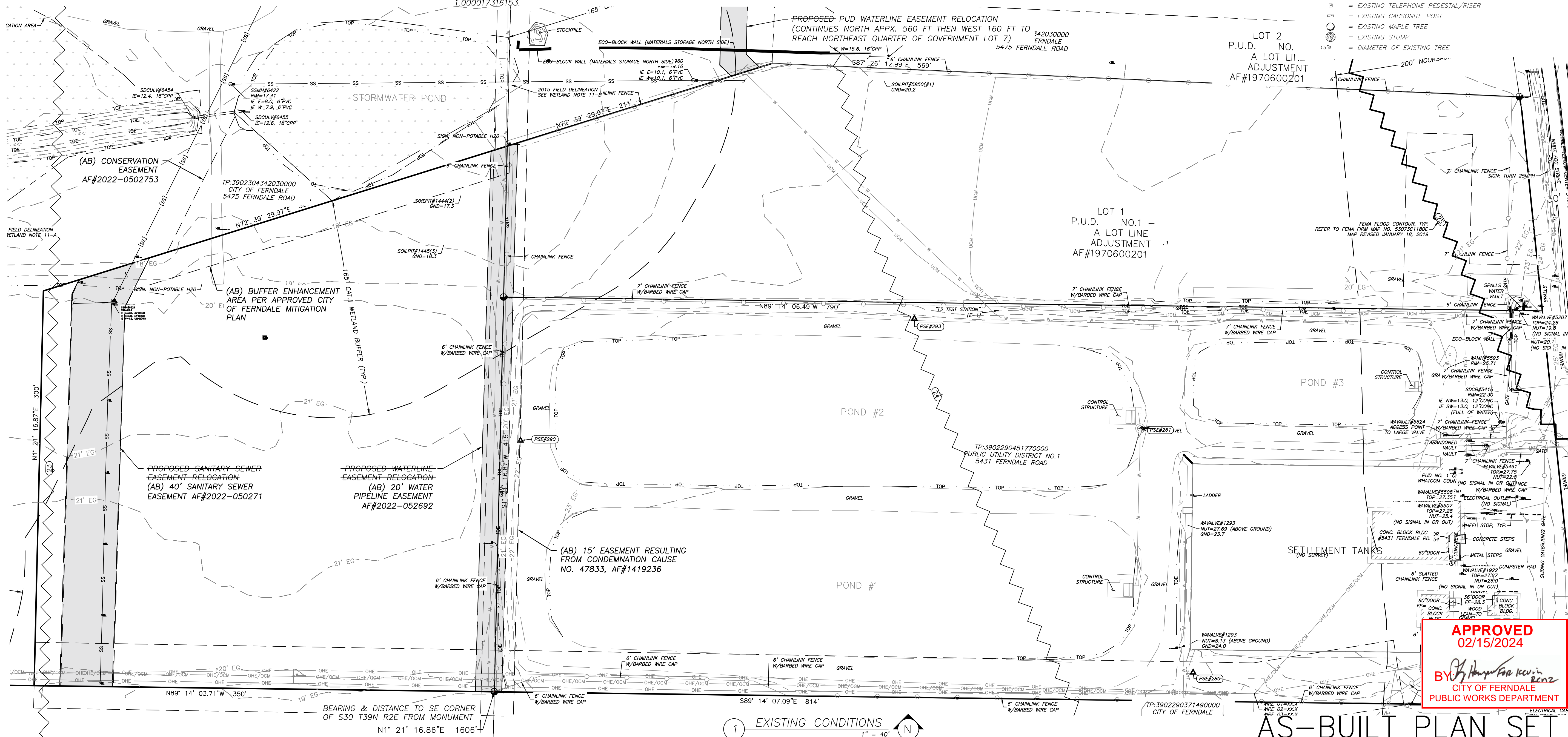
FERNDAL MONUMENT NO. 14: EXISTING SURFACE MONUMENT (HARN) IN FERNDAL ROAD JUST NORTH OF SLATER ROAD, IN SOUTH BOUND LANE.  
STATE: WA, ZONE: N, STATION: FERNDAL-14. GIVEN FEET - NORTH: 668540.03430, EAST: 1215874.61865, PT.NO.: 14. CALC. - LATITUDE: 48-49-09.685936, LONGITUDE: 122-35-43.956524, CONVERGENCE ANGLE: - 1-18-43.204583, SCALE FACTOR: 1.000017316153.


**EXISTING LINE LEGEND**

	=	EXISTING EDGE OF ASPHALT
	=	EXISTING EDGE OF CONCRETE
	=	EXISTING EDGE OF GRAVEL ROAD
	=	EXISTING CURB
	=	EXISTING STRIPE (1 YELLOW)
	=	EXISTING WHITE STRIPE
	=	EXISTING STORM CULVERT
	=	EXISTING STORM DRAIN LINE
	=	EXISTING SANITARY SEWER GRAVITY LINE
	=	EXISTING WATER LINE
	=	RECORD WATER LINE
	=	EXISTING OVERHEAD ELECTRIC LINES
	=	EXISTING OVERHEAD ELECTRIC & COMMUNICATION LINES
	=	EXISTING UNDERGROUND POWER
	=	EXISTING UNDERGROUND COMMUNICATIONS LINE
	=	EXISTING OVERHEAD COMMUNICATIONS LINE
	=	EXISTING OVERHEAD GUY WIRE LINE
	=	EXISTING UNDERGROUND COMPRESSED AIR LINE
	=	EXISTING TOP OF SLOPE LINE
	=	EXISTING TOE OF SLOPE LINE
	=	EXISTING GRADE INDEX CONTOUR
	=	EXISTING GRADE INTERVAL CONTOUR
	=	EXISTING FLOW LINE
	=	EXISTING ORDINARY HIGH WATER LINE
	=	EXISTING EDGE OF TREES & BRUSH
	=	EXISTING EDGE OF LANDSCAPED AREA
	=	EXISTING CHAINLINK FENCE
	=	EXISTING CITY OF FERNDALE LEASE AREA BOUNDARY (AF#1970700104)
	=	EXISTING FIELD DELINEATED WETLAND LINE
	=	EXISTING 2015 FIELD DELINEATED WETLAND PER AF#215080006
	=	EXISTING DIGITALLY DELINEATED WETLAND LINE

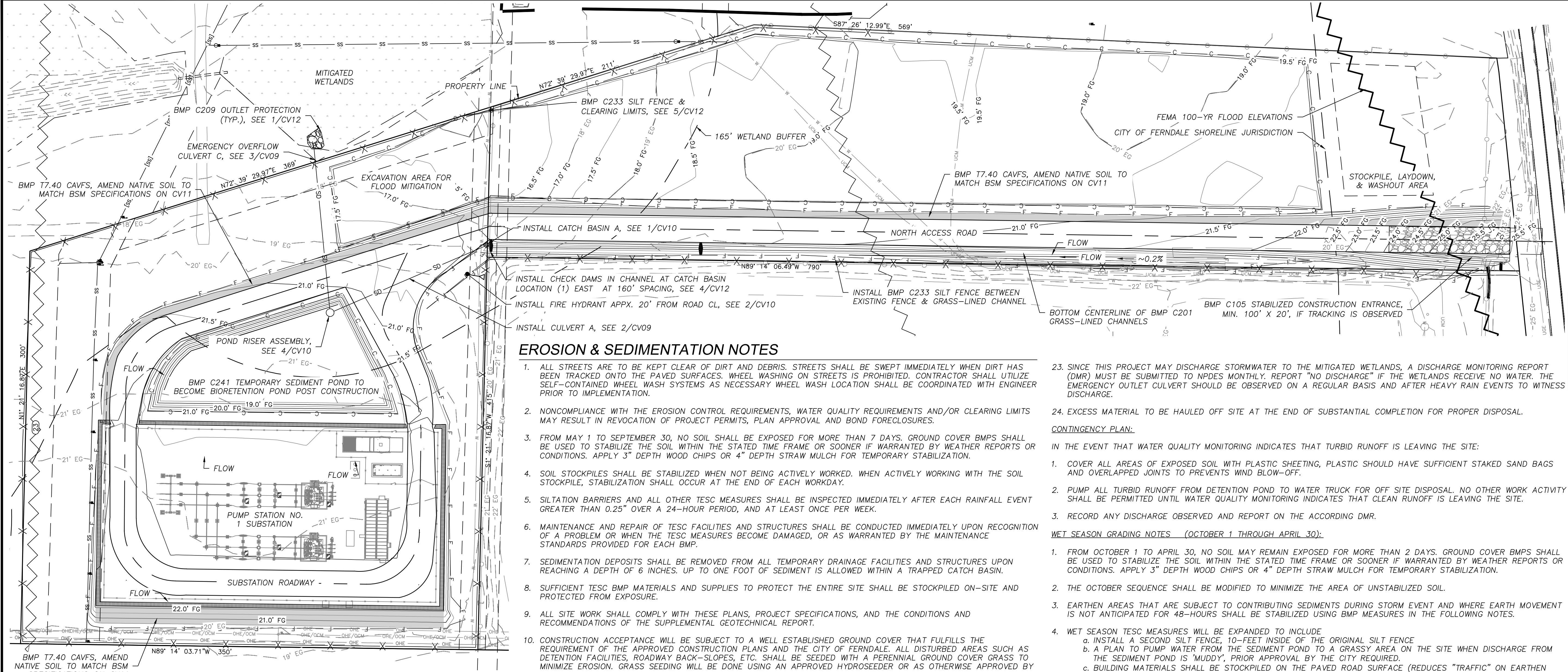
EXISTING FEATURE SYMBOL LEGEND

- = EXISTING REBAR AND CAP PLG.#...
- = EXISTING DISTURBED MONUMENT
- = SET REBAR & RED PLASTIC CAP
- = SET REBAR & ORANGE PLASTIC CAP
- = SET HUB AND TACK
- = SET P.K. NAIL
- = SET SPIKE
- = EXISTING NAIL/FLASHER
- = EXISTING/SET TEMPORARY BENCHMARK/BENCHMARK
- = EXISTING CATCH BASIN
- = EXISTING DOWNSPOUT
- = EXISTING SANITARY SEWER MANHOLE
- = EXISTING SANITARY SEWER CLEANOUT
- = EXISTING GATE VALVE
- = EXISTING WATER METER
- = EXISTING BLOWOFF
- = EXISTING HOSE BIB
- = EXISTING WATER MANHOLE
- = EXISTING IRRIGATION BOX
- = EXISTING BOLLARD
- = EXISTING STREET SIGN
- = EXISTING TEST PIT
- = EXISTING POWER POLE
- = EXISTING POWER POLE W/DROP
- = EXISTING STREET LIGHT POLE
- = EXISTING LUMINAIRE WITH ARM S(S)
- = EXISTING GROUND GUY
- = EXISTING FIBER-OPTIC/COMM. PEDESTAL/RISER
- = EXISTING ELECTRICAL MANHOLE
- = EXISTING TELEPHONE PEDESTAL/RISER
- = EXISTING CARSONITE POST
- = EXISTING MAPLE TREE
- = EXISTING STUMP
- = DIAMETER OF EXISTING TREE



03-NG-CV03	9	PUMP STATION #1 SUBSTATION SURVEY (TOPOGRAPHY & EXISTING CONDITIONS)	PUD #1 of Whatcom County	PUD NO.1 OF WHATCOM COUNTY 1705 TRIGG RD FERNDALE, WA 98248	BKI BROWN & KYSAF, INC.		<div> <div>AS-BUILTS</div> <div>9/13/24</div> </div>	TPP	CMB
							<div> <div>LDP APPLICATION</div> <div>9/18/20</div> </div>	TPP	BAW
							<div> <div>LDP APPLICATION</div> <div>9/10/20</div> </div>	TPP	BAW
							<div> <div>MANUVERING AREA ADD</div> <div>8/03/20</div> </div>	TPP	BAW
							<div> <div>LDP APPLICATION</div> <div>7/28/20</div> </div>	TPP	BAW
							<div> <div>LDP APPLICATION</div> <div>7/2/20</div> </div>	TPP	BAW
							<div> <div>LDP APPLICATION</div> <div>5/29/20</div> </div>	TPP	BAW
							<div> <div>LDP APPLICATION</div> <div>4/29/20</div> </div>	TPP	BAW
							<div> <div>LAND DISTURBANCE APPLICATION</div> <div>1/20/07</div> </div>	TPP	BAW
	REVISION	DESIGNER	REVISION DESCRIPTION						REVIEWER





1 EROSION CONTROL PLAN  
1" = 40'

GENERAL NOTES

- TEMPORARY EROSION/SILTATION CONTROL (TESC) MEASURES SHALL BE INSTALLED PRIOR TO ANY SITE WORK (SEE TESC PLANS). THESE FACILITIES MUST BE SATISFACTORILY MAINTAINED UNTIL CONSTRUCTION AND LANDSCAPING IS COMPLETED AND THE SITE HAS BEEN STABILIZED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO IMPLEMENT ADDITIONAL BMPs SHOULD SITE CONDITIONS WORSEN. MAINTAIN A 24 HOUR EMERGENCY PHONE NUMBER FOR RESPONSE TO REPAIR OR UPGRADE TESC FACILITIES.
- TEMPORARY SEDIMENT POND TO BE USED AS PERMANENT BIORETENTION FACILITY AFTER SUBSTATION CONSTRUCTION THROUGH IMPORTING THE APPROVED SPECIFIED SOIL MIX FOUND ON SHEET CV11.
- CONSTRUCT BMP T7.40 COMPOST AMENDED VEGETATED FILTER STRIP ALONG (CAVFS) ALONG THE NORTH EDGE OF THE ACCESS ROAD.
- INSTALL SILT FENCE ALONG PROPERTY BOUNDARIES AS SHOWN TO PREVENT SEDIMENT FROM LEAVING THE SITE, INSTALLATION AND MAINTENANCE IN ACCORDANCE WITH SWMMWW 2014 BMP C233.
- CONTRACTOR TO PROVIDE CONCRETE WASHOUT AREA IN ACCORDANCE WITH SWMMWW 2012 BMP C154.
- CUT AREA FOR FLOOD MITIGATION CONSISTS OF STRIPPING TOPSOIL AND STOCKPILING IN DESIGNATED AREA. REMOVE APPX. 12" OF TOP LAYER SOIL IN THE STRIPPED AREA TO REACH DESIGN CONTOURS AS SHOWN. RETURN STRIPPED TOPSOIL TO SCARIFIED SUBGRADE IMMEDIATELY AFTER CUT VOLUME IS REACHED. SEE SHEET CV13 FOR MORE INFORMATION.
- DRAINAGE PIPE PROFILES, ELEVATIONS, LENGTHS, AND MATERIAL REQUIREMENTS ARE FOUND ON SHEET CV09.

APPROXIMATE QUANTITIES

ANY STATED QUANTITIES ARE APPROXIMATE ONLY. THE CONTRACTOR IS ADVISED TO DETERMINE THEIR OWN TAKEOFF AND QUANTITIES FOR BIDDING. WHEN SIGNING THE PROJECT CONSTRUCTION CONTRACT, THE CONTRACTOR AGREES THAT THEIR COST FOR CONSTRUCTION OF EROSION AND STORMWATER CONTROL IS INCLUDED AND THERE WILL BE NO ADDITIONAL COSTS FOR NECESSARY MEASURES DUE TO WET WEATHER.

BMP C233 SILT FENCE: 2,418 LF  
BMP C201 GRASS-LINED CHANNELS: 563 LF  
BMP C241 TEMPORARY SEDIMENT POND EXCAVATION: 1,067 CY  
BMP C105 STABILIZED CONSTRUCTION ENTRANCE: 2,000 SF MIN.  
BMP C207 CHECK DAMS: 2 TOTAL

EROSION & SEDIMENTATION NOTES

- ALL STREETS ARE TO BE KEPT CLEAR OF DIRT AND DEBRIS. STREETS SHALL BE SWEEP IMMEDIATELY WHEN DIRT HAS BEEN TRACKED ONTO THE PAVED SURFACES. WHEEL WASHING ON STREETS IS PROHIBITED. CONTRACTOR SHALL UTILIZE SELF-CONTAINED WHEEL WASH SYSTEMS AS NECESSARY WHEEL WASH LOCATION SHALL BE COORDINATED WITH ENGINEER PRIOR TO IMPLEMENTATION.
- NONCOMPLIANCE WITH THE EROSION CONTROL REQUIREMENTS, WATER QUALITY REQUIREMENTS AND/OR CLEARING LIMITS MAY RESULT IN REVOCATION OF PROJECT PERMITS, PLAN APPROVAL AND BOND FORECLOSURES.
- FROM MAY 1 TO SEPTEMBER 30, NO SOIL SHALL BE EXPOSED FOR MORE THAN 7 DAYS. GROUND COVER BMPs SHALL BE USED TO STABILIZE THE SOIL WITHIN THE STATED TIME FRAME OR SOONER IF WARRANTED BY WEATHER REPORTS OR CONDITIONS. APPLY 3" DEPTH WOOD CHIPS OR 4" DEPTH STRAW MULCH FOR TEMPORARY STABILIZATION.
- SOIL STOCKPILES SHALL BE STABILIZED WHEN NOT BEING ACTIVELY WORKED. WHEN ACTIVELY WORKING WITH THE SOIL STOCKPILE, STABILIZATION SHALL OCCUR AT THE END OF EACH WORKDAY.
- SILTATION BARRIERS AND ALL OTHER TESC MEASURES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL EVENT GREATER THAN 0.25" OVER A 24-HOUR PERIOD, AND AT LEAST ONCE PER WEEK.
- MAINTENANCE AND REPAIR OF TESC FACILITIES AND STRUCTURES SHALL BE CONDUCTED IMMEDIATELY UPON RECOGNITION OF A PROBLEM OR WHEN THE TESC MEASURES BECOME DAMAGED, OR AS WARRANTED BY THE MAINTENANCE STANDARDS PROVIDED FOR EACH BMP.
- SEDIMENTATION DEPOSITS SHALL BE REMOVED FROM ALL TEMPORARY DRAINAGE FACILITIES AND STRUCTURES UPON REACHING A DEPTH OF 6 INCHES. UP TO ONE FOOT OF SEDIMENT IS ALLOWED WITHIN A TRAPPED CATCH BASIN.
- SUFFICIENT TESC BMP MATERIALS AND SUPPLIES TO PROTECT THE ENTIRE SITE SHALL BE STOCKPILED ON-SITE AND PROTECTED FROM EXPOSURE.
- ALL SITE WORK SHALL COMPLY WITH THESE PLANS, PROJECT SPECIFICATIONS, AND THE CONDITIONS AND RECOMMENDATIONS OF THE SUPPLEMENTAL GEOTECHNICAL REPORT.
- CONSTRUCTION ACCEPTANCE WILL BE SUBJECT TO A WELL ESTABLISHED GROUND COVER THAT FULFILLS THE REQUIREMENT OF THE APPROVED CONSTRUCTION PLANS AND THE CITY OF FERNDAL. ALL DISTURBED AREAS SUCH AS DETENTION FACILITIES, ROADWAY BACK-SLOPES, ETC. SHALL BE SEEDED WITH A PERENNIAL GROUND COVER GRASS TO MINIMIZE EROSION. GRASS SEEDING WILL BE DONE USING AN APPROVED HYDROSEEDER OR AS OTHERWISE APPROVED BY THE CITY OF FERNDAL.
- ALL AREAS TO BE SEEDED SHALL BE CULTIVATED TO THE SATISFACTION OF THE CITY INSPECTOR. THIS MAY BE ACCOMPLISHED BY DISKING, RAKING, HARROWING OR OTHER ACCEPTABLE MEANS. PERFORM ALL CULTURAL OPERATIONS ACROSS OR AT RIGHT ANGLES TO THE SLOPE. IF NECESSARY, SURFACE RUNOFF CONTROL MEASURES SUCH AS GRADIENT TERRACES, INTERCEPTOR DIKE/SWALES, LEVEL SPREADERS, AND SEDIMENT BASINS SHALL BE INSTALLED PRIOR TO SEEDING.
- ADDITIONAL POLLUTION PREVENTION REQUIREMENTS ARE INCLUDED IN THE PROJECT SURFACE WATER POLLUTION PREVENTION PLAN (SWPPP), INCLUDING MATERIAL HANDLING, SAMPLING, MAINTENANCE, AND REPORTING REQUIREMENTS. A COPY OF THE APPROVED SWPPP SHALL BE MAINTAINED ONSITE THROUGH THE ENTIRETY OF CONSTRUCTION.
- CLEARING LIMITS SHALL BE FENCED WITH SILT FENCING, OR OTHER MEANS APPROVED BY THE OWNER, PRIOR TO BEGINNING CLEARING OR EARTHWORK ACTIVITIES. CLEARING LIMITS SHALL BE REVIEWED WITH THE OWNER AND ADJUSTMENTS MADE TO THE PROTECTION LIMITS AND TREES TO BE PROTECTED PRIOR TO CLEARING THE SITE.
- EXISTING VEGETATION SHALL BE PROTECTED AND RETAINED TO THE MAXIMUM EXTENT FEASIBLE.
- DURING THE CONSTRUCTION PERIOD, NO DISTURBANCE BEYOND THE FLAGGED CLEARING LIMITS SHALL BE PERMITTED. THE FLAGGING SHALL BE MAINTAINED BY THE CONTRACTOR FOR THE DURATION OF CONSTRUCTION.
- THE TESC FACILITIES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE TESC FACILITIES SHALL BE UPGRADED AS NEEDED FOR THE UNEXPECTED STORM EVENTS AND TO ENSURE THAT SEDIMENT AND SEDIMENT-LADEN WATER DOES NOT LEAVE THE SITE.
- AT NO TIME SHALL MORE THAN ONE FOOT OF SEDIMENT BE ALLOWED TO ACCUMULATE WITHIN A TRAPPED CATCH BASIN. ALL CATCH BASINS AND CONVEYANCE LINES SHALL BE CLEANED PRIOR TO PROJECT ACCEPTANCE. THE CLEANING OPERATION SHALL NOT FLUSH SEDIMENT LADED WATER INTO THE DOWNSTREAM SYSTEM.
- THE CONTRACTOR SHALL REMOVE ALL TESC BMPs WITHIN 30 DAYS AFTER FINAL SITE STABILIZATION OR AFTER THEY ARE NO LONGER NECESSARY.
- CONSTRUCTION ACCESS ROADS SHALL BE CONSTRUCTED AND MAINTAINED AS NEEDED BASED ON CONTRACTOR'S PHASING.
- CONTRACTOR SHALL PROVIDE ROUTINE INSPECTION AND MAINTENANCE OF THE SITE. INSPECTIONS WILL ALSO BE CARRIED OUT BY THE CITY OF FERNDAL AND SITE OWNER.
- WEEKLY INSPECTIONS OF THE SITE WILL BE IMMEDIATELY FOLLOWED BY NECESSARY REPAIRS TO BMPs; PLUS INSPECTION AND REPAIRS AS NECESSARY ARE REQUIRED AFTER ANY STORM WITH INTENSITY OF GREATER THAN 6 MONTHS FOR ANY DURATION. INSPECTIONS AND MAINTENANCE SHALL OCCUR INDEFINITELY UNTIL THE SITE IS DEVELOPED OR UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
- AN INSPECTION CHECKLIST SHALL BE FILLED OUT FOR EACH INSPECTION AND SHALL BE SUBMITTED TO THE CITY OF FERNDAL.

23. SINCE THIS PROJECT MAY DISCHARGE STORMWATER TO THE MITIGATED WETLANDS, A DISCHARGE MONITORING REPORT (DMR) MUST BE SUBMITTED TO NPDES MONTHLY. REPORT "NO DISCHARGE" IF THE WETLANDS RECEIVE NO WATER. THE EMERGENCY OUTLET CULVERT SHOULD BE OBSERVED ON A REGULAR BASIS AND AFTER HEAVY RAIN EVENTS TO WITNESS DISCHARGE.

24. EXCESS MATERIAL TO BE HAULED OFF SITE AT THE END OF SUBSTANTIAL COMPLETION FOR PROPER DISPOSAL.

CONTINGENCY PLAN:

IN THE EVENT THAT WATER QUALITY MONITORING INDICATES THAT TURBID RUNOFF IS LEAVING THE SITE:

- COVER ALL AREAS OF EXPOSED SOIL WITH PLASTIC SHEETING, PLASTIC SHOULD HAVE SUFFICIENT STAKED SAND BAGS AND OVERLAPPED JOINTS TO PREVENTS WIND BLOW-OFF.
- PUMP ALL TURBID RUNOFF FROM DETENTION POND TO WATER TRUCK FOR OFF SITE DISPOSAL. NO OTHER WORK ACTIVITY SHALL BE PERMITTED UNTIL WATER QUALITY MONITORING INDICATES THAT CLEAN RUNOFF IS LEAVING THE SITE.
- RECORD ANY DISCHARGE OBSERVED AND REPORT ON THE ACCORDING DMR.

WET SEASON GRADING NOTES (OCTOBER 1 THROUGH APRIL 30):

- FROM OCTOBER 1 TO APRIL 30, NO SOIL MAY REMAIN EXPOSED FOR MORE THAN 2 DAYS. GROUND COVER BMPs SHALL BE USED TO STABILIZE THE SOIL WITHIN THE STATED TIME FRAME OR SOONER IF WARRANTED BY WEATHER REPORTS OR CONDITIONS. APPLY 3" DEPTH WOOD CHIPS OR 4" DEPTH STRAW MULCH FOR TEMPORARY STABILIZATION.
- THE OCTOBER SEQUENCE SHALL BE MODIFIED TO MINIMIZE THE AREA OF UNSTABILIZED SOIL.
- EARTHEN AREAS THAT ARE SUBJECT TO CONTRIBUTING SEDIMENTS DURING STORM EVENT AND WHERE EARTH MOVEMENT IS NOT ANTICIPATED FOR 48-HOURS SHALL BE STABILIZED USING BMP MEASURES IN THE FOLLOWING NOTES.
- WET SEASON TESC MEASURES WILL BE EXPANDED TO INCLUDE
  - INSTALL A SECOND SILT FENCE, 10-Feet INSIDE OF THE ORIGINAL SILT FENCE
  - A PLAN TO PUMP WATER FROM THE SEDIMENT POND TO A GRASSY AREA ON THE SITE WHEN DISCHARGE FROM THE SEDIMENT POND IS 'MUDDY', PRIOR APPROVAL BY THE CITY REQUIRED.
  - BUILDING MATERIALS SHALL BE STOCKPILED ON THE PAVED ROAD SURFACE (REDUCES "TRAFFIC" ON EARTHEN STRUCTURES)
- SOILS SHALL NOT BE DISTURBED EXCEPT FOR ACTUAL CONSTRUCTION ACTIVITIES. PARKING IS ALLOWED ONLY ON PAVED AND/OR ON GRAVEL SURFACES.
- SLOPES 8% AND GREATER WITHOUT ESTABLISHED GROUNDCOVER WILL BE STABILIZED WITH PLASTIC SHEETING, 6-MIL (MINIMUM). THE SHEETING SHALL BE ANCHORED WITH SAND BAGS LOCATED 5-Feet APART ON THE PERIMETER AND 10-Feet ON CENTER OF THE REMAINDER OF THE SHEETING. MINIMUM OF 2-Feet OVERLAP IS REQUIRED FOR OVERLAPPING SHEETS.
- WHEN RAINFALL IS HEAVY (DEFINED AS RAINFALL HARD ENOUGH TO PRODUCE SEDIMENT RUN-OFF FROM EXPOSED DIRT), ALL EXPOSED EARTHWORK SHALL BE COVERED. NO OTHER CONSTRUCTION ACTIVITY SHALL OCCUR ON PREVIOUS SURFACES DURING THESE PERIODS OF HEAVY RAIN.
- ALL DRAINAGE CHANNELS SHALL BE FULLY VEGETATED. CHANNELS SHALL BE SODDED IF THE VEGETATION GROWING IN THE CHANNEL IS INSUFFICIENT TO PROVIDE WATER QUALITY AND TO PREVENT EROSION OF THE CHANNEL.

DAILY MAINTENANCE:

ROADS ALONG CONTRACTOR'S HAUL ROUTE SHALL BE SWEEP OFF AND/OR CLEARED OF DEBRIS EVERYDAY.

SITE EROSION CONTROL AND WATER QUALITY ENFORCEMENT:

CITY OF FERNDAL AND THE STATE DEPARTMENT OF ECOLOGY WILL COORDINATE ENFORCEMENT EFFORTS FOR WATER QUALITY AND EROSION CONTROL, AS DEFINED IN THE CITY OF FERNDAL DESIGN AND CONSTRUCTION STANDARDS AND THE CONSTRUCTION STORMWATER GENERAL PERMIT.

SPECIAL FILL/STOCKPILE MATERIAL PLACEMENT, COMPACTION AND GRADING NOTES:

- ANY AREAS RECEIVING STOCKPILED/FILL MATERIAL TO BE PLACED AND COMPACTED, S TILLED INTO THE SUBGRADE PRIOR TO PLACEMENT OF THE SOIL.
- STRUCTURAL FILL IN TRENCHES AND ACCESS ROADS SHALL BE COMPACTED TO MINIMUM REQUIREMENTS.
- GEOTECHNICAL TESTING SHALL BE COMPLETED PRIOR TO FILL PLACEMENT TO DETERMINE REQUIREMENTS REQUIRED TO ACHIEVE SPECIFIED COMPACTION.

APPROVED  
02/15/2024  
BY: [Signature]  
CITY OF FERNDAL  
PUBLIC WORKS DEPARTMENT

9	1/31/24	AS-BUILTS	TPP	TPP	CMR
8	9/18/20	LDP APPLICATION	TPP	TPP	BAW
7	9/10/20	LDP APPLICATION	TPP	TPP	BAW
6	8/03/20	MANUVERING AREA ADD	TPP	TPP	BAW
5	7/28/20	LDP APPLICATION	TPP	TPP	BAW
4	7/2/20	LDP APPLICATION	TPP	TPP	BAW
3	5/29/20	LDP APPLICATION	TPP	TPP	BAW
2	4/24/20	LDP APPLICATION	TPP	TPP	BAW
1	2/07/20	LAND DISTURBANCE APPLICATION	TPP	TPP	BAW
REV	DATE	REVISION DESCRIPTION	DESIGNER	REVIEWER	

**BKI**  
BROWN & KYSTAR, INC.  
BKI PROJECT NO: WT18-004  
CONTRACT NO: [Blank]  
THIS LINE IS 1" LONG  
AT THE CORRECT SCALE

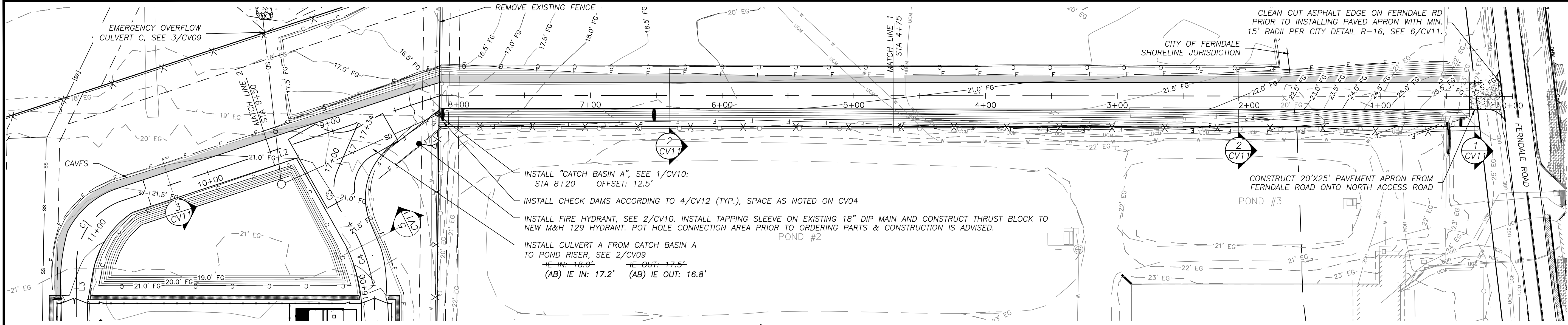
**PUD #1**  
of Whatcom County

**9**  
REVISION

**PUMP STATION #1 SUBSTATION  
EROSION CONTROL PLAN**

**03-NG-CV04**

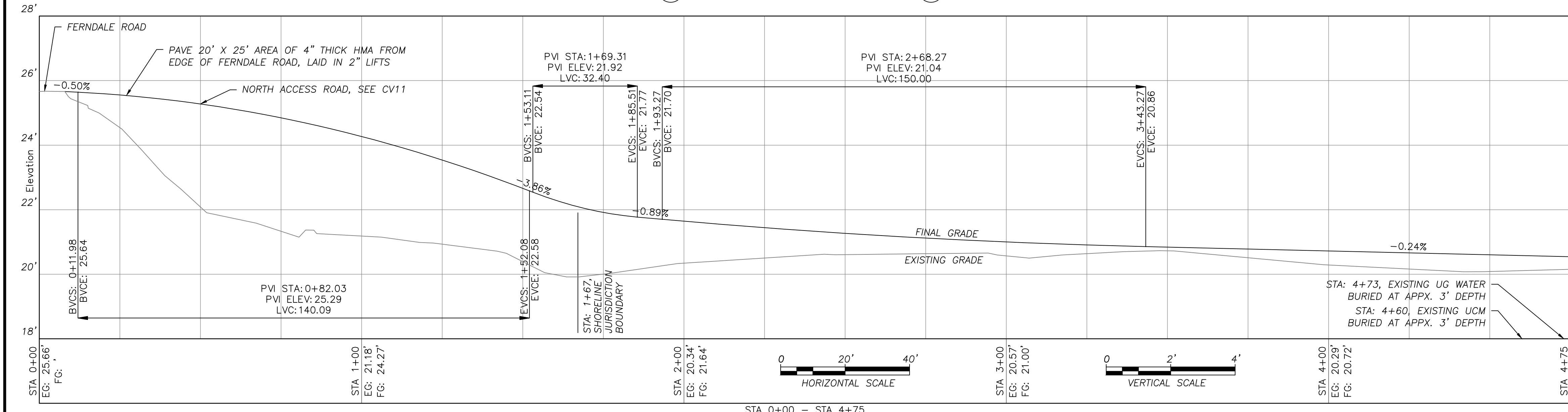




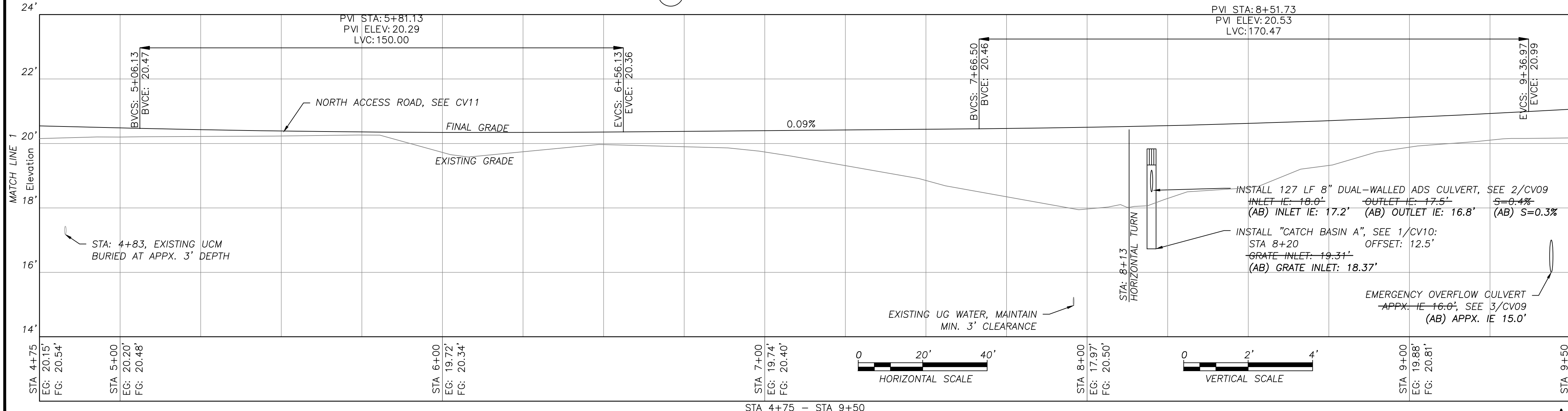
1 NORTH ACCESS ROAD PLAN  
1" = 40'

GENERAL NOTES

- ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE IN LOCATION AND THE PROTECTION OF IS THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL STATIONS AND ELEVATIONS IN PROFILE VIEWS REFER TO TOP OF FINISHED ROAD SURFACE.
- COMPACT ROAD SUBGRADE MATERIAL TO 90% OF THE MODIFIED PROCTOR MAXIMUM DENSITY USING ASTM D-1557 AS THE STANDARD.
- IF SUBGRADE MATERIAL CONTAINS TOO MUCH MOISTURE, BLANKET THE AREA WITH WASHED ROCK OR QUARRY SPALLS AND PLACE AN APPROVED ENGINEERED STABILIZATION FABRIC PRIOR TO STRUCTURAL FILL TO PREVENT CONTAMINATION.
- COMPACT APPROVED STRUCTURAL FILL TO 95% OF THE MODIFIED PROCTOR MAXIMUM DENSITY USING ASTM D-1557 AS THE STANDARD.
- NORTH ACCESS ROAD SHALL BE A 20' WIDE ALL-WEATHER SURFACE WITH A GRASS-LINED CHANNEL THAT PARALLELS THE SOUTH EDGE OF ACCESS ROAD AND A CAVFS PARALLEL ON THE NORTH EDGE, SEE SHEET CV11.
- CONSTRUCT 4" THICK HMA 20' X 25' APRON TO CONNECT ACCESS ROAD TO FERNDAL ROAD, LAID IN 2" LIFTS.
- REMOVE ALL DELETERIOUS MATERIAL FOUND ON SITE.
- CUT AND FILL SLOPES NOT TO EXCEED 3H:1V.
- TOP OF POND ELEVATION TO BE 21.35' MINIMUM.
- APPROXIMATE STATION COORDINATES IN WA83-NF DATUM:  
0+00: N: 675750.4' E: 1216798.1'  
8+13: N: 675762.0' E: 1215985.2'



2 NORTH ACCESS ROAD PROFILE 1 OF 5



3 NORTH ACCESS ROAD PROFILE 2 OF 5

- LINE TYPE LEGEND
- CUT LIMITS
  - FILL LIMITS
  - EXISTING CONTOURS
  - FINAL CONTOURS
  - STORM DRAIN
  - SILT FENCE

APPROVED  
02/15/2024  
BY: [Signature]  
CITY OF FERNDAL  
PUBLIC WORKS DEPARTMENT

9 1/31/24 AS-BUILTS

8 9/18/20 LDP APPLICATION

7 9/10/20 LDP APPLICATION

6 8/10/20 MANUVERING AREA ADD

5 7/28/20 LDP APPLICATION

4 7/2/20 LDP APPLICATION

3 5/29/20 LDP APPLICATION

2 4/24/20 LDP APPLICATION

1 2/10/20 LAND DISTURBANCE APPLICATION

TPP

TPP

TPP

TPP

TPP

TPP

TPP

TPP

TPP

DESIGNER

REVISION

REVISION DESCRIPTION

DATE

REVIEWER

00749.005 02/15/24 RH

STATE OF WASHINGTON

PROFESSIONAL ENGINEER

36877

REGISTERED

1/31/24

02/15/24

BROWN & KYSTAR, INC.

BKI PROJECT NO: WT18-004

CONTRACT NO:

PUD #1

of Whatcom County

PUMP STATION #1 SUBSTATION

ACCESS ROAD PLAN & PROFILE

PUD NO. 1 OF WHATCOM COUNTY

1705 TRIGG RD

FERNDAL, WA 98248

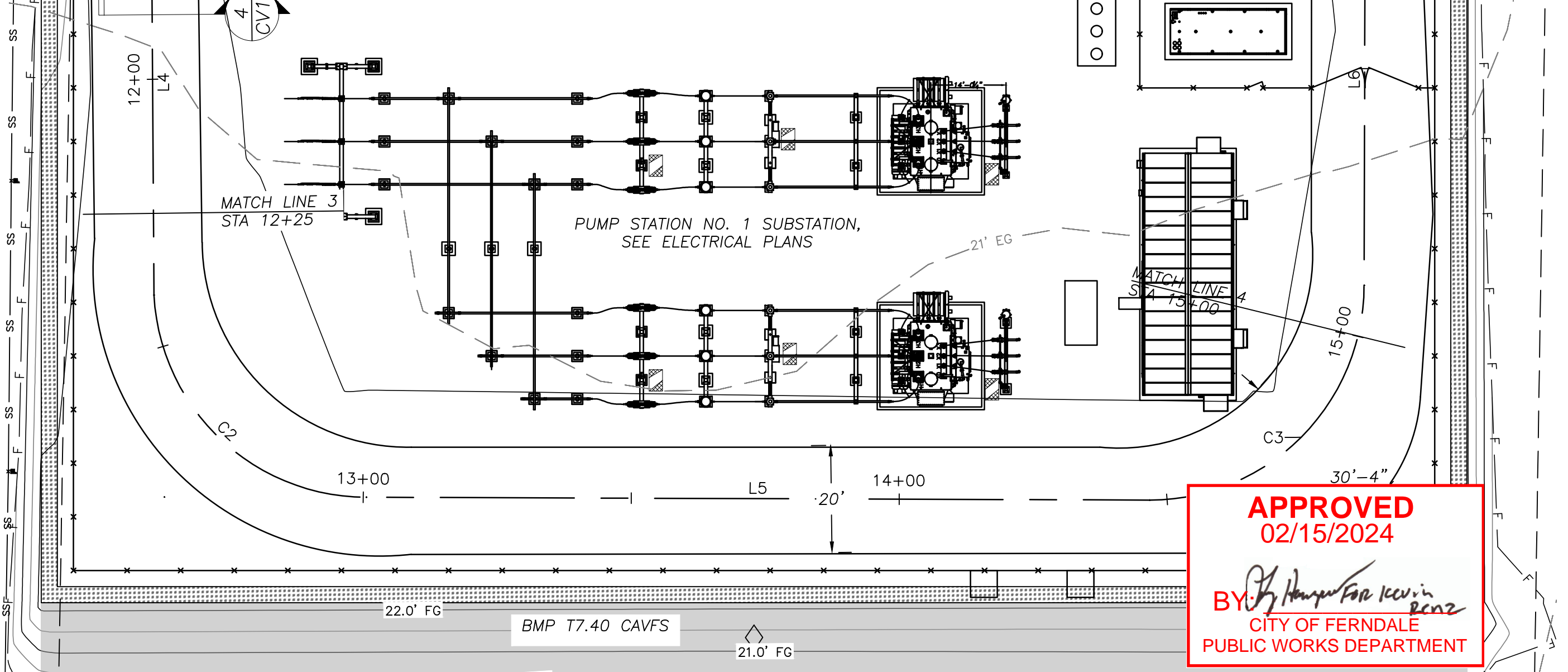
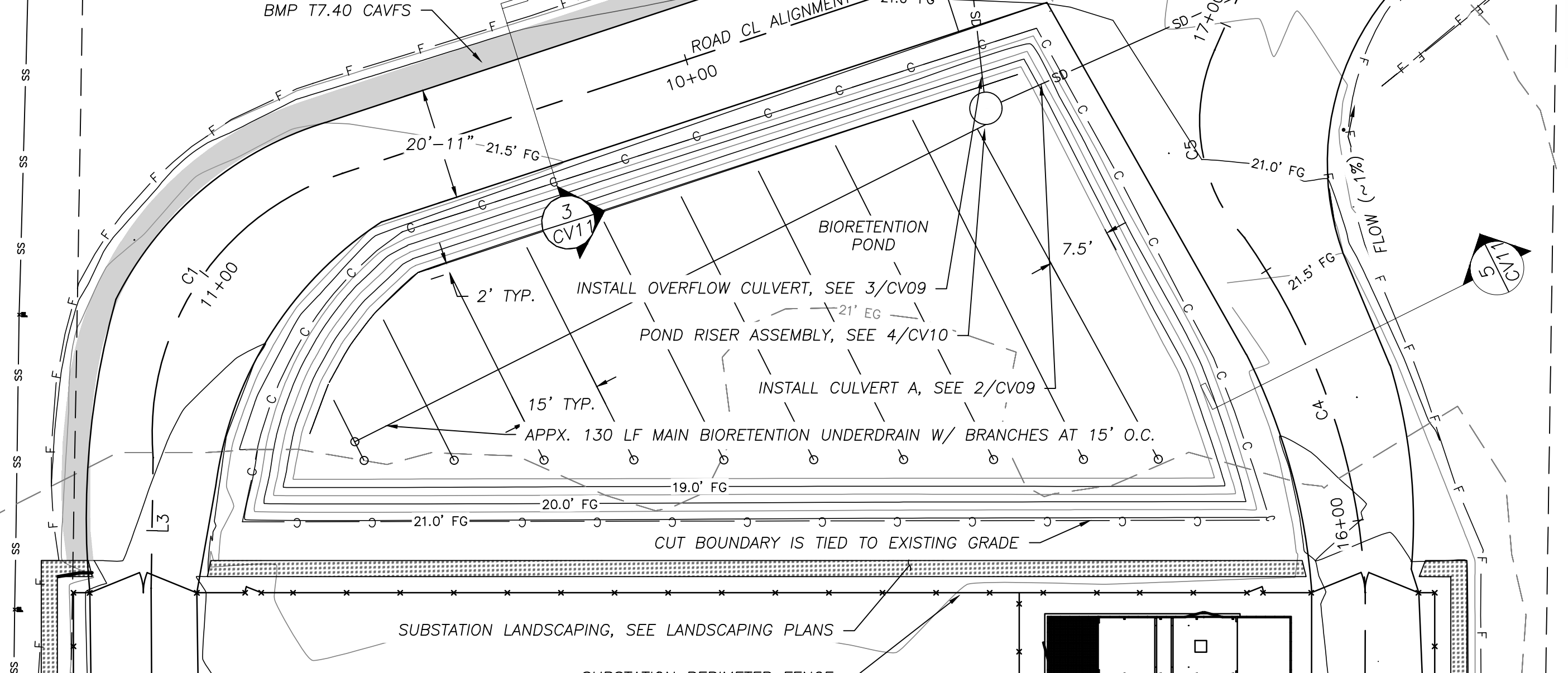
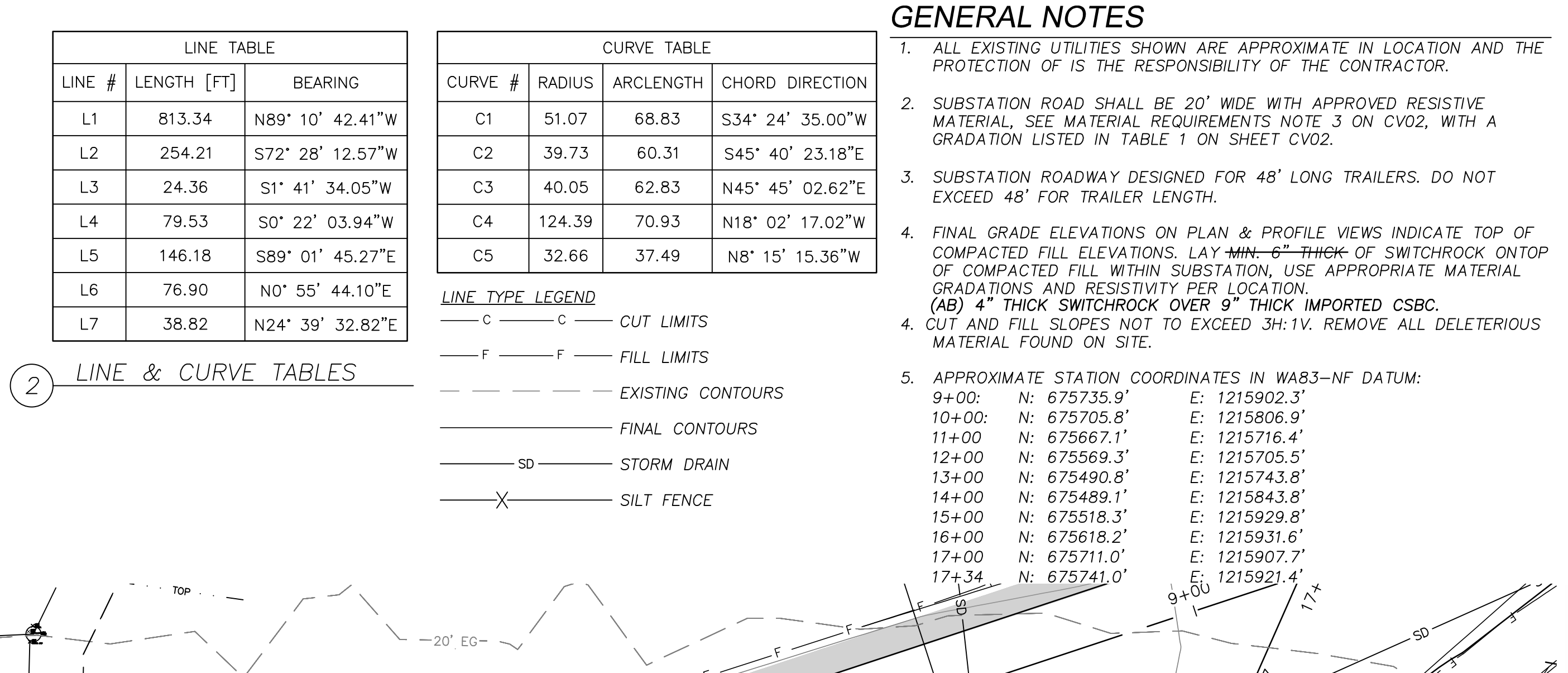
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REVISION

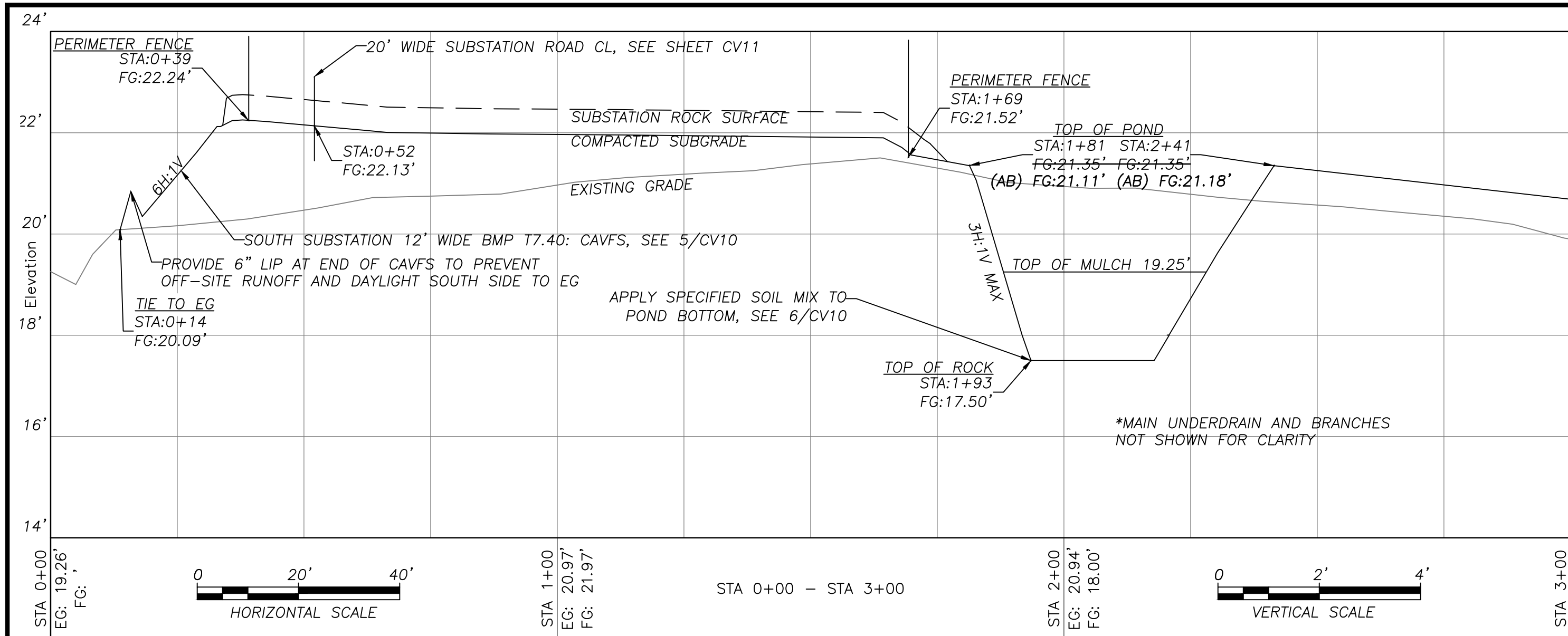
03-NG-CV05

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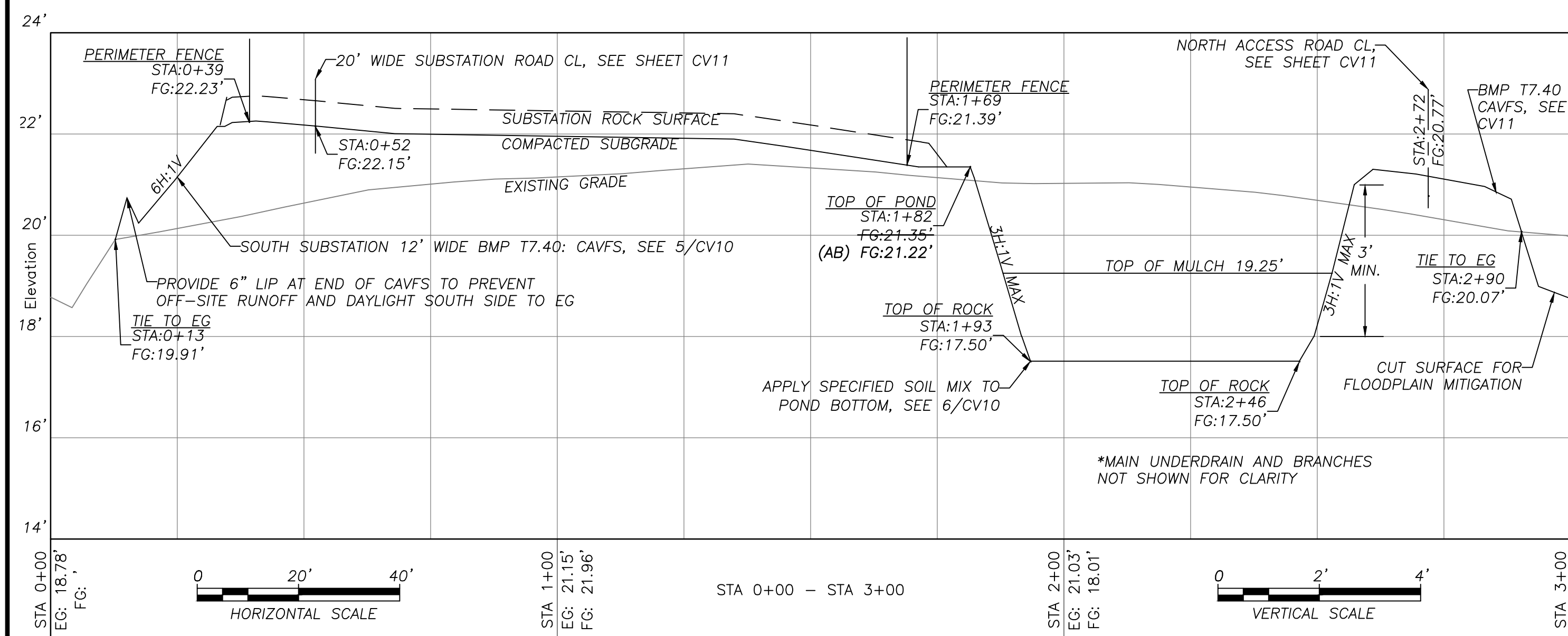


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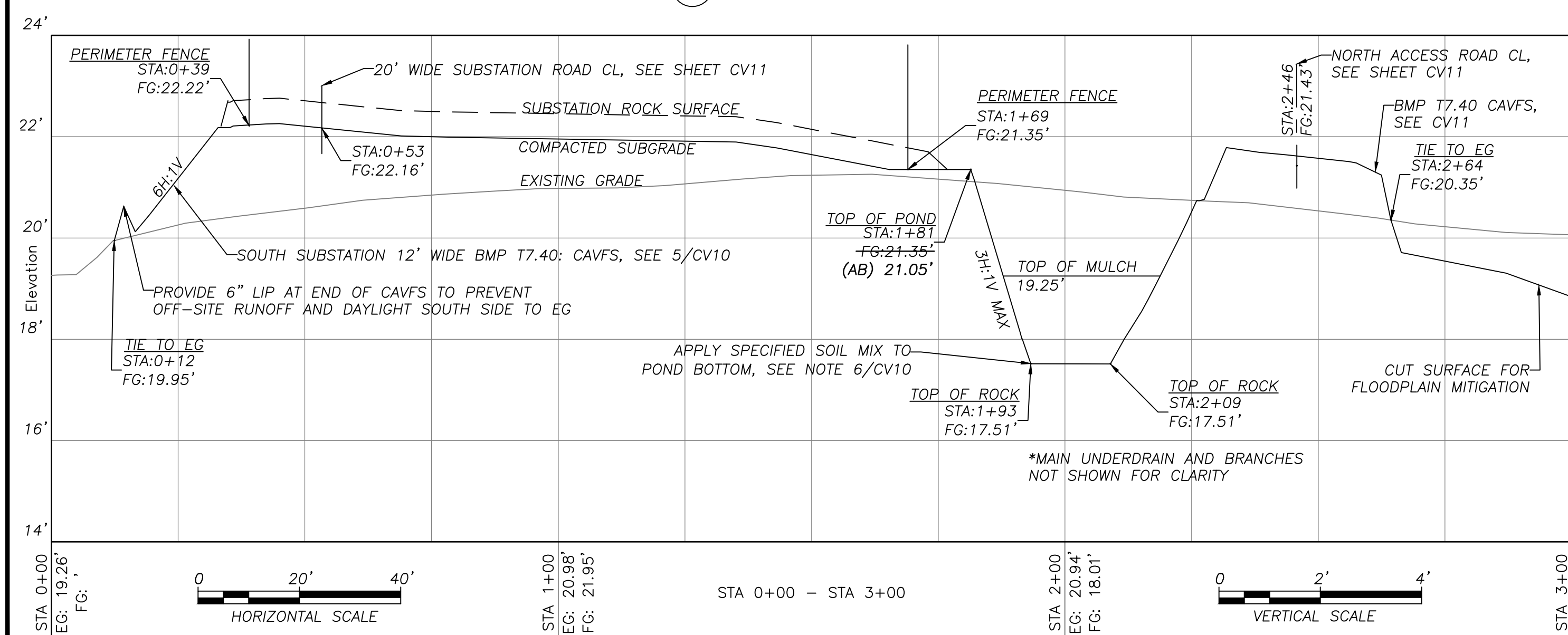




4 NS PROFILE 3



3 NS PROFILE 2



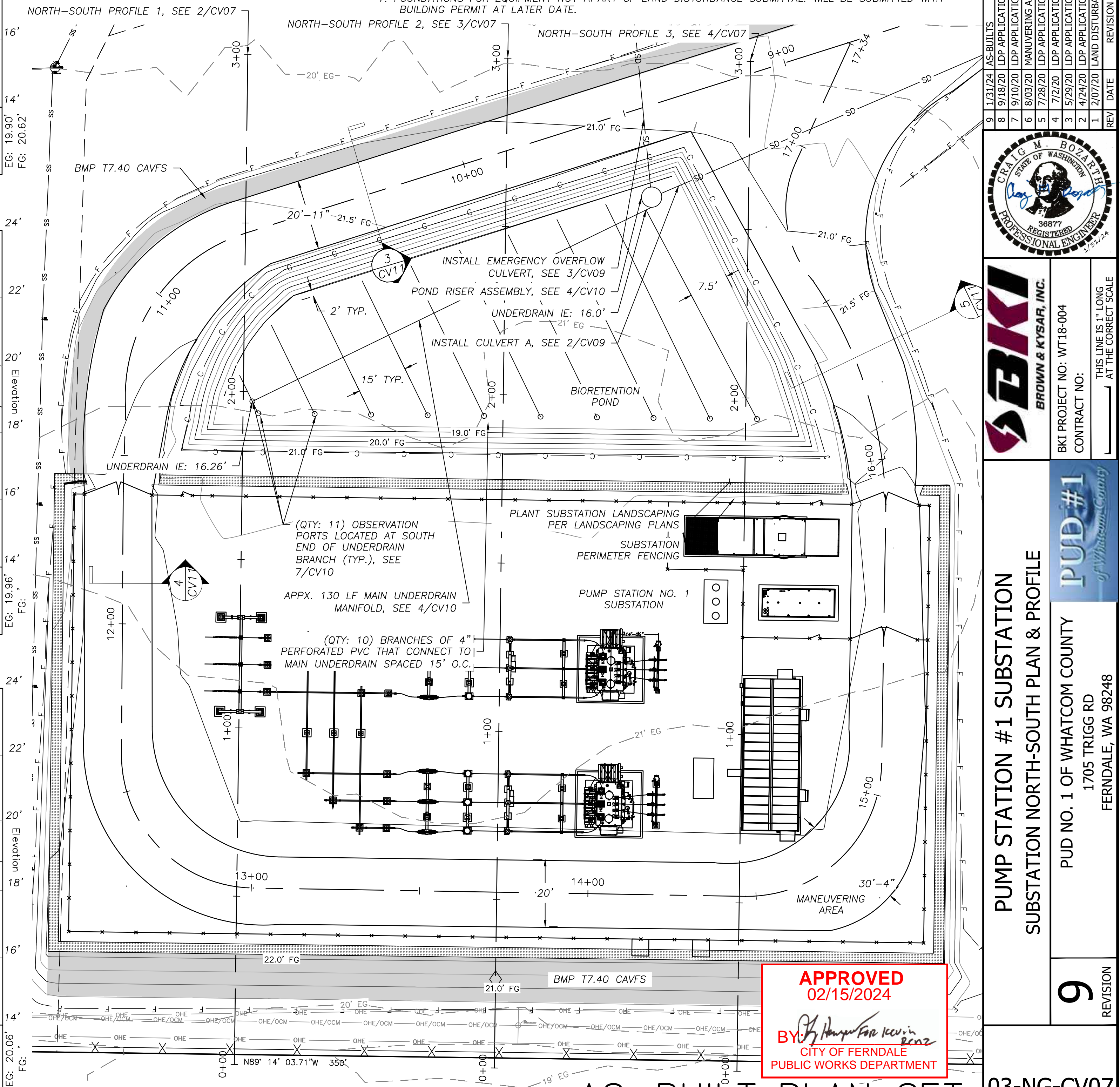
2 NS PROFILE 1

APPROXIMATE STATION COORDINATES IN WA83-NF DATUM:

NORTH-SOUTH PROFILE 1:		
0+00:	N: 675438.6'	E: 1215738.7'
3+00:	N: 675738.3'	E: 1215742.8'
NORTH-SOUTH PROFILE 2:		
0+00	N: 675437.3'	E: 1215816.0'
3+00	N: 675737.3'	E: 1215820.0'
NORTH-SOUTH PROFILE 3:		
0+00	N: 675436.4'	E: 1215888.1'
3+00	N: 675736.3'	E: 1215892.1'




## GENERAL NOTES

1. ALL EXISTING UTILITIES SHOWN ARE APPROXIMATE IN LOCATION AND THE PROTECTION OF IS THE RESPONSIBILITY OF THE CONTRACTOR.
2. FINAL GRADE ELEVATIONS ON PLAN & PROFILE VIEWS INDICATE TOP OF COMPACTED FILL ELEVATIONS. LAY (AB) 4" MIN. 6" THICK OF SWITCHROCK ON TOP OF COMPACTED FILL WITHIN SUBSTATION, USE APPROPRIATE MATERIAL GRADATIONS AND RESISTIVITY PER LOCATION.
3. CUT AND FILL SLOPES NOT TO EXCEED 3H:1V. REMOVE ALL DELETERIOUS MATERIAL FOUND ON SITE.
4. CONSTRUCT CAVES AND GRASS-LINED CHANNELS PER CV11, ALL CHANNELS DRAIN TOWARDS CATCH BASIN "A".
5. STRUCTURE LOCATIONS SHOWN ARE FOR REFERENCE USE ONLY, REFER TO STRUCTURAL & ELECTRICAL PLANS FOR SPECIFICS.
6. PLANT LANDSCAPE AROUND SUBSTATION PERIMETER AS NOTED IN LANDSCAPE PLANS.
7. FOUNDATIONS FOR EQUIPMENT NOT APART OF LAND DISTURBANCE SUBMITTAL. WILL BE SUBMITTED WITH BUILDING PERMIT AT LATER DATE.



1 NS PLAN VIEW

AS-BUILT PLAN SET

03-NG-CV07	9	PUMP STATION #1 SUBSTATION SUBSTATION NORTH-SOUTH PLAN & PROFILE	 <b>BROWN &amp; KYSTAR, INC.</b>		AS-BUILTS	TPP	CMB
					9/13/24 9/13/20 7/10/20 6/8/03/20 5/7/28/20 4/7/2/20 3/5/29/20 2/4/24/20 1/2/07/20	LDP APPLICATION LDP APPLICATION LDP APPLICATION MANUVERING AREA ADD LDP APPLICATION LDP APPLICATION LDP APPLICATION LDP APPLICATION LAND DISTURBANCE APPLICATION	TPP TPP BAW BAW BAW BAW BAW BAW BAW
03-NG-CV07 7 / 13		REVISION 9	PUD NO. 1 OF WHATCOM COUNTY 1705 TRIGG RD FERNDALE, WA 98248		BAKI PROJECT NO: WT18-004 CONTRACT NO:	1/3/24	REV DATE REVISION DESCRIPTION DESIGNER REVIEWER

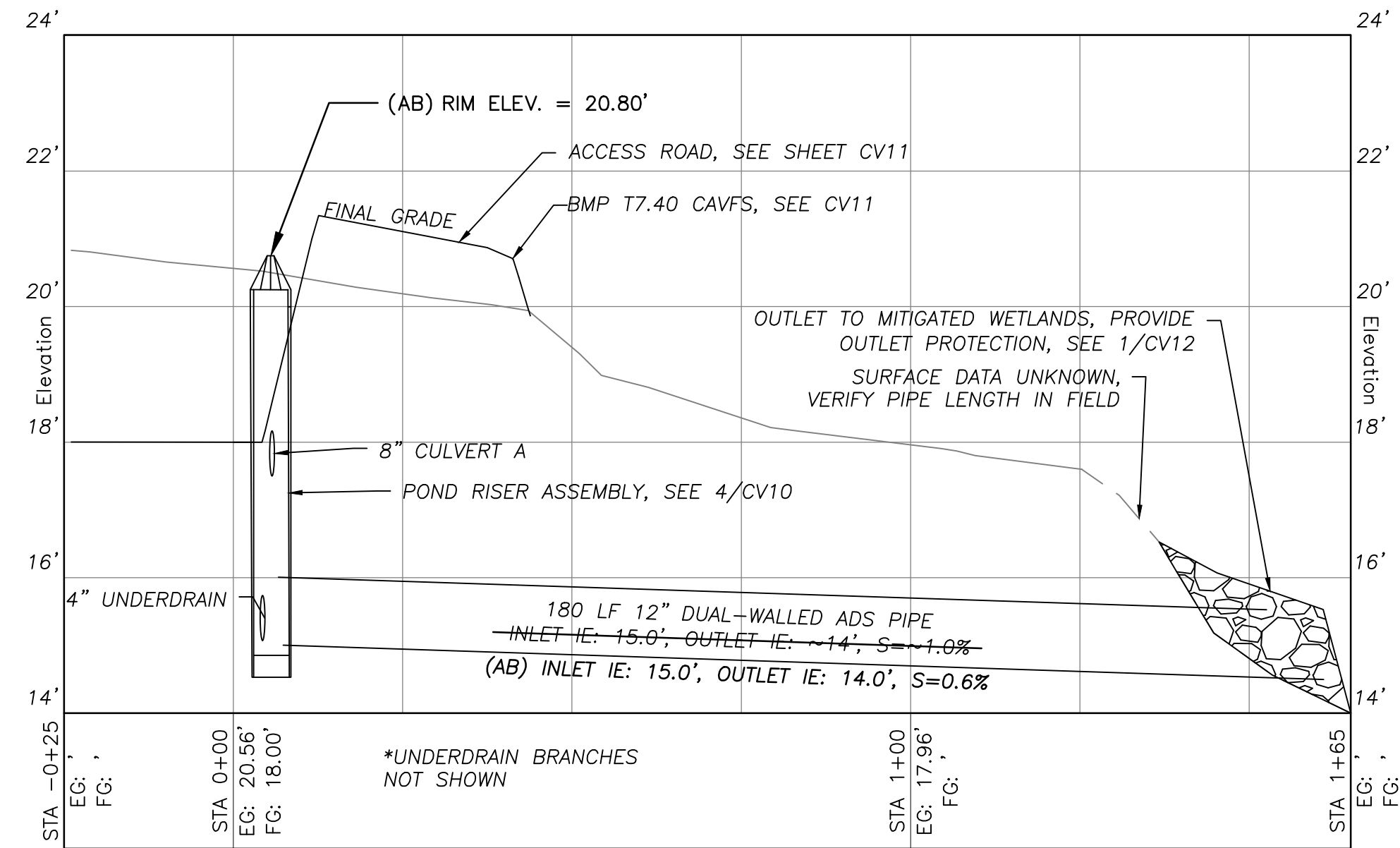




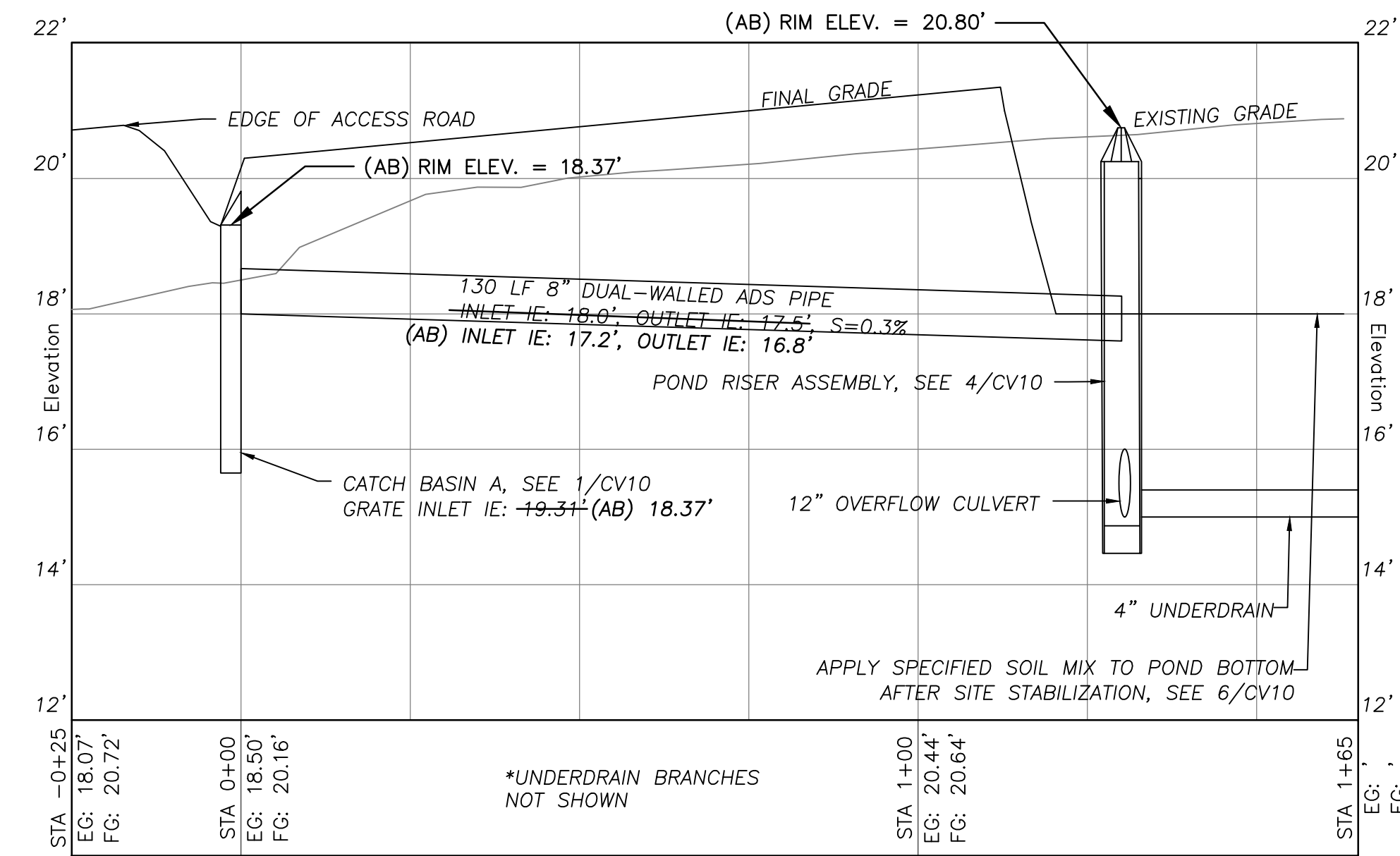


GENERAL NOTES

1. ALL UTILITIES SHOWN ARE APPROXIMATE IN LOCATION AND THE PROTECTION OF IS THE RESPONSIBILITY OF THE CONTRACTOR. IF CONFLICTS WITH EXISTING UTILITIES ARISE DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AND ANY CHANGES REQUIRED SHALL BE APPROVED PRIOR TO COMMENCEMENT.
2. CATCH BASINS SHALL CONFORM TO CITY OF FERNDALE STANDARD DETAIL ST-1 OR EQUIVALENT.
3. ALL WORK AND MATERIAL SHALL CONFORM TO THE PROJECT SPECIFICATIONS, CITY OF FERNDALE DESIGN AND CONSTRUCTION STANDARDS AND SPECIFICATIONS AND THE WSDOT STANDARD SPECIFICATIONS.
4. CONVERT TEMPORARY SEDIMENT POND INTO BIORETENTION POND WITH SPECIFIED AND APPROVED SOIL MIXTURES TO FINALIZE SITE STABILIZATION, SEE 6/CV10.
5. CONSTRUCT NORTH ACCESS ROAD WITH 1% TO 2% CROSS SLOPE TOWARDS THE ADJACENT GRASS-LINED CHANNEL



3 OVERFLOW CULVERT B PROFILE

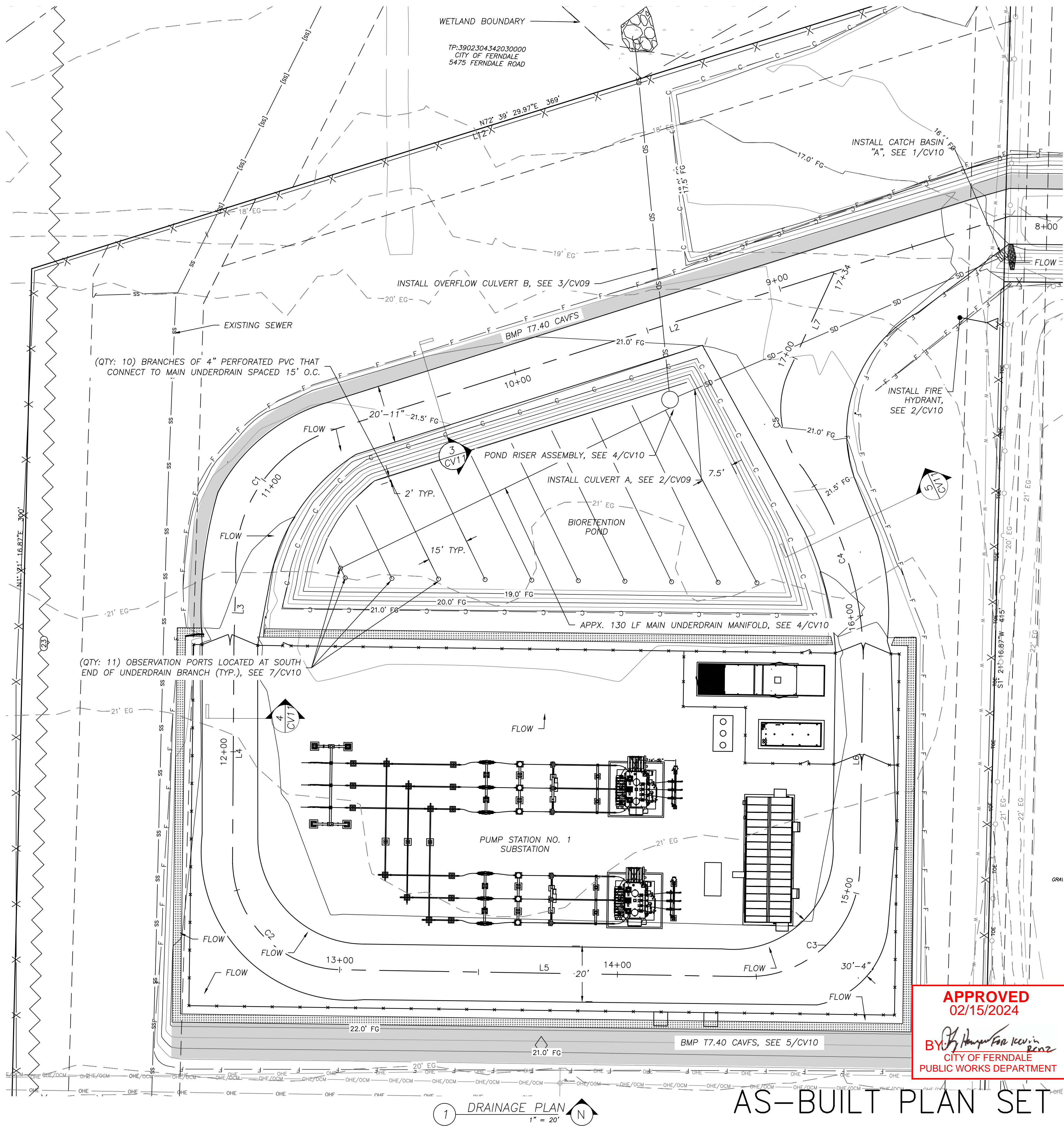


2 CULVERT A PROFILE

NOTE: ALL PROFILE VIEW USE THESE SCALES.

HORIZONTAL SCALE: 1" = 40'

VERTICAL SCALE: 1" = 4'



1 DRAINAGE PLAN

AS-BUILT PLAN SET

CHB	BAW	TPP	AS-BUILTS	TPP	REVISION DESCRIPTION	DESIGNER	REVIEWER
9	1/31/24	AS-BUILTS	TPP	1/31/24	AS-BUILTS	TPP	TPP
8	9/18/20	LDP APPLICATION	TPP	9/18/20	LDP APPLICATION	TPP	TPP
7	9/10/20	LDP APPLICATION	TPP	9/10/20	LDP APPLICATION	TPP	TPP
6	8/03/20	MANUVERING AREA ADD	TPP	8/03/20	MANUVERING AREA ADD	TPP	TPP
5	7/28/20	LDP APPLICATION	TPP	7/28/20	LDP APPLICATION	TPP	TPP
4	7/2/20	LDP APPLICATION	TPP	7/2/20	LDP APPLICATION	TPP	TPP
3	5/29/20	LDP APPLICATION	TPP	5/29/20	LDP APPLICATION	TPP	TPP
2	4/24/20	LDP APPLICATION	TPP	4/24/20	LDP APPLICATION	TPP	TPP
1	2/07/20	LAND DISTURBANCE APPLICATION	TPP	2/07/20	LAND DISTURBANCE APPLICATION	TPP	TPP

CRAIG M. BOZARTH  
STATE OF WASHINGTON  
36877  
REGISTERED  
PROFESSIONAL ENGINEER

BKI  
BROWN & KYSTAR, INC.

PUD #1  
of Whatcom County

PUMP STATION #1 SUBSTATION  
DRAINAGE PLAN & PROFILE

PUD NO. 1 OF WHATCOM COUNTY  
1705 TRIGG RD  
FERNDALE, WA 98248

BKI PROJECT NO: WT18-004  
CONTRACT NO:

THIS LINE IS 1" LONG  
AT THE CORRECT SCALE

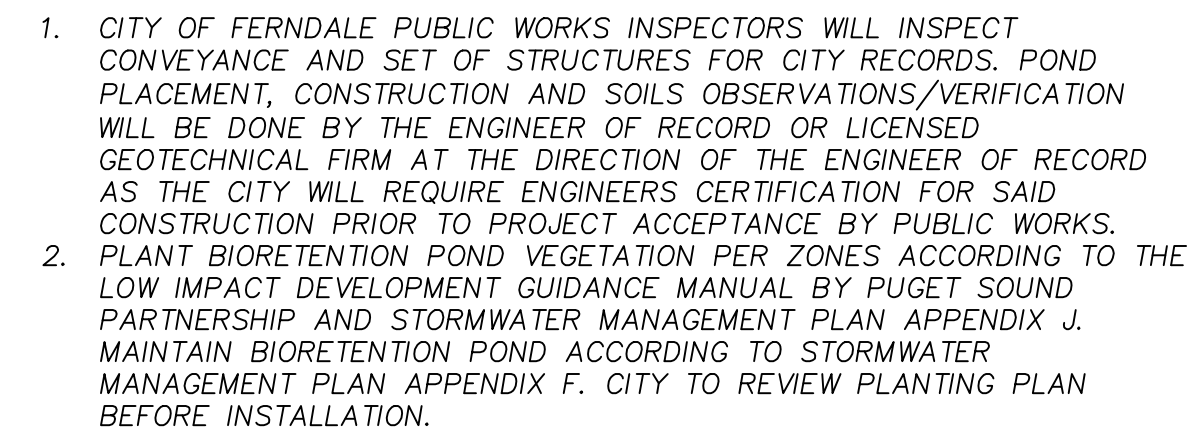
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REVISION

03-NG-CV09

9 / 13





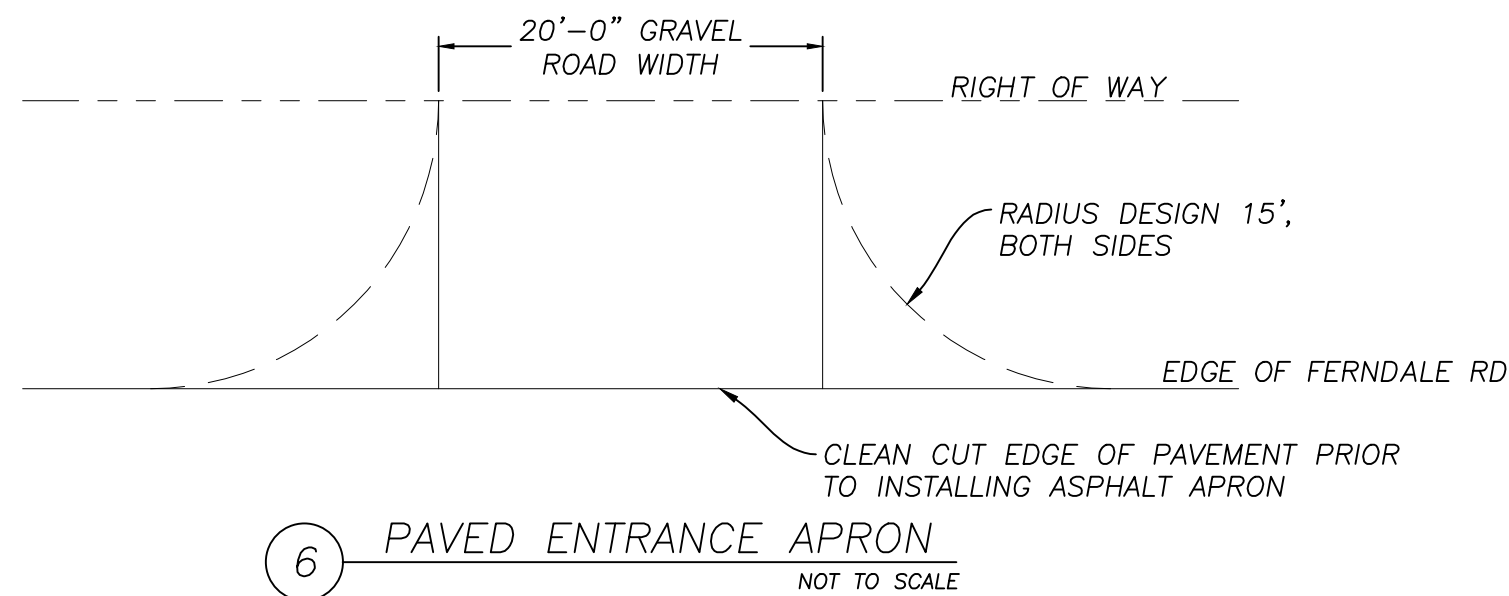
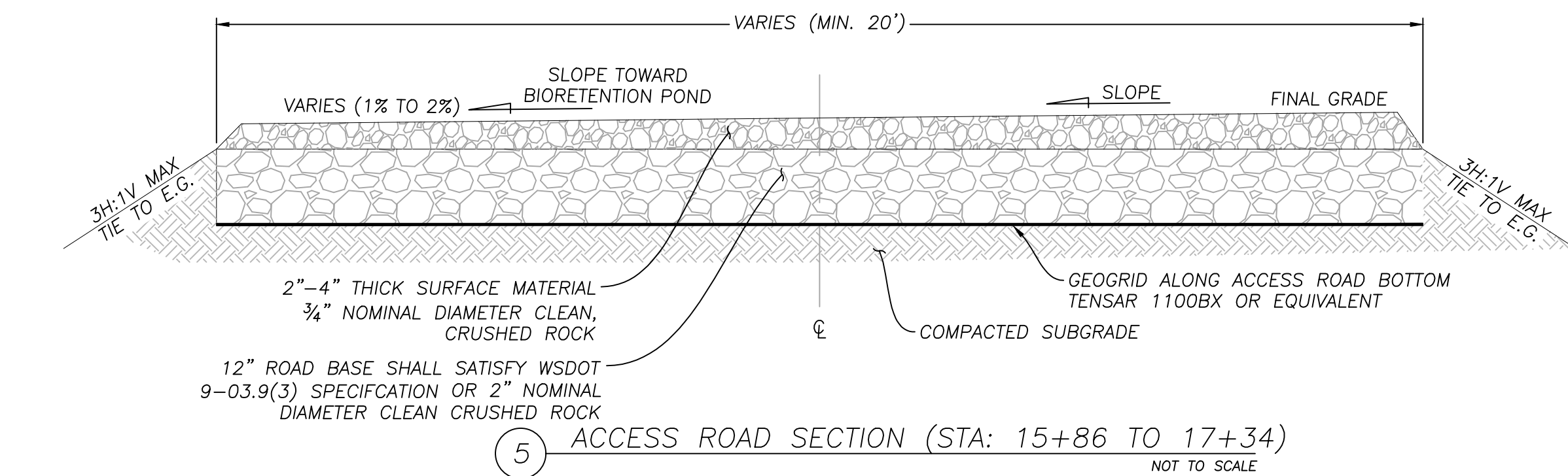
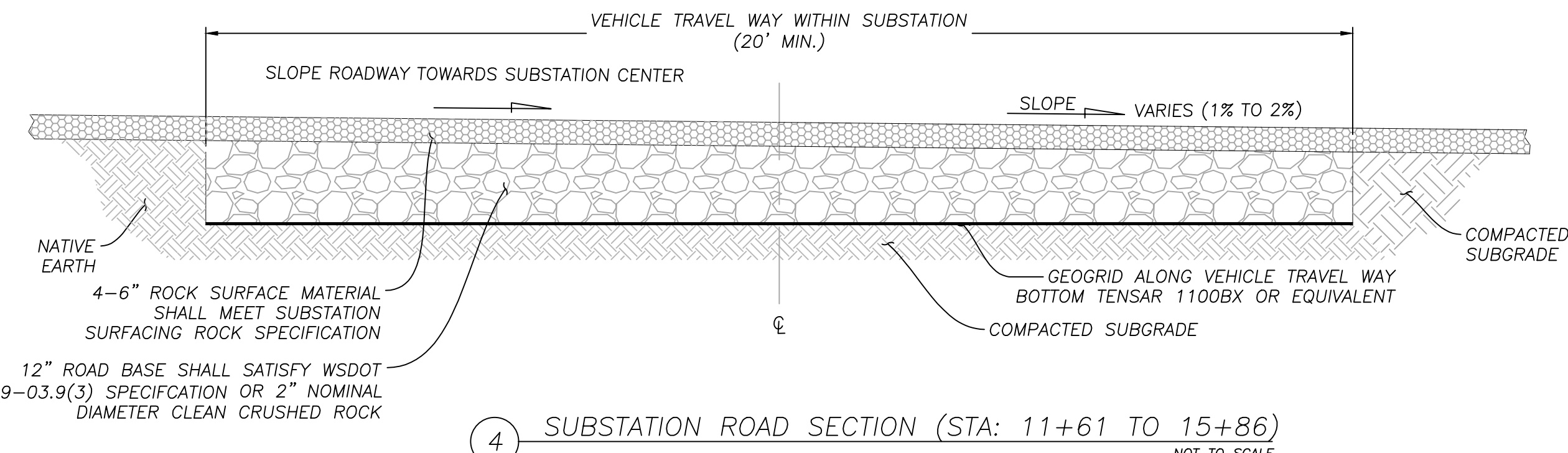
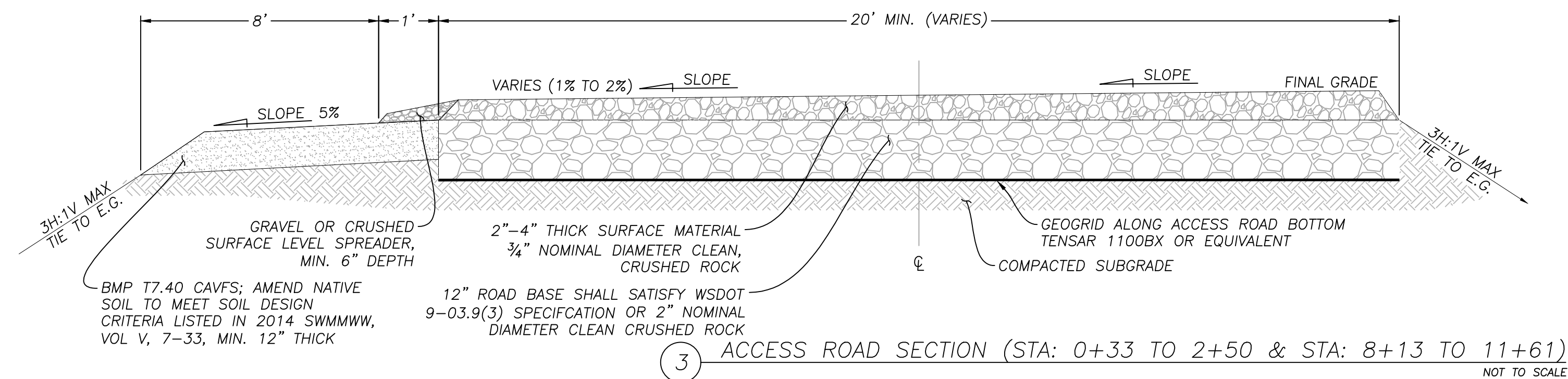
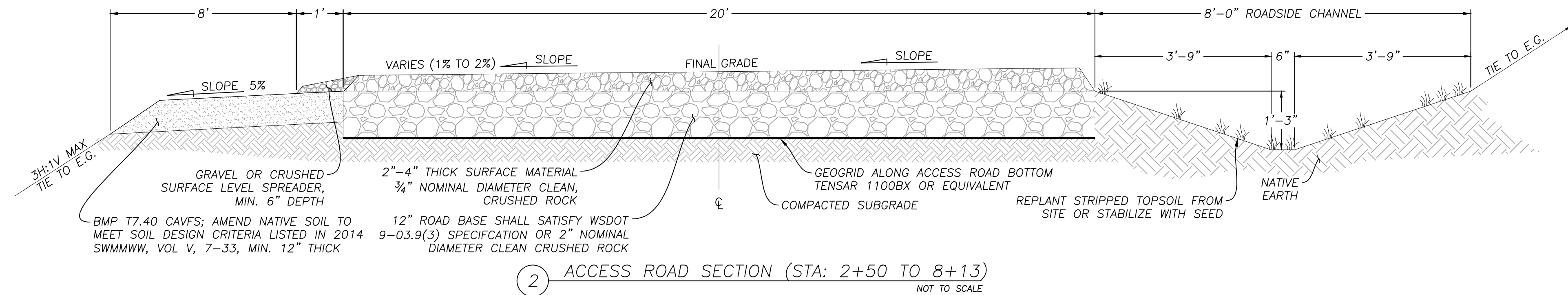
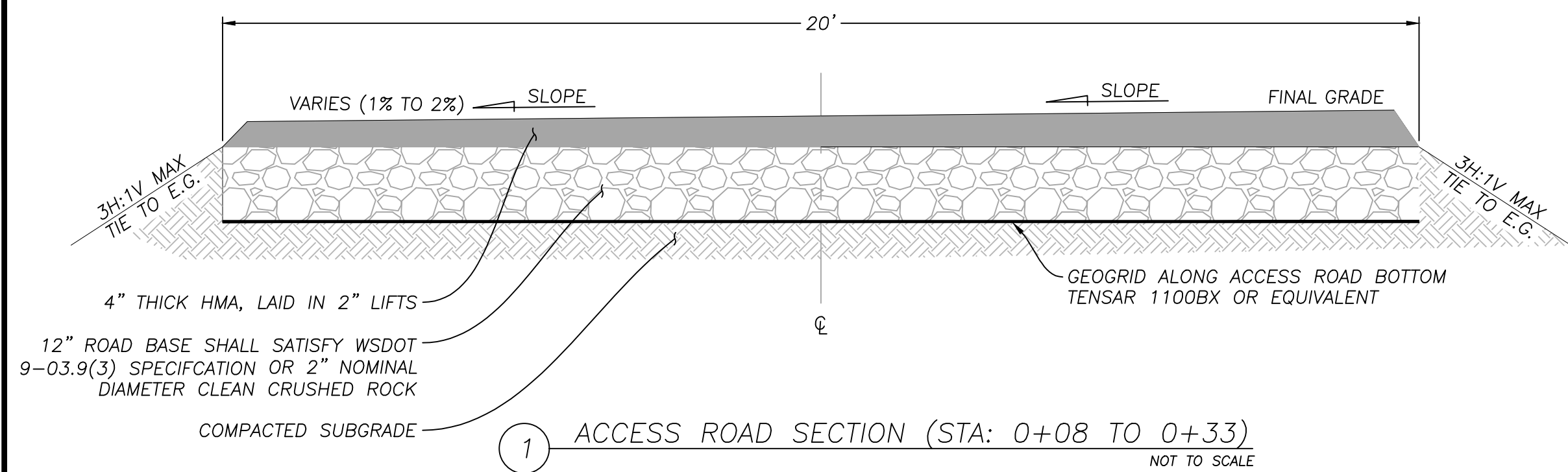
NOTES:

1. FOR CLOSE COUPLED HYDRANTS USE ALL FLANGE TYPE CONNECTIONS
2. IF HYDRANT RISES THROUGH CONCRETE USE EXPANSION STRIP AROUND HYDRANT BARREL.
3. ALL HYDRANT ASSEMBLIES WILL BE M&H MODEL 129.
4. THE BLOCK TO BE PLACED AGAINST UNDISTURBED EARTH. BEARING AREA OF THRUST BLOCK TO BE 6'-4" WIDTH BY 4'-0" DEPTH AND AT LEAST 1' LONG FROM TEE TO EARTH. BEARING SURFACE ON TEE SHOULD BE AT LEAST 0.5 SF.
5. ALL PARTS TO BE ANSI/NSF 61 APPROVED.
6. ALL PARTS TO BE RATED UP TO 250 PSIG FOR TESTING PRESSURES.

AS-BUILT PLAN SET

03-NG-CV10  
10 / 13





## BIORETENTION SOIL MEDIA (BSM) SPECIFICATION (2014 SWMMWW)

MINERAL AGGREGATE

PERCENT FINES: A RANGE OF 2 TO 4 PERCENT PASSING THE #200 SIEVE IS IDEAL AND FINES SHOULD NOT BE ABOVE 5 PERCENT FOR A PROPER FUNCTIONING SPECIFICATION ACCORDING TO ASTM D422.

AGGREGATE GRADATION  
THE AGGREGATE PORTION OF THE BSM SHOULD BE WELL-GRADED.  
ACCORDING TO ASTM D 2487-98 (CLASSIFICATION OF SOILS FOR  
ENGINEERING PURPOSES (UNIFIED SOIL CLASSIFICATION SYSTEM)),  
WELL-GRADED SAND SHOULD HAVE THE FOLLOWING GRADATION  
COEFFICIENTS:

- COEFFICIENT OF UNIFORMITY ( $CU = D_{60}/D_{10}$ ) EQUAL TO OR GREATER THAN 4,
- AND COEFFICIENT OF CURVE ( $CC = (D_{30})^2/D_{60} \times D_{10}$ ) GREATER THAN OR EQUAL TO 1 AND LESS THAN OR EQUAL TO 3.

THE TABLE BELOW PROVIDES A GRADATION GUIDELINE FOR THE AGGREGATE COMPONENT OF A BIORETENTION SOIL MIX SPECIFICATION IN WESTERN WASHINGTON (HINMAN, ROBERTSON, 2007). THE SAND GRADATION BELOW IS OFFERED SUPPLIED AS A WELL-GRADED UTILITY OR SCREENED. WITH COMPOST THIS BLEND PROVIDES ENOUGH FINES FOR ADEQUATE WATER RETENTION, HYDRAULIC CONDUCTIVITY WITHIN RECOMMENDED RANGE (SEE BELOW), POLLUTANT REMOVAL CAPABILITY, AND PLANT GROWTH CHARACTERISTICS FOR MEETING DESIGN GUIDELINES AND OBJECTIVES.

GENERAL GUIDELINE FOR MINERAL AGGREGATE GRADATION	
SIEVE SIZE	PERCENT PASSING
3/8"	100
#4	95-100
#10	75-90
#40	25-40
#100	4-10
#200	2-5

WHERE EXISTING SOILS MEET THE ABOVE AGGREGATE GRADATION, THOSE SOILS MAY BE AMENDED RATHER THAN IMPORTING MINERAL AGGREGATE. COMPOST TO AGGREGATE RATIO, ORGANIC MATTER CONTENT, CATION EXCHANGE CAPACITY

- COMPOST TO AGGREGATE RATIO: 60-65 PERCENT MINERAL AGGREGATE, 35 - 40 PERCENT COMPOST BY VOLUME.
- ORGANIC MATTER CONTENT: 5 - 8 PERCENT BY WEIGHT.
- CATION EXCHANGE CAPACITY (CEC) MUST BE  $> 5$  MILLIEQUIVALENTS/100 G DRY SOIL NOTE: SOIL MIXES MEETING THE ABOVE SPECIFICATIONS DO NOT HAVE TO BE TESTED FOR CEC. THEY WILL READILY MEET THE MINIMUM CEC.

COMPOST

TO ENSURE THAT THE BSM WILL SUPPORT HEALTHY PLANT GROWTH AND ROOT DEVELOPMENT, CONTRIBUTE TO BIOFILTRATION OF POLLUTANTS, AND NOT RESTRICT INFILTRATION WHEN USED IN THE PROPORTIONS CITED HEREIN, THE FOLLOWING COMPOST STANDARDS ARE REQUIRED.

- MEETS THE DEFINITION OF "COMPOSTED MATERIAL" IN WAC 173-350-100 AND COMPLIES WITH TESTING PARAMETERS AND OTHER STANDARDS IN WAC 173-350-220.
- CANNOT CONTAIN ANIMAL BYPRODUCTS.
- PRODUCED AT A COMPOSTING FACILITY THAT IS PERMITTED BY THE JURISDICTIONAL HEALTH AUTHORITY. PERMITTED COMPOST FACILITIES IN WASHINGTON ARE INCLUDED ON A LIST AVAILABLE AT [HTTP://WWW.ECY.WA.GOV/PROGRAMS/SWFA/ORGANICS/SOIL.HTML](http://www.ecy.wa.gov/programs/swfa/organics/soil.html).
- THE COMPOST PRODUCT MUST ORIGINATE A MINIMUM OF 65 PERCENT BY VOLUME FROM RECYCLED PLANT WASTE COMPRISED OFS "YARD DEBRIS," "CROP RESIDUES," AND "BULKING AGENTS" AS THOSE TERMS ARE DEFINED IN WAC 173-350-100. A MAXIMUM OF 35 PERCENT BY VOLUME OF "POSTCONSUMER FOOD WASTE" AS DEFINED IN WAC 173-350-100, MAY BE INCLUDED INCLUDING BIOSOLIDS, MAY BE SUBSTITUTED FOR RECYCLED PLANT WASTE.
- STABLE (LOW OXYGEN USE AND CO2 GENERATION) AND MATURE (CAPABLE OF SUPPORTING PLANT GROWTH) AS B TESTS SHOWN BELOW. THE CRITERIA FOR SUCCESS IN THE BIORETENTION SOIL MIXES: MOISTURE CONTENT RANGE: NO VISIBLE FREE WATER OR DUST PRODUCED WHEN HANDLING THE MATERIAL.
- TESTED IN ACCORDANCE WITH THE U.S. COMPOSTING COUNCIL "TEST METHOD FOR THE EXAMINATION OF COMPOST AND COMPOSTING" (TMECC), AS ESTABLISHED IN THE COMPOSTING COUNCIL'S "SEAL OF TESTING ASSURANCE"
- (STA) PROGRAM. MOST WASHINGTON COMPOST FACILITIES NOW USE THESE TESTS.
- SCREENED TO THE FOLLOWING SIZE GRADATIONS FOR FINE COMPOST WHEN TESTED IN ACCORDANCE WITH TMECC TEST METHOD 02.02-B, SAMPLE SIEVING FOR AGGREGATE SIZE CLASSIFICATION."

FINE COMPOST SHALL MEET THE FOLLOWING GRADATION BY DRY WEIGHT

MINIMUM PERCENT PASSING 2"	100%
MINIMUM PERCENT PASSING 1"	99%
MINIMUM PERCENT PASSING 5/8"	90%
MINIMUM PERCENT PASSING 1/4"	75%

- PH BETWEEN 6.0 AND 8.5 (TMECC 04.11-A). "PHYSICAL CONTAMINANTS" (AS DEFINED IN WAC 173-350-100) CONTENT LESS THAN 1% BY WEIGHT (TMECC 03.08-A) TOTAL, NOT TO EXCEED 0.25 PERCENT FINE PLASTIC BY DRY WEIGHT.
- MINIMUM ORGANIC MATTER CONTENT OF 40% (TMECC 05.07-A "LOSS ON IGNITION")
- SOLUBLE SALT CONTENT LESS THAN 0.4 DS/M (MMHOS/CM) (TMECC 04.10-A "ELECTRICAL CONDUCTIVITY, 1:5 SLURRY METHOD, MASS BASIS")
- MATURITY INDICATORS FROM A CUCUMBER BIOASSAY (TMECC 05.05-A "SEEDLING EMERGENCE AND RELATIVE GROWTH") MUST BE GREATER THAN 80% FOR BOTH EMERGENCE AND VIGOR.
- STABILITY OF 7 MG CO<sub>2</sub>-C/G/M/ DAY OR "CARBON DIOXIDE EVOLUTION RATE")
- CARBON TO NITROGEN RATIO (TMECC 05.02 RATIO") WHICH USES 04.01 "ORGANIC CARBON (NITROGEN BY OXIDATION)" OF LESS THAN 1.0
- BE UP TO 35:1 FOR PLANTINGS COMPOSED OF SOUND LOWLAND NATIVE SPECIES AND UP TO 25:1 FOR PLANTINGS COMPOSED OF NON-NATIVE SPECIES.
- COMPOST TO BE USED AS A SURFACE MULCH
- APPROVED**  
**02/15/2024**
- BY: *[Signature]*  
CITY OF FERNDALE  
PUBLIC WORKS DEPARTMENT

**APPROVED**  
02/15/2024

BY: By Hunter For Kevin  
CITY OF FERNDALE  
PUBLIC WORKS DEPARTMENT

# AS-BUILT PLAN SET

REV	DATE	REVISION DESCRIPTION	DESIGNER	REVIEWER
1	2/20/20	LAND DISTURBANCE APPLICATION	TTP	BAW
2	4/24/20	LAND APPLICATION	TTP	BAW
3	5/29/20	LOP APPLICATION	TTP	BAW
4	7/12/20	LOP APPLICATION	TTP	BAW
5	7/28/20	LOP APPLICATION	TTP	BAW
6	8/03/20	MANUEVERING AREA ADD	TTP	BAW
7	9/10/20	LOP APPLICATION	TTP	BAW
8	9/18/20	LOP APPLICATION	TTP	BAW
9	1/31/24	AS-BUILTS	TTP	CMB



## PUMP STATION #1 SUBSTATION ROAD SECTION DETAILS

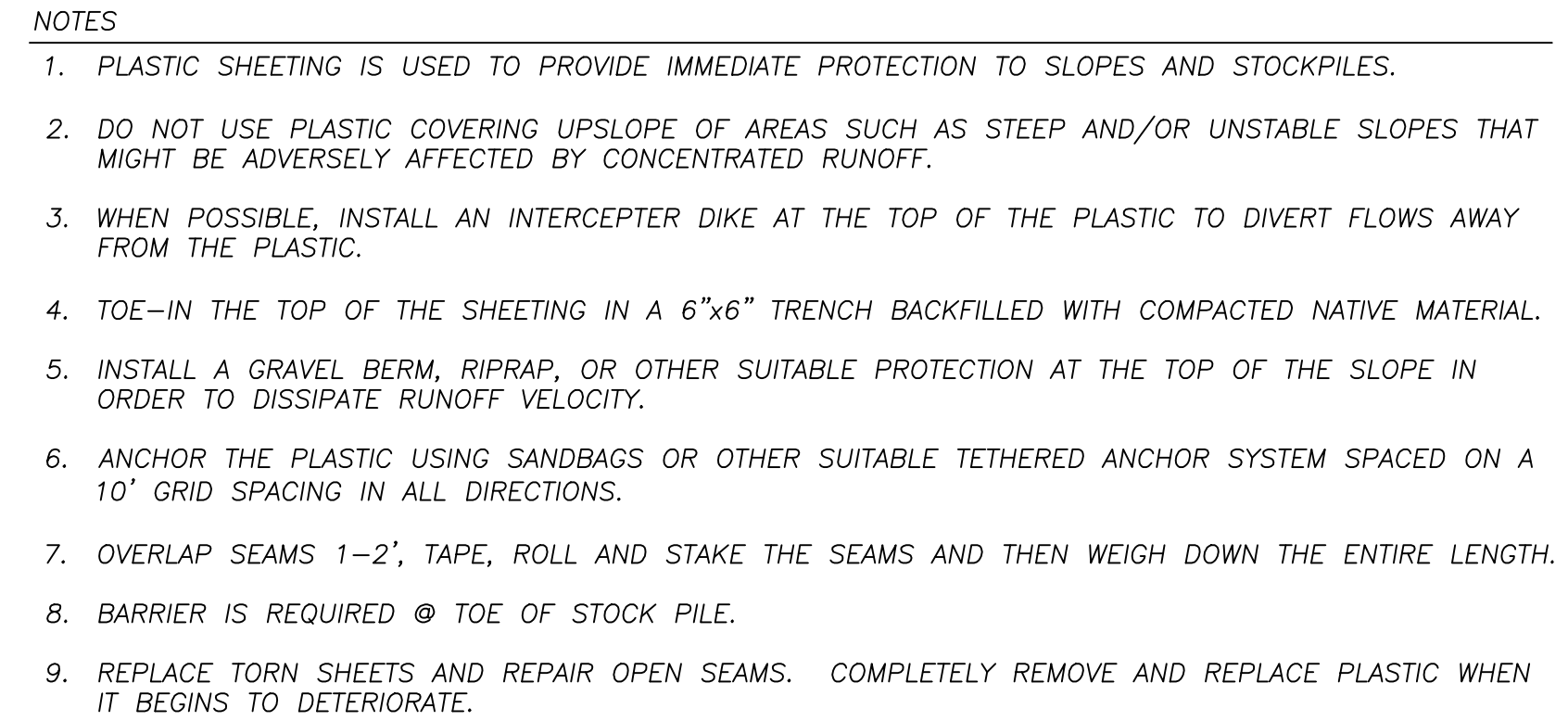
PUD NO. 1 OF WHATCOM COUNTY

C

03-NG-CV11



1. FOR ADDITIONAL EROSION CONTROL INFORMATION, SEE CV04 EROSION CONTROL PLAN.
2. THE IMPLEMENTATION OF THESE ESC PLANS AND THE CONSTRUCTION, MAINTENANCE, REPLACEMENT, AND UPGRADING OF THESE ESC FACILITIES IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL CONSTRUCTION IS COMPLETED AND APPROVED AND VEGETATION/LANDSCAPING IS ESTABLISHED.
3. THE ESC FACILITIES SHALL BE INSPECTED DAILY BY THE CONTRACTOR AND MAINTAINED AS NECESSARY TO ENSURE THEIR CONTINUED FUNCTIONING.
4. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE BEGINNING OF CONSTRUCTION AND MAINTAINED FOR THE DURATION OF THE PROJECT. ADDITIONAL MEASURES MAY BE REQUIRED TO INSURE THAT ALL PAVED AREAS ARE KEPT CLEAN FOR THE DURATION OF THE PROJECT.
5. CONSTRUCTION ACTIVITY SHOULD BE SCHEDULED OR PHASED AS MUCH AS POSSIBLE TO REDUCE THE AMOUNT OF EARTHWORK ACTIVITY THAT IS PERFORMED DURING THE WINTER MONTHS.
6. EXISTING TEMPORARY EROSION CONTROL MEASURES SHALL BE MAINTAINED AND MODIFIED AS NECESSARY TO PRESERVE FUNCTIONALITY.
7. EROSION CONTROL MEASURES TO BE INSTALLED IN ACCORDANCE TO DEPARTMENT OF ECOLOGY'S STORMWATER MANAGEMENT MANUAL FOR WESTERN WASHINGTON 2014 AND CONSTRUCTION STORMWATER POLLUTION & PREVENTION PLAN.
8. CONTRACTOR TO PROVIDE CONCRETE WASHOUT AREA IN ACCORDANCE TO BMP C154.
9. ON-SITE EROSION CONTROL INSPECTIONS AND TURBIDITY MONITORING SHOULD BE PERFORMED IN ACCORDANCE WITH DEPARTMENT OF ECOLOGY REQUIREMENTS. WEEKLY AND MONTHLY REPORTING TO ECOLOGY SHOULD BE PERFORMED ON A REGULARLY SCHEDULED BASIS.
10. SOILS TO BE REUSED ON SITE SHOULD BE STORED TO REDUCE EROSION FROM THE STOCKPILE WITH THE USE OF PLASTIC SHEETING, SEE 2/CV12.
11. PROVIDE OUTLET PROTECTION FOR ALL CULVERT OUTLETS, SEE 1/CV12.



(2)



AS-BUILT PLAN SET

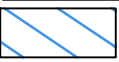

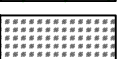
03-NG-CV12	<div>9</div> <div>REVISION</div>	<div><div>PUMP STATION #1 SUBSTATION</div><div>EROSION CONTROL DETAILS</div></div> <div><div>PUD NO. 1 OF WHATCOM COUNTY</div><div>1705 TRIGG RD</div><div>FERNDALDE, WA 98248</div></div>	<div><div></div><div><div>BKI</div><div>BROWN &amp; KYSTAR, INC.</div></div><div><div>BKI PROJECT NO: WT18-004</div><div>CONTRACT NO:</div><div>THIS LINE IS 1" LONG _____ AT THE CORRECT SCALE</div></div></div>	<div></div>	<div>9</div> <div>1/31/24</div> <div>AS-BUILTS</div>	<div>TPP</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div>	<div>9</div> <div>1/31/24</div> <div>AS-BUILTS</div>	<div>TPP</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div>	<div>9</div> <div>1/31/24</div> <div>AS-BUILTS</div>	<div>TPP</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> <div>BAW</div> 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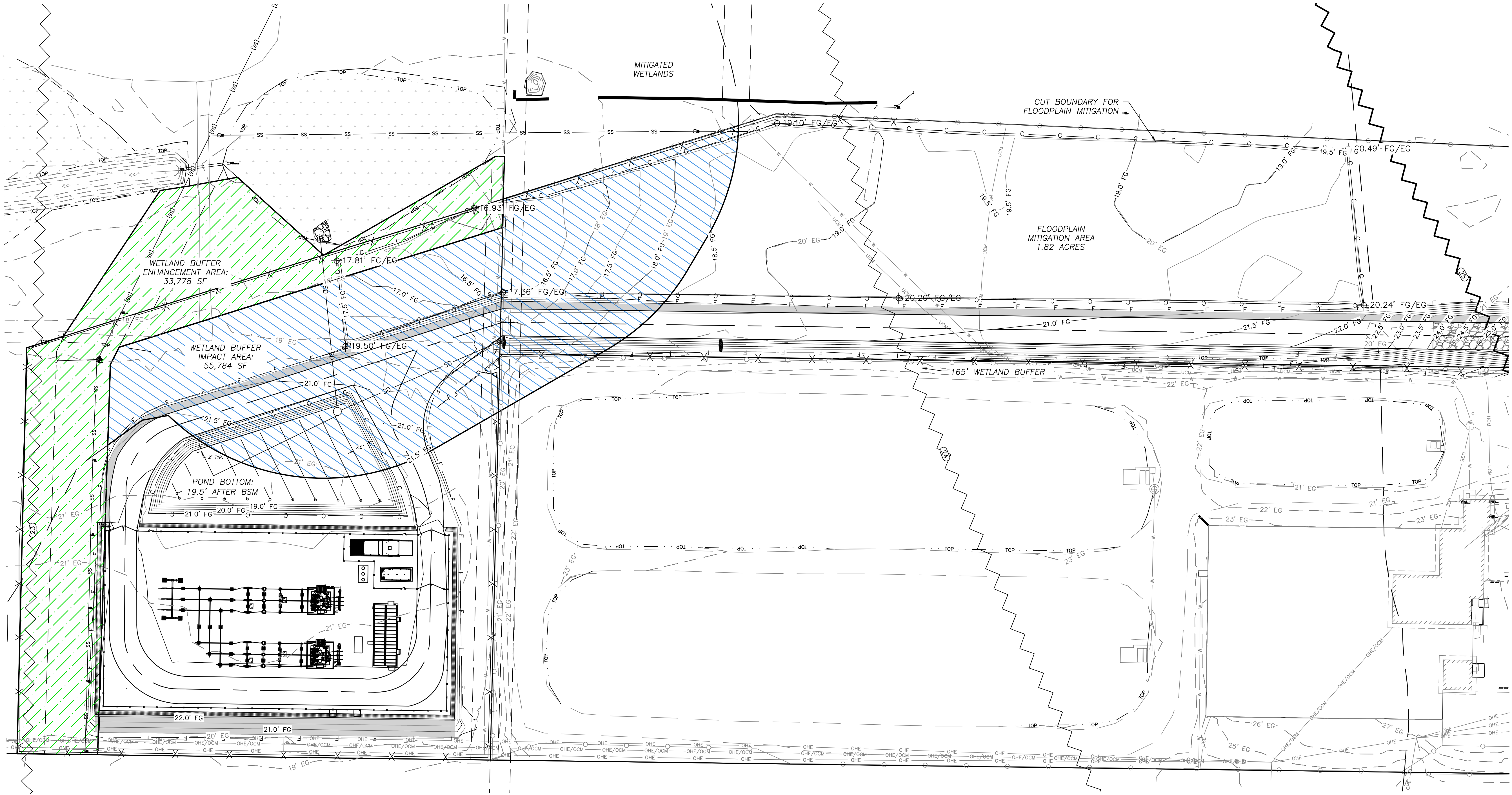


GENERAL NOTES

1. REFER TO THE CITY OF FERNDALE CRITICAL AREAS REPORT FROM ELEMENT SOLUTIONS, DATED SEPTEMBER 11, 2019 FOR APPROPRIATE MITIGATION EFFORTS AND IMPLEMENT ACCORDINGLY.
2. PLANT LANDSCAPE BUFFER AROUND SUBSTATION PERIMETER IN ACCORDANCE WITH PROJECT PLANS AND SPECIFICATIONS AND CITY OF FERNDALE MUNICIPAL CODE 18.74.
3. FLOODPLAIN MITIGATION CUTS INVOLVE STRIPPING TOPSOIL FROM MITIGATION AREA AND STOCKPILING IN A DESIGNATED AREA. REMOVE SUBSURFACE SOIL TO REACH CONTOURS AS SHOWN THEN REPLANTING TOPSOIL ONTO SCARIFIED SURFACE. APPX. 12" OF SOIL SHOULD BE REMOVED FROM THE DESIGNATED AREA TO ACHIEVE CUT VOLUMES. GRADE SURFACE 3H:1V AT EDGE OF SURFACE TO TIE BACK TO EXISTING GRADE. SPOT ELEVATIONS (WA83-NF) SHOWN IN 1/CV13 INDICATE POINTS TO TIE FINAL SURFACE BACK TO EXISTING GRADE. APPROXIMATELY 3,730 CY OF SOIL MUST BE REMOVED FROM THE SITE TO ACHIEVE A NO-NET RISE IN 100-YEAR FLOOD ELEVATIONS.

HATCH TYPE LEGEND

-  WETLAND BUFFER IMPACTED BY DEVELOPMENT
-  ENHANCED AREA FOR WETLAND MITIGATION
-  SUBSTATION LANDSCAPING





1 WETLAND BUFFER IMPACT & ENHANCEMENT AREAS  
1" = 40'



AS-BUILT PLAN SET

APPROVED  
02/15/2024  
BY: *[Signature]*  
CITY OF FERNDALE  
PUBLIC WORKS DEPARTMENT

03-NG-CV13		PUMP STATION #1 SUBSTATION WETLAND & FLOODPLAIN MITIGATION AREAS		 BROWN & KYSTAR, INC.				9 1/31/24 AS-BUILTS		TPP		CMB	
								8 9/18/20 LDP APPLICATION		TPP		BAW	
								7 9/10/20 LDP APPLICATION		TPP		BAW	
								6 8/03/20 MANUVERING AREA ADD		TPP		BAW	
								5 7/28/20 LDP APPLICATION		TPP		BAW	
								4 7/2/20 LDP APPLICATION		TPP		BAW	
								3 5/29/20 LDP APPLICATION		TPP		BAW	
								2 4/24/20 LDP APPLICATION		TPP		BAW	
								1 2/07/20 LAND DISTURBANCE APPLICATION		TPP		BAW	
								REV DATE REVISION DESCRIPTION		DESIGNER		REVIEWER	