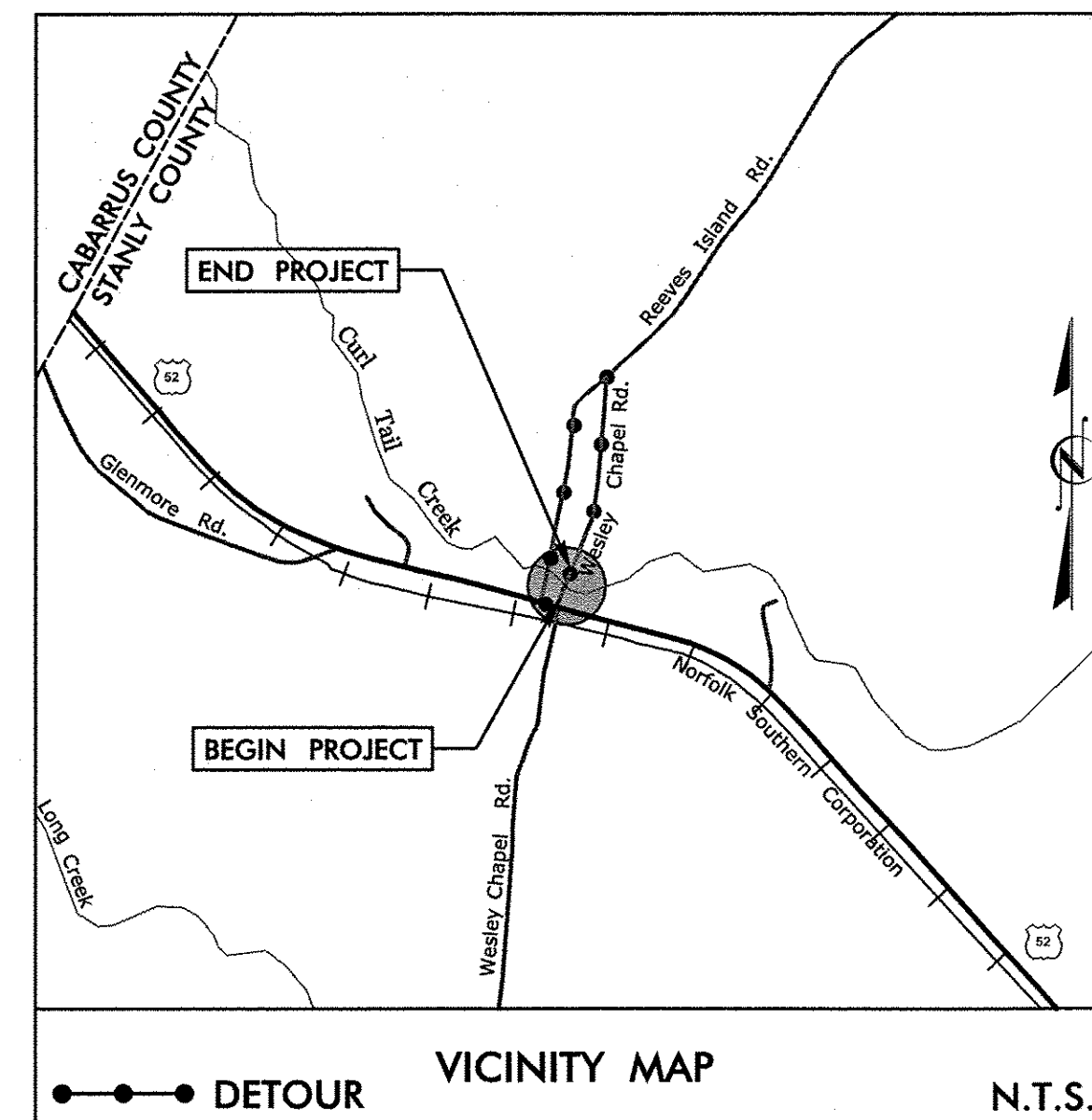


PROJECT: WBS 17BP.10.R.25

CONTRACT:

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

STANLY COUNTY

LOCATION: BRIDGE #148 OVER CURL TAIL CREEK
ON SR 1455 (WESLEY CHAPEL ROAD)

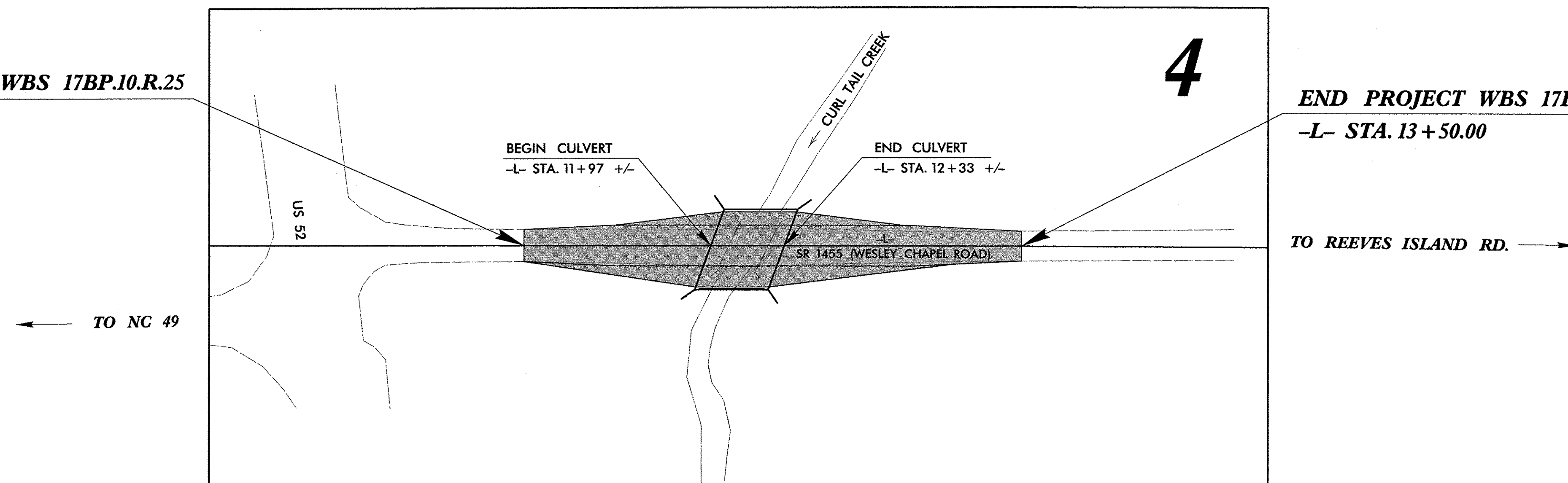
TYPE OF WORK: GRADING, PAVING, DRAINAGE & STRUCTURE

NAD 83 • 7 NSRS 2007

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.25	1	
STATE PROJ. NO.	P.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.25		P.E.	
17BP.10.R.25		RW & UTILITIES	
17BP.10.R.25		CONST.	

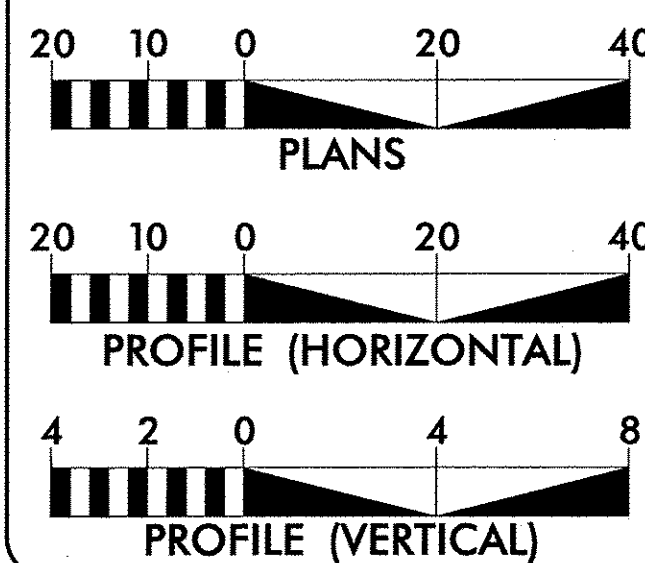
BEGIN PROJECT WBS 17BP.10.R.25
-L- STA. 11+05.00

END PROJECT WBS 17BP.10.R.25
-L- STA. 13+50.00



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

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 168
ADT 2035 = 336
DHV = N/A
D = N/A
T = 6%
V = 35 MPH
FUNC. CLASSIFICATION:
LOCAL

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT WBS 17BP.10.R.25 = 0.039 MILES
LENGTH OF STRUCTURE PROJECT WBS 17BP.10.R.25 = 0.007 MILES
TOTAL LENGTH OF PROJECT WBS 17BP.10.R.25 = 0.046 MILES

NCDOT CONTACT: GARLAND HAYWOOD, PE
Division Bridge Manager

PLANS PREPARED FOR THE NCDOT BY:
STVRALPH WHITEHEAD ASSOCIATES, INC.
1000 West Morehead St., Ste. 200, Charlotte NC, 28208
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 20, 2012

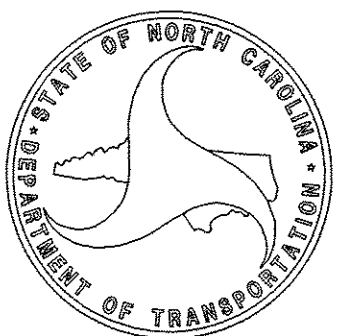
LETTING DATE:
FEBRUARY 20, 2013

NIKKI T. HONEYCUTT, PE
PROJECT ENGINEER

ALLISON DRAKE, EI
PROJECT DESIGN ENGINEER

HYDRAULICS
ENGINEER

SEAL 038053
SIGNATURE: 1/9/13 P.E.
ROADWAY
DESIGN
ENGINEER
SEAL 039234
SIGNATURE: 9/30/13 P.E.



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 TYPICALS
4	PLAN AND PROFILE SHEET
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
TCP-1 THRU TCP-2	TRAFFIC CONTROL PLANS
EC-1 THRU EC-4	EROSION CONTROL PLANS
X-1	CROSS-SECTIONS
C-1 THRU C-4	CULVERT PLANS

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 11.
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
862.03	Structure Anchor Units
DIVISION 11 - WORK ZONE TRAFFIC CONTROL	
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
1606.01	Special Sediment Control Fence
1607.01	Gravel Construction Entrance
1622.01	Guide for Temporary Berms and Slope Drains
1630.04	Stilling Basins For Pumped Effluent
1630.06	Special Stilling Basin

Note: Not to Scale

**S.U.E. = Subsurface Utility Engineering*

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
17BPJ0.R.25	1-B

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

State Line	
County Line	
Township Line	
City Line	
Reservation Line	
Property Line	
Existing Iron Pin	⊙
Property Corner	✕
Property Monument	ECM
Parcel/Sequence Number	(123)
Existing Fence Line	—X—X—X—
Proposed Woven Wire Fence	—○—
Proposed Chain Link Fence	—□—
Proposed Barbed Wire Fence	—◇—
Existing Wetland Boundary	---WLB---
Proposed Wetland Boundary	---WLB---
Existing Endangered Animal Boundary	---EAB---
Existing Endangered Plant Boundary	---EPB---
Known Soil Contamination: Boundary or Site	☠
Potential Soil Contamination: Boundary or Site	☹

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:

Stream or Body of Water	
Hydro, Pool or Reservoir	▭
Jurisdictional Stream	JS
Buffer Zone 1	BZ 1
Buffer Zone 2	BZ 2
Flow Arrow	→
Disappearing Stream	→
Spring	⊙
Wetland	⋈
Proposed Lateral, Tail, Head Ditch	→
False Sump	▭

RAILROADS:

Standard Gauge	CSX TRANSPORTATION
RR Signal Milepost	MILEPOST 35
Switch	SWITCH
RR Abandoned	—+—+—+—
RR Dismantled	—+—+—+—

RIGHT OF WAY:

Baseline Control Point	◆
Existing Right of Way Marker	△
Existing Right of Way Line	—
Proposed Right of Way Line	—(RW)—
Proposed Right of Way Line with Iron Pin and Cap Marker	—(RW)—▲
Proposed Right of Way Line with Concrete or Granite Marker	—(RW)—▲
Existing Control of Access	⊙
Proposed Control of Access	⊙
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—

ROADS AND RELATED FEATURES:

Proposed Permanent Easement with Iron Pin and Cap Marker	◆
Existing Edge of Pavement	—
Existing Curb	—C—
Proposed Slope Stakes Cut	—C—
Proposed Slope Stakes Fill	—F—
Proposed Curb Ramp	—(CR)—
Curb Cut Future Ramp	—(CCFR)—

Existing Metal Guardrail	—+—+—+—
Proposed Guardrail	—+—+—+—
Existing Cable Guiderail	—+—+—+—
Proposed Cable Guiderail	—+—+—+—

Equality Symbol	⊕
Pavement Removal	▭

VEGETATION:

Single Tree	⊙
Single Shrub	⊙
Hedge	—+—+—+—
Woods Line	—+—+—+—

Orchard	⊙
Vineyard	Vineyard

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	CONC
Bridge Wing Wall, Head Wall and End Wall	CONC WW
MINOR:	
Head and End Wall	CONC HW
Pipe Culvert	—
Footbridge	—
Drainage Box: Catch Basin, DI or JB	CB
Paved Ditch Gutter	—
Storm Sewer Manhole	⊙
Storm Sewer	—S—

UTILITIES:

POWER:	
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	—
Recorded U/G Power Line	—P—
Designated U/G Power Line (S.U.E.*)	---P---

TELEPHONE:

Existing Telephone Pole	●
Proposed Telephone Pole	○
Telephone Manhole	⊙
Telephone Booth	⊙
Telephone Pedestal	⊙
Telephone Cell Tower	⊙
U/G Telephone Cable Hand Hole	—
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 FO—
Designated U/G Fiber Optics Cable (S.U.E.*)	---T FO---

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

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

MISCELLANEOUS:

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

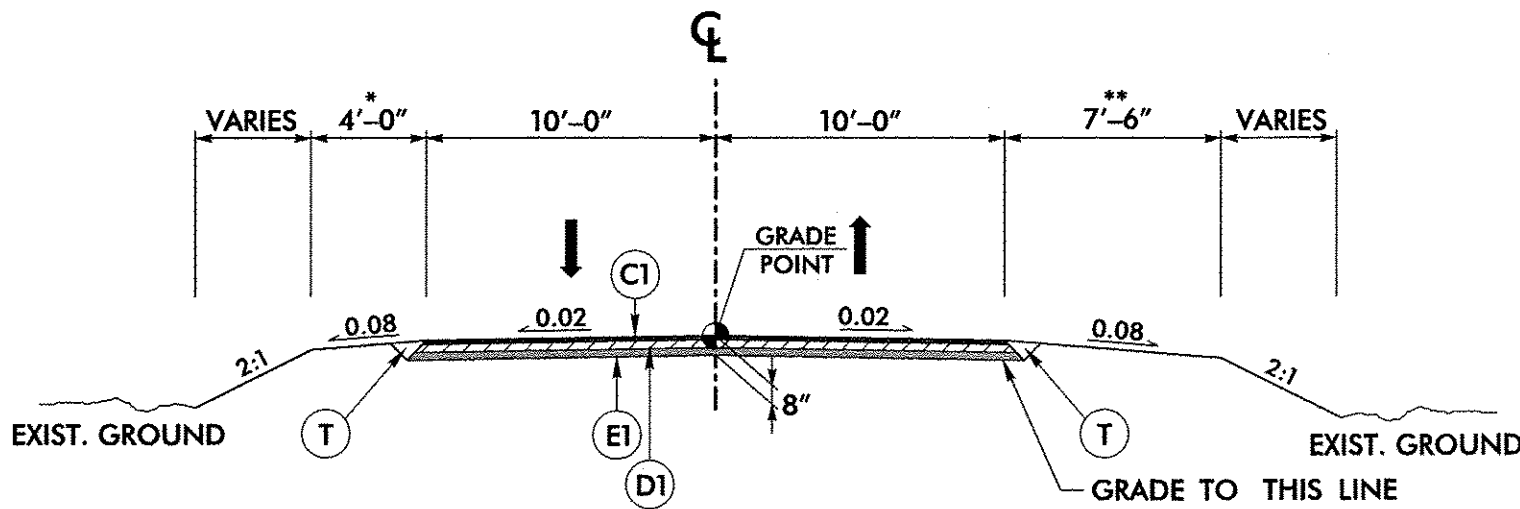
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

EARTHWORK SUMMARY
(IN CUBIC YARDS)

CHAIN	FROM STATION	TO STATION	SIDE	UNCL. EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
-L-	11+05.00	12+15.00	LT & RT	35		145	110	
SUBTOTAL SUMMARY NO. 1				35		145	110	
-L-	12+15.00	13+50.00	LT & RT	49		132	83	
SUBTOTAL SUMMARY NO. 2				49		132	83	
SUBTOTAL SUMMARY 1-2				84		277	193	
LOSS DUE TO CLEARING AND GRUBBING							128	
PROJECT TOTAL				84		277	321	
WASTE IN LIEU OF BORROW								
ESTIMATE 5% FOR TOPSOIL ON BORROW PITS							16	
GRAND TOTAL				84		277	337	
SAY				85			340	

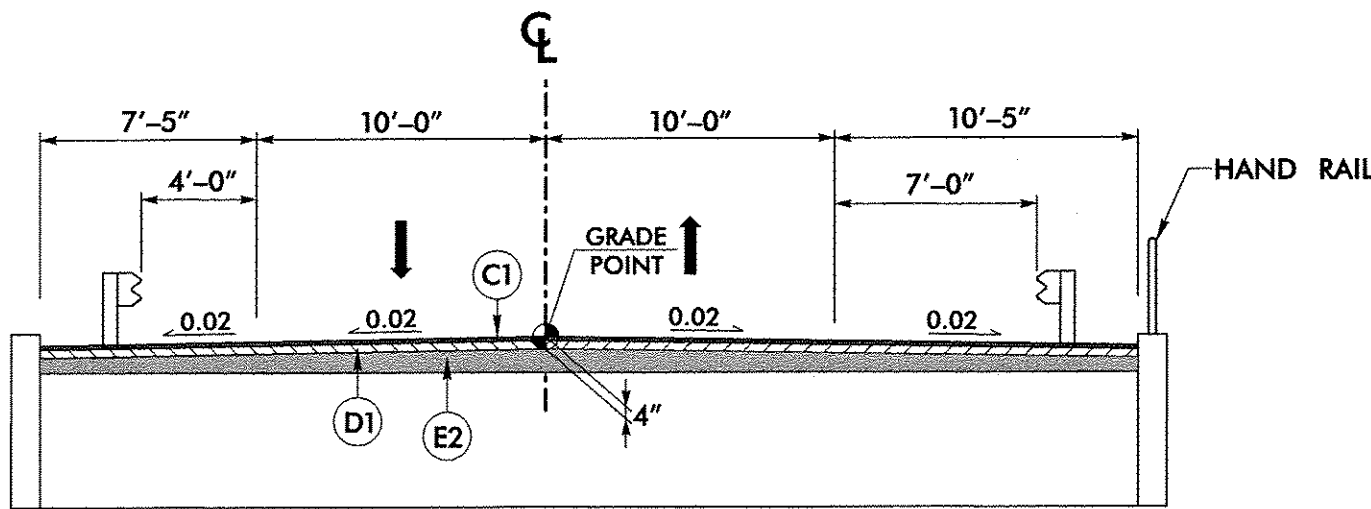
NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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."



TYPICAL SECTION 1
-L- STA. 11+05.00 TO 11+97 +/-
-L- STA. 12+33 +/- TO 13+50.00

* 7'-0" WITH GUARDRAIL
** 10'-4" WITH GUARDRAIL
*** ALL PAVEMENT SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION 2
-L- STA. 11+97 +/- TO 12+33 +/-

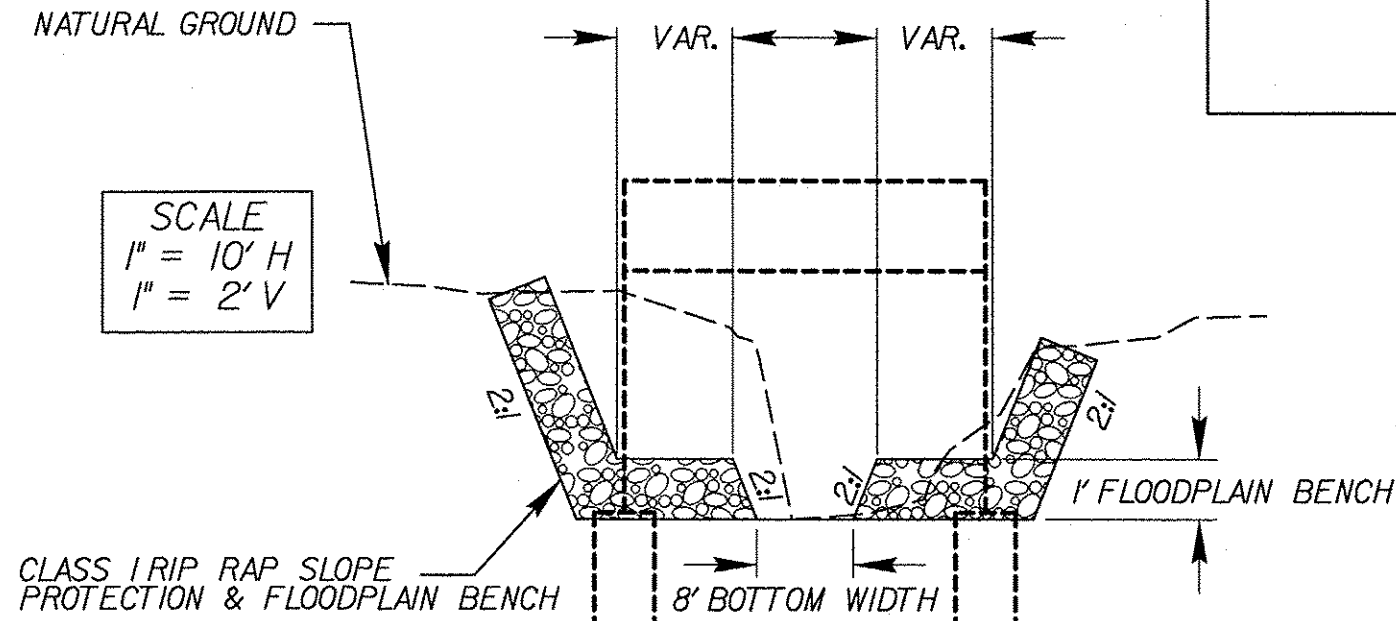
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, 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 3.0" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT

* 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

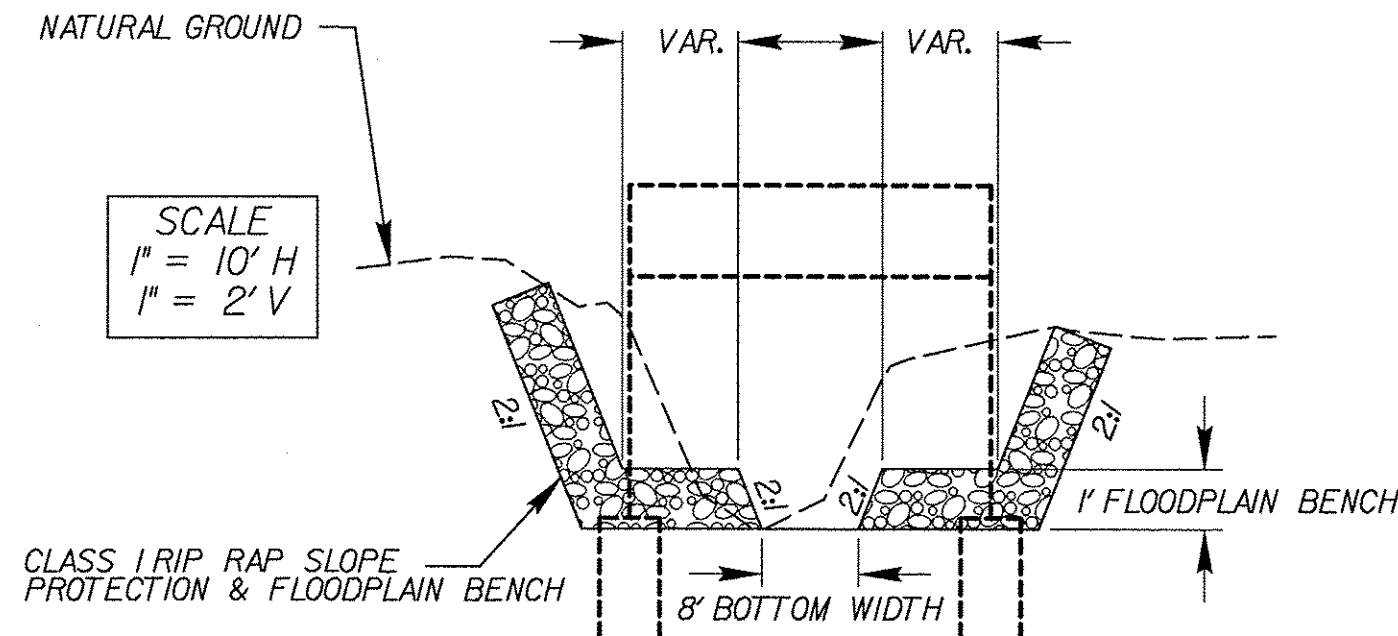
GUARDRAIL SUMMARY

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		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	AT-1	EA	G	NG		
-L-	11+41.52	12+79.01	RT	137.5			11+82.49	12+29.81	7.50	10.50	50.0'	50.0'	1.0'	1.0'			2											
-L-	11+50.99	12+88.48	LT	137.5			12+46.14	11+98.82	4.00	7.00	50.0'	50.0'	1.0'	1.0'			2											
TOTAL:				275.0													4											
TOTAL ANCHOR LENGTH:				200.0																								
TOTAL GUARDRAIL LENGTH:				75.0																								
SAY:				75.0																								

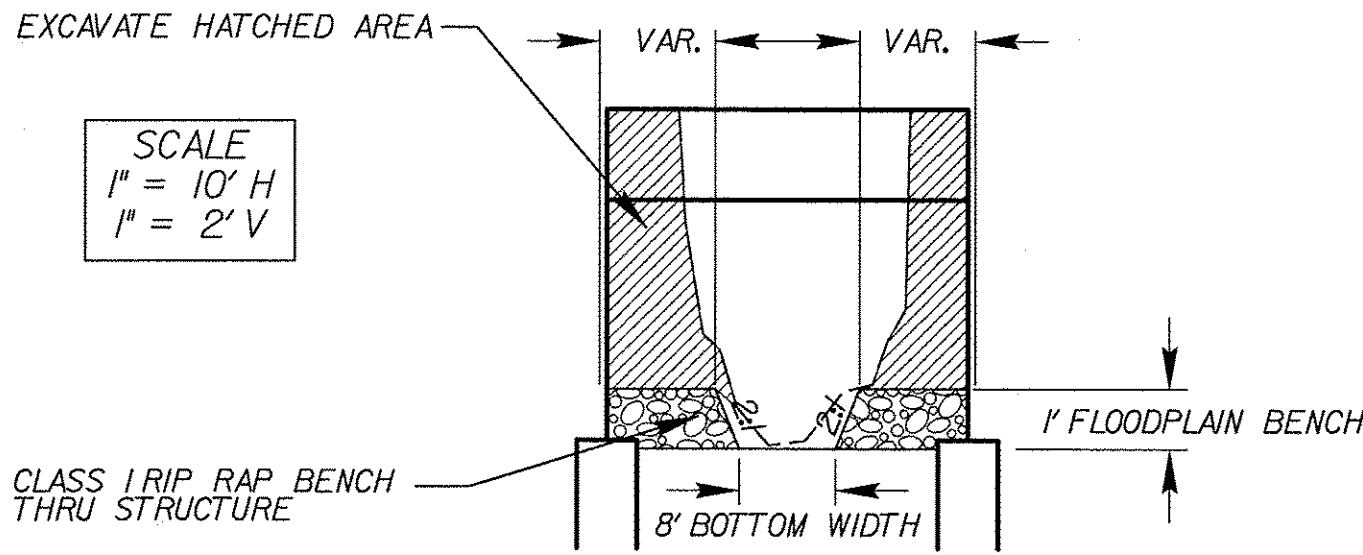
RIP RAP DETAILS



TYPICAL SECTION - INLET CHANNEL



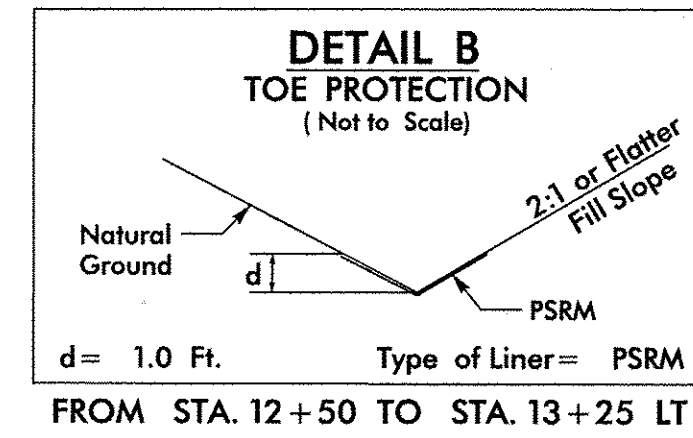
TYPICAL SECTION - OUTLET CHANNEL



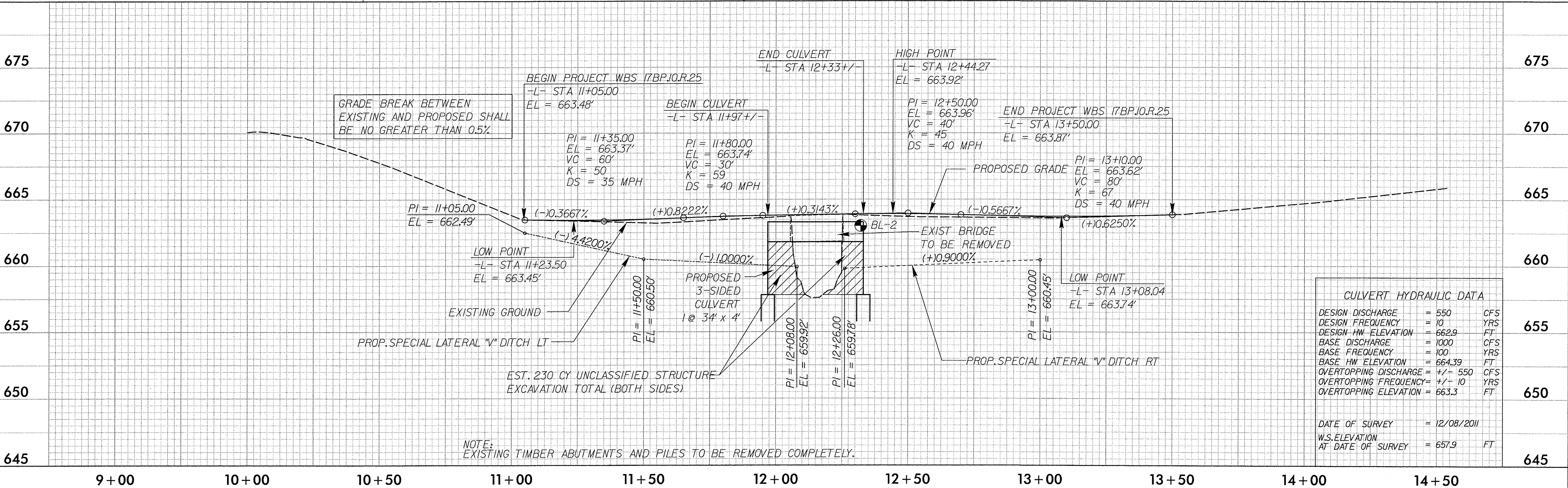
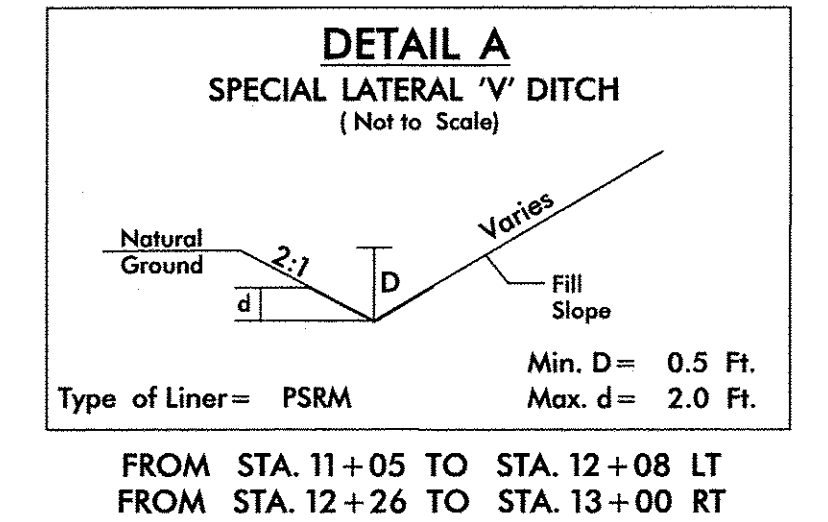
TYPICAL SECTION - THRU STRUCTURE

DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 634095.377(FT) EASTING: 1616649.544(FT) ELEVATION: 663.02(FT)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999854
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO -L- STATION 11+05.00 IS
S 28° 08' 50.658" W 127.726 (FT)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL-1 N 633862.220 E 1616533.997 ELEV 669.61
BL-2 N 634095.377 E 1616649.544 ELEV 663.02
BL-3 N 634318.684 E 1616737.095 ELEV 665.89



PROJECT REFERENCE NO. 17BPJ0.R.25		SHEET NO. 4	
RW SHEET NO.		HYDRAULICS ENGINEER	
ROADWAY DESIGN ENGINEER		SEAL 038053 NORTH CAROLINA PROFESSIONAL ENGINEER DAVID C. MORRISON 1/7/13	
STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991			



PROJECT: WBS 17BP.10.R.25

CONTRACT:

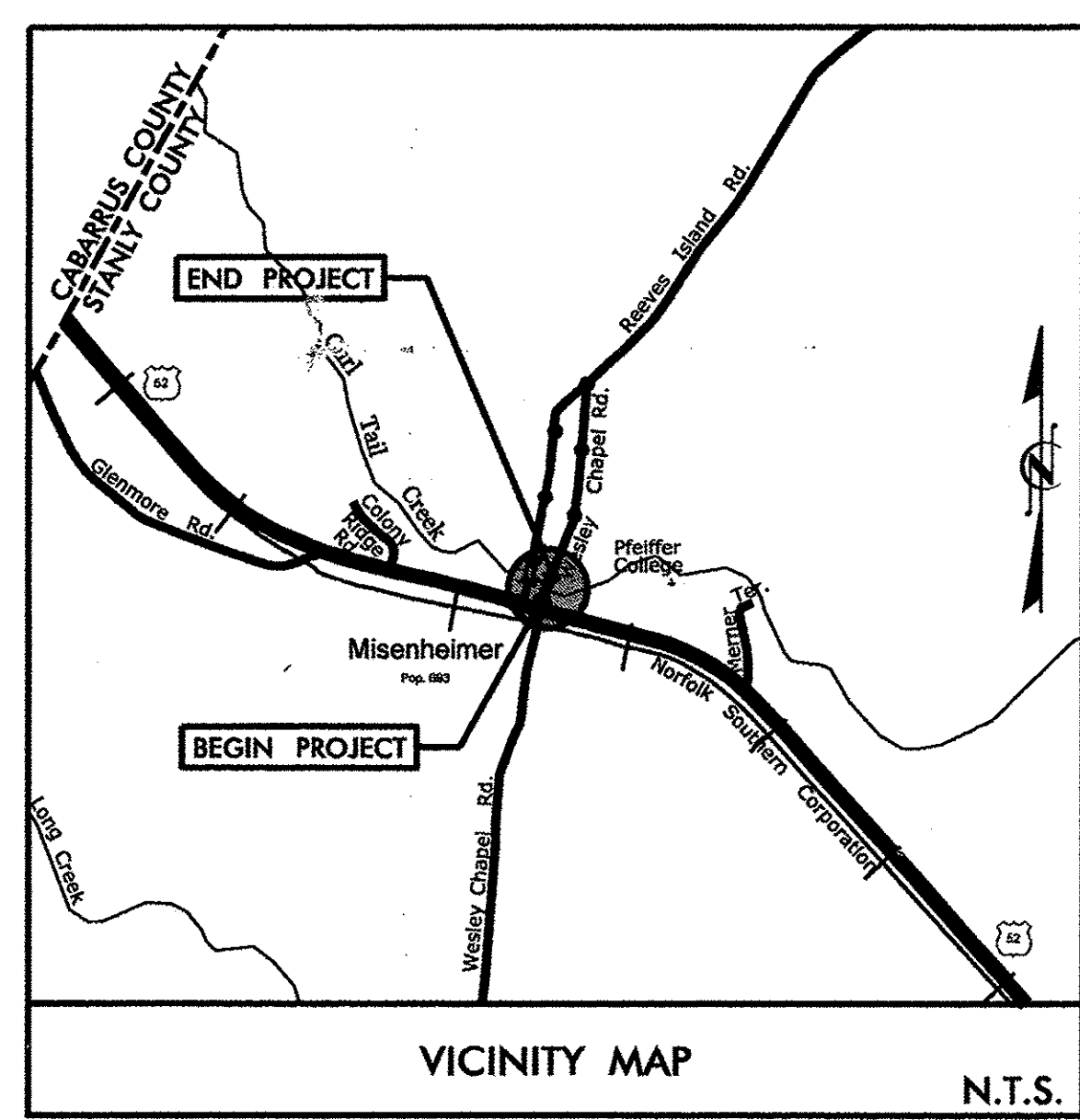
PRELIMINARY PLANS
DATES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
WBS 17BP.10.R.25	UC-1

UTILITY CONSTRUCTION PLANS
STANLY COUNTY

LOCATION: BRIDGE #148 OVER CURL TAIL CREEK
ON SR 1455 (WESLEY CHAPEL ROAD)
TYPE OF WORK: WATER CONSTRUCTION



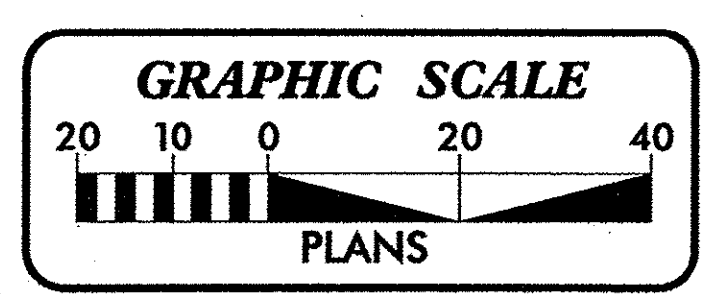
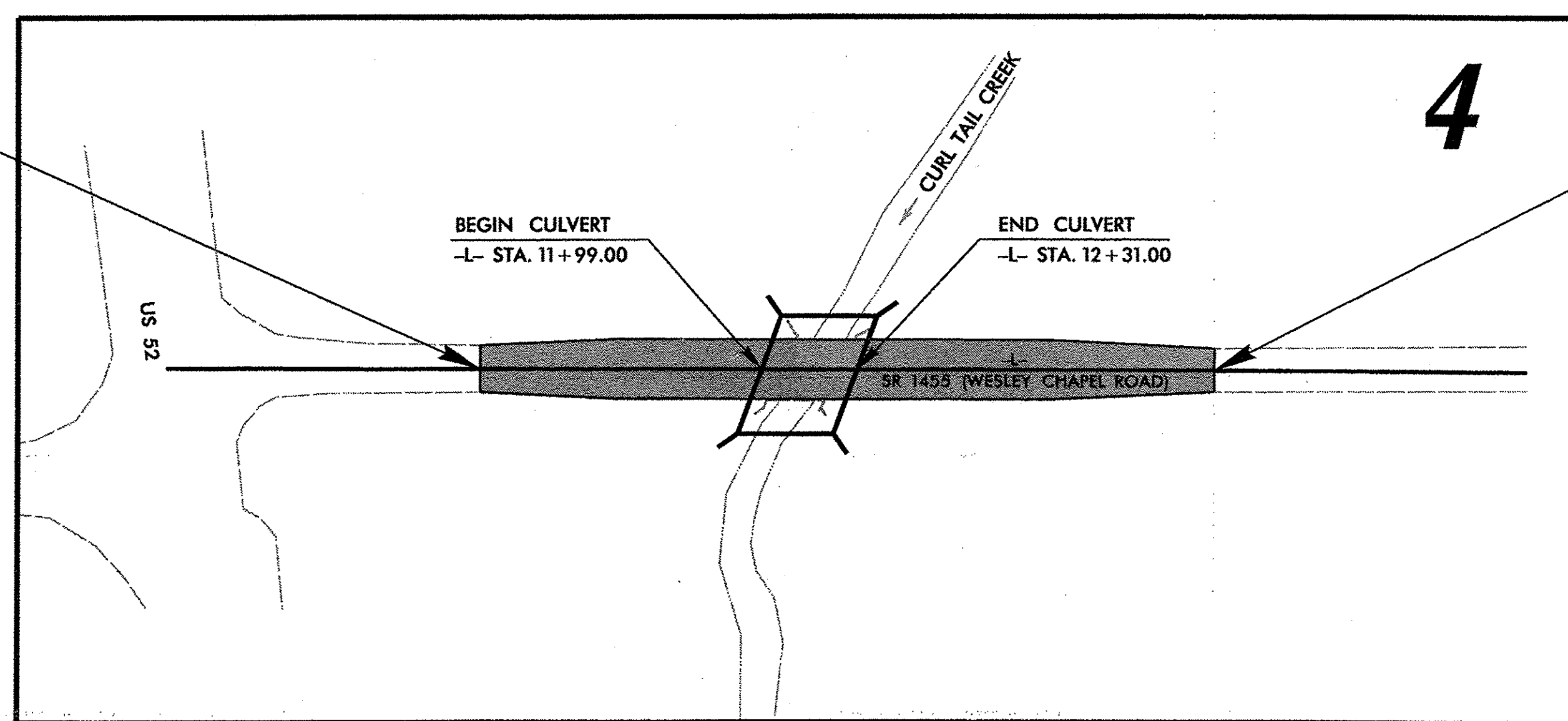
NSRS 2007 - NAD 83

BEGIN PROJECT WBS 17BP.10.R.25
-L- STA. 11+05.00

END PROJECT WBS 17BP.10.R.25
-L- STA. 13+50.00

TO SR 1454

TO SR 1500



INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UC-1	TITLE SHEET
UC-2	SYMBOLGY SHEET
UC-3	NOTES AND DETAIL SHEET
UC-4	UTILITY PLAN AND PROFILE SHEET

WATER AND SEWER OWNERS ON PROJECT

(1) WATER - PFEIFFER NORTH STANLY WATER ASSOC., INC.

SEAL

Vaughan & Melton
Consulting Engineers
3089-L Beam Road
Charlotte, NC 28217
704-357-0488

PREPARED IN THE OFFICE OF:
**DIVISION OF HIGHWAYS
UTILITIES ENGINEERING
SECTION**

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E. UTILITIES SECTION ENGINEER
XXXXX XXXXX, P.E. UTILITIES SQUAD LEADER PROJECT ENGINEER
Reece Schuler, PE UTILITIES PROJECT DESIGNER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

Water Line (Sized as Shown)	
11¼ Degree Bend	
22½ Degree Bend	
45 Degree Bend	
90 Degree Bend	
Plug	
Tee	
Cross	
Reducer	
Gate Valve	
Butterfly Valve	
Tapping Valve	
Line Stop	
Line Stop with Bypass	
Blow Off	
Fire Hydrant	
Relocate Fire Hydrant	
Remove Fire Hydrant	
Water Meter	
Relocate Water Meter	
Remove Water Meter	
Water Pump Station	
RPZ Backflow Preventer	
DCV Backflow Preventer	
Relocate RPZ Backflow Preventer	
Relocate DCV Backflow Preventer	

PROPOSED SEWER SYMBOLS

Gravity Sewer Line (Sized as Shown)	
Force Main Sewer Line (Sized as Shown)	
Manhole (Sized per Note)	
Sewer Pump Station	

PROPOSED MISCELLANEOUS UTILITIES SYMBOLS

Power Pole	
Telephone Pole	
Joint Use Pole	
Telephone Pedestal	
Utility Line by Others (Type as Shown)	
Trenchless Installation	
Encasement by Open Cut	
Encasement	

Thrust Block	
Air Release Valve	
Utility Vault	
Concrete Pier	
Steel Pier	
Plan Note	
Pay Item Note	

NOTE

PAY ITEM

EXISTING UTILITIES SYMBOLS

*Underground Power Line	
*Underground Telephone Cable	
*Underground Telephone Conduit	
*Underground Fiber Optics Telephone Cable	
*Underground TV Cable	
*Underground Fiber Optics TV Cable	
*Underground Gas Pipeline	
Aboveground Gas Pipeline	
*Underground Water Line	
Aboveground Water Line	
*Underground Gravity Sanitary Sewer Line	
Aboveground Gravity Sanitary Sewer Line	
*Underground SS Forced Main Line	
Underground Unknown Utility Line	
SUE Test Hole	
Water Meter	
Water Valve	
Fire Hydrant	
Sanitary Sewer Cleanout	


*For Existing Utilities

Utility Line Drawn from Record (Type as Shown)	
Designated Utility Line (Type as Shown)	

5/14/99

5/14/99

UTILITIES NOTES AND DETAILS SHEET

 <p>V&M Vaughan & Melton Consulting Engineers</p> <p>Charlotte, ■ North Carolina 704-357-0488</p> <p>Copyright © 2006 Vaughan & Melton, Inc. All Rights Reserved</p>	Asheville, NC <input type="checkbox"/> North Carolina 828-253-2796 Tri-Cities, <input type="checkbox"/> Tennessee 423-467-8401 Knoxville, Tennessee 605-546-5603 Middleboro, Kentucky 606-248-6660 Spartanburg, <input type="checkbox"/> South Carolina 864-574-4715	PROJECT REFERENCE NO. 17BP.10.R.25	SHEET NO. UC-3
	DESIGNED BY: RMS DRAWN BY: NVA CHECKED BY: RMS APPROVED BY: REVISED: NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119	NORTH CAROLINA PROFESSIONAL ENGINEER EXHIBIT SEAL 289566 JEFFREY W. SCHULTE 9/26/12 UTILITY CONSTRUCTION PLANS ONLY	

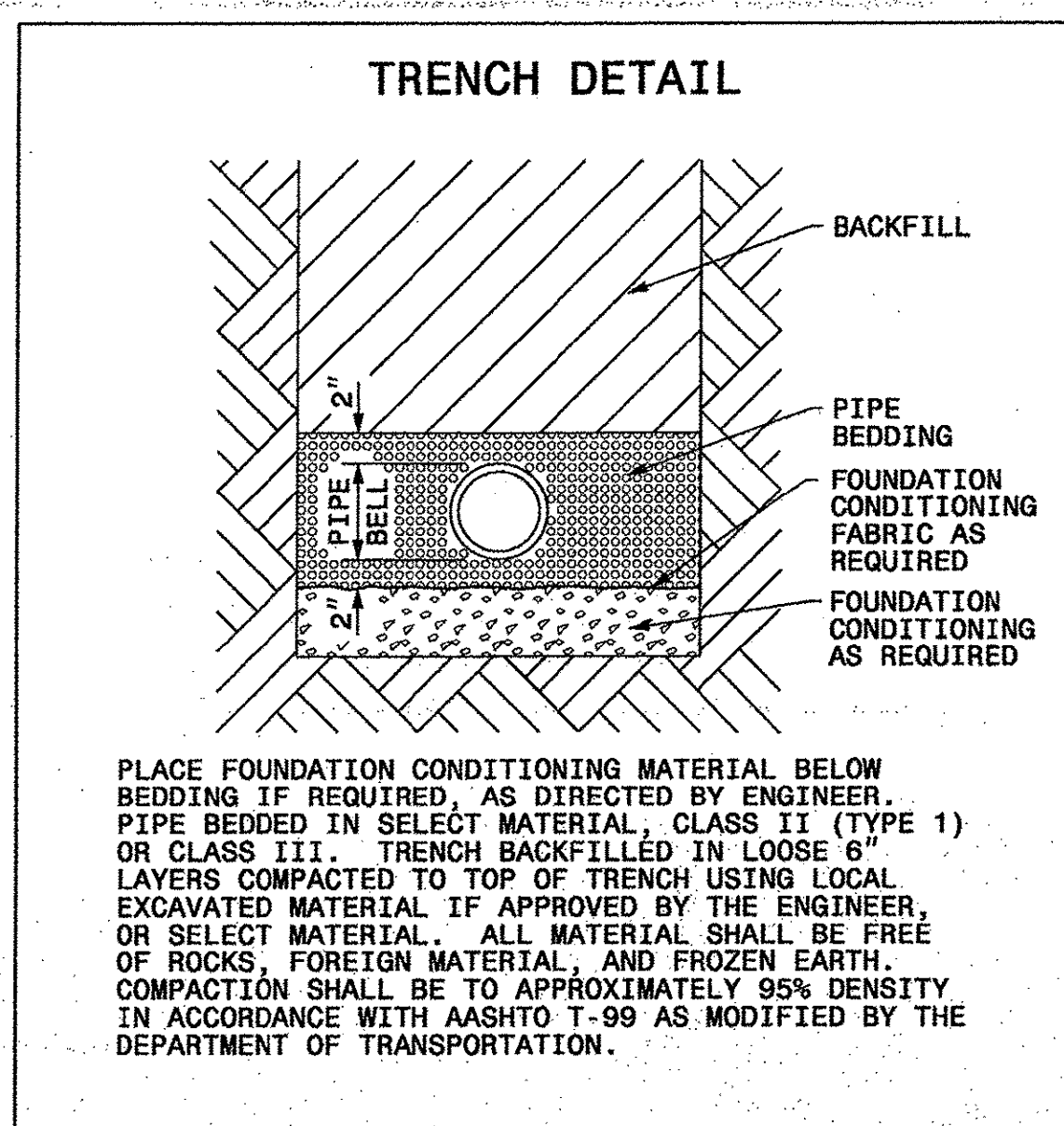
PROJECT SPECIFIC NOTES:

UTILITY CONSTRUCTION

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE DEPARTMENT.
7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.
8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY.
9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

1. PROPOSED WATER LINE FROM W1 STATION 10+66 TO W1 STATION 11+16 FOR 60 LF UNDER THE CREEK, CENTERED IN THE BORE & JACK, SHALL BE D.I.R.J. (DUCTILE IRON RESTRAINED JOINT) PIPE.
2. CONTRACTOR'S ATTENTION IS DIRECTED TO SECTIONS 102, 107, AND 1550 OF THE STANDARD SPECIFICATIONS CONCERNING TRENCHLESS INSTALLATION. IT IS CONTRACTOR'S RESPONSIBILITY TO HAVE BORE PATH DESIGNED AND SEALED BY A LICENSED NORTH CAROLINA PROFESSIONAL ENGINEER. NO DAMAGE IS ALLOWED TO RIVER, WETLANDS, OR BUFFER ZONES.

3. PFEIFFER-NORTH STANLY WATER
ASSOCIATION, INC MAY INSPECT
CONTRACTORS WORK.
PRIOR TO START OF PROJECT, CONTRACTOR
MUST CONTACT BILL BARRINGER, MANAGER AT
704-463-7117.



8/17/99

DATUM DESCRIPTION

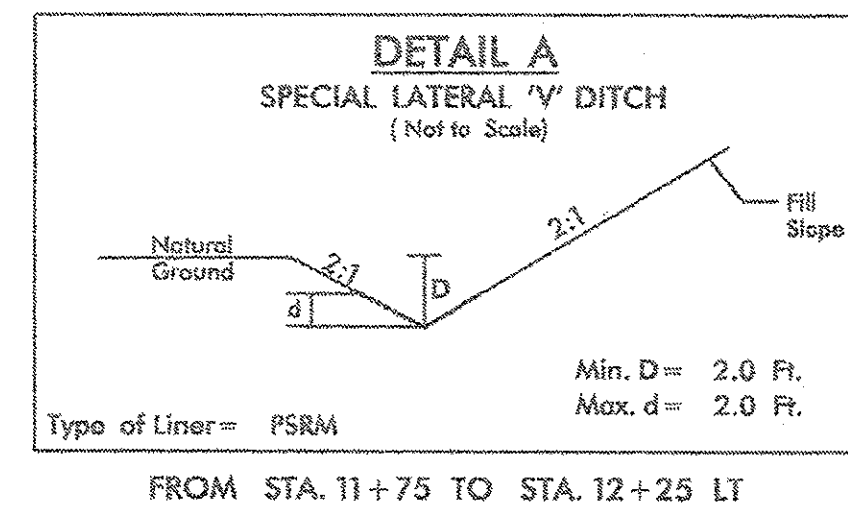
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDS FOR MONUMENT "BL-2" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 634085.377 (ft) EASTING: 1616649.544 (ft) ELEVATION: 663.02 (ft)


THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999854

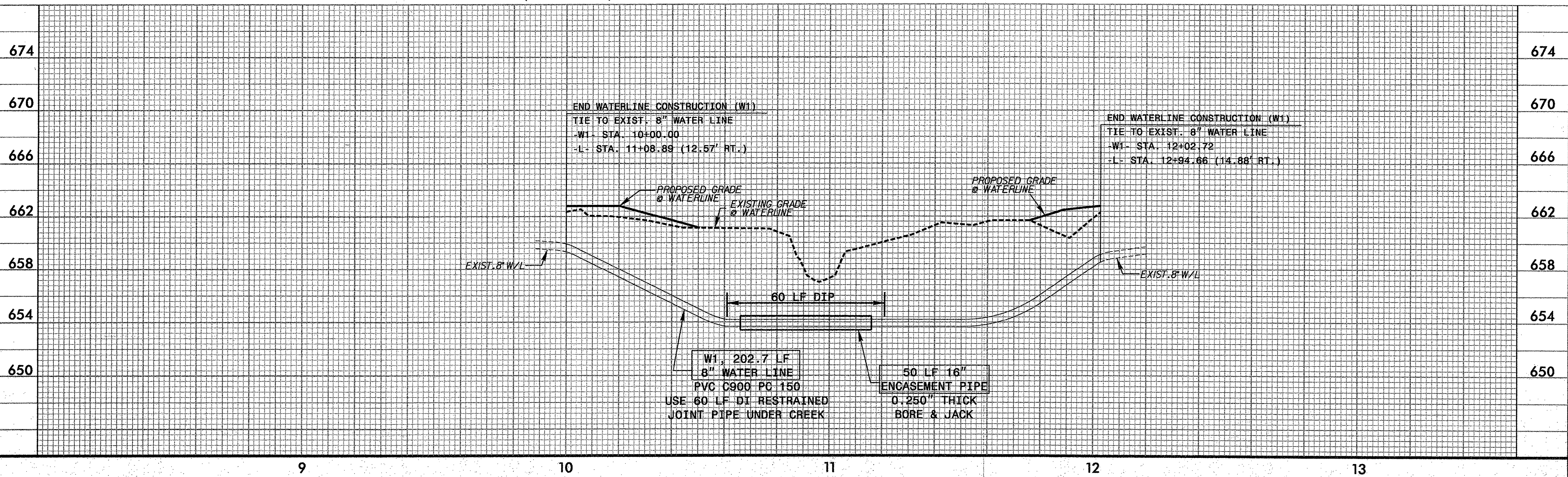
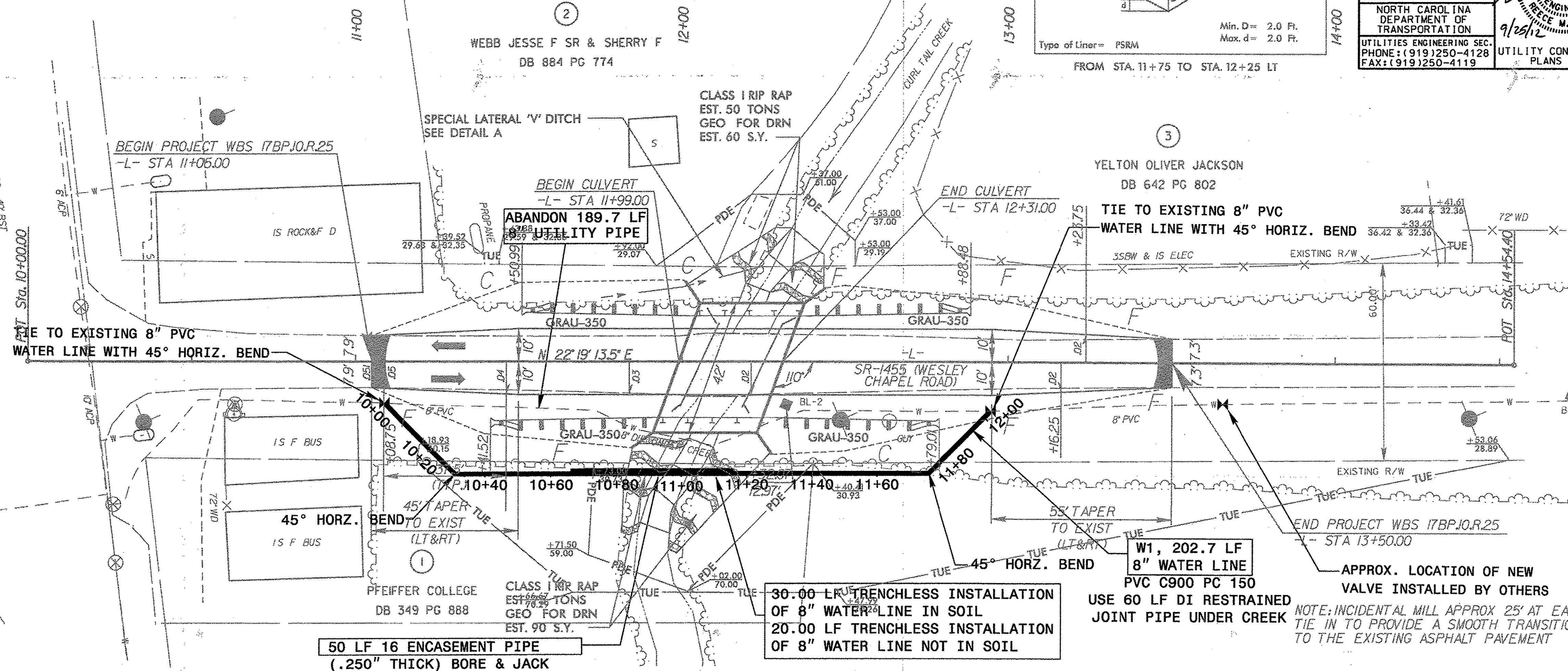
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO "L" STATION 11+05.00 IS S 28° 08' 52.363" W 127.726 (ft)

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

BL-1 N 633862.220 E 1616533.997 ELEV 669.61
BL-2 N 634085.377 E 1616649.544 ELEV 663.02
BL-3 N 634318.684 E 1616737.095 ELEV 665.89



PROJECT REFERENCE NO.		SHEET NO.
17BP.10.R.25		UC-4
DESIGNED BY: RMS		
DRAWN BY: NVA		
CHECKED BY: RMS		
APPROVED BY:		
REVISED:		
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION		
UTILITIES ENGINEERING SEC. PHONE: (919) 250-4128 FAX: (919) 250-4119		
UTILITY CONSTRUCTION * PLANS ONLY		



PROJECT: WBS 17BP.10.R.25

CONTRACT:

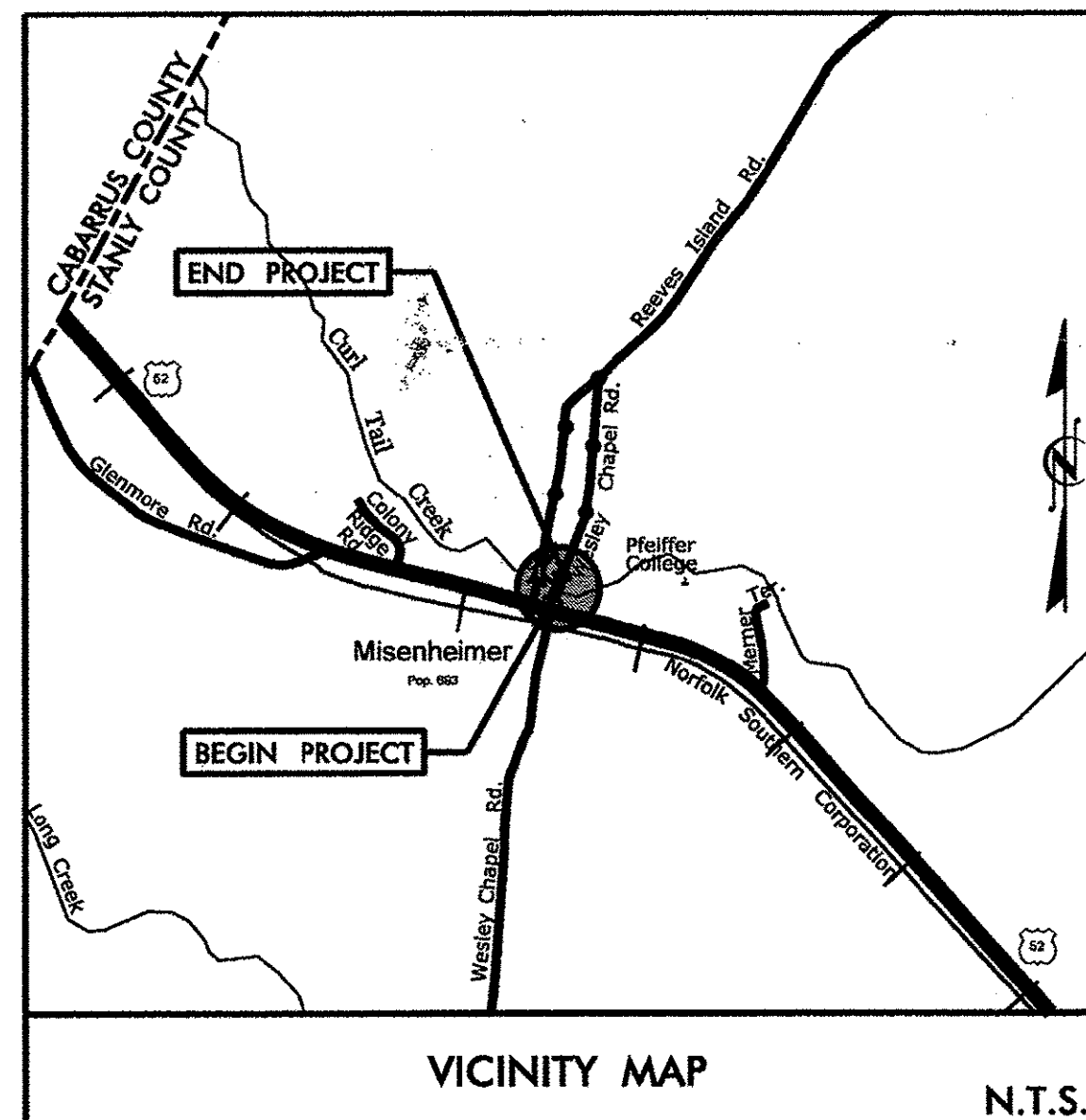
PRELIMINARY PLANS
DATES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
WBS 17BP.10.R.25	UO-1

UTILITIES BY OTHERS PLANS
STANLY COUNTY

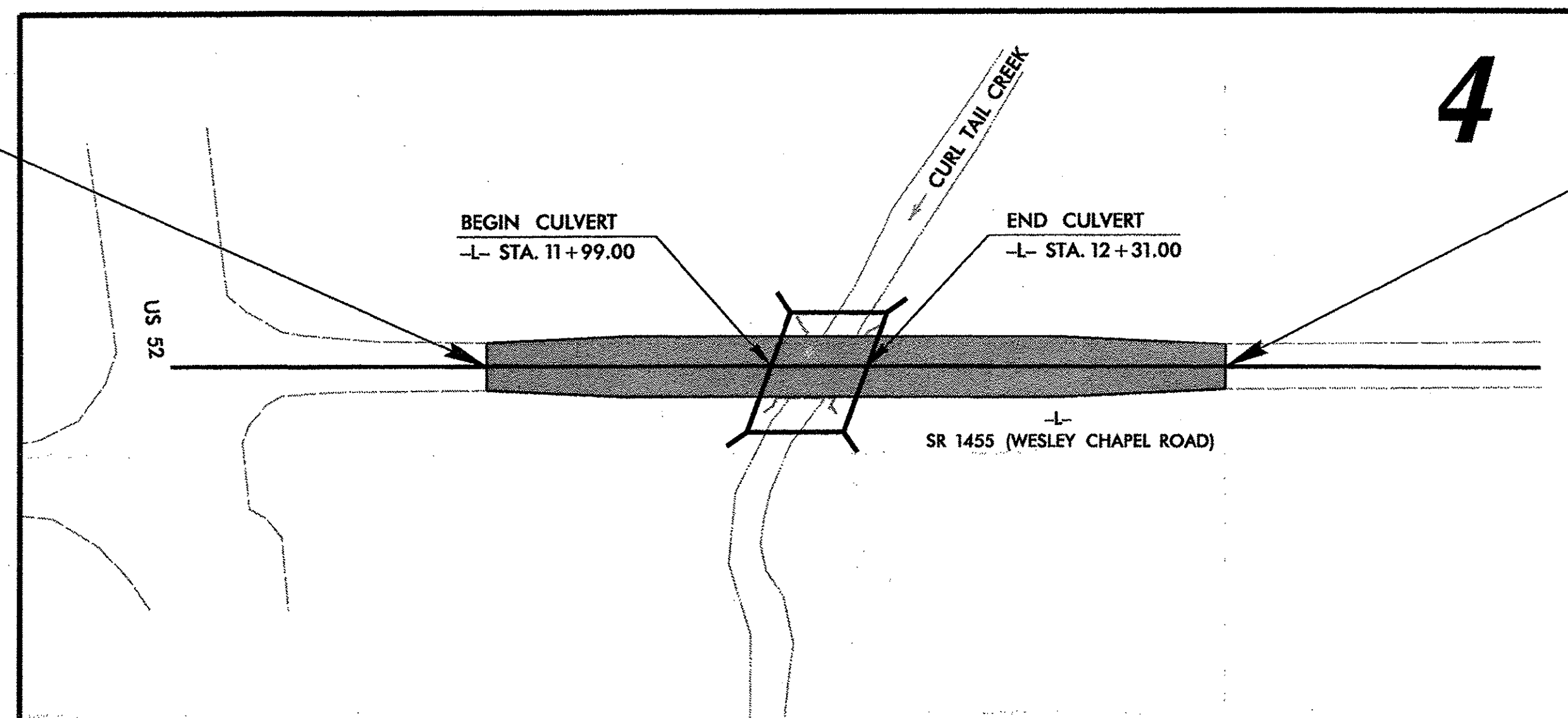
LOCATION: BRIDGE #148 OVER CURL TAIL CREEK
ON SR 1455 (WESLEY CHAPEL ROAD)
TYPE OF WORK: AERIAL TELEPHONE AND POWER



NSRS 2007 NAD 83

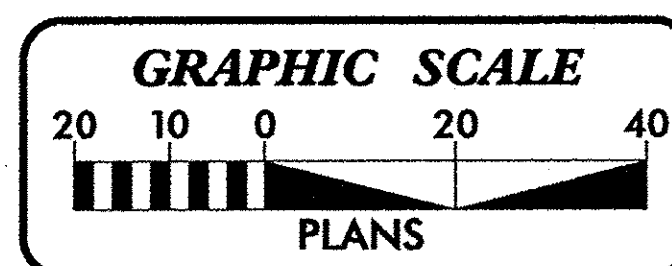
BEGIN PROJECT WBS 17BP.10.R.25
-L- STA. 11+05.00

TO SR 1454



END PROJECT WBS 17BP.10.R.25
-L- STA. 13+50.00

TO SR 1500

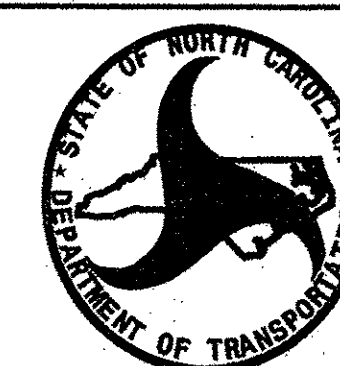
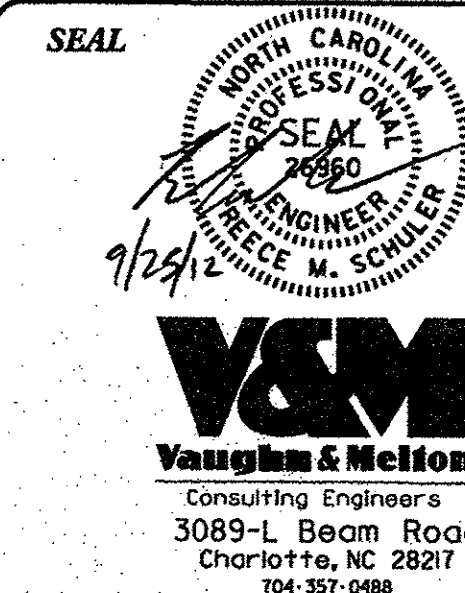


INDEX OF SHEETS

SHEET NO.	DESCRIPTION
UO-1	TITLE SHEET
UO-2	UTILITIES BY OTHERS PLAN SHEET

UTILITY OWNERS ON PROJECT

- (1) POWER - DUKE ENERGY
- (2) TELEPHONE - WINDSTREAM



PREPARED IN THE OFFICE OF:
DIVISION OF HIGHWAYS
UTILITIES ENGINEERING
SECTION

1591 MAIL SERVICES CENTER
RALEIGH NC 27699-1591
PHONE (919) 250-4128
FAX (919) 250-4119

Roger Worthington, P.E.	UTILITIES SECTION ENGINEER
Xxxxx Xxxxx, P.E.	UTILITIES SQUAD LEADER PROJECT ENGINEER
Reece Schuler, PE	UTILITIES PROJECT DESIGNER

8/17/99

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK
SHOWN ON THIS SHEET WILL
BE DONE BY OTHERS

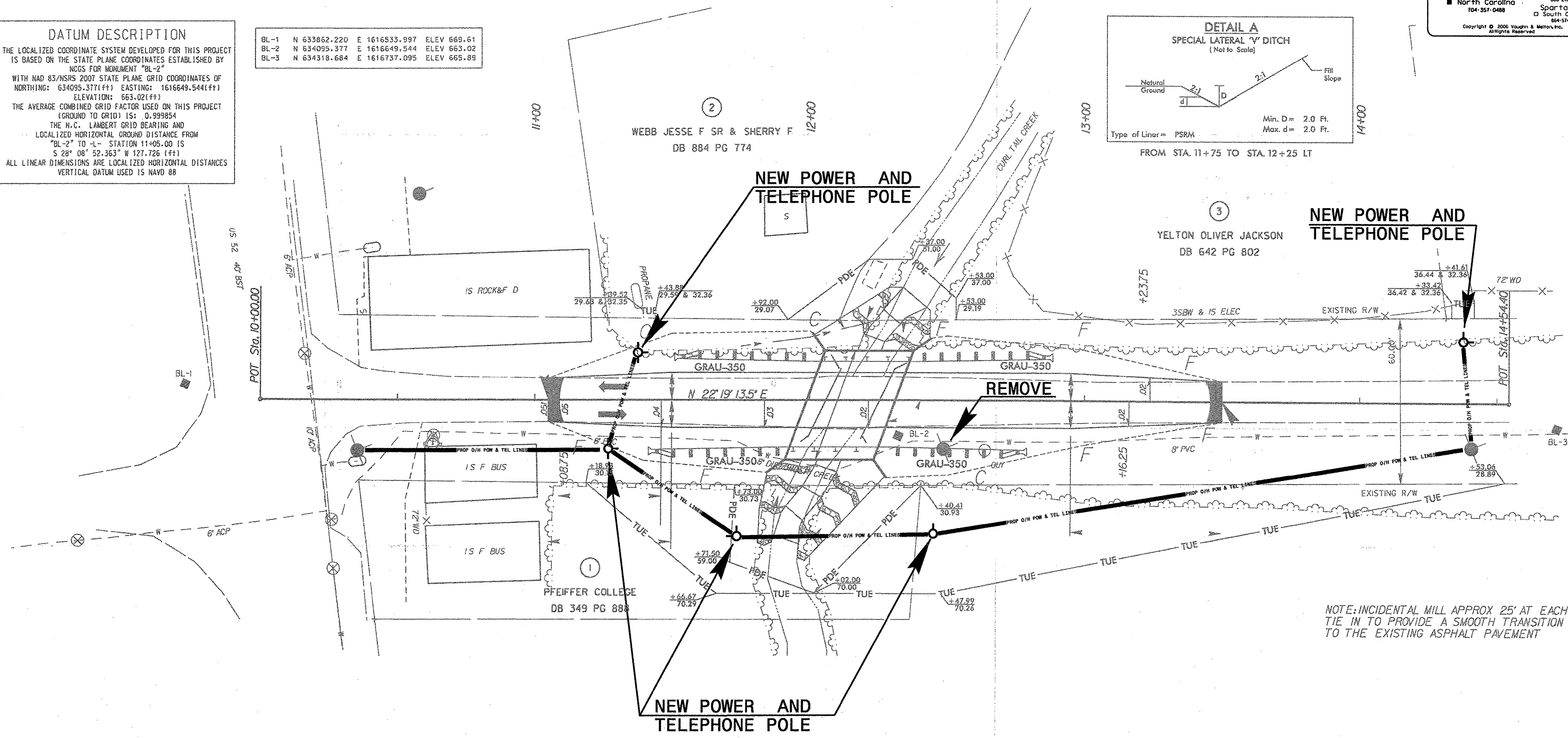
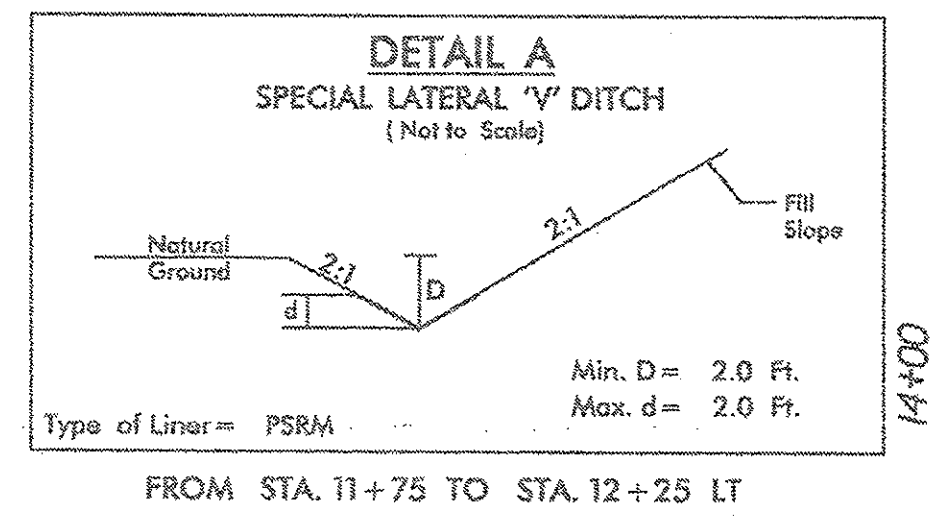
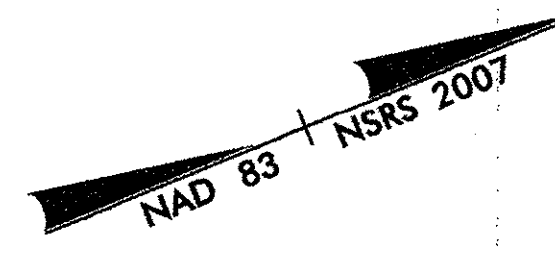
V&M
Vaughn & Melton
Consulting Engineers
Charlotte,
North Carolina
704-357-0488

☐ Asheville,
North Carolina
828-253-2796
☐ Tri-Cities,
Tennessee
423-487-6900
☐ Knoxville,
Tennessee
865-546-6900
☐ Middlesboro,
Kentucky
606-248-6600
☐ Spartanburg,
South Carolina
864-574-4775

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DATUM DESCRIPTION
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCOS FOR MONUMENT "BL-2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 634095.377 (ft) EASTING: 1616649.544 (ft) ELEVATION: 663.02 (ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999854
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-2" TO L- STATION 11+05.00 IS S 28° 08' 52.363" W 127.726 (ft)
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BL-1	N 633862.220	E 1616533.997	ELEV 669.61
BL-2	N 634095.377	E 1616649.544	ELEV 663.02
BL-3	N 634318.684	E 1616737.095	ELEV 665.89




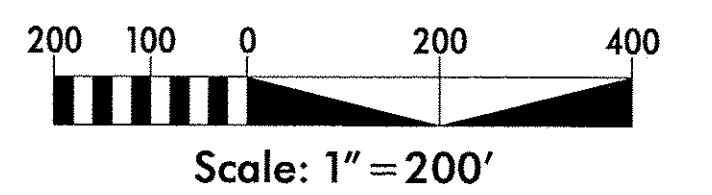
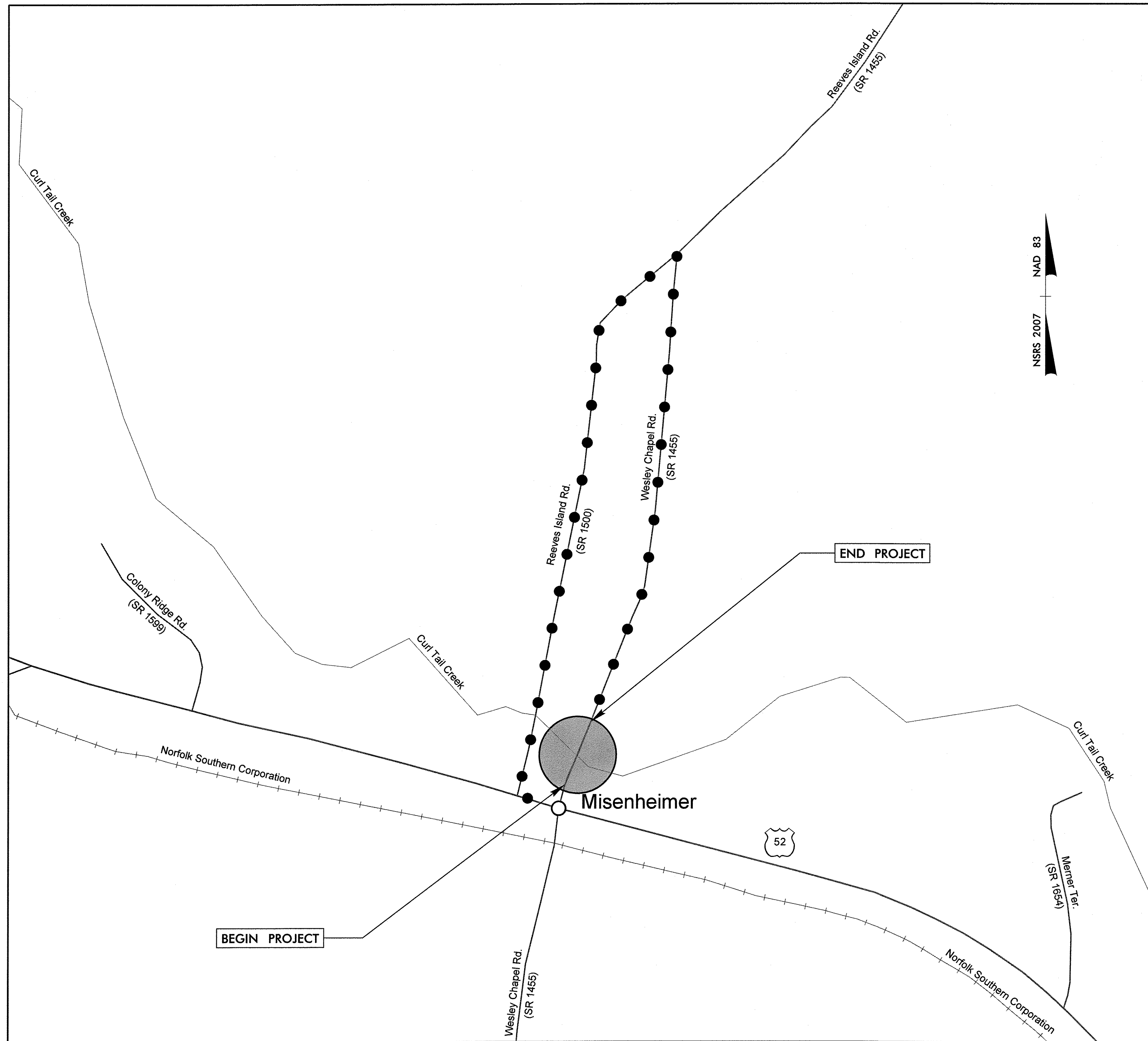
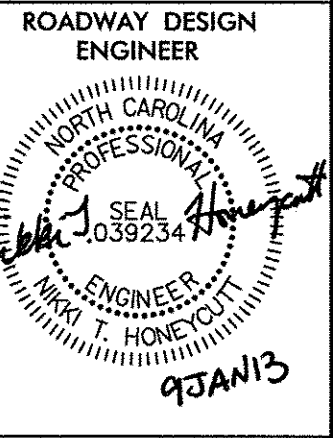
NOTE: INCIDENTAL MILL APPROX 25' AT EACH TIE IN TO PROVIDE A SMOOTH TRANSITION TO THE EXISTING ASPHALT PAVEMENT

REVISIONS

SYTIME\$\$\$\$\$
UNRECORDED
\$\$\$\$\$

DETOUR ROUTE

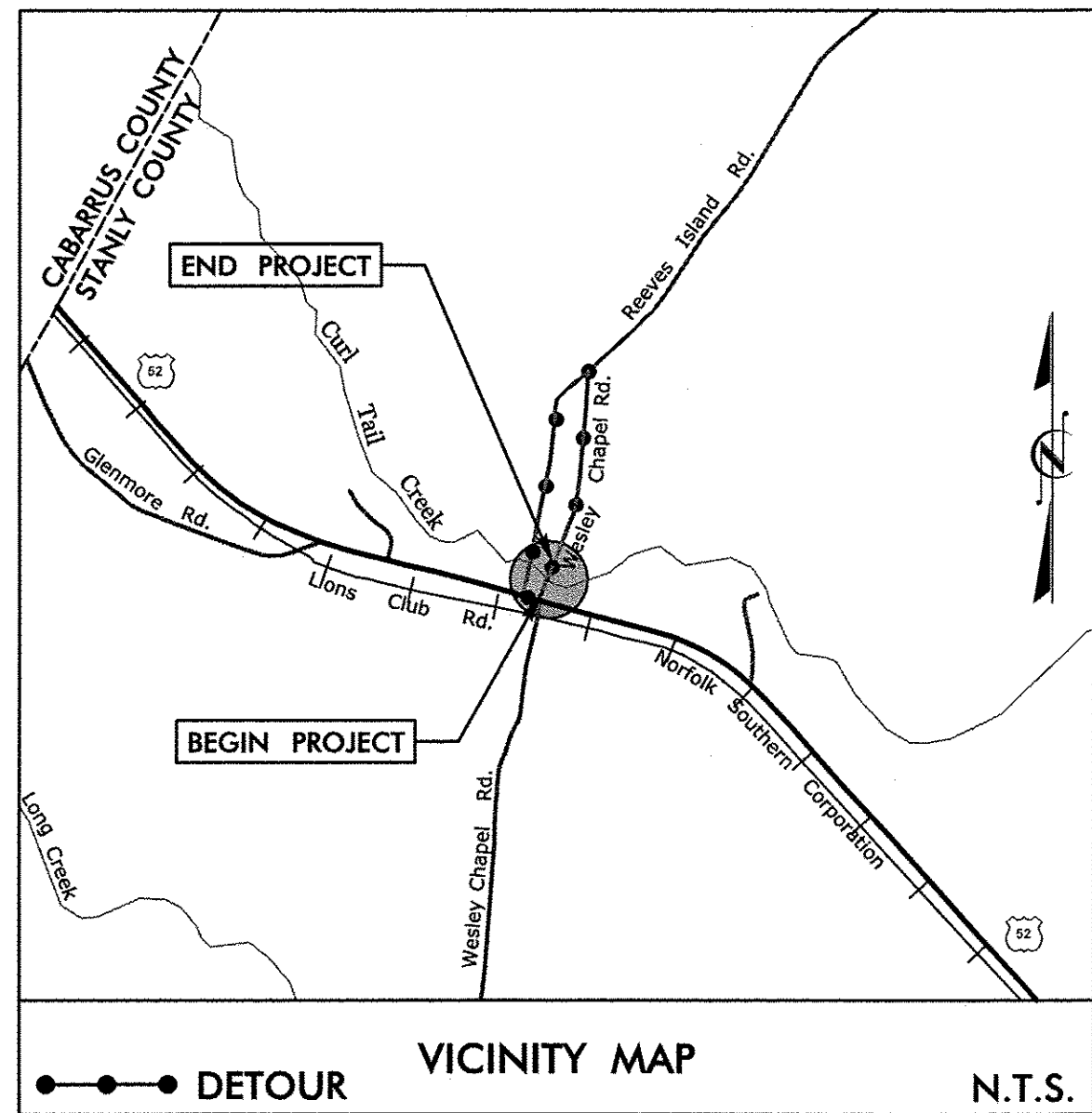
PROJECT REFERENCE NO.	SHEET NO.
17BPJO.R.25	TCP-1
RW SHEET NO.	
	
STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC License Number F-0991	



CONTRACT:

PROJECT: WBS 17BP.10.R.25

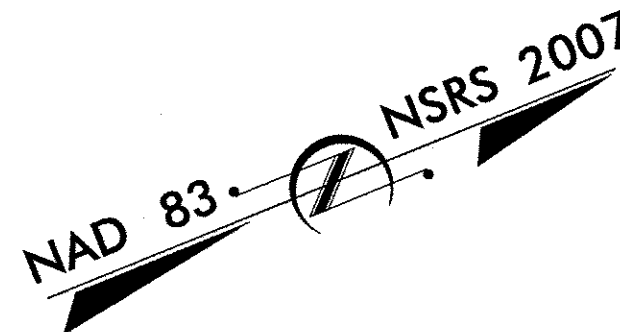
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet



EROSION CONTROL PLANS

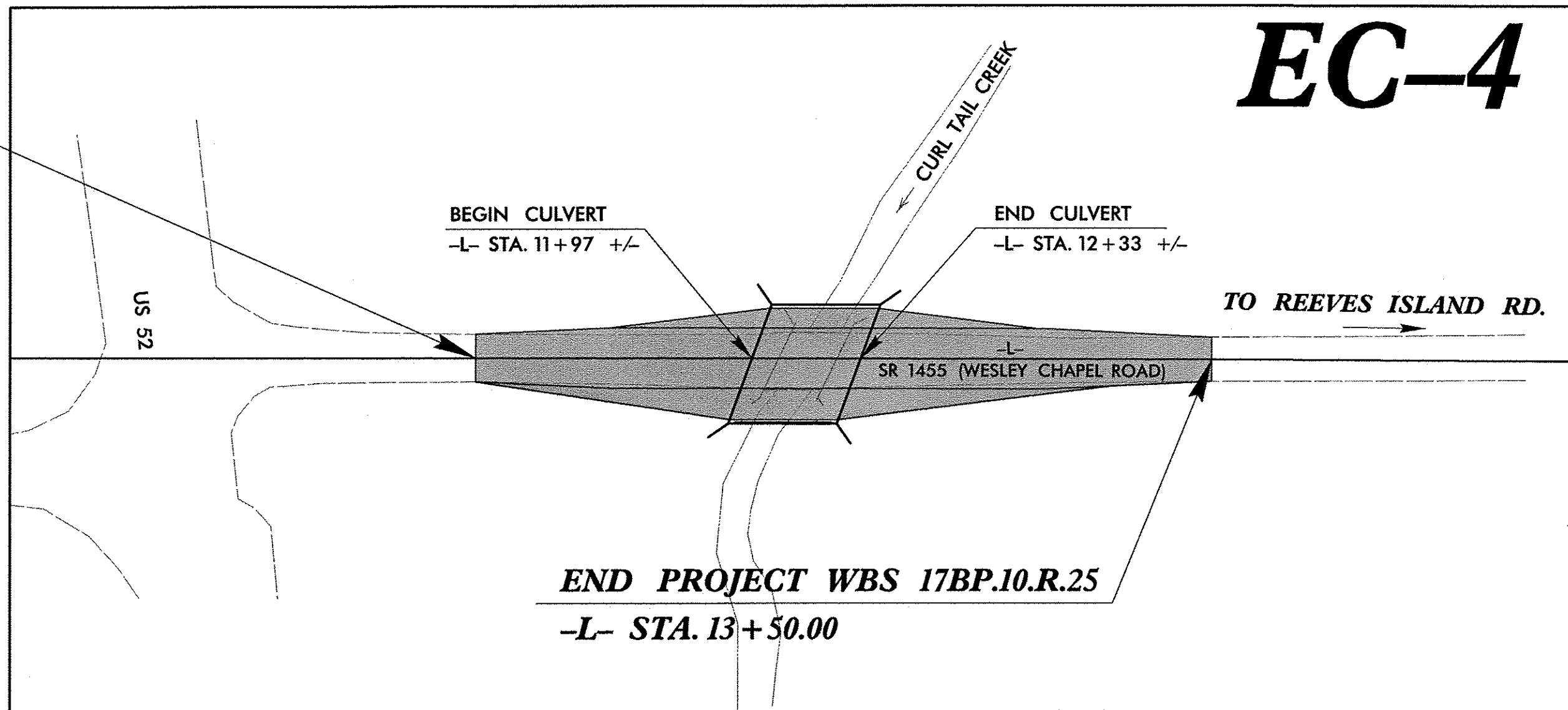
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
STANLY COUNTY

LOCATION: BRIDGE #148 OVER CURL TAIL CREEK
ON SR 1455 (WESLEY CHAPEL ROAD)



BEGIN PROJECT WBS 17BP.10.R.25
-L- STA. 11+05.00

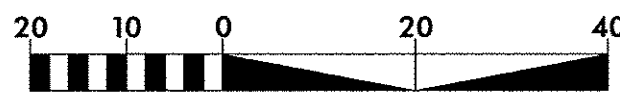
TO NC 49



These Erosion and Sediment Control Plans
comply with the regulations set forth by the
NCG010000 general construction permit
effective August 3, 2011 issued by the North
Carolina Department of Environment and
Natural resources Division of Water Quality.

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

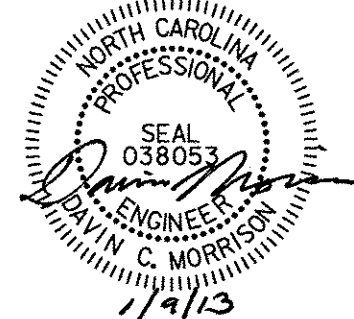
GRAPHIC SCALE



PLANS

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Level III Designer
Davin Morrison, PE #3126



Prepared In the Office of:

STVRALPH WHITEHEAD ASSOCIATES, INC.
1000 West Morehead St., Ste. 200, Charlotte NC, 28208
NC License Number F-0991
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2012 STANDARD SPECIFICATIONS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.10.R.25	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.10.R.25		P.E.	
17BP.10.R.25		R / W & UTILITIES	
17BP.10.R.25		CONST.	

EROSION AND SEDIMENT CONTROL MEASURES

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.

Std. #	Description	Symbol
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1607.01	Gravel Construction Entrance	
1622.01	Temporary Berms and Slope Drains	
1630.01	Riser Basin	
1630.03	Temporary Silt Ditch	
1630.04	Stilling Basin	
1630.05	Temporary Diversion	
1630.06	Special Stilling Basin	
1632.01	Rock Inlet Sediment Trap Type A	A
1632.02	Rock Inlet Sediment Trap Type B	B
1632.03	Rock Inlet Sediment Trap Type C	C
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
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	
SP	Silt Basin Type B	
SP	Skimmer Basin	
SP	Tiered Skimmer Basin	
SP	Infiltration Basin	
SP	Wattle	
SP	Wattle w/ Polyacrylamide (PAM)	
SP	Cair Fiber Matting	

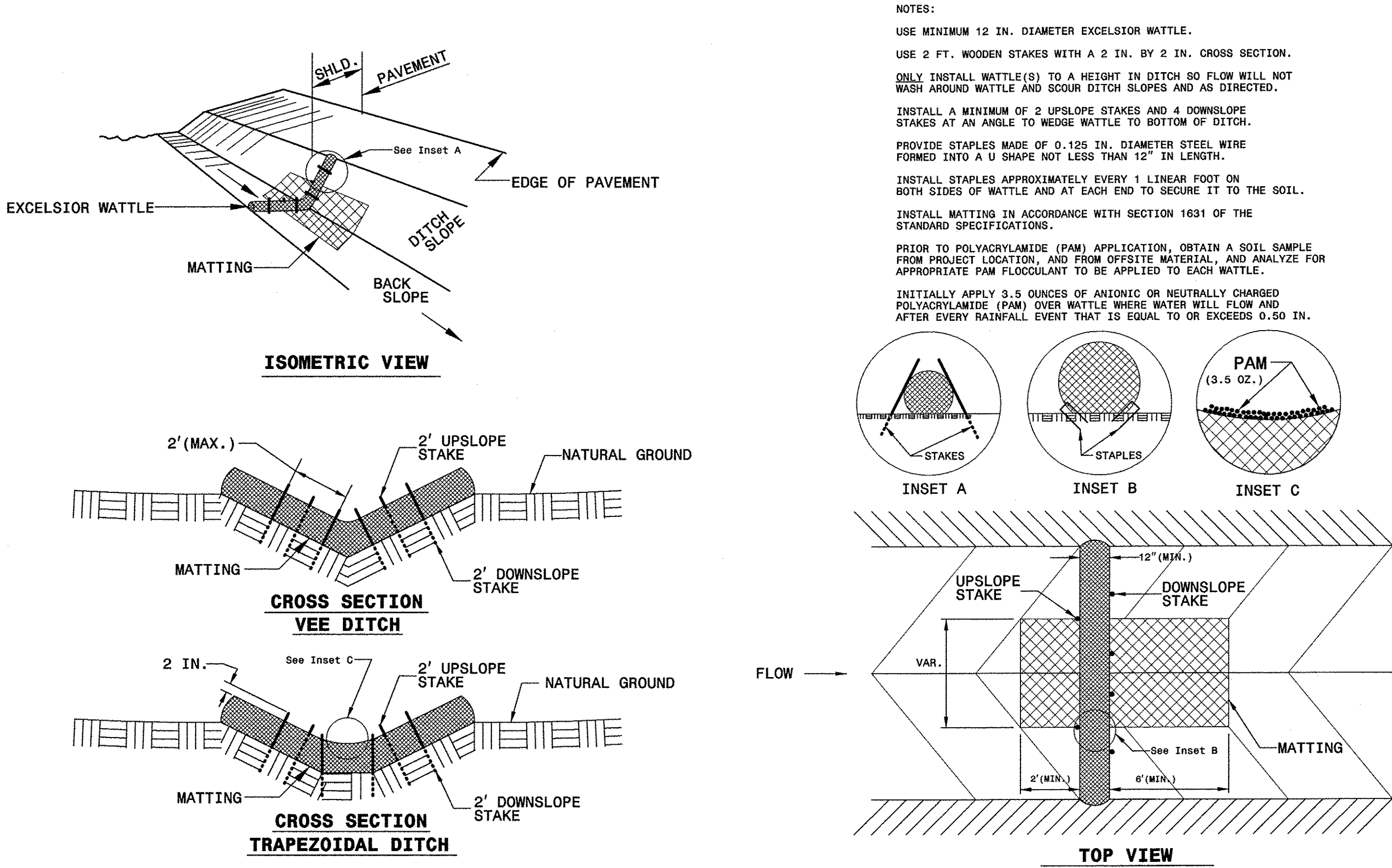
STABILIZATION REQUIREMENTS

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 landdisturbing 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:

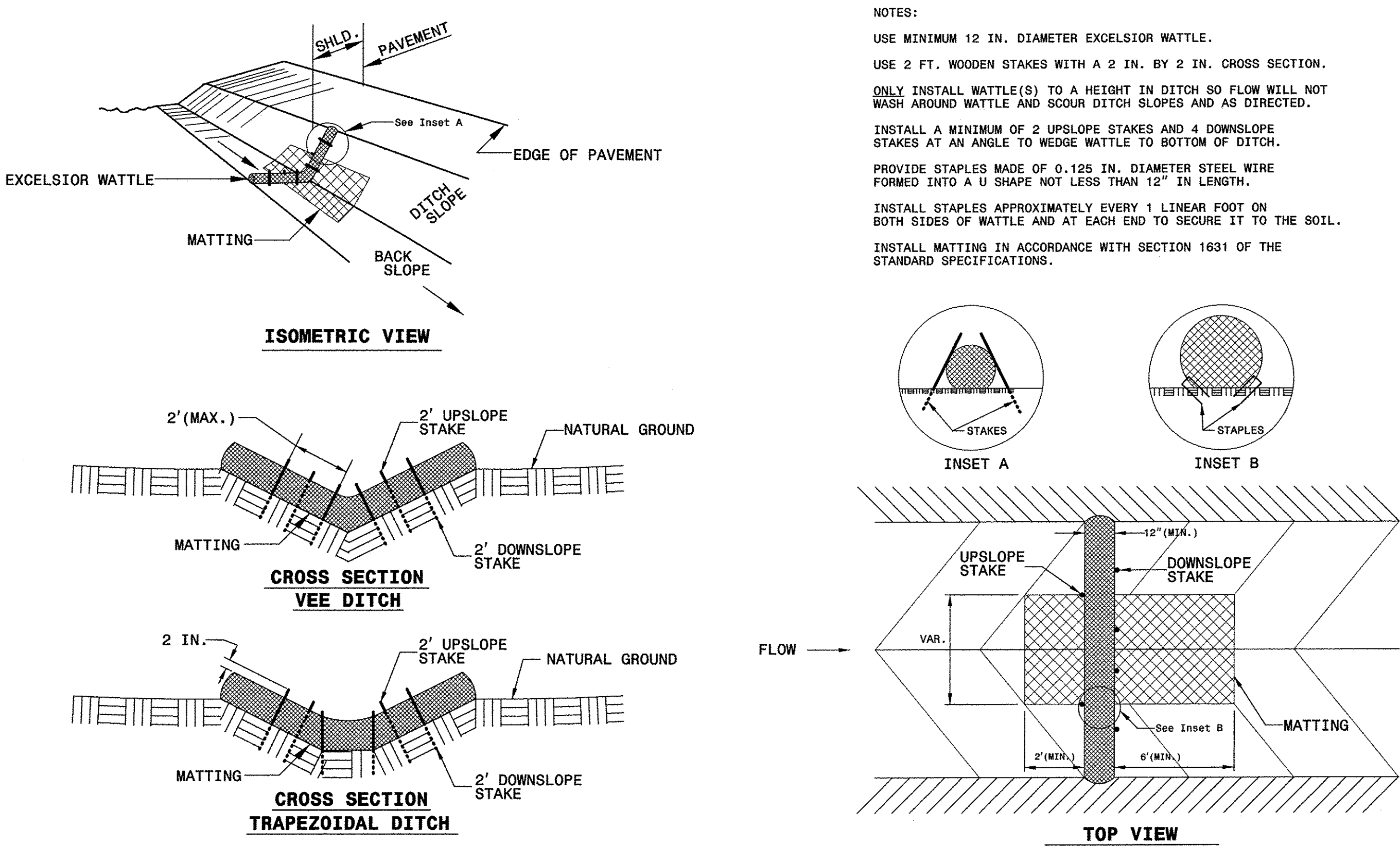
- Slopes between 2:1 and 3:1, with a slope length of 10 ft. or less
- Slopes 3:1 or flatter, with a slope of length of 50 ft. or less
- Slopes 4:1 or flatter

The stabilization timeframe for High Quality Water (HQW) Zones shall be 7 calendar days with no exceptions for slope grades or lengths. High Quality Water Zones (HQW) Zones are defined by North Carolina Administrative Code 15A NCAC 04A.0105 (25). Temporary and permanent ground cover stabilization shall be achieved in accordance with the provisions in this contract and as directed.

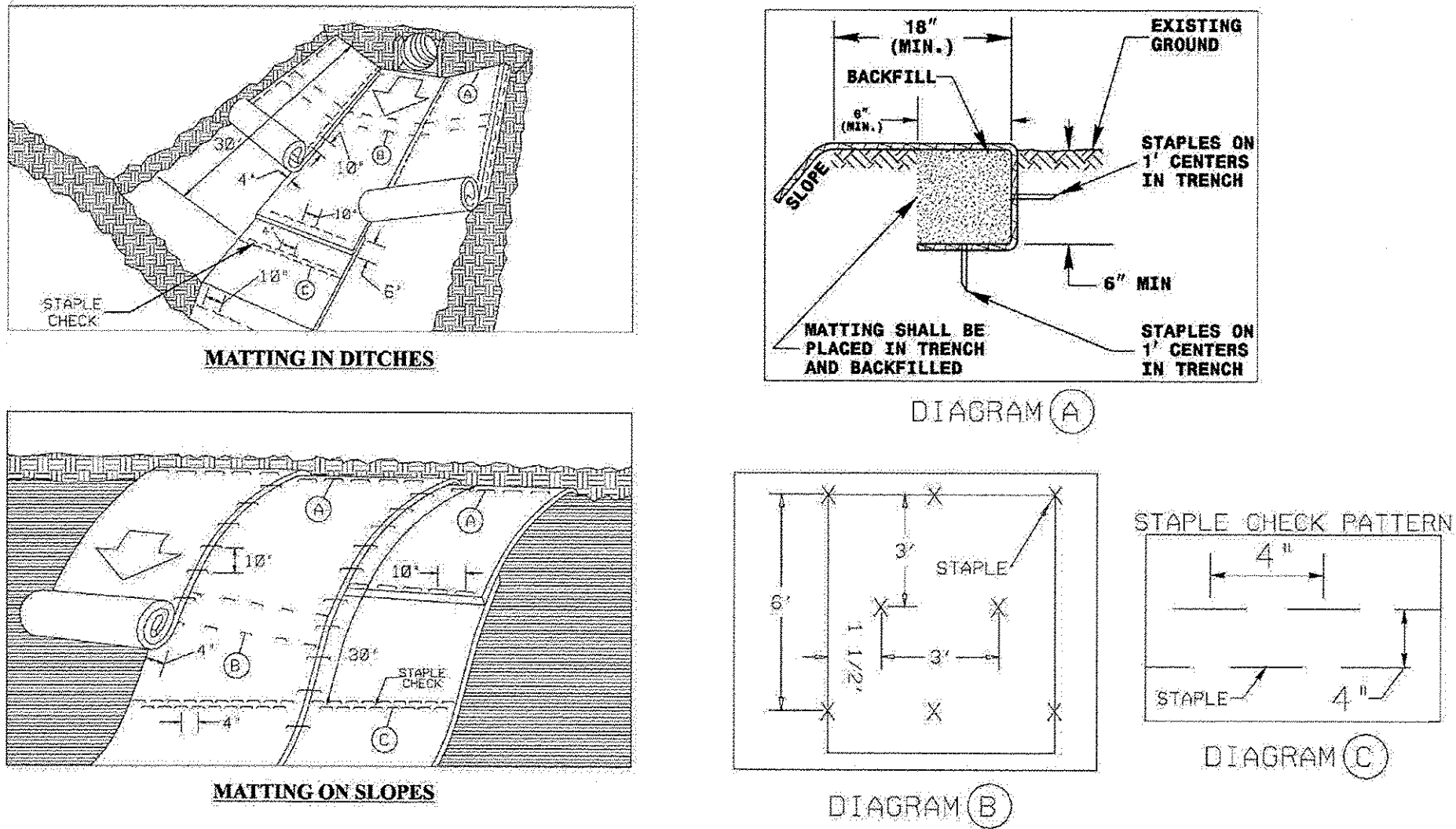
WATTLE WITH POLYACRYLAMIDE DETAIL



WATTLE DETAIL



MATTING INSTALLATION DETAIL



NOTES:

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 6 INCHES IN LENGTH.


DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PROJECT REFERENCE NO.
17BPJ0.R.25

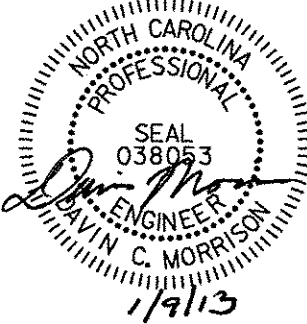
SHEET NO.
EC-3

RW SHEET NO.



STV/ Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC License Number F-0991

HYDRAULICS
ENGINEER

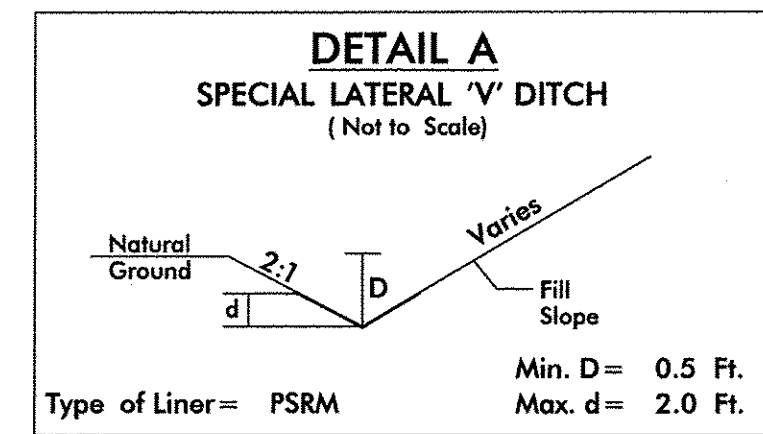


MATTING FOR EROSION CONTROL
(FOR SLOPE STABILIZATION)

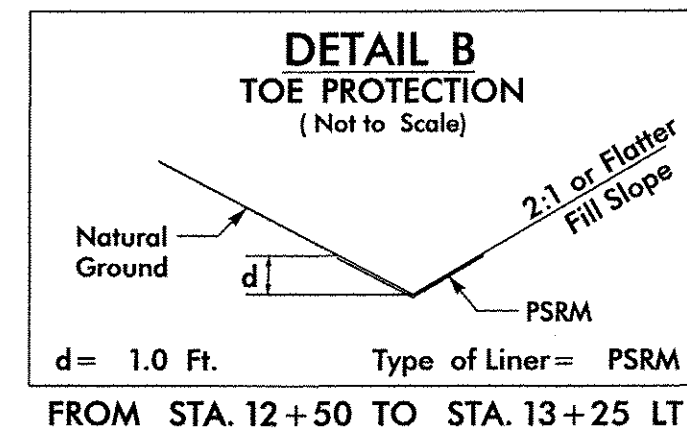
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
			SUBTOTAL		460
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				50
			TOTAL		510
			SAY		510

PERMANENT SOIL REINFORCEMENT MATTING
(FOR DITCH STABILIZATION)

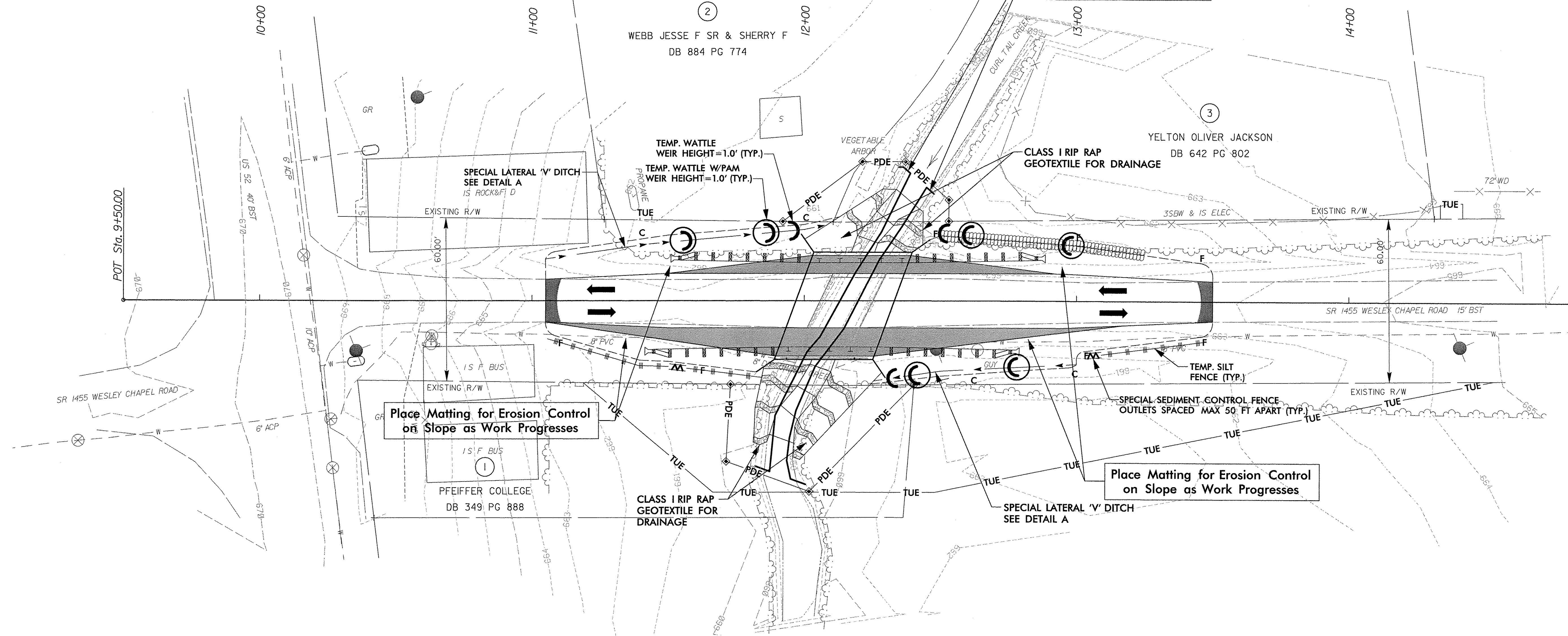
CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L- V-DITCH	11+05	12+08	LT	50
4	-L- V-DITCH	12+26	13+00	RT	35
4	-L- TOE PROTECTION	12+50	13+25	LT	30
			SUBTOTAL		115
	MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER				15
			TOTAL		130
			SAY		130



FROM STA. 11+05 TO STA. 12+08 LT
FROM STA. 12+26 TO STA. 13+00 RT



FROM STA. 12+50 TO STA. 13+25 LT

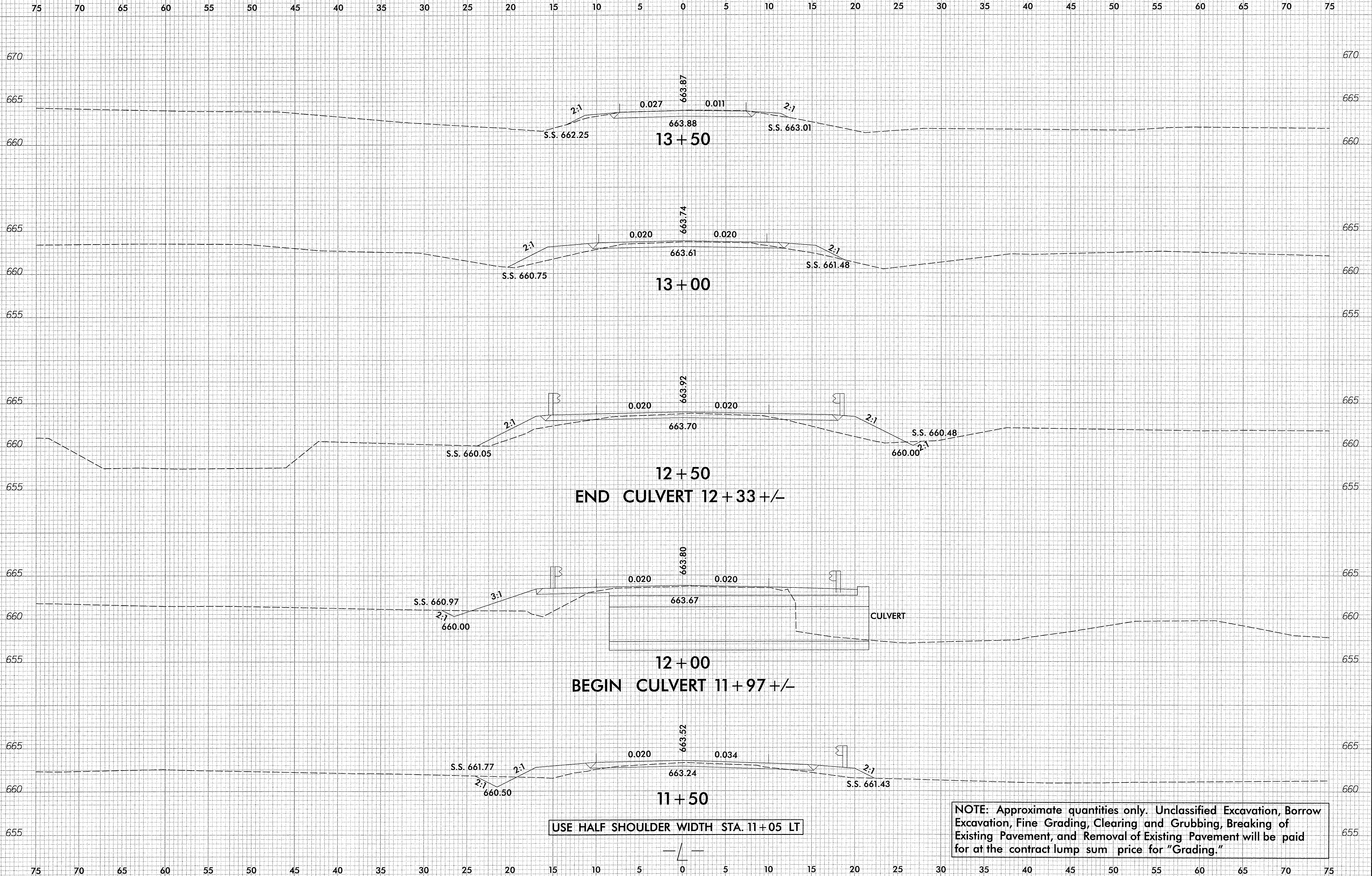


NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

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

8/23/99

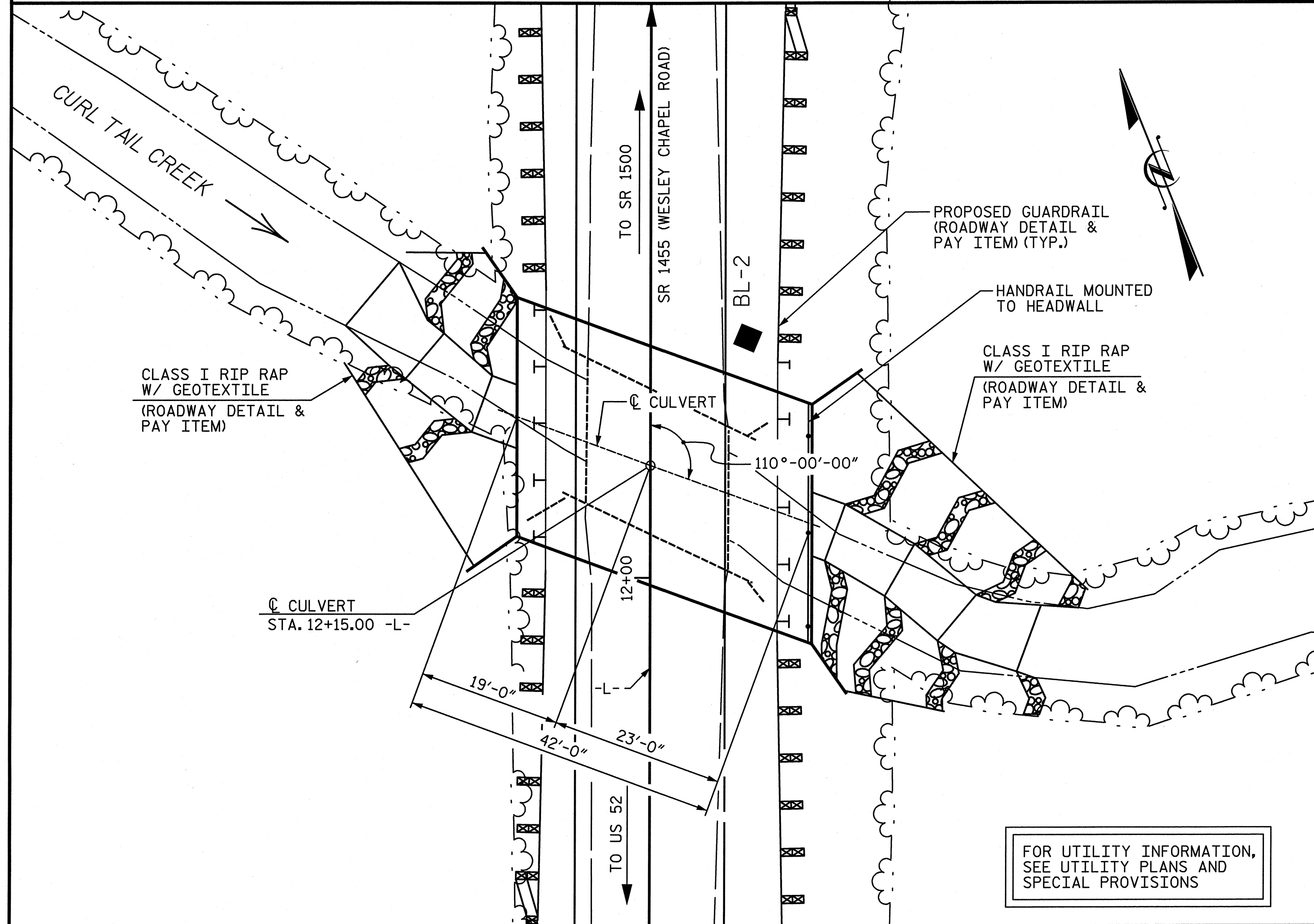
0 2.5 5	PROJ. REFERENCE NO. 17BP.10.R.25	SHEET NO. X-1
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1/9/2013
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8/23/99

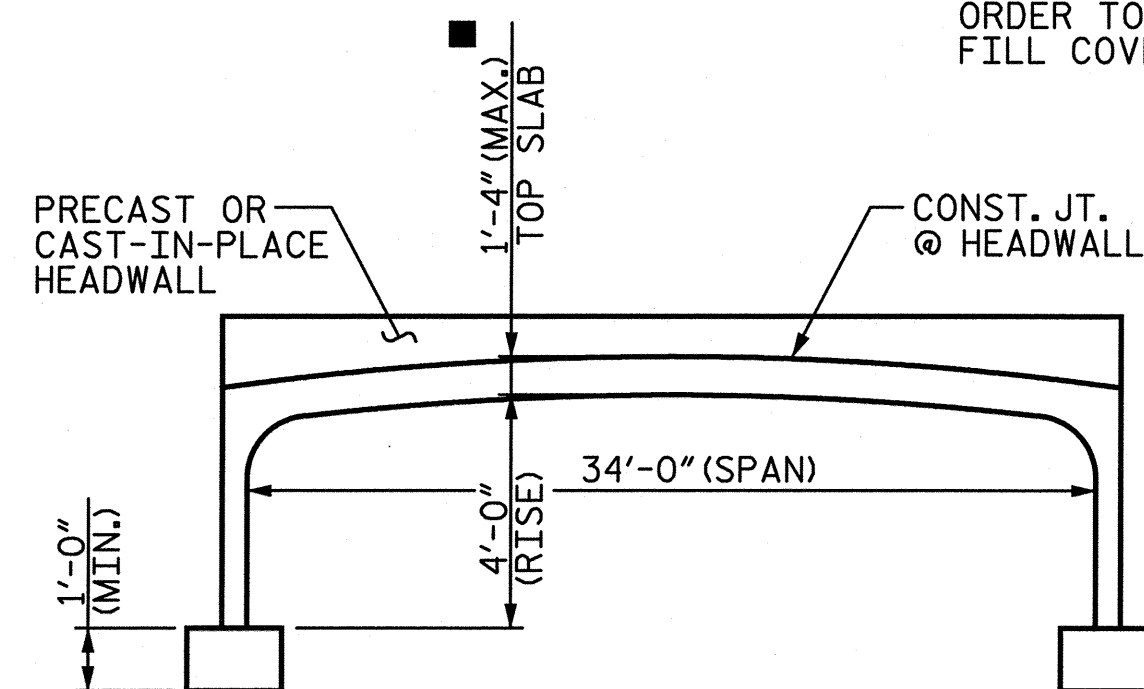
N:\PROJ\2514545\Low Impact Bridge DIV 10\7BP.10.R.25\Structures\Finals\R.25 - (01) Location Sketch.dgn 2/19/12 2:19:46 PM Jg1r1sc0m

BENCHMARK BL-2: 12.97' RT STA. 12+32.07 -L-, N 634095.3770, E 1616649.5440, ELEV. 663.02

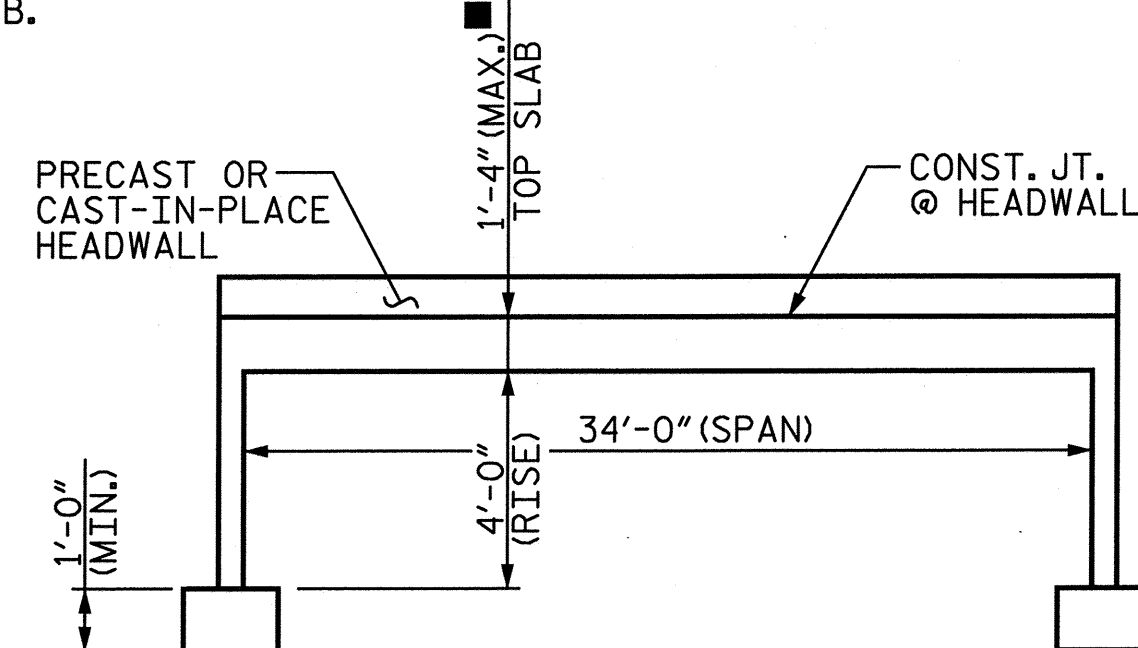


LOCATION SKETCH

■ MAXIMUM ASSUMED TOP SLAB THICKNESS SHALL BE ACHIEVED DURING DESIGN IN ORDER TO MAINTAIN ADEQUATE MINIMUM FILL COVER TO TOP SLAB.



ARCH ALTERNATE



FLAT TOPPED ALTERNATE

RIGHT ANGLE SECTION OF PRECAST CONCRETE THREE-SIDED CULVERT

TOP OF FOOTING EL. = 657.3
MIN. LOW CHORD EL. = 661.3 @ CULVERT

NOTES

ASSUMED LIVE LOAD -----HL-93 OR ALTERNATE LOADING.

MAXIMUM DESIGN FILL----- 1.3'

MINIMUM DESIGN FILL----- 0.75'

THIS STRUCTURE HAS BEEN DESIGNED IN ACCORDANCE WITH "HEC 18 - EVALUATING SCOUR AT BRIDGES."

THE EXISTING STRUCTURE, CONSISTING OF 1-SPAN AT 20'-4" TIMBER DECK ON TIMBER JOISTS WITH A 19.2' CLEAR ROADWAY WIDTH AND SUPPORTED ON A SUBSTRUCTURE OF TIMBER CAPS AND PILES AND LOCATED AT THE PROPOSED STRUCTURE, SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS NOT TO ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATION.

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

FOR PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT, SEE SPECIAL PROVISIONS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

HYDRAULIC DATA

DESIGN DISCHARGE: 550 CFS
FREQUENCY OF DESIGN FLOOD: 10 YRS.
DESIGN HIGH WATER ELEVATION: 662.9
DRAINAGE AREA: 1.7 SQ. MI.
BASIC DISCHARGE (Q100): 1000 CFS
BASIC HIGH WATER ELEVATION: 664.39

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE: 550± CFS
FREQUENCY OF OVERTOPPING FLOOD: 10± YRS.
OVERTOPPING FLOOD ELEVATION: 663.3

GRADE DATA

GRADE POINT ELEVATION @
STA. 12+15.00 -L- 663.85

BED ELEVATION @
STA. 12+15.00 -L- 657.66

ROADWAY FILL SLOPES 2:1 (MAX.)

THE PRECAST CULVERT SECTIONS AND WINGS SHALL BE DESIGNED TO HANDLE FULL DEPTH HYDROSTATIC PRESSURE IF WEEP HOLES ARE NOT UTILIZED. IF PROVIDED, WEEP HOLES SHALL BE LOCATED A MINIMUM HEIGHT OF 6 INCHES ABOVE THE NORMAL FLOW LINE AND HAVE A MAXIMUM SPACING OF 10 FEET.

THE REQUIRED BEARING CAPACITY OF THE SPREAD FOOTINGS IS 4 TSF. THE REQUIRED BEARING CAPACITY SHALL BE VERIFIED.

FOOTINGS SHALL BE KEYED A MINIMUM OF 12 INCHES INTO ROCK WITH A MINIMUM THICKNESS AS SHOWN ON THE PLANS.

TO PROVIDE PROTECTION FROM POSSIBLE SCOUR, THE FOOTING SHALL NOT BE CONSTRUCTED AT AN ELEVATION HIGHER THAN SHOWN ON THE PLANS.

SCOUR PROTECTION SHALL BE REQUIRED. RIP RAP NOT TO BE PLACED ABOVE THE STREAMBED.

THE SCOUR CRITICAL ELEVATION IS THE AS BUILT BOTTOM OF FOOTING ELEVATION. THE SCOUR CRITICAL ELEVATIONS ARE FOR USE BY MAINTENANCE FORCES TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR BLASTING ADJACENT TO HIGHWAY STRUCTURES, SEE STANDARD SPECIFICATIONS ARTICLE 410-9.

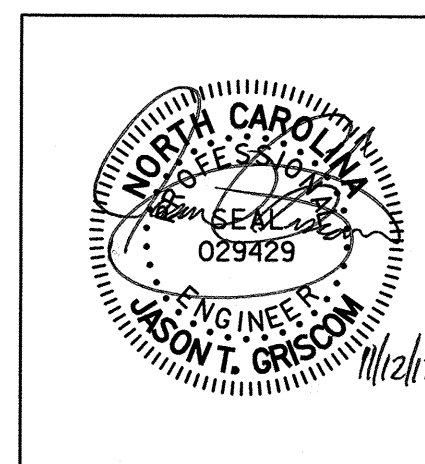
THE BOTTOM OF FOOTING ELEVATION MAY BE LOWERED IN ORDER TO SATISFY BEARING CAPACITY AND MINIMUM ROCK EMBEDMENT REQUIREMENTS.

TOTAL STRUCTURE QUANTITIES

REMOVAL OF EXISTING STRUCTURE @ STA. 12+15.00 -L-	LUMP SUM
PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT @ STA. 12+15.00 -L-	LUMP SUM
CLASS A CONCRETE	24.0 CU. YDS.
HANDRAIL	36.0 LIN. FT.

PROJECT NO. 17BP.10.R.25
STANLY COUNTY
STATION: 12+15.00 -L-

SHEET 1 OF 4 REPLACES BRIDGE NO. 148



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT
110° SKEW

REVISIONS

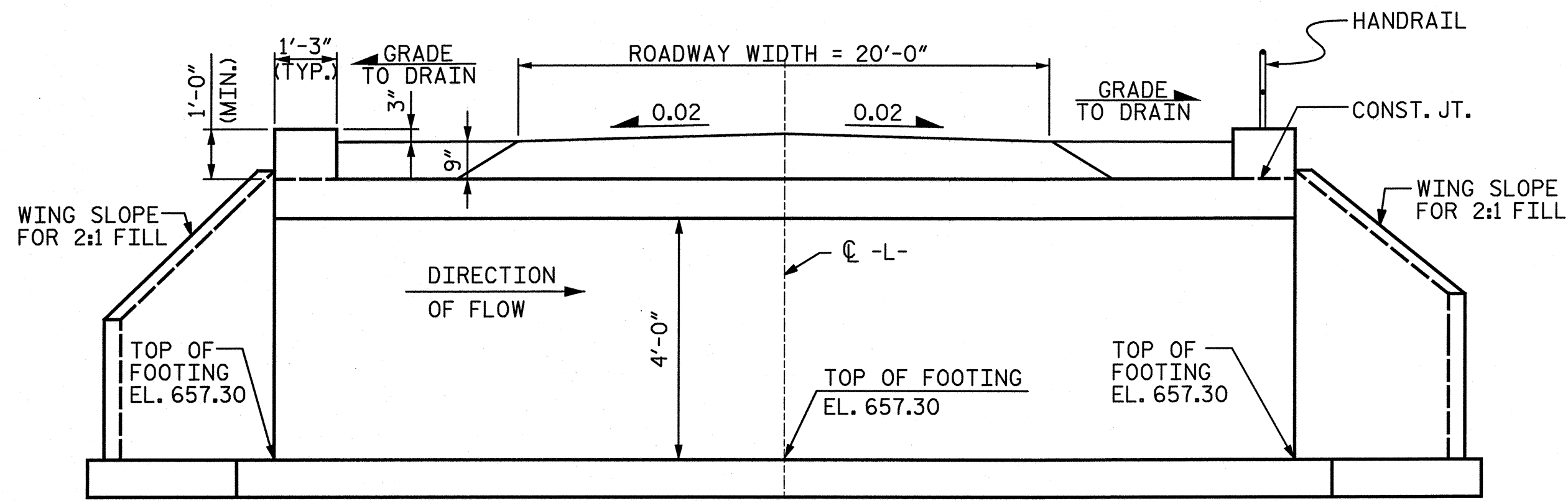
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO.
C-1

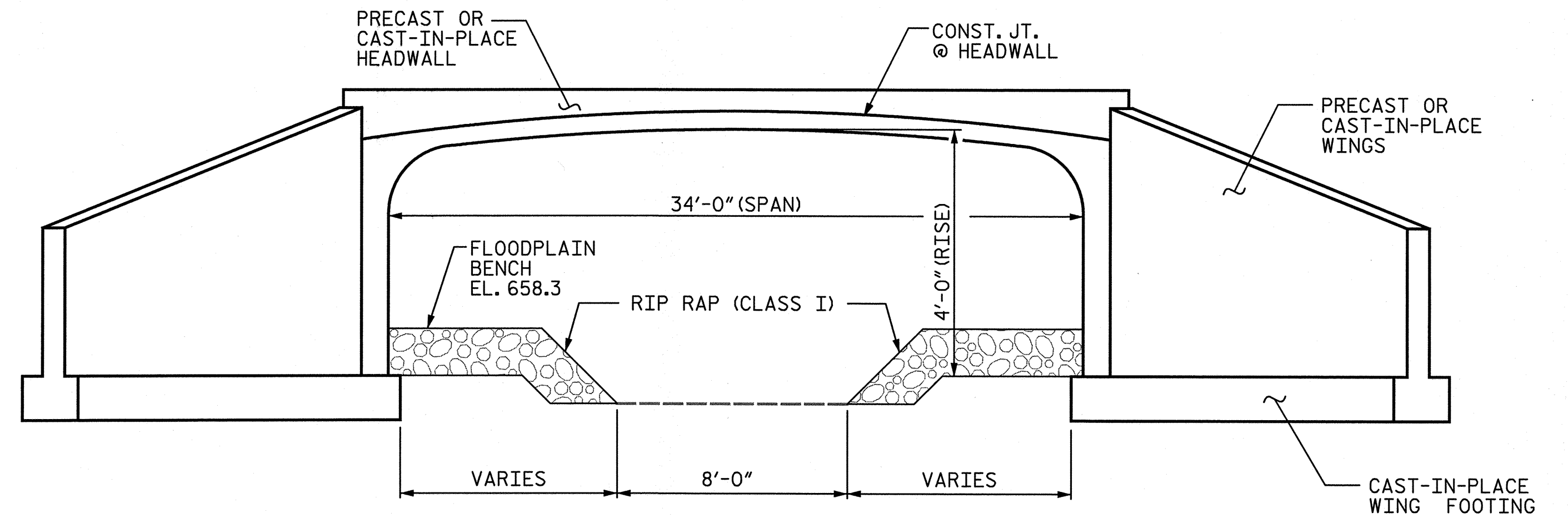
TOTAL SHEETS
4

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Charlotte, NC 28208
NC License No. F-0991

DRAWN BY : LEM DATE : 8-12
CHECKED BY : JTG DATE : 10-12

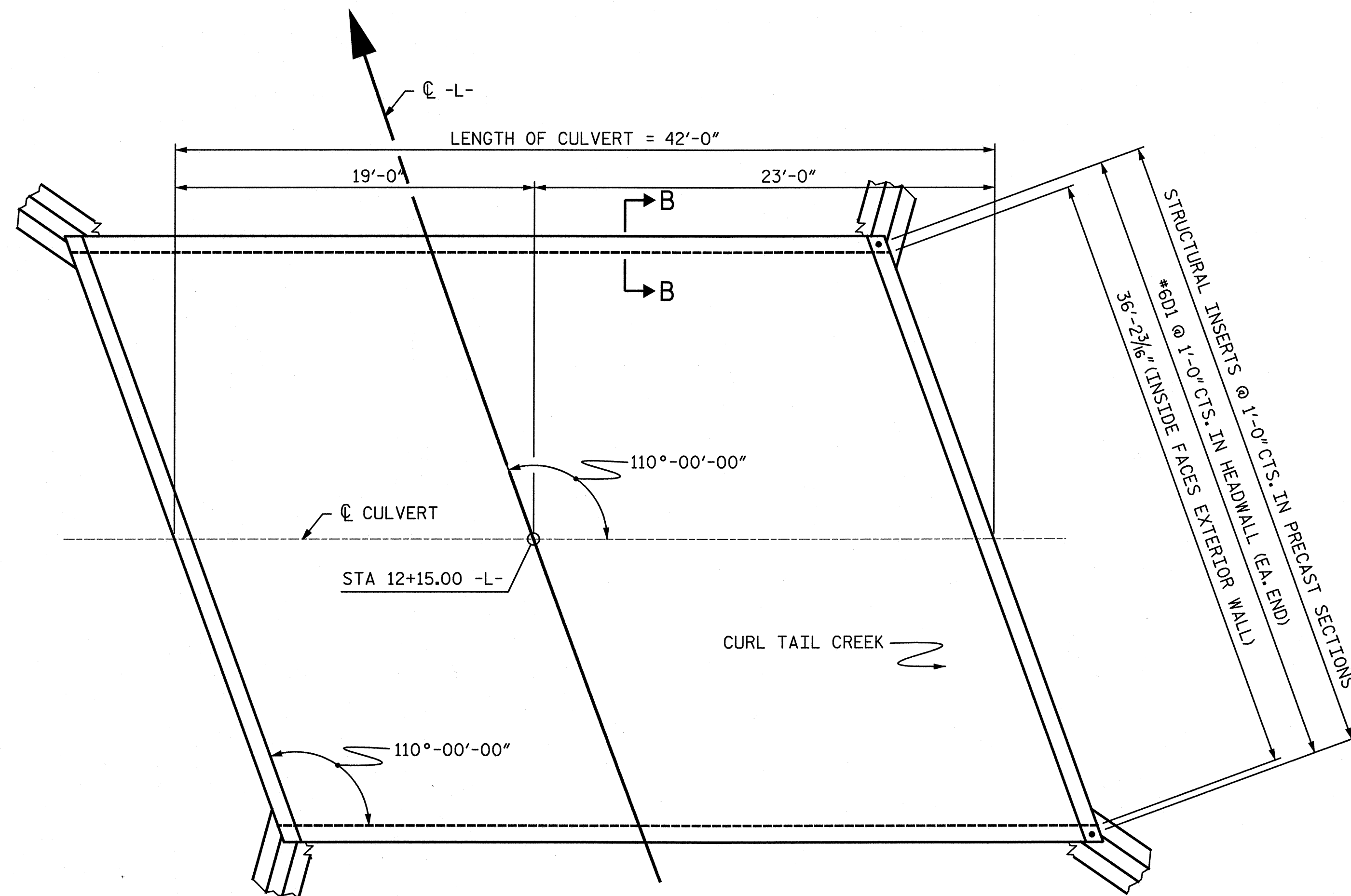


CULVERT SECTION NORMAL TO ROADWAY



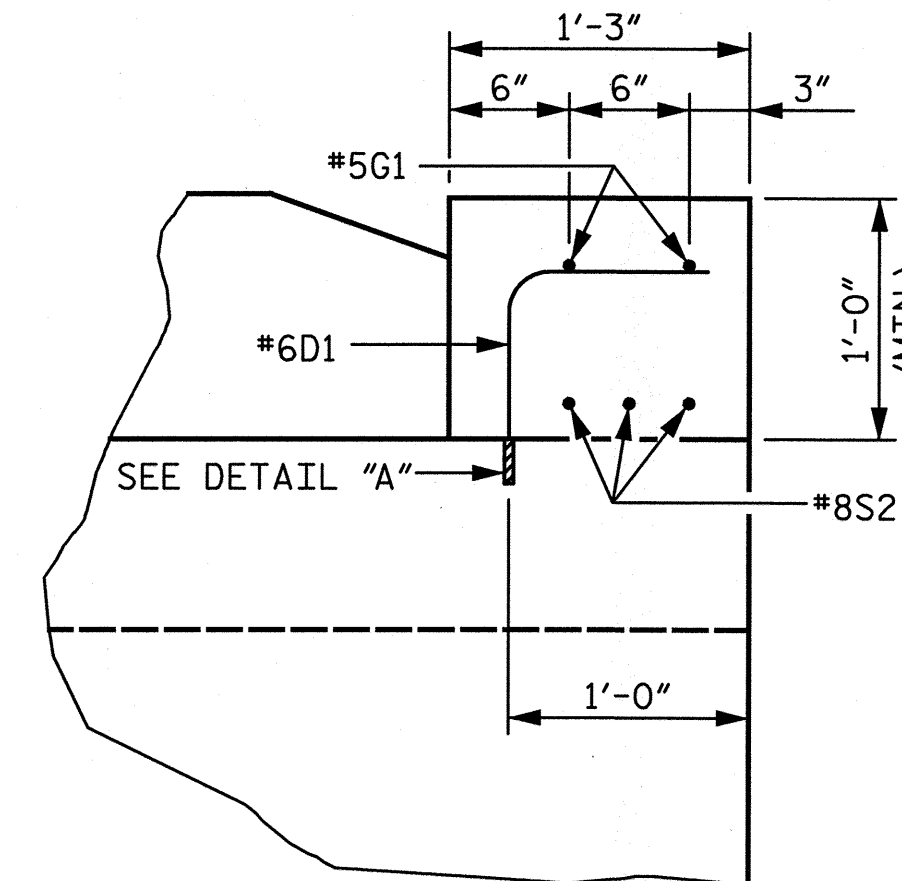
END ELEVATION NORMAL TO SKEW

(SECTION THRU CULVERT SIMILAR)

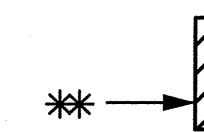


LENGTH FOR PRECAST THREE-SIDED CULVERT

(SEE SHEET 3 OF 4 FOR SECTION B-B)



SECTION THRU HEADWALL



DETAIL "A"

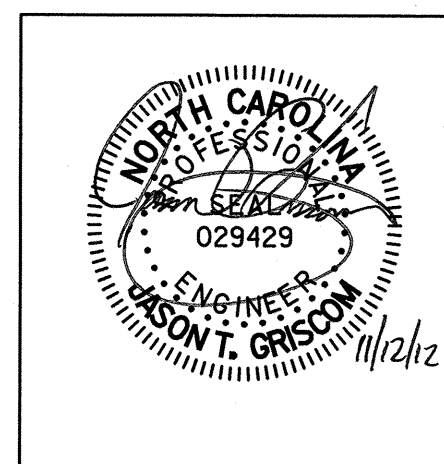
** APPROVED GALVANIZED CONCRETE INSERTS HAVING A MINIMUM WORKING LOAD TENSION CAPACITY OF 2.5 KIPS. DIA. = 3/4", NO. REQUIRED 74

BAR SCHEDULE					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
D1	74	#6	①	1'-8"	185
G1	4	#5	STR	36'-8"	153
S2	6	#8	STR	36'-8"	587
TOTAL				LBS	925

BAR TYPE	
①	D1
②	11"
③	2 1/4" THREADED

PROJECT NO. 17BP.10.R.25
STANLY COUNTY
STATION: 12+15.00 -L-

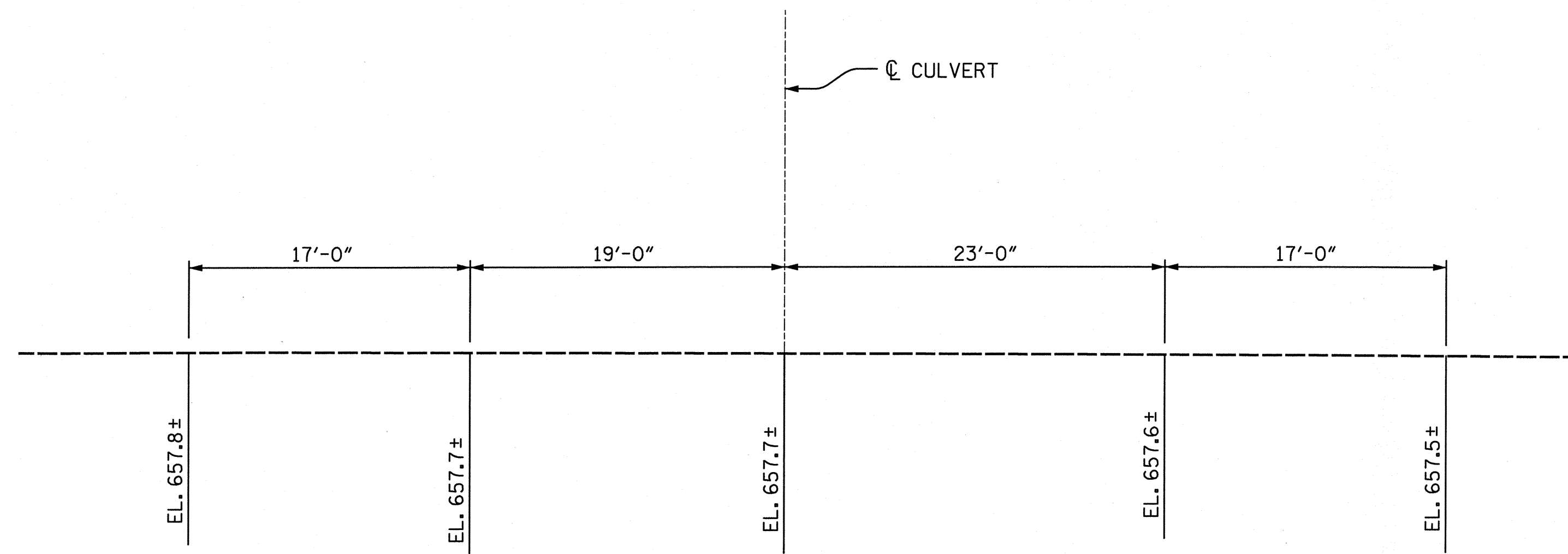
SHEET 2 OF 4



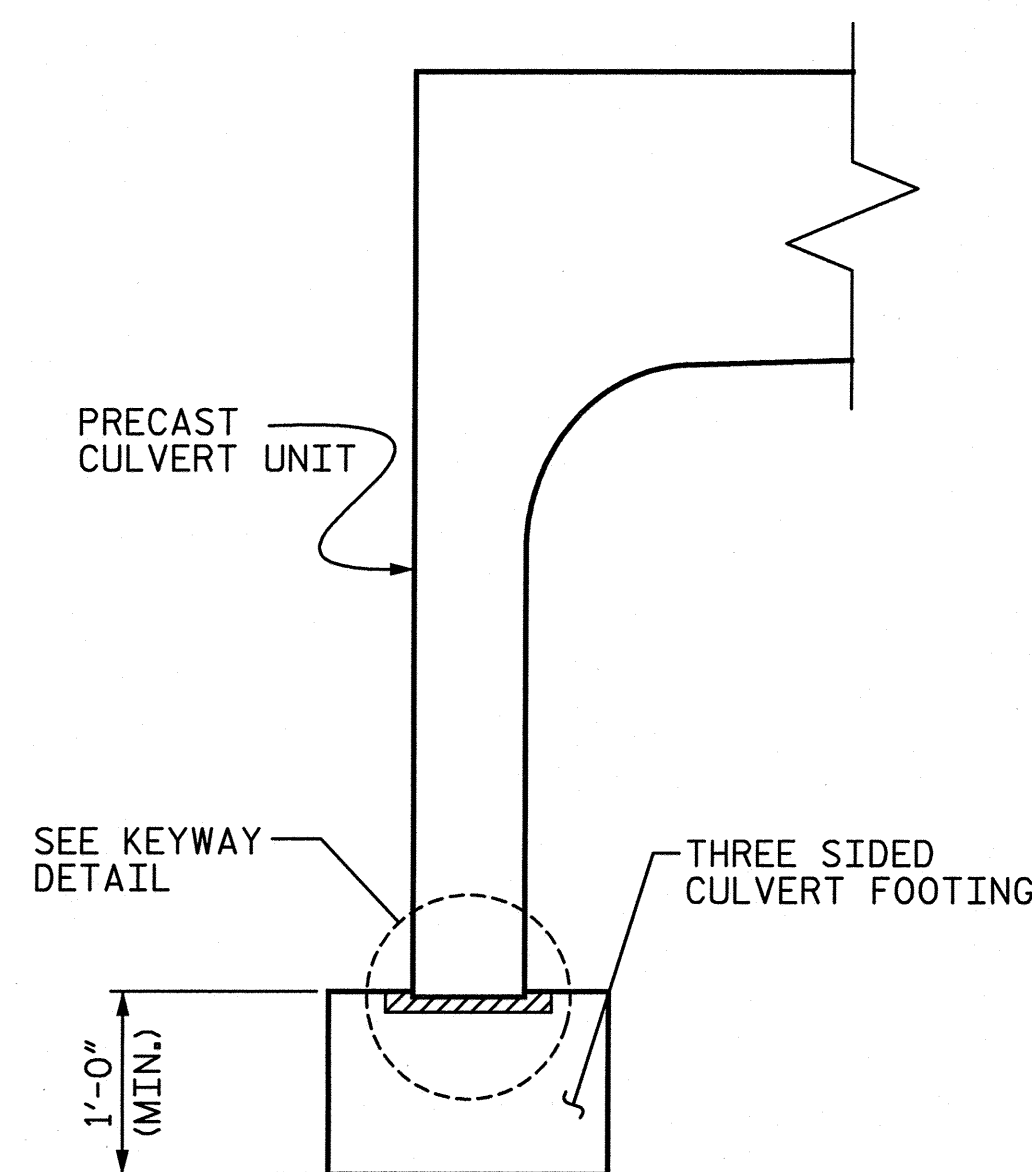
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
PRECAST REINFORCED CONCRETE THREE-SIDED CULVERT 110° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. C-2
TOTAL SHEETS 4

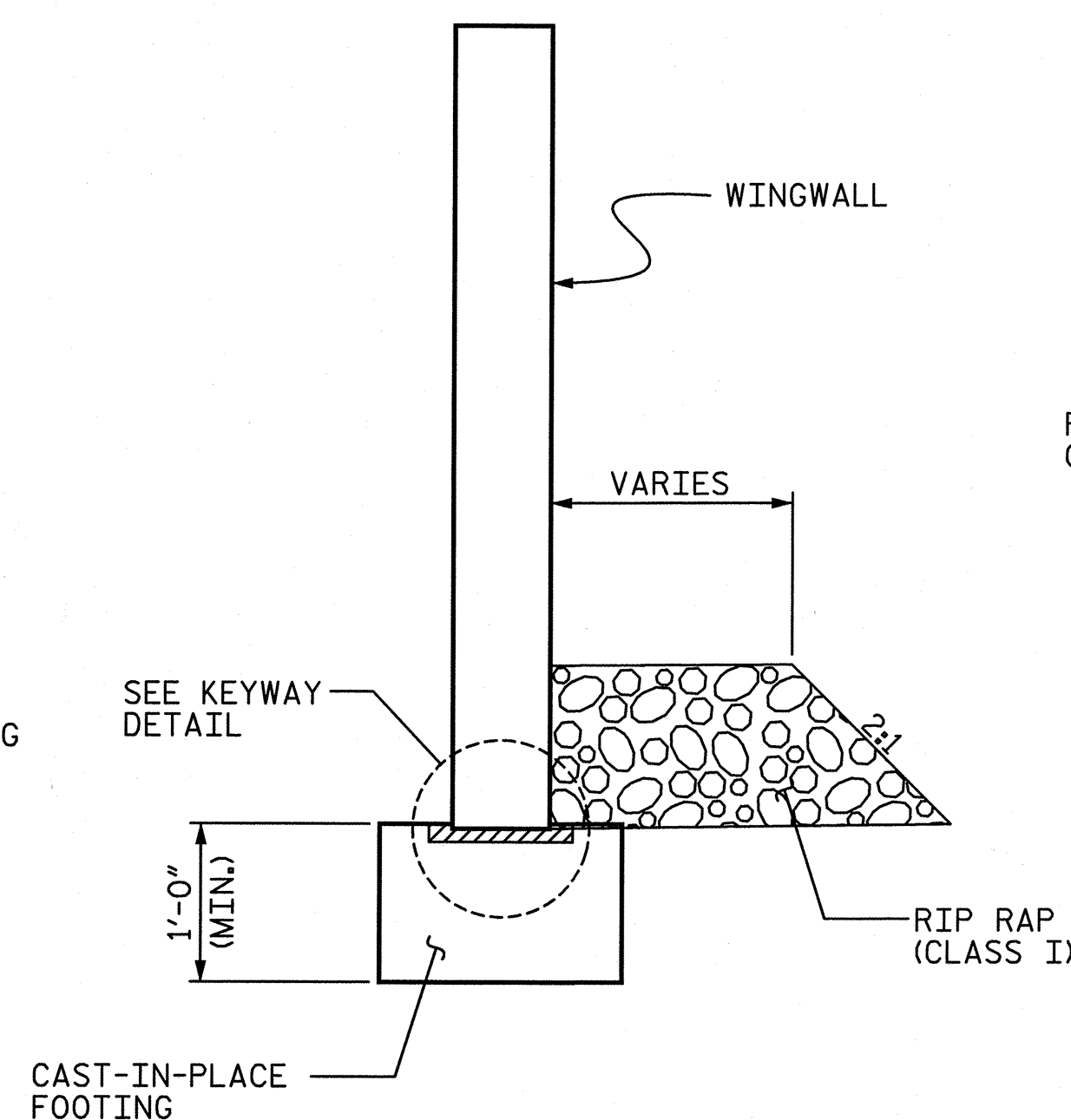
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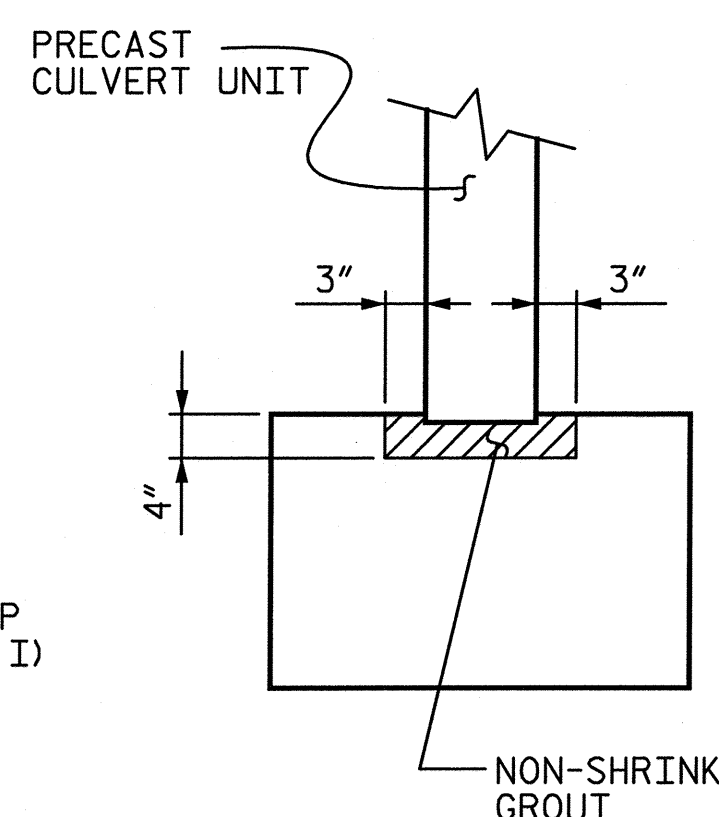
PROFILE ALONG CL CULVERT



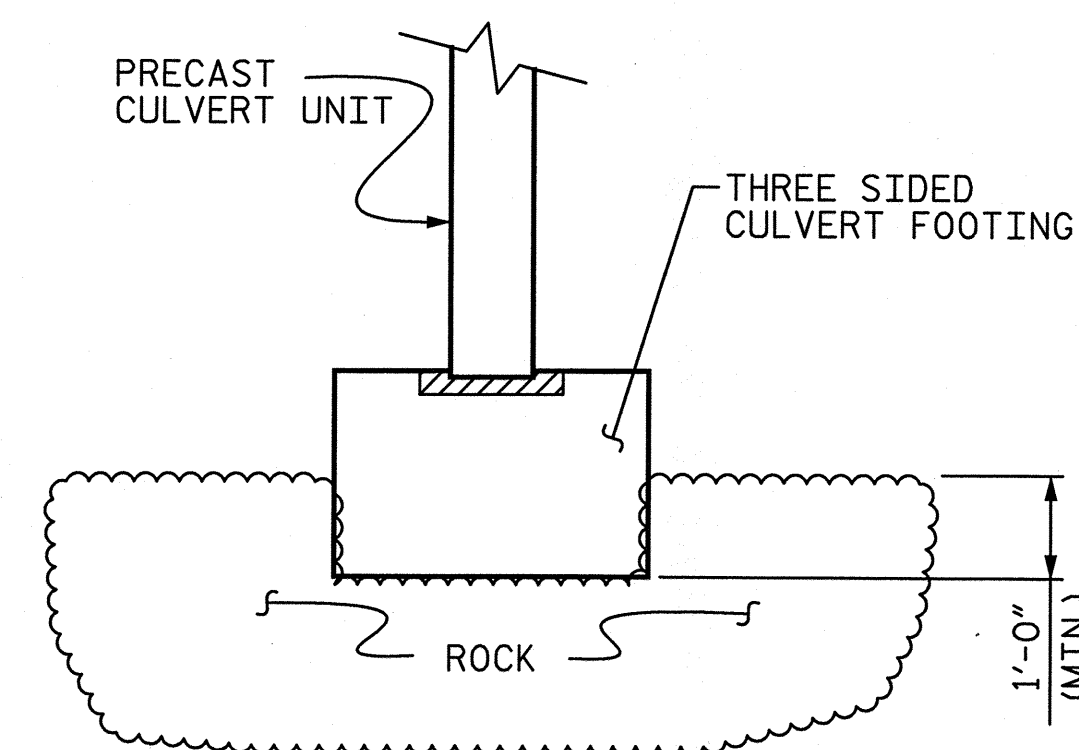
SECTION B-B



SECTION THRU WINGWALL



KEYWAY DETAIL

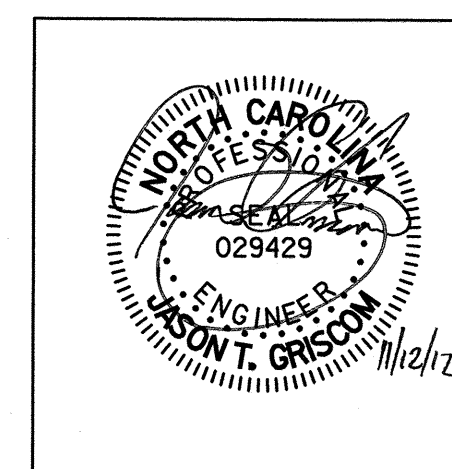


KEYED FOOTING DETAIL

SIDES OF FOOTING SHALL BE IN CONTACT WITH UNDISTURBED MATERIAL FOR MINIMUM DIMENSION SHOWN.

PROJECT NO. 17BP.10.R.25
STANLY COUNTY
STATION: 12+15.00 -L-

SHEET 3 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PRECAST REINFORCED
CONCRETE THREE-SIDED
CULVERT
110° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-3
2			4			TOTAL SHEETS
						4

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DRAWN BY: LEM DATE: 8-12
CHECKED BY: JTG DATE: 10-12

GUARDRAIL ATTACHMENT NOTES

ALL GUARDRAIL ATTACHMENTS SHALL BE MADE USING ADHESIVELY ANCHORED ANCHOR BOLTS. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1" Ø BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.

ANCHOR BOLTS, NUTS, AND WASHERS SHALL BE 1" Ø AND MEET THE REQUIREMENTS OF ASTM A325. BOLTS, NUTS, AND WASHERS SHALL BE GALVANIZED.

PAYMENT FOR GUARDRAIL, POSTS, AND POST BASE PLATES IS INCLUDED IN ROADWAY PAY ITEMS.

HANDRAIL NOTES

HANDRAIL SHALL BE 2" Ø SCHEDULE 40 STEEL PIPE AND SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

THREADED RODS, NUTS, AND WASHERS SHALL BE 1/2" Ø AND MEET THE REQUIREMENTS OF ASTM A325.

ALL HANDRAIL ATTACHMENTS SHALL BE MADE USING ADHESIVELY ANCHORED ANCHOR BOLTS. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 1/2" Ø BOLT IS 7.0 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS, SEE STANDARD SPECIFICATIONS.

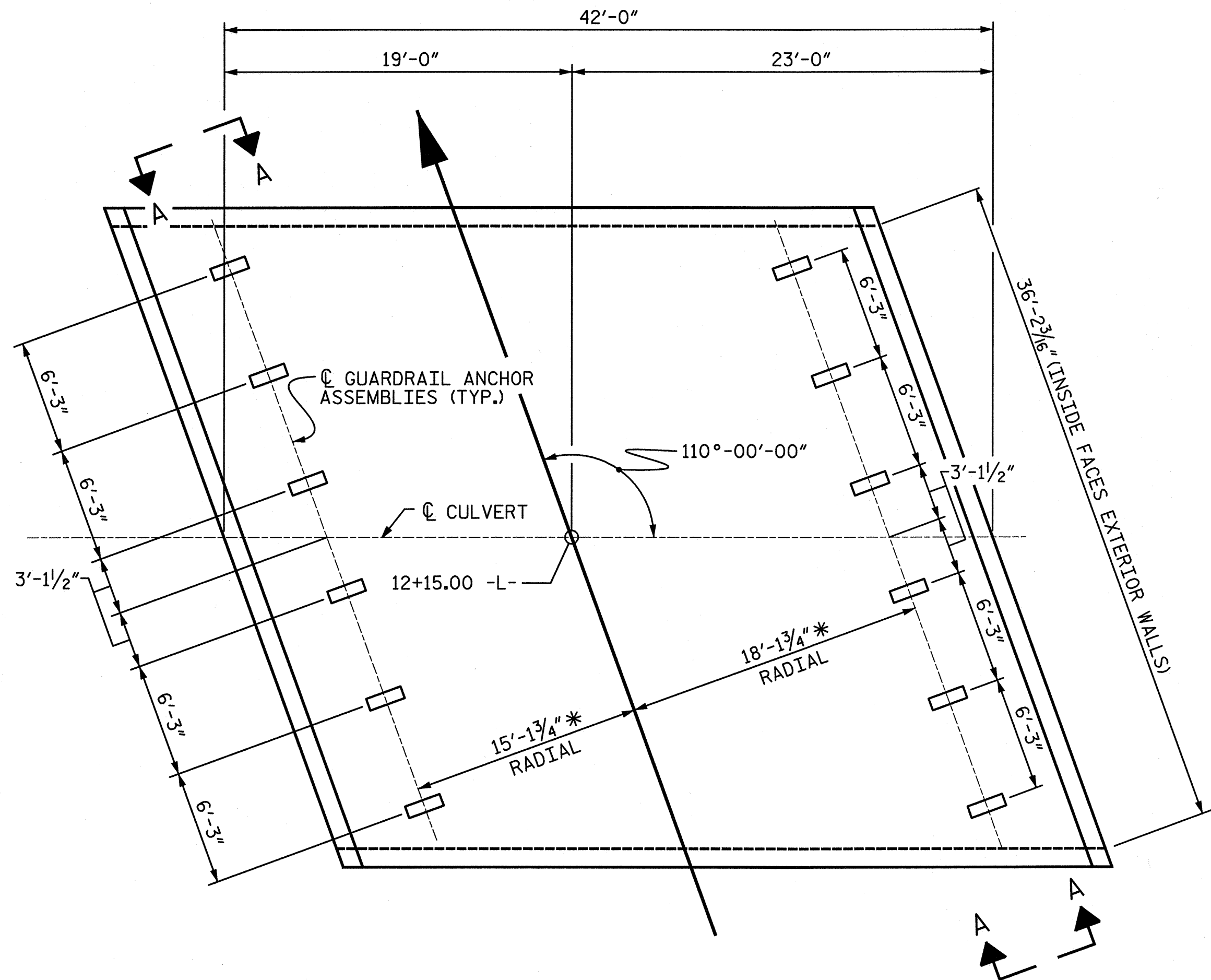
AFTER TIGHTENING OF NUT, ANCHOR ROD THREAD SHALL BE BURRED WITH A SHARP POINTED TOOL.

BASE PLATE SHALL MEET THE REQUIREMENTS OF ASTM A36.

THE BASE PLATE, NUTS, WASHERS, AND ANCHOR RODS SHALL BE GALVANIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

DAMAGE TO GALVANIZED SURFACES SHALL BE REPAIRED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

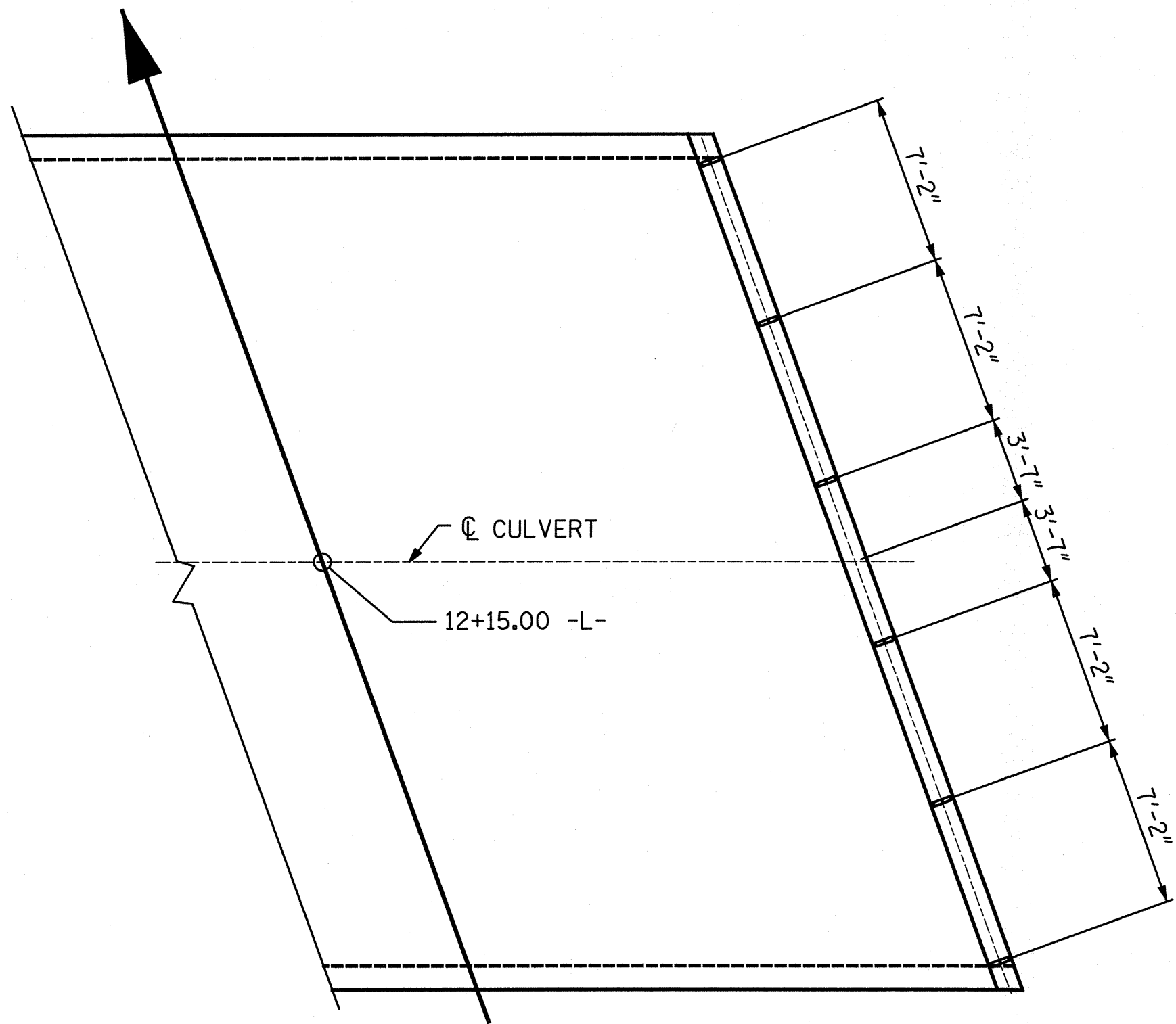
ALL COSTS FOR FURNISHING AND INSTALLING HANDRAIL SHALL BE INCLUDED IN THE UNIT PRICE BID FOR "HANDRAIL".



PLAN OF PRECAST CULVERT GUARDRAIL POST SPACING

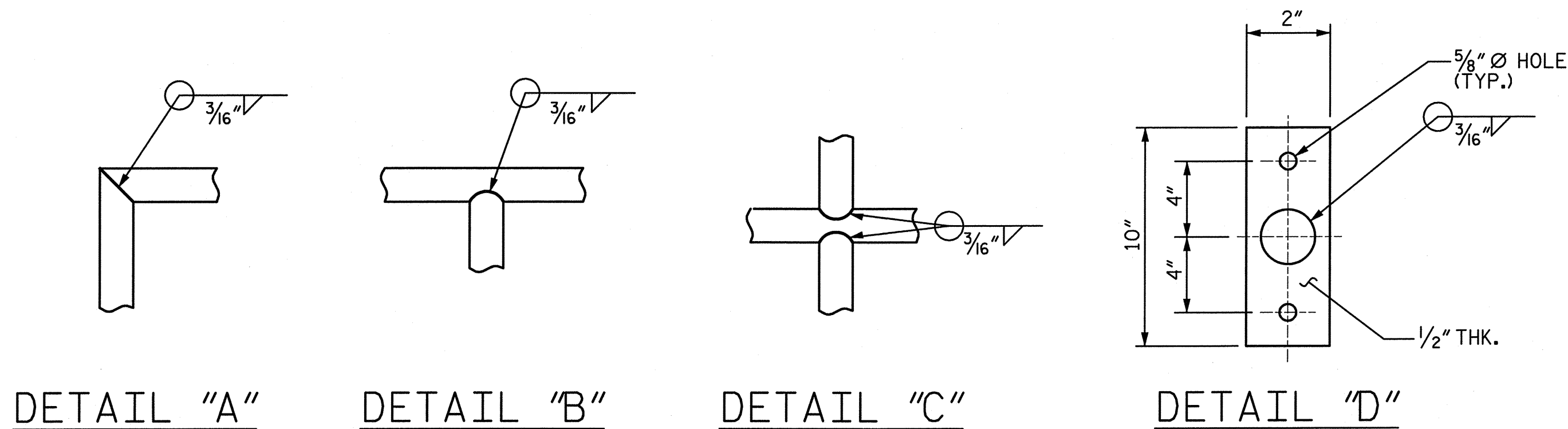
*THIS DIMENSION TO BE CONFIRMED BY THE ENGINEER IN THE FIELD.

NOTE: GUARDRAIL POSTS PLACEMENT AS SHOWN. GUARDRAIL POSTS AND THREADED ANCHOR RODS MUST CLEAR ALL JOINTS OF PRECAST CULVERT UNITS.



PLAN OF HANDRAIL POST SPACING

NOTE: HANDRAIL POSTS PLACEMENT AS SHOWN. HANDRAIL POSTS AND BOLTS MUST CLEAR ALL JOINTS OF PRECAST CULVERT UNITS.

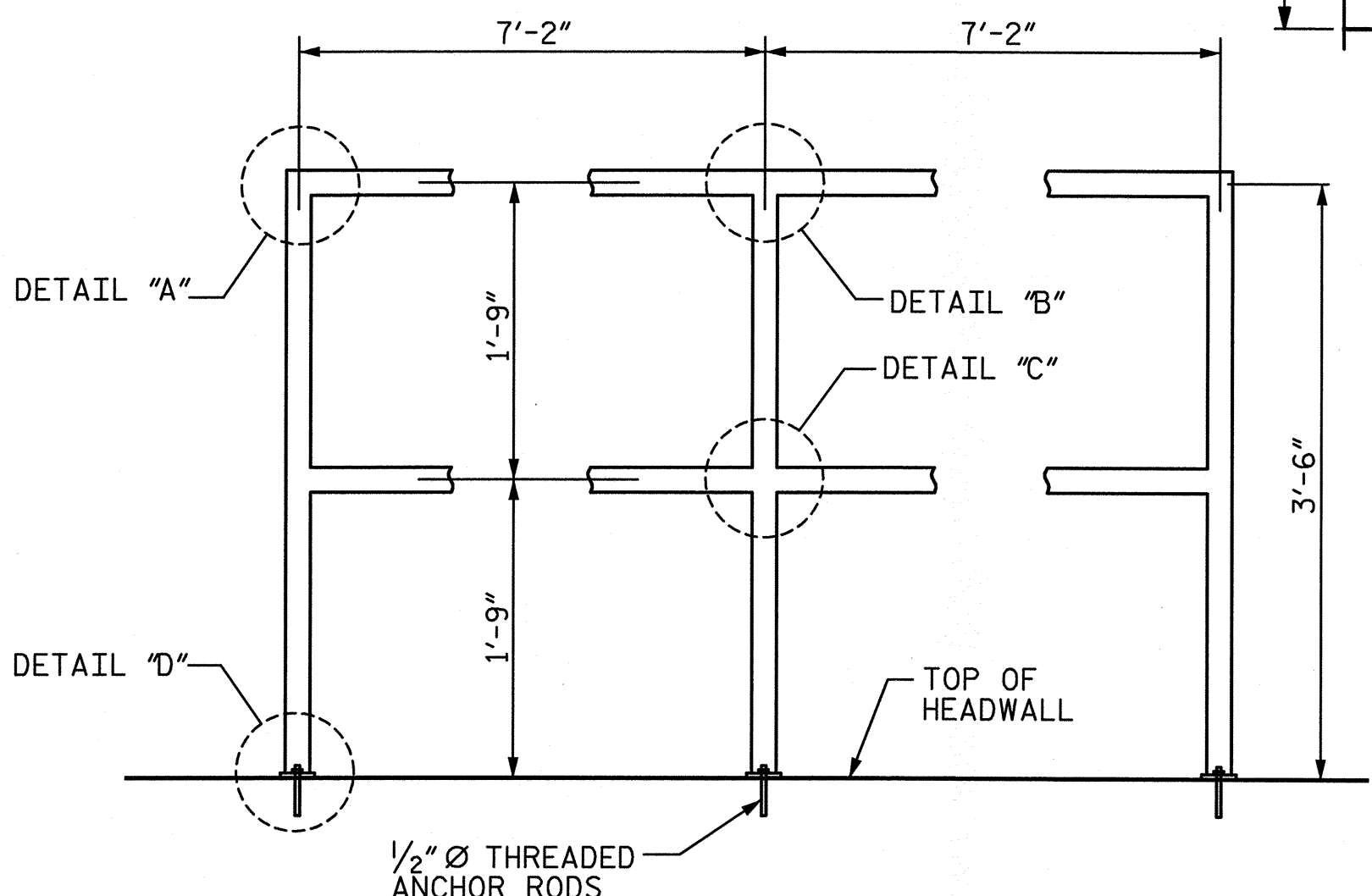


DETAIL "A"

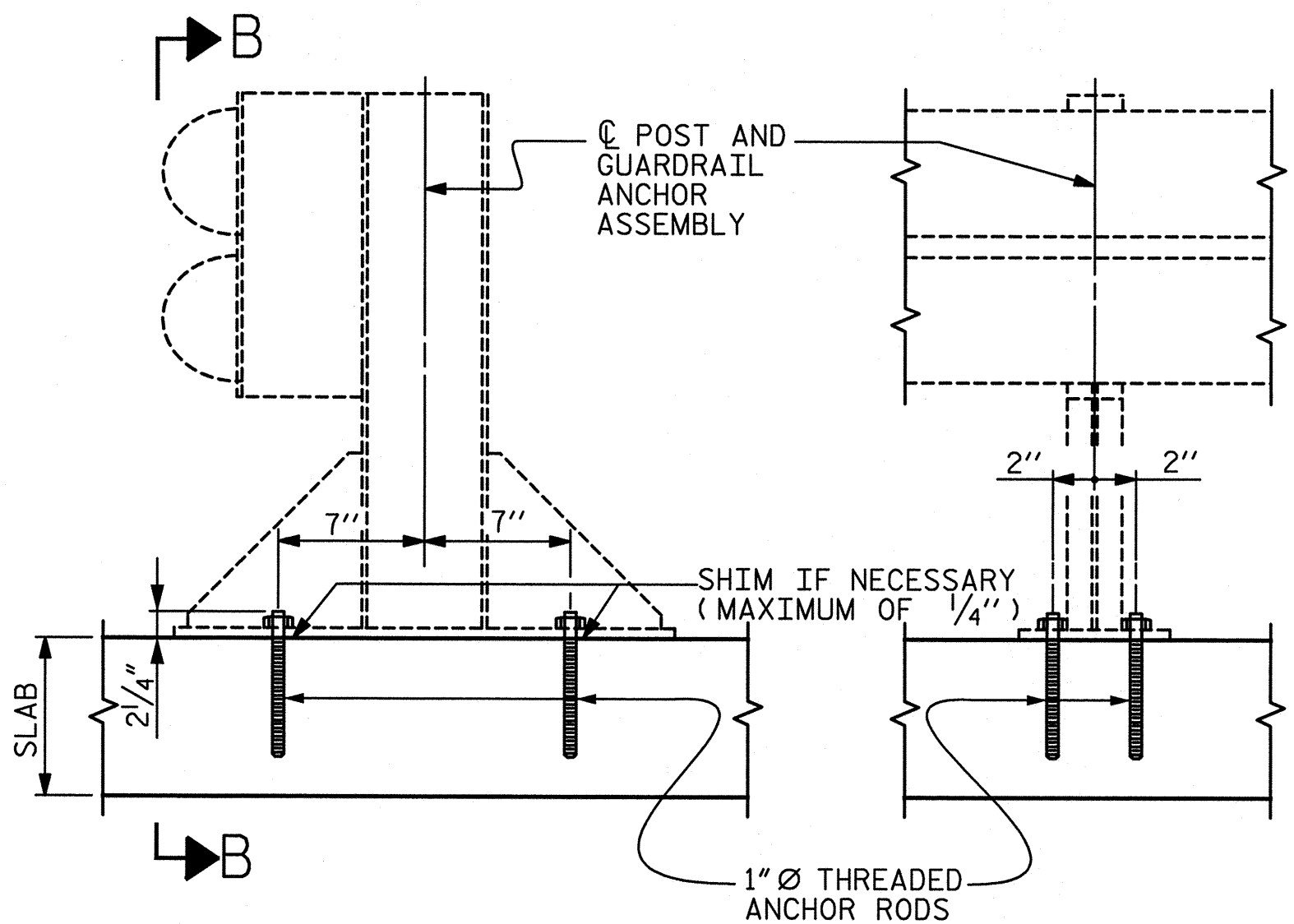
DETAIL "B"

DETAIL "C"

DETAIL "D"



HANDRAIL DETAIL

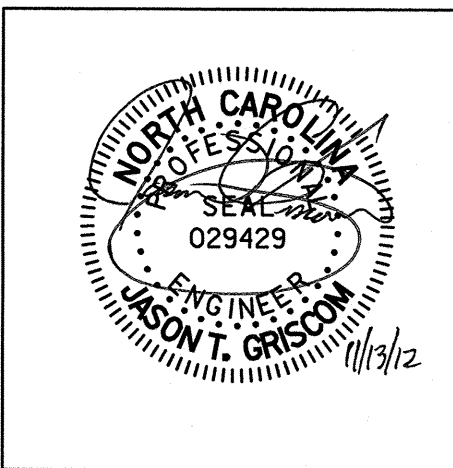


SECTION A-A

SECTION B-B

PROJECT NO. 17BP.10.R.25
STANLY COUNTY
STATION: 12+15.00 -L-

SHEET 4 OF 4



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
ANCHORAGE DETAILS
FOR GUARDRAIL
ANCHOR ASSEMBLY FOR
CULVERTS AND
HANDRAIL

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-4
2			4			TOTAL SHEETS 4

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NC License No. F-0991

STD. NO. GRA1

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	- - - - -	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	- - - - -	SEE PLANS
IMPACT ALLOWANCE	- - - - -	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF		
STRUCTURAL STEEL - AASHTO M270 GRADE 36	-	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	-	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	-	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION		
GRADE 60	- -	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	- - - - -	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	- - - - -	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR		
UNTREATED - EXTREME FIBER STRESS	- - - - -	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	- - - - -	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	- - - - -	30 LBS. PER CU. FT.
		(MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8"Ø SHEAR STUDS FOR THE 3/4"Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8"Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4"Ø STUDS BASED ON THE RATIO OF 3 - 7/8"Ø STUDS FOR 4 - 3/4"Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINIS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN