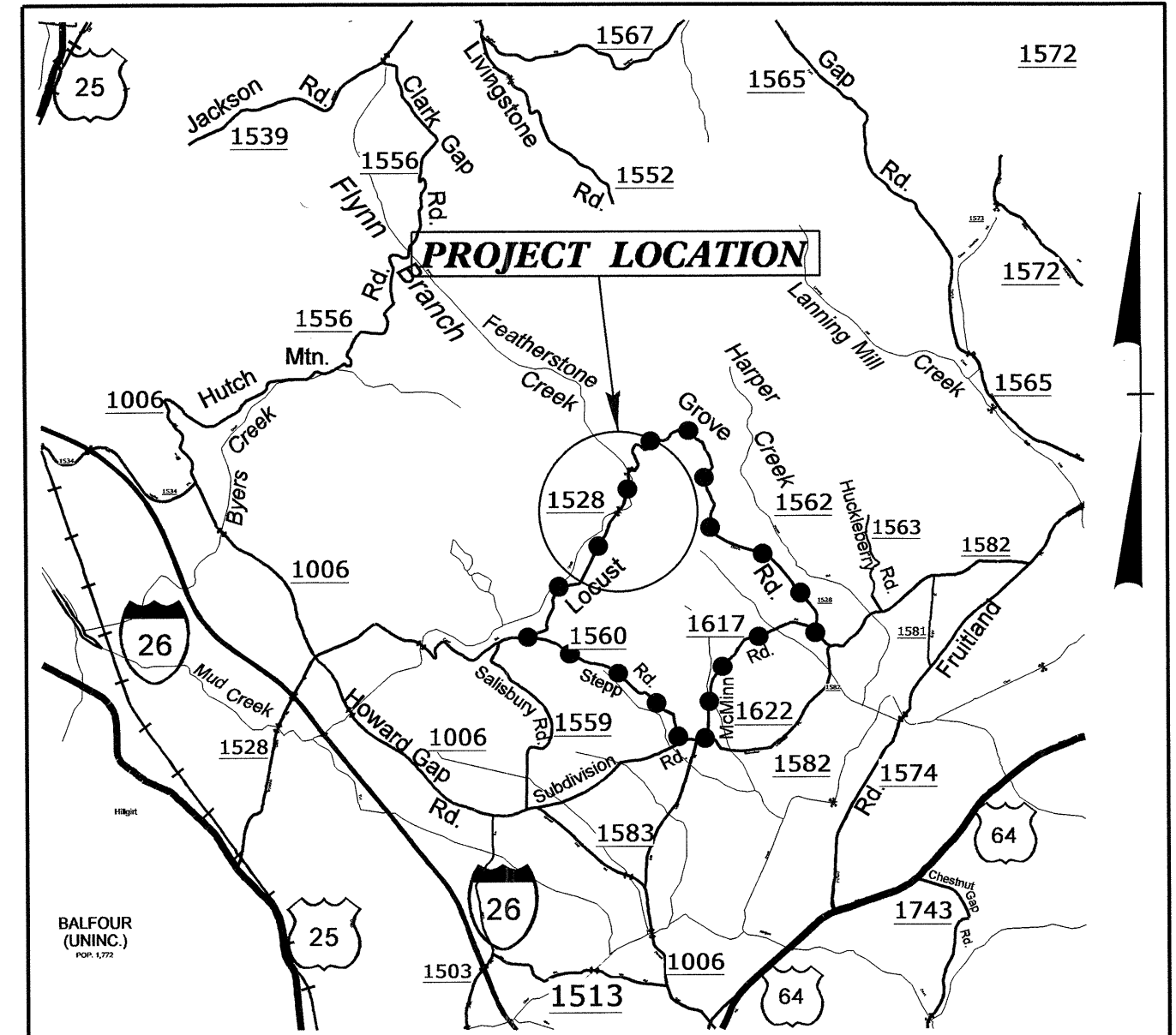


09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

●●●●●●●●●● DENOTES OFF-SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HENDERSON COUNTY

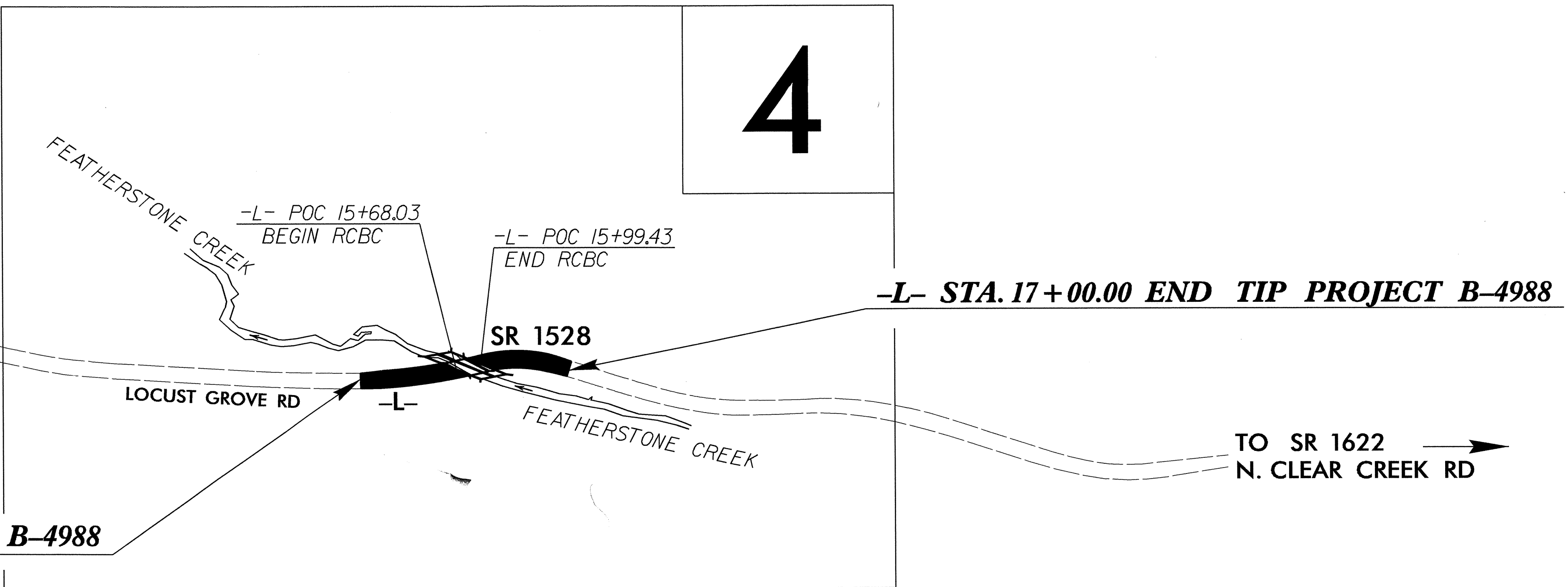
LOCATION: REPLACEMENT OF BRIDGE 309 ON SR 1528
OVER FEATHERSTONE CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4988	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
40156.1.1	BRZ-1528(6)	PE	
40156.2.1	BRZ-1528(6)	R/W & UTIL	
40156.3.FD1	BRZ-1528(6)	CONST.	



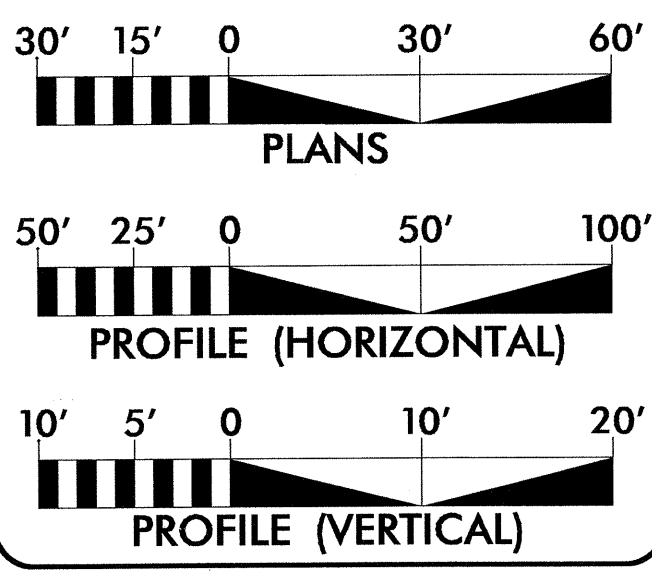
NAD 83 / 2001



TIP PROJECT: B-4988

CONTRACT: C203352

GRAPHIC SCALES



DESIGN DATA

ADT 2014 = 775
 ADT 2035 = 1,900
 K = 12 %
 D = 70 %
 T = 8 % *
 V = 25 MPH
 * TTST = 1% DUAL 7%
 FUNC CLASS = LOCAL
 SUB REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4988 = 0.039 MILES
 LENGTH STRUCTURE TIP PROJECT B-4988 = 0.006 MILES
 TOTAL LENGTH TIP PROJECT B-4988 = 0.045 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS

1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 16, 2012

LETTING DATE:
FEBRUARY 18, 2014

G.E. BREW, P.E.
PROJECT ENGINEER

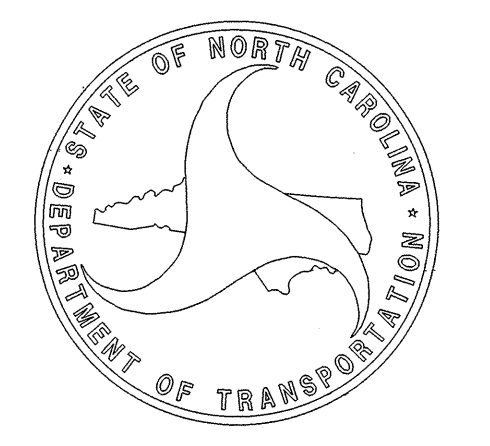
I. T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER



ROADWAY DESIGN ENGINEER

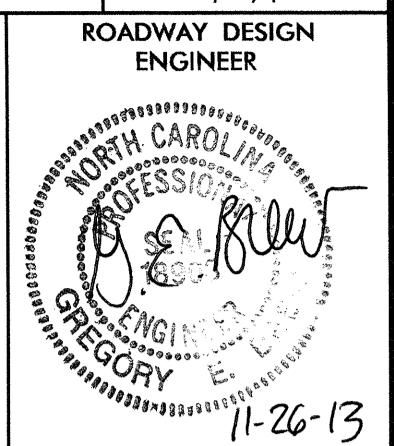
11-14-13
SIGNATURE: Gregory E. Brew



01-NOV-2013 13:27
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\$\$\$\$\$USERNAME\$\$\$\$\$

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	ROCK PLATING DETAIL
3-A	SUMMARY OF EARTHWORK, GUARDRAIL SUMMARY, AND SUMMARY OF ASPHALT PAVEMENT REMOVAL
3-B	SUMMARY OF SUBSURFACE DRAINAGE, ROCK PLATING SUMMARY, AND SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-4	CROSS-SECTIONS
C-1 THRU C-8	CULVERT PLANS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS

GRADING AND SURFACING OR SURFACING AND WIDENING:
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO 560.01.

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:
THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:
SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC WILL BE PAID FOR AS "EXTRA WORK" IN ACCORDANCE WITH SECTION 104-7.

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

LIST OF STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
815.03	Pipe Underdrain and Blind Drain
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels
876.04	Drainage Ditches with Class 'B' Rip Rap

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

State Line	-----
County Line	-----
Township Line	-----
City Line	-----
Reservation Line	-----
Property Line	-----
Existing Iron Pin	---(IP)---
Property Corner	---(C)---
Property Monument	---(M)---
Parcel/Sequence Number	---(123)---
Existing Fence Line	---(X)---
Proposed Woven Wire Fence	---(O)---
Proposed Chain Link Fence	---(CL)---
Proposed Barbed Wire Fence	---(B)---
Existing Wetland Boundary	---(WLB)---
Proposed Wetland Boundary	---(WLB)---
Existing Endangered Animal Boundary	---(EAB)---
Existing Endangered Plant Boundary	---(EPB)---
Known Soil Contamination: Area or Site	---(S)---
Potential Soil Contamination: Area or Site	---(P)---

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G Tank Cap	---(G)---
Sign	---(S)---
Well	---(W)---
Small Mine	---(M)---
Foundation	---(F)---
Area Outline	---(A)---
Cemetery	---(C)---
Building	---(B)---
School	---(S)---
Church	---(C)---
Dam	---(D)---

HYDROLOGY:

Stream or Body of Water	-----
Hydro, Pool or Reservoir	-----
Jurisdictional Stream	---(JS)---
Buffer Zone 1	---(BZ 1)---
Buffer Zone 2	---(BZ 2)---
Flow Arrow	---(A)---
Disappearing Stream	---(D)---
Spring	---(S)---
Wetland	---(W)---
Proposed Lateral, Tail, Head Ditch	---(L)---
False Sump	---(F)---

RAILROADS:

Standard Gauge	-----
RR Signal Milepost	---(M)---
Switch	---(S)---
RR Abandoned	-----
RR Dismantled	-----

RIGHT OF WAY:

Baseline Control Point	---(C)---
Existing Right of Way Marker	---(R)---
Existing Right of Way Line	-----
Proposed Right of Way Line	---(R)---
Proposed Right of Way Line with Iron Pin and Cap Marker	---(R)---
Proposed Right of Way Line with Concrete or Granite RW Marker	---(R)---
Proposed Control of Access Line with Concrete CA Marker	---(C)---
Existing Control of Access	---(C)---
Proposed Control of Access	---(C)---
Existing Easement Line	---(E)---
Proposed Temporary Construction Easement	---(E)---
Proposed Temporary Drainage Easement	---(TDE)---
Proposed Permanent Drainage Easement	---(PDE)---
Proposed Permanent Drainage / Utility Easement	---(DUE)---
Proposed Permanent Utility Easement	---(PUE)---
Proposed Temporary Utility Easement	---(TUE)---
Proposed Aerial Utility Easement	---(AUE)---
Proposed Permanent Easement with Iron Pin and Cap Marker	---(E)---

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	---(C)---
Proposed Slope Stakes Fill	---(F)---
Proposed Curb Ramp	---(CR)---
Existing Metal Guardrail	---(G)---
Proposed Guardrail	---(G)---
Existing Cable Guiderail	---(G)---
Proposed Cable Guiderail	---(G)---
Equality Symbol	---(E)---
Pavement Removal	---(R)---
VEGETATION:	
Single Tree	---(T)---
Single Shrub	---(S)---
Hedge	---(H)---
Woods Line	---(W)---

Orchard	---(O)---
Vineyard	---(V)---

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	---(C)---
Bridge Wing Wall, Head Wall and End Wall	---(C)---
MINOR:	
Head and End Wall	---(C)---
Pipe Culvert	---(C)---
Footbridge	---(F)---
Drainage Box: Catch Basin, DI or JB	---(CB)---
Paved Ditch Gutter	---(D)---
Storm Sewer Manhole	---(S)---
Storm Sewer	---(S)---

UTILITIES:

POWER:	
Existing Power Pole	---(P)---
Proposed Power Pole	---(P)---
Existing Joint Use Pole	---(P)---
Proposed Joint Use Pole	---(P)---
Power Manhole	---(P)---
Power Line Tower	---(P)---
Power Transformer	---(P)---
U/G Power Cable Hand Hole	---(P)---
H-Frame Pole	---(P)---
Recorded U/G Power Line	---(P)---
Designated U/G Power Line (S.U.E.*)	---(P)---

TELEPHONE:

Existing Telephone Pole	---(T)---
Proposed Telephone Pole	---(T)---
Telephone Manhole	---(T)---
Telephone Booth	---(T)---
Telephone Pedestal	---(T)---
Telephone Cell Tower	---(T)---
U/G Telephone Cable Hand Hole	---(T)---
Recorded U/G Telephone Cable	---(T)---
Designated U/G Telephone Cable (S.U.E.*)	---(T)---
Recorded U/G Telephone Conduit	---(TC)---
Designated U/G Telephone Conduit (S.U.E.*)	---(TC)---
Recorded U/G Fiber Optics Cable	---(T)---
Designated U/G Fiber Optics Cable (S.U.E.*)	---(T)---

WATER:

Water Manhole	---(W)---
Water Meter	---(M)---
Water Valve	---(V)---
Water Hydrant	---(H)---
Recorded U/G Water Line	---(W)---
Designated U/G Water Line (S.U.E.*)	---(W)---
Above Ground Water Line	---(A/G)---

TV:

TV Satellite Dish	---(T)---
TV Pedestal	---(T)---
TV Tower	---(T)---
U/G TV Cable Hand Hole	---(T)---
Recorded U/G TV Cable	---(TV)---
Designated U/G TV Cable (S.U.E.*)	---(TV)---
Recorded U/G Fiber Optic Cable	---(TV)---
Designated U/G Fiber Optic Cable (S.U.E.*)	---(TV)---

GAS:

Gas Valve	---(G)---
Gas Meter	---(G)---
Recorded U/G Gas Line	---(G)---
Designated U/G Gas Line (S.U.E.*)	---(G)---
Above Ground Gas Line	---(A/G)---

SANITARY SEWER:

Sanitary Sewer Manhole	---(SS)---
Sanitary Sewer Cleanout	---(SS)---
U/G Sanitary Sewer Line	---(SS)---
Above Ground Sanitary Sewer	---(A/G)---
Recorded SS Forced Main Line	---(SS)---
Designated SS Forced Main Line (S.U.E.*)	---(SS)---

MISCELLANEOUS:

Utility Pole	---(U)---
Utility Pole with Base	---(U)---
Utility Located Object	---(U)---
Utility Traffic Signal Box	---(U)---
Utility Unknown U/G Line	---(U)---
U/G Tank; Water, Gas, Oil	---(U)---
Underground Storage Tank, Approx. Loc.	---(UST)---
A/G Tank; Water, Gas, Oil	---(U)---
Geoenvironmental Boring	---(U)---
U/G Test Hole (S.U.E.*)	---(U)---
Abandoned According to Utility Records	---(A)---
End of Information	---(E)---

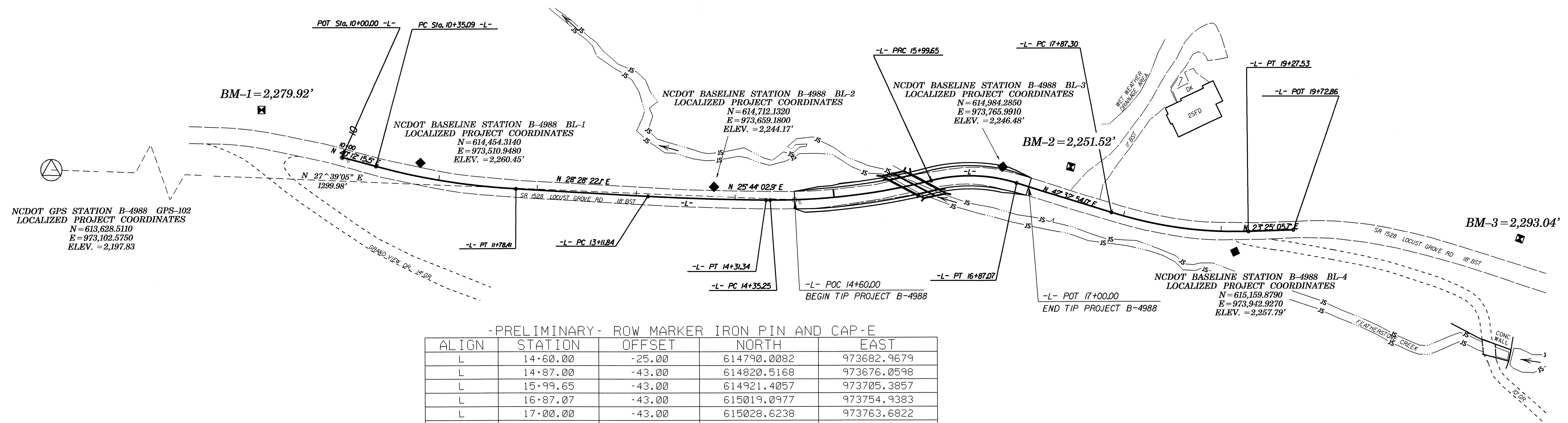
SURVEY CONTROL SHEET B-4988

 BM1 ELEVATION = 2279.92
 N 614332 E 973394
 BL STATION 5+00.00
 S 43°43'57.82" W DIST 168.81'
 8" SPIKE SET IN BASE OF 18" OAK TREE

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
	1	BL-1	614454.3140	973510.9480	2260.45	10+78.35	13.78 LT
	2	BL-2	614712.1320	973659.1800	2244.17	13+78.29	12.51 LT
	3	BL-3	614984.2850	973765.9910	2246.48	16+70.16	12.28 LT
	4	BL-4	615159.8790	973942.9270	2257.79	19+13.84	20.12 RT

 BM3 ELEVATION = 2293.04
 N 615426 E 974054
 BL STATION 13+39.00
 N 22°42'10.29" E DIST 288.09
 CHISELED SQUARE IN ROCK OUTCROP

 BM2 ELEVATION = 2251.52
 N 615046 E 973796
 BL STATION 11+55.00 23 LEFT
 8" SPIKE SET IN BASE OF 18" BIRCH TREE



-PRELIMINARY- ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	14+60.00	-25.00	614790.0082	973682.9679
L	14+87.00	-43.00	614820.5168	973676.0598
L	15+99.65	-43.00	614921.4057	973705.3857
L	16+87.07	-43.00	615019.0977	973754.9383
L	17+00.00	-43.00	615028.6238	973763.6822
L	17+00.00	-25.00	615016.4520	973776.9429
L	17+00.00	25.00	614982.6414	973813.7783
L	16+87.07	25.00	614973.1153	973805.0344
L	15+99.65	25.00	614908.1477	973772.0807
L	14+60.00	25.00	614770.0286	973728.8026

-PRELIMINARY- ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+84.00	25.00	614892.2490	973768.7208
L	16+08.00	40.00	614911.3320	973788.1738

-PRELIMINARY- L

TYPE	STATION	NORTH	EAST
POT	10+00.00	614385.4087	973472.4634
PC	10+35.09	614412.2060	973495.1123
PT	11+78.41	614530.3475	973575.8196
PC	13+11.84	614647.6366	973639.4303
PT	14+31.34	614754.0004	973693.8675
PC	14+35.25	614757.5251	973695.5664
PRC	15+99.65	614913.0219	973747.5604
PT	16+87.07	614990.0206	973786.6168
PC	17+87.30	615063.8638	973854.3963
PT	19+27.53	615180.9479	973930.3830
POT	19+72.86	615222.5367	973948.3958

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTP://WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
B4988_LS_CONTROL.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊗ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4988 GPS-102"
 WITH NAD 83/2001 STATE PLANE GRID COORDINATES OF
 NORTHING: 613628.5110(±) EASTING: 973102.5750(±)
 ELEVATION: 2197.83(±)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99977524
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4988 GPS-102" TO -L- 14+60.00 IS
 N 27°39' 05.15" E 1299.98'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

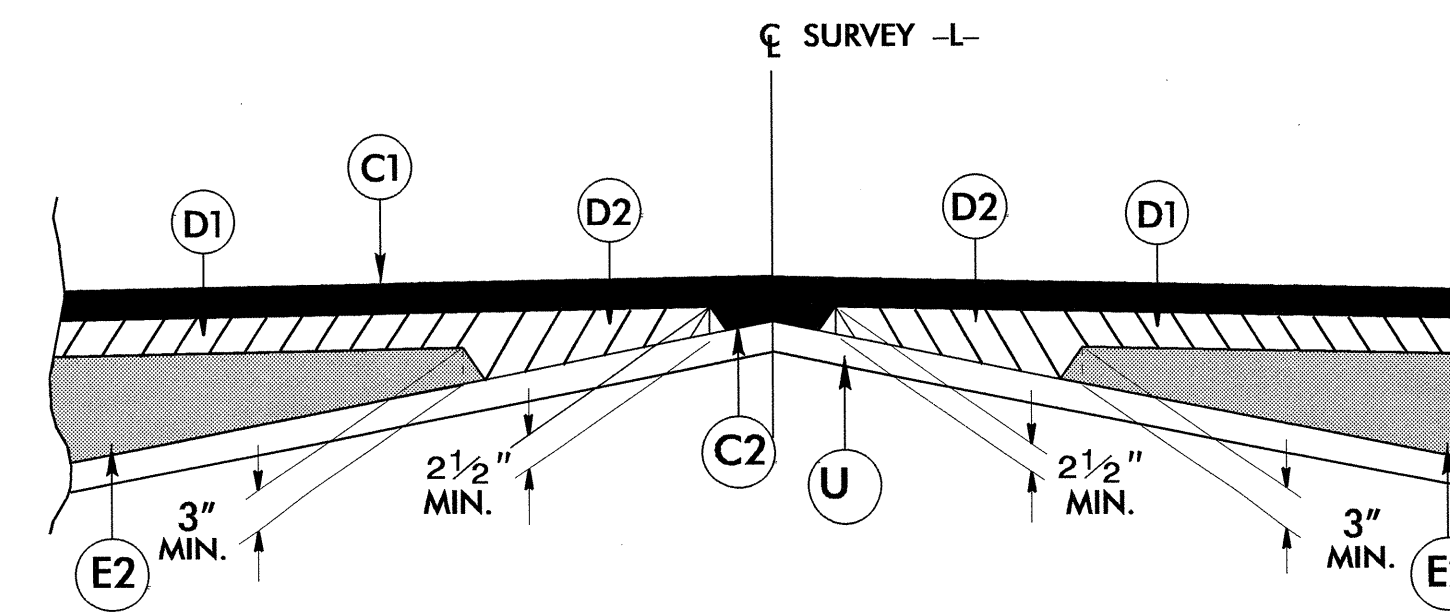
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 NOTE: DRAWING NOT TO SCALE

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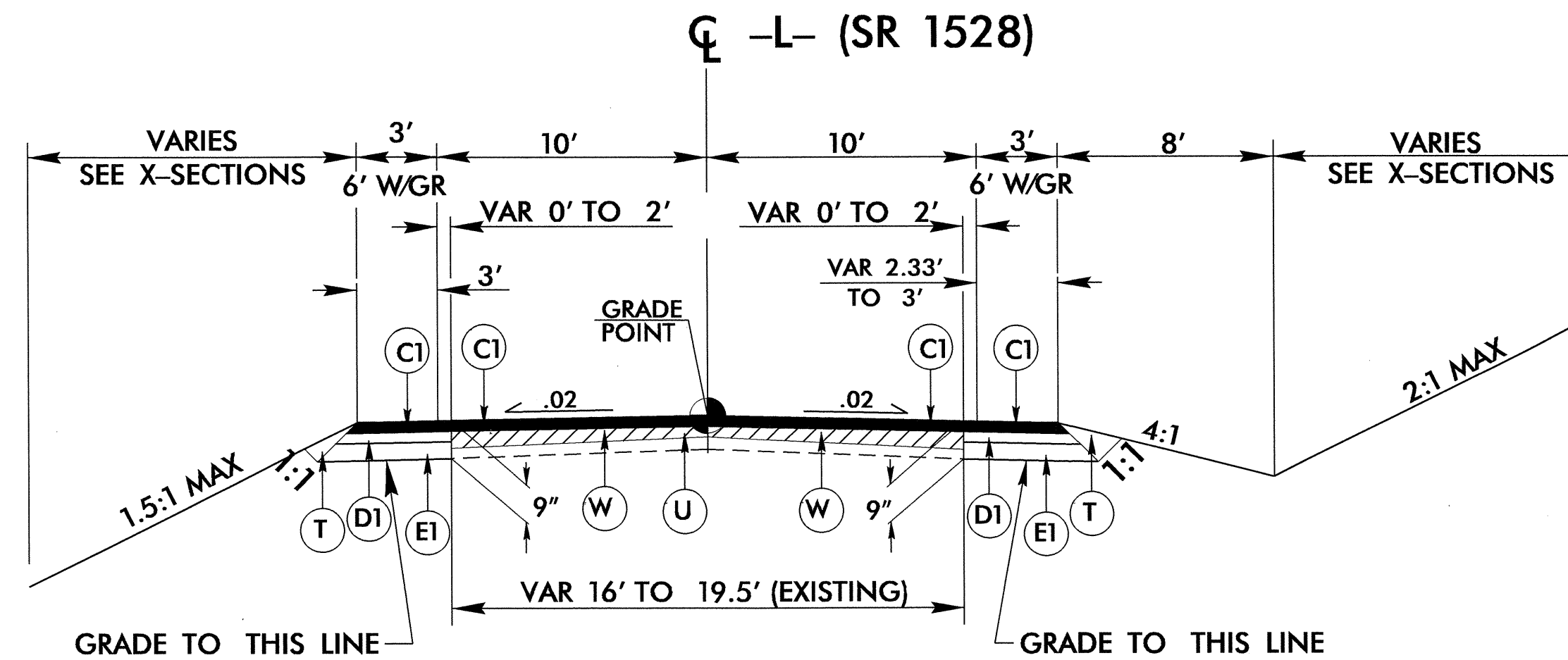
PROJECT REFERENCE NO. B-4988	SHEET NO. 2
ROADWAY DESIGN ENGINEER GREGORY E. BRUN	PAVEMENT DESIGN ENGINEER SEAL 029879 November 2013

FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	SHOULDER BERM GUTTER.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL)

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

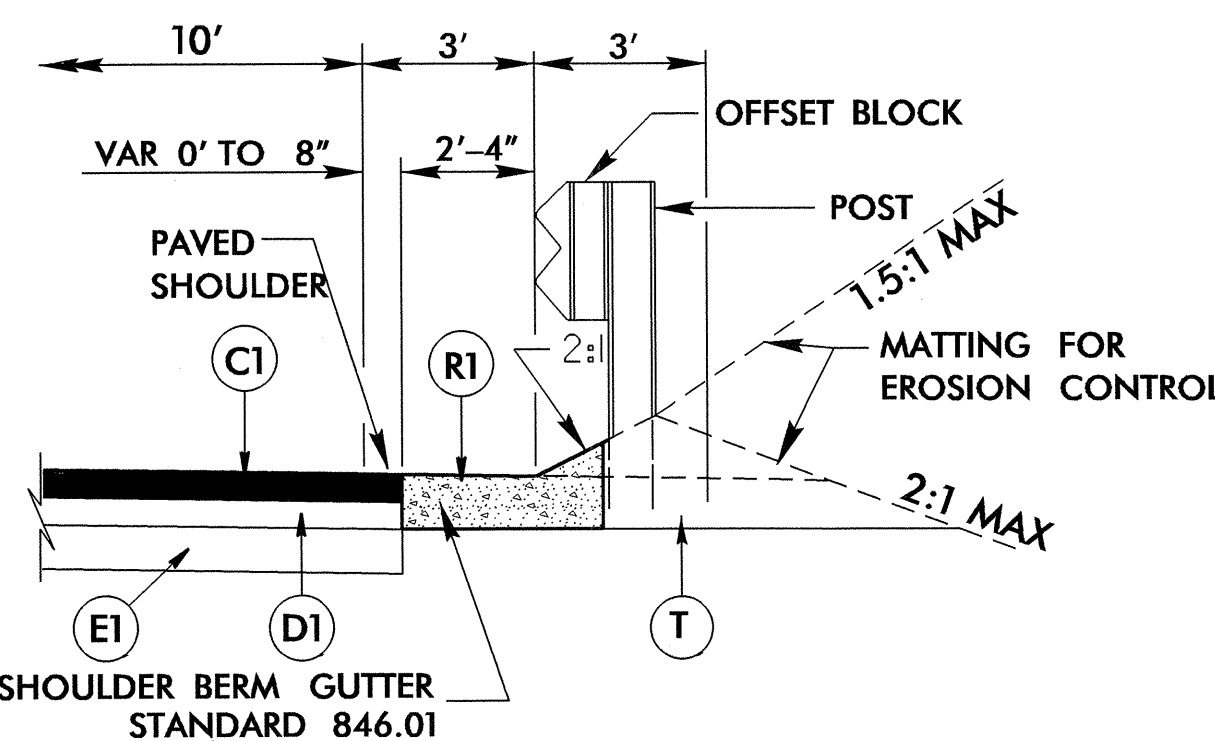


Detail Showing Method of Wedging
(USE WITH TYPICAL SECTION 1)



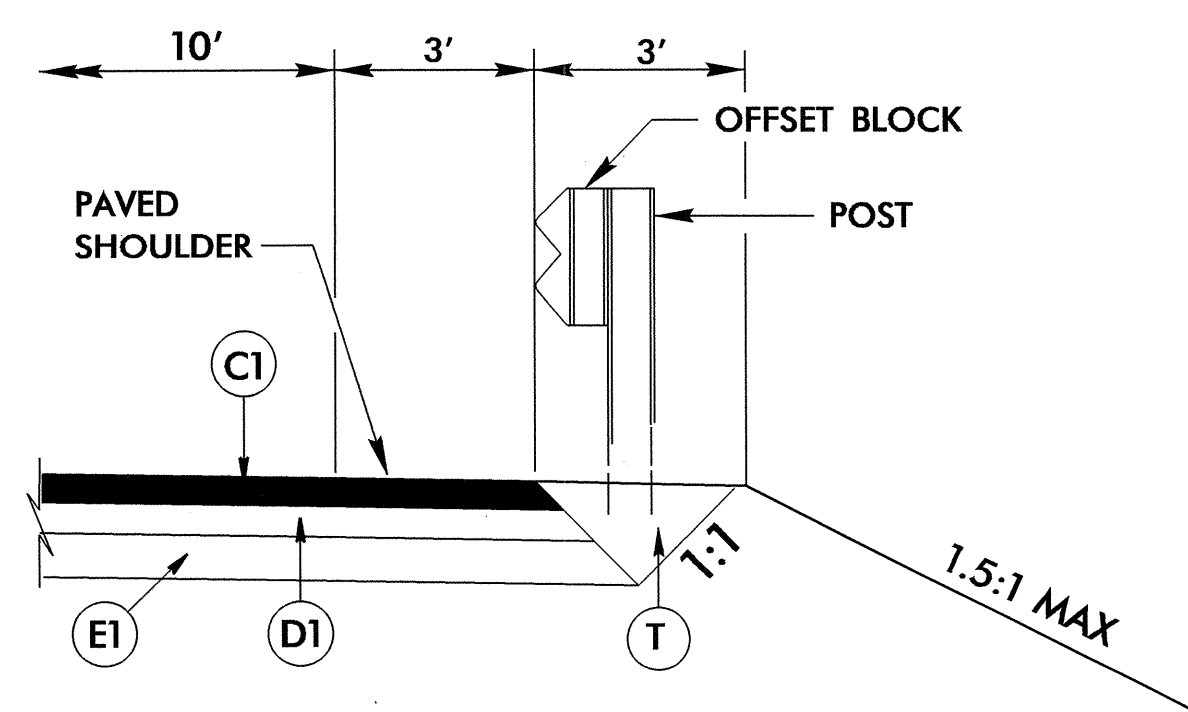
TYPICAL SECTION NO. 1

-L- STA. 14+60.00 TO 15+40.00
-L- STA. 16+10.00 TO 17+00.00



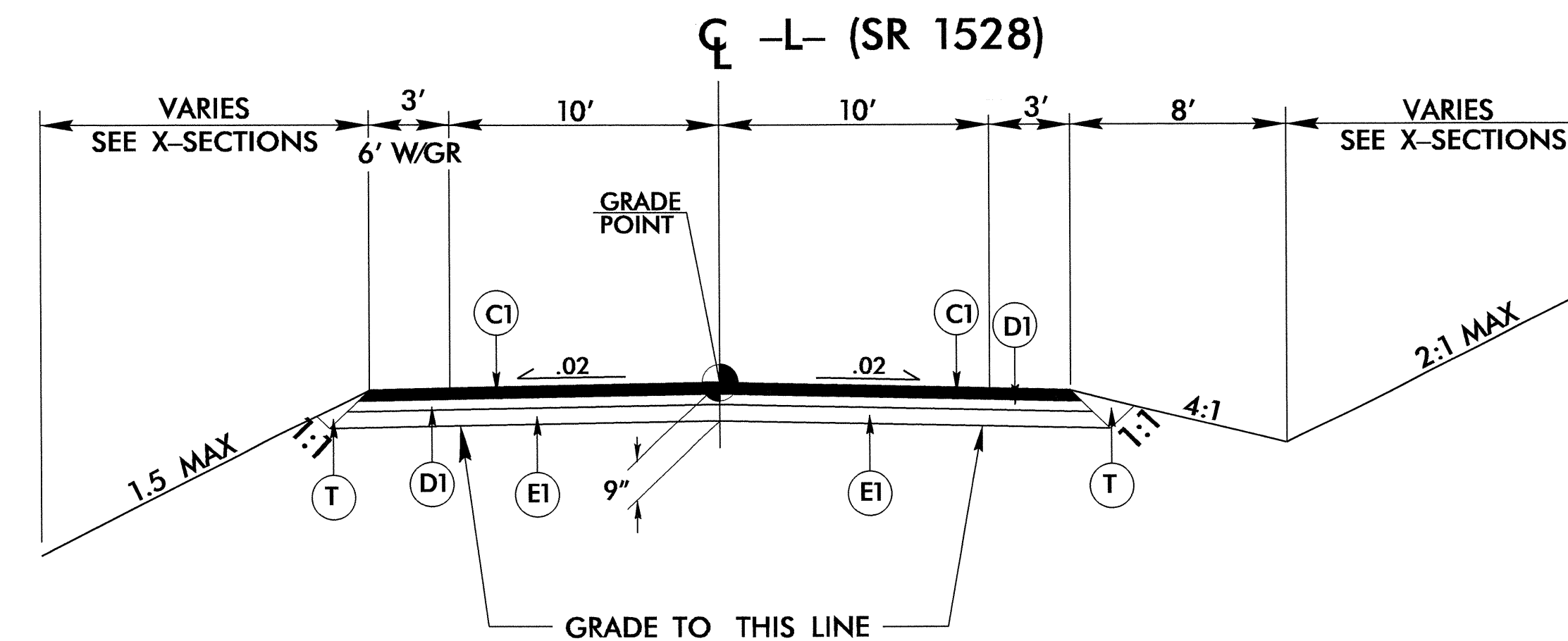
DETAIL OF GUARDRAIL WITH SHLD. BERM GUTTER

USE WITH TYPICAL SECTIONS 1 AND 2
-L- STA. 14+95.00 TO 16+00.00 (RIGHT)




DETAIL OF EXTENDING PAVED SHLD NEAR PROPOSED GUARDRAIL

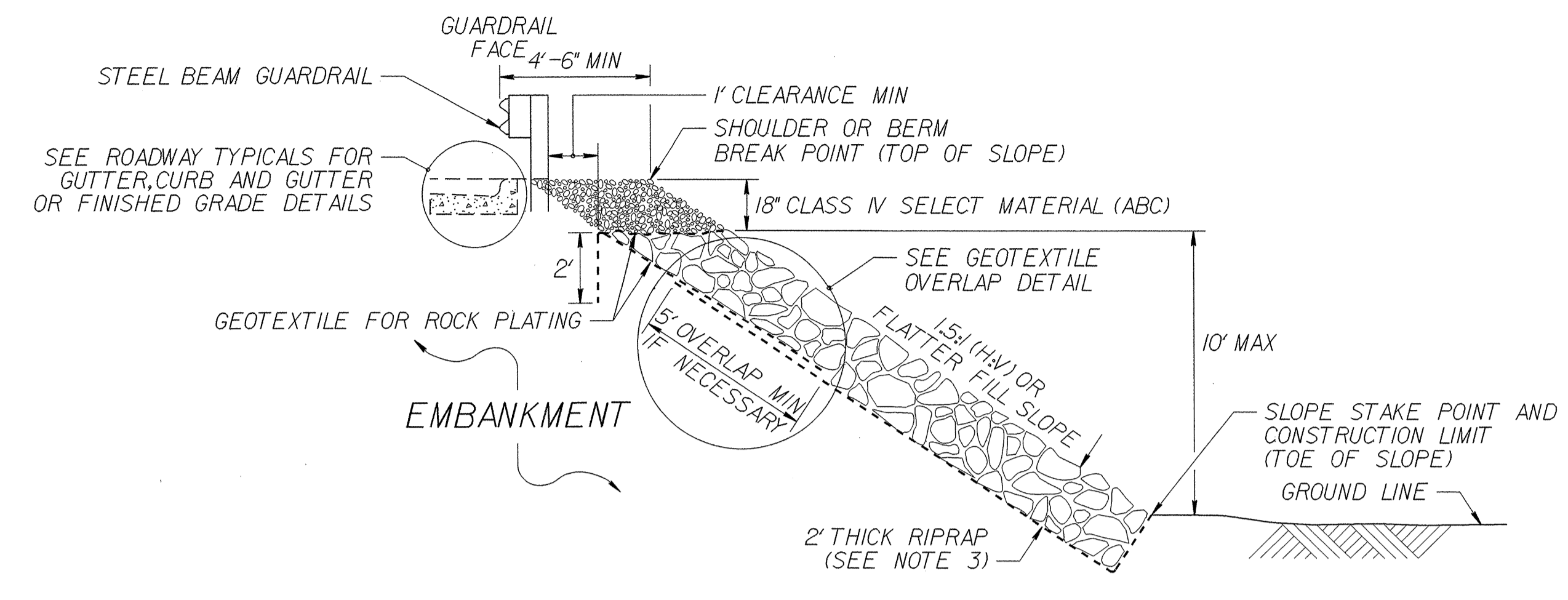
USE WITH TYPICAL SECTION NO. 1 AND NO. 2
(SEE PLANS FOR LOCATION)



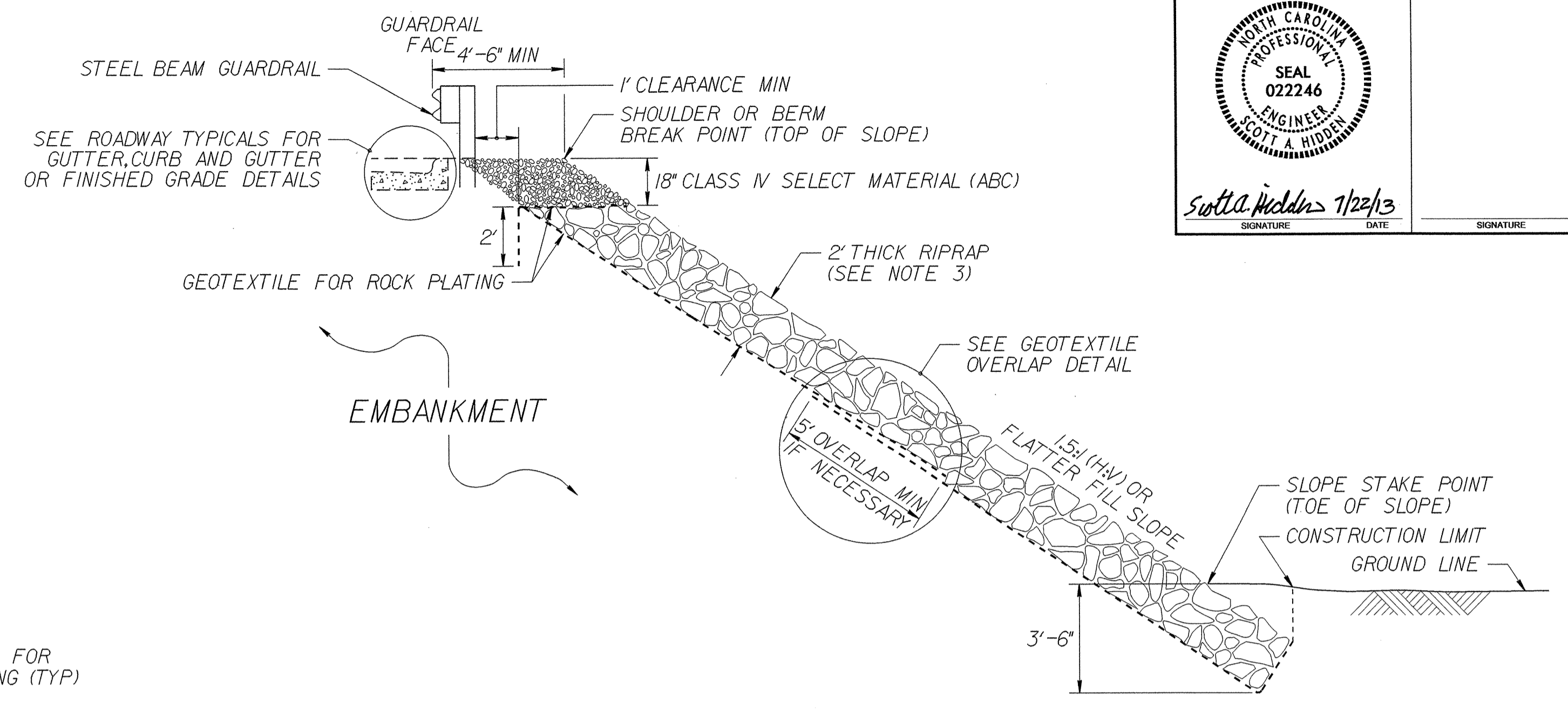
TYPICAL SECTION NO. 2

-L- STA. 15+40.00 TO 16+10.00

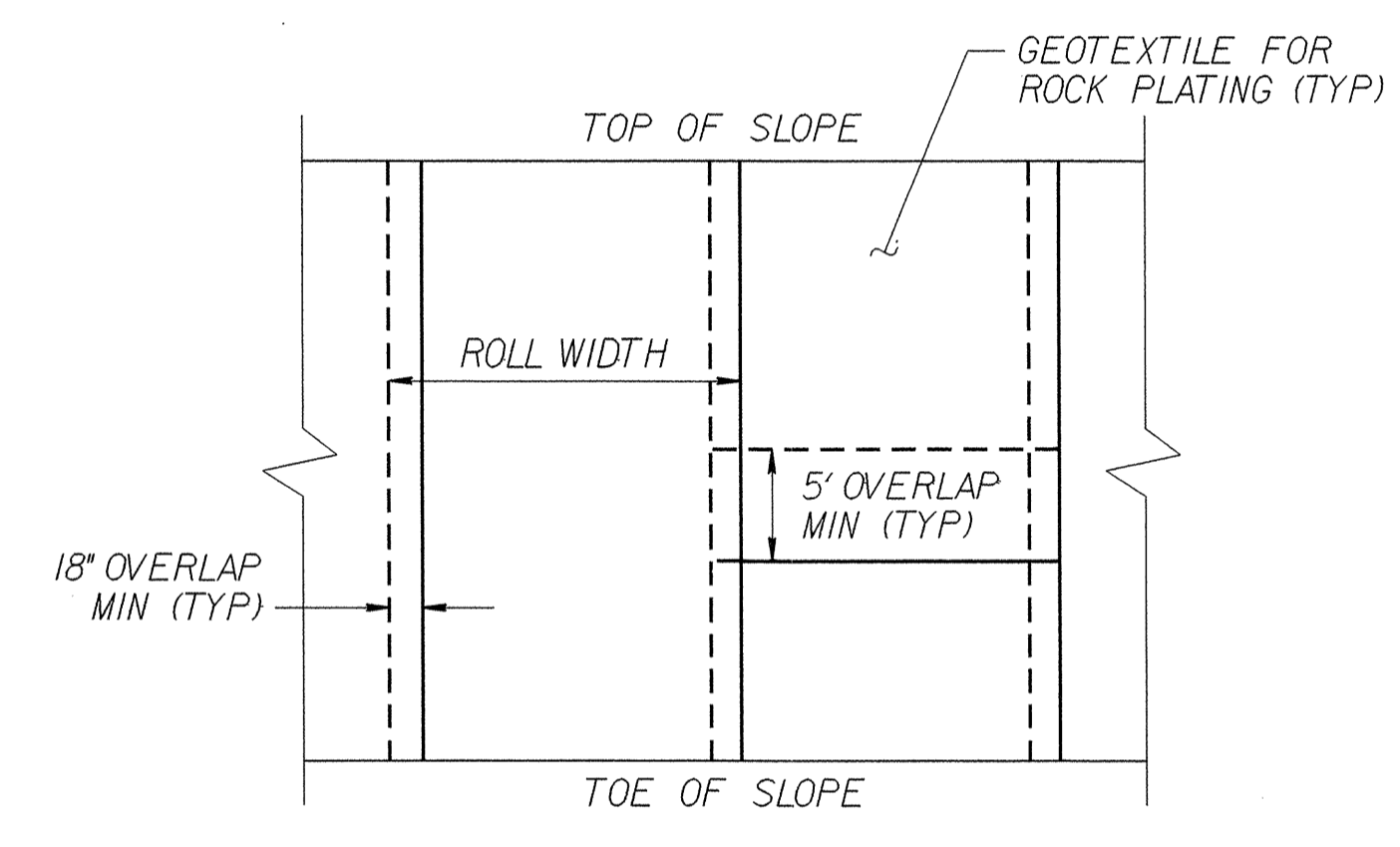
GEOTECHNICAL ENGINEER  Scott A. Hadden 1/22/13 SIGNATURE DATE	ENGINEER SIGNATURE DATE
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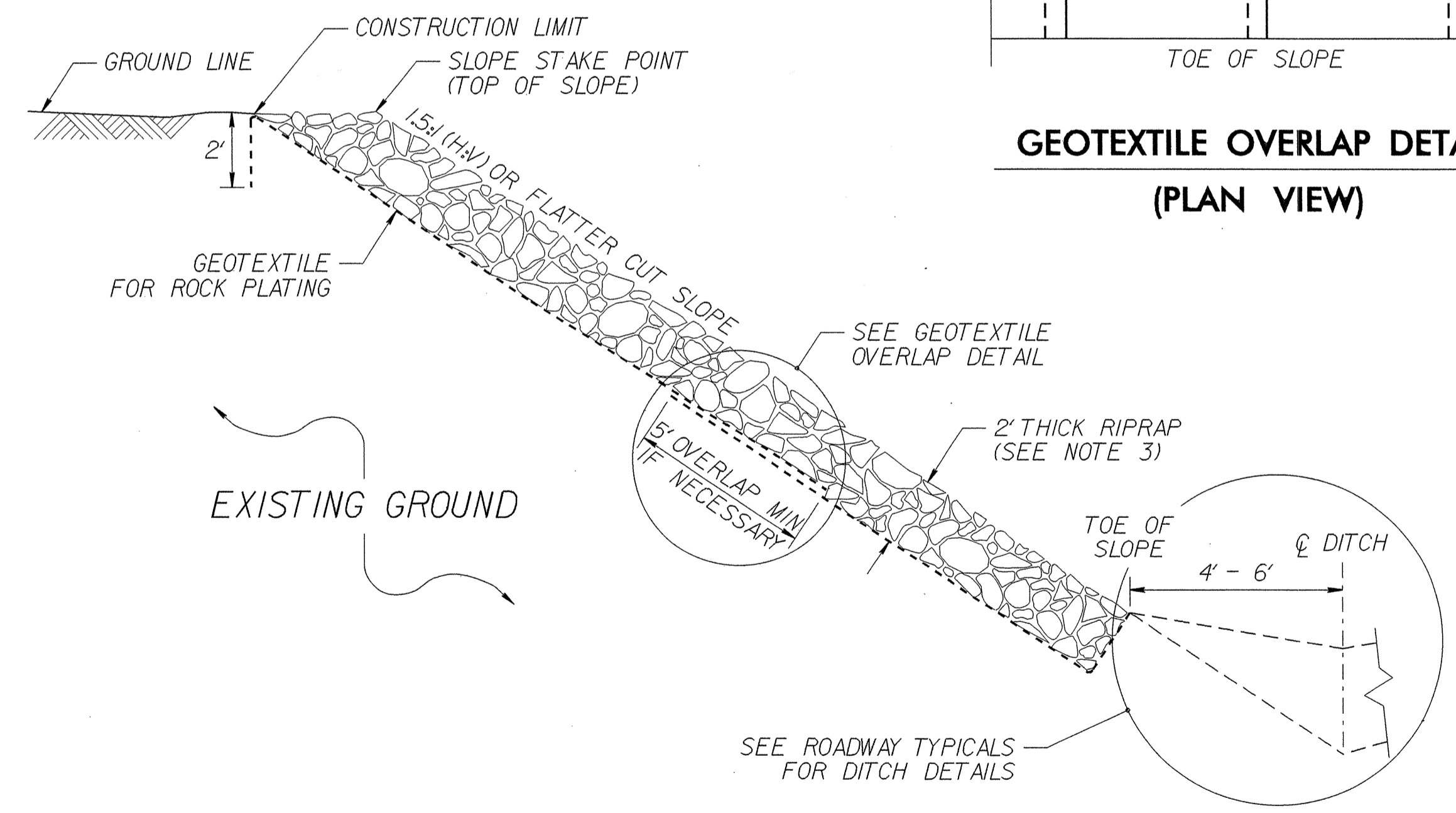
ROCK PLATING DETAIL NO. 1 - TYPICAL SECTION



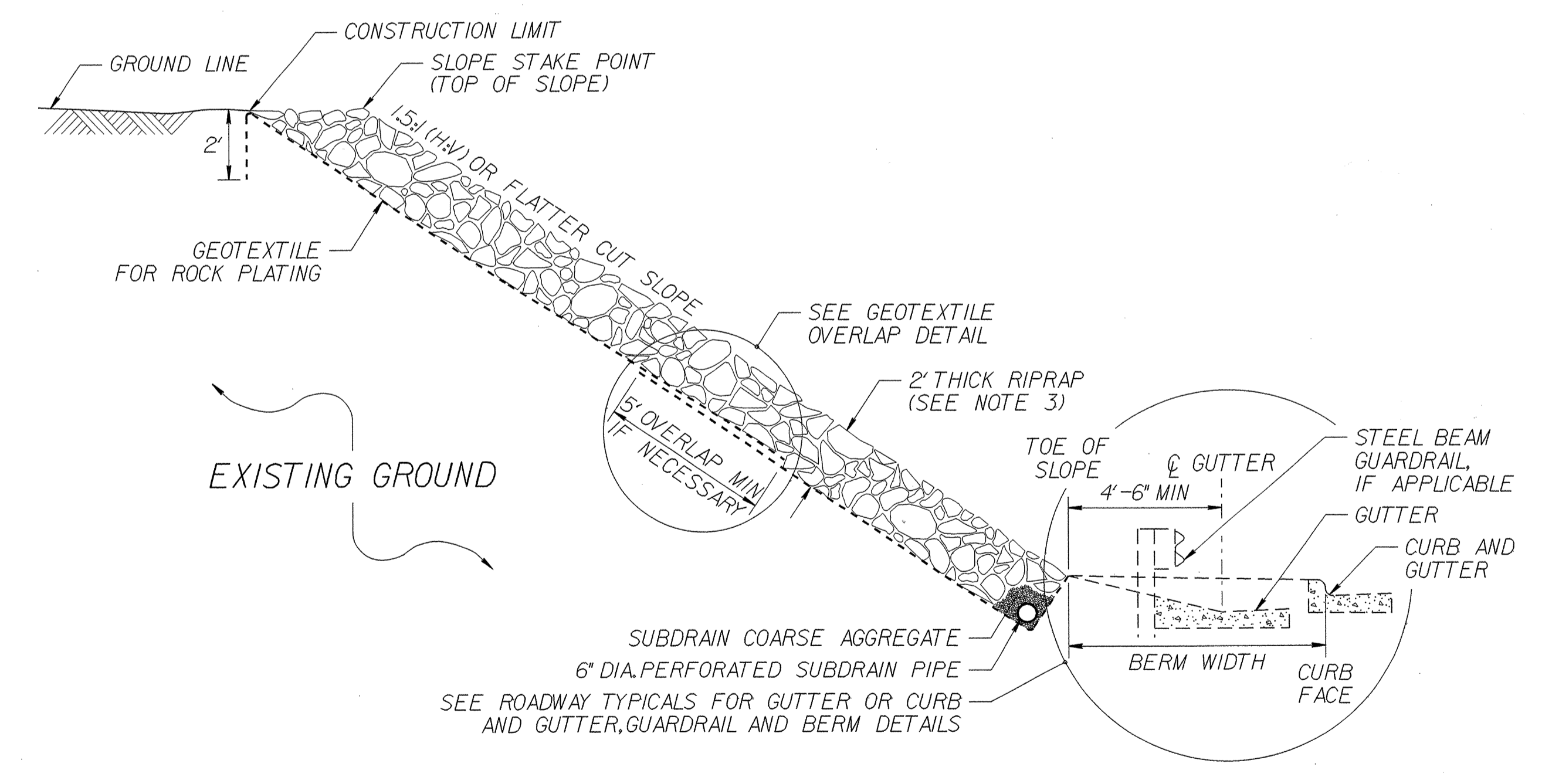
ROCK PLATING DETAIL NO. 2 - TYPICAL SECTION



GEOTEXTILE OVERLAP DETAIL (PLAN VIEW)

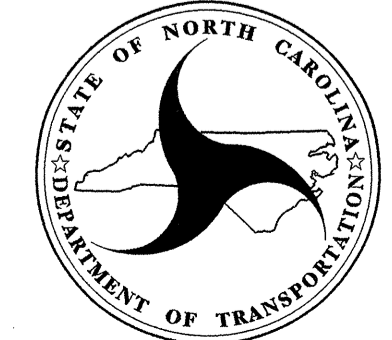


ROCK PLATING DETAIL NO. 3 - TYPICAL SECTION



ROCK PLATING DETAIL NO. 4 - TYPICAL SECTION

- NOTES:**
1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
 2. FOR STANDARD ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
 3. USE CLASS 1, 2 OR B RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.


GEOTECHNICAL ENGINEERING UNIT
 STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD DRAWING NO. 1802.01
STANDARD ROCK PLATING
 DATE: 2-19-13

RD223184

COMPUTED BY: TRH DATE: 10/22/2013
 CHECKED BY: IY DATE: 10/22/2013

PROJECT NO. B-4988
 SHEET NO. 3-A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station to Station	CUBIC YARDS			
	Uncl. Exc. C.Y.	Embank. +% C.Y.	Borrow C.Y.	Waste C.Y.
SUMMARY NO. 1				
-L- 14+60 TO 17+00	64	386	322	
SUMMARY NO. 1 TOTALS				
	64	386	322	
PROJECT SUB TOTAL				
	64	386	322	
Loss due to Clearing & Grubbing	-5		5	
Est 5% To Replace Topsoil at Borrow Pit			16	
GRAND TOTALS	59		343	
SAY	75		375	
ESTIMATED SHALLOW UNDERCUT = 60 CY				
CLASS IV SUBGRADE STABILIZATION = 100 TONS				
SELECT GRANULAR MATERIAL = 100 CY				

SUMMARY OF ASPHALT PAVEMENT REMOVAL

LINE	Station to Station	LOC LT/RT/CL	Asphalt Removal SQ. YDS.
-L-	15+45.00 TO 16+23.00	CL	152.05
PROJECT TOTAL			152.05
SAY			160

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING AND REMOVAL OF EXISTING ASPHALT PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
 TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
 FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
 W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
 G = GATING IMPACT ATTENUATOR TYPE 350
 NG = NON-GATING IMPACT ATTENUATOR TYPE 350

LINE	BEG. STA.	END STA.	LOC.	LENGTH (FT.)			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS				IMP. ATTEN. TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	GRAU 350 TL-2	EA	G	NG					
L	14+69.35	16+81.85	RT	212.50			15+93.64	16+25.65	3'	6'	25'	25'	1	1									
L	14+79.12	16+29.12	LT	150.00			15+67.35	15+36.27	3'	6'	25'	25'	1	1									
SUBTOTALS				362.50																			
DEDUCTION FOR ANCHOR UNITS (4 GRAU TL-2 @25')				-100																			
PROJECT TOTAL				262.50																			
SAY				275																			

ADDITIONAL GUARDRAIL POSTS= 5 EA

COMPUTED BY: SCC DATE: 11/25/2013
 CHECKED BY: SCC DATE: 11/25/2013

PROJECT NO. SHEET NO.
 B-4988 3-B

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				UD	100
				TOTAL LF:	100

*UD = Underdrain
 *BD = Blind Drain
 *SD = Subsurface Drain

SUMMARY OF ROCK PLATING

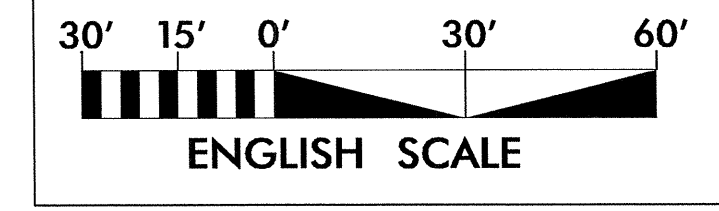
LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
-L-	2:1	15+16.26	1.5:1	15+26.00	LT	1	2	20
-L-	1.5:1	16+34.00	2:1	16+75.00	RT	1	2	20
							TOTAL SY:	40

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

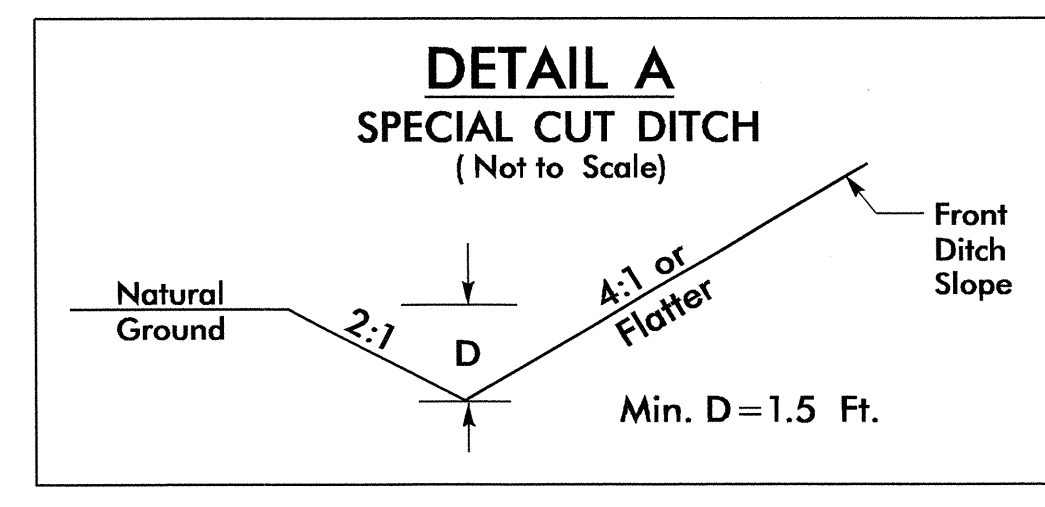
LINE	Station	Station	Aggregate Type* ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
ROADSIDE ENVIRONMENTAL UNIT ESTIMATE							100		
GEOTECH. ENG. UNIT CONTINGENCY			AST		60	100	100		
TOTAL CY/TONS/SY:					60	100	200	0	0

*ASU = Aggregate Subgrade
 *AST = Aggregate Stabilization



FOR CULVERT PLANS SEE SHEET C-1 THROUGH C-8

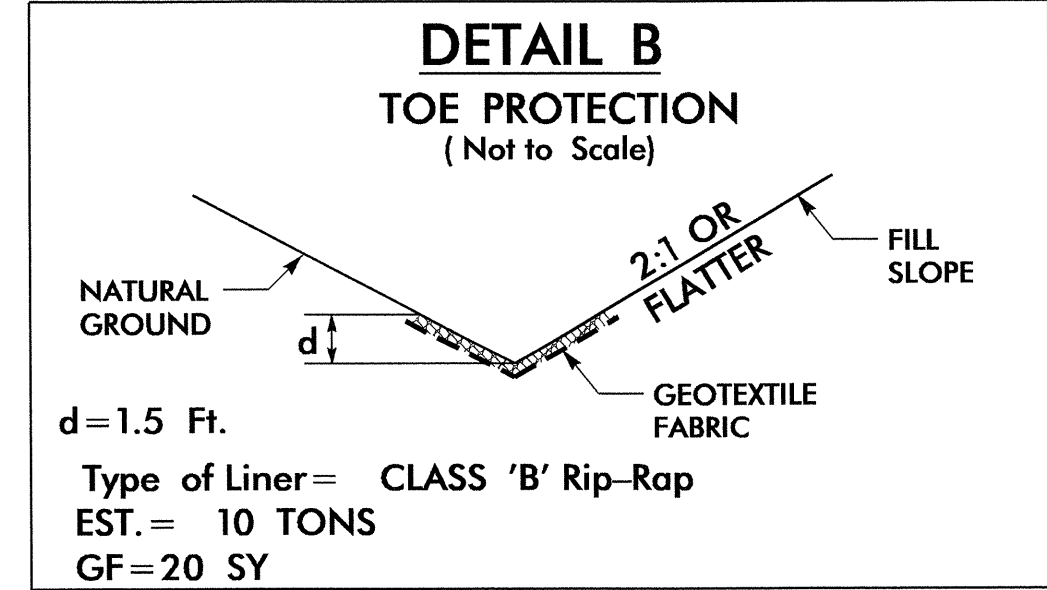
PI Sta 11+07.00	PI Sta 13+71.60	PI Sta 15+17.89	PI Sta 16+44.48	PI Sta 18+58.08
$\Delta = 1^{\circ} 43' 53.4''$ (LT)	$\Delta = 2^{\circ} 44' 19.2''$ (LT)	$\Delta = 14^{\circ} 29' 28.2''$ (LT)	$\Delta = 3^{\circ} 18' 19.2''$ (RT)	$\Delta = 19^{\circ} 07' 48.3''$ (LT)
$D = 8^{\circ} 11' 06.4''$	$D = 2^{\circ} 17' 30.6''$	$D = 8^{\circ} 48' 53.0''$	$D = 35^{\circ} 48' 35.5''$	$D = 13^{\circ} 38' 30.7''$
$L = 143.33'$	$L = 119.50'$	$L = 164.40'$	$L = 87.42'$	$L = 140.23'$
$T = 71.92'$	$T = 59.76'$	$T = 82.64'$	$T = 44.83'$	$T = 70.77'$
$R = 700.00'$	$R = 2,500.00'$	$R = 650.00'$	$R = 160.00'$	$R = 420.00'$
e = EXIST	e = EXIST	e = SEE PLANS	e = SEE PLANS	e = EXIST



FROM -L- STA. 15+80 TO STA. 16+90 LT.

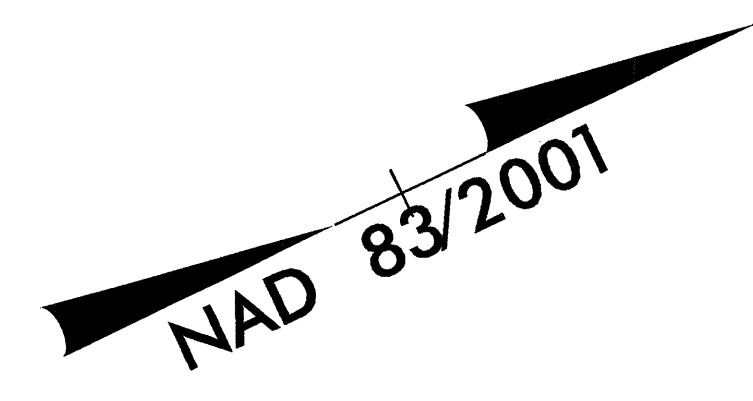
UTILITY OWNERS
NO UTILITIES FOUND INSIDE SURVEY LIMITS

BRIDGE DESCRIPTION
BST COVERED WOODEN DECK
WOODEN GUARDRAILS
CONCRETE HEADWALLS
CONCRETE WINGWALLS
10" STEEL "I" BEAMS
HIGH WATER MARK = 2244'

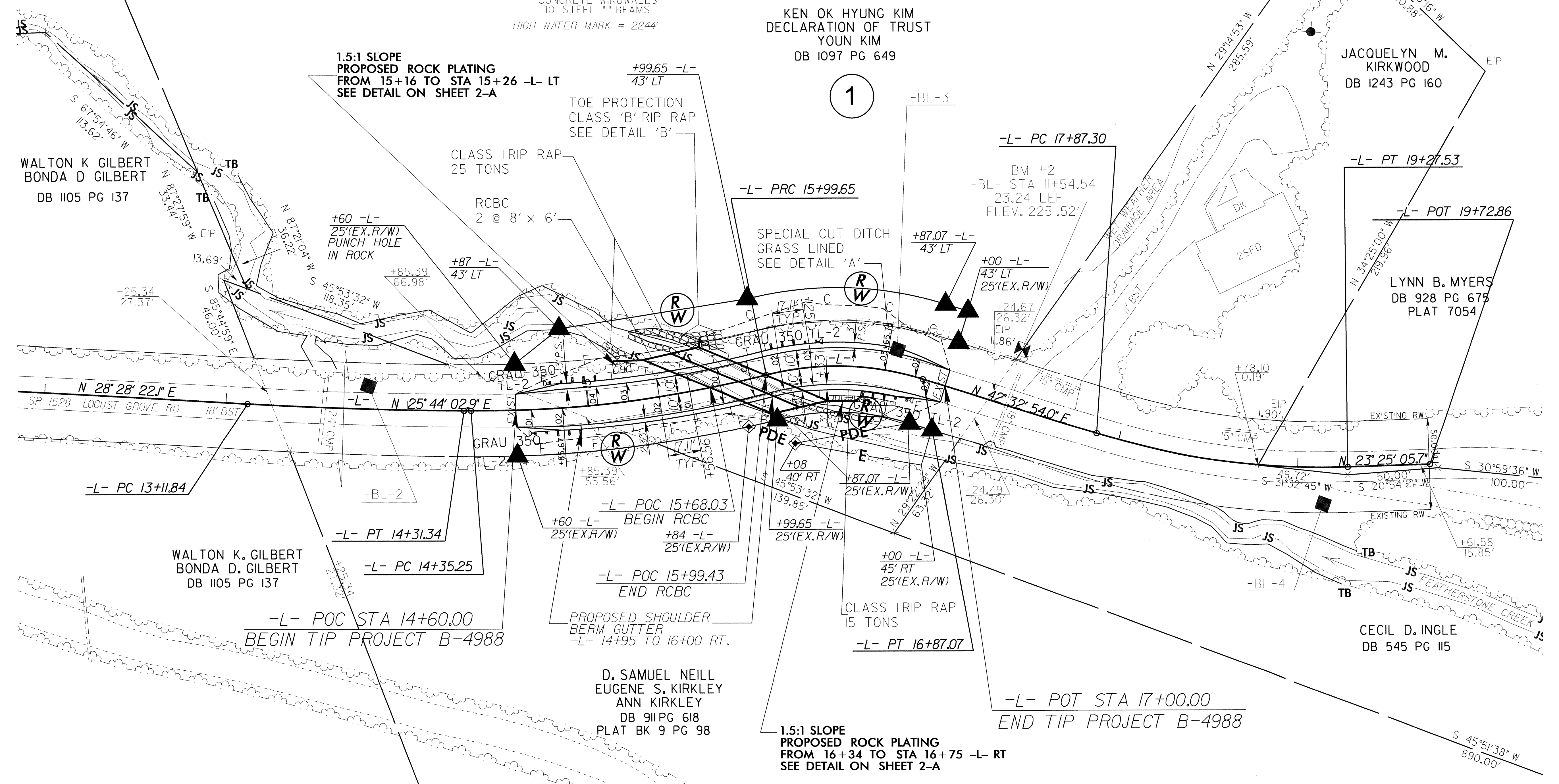


FROM -L- STA. 15+68 TO STA. 15+80 LT.

KEN OK HYUNG KIM
DECLARATION OF TRUST
YOUNG KIM
DB 1097 PG 649



SEE SHEET 5 FOR PROFILE OF -L-



REVISIONS

05-NOV-2013 10:10
R:\Projects\B-4988_Prdy_psh\04.dgn
GREGORY E. BRENN

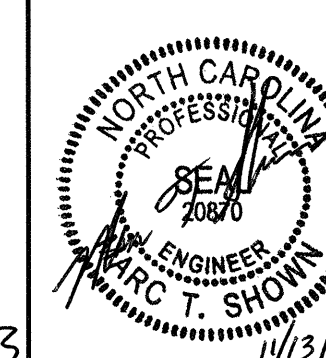
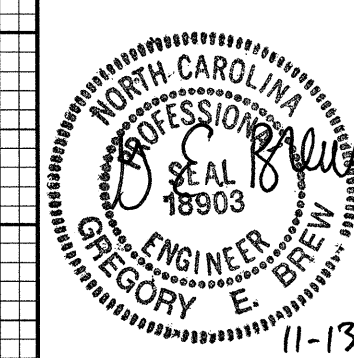
5/28/99

PROJECT REFERENCE NO. SHEET NO.

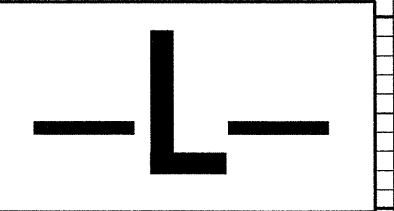
B-4988 5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

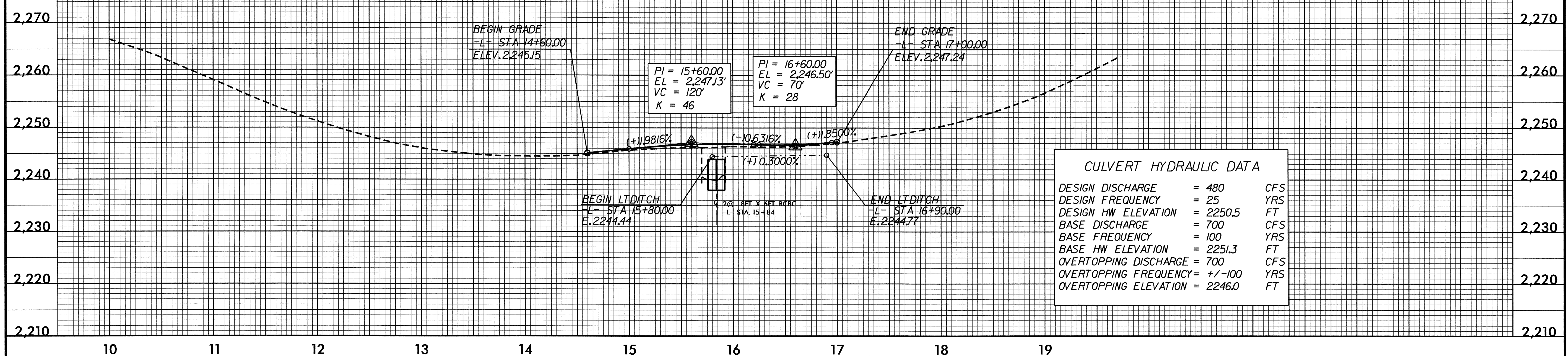


BM *1 ELEVATION = 2279.92'
N = 614332 E = 973394
-BLI- STATION 5+00.00
S43°43'58"W Dist 168.81
8 INCH SPIKE SET IN BASE OF 18 INCH OAK TREE



BM *2 ELEVATION = 2251.52'
N = 615046 E = 973796
-L- STATION 17+34.69 (31.52) LEFT
8 INCH SPIKE SET IN BASE OF 18 INCH BIRCH TREE

FOR PLANS OF -L-, SEE SHEET 4



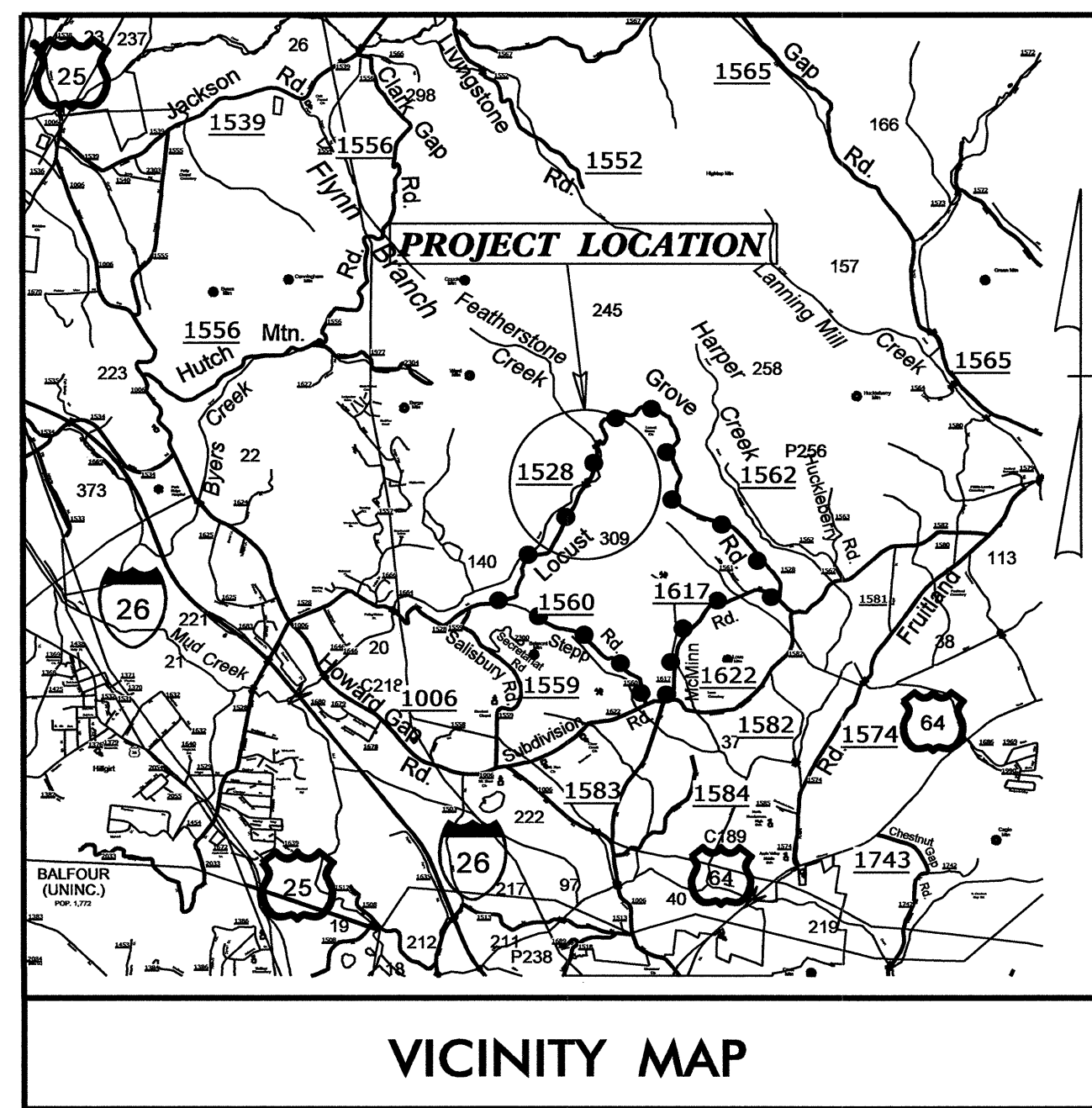
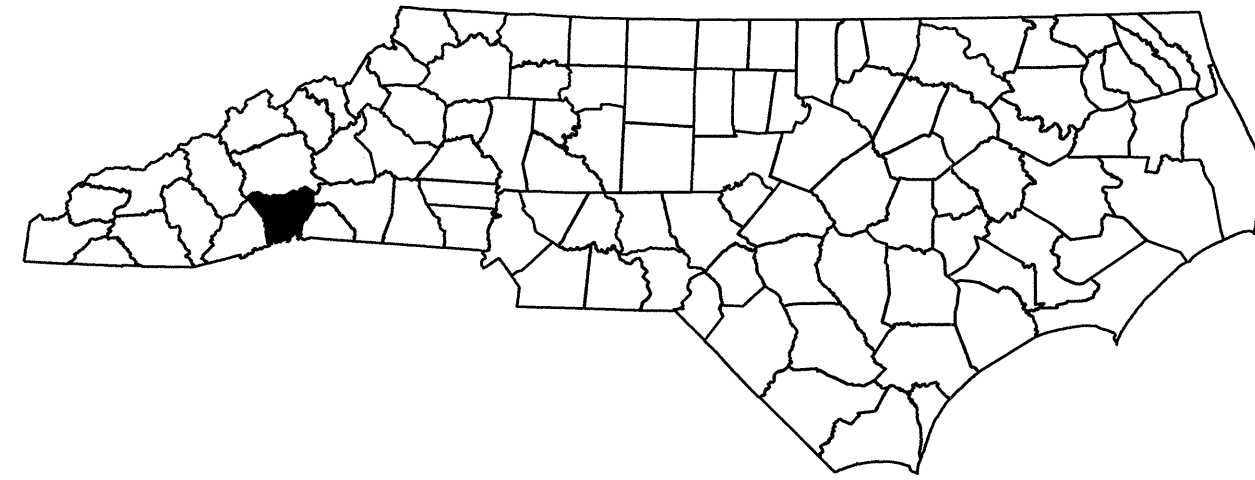
CULVERT HYDRAULIC DATA		
DESIGN DISCHARGE	= 480	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2250.5	FT
BASE DISCHARGE	= 700	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2251.3	FT
OVERTOPPING DISCHARGE	= 700	CFS
OVERTOPPING FREQUENCY	= +/-100	YRS
OVERTOPPING ELEVATION	= 2246.0	FT

20 OCT 2013 10:35 B:\4988_Rdy+cf1.dgn

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

HENDERSON COUNTY



OFF-SITE DETOUR ROUTE ●—●—●—●—

LOCATION: REPLACEMENT OF BRIDGE 309 ON SR 1528 (LOCUST GROVE ROAD) OVER FEATHERSTONE CREEK

INDEX OF SHEETS

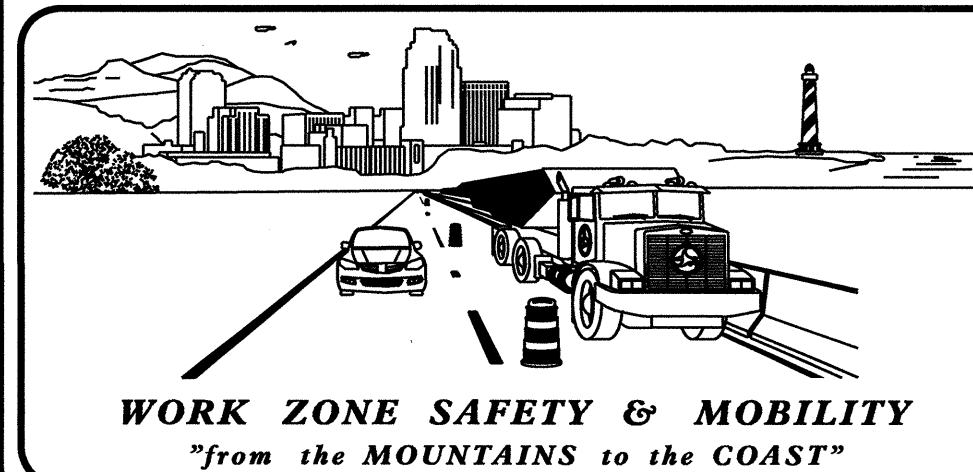
SHEET NO.	TITLE
TMP-1	TITLE SHEET, AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-1B	TRANSPORTATION OPERATIONS PLAN AND PROJECT NOTES
TMP-2	DETOUR SIGN DETAIL
TMP-3	TEMPORARY TRAFFIC CONTROL PHASING AND DETAIL

SHEET NO.
TMP-1

B-4988

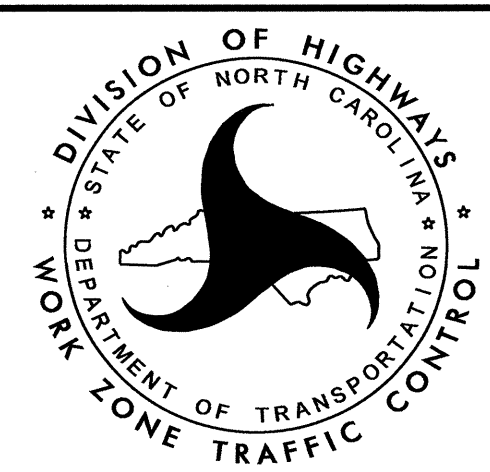
TIP PROJECT:

14-AUG-2013 16:46
 s:\do\dir\00\proj\1\TIP\projects-B\4988\TrafficControl\TCP\B4988-TC-TMP_01.dgn
 singh.AT.1255817



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
 1580 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1580
 1020 BIRCH RIDGE DRIVE, RALEIGH, NC 27610 (DELIVERY)
 PHONE: (919) 250-4094 FAX: (919) 250-4098

J. S. BOURNE, P.E. STATE TRAFFIC MANAGEMENT ENGINEER
 G. L. GETTIER, P.E. TRAFFIC CONTROL PROJECT ENGINEER
 J. W. GILSTRAP TRAFFIC CONTROL PROJECT DESIGN ENGINEER
 S. GREEN TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: _____
 DATE: _____

SEAL


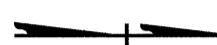
ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

<u>STD. NO.</u>	<u>TITLE</u>
1101.03	TEMPORARY ROAD CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES - TYPE III

LEGEND

GENERAL

-  DIRECTION OF TRAFFIC FLOW
-  NORTH ARROW

TRAFFIC CONTROL DEVICES

-  BARRICADE (TYPE III)

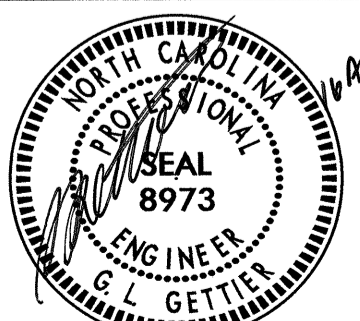

TEMPORARY SIGNING

-  STATIONARY SIGN

TEMPORARY PAVEMENT MARKING

NONE

15-AUG-2013 09:08
 C:\pds\proj\1\TipProjects-B\B4988\TrafficControl\TCP\B4988_TC_TMP_01A.dgn
 sng\ben AT 11265817

APPROVED: _____ DATE: _____ <div style="text-align: center;">  SEAL G. L. GETTLER ENGINEER NO. 8973 STATE OF NORTH CAROLINA </div>	<div style="text-align: center;">  DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION WORK ZONE TRAFFIC CONTROL </div>	<h3>ROADWAY STANDARD DRAWINGS & LEGEND</h3>
---	--	---

TRANSPORTATION OPERATIONS

CONSTRUCTION

REMOVE AND REPLACE EXISTING BRIDGE WITH A CULVERT ALONG THE EXISTING ROADWAY ALIGNMENT AS SHOWN IN THE CONSTRUCTION PLANS.

TMP DESIGN PARAMETERS

TRAFFIC WILL BE DETOURED OFFSITE DURING THE CONSTRUCTION PERIOD.

THE OFFSITE DETOUR WILL INCLUDE SR 1617, SR 1622, SR 1560. (SEE SHEET TMP-3).

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE, OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING, OF REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR AS DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

A) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

B) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

C) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

D) ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

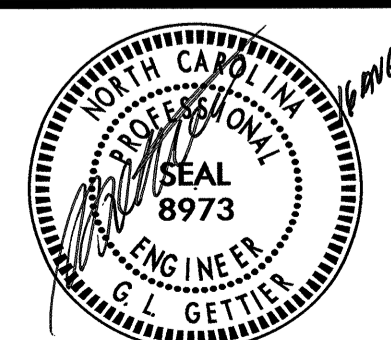
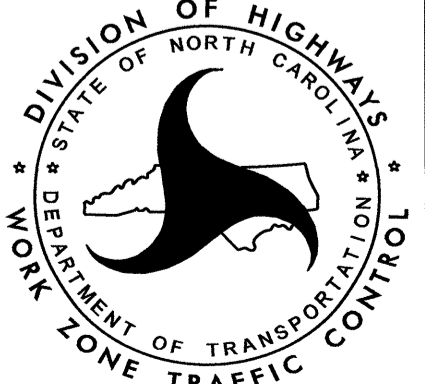
TRAFFIC CONTROL DEVICES

E) PLACE TYPE III BARRICADES WITH "ROAD CLOSED" SIGN R-11-2 ATTACHED OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

F) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

15-AUG-2013 09:08
 \\c01d1s01\c01\TIPProjects-B\4988\TrafficControl\TCP\B4988_TC_TMP_01B.dgn
 sngren AT 1226587

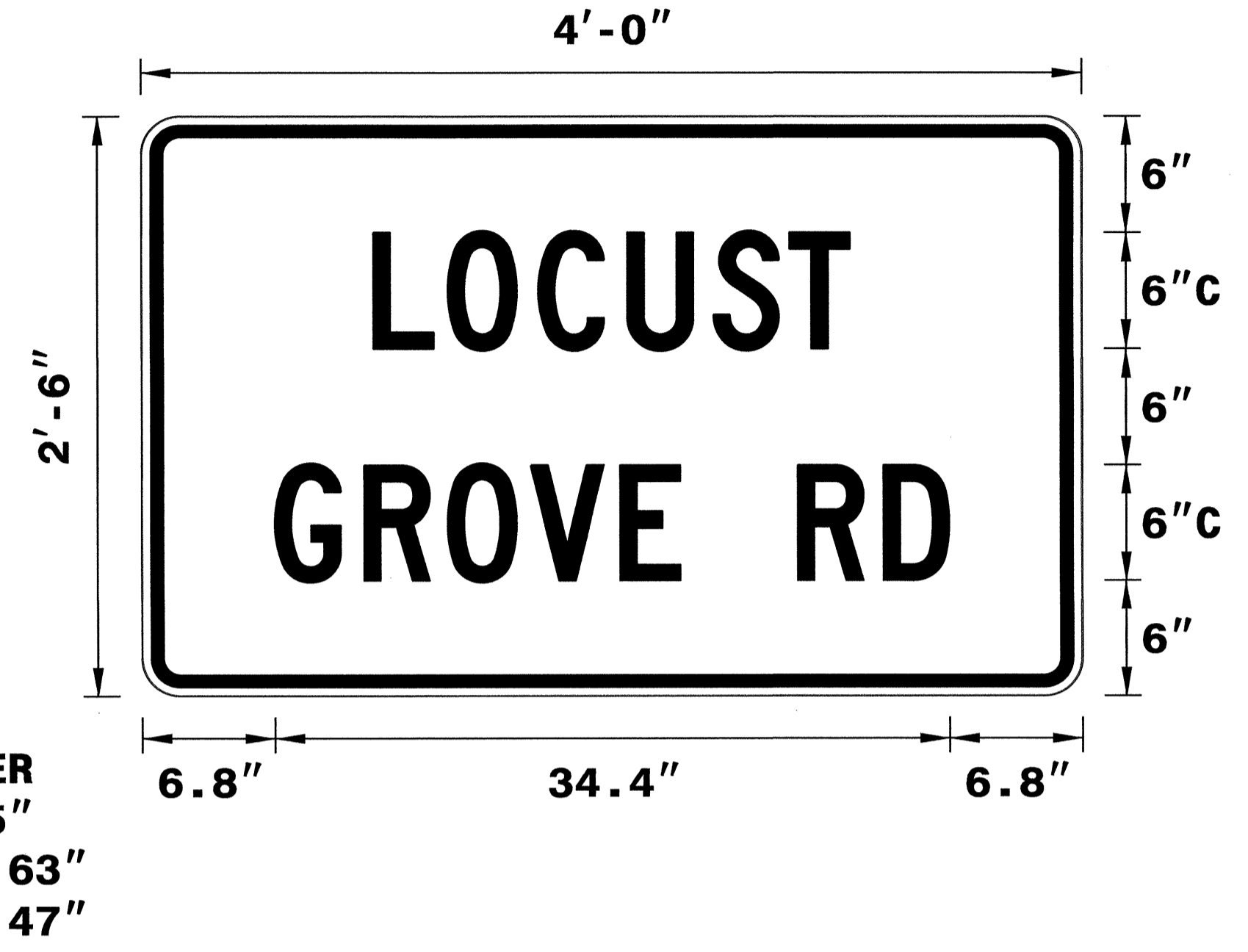
APPROVED: _____ DATE: _____			<h2>TRANSPORTATION OPERATIONS & PROJECT NOTES</h2>
SEAL			

SIGN NUMBER: SP12228
 TYPE: D
 QUANTITY: 1
 SIGN WIDTH: 4'-0"
 HEIGHT: 2'-6"
 TOTAL AREA: 10.0 Sq.Ft.
 BORDER TYPE: FLUSH
 RECESS: 0.47"
 WIDTH: 0.63"
 RADII: 1.5"
 NO. Z BARS:
 LENGTH:

BACKG COLOR: Fluorescent Orange
 COPY COLOR: Black
 MAT'L: 0.125" (3.2 mm) ALUMINUM

SYMBOL	X	Y	WID	HT

DESIGN BY: jgm
 PROJECT ID: B-4988
 CHECKED BY:
 DIV: 14
 DATE: Jun 15, 2012



USE NOTES:
 1. Legend and border shall be direct applied black non-reflective sheeting.
 2. Background shall be Type VII, VIII, or IX (prismatic) fluorescent orange retroreflective sheeting.

Spacing Factor is 1 unless specified otherwise

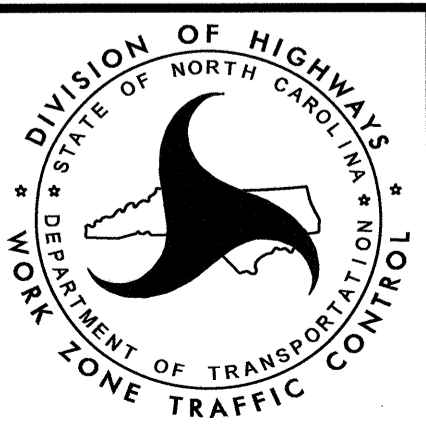
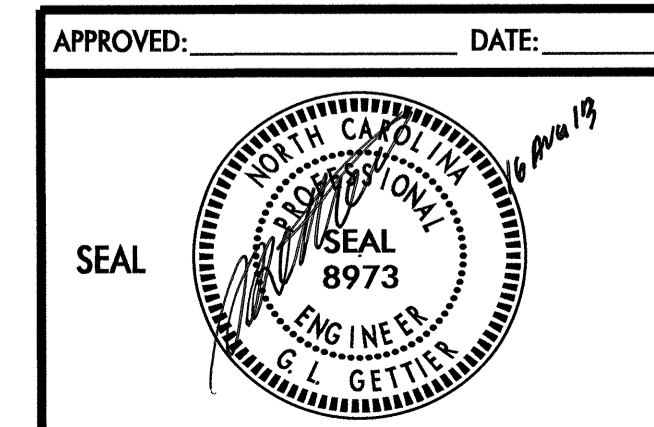
LETTER POSITIONS

Letter spacings are to start of next letter													Series/Size
	L	O	C	U	S	T							Text Length
	11.9	3.8	4.6	4.6	4.4	3.9	3.1	11.8					C 2000 24.3
	6.8	4.6	4.3	4.3	4.6	3.1	6	4.4	3.4	6.8			C 2000 34.4

FILENAME: Sign Design

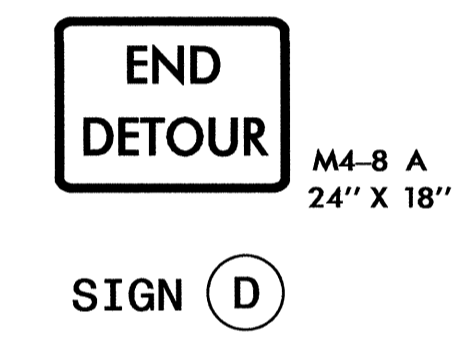
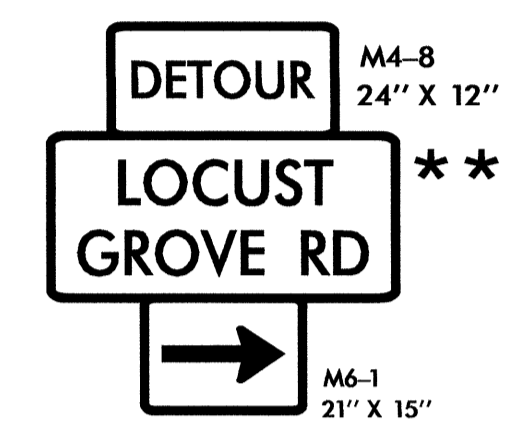
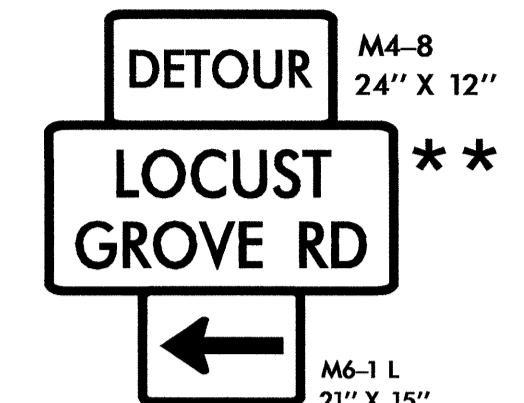
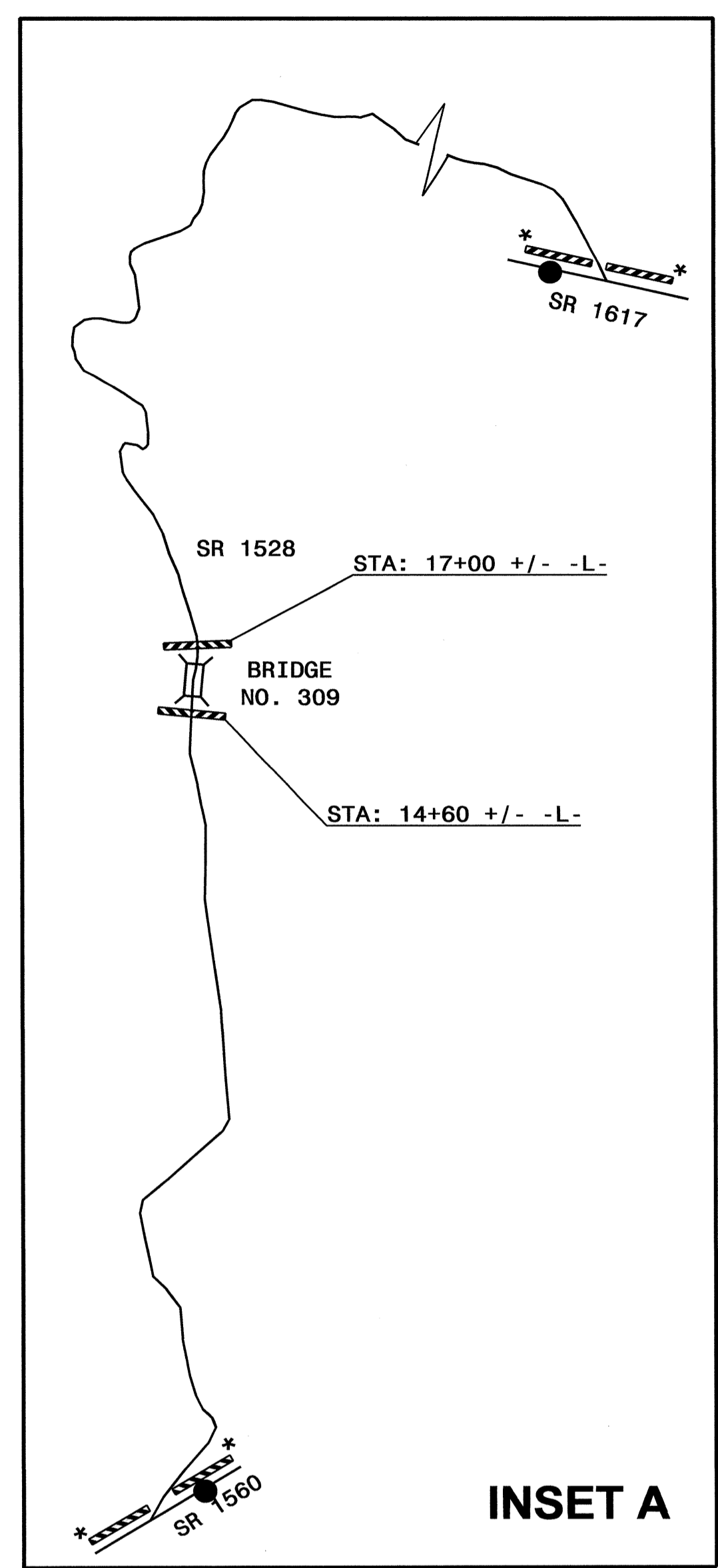
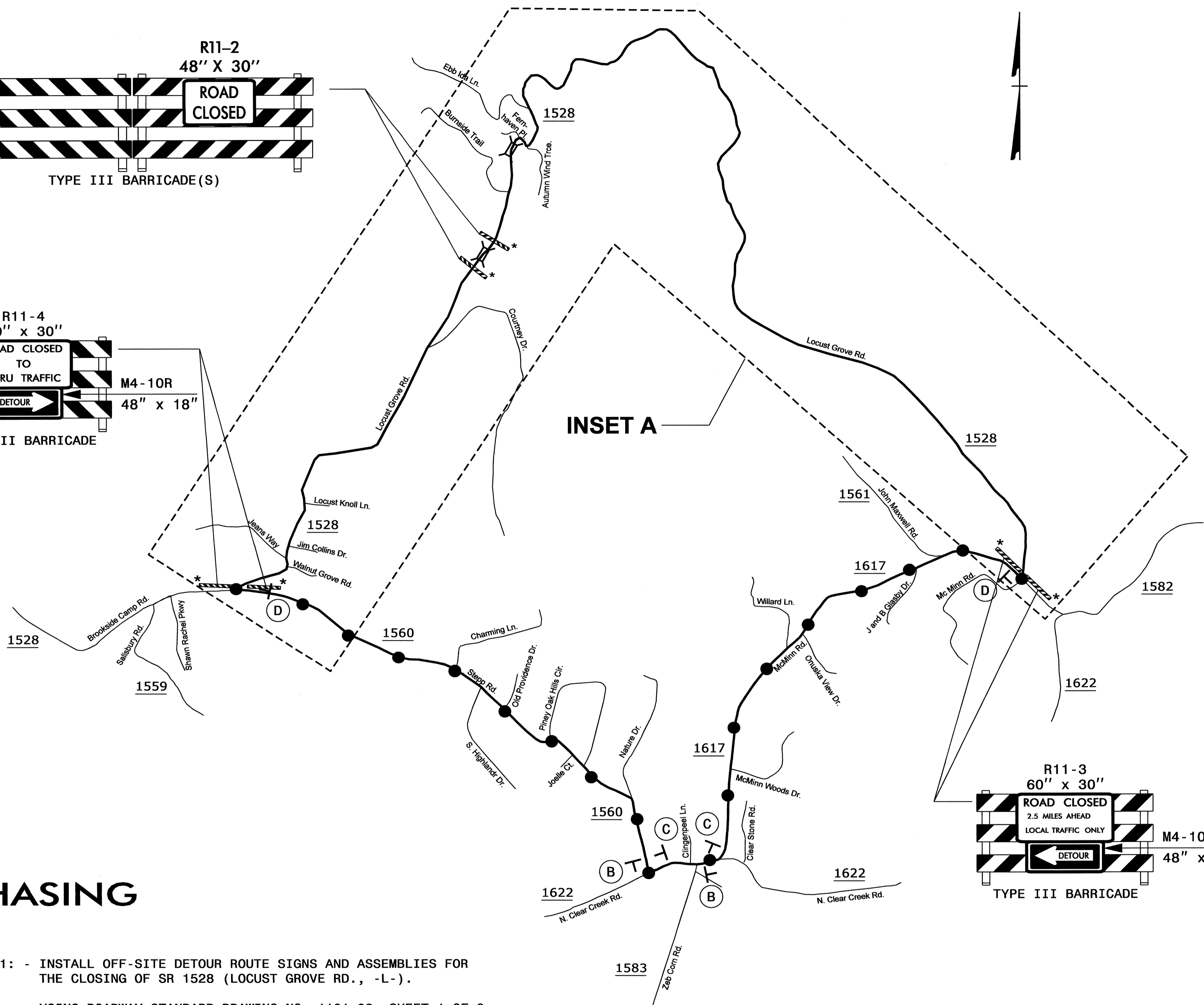
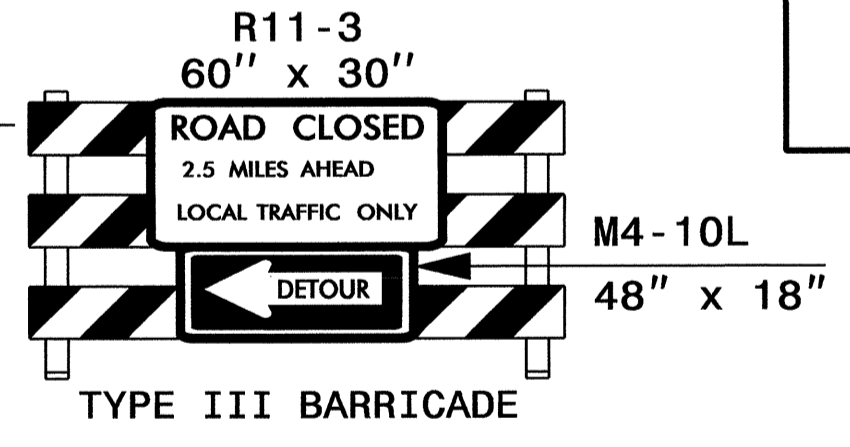
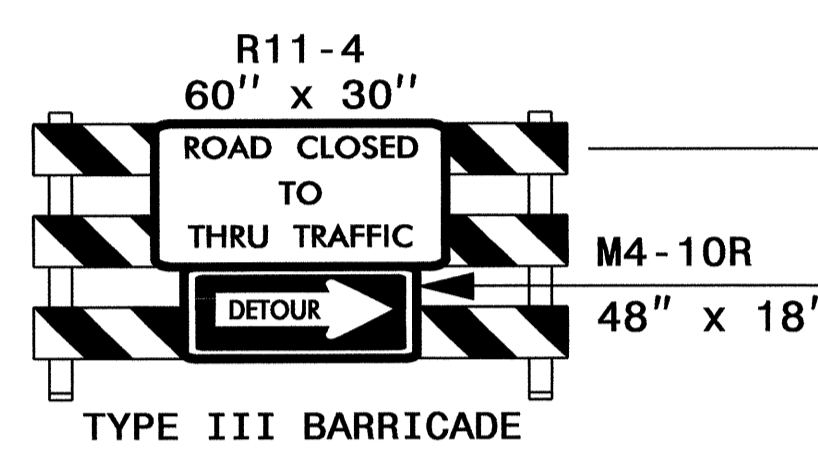
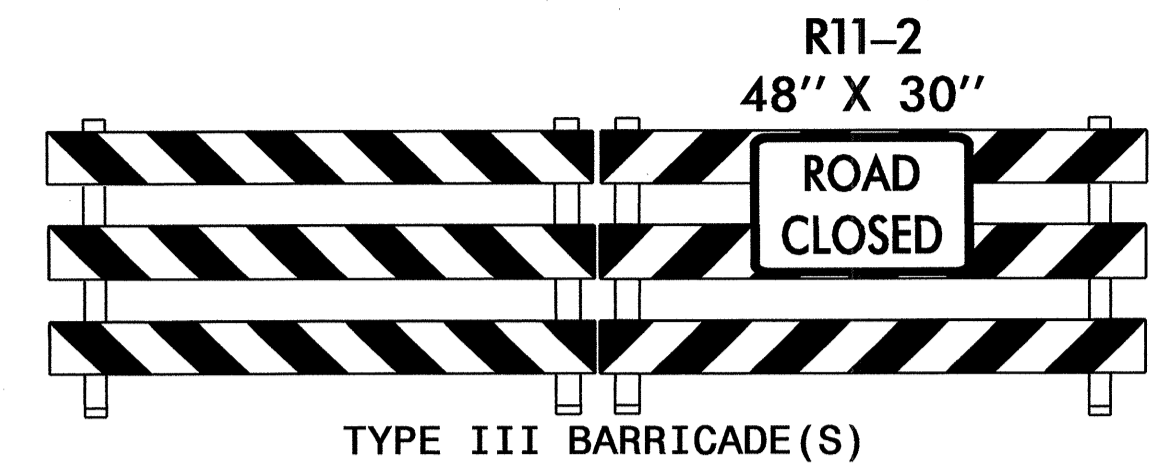
NORTH CAROLINA D.O.T. SIGN DETAIL

"The special sign designs shown on this sheet were provided through a sealed document from Signing and Delineation. The document was submitted to WZTC on 06-15-2012 and sealed by a Professional Engineer, Ronald W. King, license # 022959".



DETOUR SIGN
 DETAIL

15-AUG-2013 11:29 AM C:\Users\jg\Documents\Projects\B-4988\TrafficControl\TCP\B-4988_TC_TMP_02.dgn



PHASING

- STEP 1: - INSTALL OFF-SITE DETOUR ROUTE SIGNS AND ASSEMBLIES FOR THE CLOSING OF SR 1528 (LOCUST GROVE RD., -L-).
- USING ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, CLOSE SR 1528 (LOCUST GROVE RD., -L-) TO THRU TRAFFIC.
- STEP 2: - REMOVE THE EXISTING BRIDGE AND CONSTRUCT THE PROPOSED CULVERT AND ROADWAY UP TO AND INCLUDING THE FINAL LAYER OF SURFACE COURSE AND PLACE FINAL PAVEMENT MARKINGS AND MARKERS ON SR 1528 (LOCUST GROVE RD., -L-) FROM STATION 14+60 +/- -L- TO STATION 17+00 +/- -L-. (SEE CONSTRUCTION PLANS AND PAVEMENT MARKING PLAN).
- STEP 3: - REMOVE ALL TRAFFIC CONTROL DEVICES, SIGNING AND DETOUR ROUTE SIGNING.
- OPEN TO FINAL TRAFFIC PATTERN.

NOTES:

- ALL DETOUR SIGN LOCATIONS ARE APPROXIMATE.
- ALL DETOUR SIGNS ARE BLACK ON ORANGE UNLESS OTHERWISE NOTED.
- * SEE ROADWAY STANDARD DRAWING NO. 1101.03, SHEET 1 OF 9, FOR ADDITIONAL WORK ZONE SIGNS.
- ** SEE TMP-2 FOR SIGN DESIGN.

APPROVED: _____ DATE: _____

TEMPORARY TRAFFIC CONTROL PHASING AND DETAIL

15-AUG-2013 09:13
 C:\Users\jg001\Documents\Projects\TrafficControl\TCP\B4988_TC_TMP_03.dgn
 jg001 AT 12:58:17

**STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION**

**PAVEMENT MARKING PLAN
HENDERSON COUNTY**

**LOCATION: REPLACEMENT OF BRIDGE 309 ON SR 1528
OVER FEATHERSTONE CREEK**

TIP NO. B-4988	SHEET NO. PMP-1
APPROVED: <i>[Signature]</i>	
DATE: 10/24/13	
SEAL	

T.I.P.: B-4988

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION

GENERAL NOTES

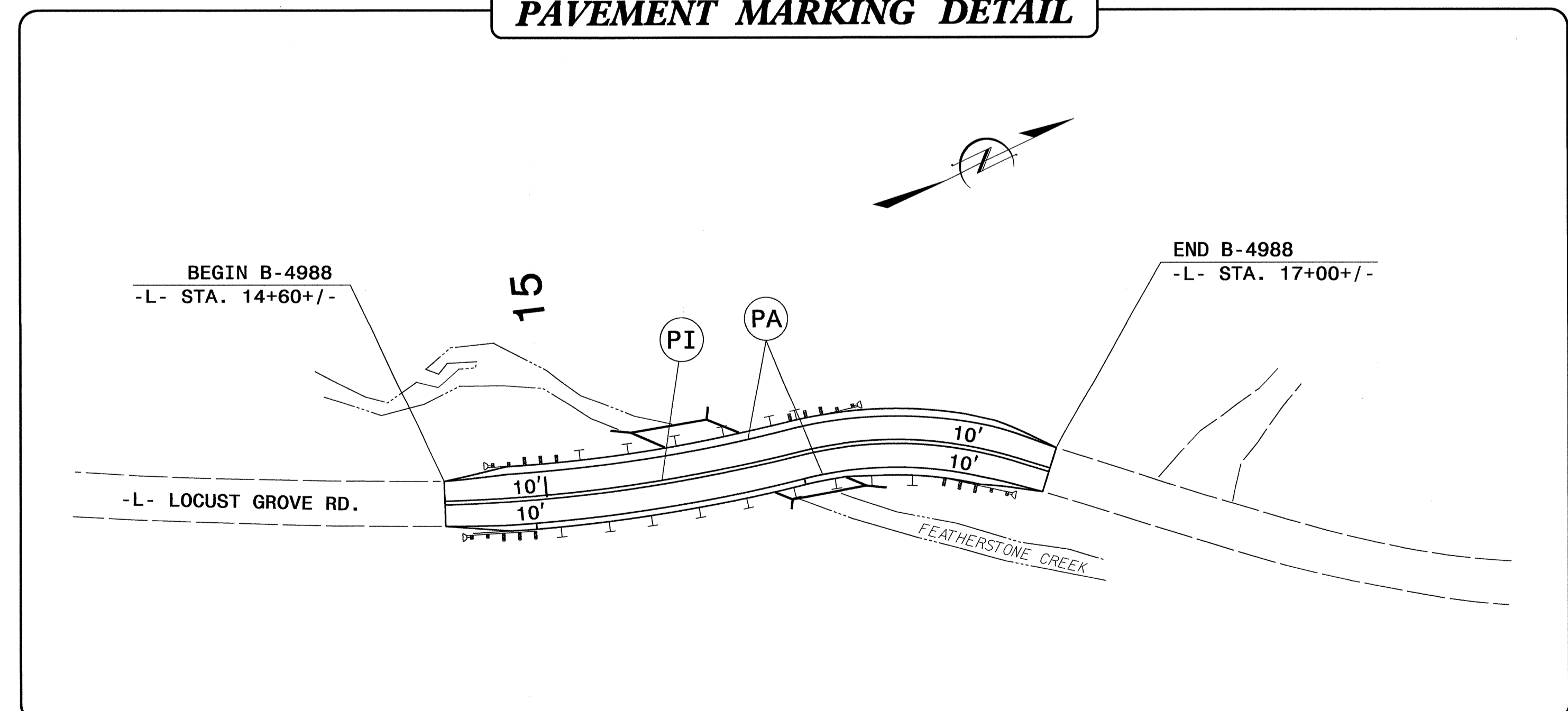
THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

- A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:
- | ROAD NAME | MARKING | MARKER |
|------------------|---------|--------|
| LOCUST GROVE RD. | PAINT | NONE |
- B) PLACE TWO APPLICATIONS OF PAINT PAVEMENT MARKINGS ON THE FINAL WEARING SURFACE. PLACE THE SECOND APPLICATION OF PAINT UPON SUFFICIENT DRYING TIME OF THE FIRST.
- C) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.
- D) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.
- E) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PAVEMENT MARKING SCHEDULE

SYMB	DESCRIPTION
	FINAL PAVEMENT MARKINGS
	PAINT (4")
PA	WHITE EDGELINE
PI	YELLOW DOUBLE CENTER

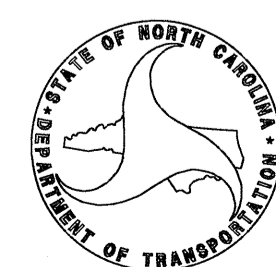
PAVEMENT MARKING DETAIL



PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

KELVIN L. JORDAN SIGNING & DELINEATION REGIONAL ENGINEER

DERRICK H. BEARD SIGNING & DELINEATION PROJECT DESIGN ENGINEER



CONTRACT:

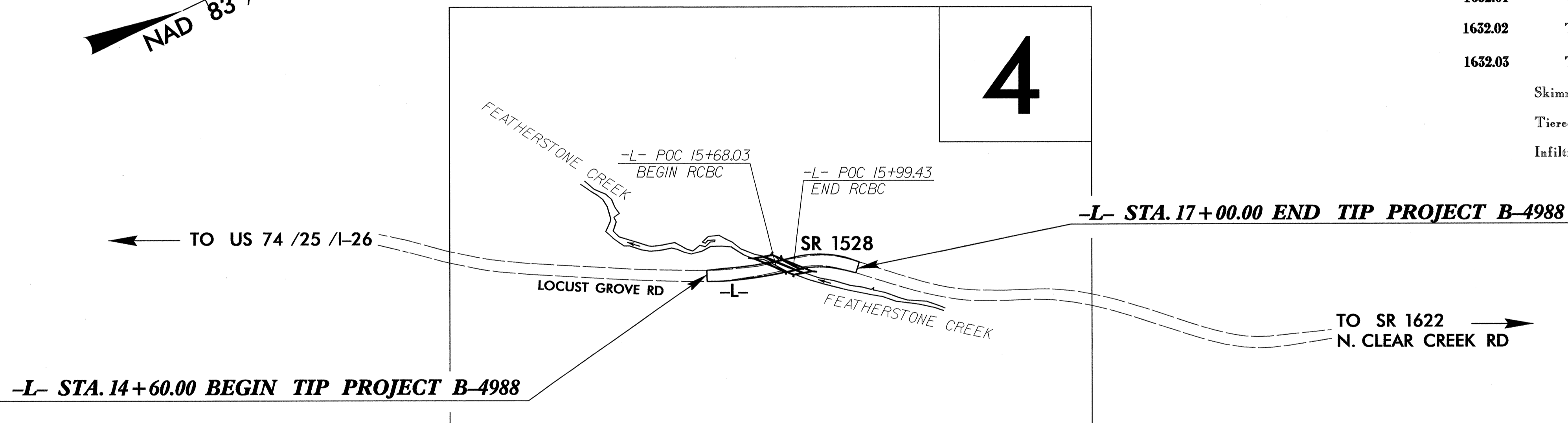
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4988	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

TIP PROJECT: B-4988

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS
 PLAN FOR PROPOSED
 HIGHWAY EROSION CONTROL
HENDERSON COUNTY

**LOCATION: REPLACEMENT OF BRIDGE 309 ON SR 1528
 OVER FEATHERSTONE CREEK**

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND CULVERT

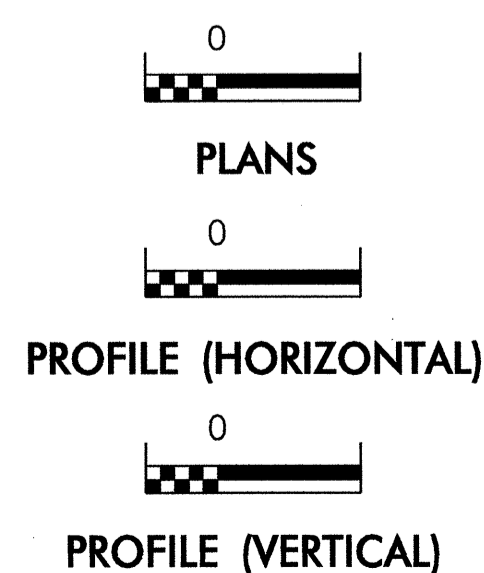


**THIS PROJECT CONTAINS
 EROSION CONTROL PLANS
 FOR CLEARING AND
 GRUBBING PHASE OF
 CONSTRUCTION.**

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	△△△△△
1622.01	Temporary Berms and Slope Drains	—▲—
1630.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	▩
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	▩
1633.02	Temporary Rock Silt Check Type-B	▶
	Wattle / Coir Fiber Wattle	◡
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	◡
1634.01	Temporary Rock Sediment Dam Type-A	▩
1634.02	Temporary Rock Sediment Dam Type-B	▩
1635.01	Rock Pipe Inlet Sediment Trap Type-A	⊓
1635.02	Rock Pipe Inlet Sediment Trap Type-B	⊓
1630.04	Stilling Basin	▭
1630.06	Special Stilling Basin	▭
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	▭
	Tiered Skimmer Basin	▭
	Infiltration Basin	▭

GRAPHIC SCALE



ROADSIDE ENVIRONMENTAL UNIT
 DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

**THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY
 WITH THE REGULATIONS SET FORTH BY THE
 NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011
 ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND
 NATURAL RESOURCES DIVISION OF WATER QUALITY.**

Prepared in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
 1 South Wilmington St.
 Raleigh, NC 27611
2012 STANDARD SPECIFICATIONS

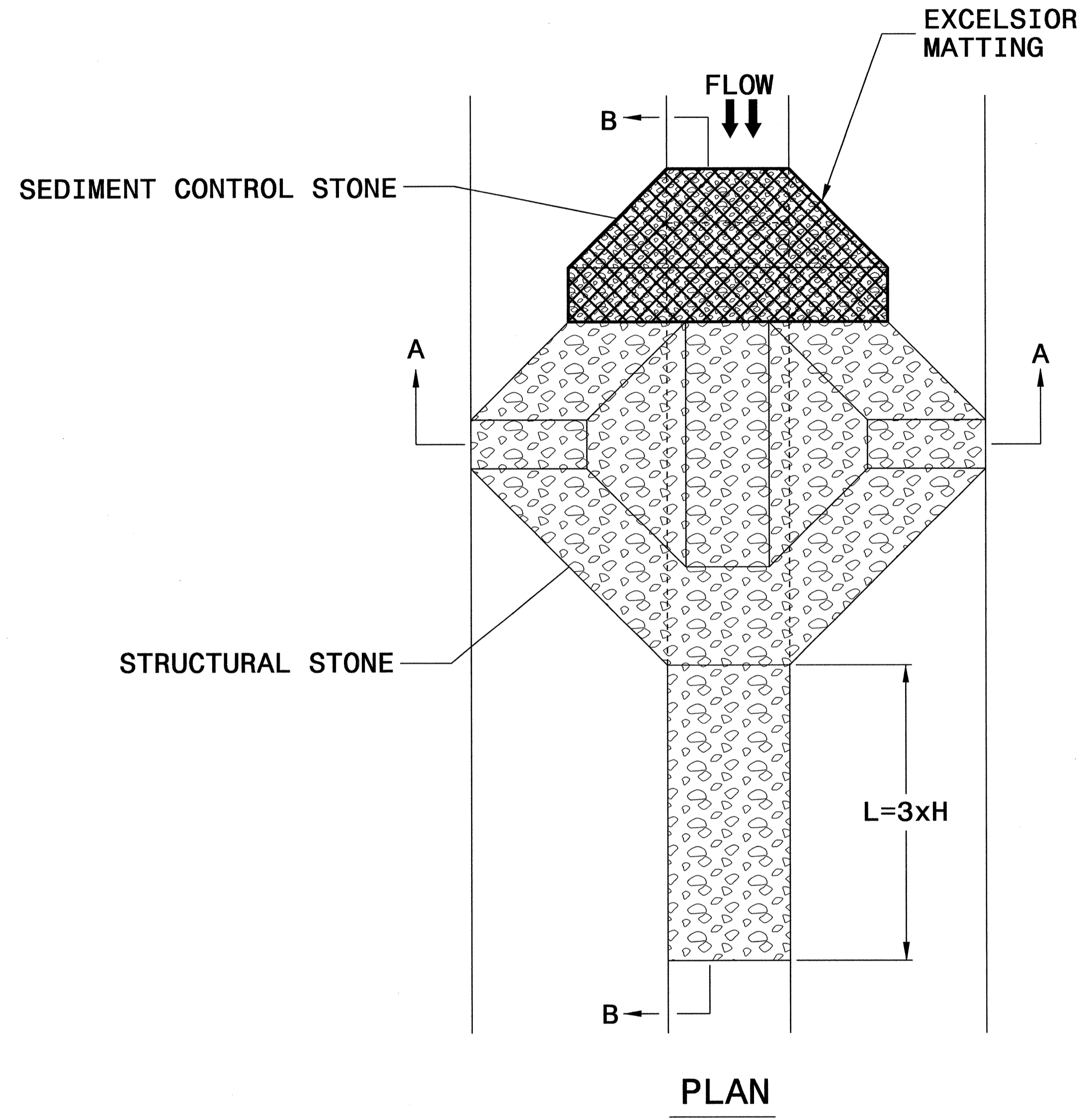
Roadway Standard Drawings

The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2012 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01 Railroad Erosion Control Detail	1632.01 Rock Inlet Sediment Trap Type A
1605.01 Temporary Silt Fence	1632.02 Rock Inlet Sediment Trap Type B
1606.01 Special Sediment Control Fence	1632.03 Rock Inlet Sediment Trap Type C
1607.01 Gravel Construction Entrance	1633.01 Temporary Rock Silt Check Type A
1622.01 Temporary Berms and Slope Drains	1633.02 Temporary Rock Silt Check Type B
1630.01 Riser Basin	1634.01 Temporary Rock Sediment Dam Type A
1630.02 Silt Basin Type B	1634.02 Temporary Rock Sediment Dam Type B
1630.03 Temporary Silt Ditch	1635.01 Rock Pipe Inlet Sediment Trap Type A
1630.04 Stilling Basin	1635.02 Rock Pipe Inlet Sediment Trap Type B
1630.05 Temporary Diversion	1640.01 Coir Fiber Baffle
1630.06 Special Stilling Basin	1645.01 Temporary Stream Crossing
1631.01 Matting Installation	

PROJECT REFERENCE NO. B-4988	SHEET NO. EC-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)

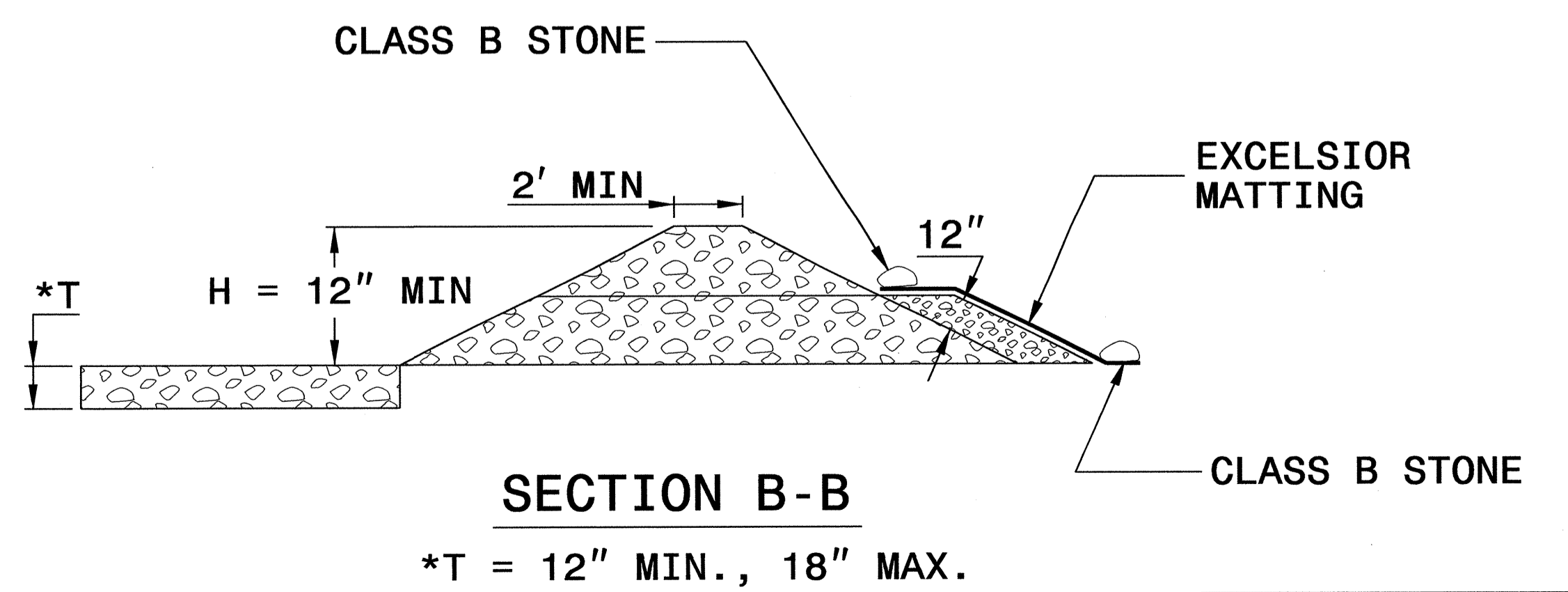
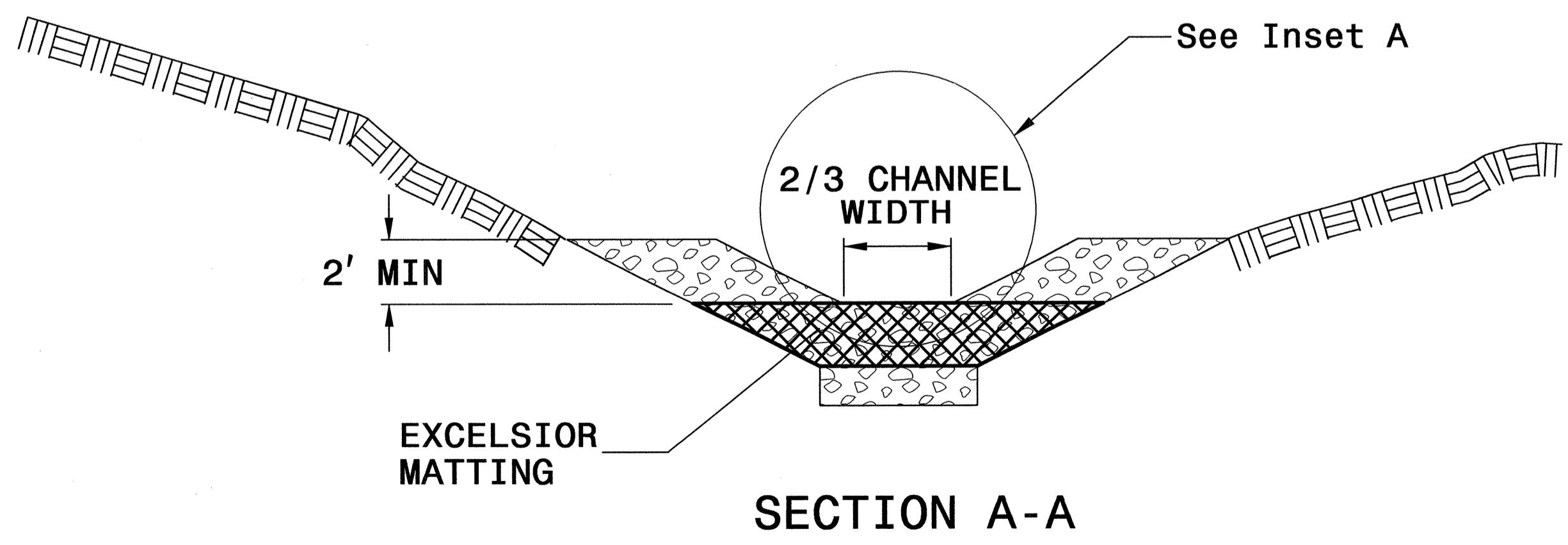
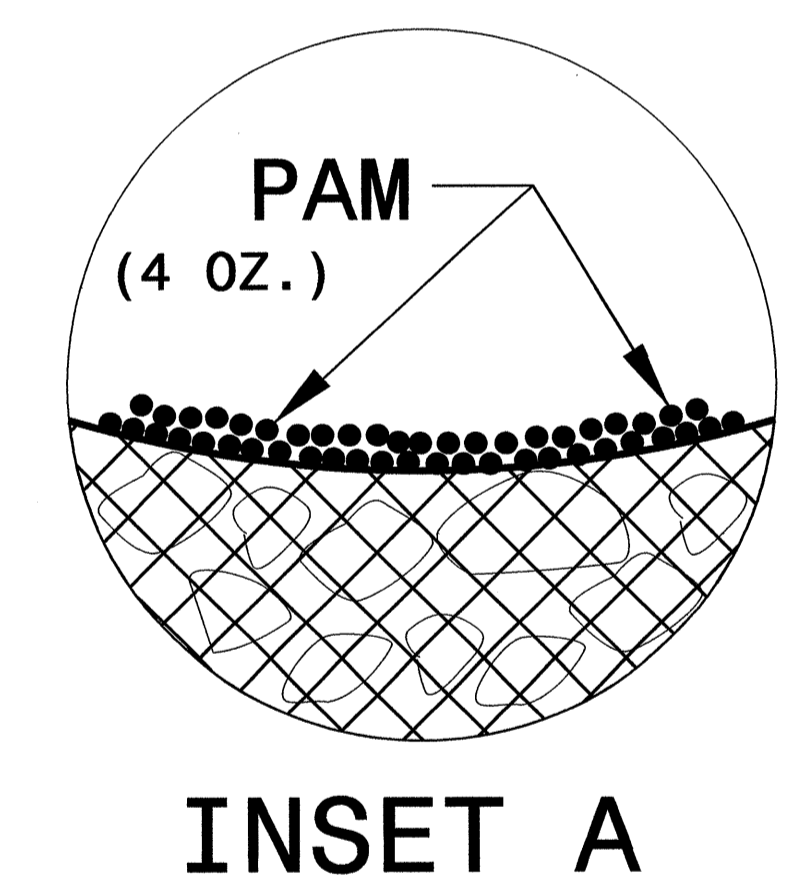


NOTES

USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH ROCK SILT CHECK.

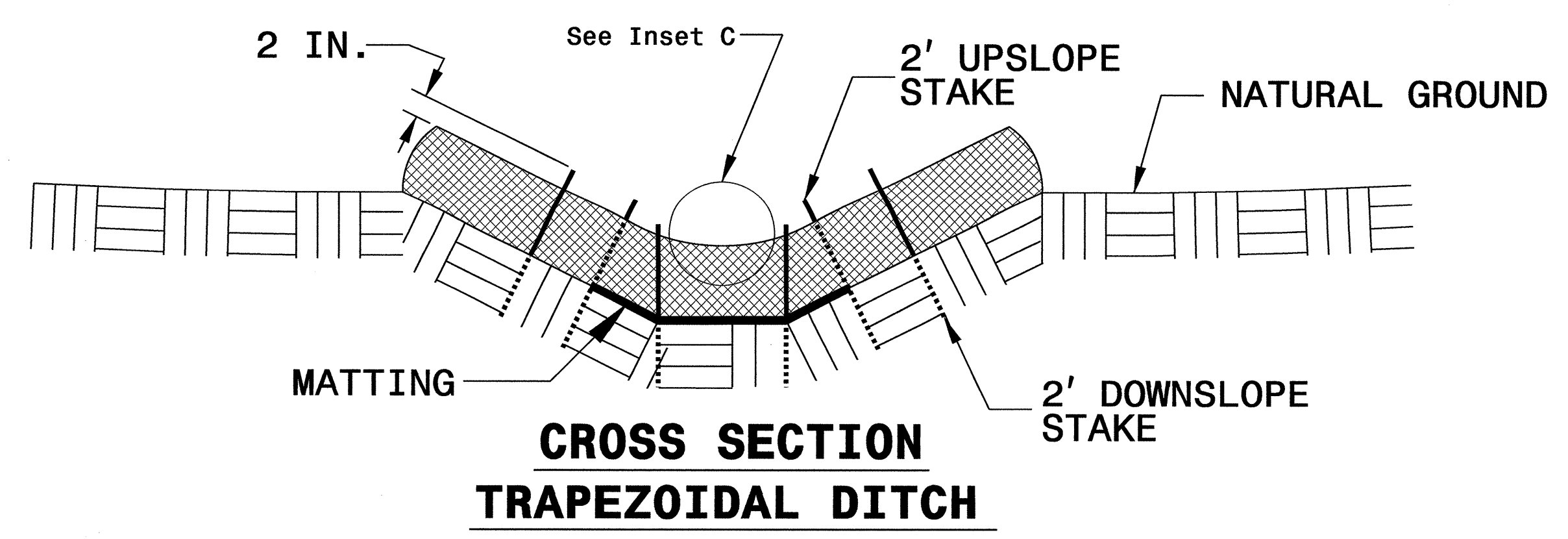
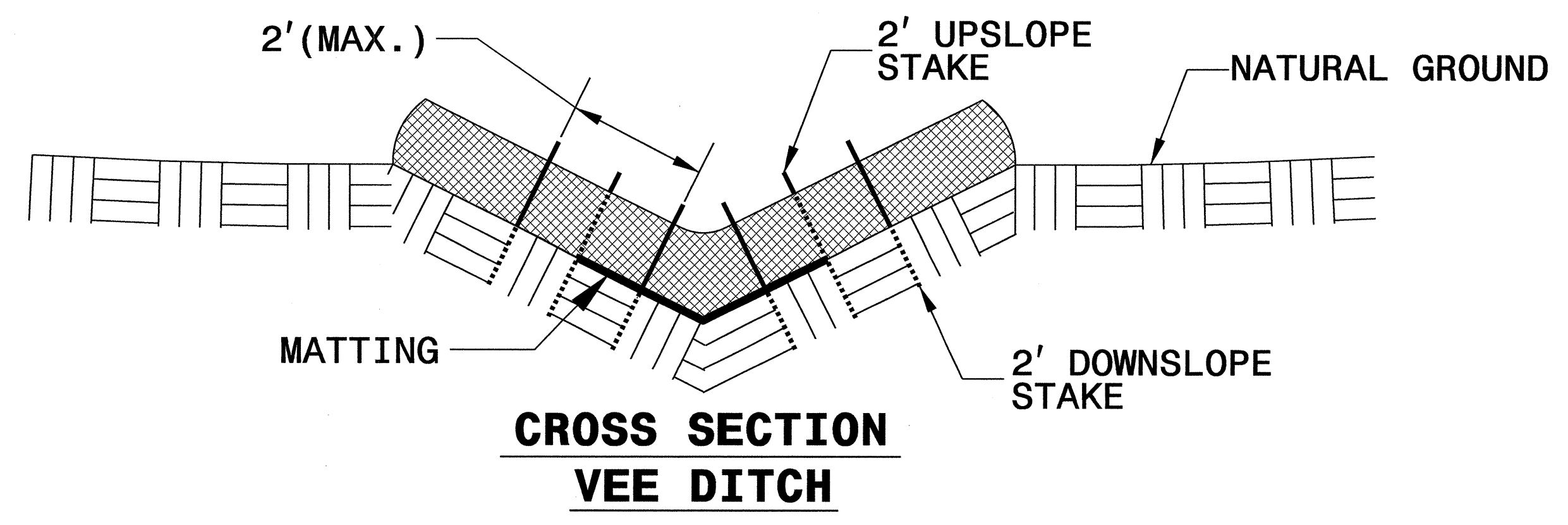
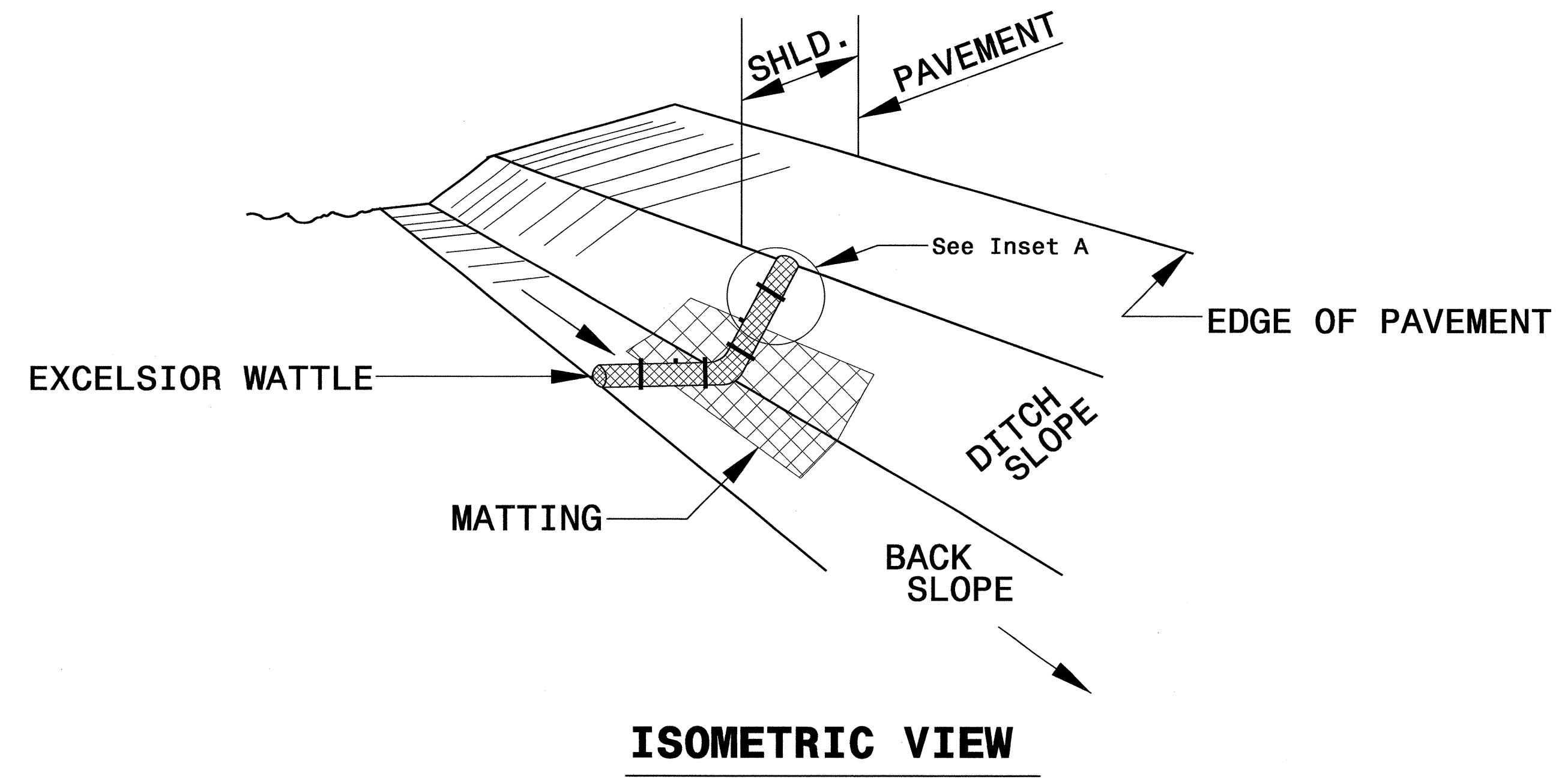
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



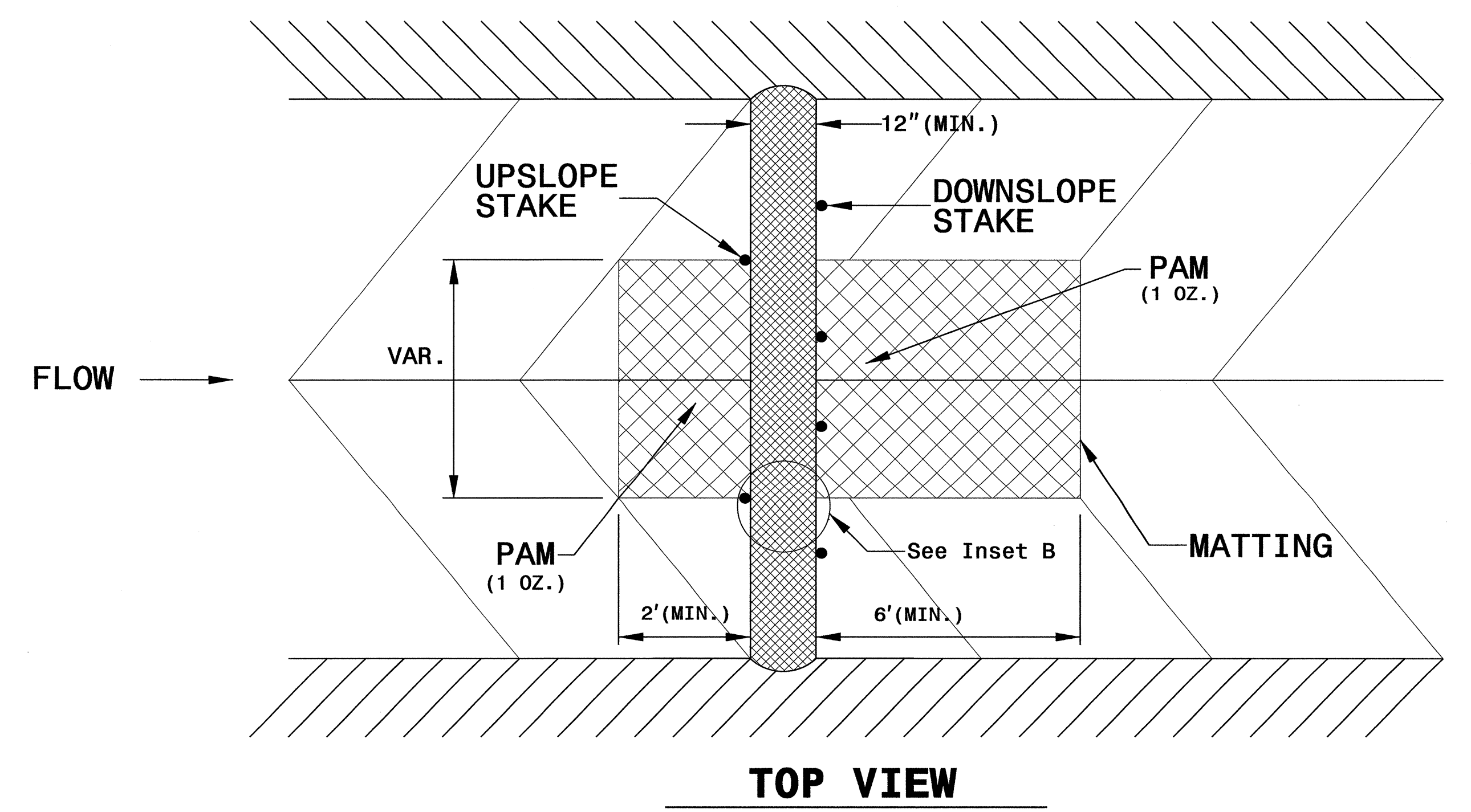
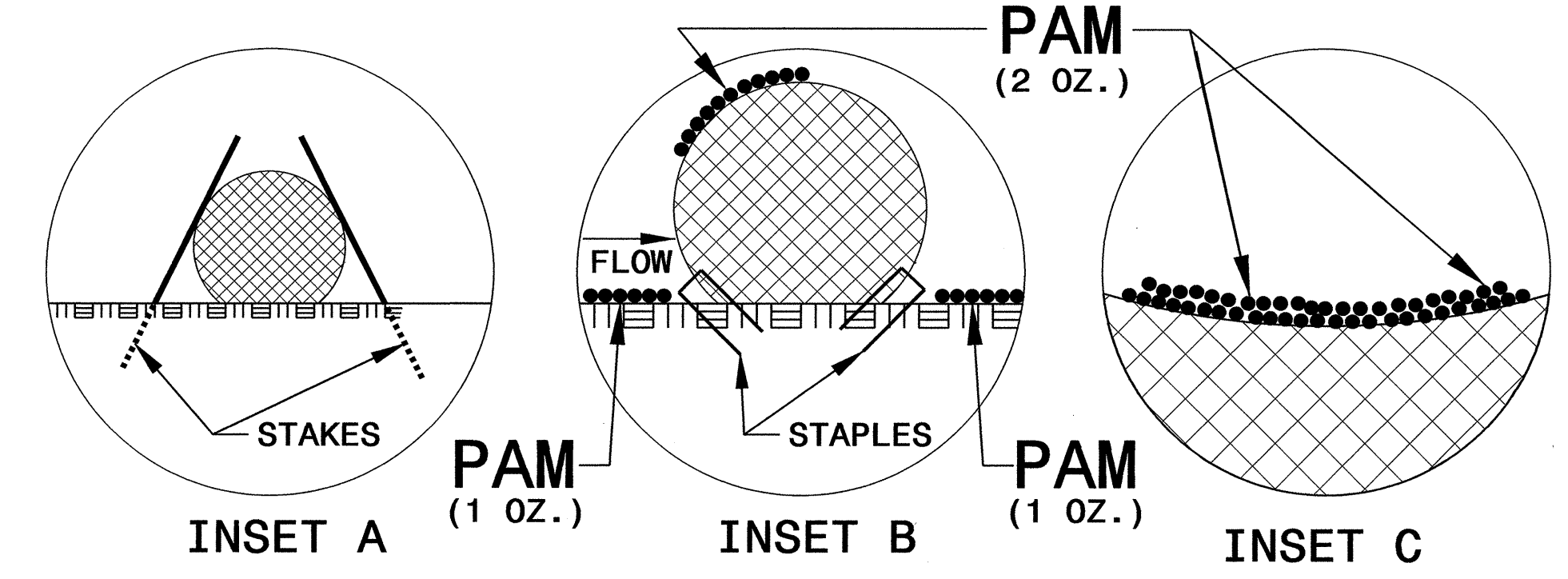
NOT TO SCALE

PROJECT REFERENCE NO. B-4988	SHEET NO. EC-2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL

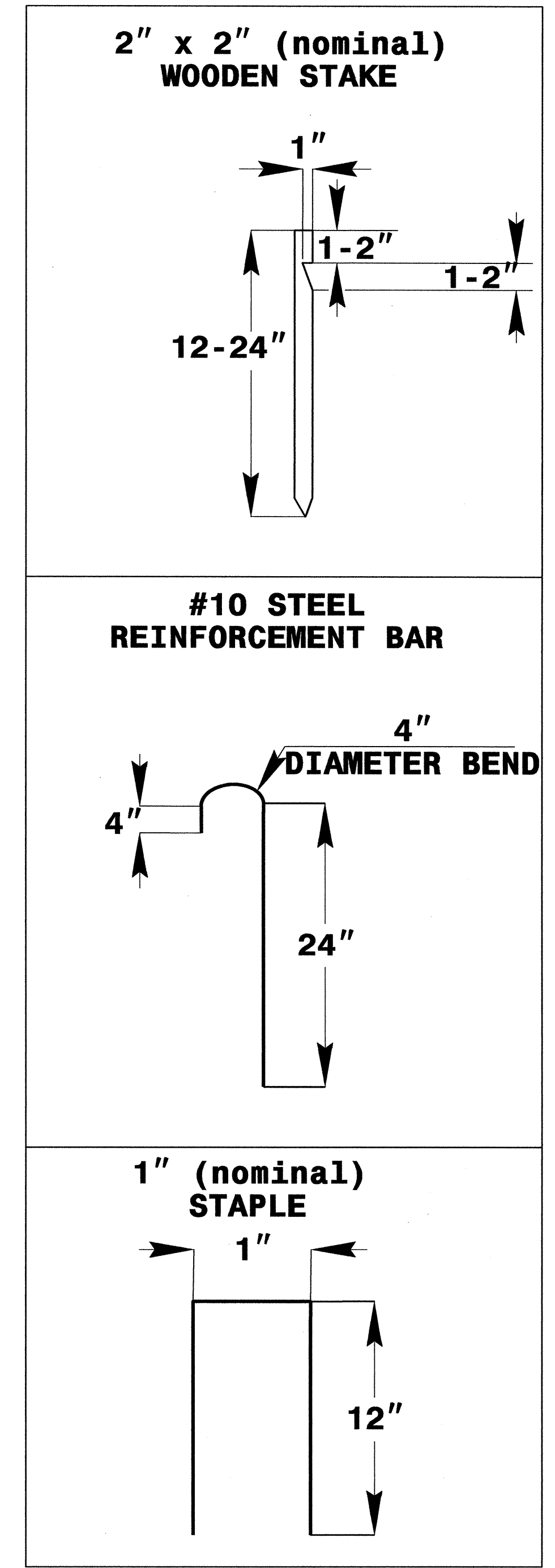
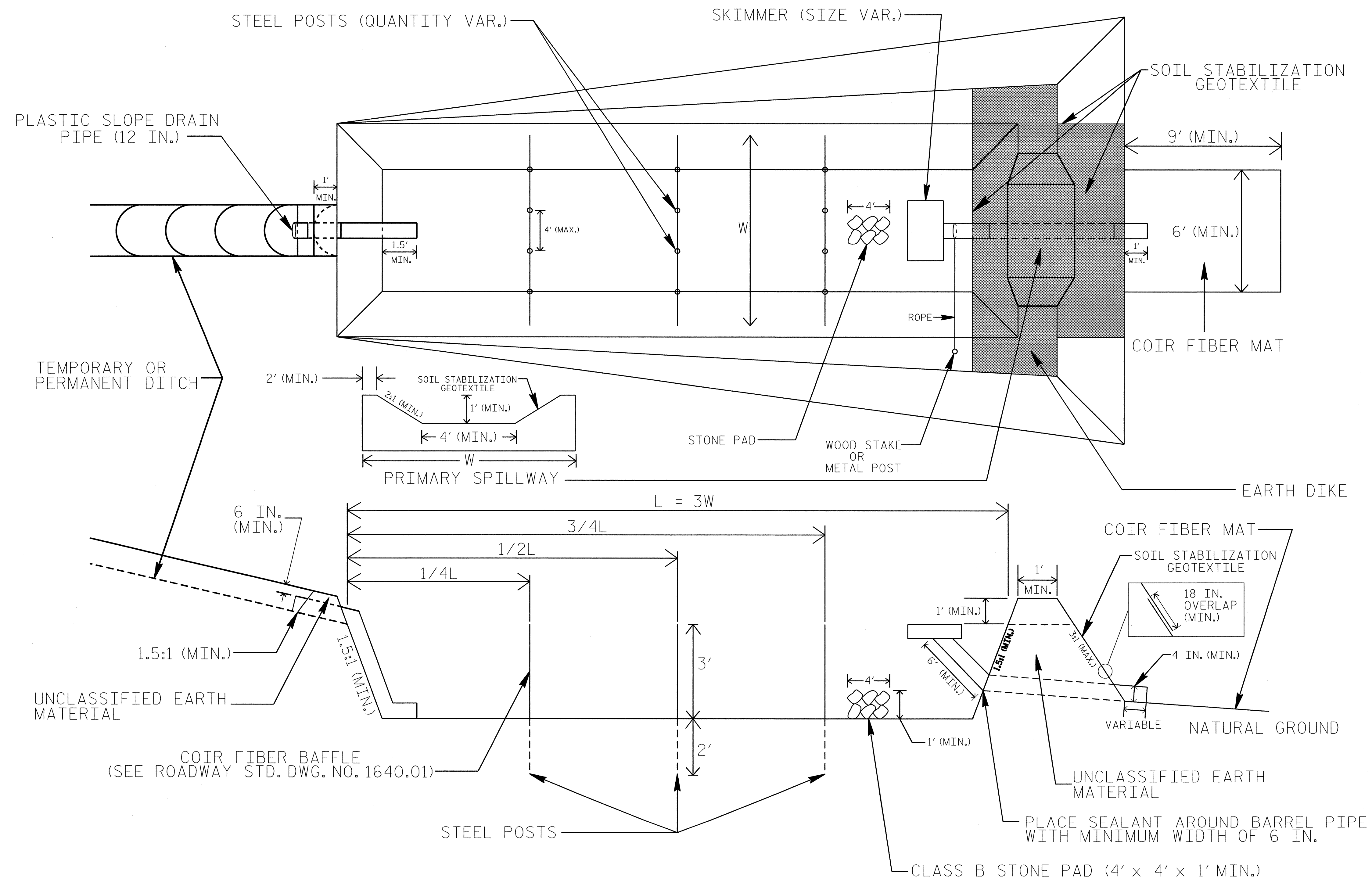


- NOTES:
- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE.
 - USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
 - ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.
 - INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.
 - PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.
 - INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.
 - INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.
 - PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.
 - INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.



PROJECT REFERENCE NO. B-4988	SHEET NO. EC-2B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SKIMMER BASIN WITH BAFFLES DETAIL



NOTES

1. SEED AND PLACE MATTING FOR EROSION CONTROL ON INTERIOR AND EXTERIOR SIDESLOPES.
2. LIMIT EARTH DIKE HEIGHT TO 5 FT.
3. FOR BASIN DEPTH OF 3 FT., THE MINIMUM BASIN WIDTH SHALL BE 9 FT.
4. DETERMINE PRIMARY SPILLWAY WEIR LENGTH (FT.) USING $Q/0.4$, WHERE Q IS FLOW RATE (CFS) INTO BASIN.
5. PLASTIC SLOPE DRAIN PIPE AT INLET OF BASIN MAY BE REPLACED BY FILTRATION GEOTEXTILE OR TARP AS DIRECTED.
6. SOIL STABILIZATION GEOTEXTILE FOR PRIMARY SPILLWAY SHALL BE ONE CONTINUOUS PIECE OF MATERIAL OR OVERLAPPED 18 IN. (MIN.).

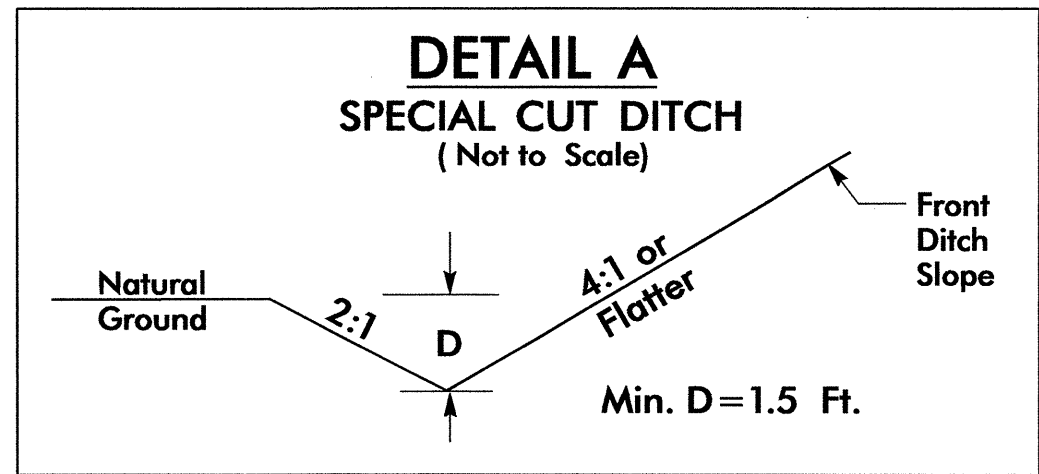
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DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

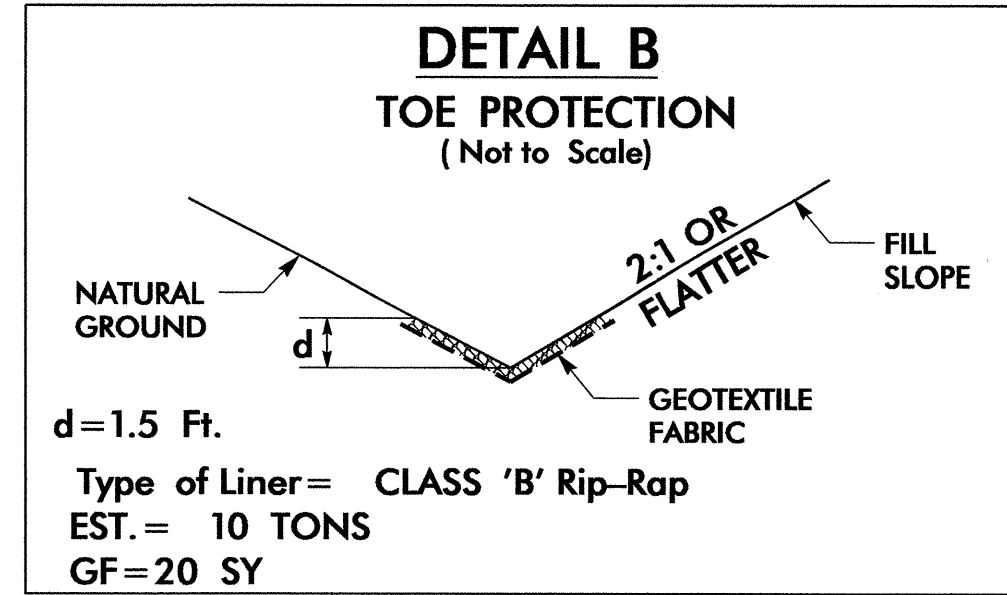
PROJECT REFERENCE NO. <i>B-4988</i>	SHEET NO. <i>EC-3</i>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

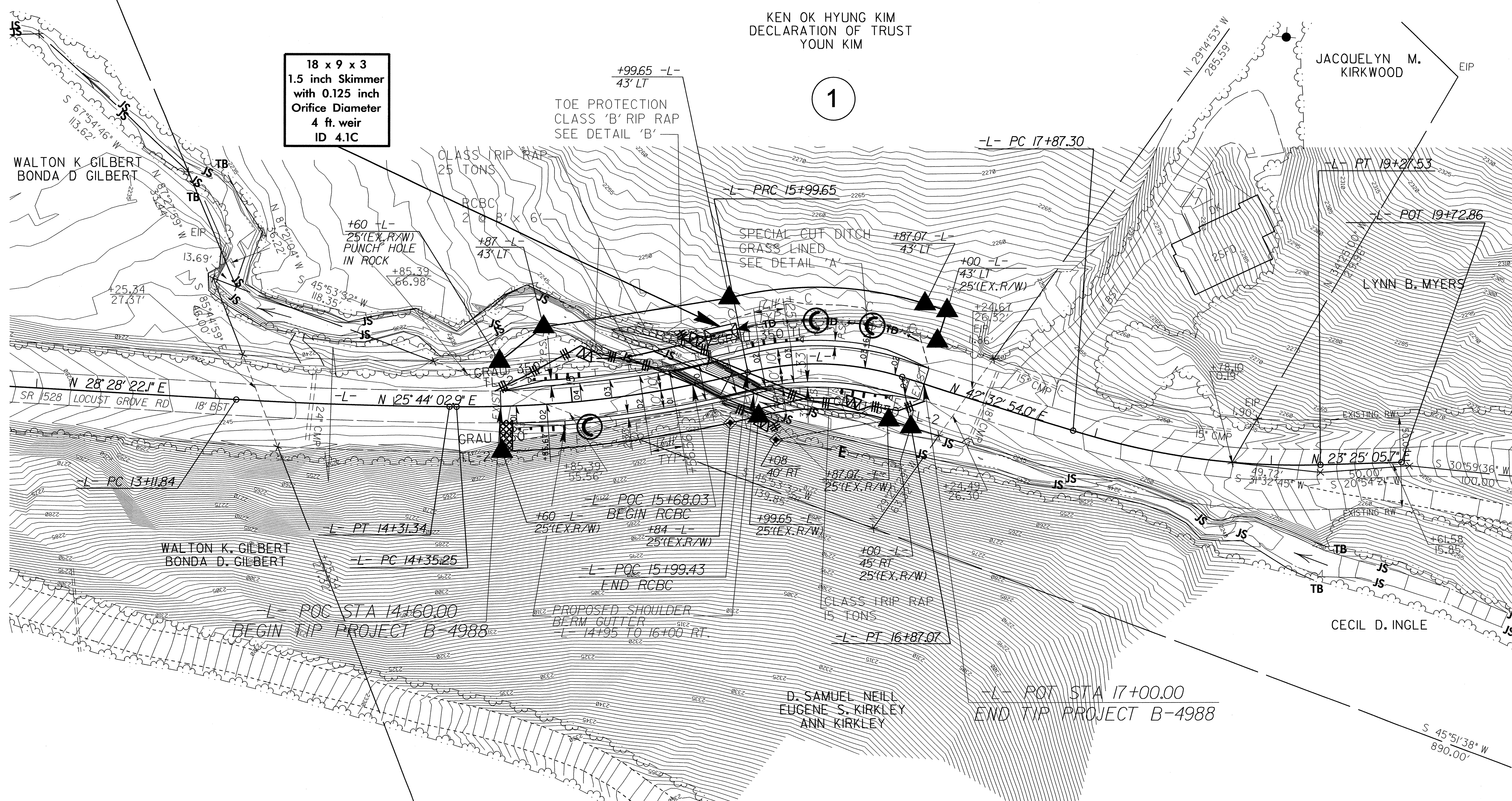
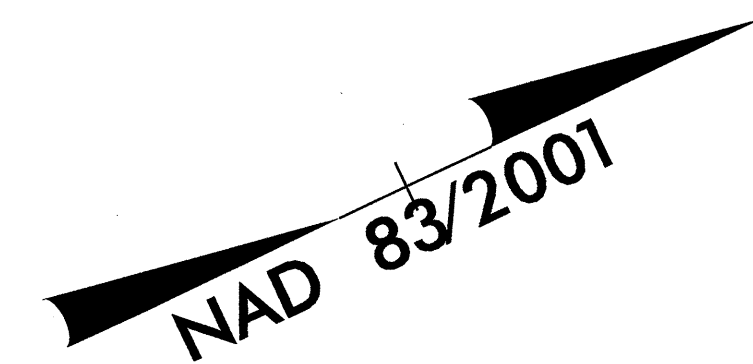


FROM -L- STA. 15+80 TO STA. 16+90 LT.



FROM -L- STA. 15+68 TO STA. 15+80 LT.

KEN OK HYUNG KIM
DECLARATION OF TRUST
YOUN KIM



PROJECT REFERENCE NO.	SHEET NO.
B-4988	EC-5/CONST.4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

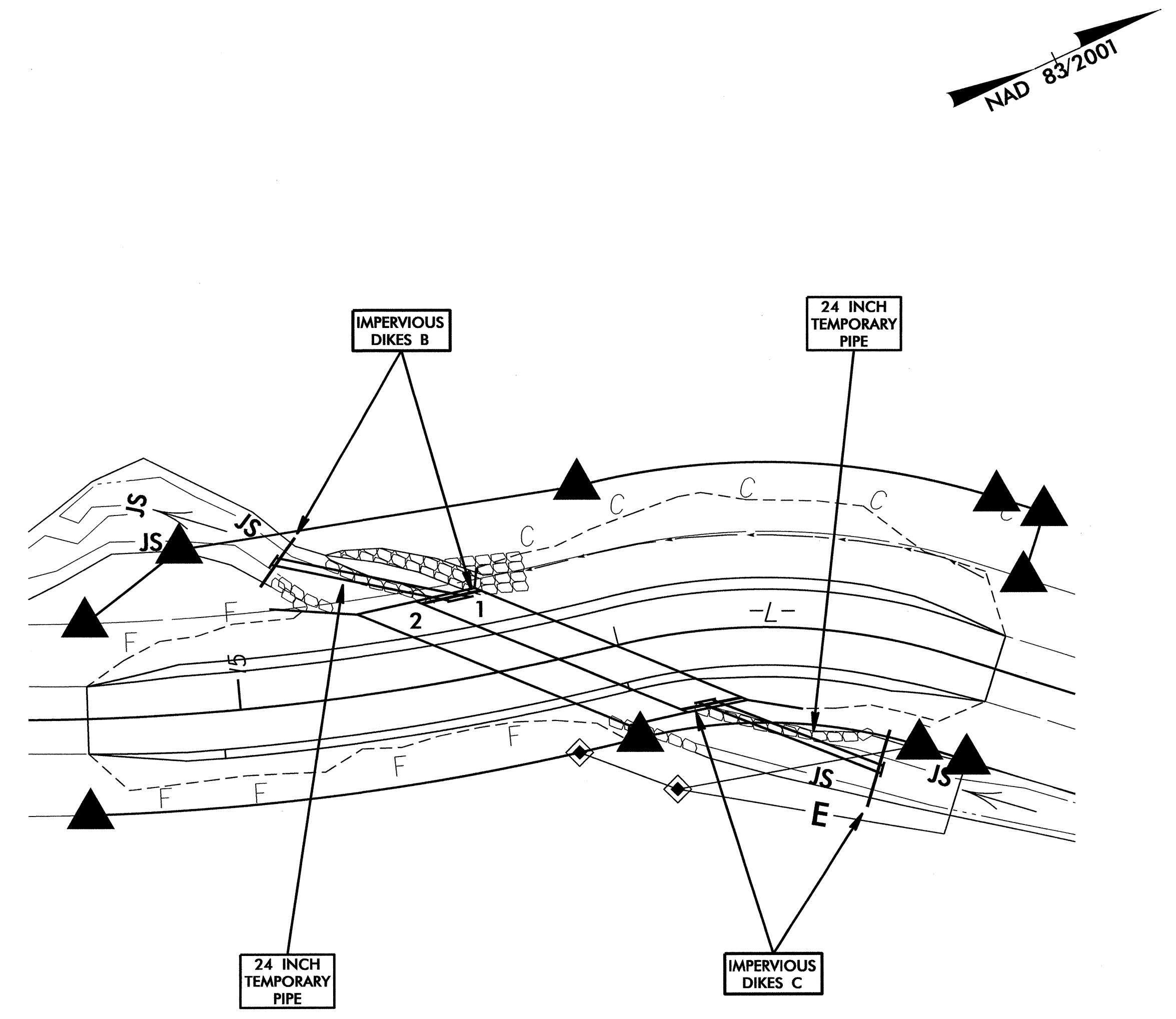
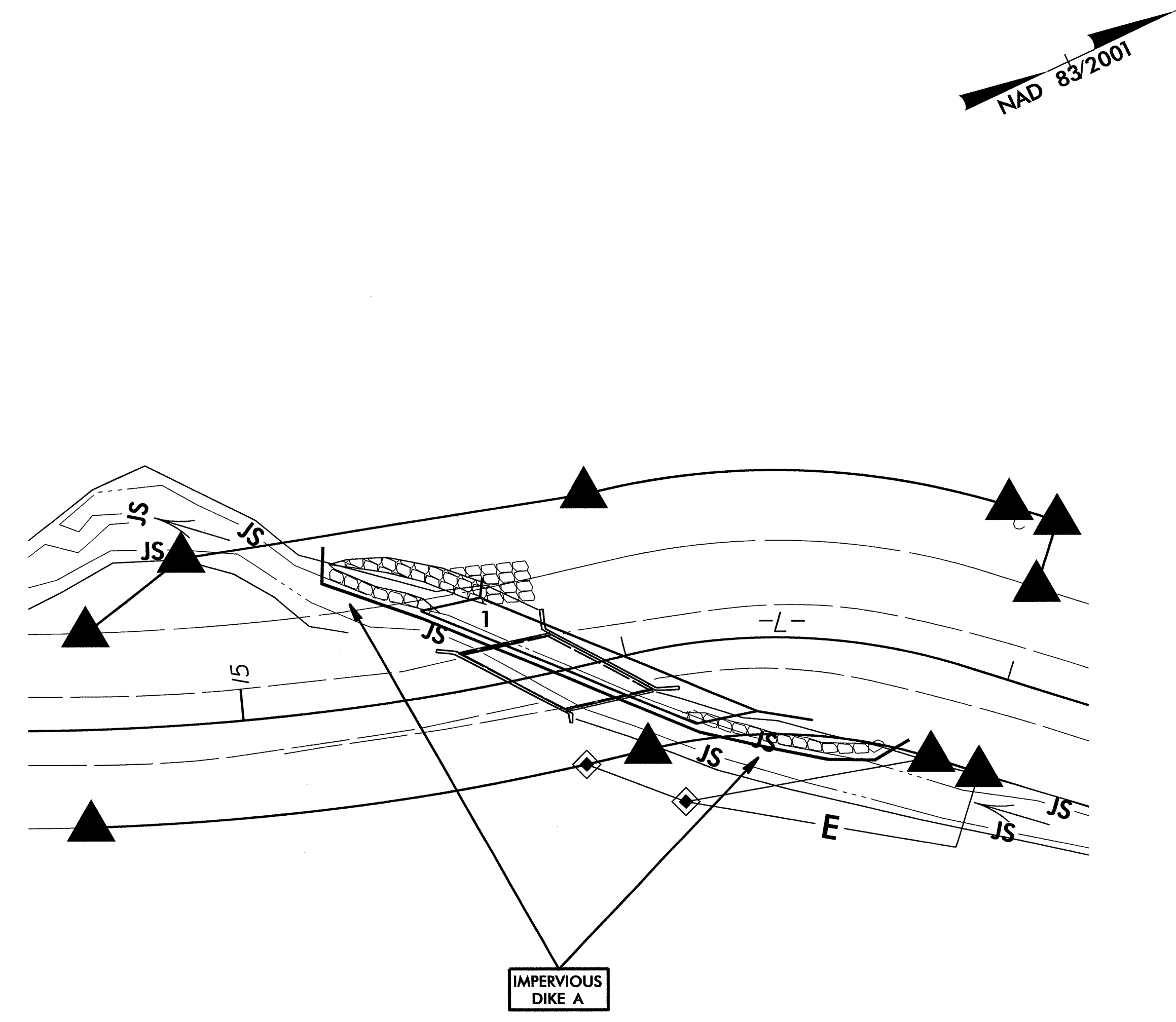
CULVERT CONSTRUCTION SEQUENCE STA. 15+84 -L-

PHASE I

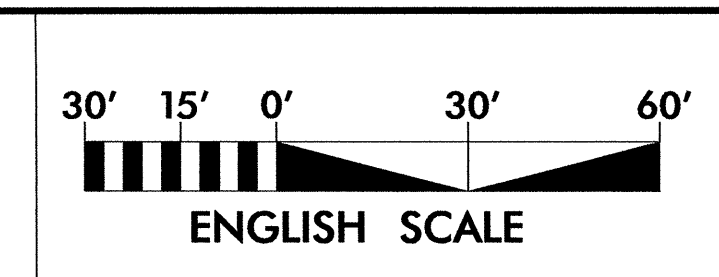
1. UTILIZE SPECIAL STILLING BASIN(S) AS NEEDED THROUGHOUT CULVERT CONSTRUCTION.
2. CONSTRUCT IMPERVIOUS DIKE A, DIVERTING FLOW.
3. CONSTRUCT BARREL 1 OF PROPOSED CULVERT, AND PORTION OF THE INLET/OUTLET CHANNEL IMPROVEMENTS.
4. REMOVE IMPERVIOUS DIKE A.

PHASE II

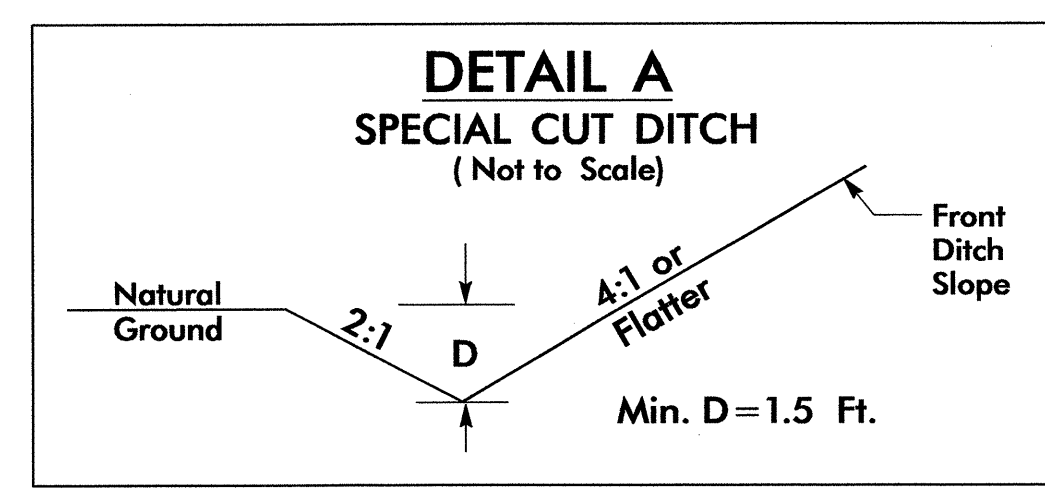
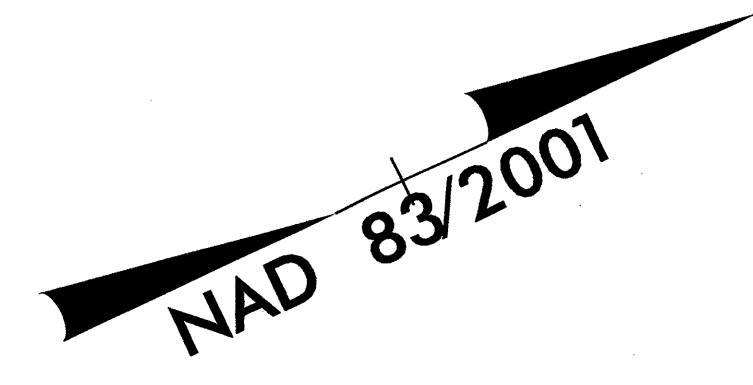
5. CONSTRUCT IMPERVIOUS DIKES B AND C, AND INSTALL 24 INCH TEMPORARY PIPES, DIVERTING FLOW THROUGH BARREL 1 OF PROPOSED CULVERT.
6. CONSTRUCT BARREL 2 OF PROPOSED CULVERT, AND REMAINING INLET/OUTLET CHANNEL IMPROVEMENTS.
7. REMOVE IMPERVIOUS DIKES B AND C, AND 24 INCH TEMPORARY PIPES, ALLOWING NORMAL FLOW THROUGH CULVERT.
8. REMOVE ANY REMAINING SPECIAL STILLING BASIN(S).
9. COMPLETE ROADWAY.



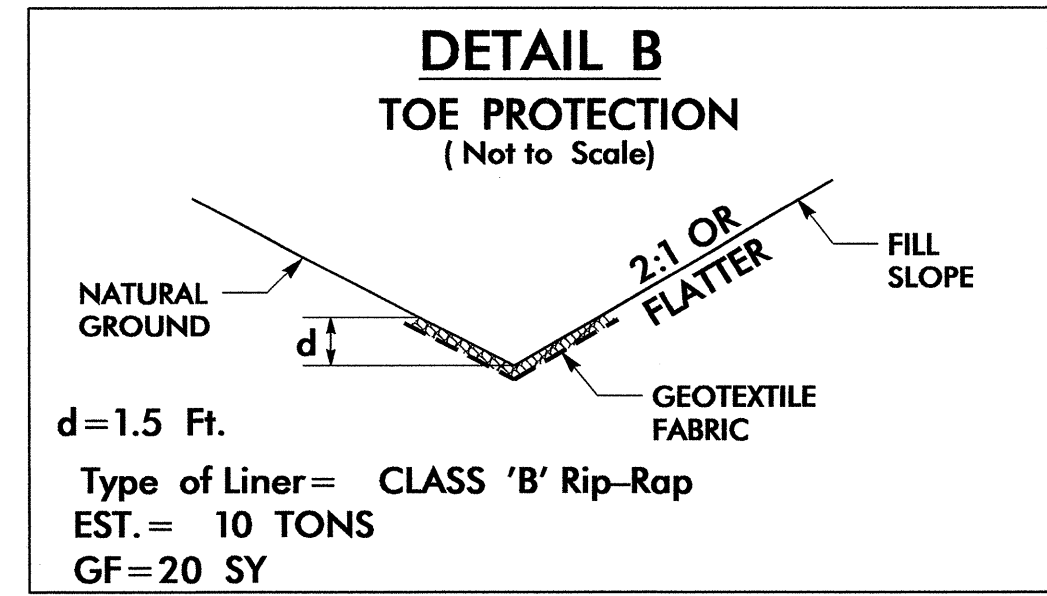
8/17/99



PROJECT REFERENCE NO. B-4988	SHEET NO. EC-6/CONST.4
R/W SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

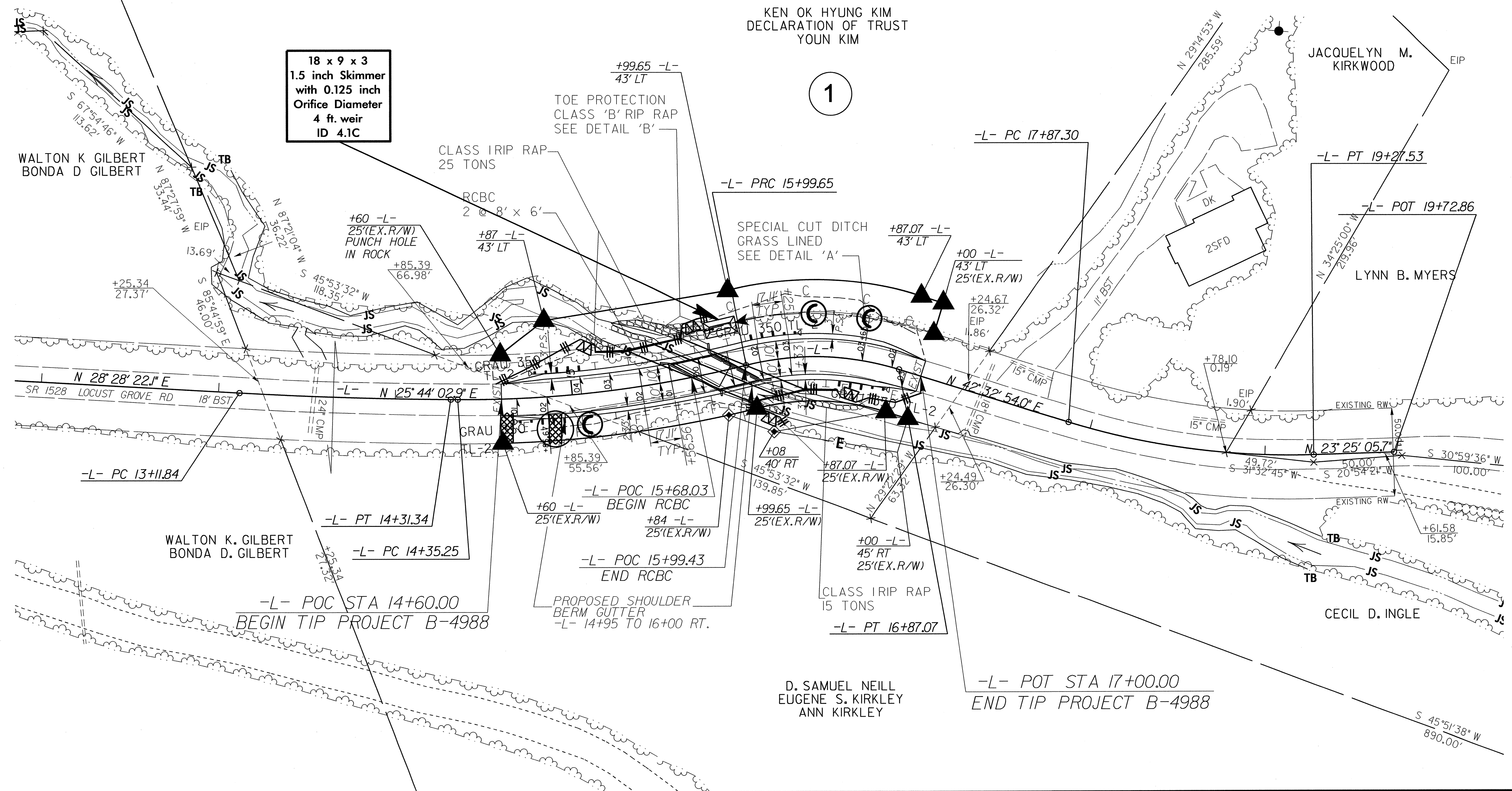


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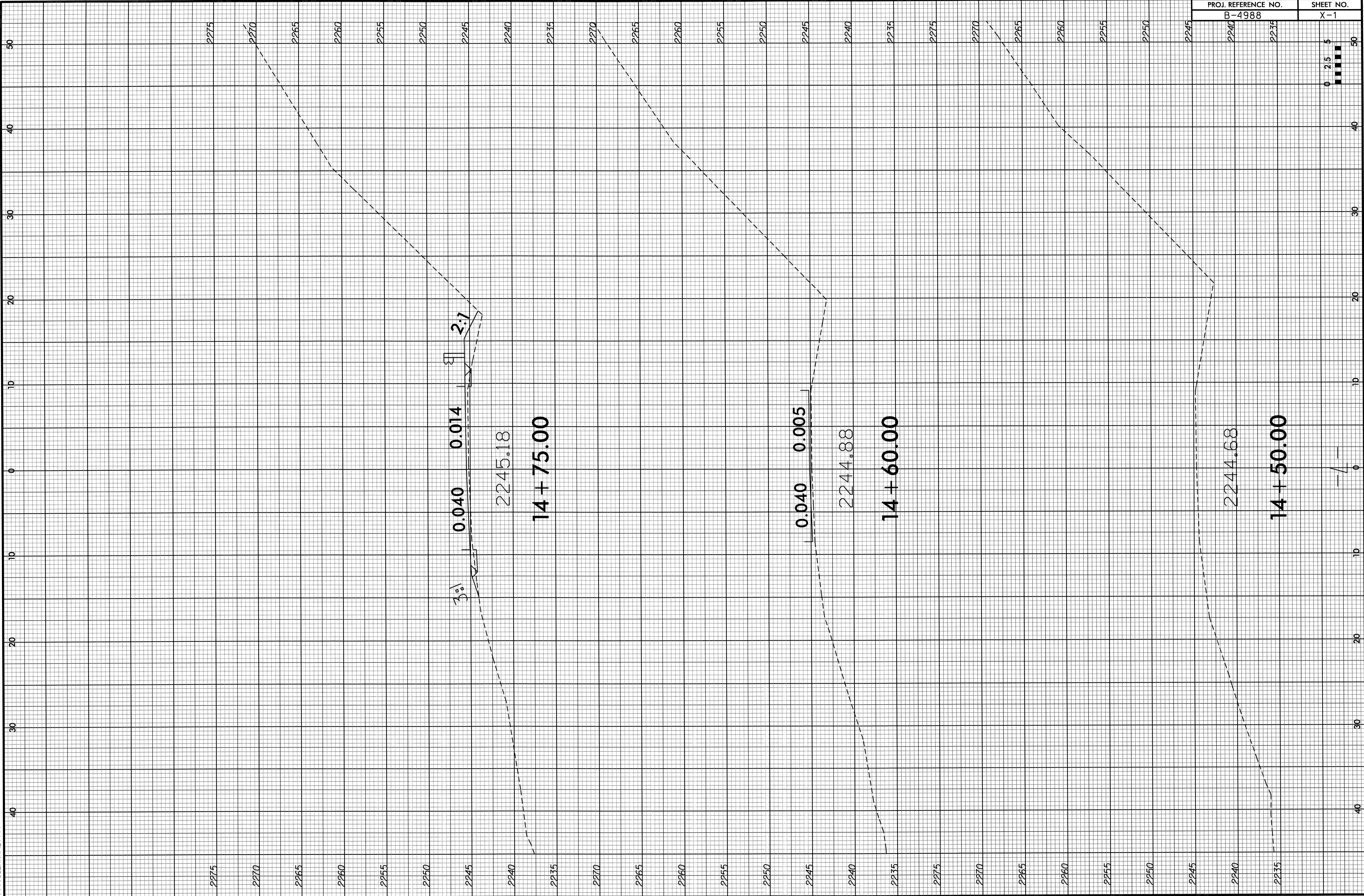


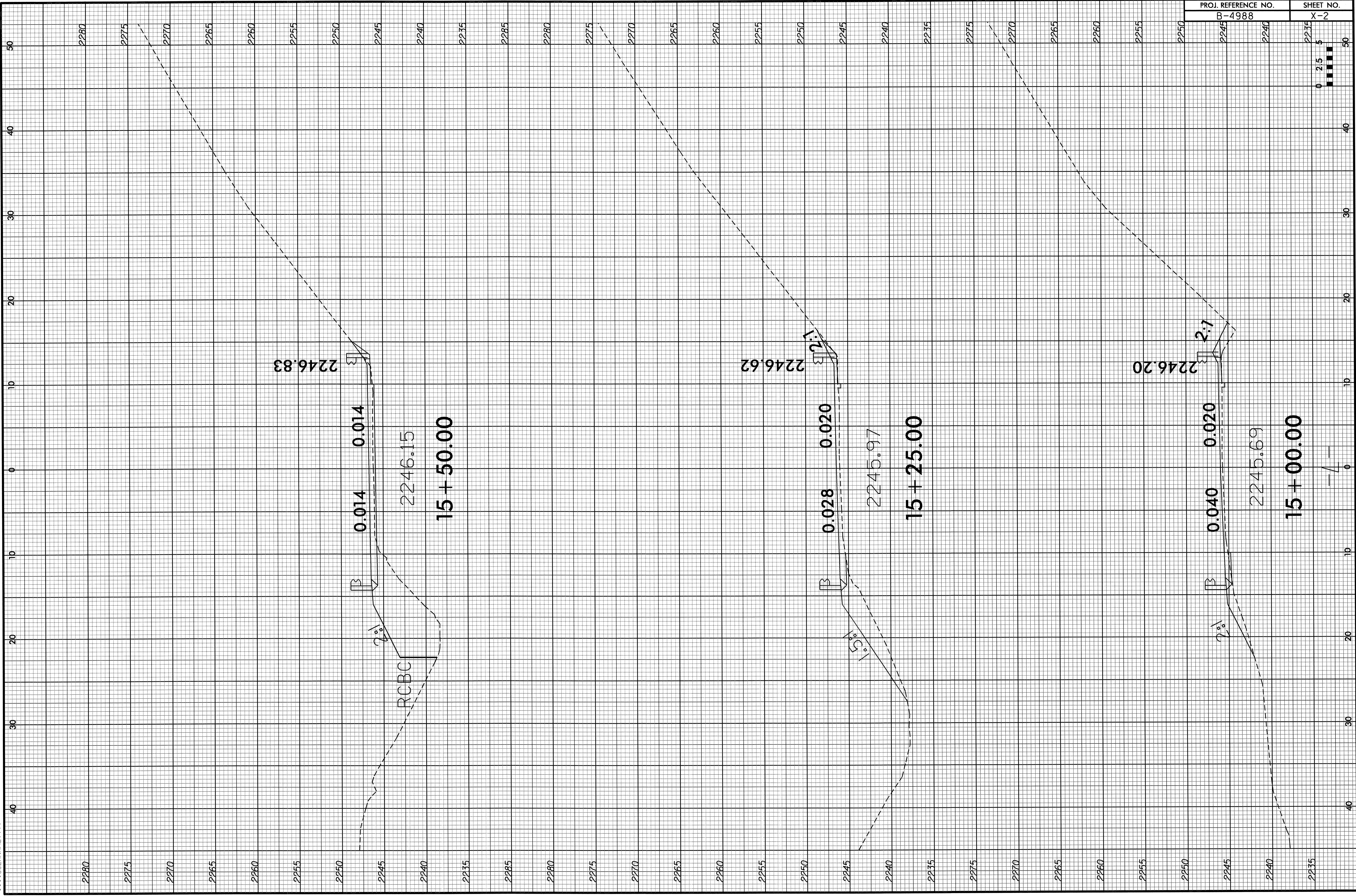
FROM -L- STA. 15+68 TO STA. 15+80 LT.

KEN OK HYUNG KIM
DECLARATION OF TRUST
YOUN KIM

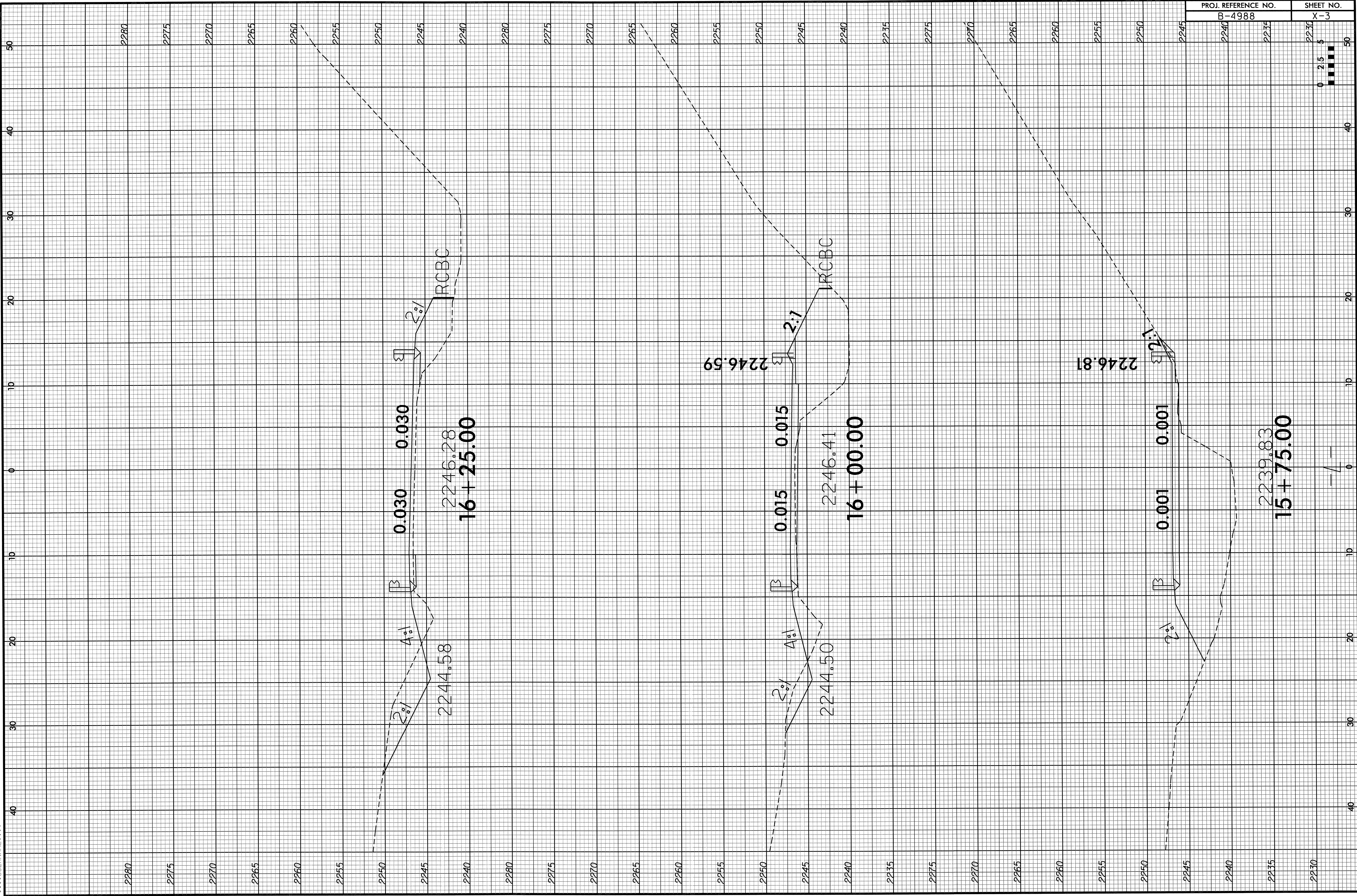


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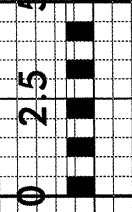


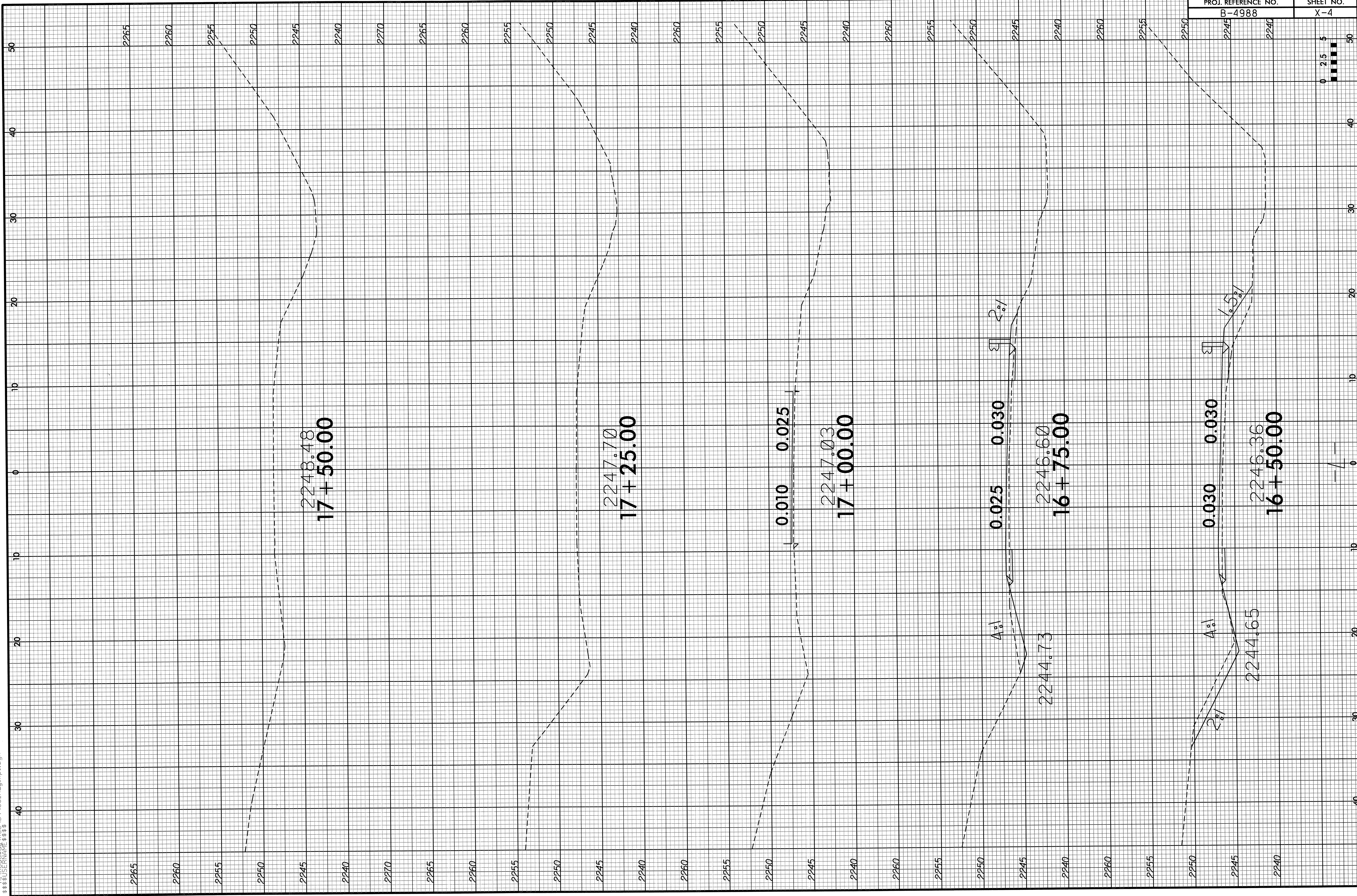


PROJ. REFERENCE NO.	SHEET NO.
B-4988	X-2



PROJ. REFERENCE NO.	SHEET NO.
B-4988	X-3





2248.48
17+50.00

2247.70
17+25.00

0.010 0.025
2247.03
17+00.00

0.025 0.030
2246.60
16+75.00

0.030 0.030
2246.36
16+50.00

