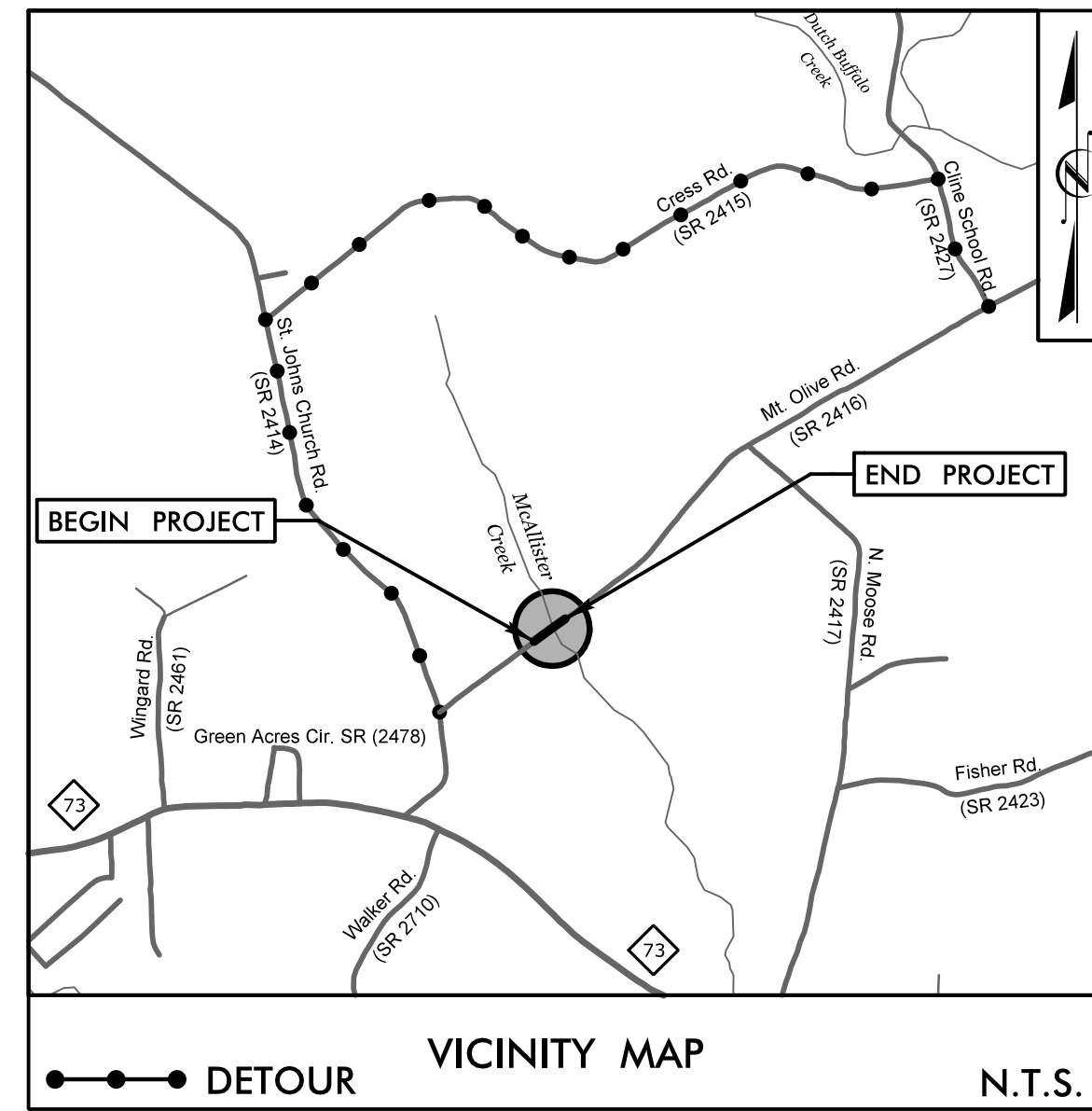


PROJECT WBS: 17BP.10.R.52

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet



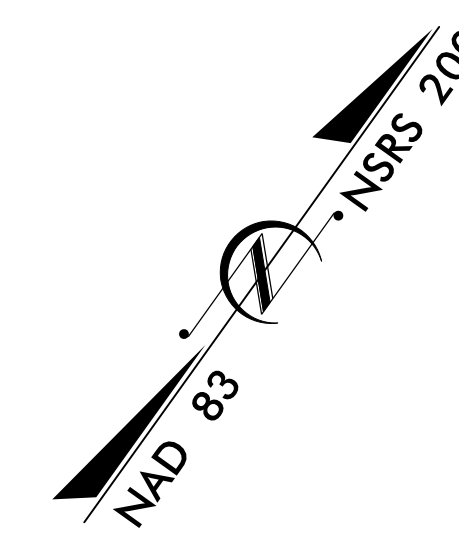
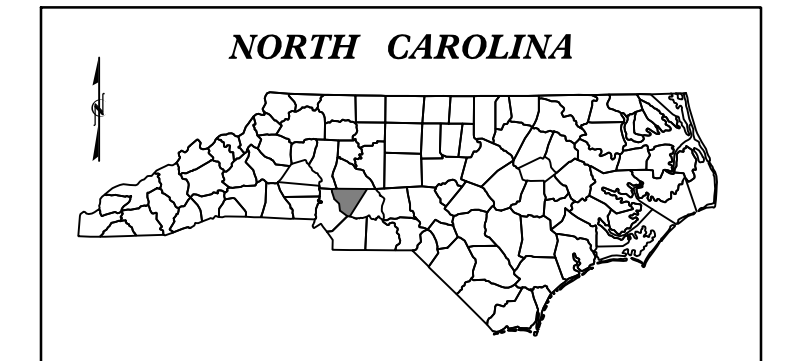
FINAL PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
CABARRUS COUNTY

**LOCATION: BRIDGE #070 OVER McALLISTER CREEK
ON SR 2416 (MOUNT OLIVE RD.)**

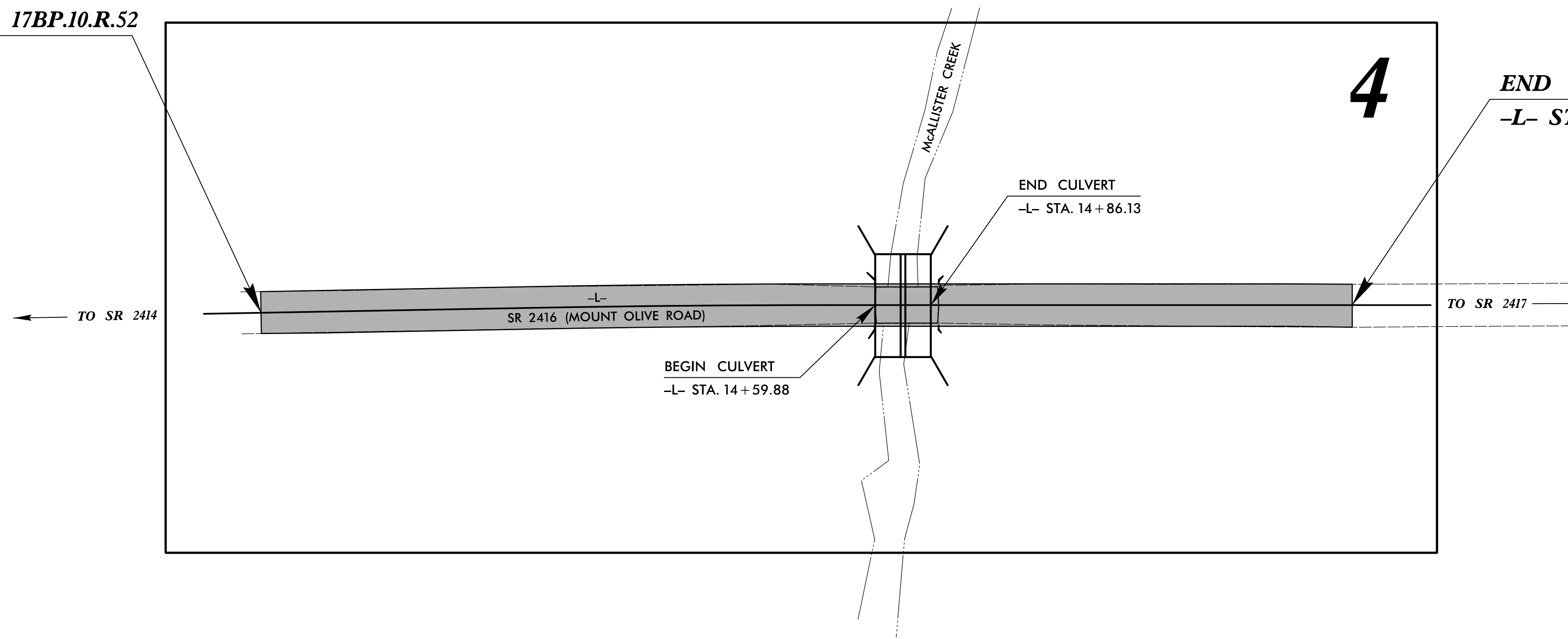
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.52	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.52		P.E.	
17BP.10.R.52		R/W & UTILITIES	
17BP.10.R.52		CONSTRUCTION	

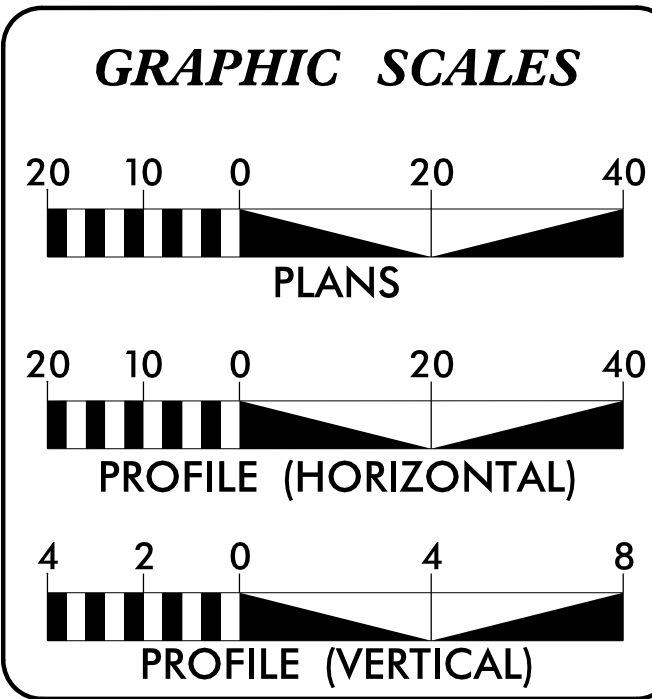


BEGIN WBS PROJECT 17BP.10.R.52
-L- STA. 11 + 70.00

END WBS PROJECT 17BP.10.R.52
-L- STA. 16 + 85.00



CONTRACT:



DESIGN DATA

ADT 2010 =	880
ADT 2025 =	1540
DHV =	N/A
D =	N/A
T =	6%
V =	55 MPH
FUNC. CLASSIFICATION:	LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT WBS 17BP.10.R.52 =	0.093 MILES
LENGTH OF STRUCTURE PROJECT WBS 17BP.10.R.52 =	0.005 MILES
TOTAL LENGTH OF PROJECT WBS 17BP.10.R.52 =	0.098 MILES

NCDOT CONTACT: GARLAND HAYWOOD, PE
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

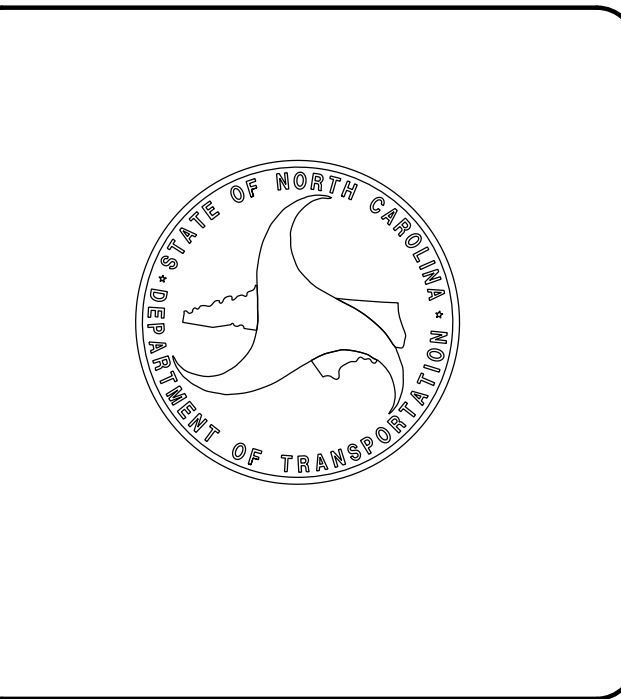
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: SEPTEMBER 9, 2014	NIKKI T. HONEYCUTT, PE PROJECT ENGINEER
LETTING DATE: MAY 4, 2016	MAAMOON K. ABDELAZIZ PROJECT DESIGNER

HYDRAULICS ENGINEER

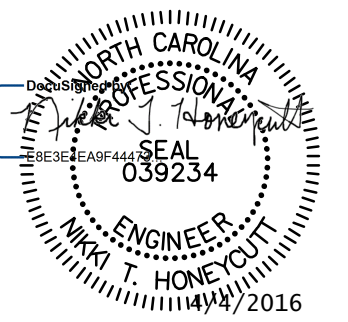
DocuSigned by:
Edward J. Vance
SIGNATURE: EDWARD J. VANCE, P.E.
4/17/2016

ROADWAY DESIGN ENGINEER

DocuSigned by:
Nikki T. Honeycutt
SIGNATURE: NIKKI T. HONEYCUTT, P.E.
4/14/2016



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**



**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

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
3	SUMMARIES AND TYPICAL SECTION SHEET
4	PLAN AND PROFILE SHEET
TMP-1	TRAFFIC MANAGEMENT PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION DETAIL SHEET
X-1 THRU X-4	CROSS-SECTIONS

GENERAL NOTES

GENERAL NOTES: 2012 SPECIFICATIONS
EFFECTIVE: 01-01-2012

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED 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.

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.

RIGHT-OF-WAY MARKERS:

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

STANDARD DRAWINGS

2012 ROADWAY ENGLISH STANDARD DRAWINGS EFF. January, 2012

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
DIVISION 2 - EARTHWORK	
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
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
862.01	Guardrail Placement
862.02	Guardrail Installation
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
1101.03	Temporary Road Closures
1110.01	Work Zone Advance Warning Signs
1110.01	Stationary Work Zone Signs - Mounting Height & Lateral Clearance
1145.01	Barricades - Type III
DIVISION 16 - EROSION CONTROL AND ROADSIDE DEVELOPMENT	
1605.01	Temporary Silt Fence
1607.01	Gravel Construction Entrance
1630.04	Stilling Basin For Pumped Effluent
1630.06	Special Stilling Basin
1631.01	Matting Installation
1633.01	Temporary Rock Silt Check Type A
1645.01	Temporary Stream Crossing

04/16/11

Note: Not to Scale

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS CONVENTIONAL PLAN SHEET SYMBOLS

*S.U.E. = Subsurface Utility Engineering

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin, Property Corner, Property Monument, Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Existing Historic Property Boundary, Known Contamination Area: Soil, Potential Contamination Area: Soil, Known Contamination Area: Water, Potential Contamination Area: Water, Contaminated Site: Known or Potential.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY:

Table listing symbols for right of way: Baseline Control Point, Existing Right of Way Marker, Existing Right of Way Line, Proposed Right of Way Line, Proposed Right of Way Line with Iron Pin and Cap Marker, Proposed Right of Way Line with Concrete or Granite RW Marker, Proposed Control of Access Line with Concrete C/A Marker, Existing Control of Access, Proposed Control of Access, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage / Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement, Proposed Permanent Easement with Iron Pin and Cap Marker.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal.

VEGETATION:

Table listing symbols for vegetation: Single Tree, Single Shrub, Hedge, Woods Line.

Table listing symbols for orchard and vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall, Head and End Wall, Pipe Culvert, Footbridge.

Table listing symbols for drainage and sewer: Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

Table listing symbols for utilities: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, U/G Power Line LOS B (S.U.E.*), U/G Power Line LOS C (S.U.E.*), U/G Power Line LOS D (S.U.E.*).

TELEPHONE:

Table listing symbols for telephone: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, U/G Telephone Cable LOS B (S.U.E.*), U/G Telephone Cable LOS C (S.U.E.*), U/G Telephone Cable LOS D (S.U.E.*), U/G Telephone Conduit LOS B (S.U.E.*), U/G Telephone Conduit LOS C (S.U.E.*), U/G Telephone Conduit LOS D (S.U.E.*), U/G Fiber Optics Cable LOS B (S.U.E.*), U/G Fiber Optics Cable LOS C (S.U.E.*), U/G Fiber Optics Cable LOS D (S.U.E.*).

WATER:

Table listing symbols for water: Water Manhole, Water Meter, Water Valve, Water Hydrant, U/G Water Line LOS B (S.U.E.*), U/G Water Line LOS C (S.U.E.*), U/G Water Line LOS D (S.U.E.*), Above Ground Water Line.

TV:

Table listing symbols for TV: TV Pedestal, TV Tower, U/G TV Cable Hand Hole, U/G TV Cable LOS B (S.U.E.*), U/G TV Cable LOS C (S.U.E.*), U/G TV Cable LOS D (S.U.E.*), U/G Fiber Optic Cable LOS B (S.U.E.*), U/G Fiber Optic Cable LOS C (S.U.E.*), U/G Fiber Optic Cable LOS D (S.U.E.*).

GAS:

Table listing symbols for gas: Gas Valve, Gas Meter, U/G Gas Line LOS B (S.U.E.*), U/G Gas Line LOS C (S.U.E.*), U/G Gas Line LOS D (S.U.E.*), Above Ground Gas Line.

SANITARY SEWER:

Table listing symbols for sanitary sewer: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, SS Forced Main Line LOS B (S.U.E.*), SS Forced Main Line LOS C (S.U.E.*), SS Forced Main Line LOS D (S.U.E.*).

MISCELLANEOUS:

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

3/31/2016 R:\Roadway\Proj\SH110R52_r_dy_psh01B.dgn ClevesP

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

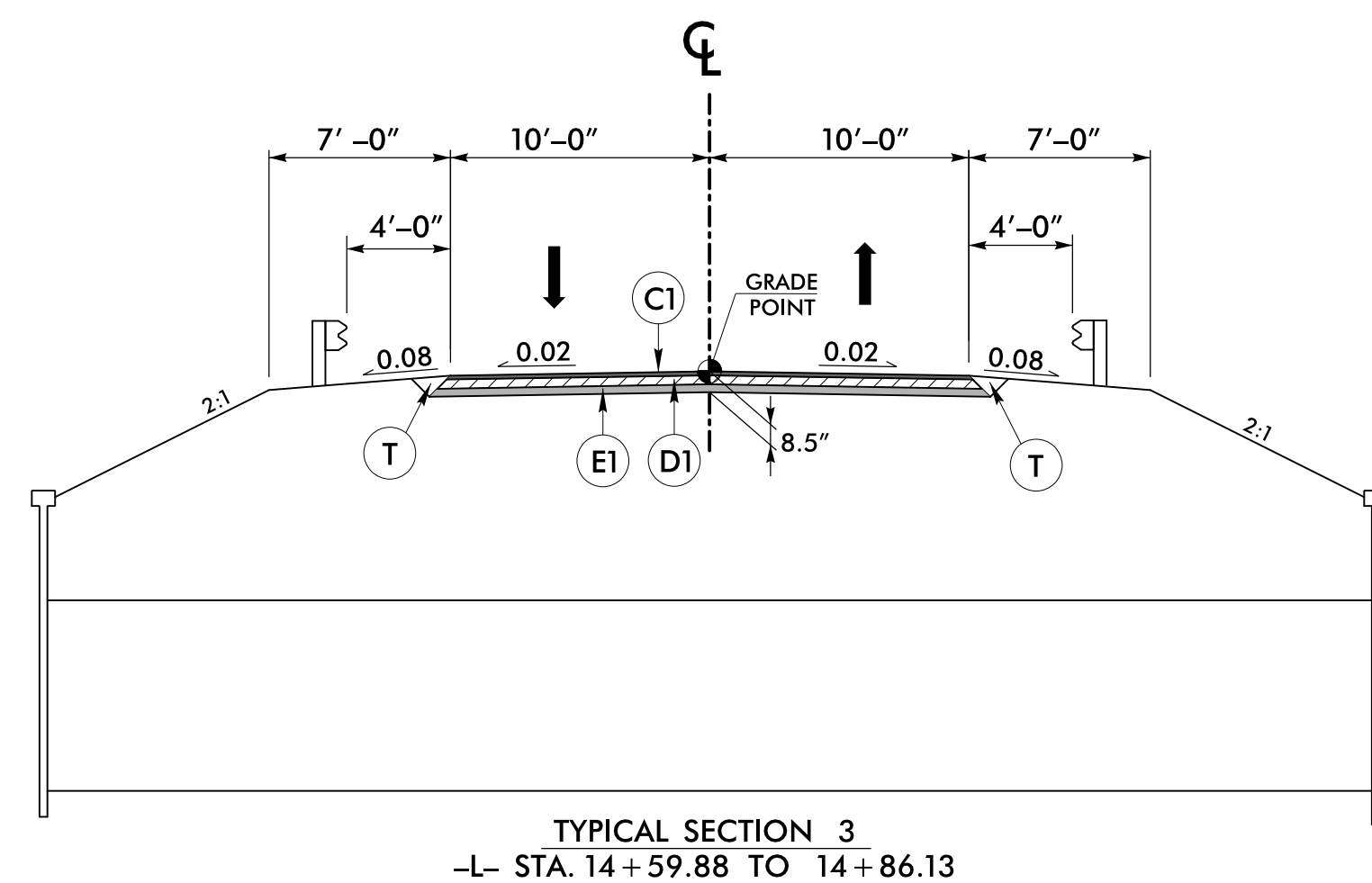
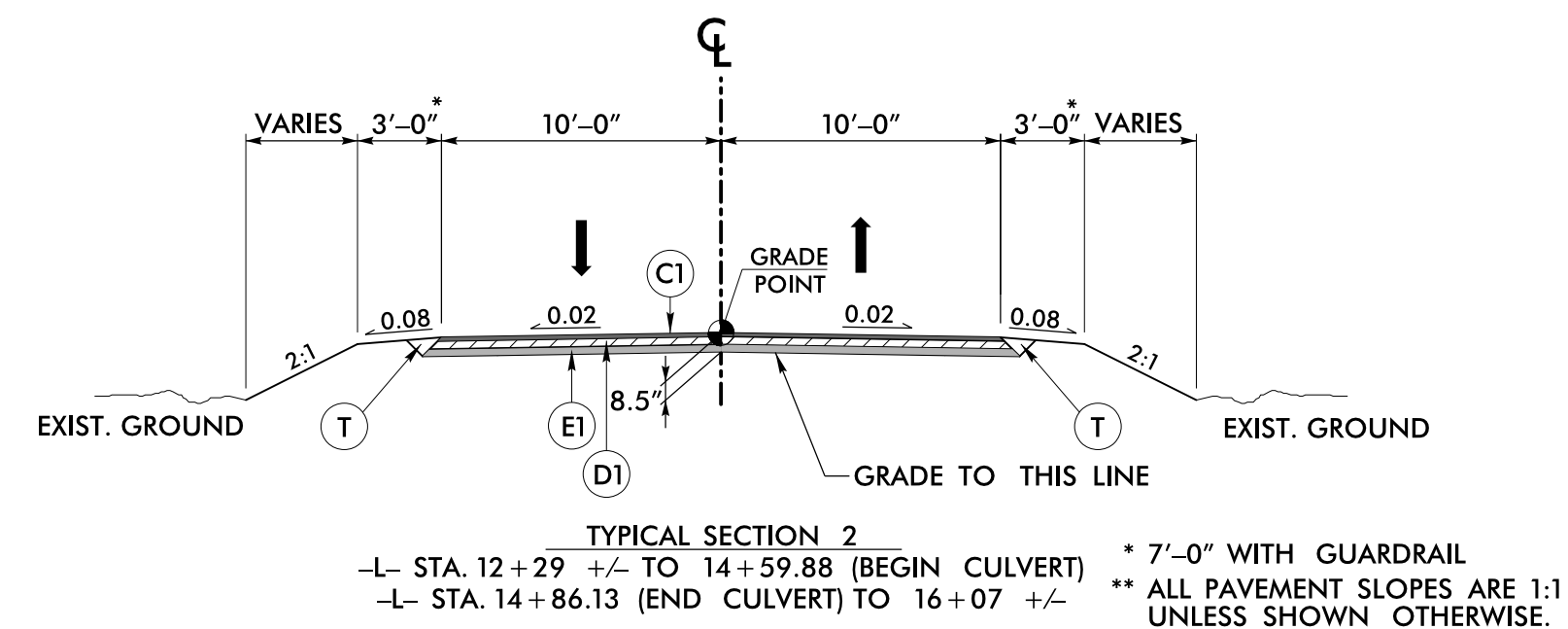
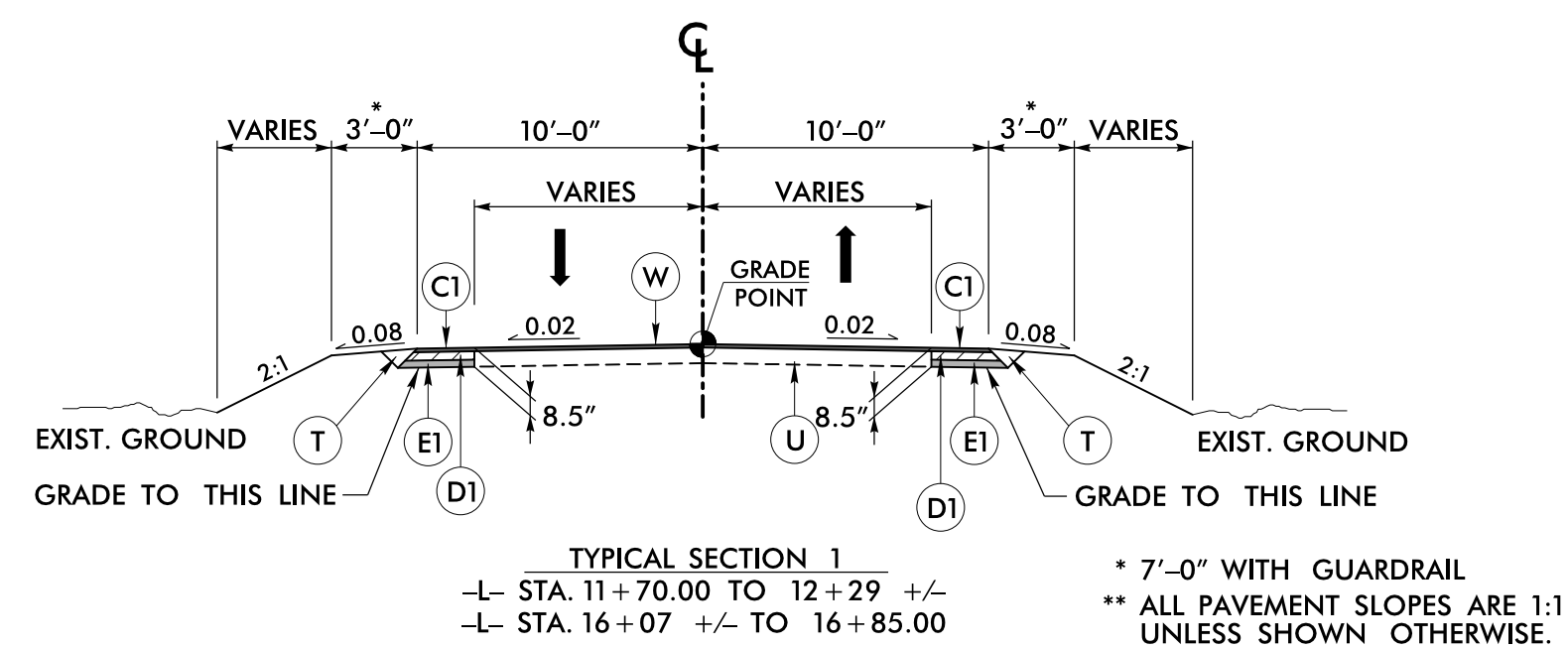
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STV Engineers, Inc. <small>900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991</small>	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER PAVEMENT DESIGN PROVIDED BY NCDOT
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

EARTHWORK SUMMARY (IN CUBIC YARDS)

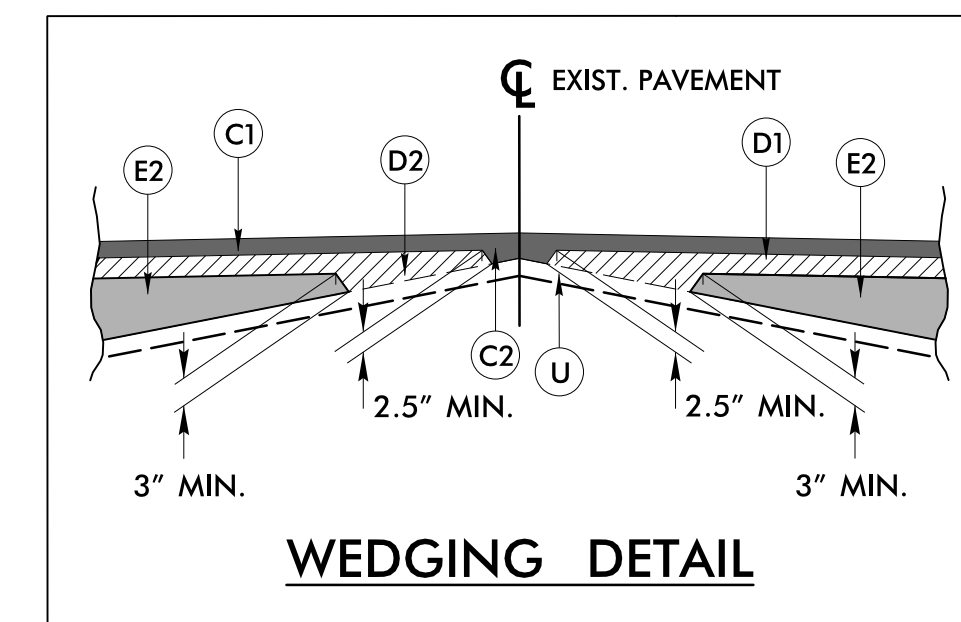
CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-	11+70.00	16+85.00	LT & RT	762		1,262	500	
LOSS DUE TO CLEARING AND GRUBBING				-132			132	
WASTE IN LIEU OF BORROW								
PROJECT TOTAL				630		1,262	632	
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS							32	
GRAND TOTAL				630		1,262	664	
SAY				650			700	

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.

Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, Breaking of Existing Pavement, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."



PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 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 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 3.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 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 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	PAVEMENT WEDGING



* W MEASURED FROM "N" AT THE BEGINNING OF THE ANCHOR TO "N" AT THE END OF THE ANCHOR.
 "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

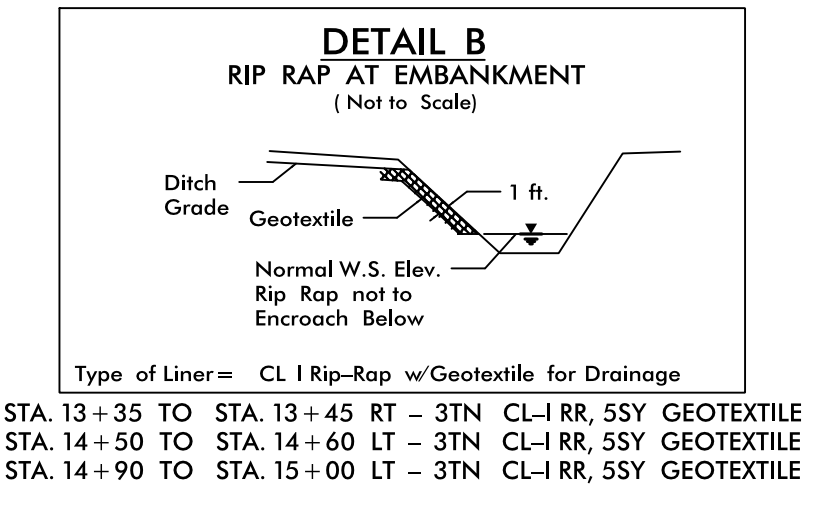
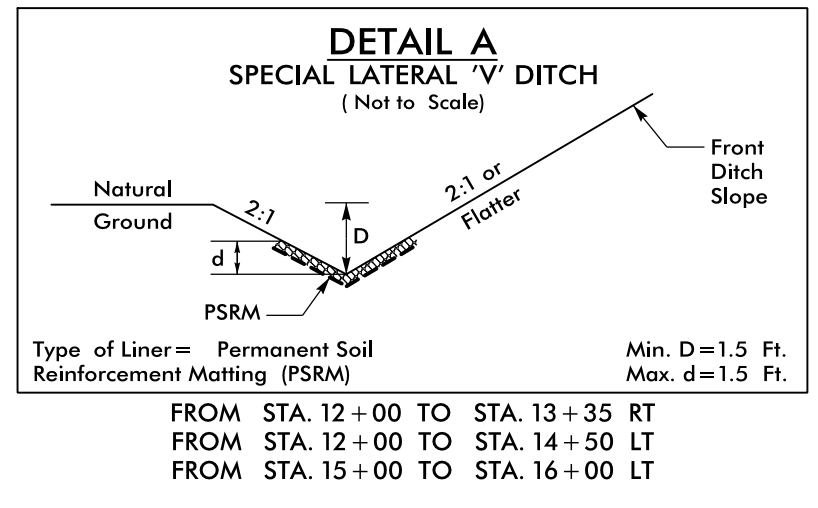
GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W*		ANCHORS								IMPACT ATTENUATOR TYPE 350 EA G NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	B-77	GRAU 350	M-350	TYPE III	CAT-1	VI MOD	BIC					
-L-	13+63.83	15+76.19	LT	212.50			14+86.13	14+59.88	4.0 - 5.0	7.0	50.0'	50.0'	1.0'	1.0'	2												
-L-	13+63.55	15+76.19	RT	212.50			14+59.88	14+86.13	4.0 - 5.0	7.0	50.0'	50.0'	1.0'	1.0'	2												
TOTAL:				425.00											4												
TOTAL ANCHOR LENGTH:				200.00																							
TOTAL GUARDRAIL LENGTH:				225.00																							
SAY:				225.00																							

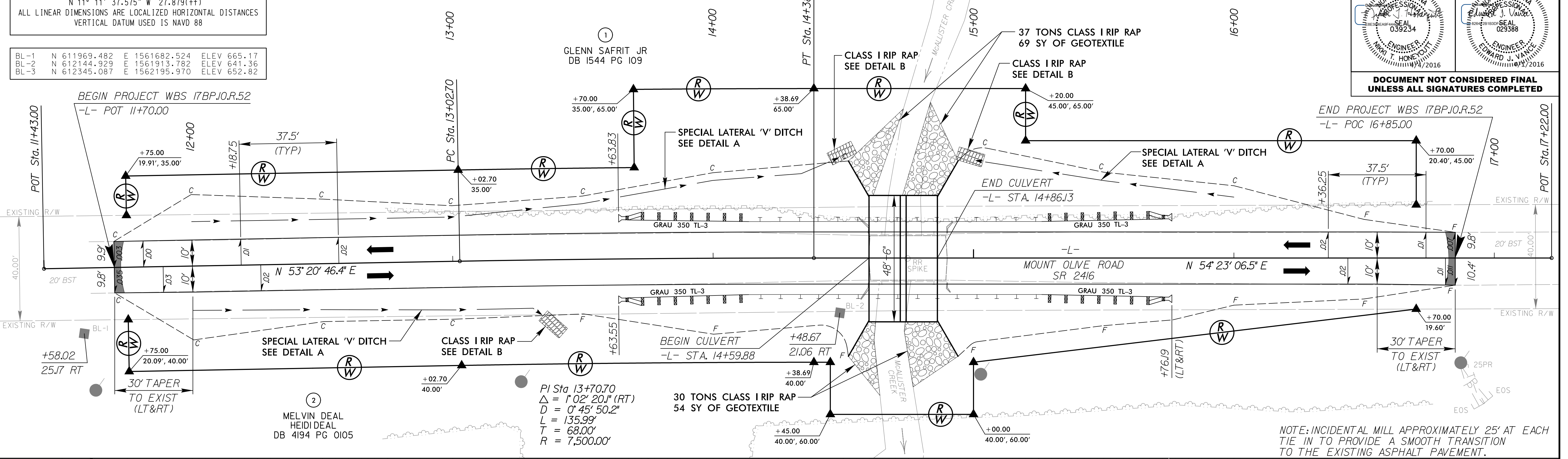
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "BL-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 611969.482(±) EASTING: 1561682.524(±) ELEVATION: 665.17(±) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999851 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 11+70.00 IS N 11° 11' 37.575" W 27.879(±) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

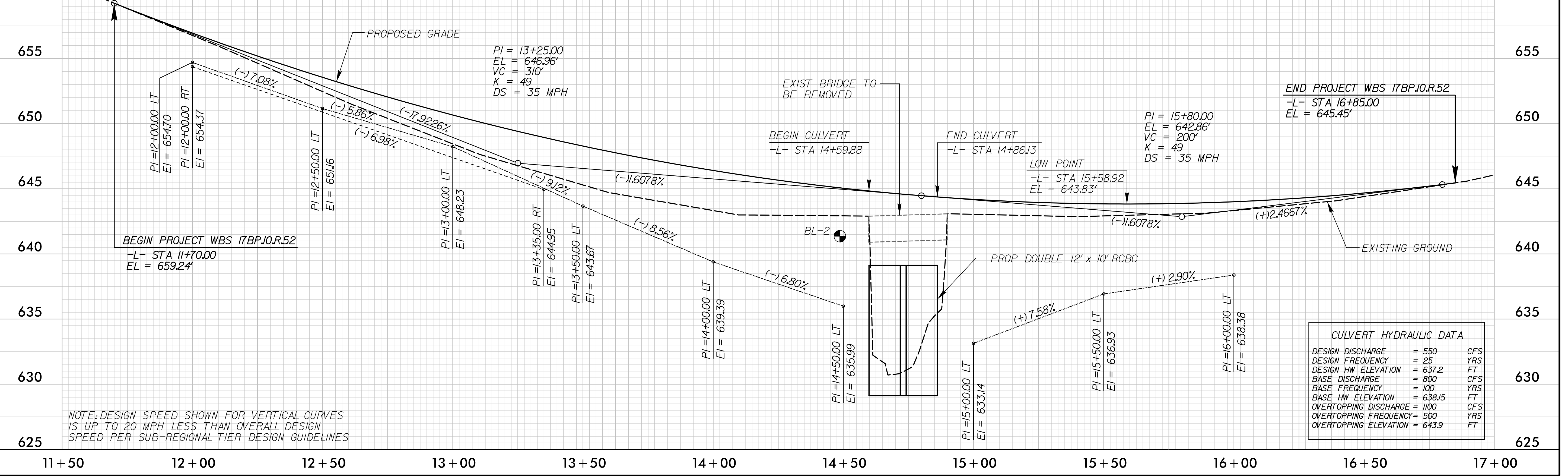
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BL-2	N 612144.929	E 1561913.782	ELEV 641.36
BL-3	N 612345.087	E 1562195.970	ELEV 652.82



PROJECT REFERENCE NO. 17BP10.R.52	SHEET NO. 4
RW SHEET NO.	
STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



NOTE: INCIDENTAL MILL APPROXIMATELY 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT.



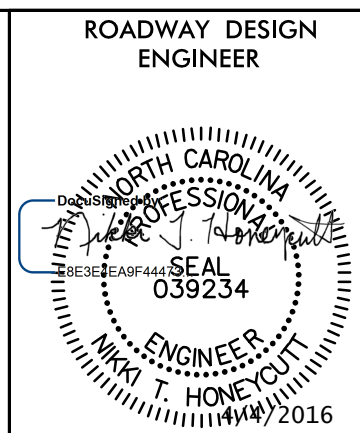
NOTE: DESIGN SPEED SHOWN FOR VERTICAL CURVES IS UP TO 20 MPH LESS THAN OVERALL DESIGN SPEED PER SUB-REGIONAL TIER DESIGN GUIDELINES

DESIGN DISCHARGE	= 550	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 637.2	FT
BASE DISCHARGE	= 800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 638.15	FT
OVERTOPPING DISCHARGE	= 1100	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 643.9	FT

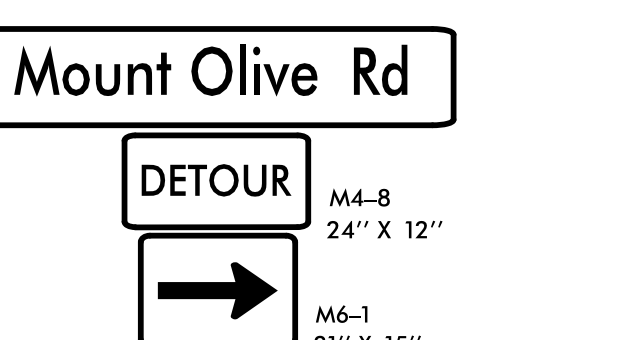
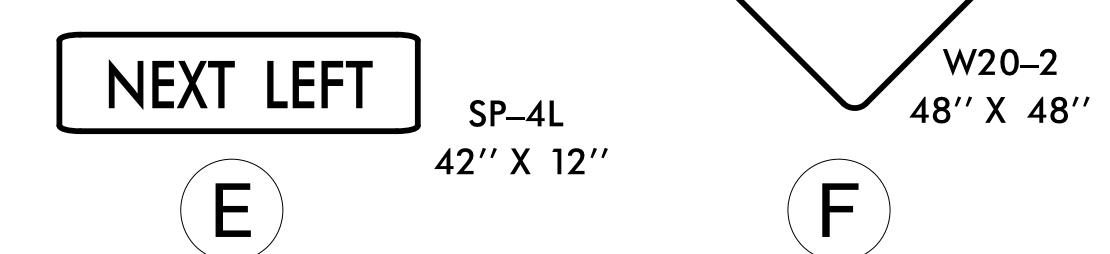
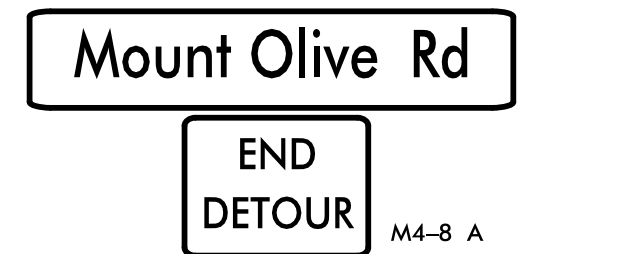
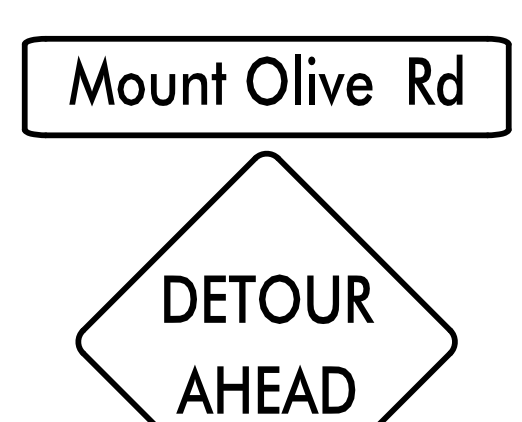
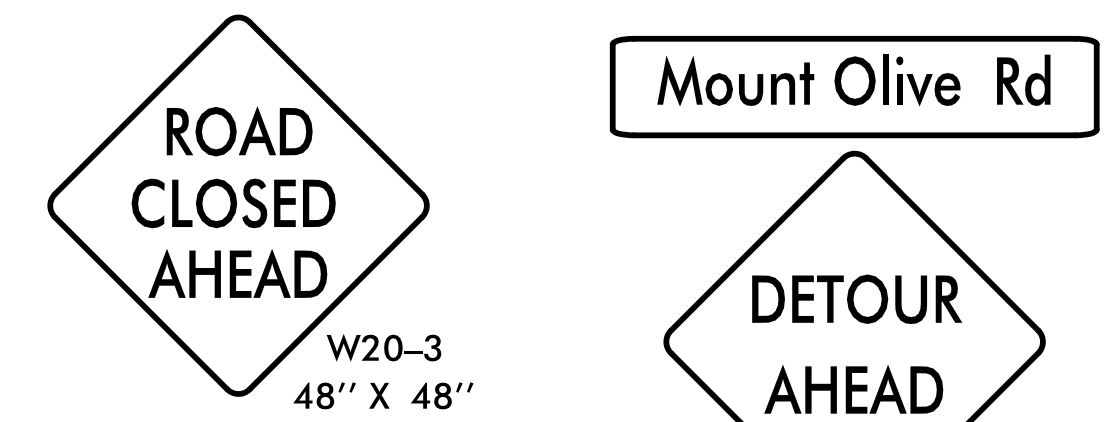
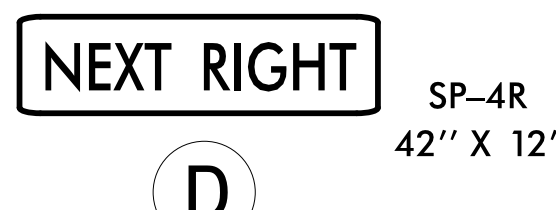
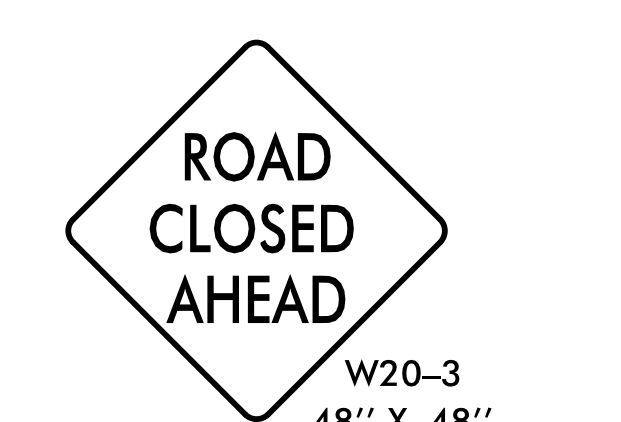
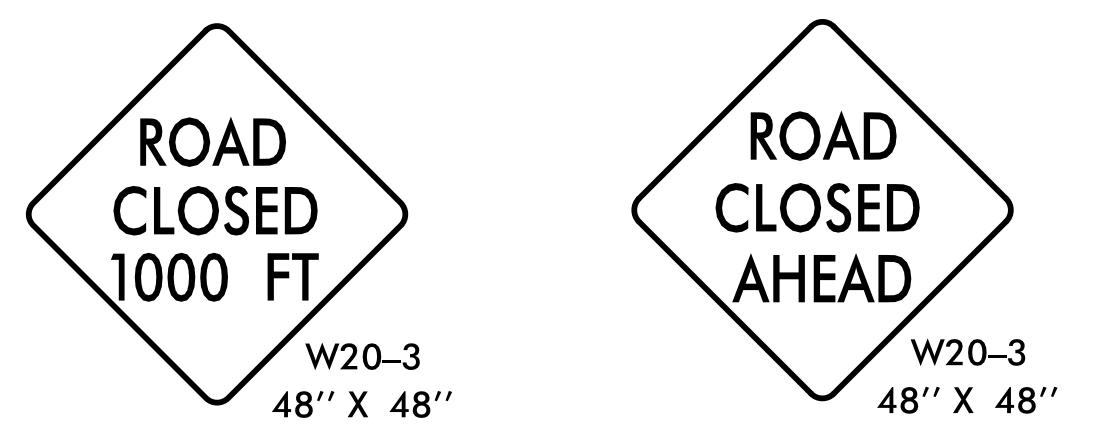
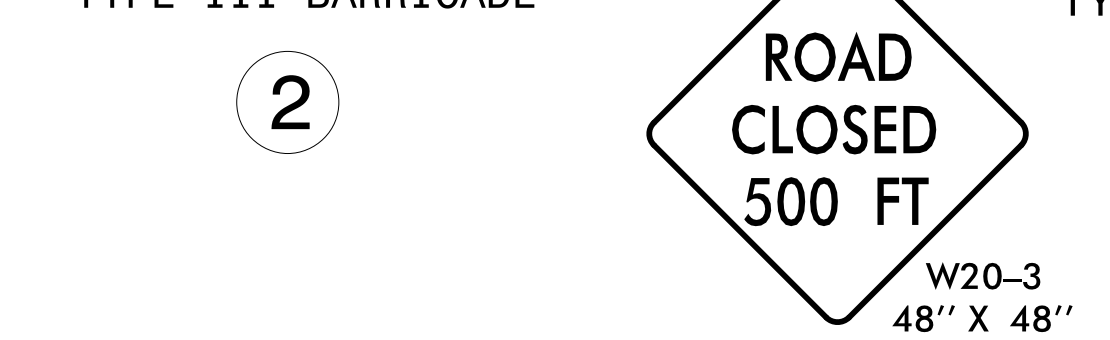
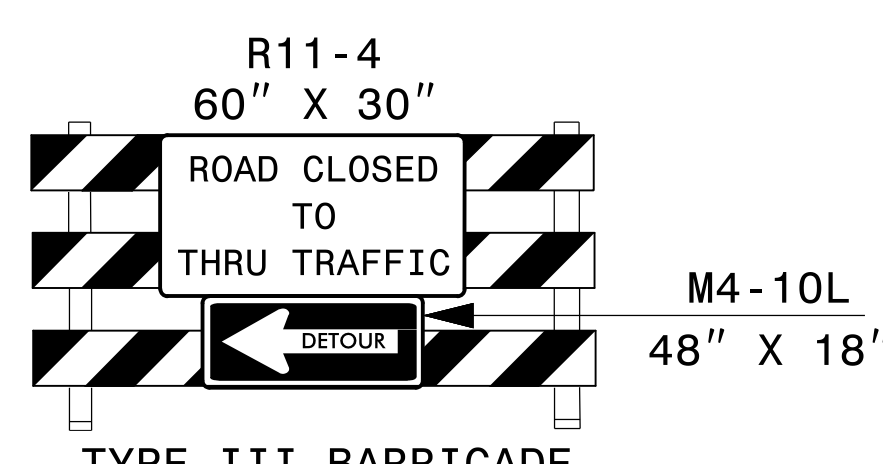
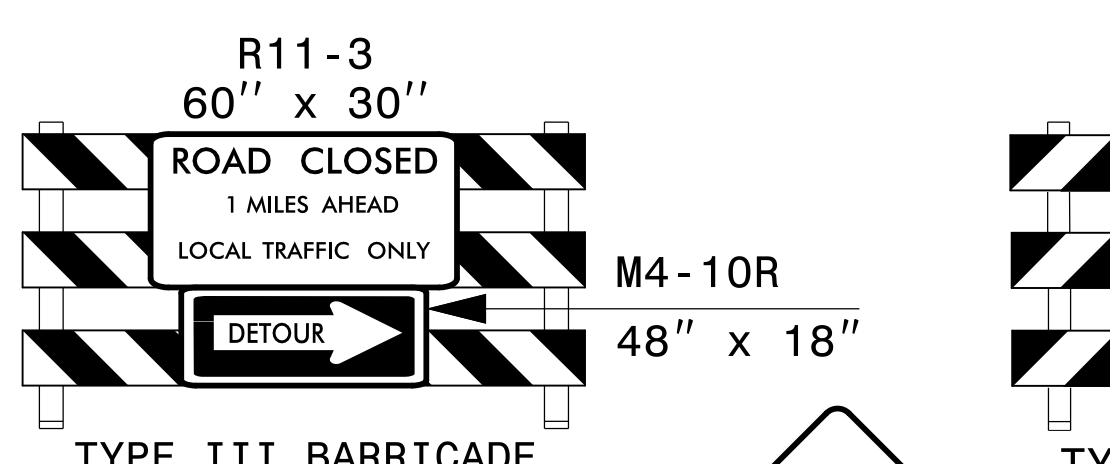
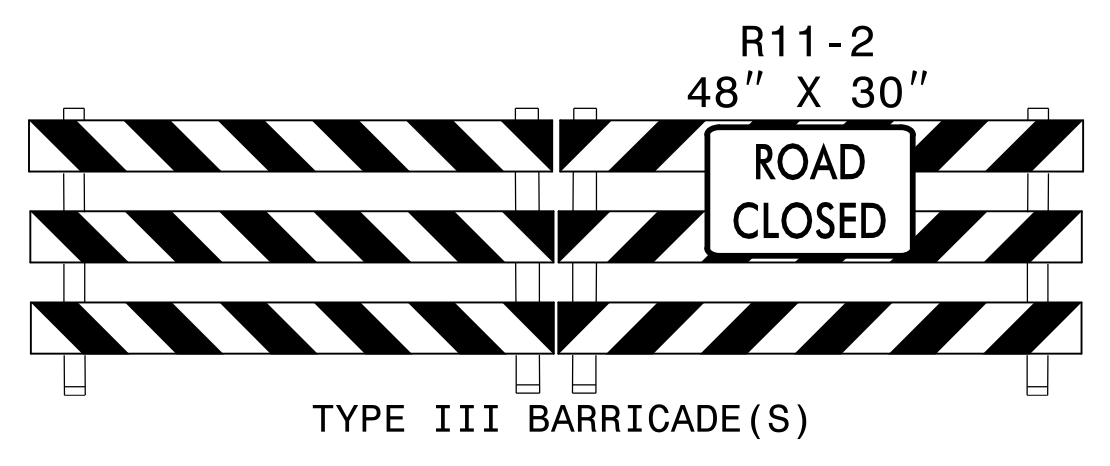
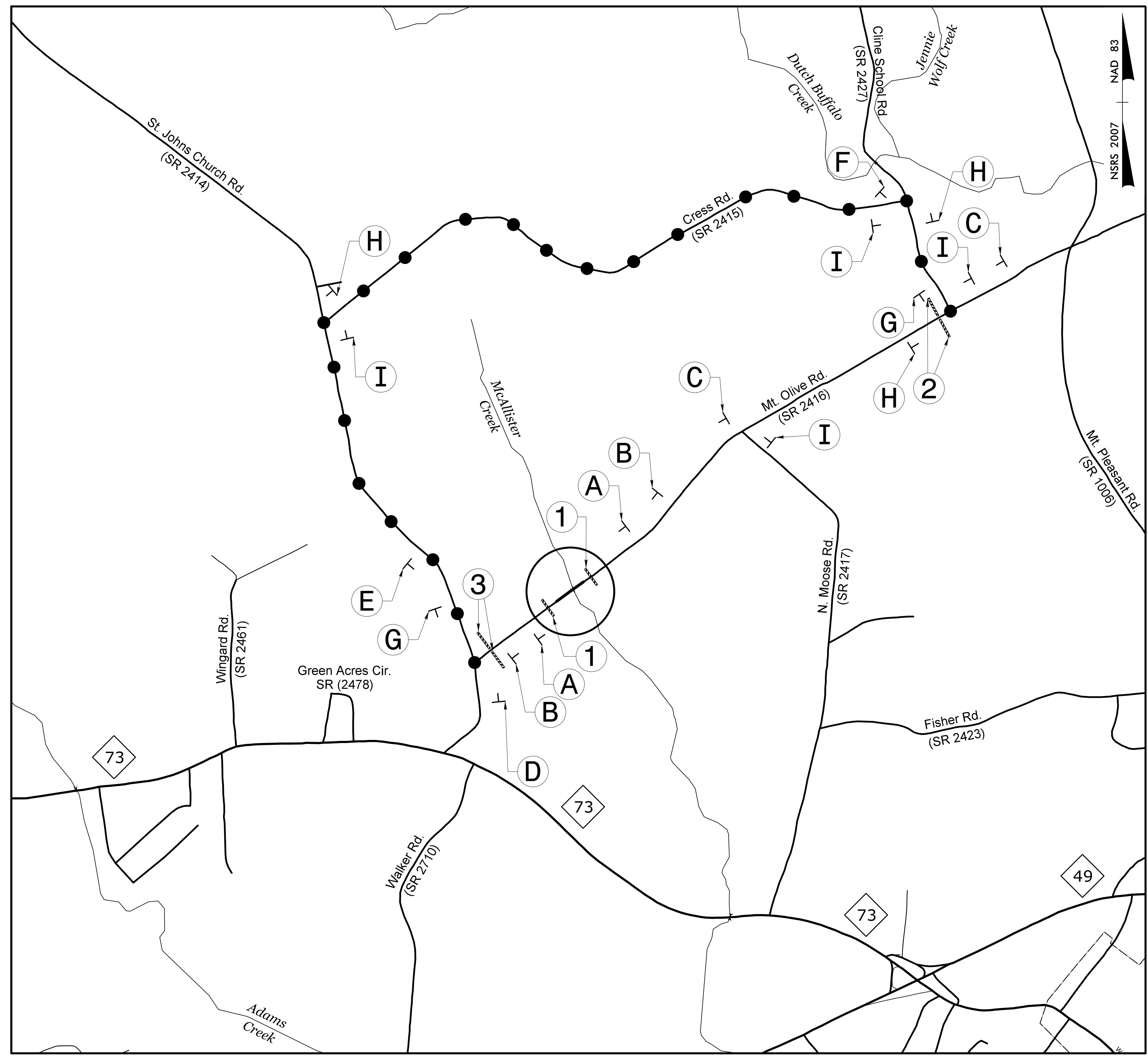
3/3/2016 R:\Roadway\Proj\17BP10.R.52_rdy_psn04.dgn Clevesp

OFF-SITE DETOUR SIGNING AND ROAD CLOSURE SIGNING

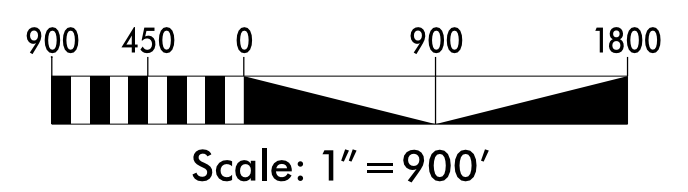
PROJECT REFERENCE NO. 17BP10R52	SHEET NO. TMP-1
RW SHEET NO.	
STV Engineers, Inc. 300 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	



ROADWAY DESIGN ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



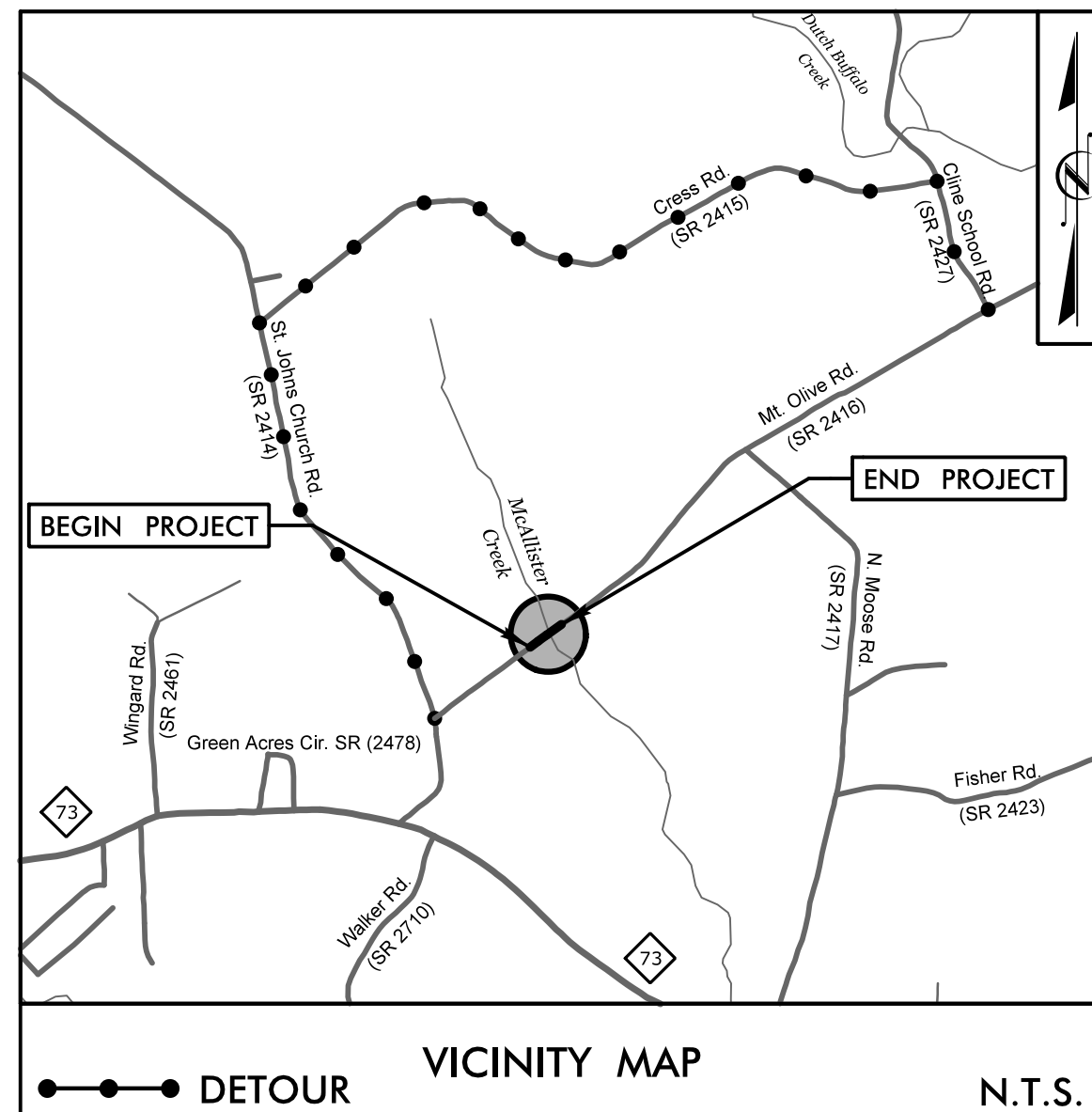
SEE ROADWAY STD DWG 1101.03, SHEET 1 OF 9 FOR ADVANCE WARNING AND BARRICADE PLACEMENT.



3/31/2016
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STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.52	EC-1	7
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.52		P.E.	
17BP.10.R.52		R/W & UTILITIES	
17BP.10.R.52		CONSTRUCTION	

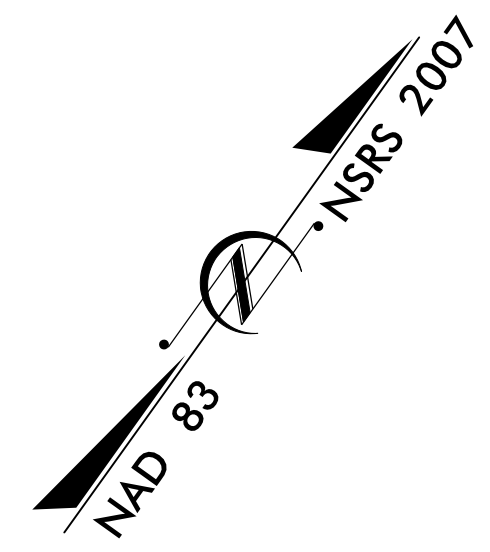
PROJECT WBS: 17BP.10.R.52



EROSION CONTROL PLANS

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

**LOCATION: BRIDGE #120070 OVER McALLISTER CREEK
ON SR 2416 (MOUNT OLIVE RD.)**
TYPE OF WORK: GRADING, PAVING, DRAINAGE, & STRUCTURE



EROSION AND SEDIMENT CONTROL MEASURES

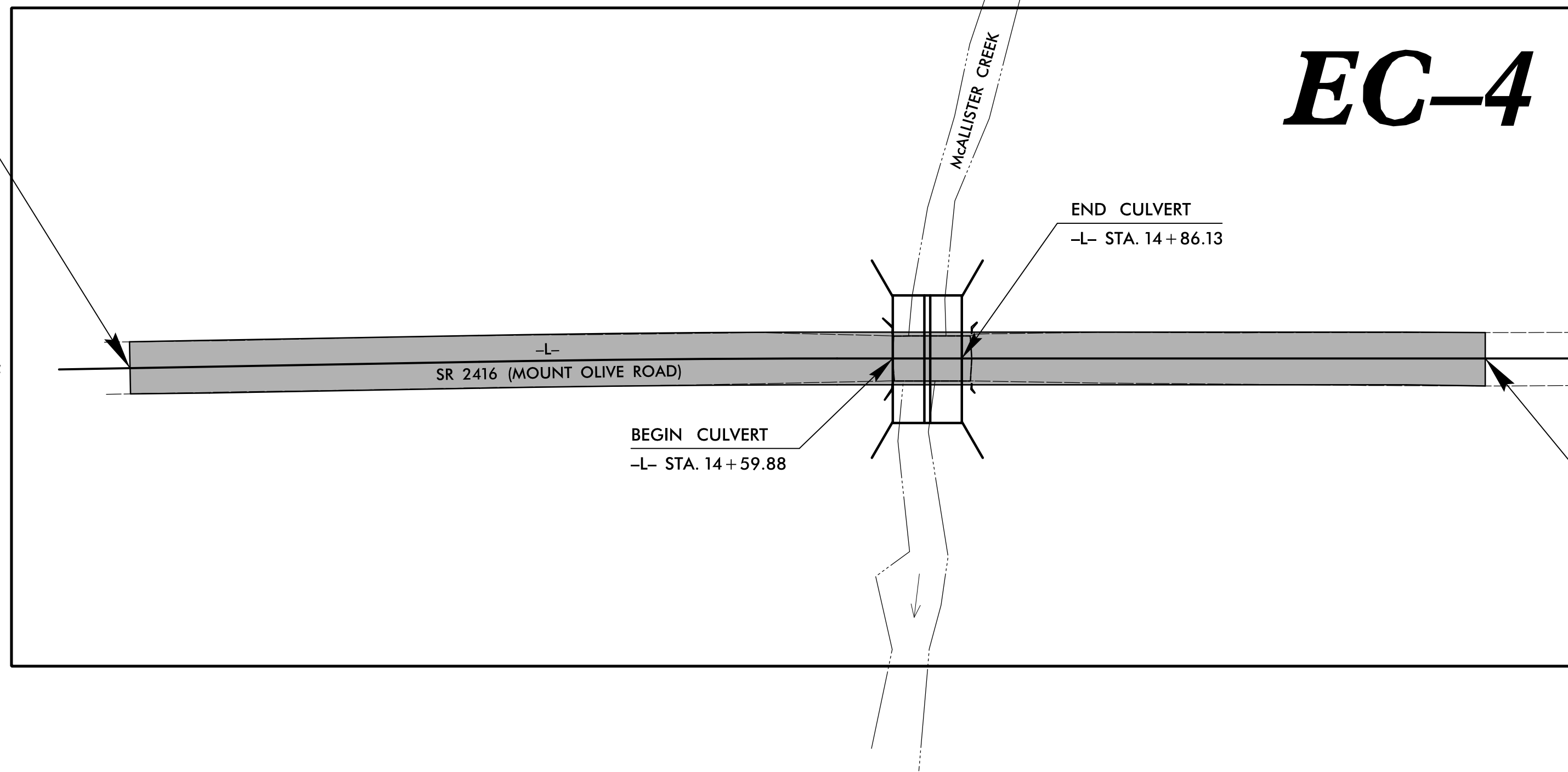
Sed. #	Description	Symbol
1630.05	Temporary Silt Ditch	TD
1630.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	III III III
1622.01	Temporary Berms and Slope Drains	III III III
1630.02	Silt Basin Type B	III III III
1633.01	Temporary Rock Silt Check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

BEGIN WBS PROJECT 17BP.10.R.52
-L- STA. 11 + 70.00

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

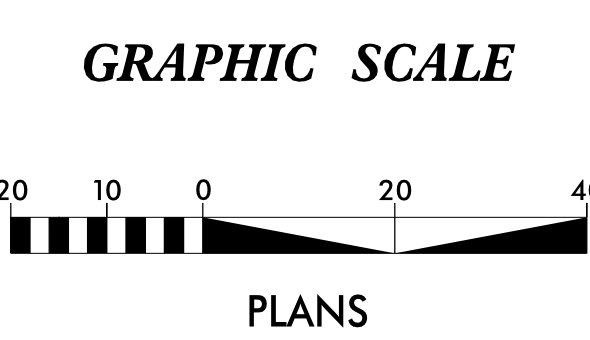
Refer To E. C. Special Provisions for Special Considerations.



END WBS PROJECT 17BP.10.R.52
-L- STA. 16 + 85.00

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

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



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Level III Designer #161
Edward Vance, PE

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:

STV 100 Years
STV Engineers, Inc.
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

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.

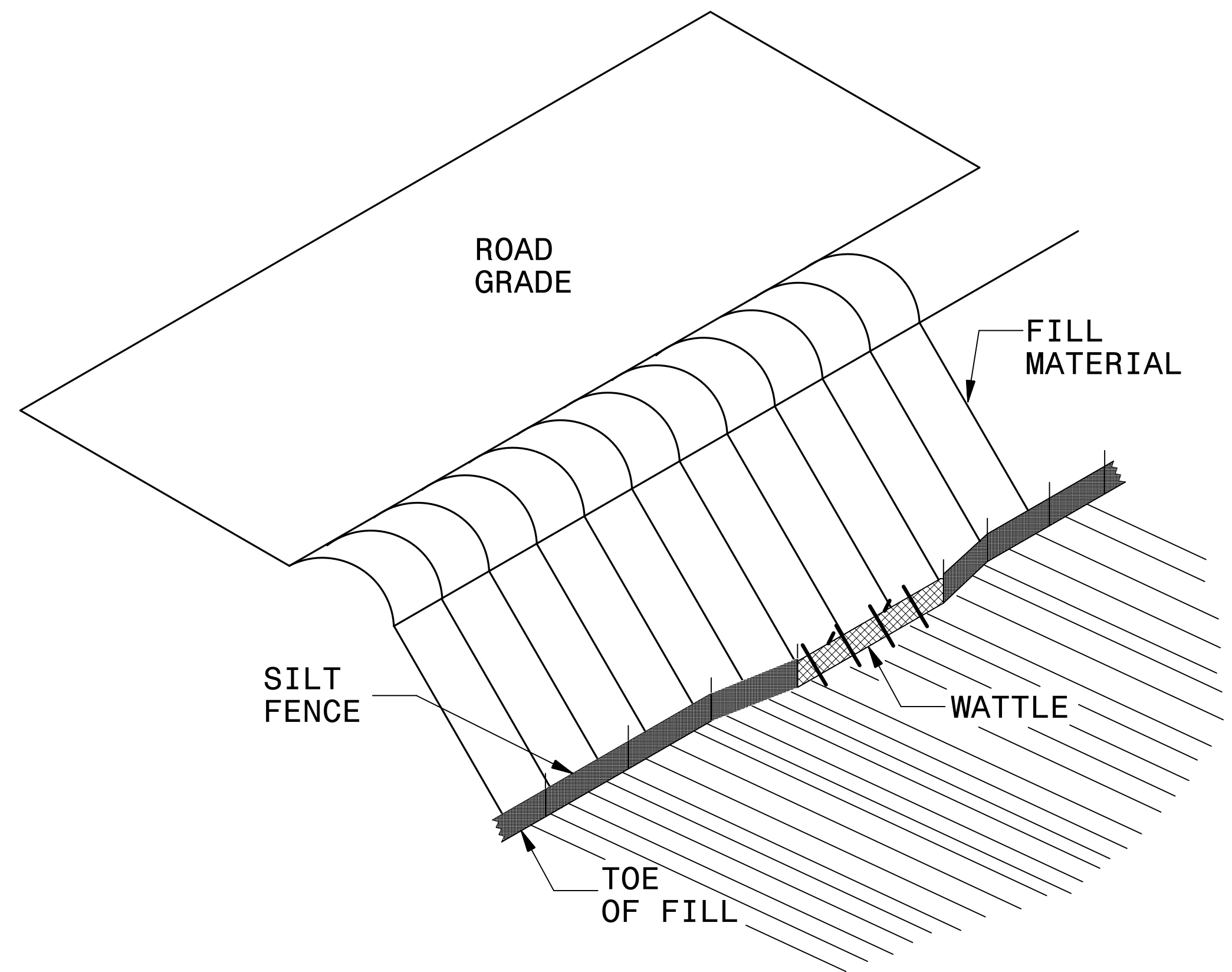
- 1605.01 Temporary Silt Fence
- 1607.01 Gravel Construction Entrance
- 1630.04 Stilling Basin for Pumped Effluent
- 1630.06 Special Stilling Basin
- 1631.01 Matting Installation
- 1633.01 Temporary Rock Silt Check Type A
- 1645.01 Temporary Stream Crossing

EROSION CONTROL PLANS
3/31/2016

CONTRACT:

SILT FENCE WATTLE BREAK DETAIL

PROJECT REFERENCE NO. 17BP10.R.52	SHEET NO. EC-2
RW SHEET NO.	
 STV Engineers, Inc. 300 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

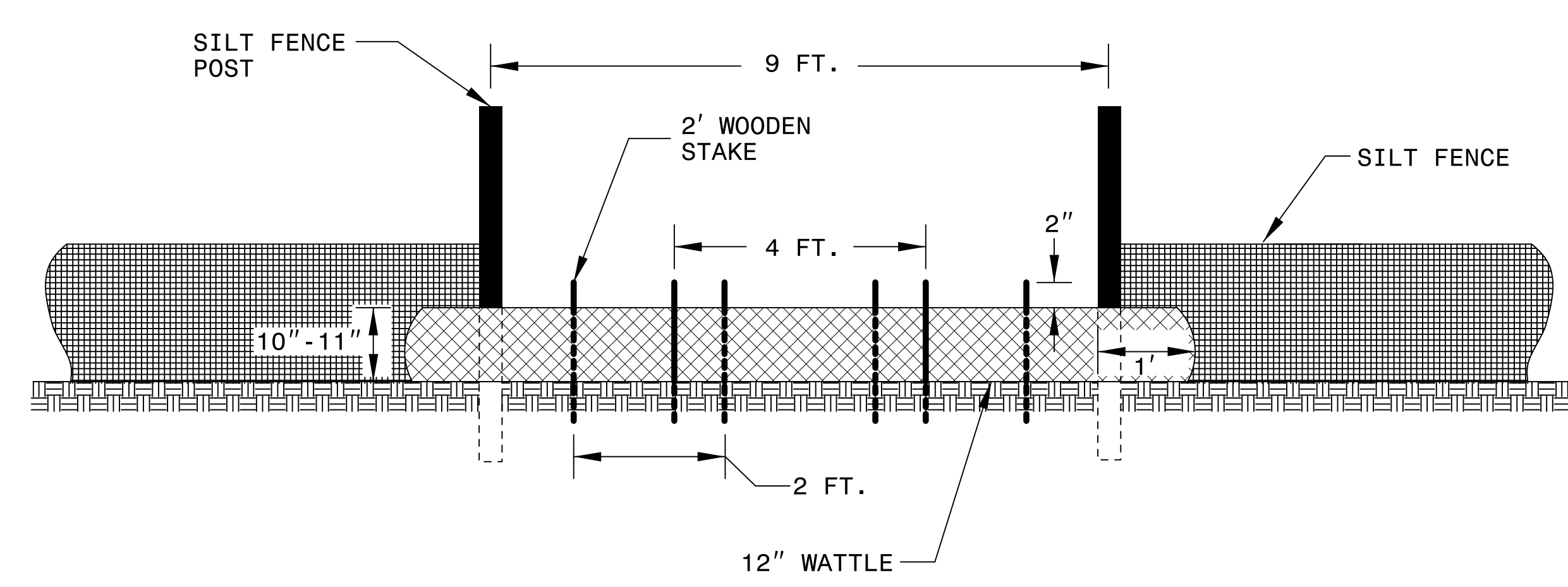
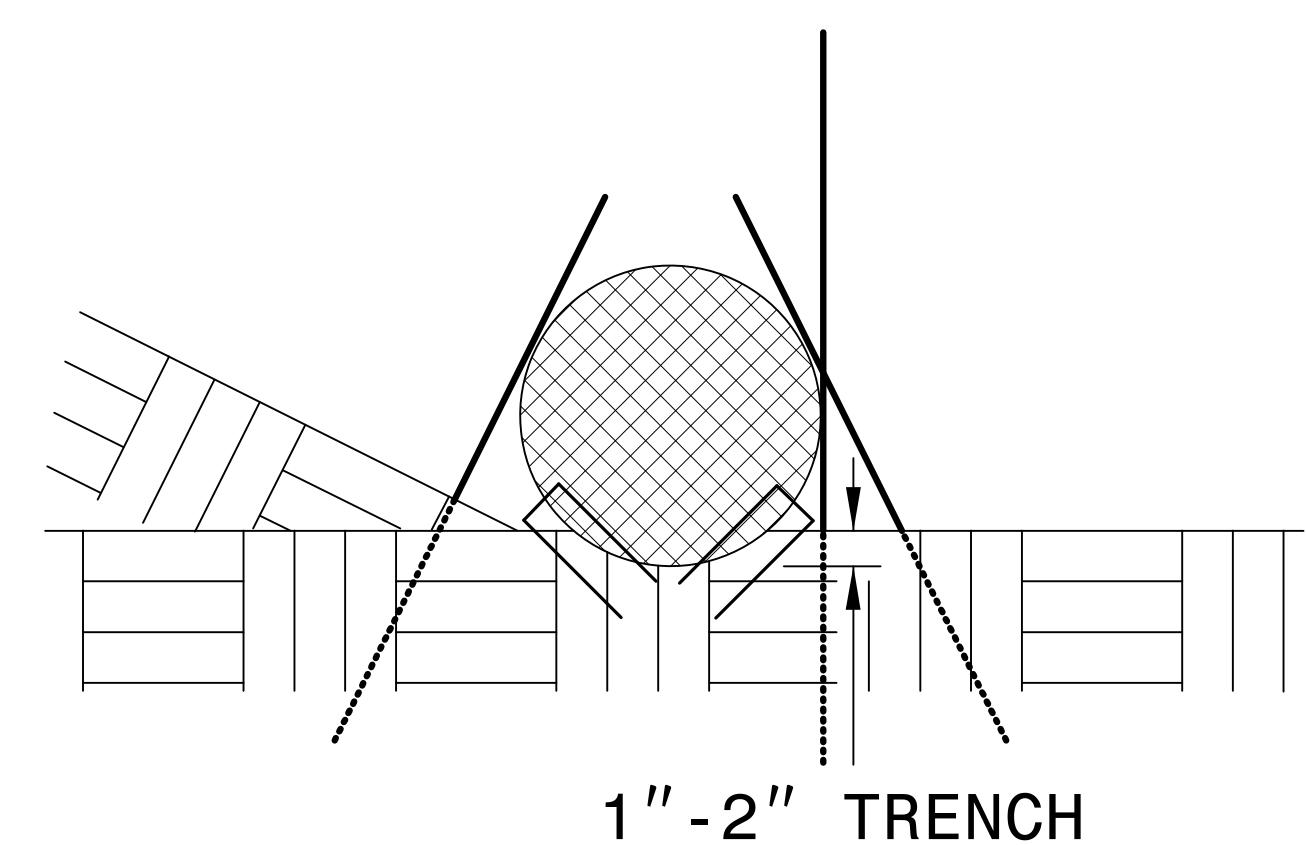


ISOMETRIC VIEW

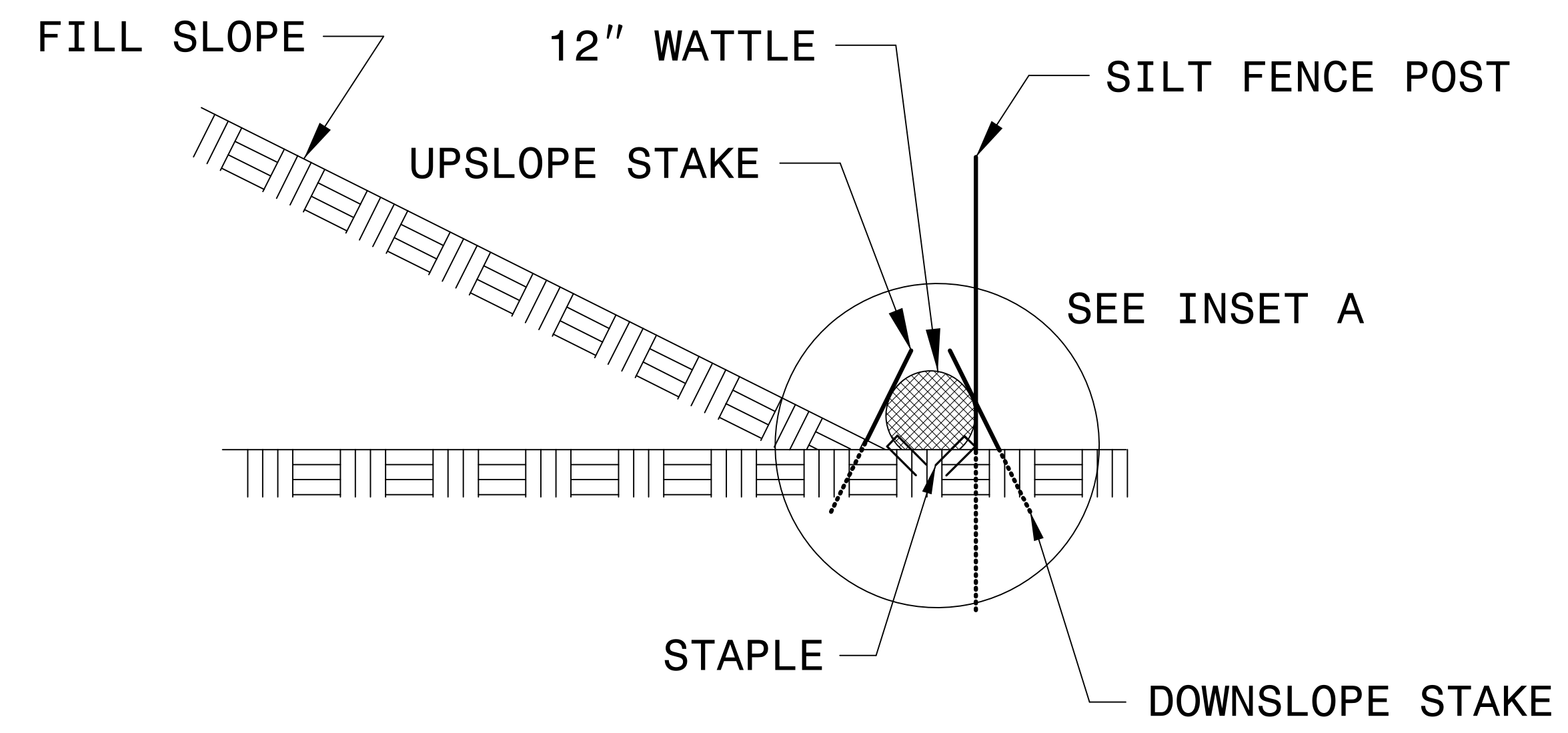
NOTES:

- USE MINIMUM 12 IN. DIAMETER EXCELSIOR WATTLE AND LENGTH OF 10 FT.
- EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.
- DO NOT PLACE WATTLE ON TOE OF SLOPE.
- USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.
- INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO GROUND.
- 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.
- WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.
- INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A




VIEW FROM SLOPE

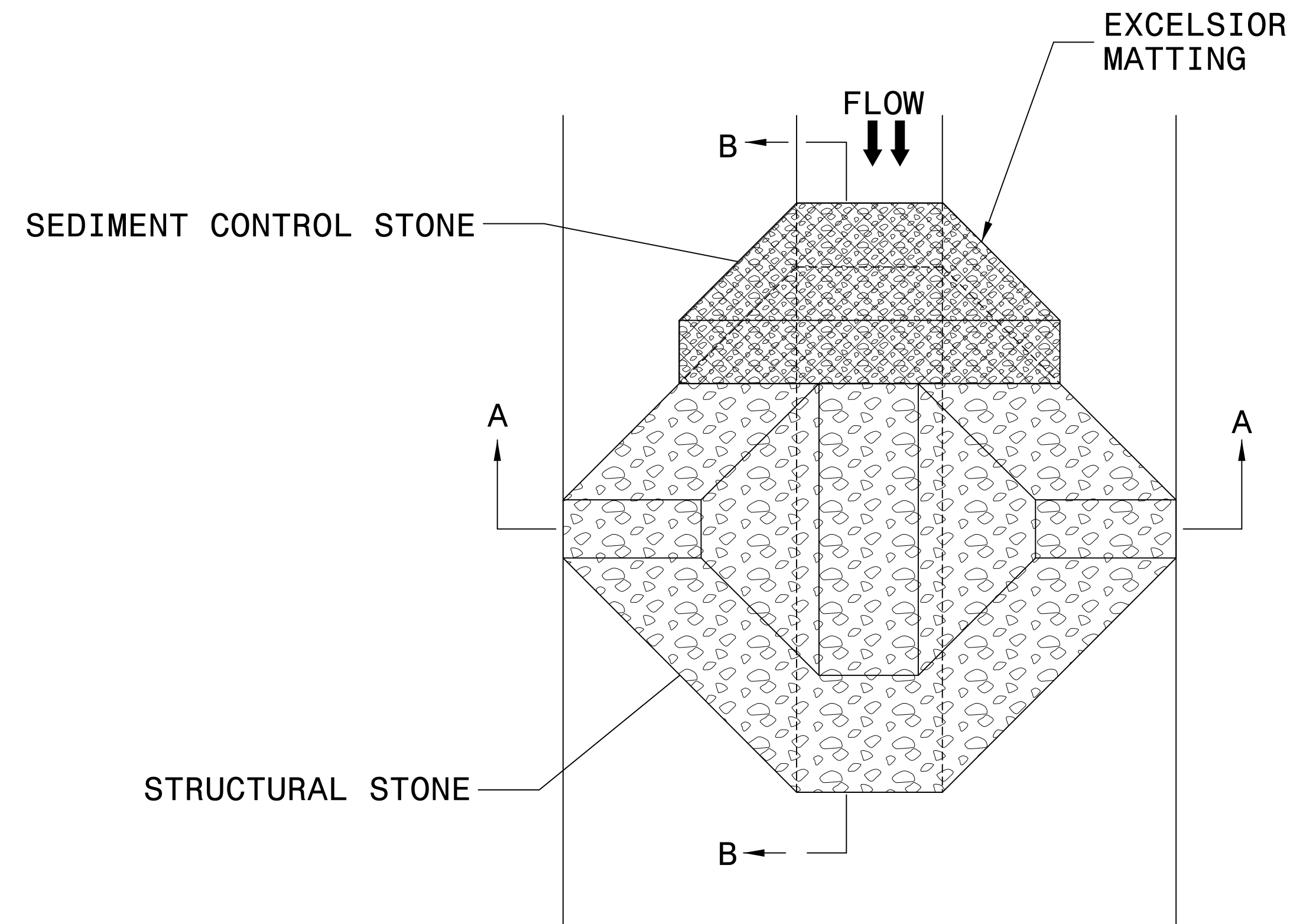


SIDE VIEW

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

PROJECT REFERENCE NO. 17BP10.R.52	SHEET NO. EC-2A
RW SHEET NO.	
 STV Engineers, Inc. 300 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	



PLAN

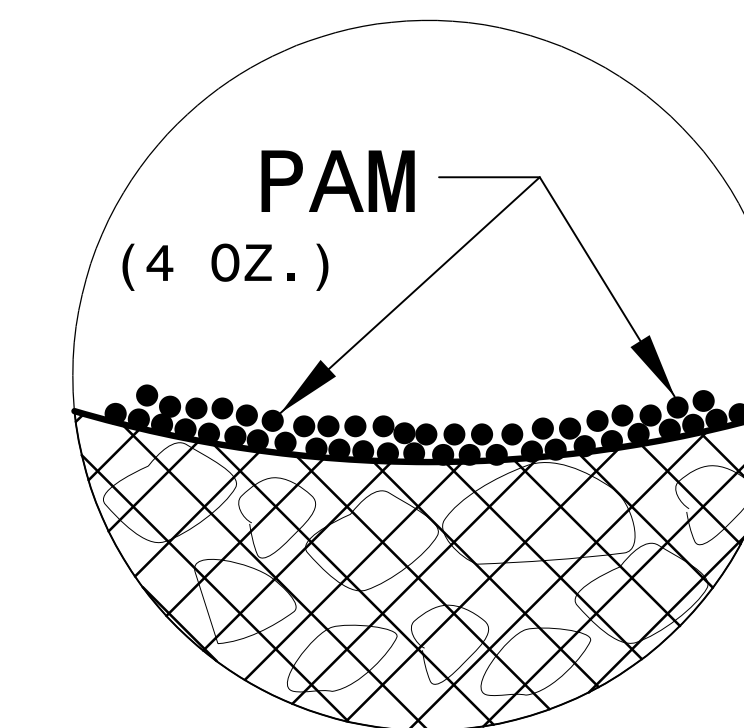
NOTES

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

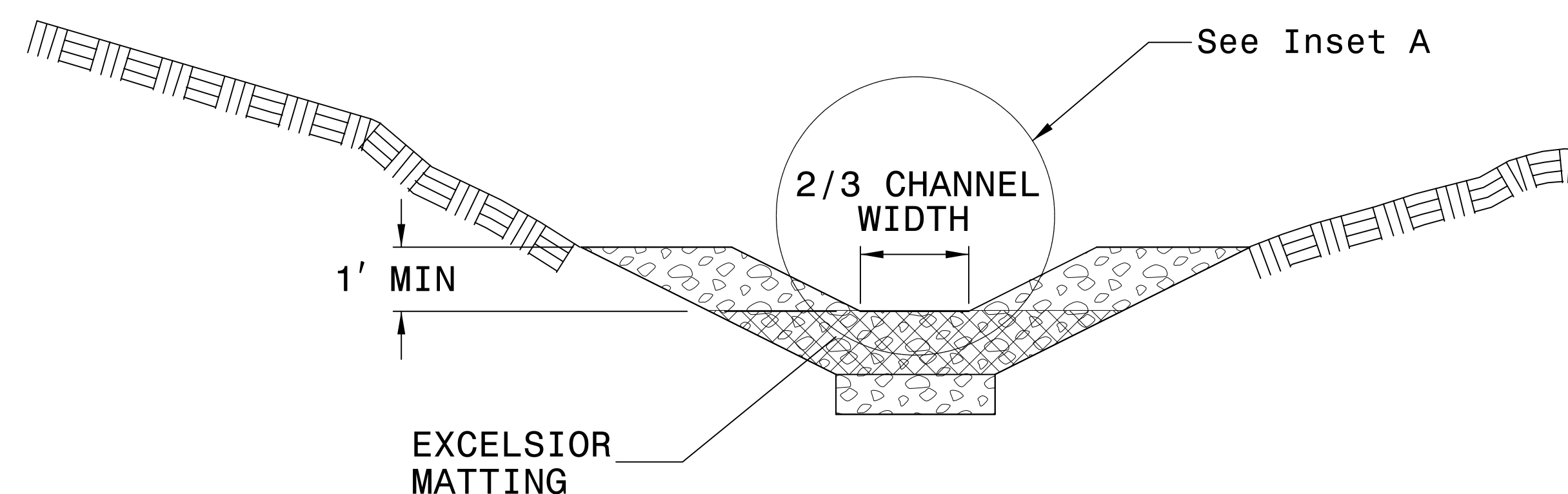
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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.

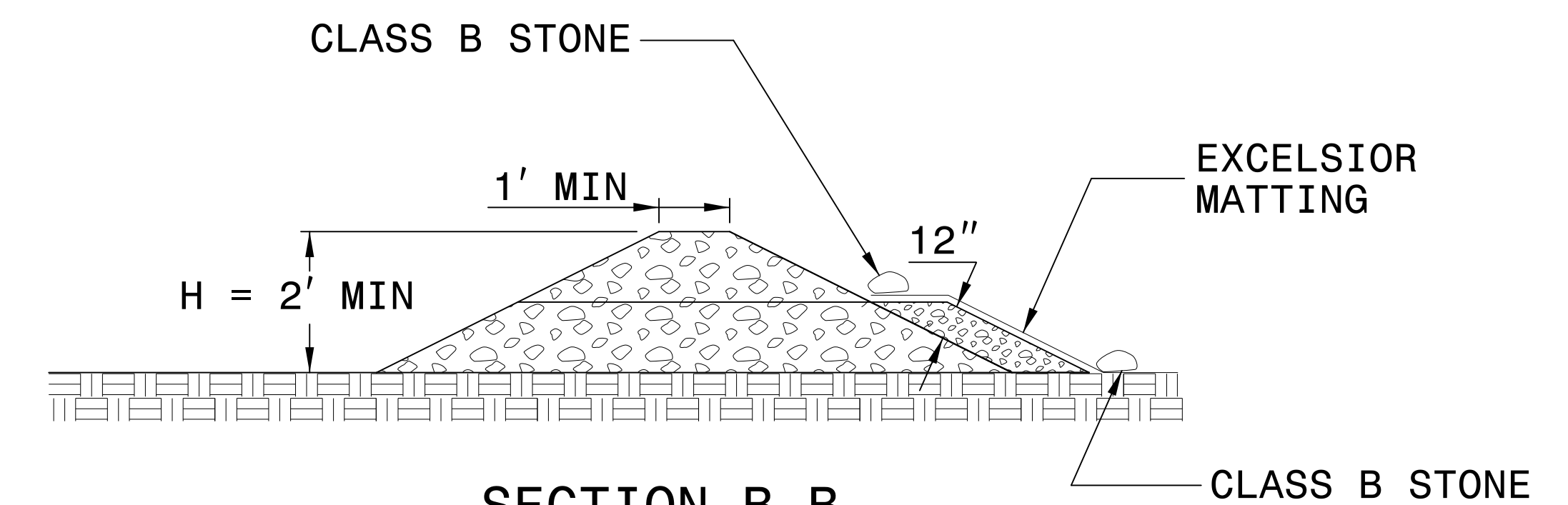
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A




SECTION A-A



SECTION B-B

NOT TO SCALE

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. <i>17BP10.R.52</i>	SHEET NO. <i>EC-3</i>
RW SHEET NO.	
 STV Engineers, Inc. <small>300 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991</small>	

SOIL STABILIZATION SUMMARY SHEET

**MATTING FOR EROSION CONTROL
(FOR SLOPE STABILIZATION)**

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		570
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				60
				TOTAL	630
				SAY	630

**PERMANENT SOIL REINFORCEMENT MATTING
(FOR DITCH STABILIZATION)**

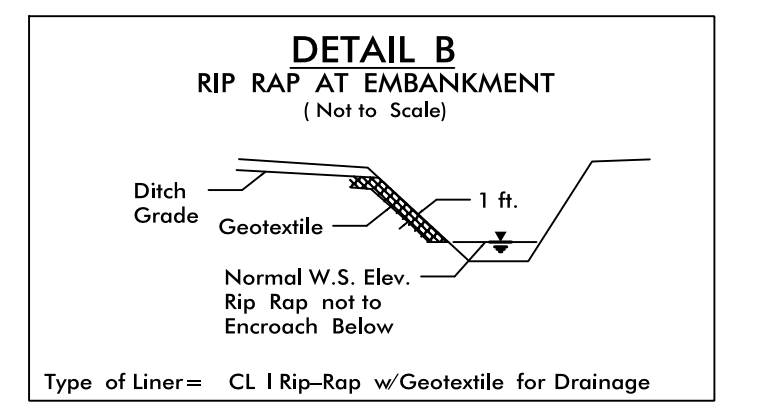
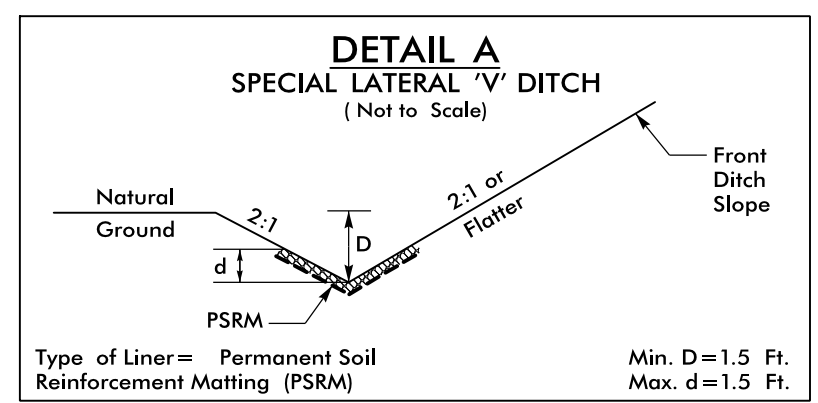
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	GEO FOR DRAINAGE ESTIMATE (SY)
4	-L- V-DITCH	12+00	14+50	LT	125
4	-L- V-DITCH	12+00	13+35	RT	100
4	-L- V-DITCH	15+00	16+00	LT	50
				SUBTOTAL	275
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				30
				TOTAL	305
				SAY	305

SOIL STABILIZATION REQUIREMENTS

Stabilization for this project shall comply with the time frame guidelines as specified 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. Temporary or permanent ground cover stabilization shall occur within 7 calendar days from the last land-disturbing activity, with the following exceptions in which temporary or permanent ground cover shall be provided in 14 calendar days from the last land-disturbing activity. Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

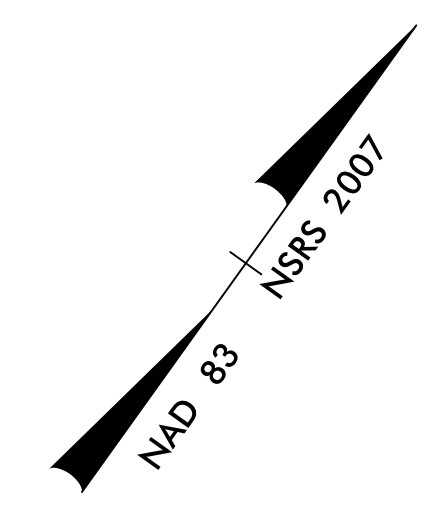
<i>SITE DESCRIPTION</i>	<i>STABILIZATION TIME</i>	<i>TIMEFRAME EXCEPTIONS</i>
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES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

- CULVERT BYPASS PHASING**
1. CONSTRUCT STILLING BASIN(S) WHERE APPLICABLE.
 2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER, BYPASS PUMPING APPARATUS WITH TEMPORARY FLEXIBLE HOSE AND/OR TEMPORARY SMOOTH LINE PIPE (24-INCH DIAMETER).
 3. CONSTRUCT IMPERVIOUS DIKS, DIVERTING FLOW THROUGH TEMPORARY CHANNEL/PIPE/PUMP CHANGE.
 4. CONSTRUCT PROPOSED CULVERT AND INLET/OUTLET CHANNEL IMPROVEMENTS.
 5. REMOVE IMPERVIOUS DIKS AND TEMPORARY CHANNEL/PIPE/PUMP CHANGE, DIVERTING FLOW THROUGH PROPOSED CULVERT.
 6. REMOVE STILLING BASIN(S), AND COMPLETE ROADWAY.

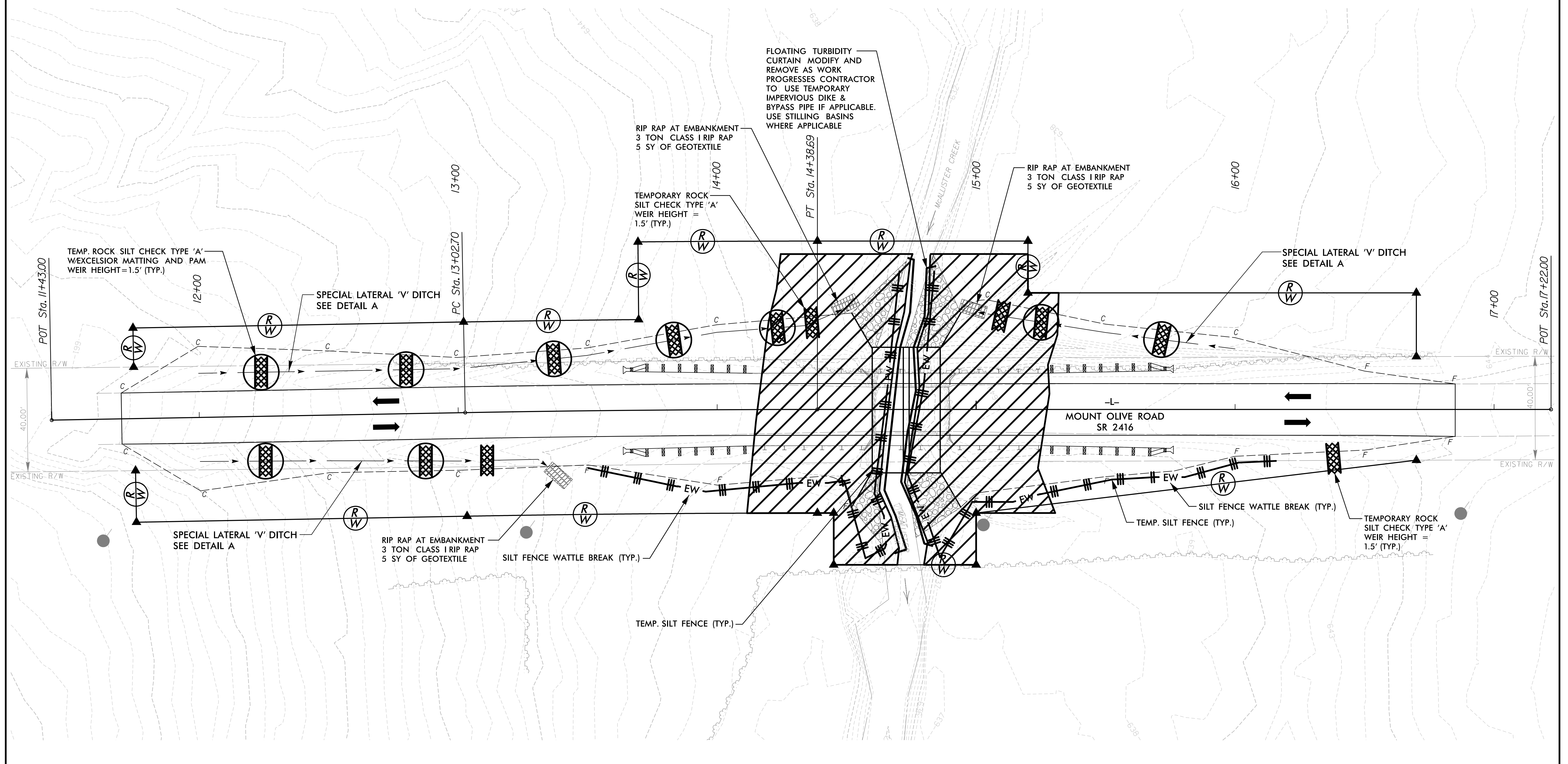


FROM STA. 12+00 TO STA. 13+35 RT
 FROM STA. 12+00 TO STA. 14+50 LT
 FROM STA. 15+00 TO STA. 16+00 LT

STA. 13+35 TO STA. 13+45 RT - 3TN CL-I RR, 55Y GEOTEXTILE
 STA. 14+50 TO STA. 14+60 LT - 3TN CL-I RR, 55Y GEOTEXTILE
 STA. 14+90 TO STA. 15+00 LT - 3TN CL-I RR, 55Y GEOTEXTILE



BRIDGE #120070
 SCALE: 1"=20'
 CLEARING AND GRUBBING
 EROSION CONTROL FOR
 CONSTRUCTION SHEET 4



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NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.




NOTE: PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE-B AND TEMPORARY ROCK SILT CHECKS TYPE-A AT DRAINAGE OUTLETS

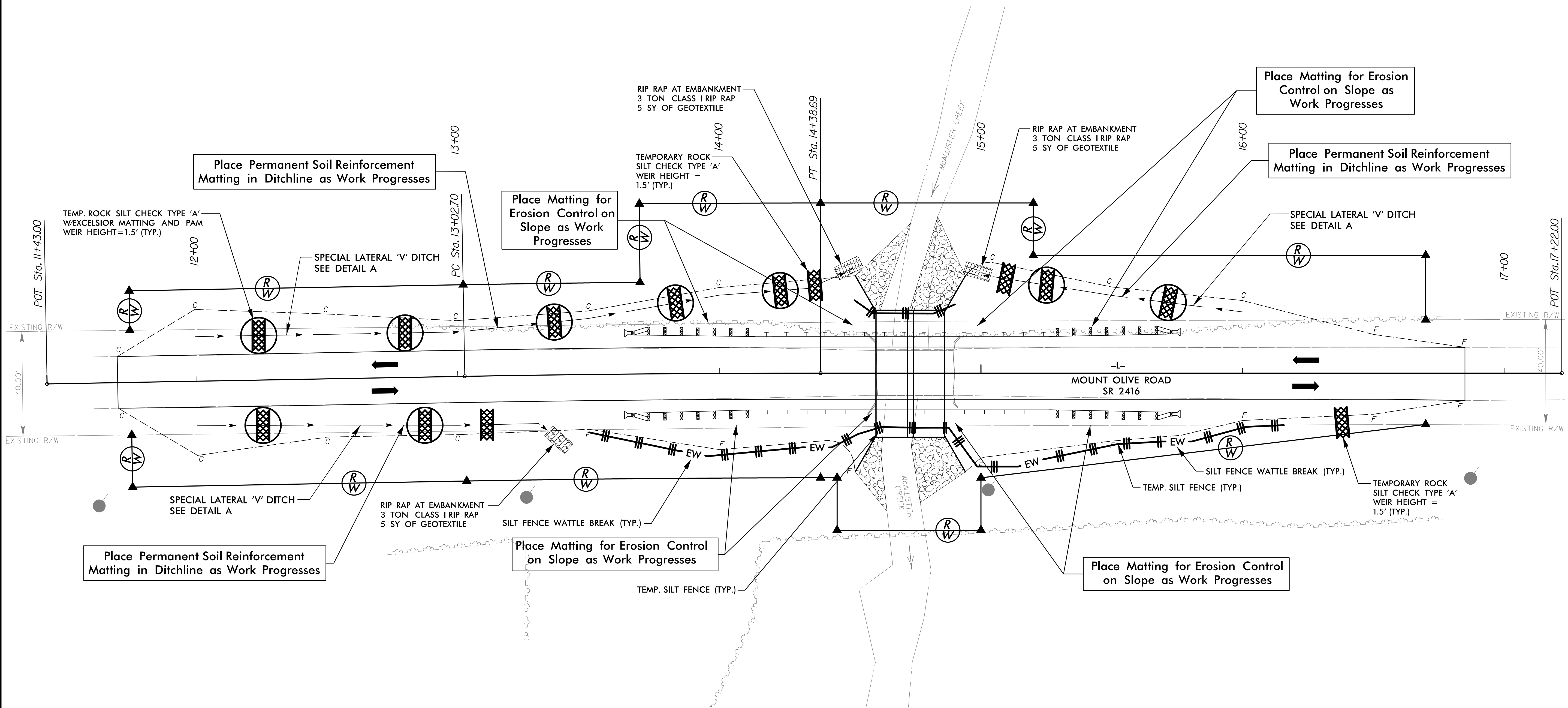
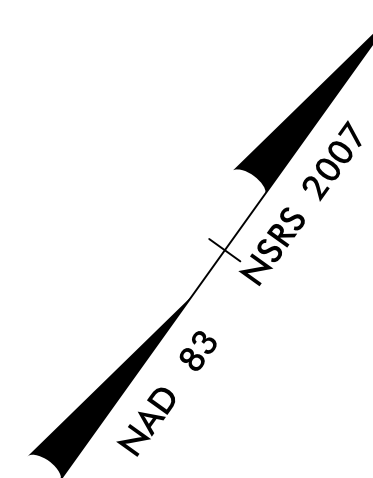
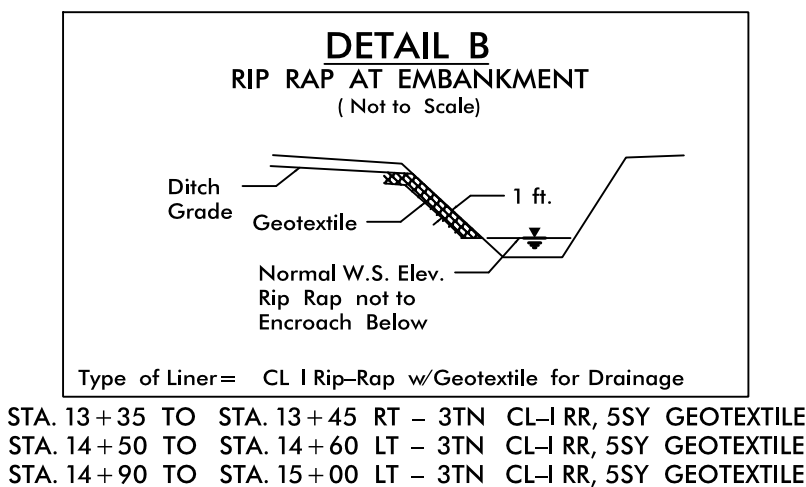
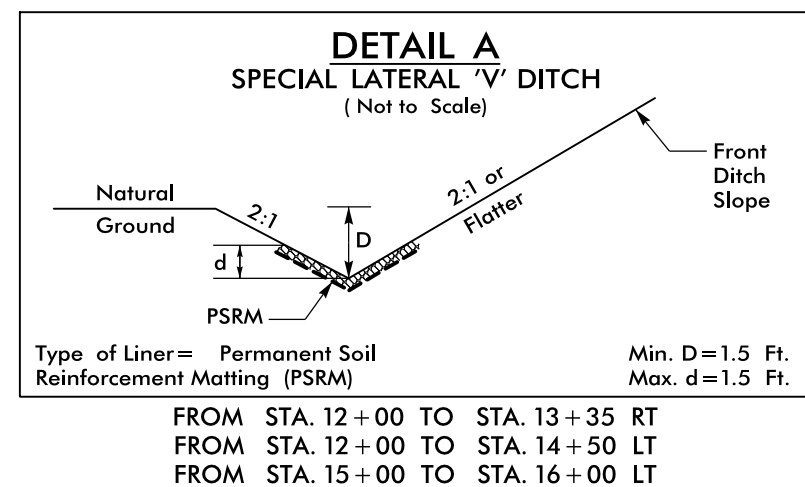
NOTE: UTILIZE SPECIAL STILLING BASIN AS STILLING BASIN WHERE APPLICABLE

NOTE: INSTALL FLOATING TURBIDITY CURTAIN AS DIRECTED

INSTALL PERMANENT DITCHES DURING C&G PHASE

PROJECT REFERENCE NO. 17BP10.R.52	SHEET NO. EC-5/CONST.4
RW SHEET NO.	
 STV Engineers, Inc. 900 West Trade St., Suite 715 Charlotte, NC 28202 NC License Number F-0991	

- CULVERT BYPASS PHASING**
1. CONSTRUCT STILLING BASIN(S) WHERE APPLICABLE.
 2. CONSTRUCT TEMPORARY CHANNEL CHANGE WITH LINER, BYPASS PUMPING APPARATUS WITH TEMPORARY FLEXIBLE HOSE AND/OR TEMPORARY SMOOTH LINE PIPE (24-INCH DIAMETER).
 3. CONSTRUCT IMPERVIOUS DIKS, DIVERTING FLOW THROUGH TEMPORARY CHANNEL/PIPE/PUMP CHANGE.
 4. CONSTRUCT PROPOSED CULVERT AND INLET/OUTLET CHANNEL IMPROVEMENTS.
 5. REMOVE IMPERVIOUS DIKS AND TEMPORARY CHANNEL/PIPE/PUMP CHANGE, DIVERTING FLOW THROUGH PROPOSED CULVERT.
 6. REMOVE STILLING BASIN(S), AND COMPLETE ROADWAY.



NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

NOTE: UTILIZE SPECIAL STILLING BASIN AS STILLING BASIN WHERE APPLICABLE

NOTE: INSTALL FLOATING TURBIDITY CURTAIN AS DIRECTED

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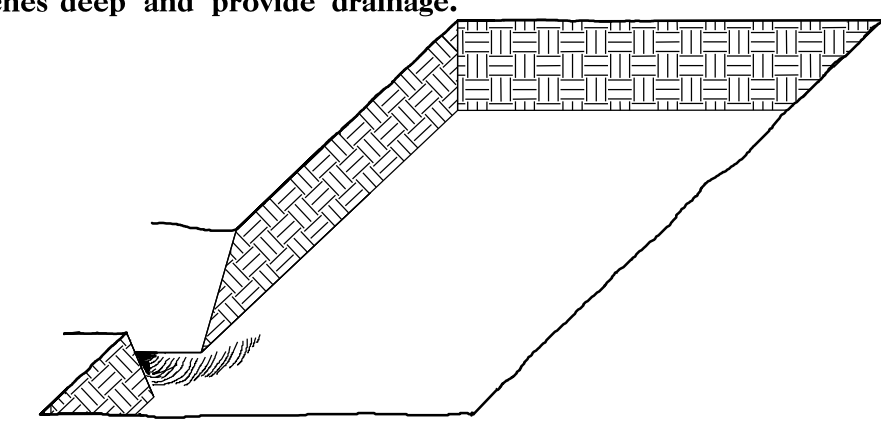
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.52	RF-1	1
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.52		P.E.	
17BP.10.R.52		R/W & UTILITIES	
17BP.10.R.52		CONSTRUCTION	

PLANTING DETAILS

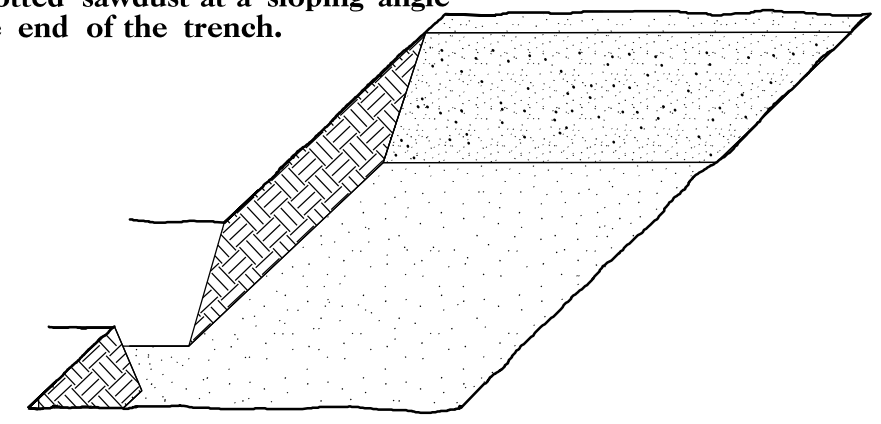
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

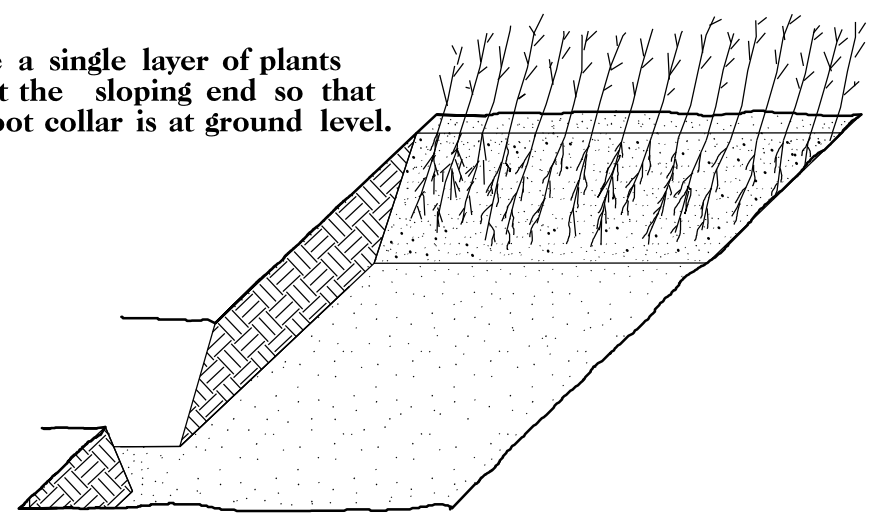
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



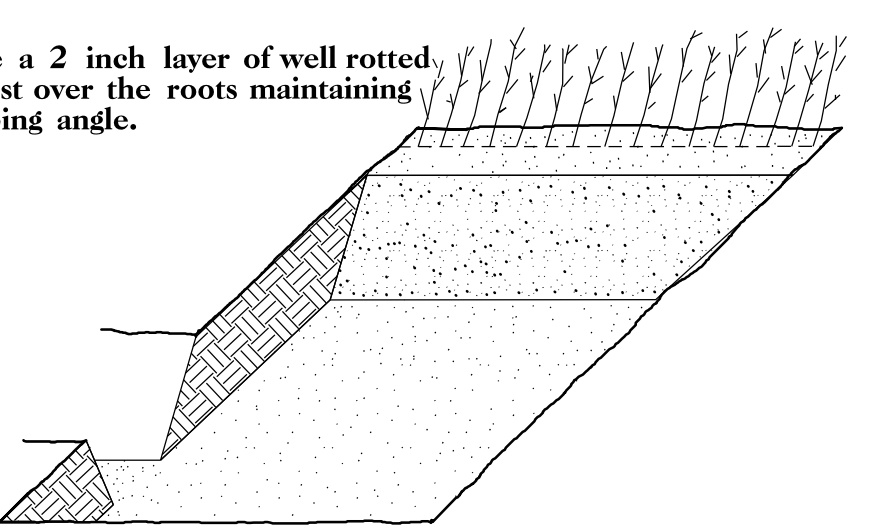
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

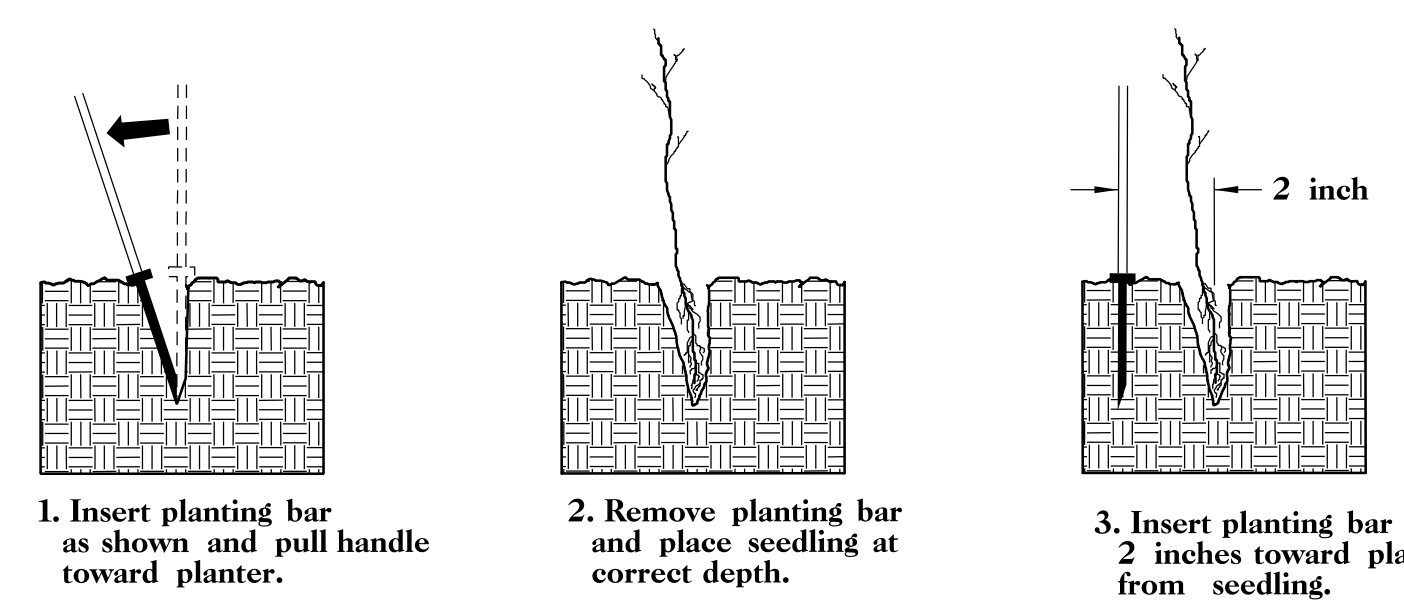


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

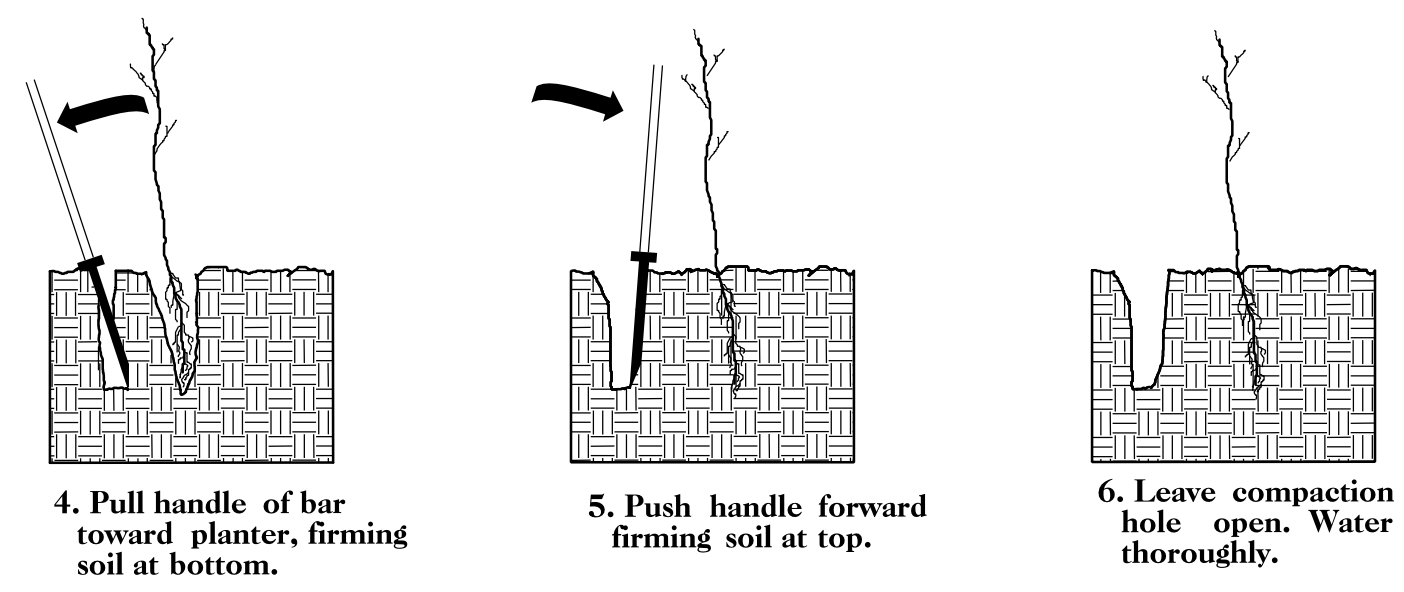


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

DIBBLE PLANTING METHOD USING THE KBC PLANTING BAR



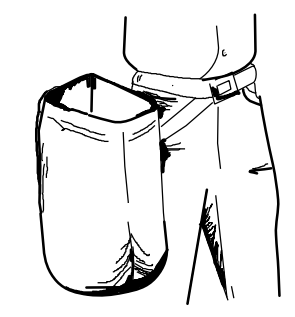
1. Insert planting bar as shown and pull handle toward planter.
2. Remove planting bar and place seedling at correct depth.
3. Insert planting bar 2 inches toward planter from seedling.



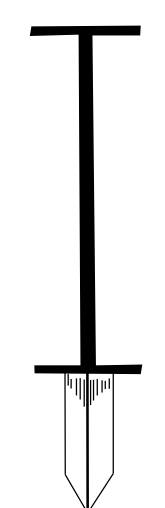
4. Pull handle of bar toward planter, firming soil at bottom.
5. Push handle forward firming soil at top.
6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.



KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

- TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in - 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in - 18 in BR

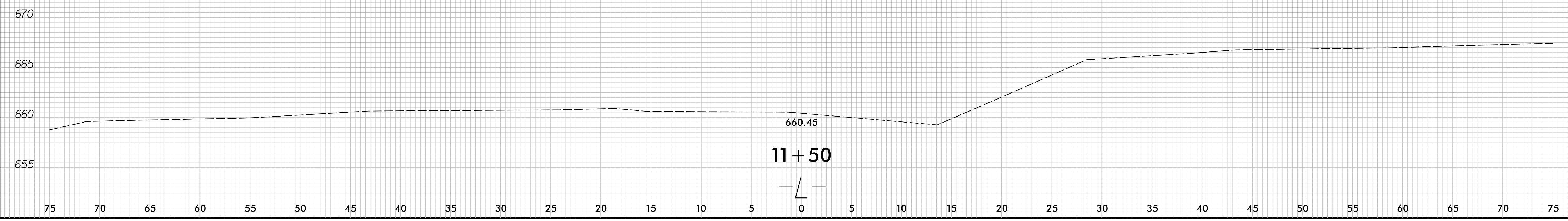
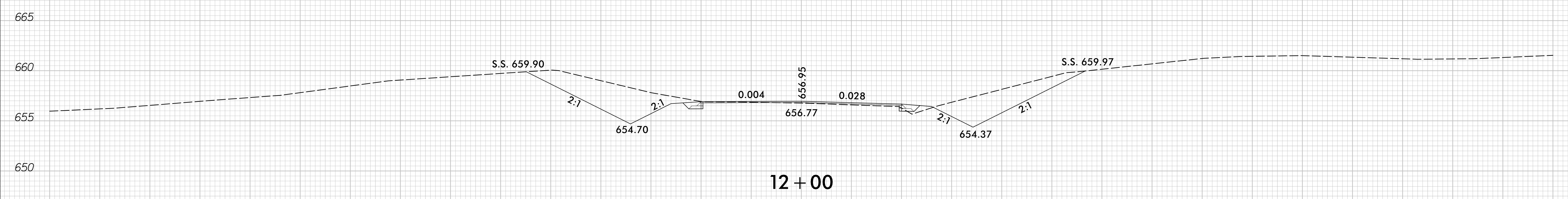
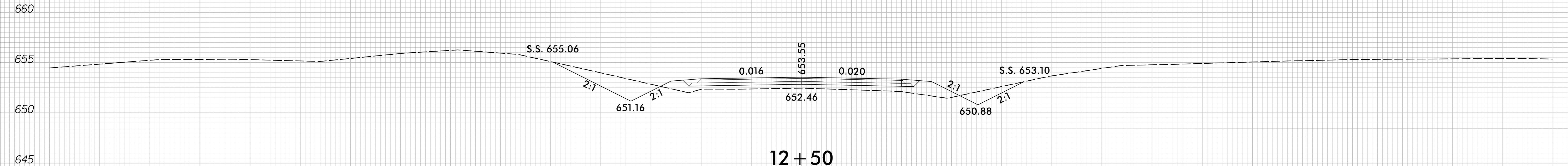
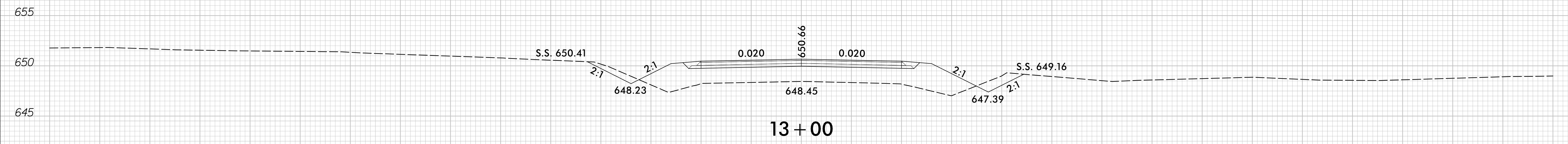
REFORESTATION DETAIL SHEET

N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

8/23/19

0 2.5 5	PROJ. REFERENCE NO. 17BP.10.R.52	SHEET NO. X-1
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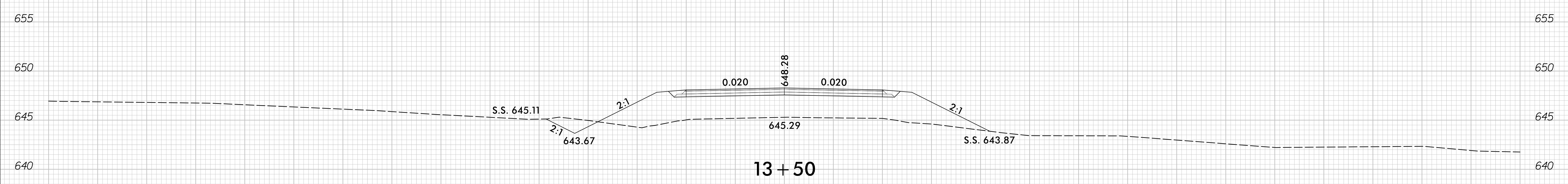
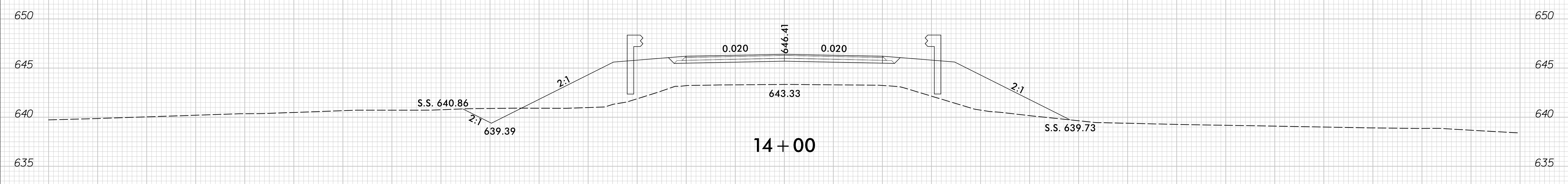
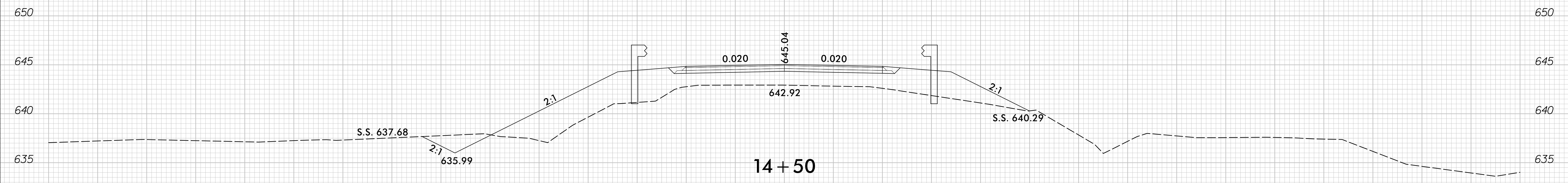


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0 2.5 5	PROJ. REFERENCE NO. 17BP.10.R.52	SHEET NO. X-2
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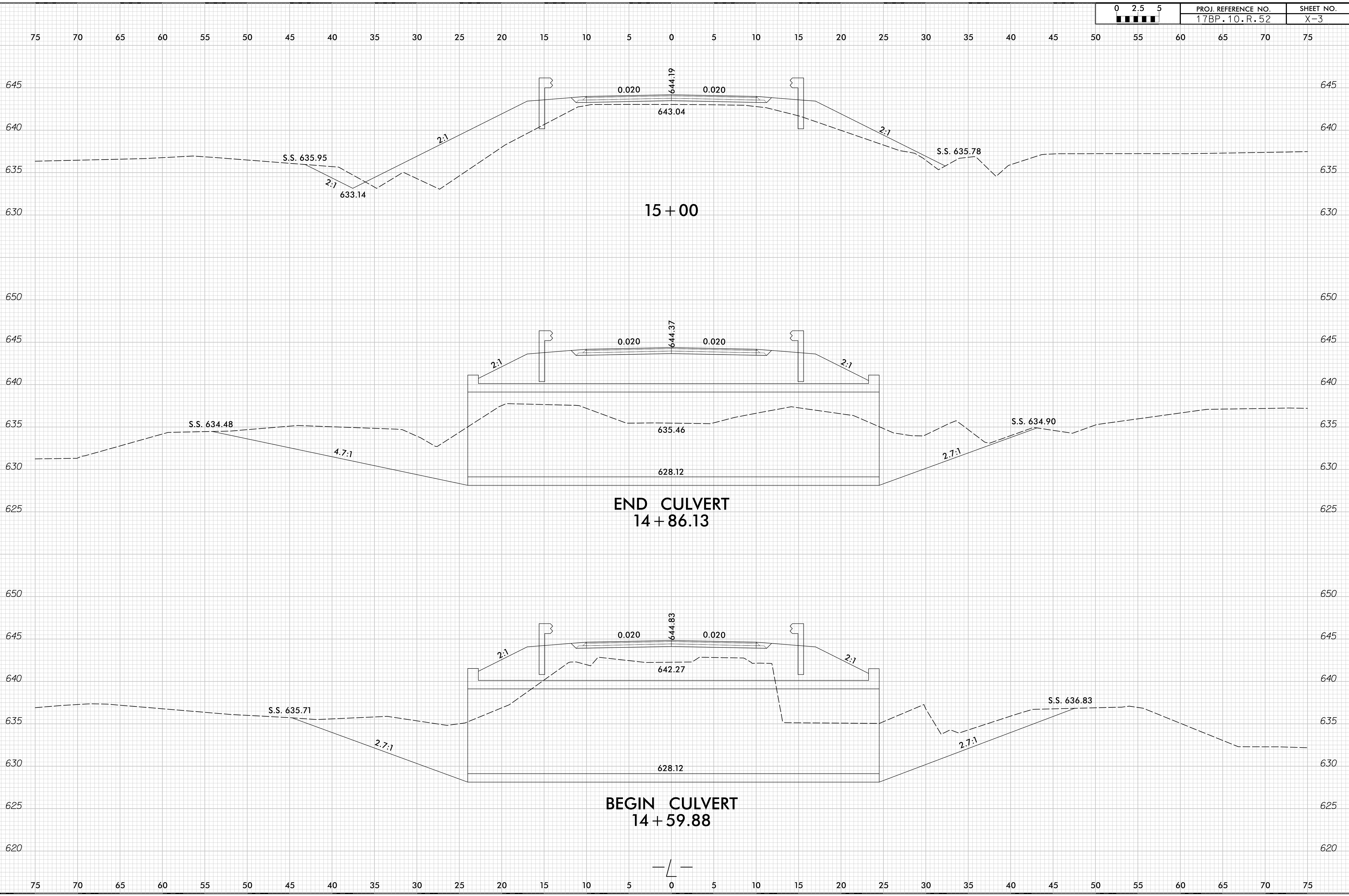
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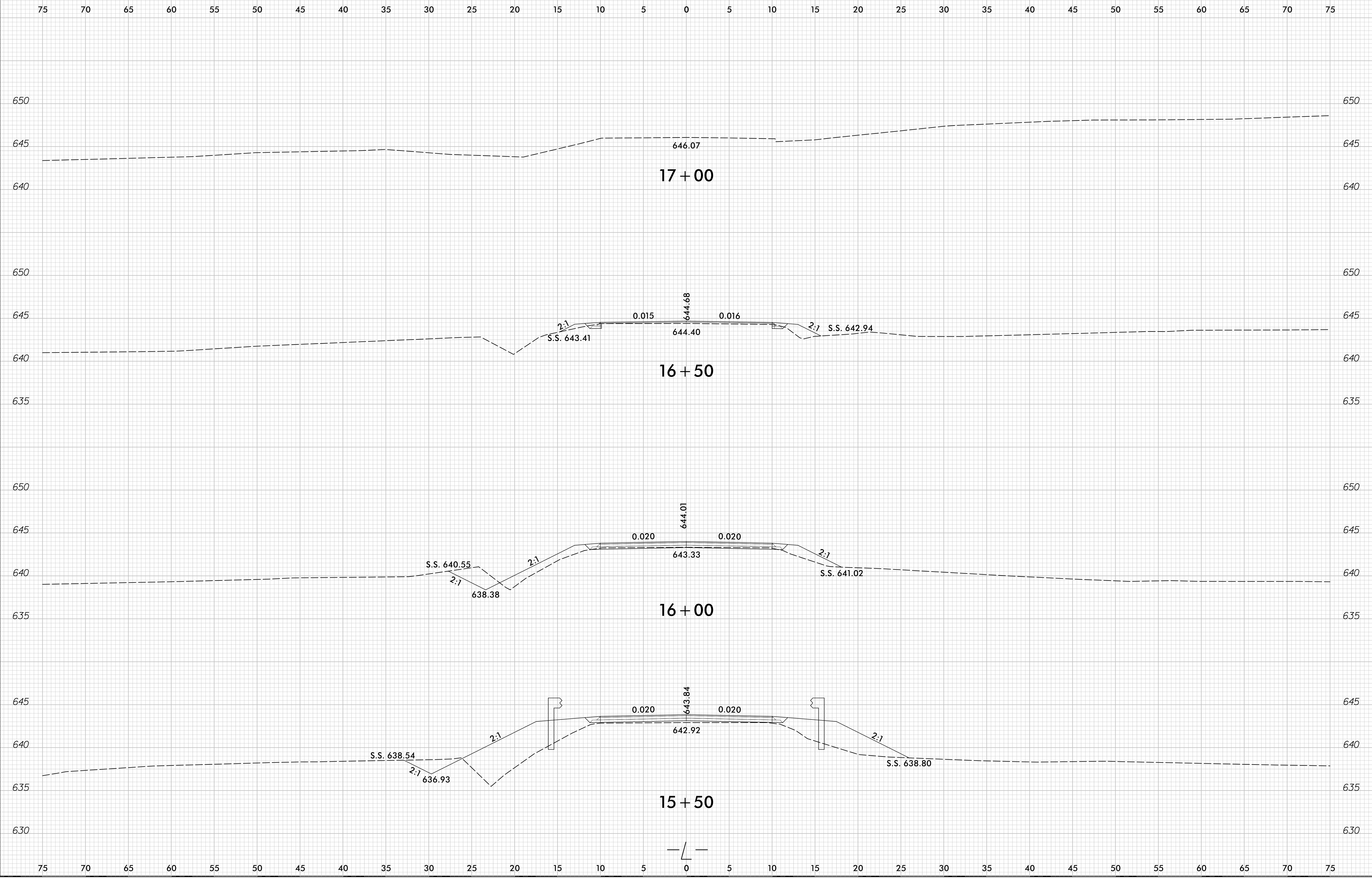
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3/31/2016
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8/23/99

0 2.5 5	PROJ. REFERENCE NO. 17BP.10.R.52	SHEET NO. X-4
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