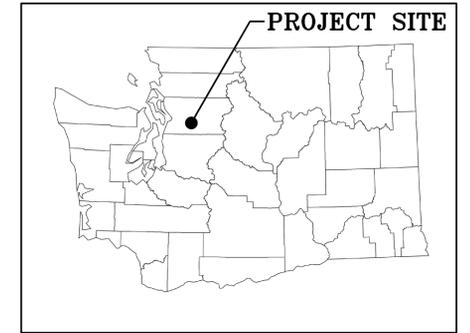




# WASHINGTON DEPARTMENT OF FISH AND WILDLIFE

## REITER POND CULVERT REPLACEMENT PROJECT CONTRACT PE:R6:12-1



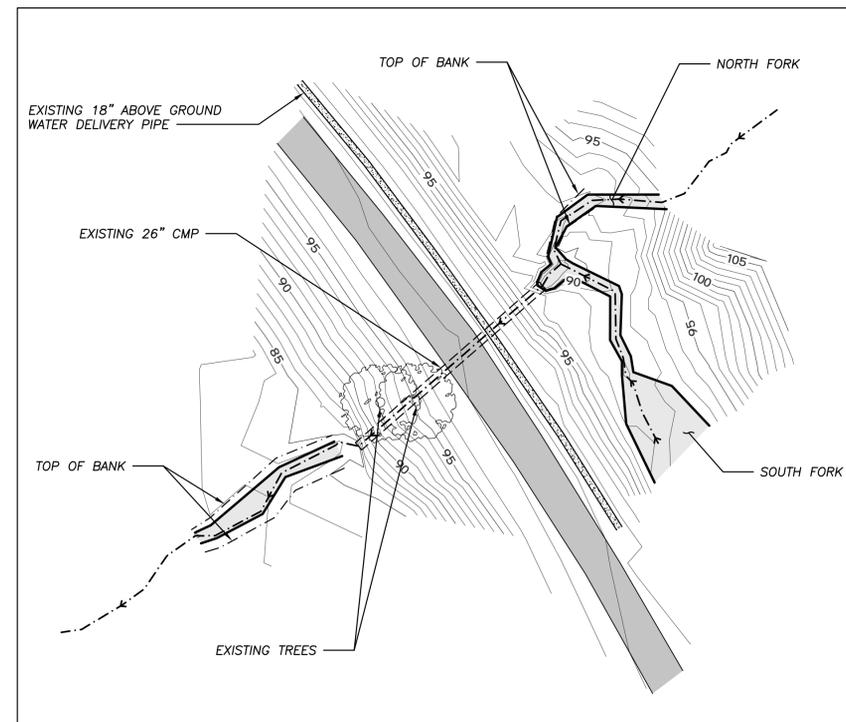
STATE MAP

NOT TO SCALE

### INDEX

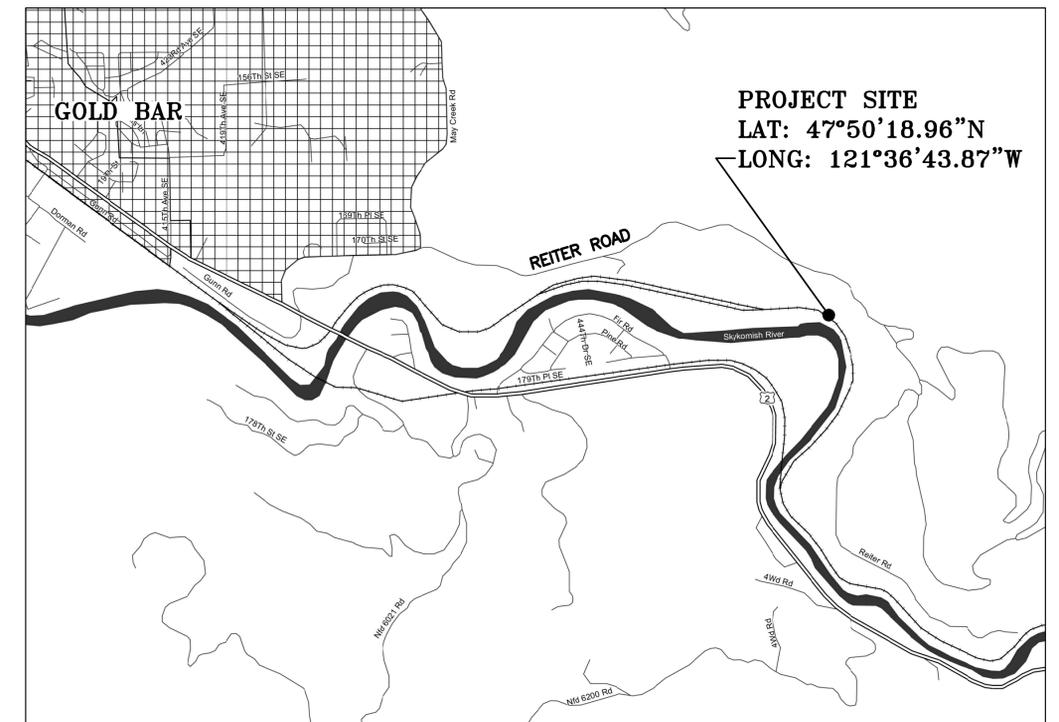
#### SHEET NO.

1. COVER SHEET
2. SITE PLAN - NOTES AND SPECIFICATIONS
3. STREAM PROFILE AND ROADWAY SECTION
4. TYPICAL SECTIONS



EXISTING SITE PLAN

SCALE: 1" = 20'



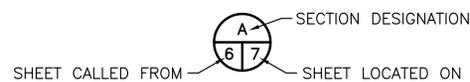
VICINITY MAP

SCALE: 1"=2000'

### SHEET SYMBOLS



#### DETAIL



#### SECTION



#### NOTE REFERENCE

REFERENCE DESIGNATION TO NOTE APPEARING ON SAME SHEET OR A PART OR MATERIAL IN A SCHEDULE

PROJECT NO. PE:R6:12-1	
SHEET 1	OF 4

**LEGEND**

-  PROJECT ELEVATION CONTROL POINT
-  60 EXISTING GROUND CONTOUR (MAJOR, 5' INTERVAL)
-  EXISTING GROUND CONTOUR (MINOR, 1' INTERVAL)
-  EXISTING CREEK THALWEG

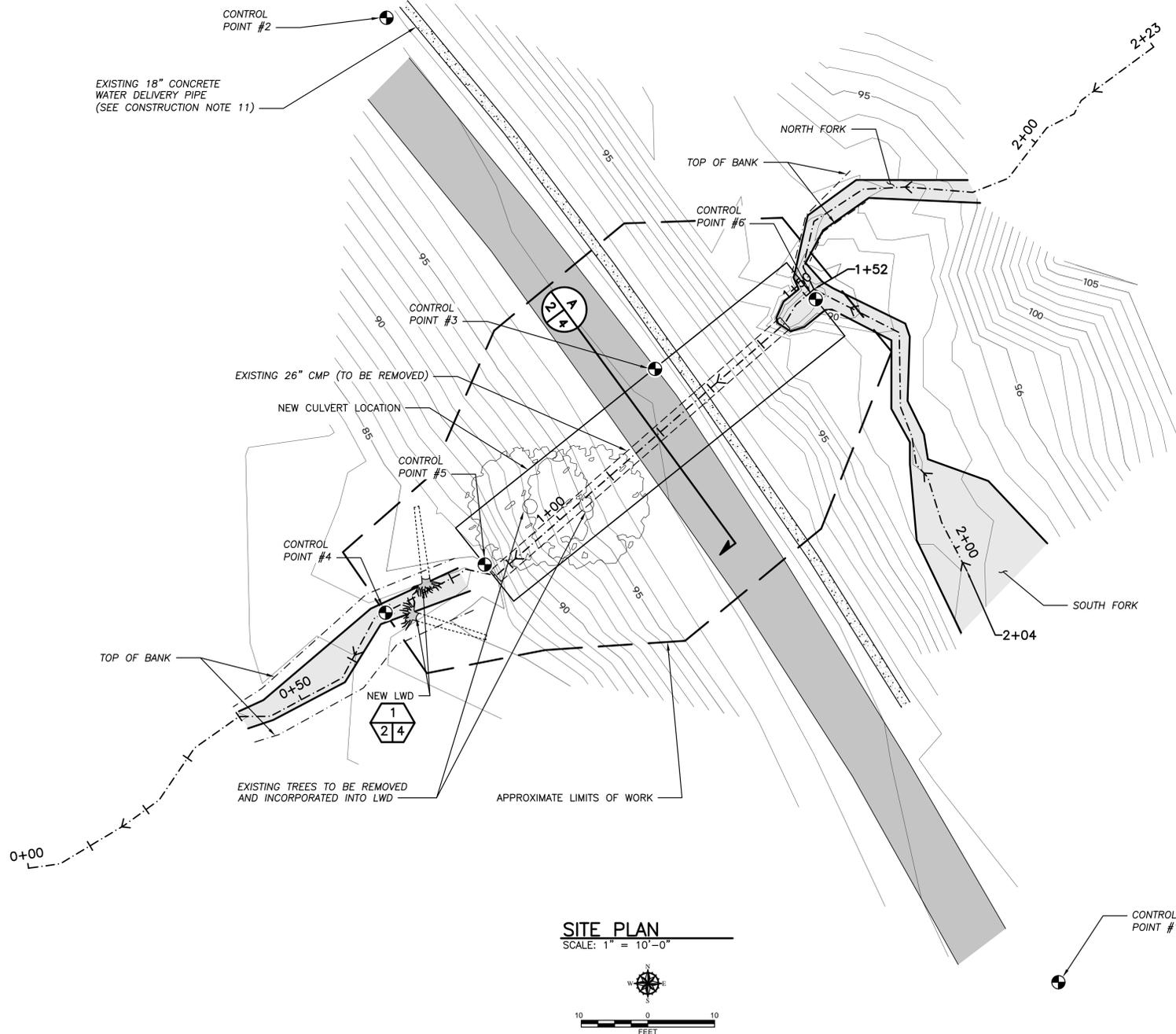
TABLE 1: CONTROL POINTS

CONTROL POINT NO.	ESTIMATED NORTHING	ESTIMATED EASTING	PROJECT ELEVATION
1	5000.00	5000.00	100.00
2	5144.00	4899.19	98.25
3	5131.80	4896.41	98.18
4	5055.18	4899.05	83.44
5	5062.36	4913.91	84.34
6	5101.97	4963.58	88.61

TABLE 2: QUANTITY TABLE

MATERIAL TYPE	QUANTITY	UNITS	SPECIFICATION REFERENCE	NOTES
STREAMBED SEDIMENT	110	TON	WSDOT STD. SPEC. 9-03.11(1)	SEE MIXING RATIOS BELOW FOR STREAMBED MATERIAL A & B
STREAMBED COBBLES - 12 INCH	140	TON	WSDOT STD. SPEC. 9-03.11(2)	SEE MIXING RATIOS BELOW FOR STREAMBED MATERIAL A & B
STREAMBED BOULDERS - ONE MAN	7	TON	WSDOT STD. SPEC. 9-03.11(3)	PLACED ALONG FACE OF FOOTINGS
1-1/4 INCH MINUS CRUSHED ROCK	80	TON	WSDOT STD. SPEC. 9-03.9(3)	PLACE IN COMPACTED LIFTS, 0.5' MAX.
SELECT BORROW	1830	TON	WSDOT STD. SPEC. 9-03.14(2)	PLACE IN COMPACTED LIFTS, 1.5' MAX.

\*STREAMBED MATERIAL A SHALL BE COMPRISED OF: 50% STREAMBED COBBLES AND 50% STREAMBED SEDIMENT BY VOLUME.  
 \*\*STREAMBED MATERIAL B SHALL BE COMPRISED OF: 66% STREAMBED COBBLES AND 33% STREAMBED SEDIMENT BY VOLUME.



**GENERAL NOTES:**

- THESE DESIGNS AND DRAWINGS HAVE BEEN PREPARED FOR THE EXCLUSIVE USE OF THE WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE. NO OTHER PARTY CAN RELY ON THE PRODUCT OF OUR SERVICES UNLESS GEOENGINEERS INC. (GEOENGINEERS) AGREES IN WRITING IN ADVANCE OF SUCH USE.
- THE DRAWINGS CONTAINED WITHIN SHOULD NOT BE UTILIZED FOR ANY PURPOSE OR PROJECT EXCEPT THE ONE SPECIFIED WITHIN THESE PLANS.
- THESE DESIGNS AND DRAWINGS ARE COPYRIGHTED BY GEOENGINEERS, INC. ANY USE, ALTERATION, DELETION OR EDITING OF THESE DOCUMENTS WITHOUT EXPLICIT WRITTEN PERMISSION FROM GEOENGINEERS IS STRICTLY PROHIBITED. ANY OTHER UNAUTHORIZED USE OF THIS DOCUMENT IS PROHIBITED.
- THE DESIGNS DEPICTED HEREIN ARE APPROXIMATE AND ARE INTENDED TO EXPRESS THE OVERALL DESIGN INTENT OF THE PROJECT. THESE DESIGNS WILL NEED TO BE ADJUSTED IN THE FIELD DURING CONSTRUCTION IN ORDER TO MEET THE SPECIFIC SITE CONDITIONS AND INTENDED FUNCTION.
- THESE IMPROVEMENTS HAVE BEEN DEVELOPED WITH THE UNDERSTANDING THAT A QUALIFIED ENGINEER AND/OR SCIENTIST WILL BE ON-SITE TO PROVIDE CONSTRUCTION GUIDANCE WHILE THE STREAM ENHANCEMENTS ARE CONSTRUCTED TO ENSURE THE OVERALL INTENT OF THE DESIGN IS ACHIEVED.
- GEOMORPHIC CONDITIONS CAN CHANGE AND THESE DESIGNS ARE BASED ON CONDITIONS THAT EXISTED AT THE TIME THE DESIGN WAS PERFORMED. THE RESULTS OF THESE DESIGNS MAY BE AFFECTED BY THE PASSAGE OF TIME, BY MANMADE EVENTS SUCH AS CONSTRUCTION ON OR ADJACENT TO THE SITE, OR BY NATURAL EVENTS SUCH AS FLOODS, EARTHQUAKES, SLOPE INSTABILITY OR GROUNDWATER FLUCTUATIONS. CONTACT GEOENGINEERS BEFORE APPLYING THESE DESIGNS TO DETERMINE IF THEY REMAIN APPLICABLE.
- IN GENERAL, THE PROPOSED ENHANCEMENTS ARE INTENDED TO RESULT IN A MORE COMPLEX CHANNEL, WHILE INCREASING BED, BANK AND FLOODPLAIN STABILITY AS WELL AS FLOODPLAIN HABITAT. HOWEVER, AS WITH ALL NATURAL STREAM SYSTEMS, SOME CHANNEL EROSION AND MIGRATION MAY BE EXPECTED TO OCCUR OVER TIME. THESE CHANNEL PROCESSES ARE NATURAL AND APPROPRIATE FOR THESE STREAM SYSTEMS.
- VERTICAL AND HORIZONTAL DATUM: PROJECT SPECIFIC.
- NOT ALL TREES WERE SURVEYED OR DEPICTED ON THIS PLAN.

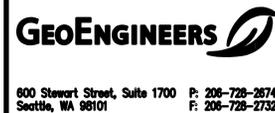
**CONSTRUCTION NOTES:**

- ALL CONTRACTORS WORKING WITHIN THE PROJECT BOUNDARIES ARE RESPONSIBLE FOR COMPLIANCE WITH ALL APPLICABLE SAFETY LAWS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BARRICADES, SAFETY DEVICES AND CONTROL OF TRAFFIC WITHIN AND AROUND THE CONSTRUCTION AREA.
- ALL MATERIAL AND WORKMANSHIP FURNISHED ON OR FOR THE PROJECT MUST MEET THE MINIMUM REQUIREMENTS OF PROJECT PERMITS, APPROVING AGENCIES, TECHNICAL SPECIFICATIONS AS SET FORTH HEREIN, OR WHICHEVER IS MORE RESTRICTIVE.
- OWNER SHALL OBTAIN ALL NECESSARY PERMITS PRIOR TO ANY DEWATERING AND/OR WATER DIVERSION ACTIVITIES ON SITE.
- THE CONTRACTOR SHALL INSTALL AND MAINTAIN APPROPRIATE SEDIMENT CONTROL DEVICES THROUGHOUT THE WHOLE PROJECT SITE, INCLUDING ANY CONSTRUCTION STAGING AREA AND STOCKPILE AREA THROUGHOUT THE PROJECT'S CONSTRUCTION. TEMPORARY CONSTRUCTION AND PERMANENT EROSION CONTROL MEASURES SHALL BE DESIGNED, CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH ALL APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS.
- ANY IN-STREAM CONSTRUCTION SHALL OCCUR DURING THE IN-STREAM WORK WINDOW FOR THE PROJECT AREA AND/OR DURING PERIODS OF LOW FLOW THROUGH THE PROJECT SITE AS APPROVED BY THE PERMITTING AGENCIES.
- CONSTRUCTION SHALL OCCUR IN A MANNER THAT SATISFIES ALL STATE AND FEDERAL STANDARDS AND PROJECT PERMIT REQUIREMENTS FOR CONTAMINANTS AND TURBIDITY.
- CONSTRUCTION SHALL MINIMIZE DISTURBANCE TO, AND MAXIMIZE REUSE OF, EXISTING RIPARIAN VEGETATION.
- ALL MATERIAL NOT USED ON-SITE SHALL BE DISPOSED OF ON-SITE AS DIRECTED BY THE WASHINGTON STATE DEPARTMENT OF FISH AND WILDLIFE OR SHALL BE HAULED OFFSITE AND PROPERLY DISPOSED OF LEGALLY.
- CONTRACTOR TO REMOVE UNSUITABLE AND DELETERIOUS MATERIAL FROM CLEARING AND GRUBBING ACTIVITIES AND EXCAVATIONS.
- THE CONTRACTOR SHALL RETURN DISTURBED AREAS ON ANY ACCESS ROUTE BACK TO THEIR ORIGINAL CONDITION AND/OR BETTER UPON COMPLETION OF THE PROJECT.
- COORDINATE WATER DELIVERY PIPE SHUT OFF, REMOVAL, REPLACEMENT AND PIPE TESTING WITH WDFW REITER POND FACILITIES MANAGER. REPLACEMENT PIPE AND CONNECTION COUPLERS SHALL BE REVIEWED AND APPROVED BY THE FACILITIES MANAGER PRIOR TO PURCHASE AND AFTER PIPE TESTING.
- REGRADE DISTURBED AREAS ACCORDING TO TYPICAL ROADWAY SECTION ON SHEET 3.

**STREAMBED CHANNEL NOTES:**

- DESIGNS SHOWN ARE APPROXIMATE AND ARE INTENDED TO BE CONSTRUCTED UNDER THE DIRECT SUPERVISION OF THE OWNER OR THE OWNER'S AUTHORIZED AGENT.
- STREAMBED MATERIAL PLACEMENT SHALL BEGIN AT THE DOWNSTREAM END AND CONTINUE UPSTREAM.
- LOCATION OF THE LWD STRUCTURES ARE APPROXIMATE AND NEED TO BE FIELD STAKED BY THE CONTRACTOR AND VERIFIED BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT BEFORE CONSTRUCTION BEGINS.
- STREAMBED MATERIALS SHALL BE THOROUGHLY MIXED AND APPROVED BY THE OWNER OR OWNER'S AUTHORIZED AGENT PRIOR TO PLACEMENT INTO THE CHANNEL.
- THE INSTALLED STREAMBED MATERIAL SHALL BE TESTED TO CHECK THAT SEEPAGE IS NEGLIGIBLE PRIOR TO INTRODUCTION OF ACTIVE STREAM FLOW.
- THE OWNER OR THE OWNER'S AUTHORIZED AGENT SHALL APPROVE CONSTRUCTION PRIOR TO DEMOBILIZATION.

REFERENCE: BASE SITE PLAN BY GEOENGINEERS STAFF FIELD MEASUREMENTS.



WASHINGTON STATE  
DEPARTMENT OF FISH AND WILDLIFE

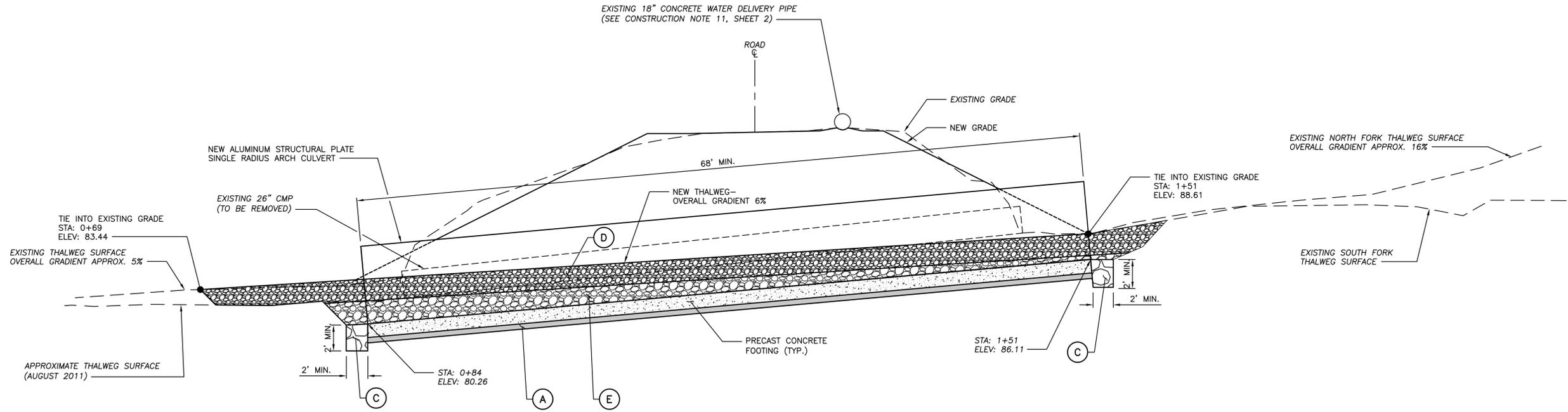


SYM	DATE	REVISION DESCRIPTION	BY
		APPROVED AND RELEASED FOR CONSTRUCTION	
		DESIGNED BY J. AMBROSE/G.N.G.	
		CHECKED BY W. WRIGHT	
		DRAWN BY T. MICHAUD	
		DATE 3/25/13	

REITER POND  
CULVERT REPLACEMENT PROJECT  
SITE PLAN - NOTES AND SPECIFICATIONS

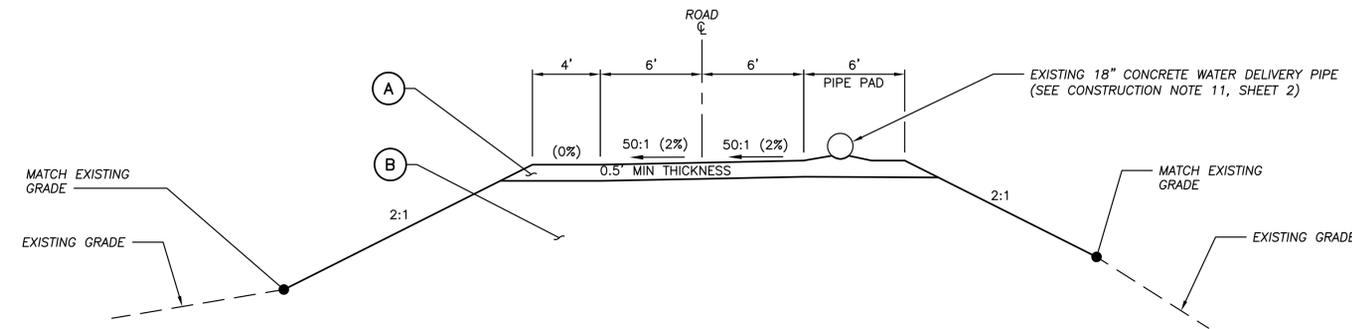
PROJECT NO.  
PE:R6:12-1  
SHEET 2 OF 4

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**THALWEG PROFILE**

HORIZONTAL SCALE: 1" = 5'  
VERTICAL SCALE: 1" = 5'  
VERTICAL EXAGGERATION: 1X



**TYPICAL-ROADWAY SECTION**

LOOKING NORTHWEST

**LEGEND**

- (A) 1-1/4 INCH MINUS CRUSHED ROCK
- (B) SELECT BORROW
- (C) STREAMBED BOULDERS (SEE NOTE 4)
- (D) STREAMBED MATERIAL A
- (E) STREAMBED MATERIAL B

**NOTES:**

1. CULVERT AND FOOTINGS TO BE PURCHASED AND SUPPLIED BY OWNER.
2. STREAMBED BOULDER TRENCH TO EXTEND ACROSS FACE OF FOOTINGS.
3. MINIMUM ROADWAY DIMENSIONS ARE COMPACTED DEPTHS.

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DEPARTMENT OF FISH AND WILDLIFE

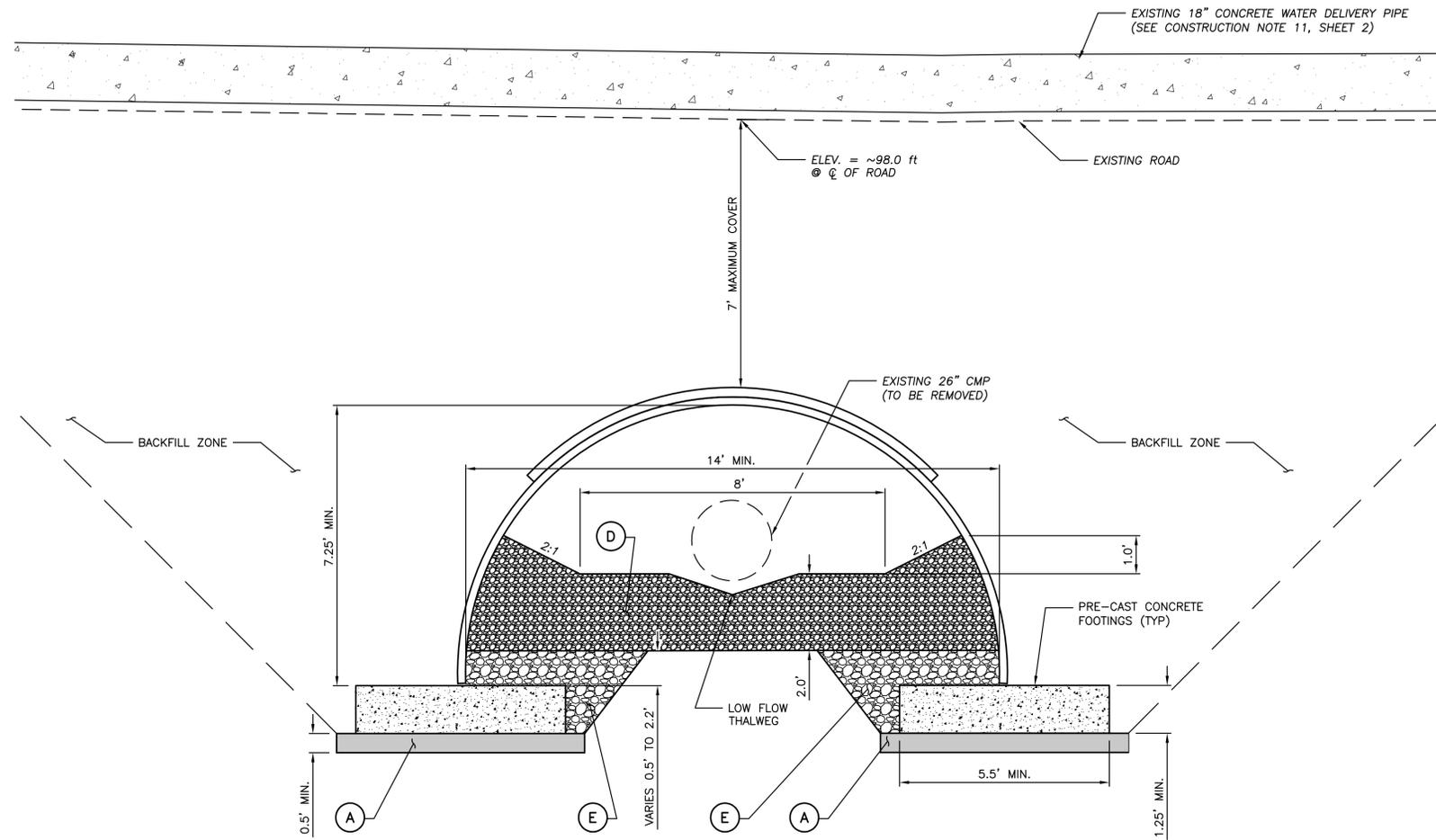


SYM	DATE	REVISION DESCRIPTION	BY
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CHIEF ENGINEER	DATE:	DESIGNED BY J. AMBROSE/G.NG	
PROGRAM	DATE:	CHECKED BY W. WRIGHT	
		DRAWN BY T. MICHAUD	
		DATE 3/25/13	

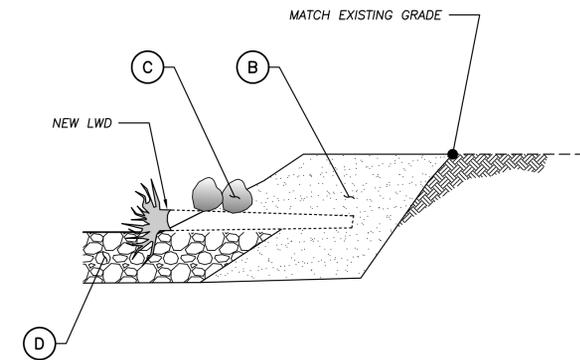
0 1"  
BAR MEASURES  
ONE INCH ON  
ORIGINAL DRAWINGS

REITER POND  
CULVERT REPLACEMENT PROJECT  
STREAM PROFILE AND ROADWAY SECTION

PROJECT NO.  
PE:R6:12-1  
SHEET 3 OF 4



**TYPICAL-CULVERT CHANNEL SECTION**  
 LOOKING DOWNSTREAM  
 HORIZONTAL SCALE: 1" = 2'  
 VERTICAL SCALE: 1" = 2'  
 VERTICAL EXAGGERATION: 1X



**TYPICAL LWD LAYOUT**  
 HORIZONTAL SCALE: 1" = 5'  
 VERTICAL SCALE: 1" = 5'  
 VERTICAL EXAGGERATION: 1X

**NOTES:**

- CULVERT AND FOOTINGS TO BE PURCHASED AND SUPPLIED BY OWNER.
- BACKFILL ZONE TO BE PER CULVERT MANUFACTURER'S SPECIFICATIONS.
- LWD SHALL BE BUIRED 2/3 OF TOTAL LENGTH WITH A MINIMUM 2 FEET THICK OF COMPACTED FILL.
- FOUNDATIONS BEARING ON UNDISTURBED GLACIAL TILL OR STRUCTURAL FILL EXTENDING TO UNDISTURBED GLACIAL TILL, MAY BE DESIGNED USING AN ALLOWABLE SOIL BEARING PRESSURE OF 3,000 POUNDS PER SQUARE FOOT (PSF) FOR ISOLATED SPREAD FOOTINGS AND CONTINUOUS FOOTINGS. THE ALLOWABLE SOIL BEARING VALUE IS A NET VALUE THAT APPLIES TO THE TOTAL OF DEAD AND LONG-TERM LIVE LOADS AND MAY BE INCREASED BY UP TO ONE-THIRD WHEN CONSIDERING TOTAL LOADS INCLUDING WIND OR SEISMIC LOADS. THE CONDITION OF CULVERT FOOTING BEARING SURFACES SHALL BE EVALUATED AND CONFIRMED BY GEOENGINEERS DURING CONSTRUCTION. LOOSE AND/OR SOFT SOILS IDENTIFIED IN THE FOOTING SUBGRADES SHALL BE OVER-EXCAVATED TO A DEPTH OF AT LEAST THREE FEET BELOW FOUNDATION GRADE OR TO DENSE SOILS, WHICHEVER COMES FIRST, AND REPLACED WITH STRUCTURAL FILL COMPACTED TO AT LEAST 95 PERCENT OF THE MAXIMUM DRY DENSITY (MDD) PER ASTM D1557. OVEREXCAVATION, IF REQUIRED TO REMOVE UNSUITABLE BEARING SOIL, SHALL EXTEND Laterally A DISTANCE OF AT LEAST 3 FEET BEYOND THE OUTER EDGES OF THE CULVERT FOOTINGS OR A DISTANCE EQUAL TO THE OVEREXCAVATION DEPTH, WHICHEVER IS LESS.
- FOOTER DIMENSIONS PROVIDED ARE FOR INFORMATION ONLY. EXACT FOOTING DIMENSIONS AND DESIGNS WILL BE DETERMINED BY THE OWNER OR THE OWNER'S AUTHORIZED AGENT.

**LEGEND**

- (A) 1-1/4 INCH MINUS CRUSHED ROCK
- (B) SELECT BORROW
- (C) STREAMBED BOULDERS
- (D) STREAMBED MATERIAL A
- (E) STREAMBED MATERIAL B

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**WASHINGTON STATE**  
**DEPARTMENT OF FISH AND WILDLIFE**



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		DESIGNED BY J. AMBROSE/G.NG	
		CHECKED BY W. WRIGHT	
		DRAWN BY T. MICHAUD	
		DATE 3/25/13	

<b>REITER POND</b>	
<b>CULVERT REPLACEMENT PROJECT</b>	
TYPICAL SECTIONS	

PROJECT NO. PE:R6:12-1	
SHEET 4	OF 4