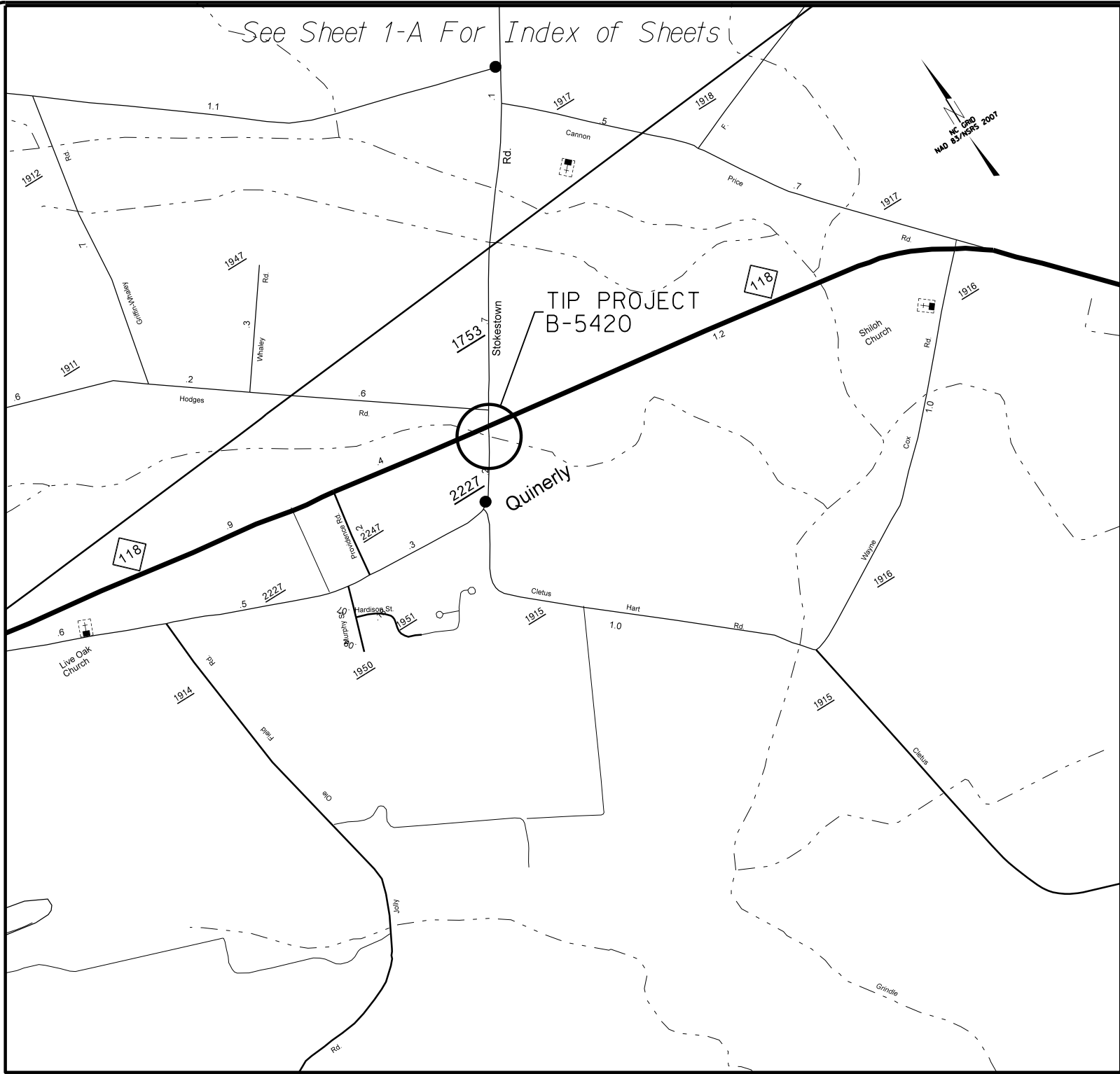


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TIP PROJECT: B-5420

CONTRACT:



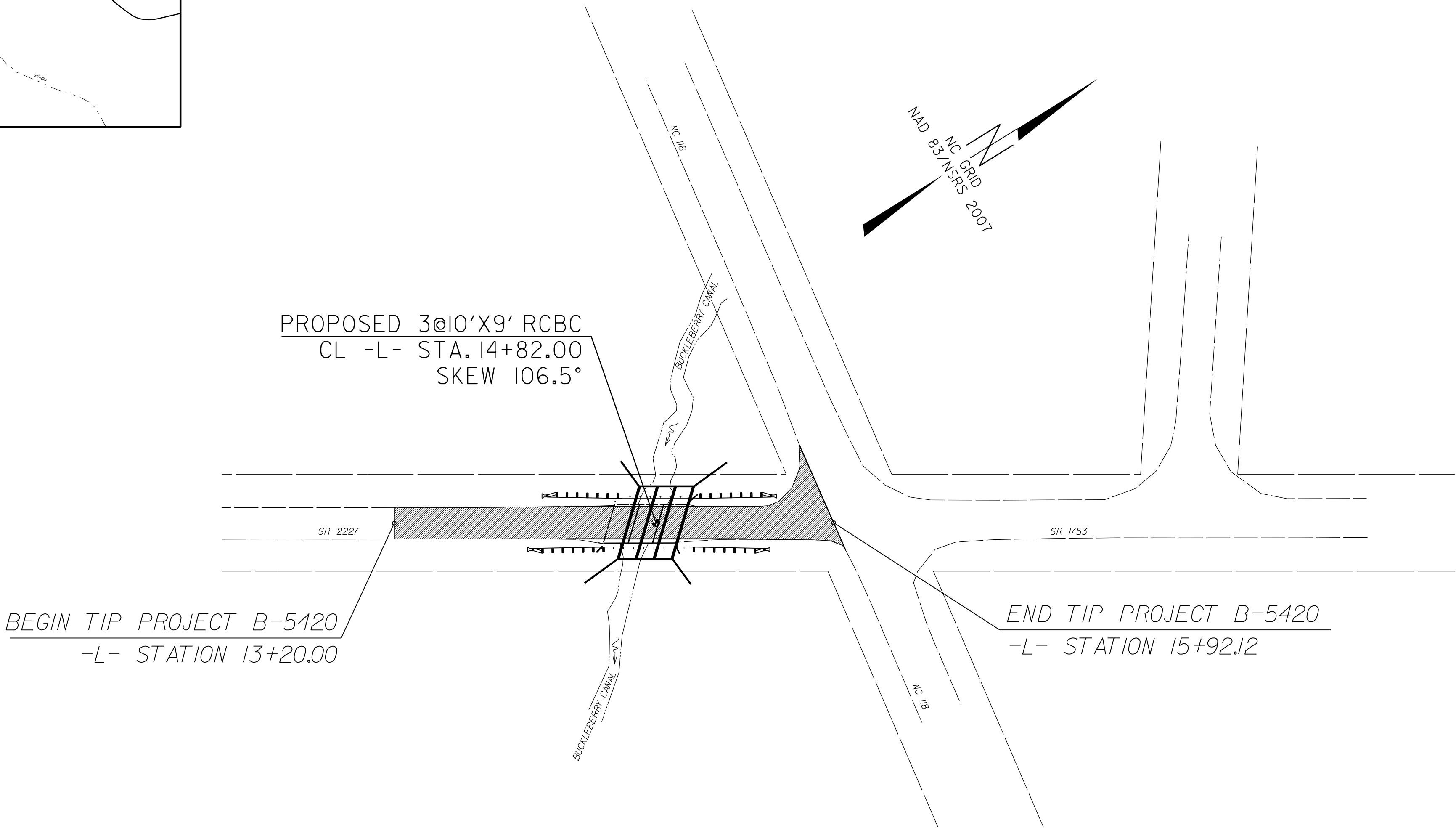
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PITT COUNTY

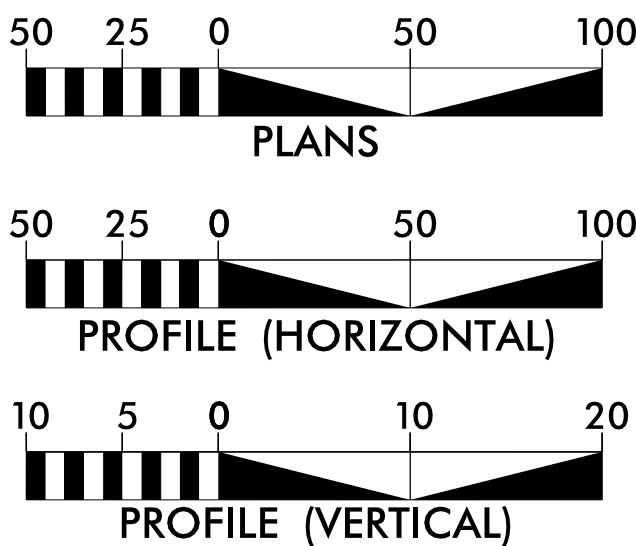
LOCATION: BRIDGE NO. 211 OVER BUCKLEBERRY
CANAL ON SR 2227 (ROCK RD)

TYPE OF WORK: REPLACE BRIDGE WITH BOX CULVERT,
PAVING, GRADING AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5420	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45481.1.1	BRZ-1753(4)	PE	
45481.2.1	BRZ-1753(4)	RW	
45481.3.1	BRZ-1753(4)	CONST	



GRAPHIC SCALES



PROJECT LENGTH

TOTAL LENGTH TIP PROJECT B-5420 = 0.052 MILE

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

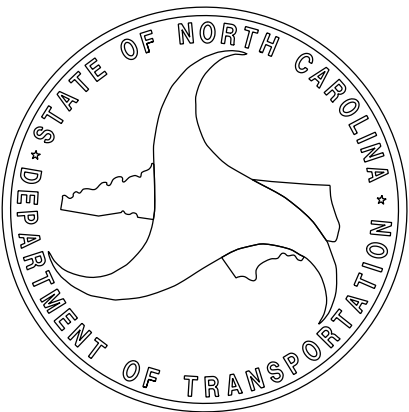
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	DWAYNE H. ALLIGOOD, PE PROJECT ENGINEER
LETTING DATE:	LANG JONES PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

Dwayne H. Alligood
SIGNATURE: 06/09/2013

ROADWAY DESIGN ENGINEER

Dwayne H. Alligood
SIGNATURE: 06/09/2013



Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

PROJECT REFERENCE NO.	SHEET NO.
B-5420	1B

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	

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	
Buffer Zone 1	
Buffer Zone 2	
Flow Arrow	
Disappearing Stream	
Spring	
Wetland	
Proposed Lateral, Tail, Head Ditch	
False Sump	

RAILROADS:

Standard Gauge	
RR Signal Milepost	
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	
Proposed Right of Way Line with Iron Pin and Cap Marker	
Proposed Right of Way Line with Concrete or Granite 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 Utility Easement	
Proposed Temporary Utility Easement	
Proposed Permanent Easement with Iron Pin and Cap Marker	

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	
Existing Curb	
Proposed Slope Stakes Cut	
Proposed Slope Stakes Fill	
Proposed Wheel Chair Ramp	
Existing Metal Guardrail	
Proposed Guardrail	
Existing Cable Guiderail	
Proposed Cable Guiderail	
Equality Symbol	
Pavement Removal	
Single Tree	
Single Shrub	
Hedge	
Woods Line	
Orchard	
Vineyard	

VEGETATION:

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	
MINOR:	
Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

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	
Designated U/G Power Line (S.U.E.*)	

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	
Designated U/G Telephone Cable (S.U.E.*)	
Recorded U/G Telephone Conduit	
Designated U/G Telephone Conduit (S.U.E.*)	
Recorded U/G Fiber Optics Cable	
Designated U/G Fiber Optics Cable (S.U.E.*)	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
Recorded U/G Water Line	
Designated U/G Water Line (S.U.E.*)	
Above Ground Water Line	

TV:

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

GAS:

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

SANITARY SEWER:

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

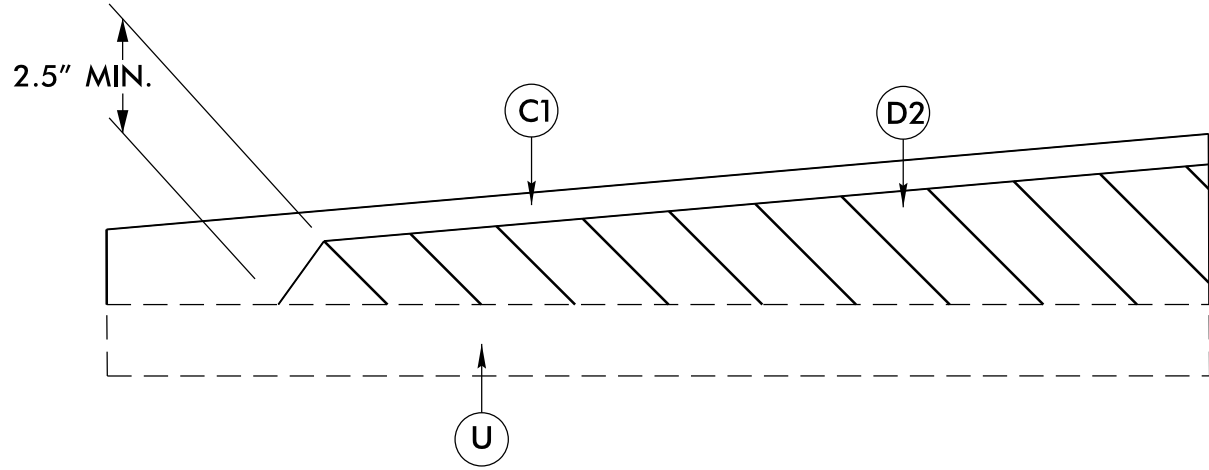
MISCELLANEOUS:

Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line	
U/G Tank; Water, Gas, Oil	
A/G Tank; Water, Gas, Oil	
U/G Test Hole (S.U.E.*)	
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

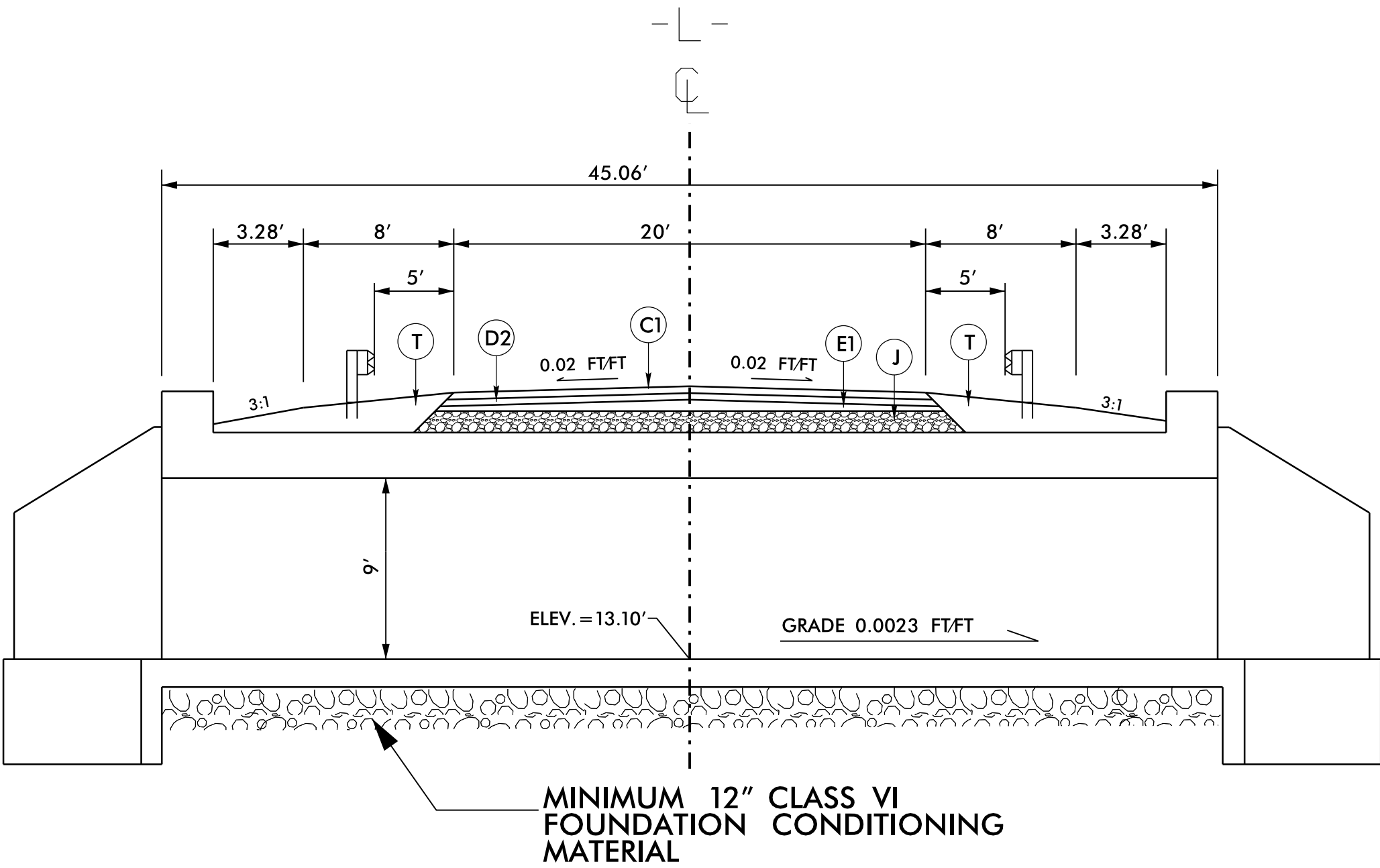
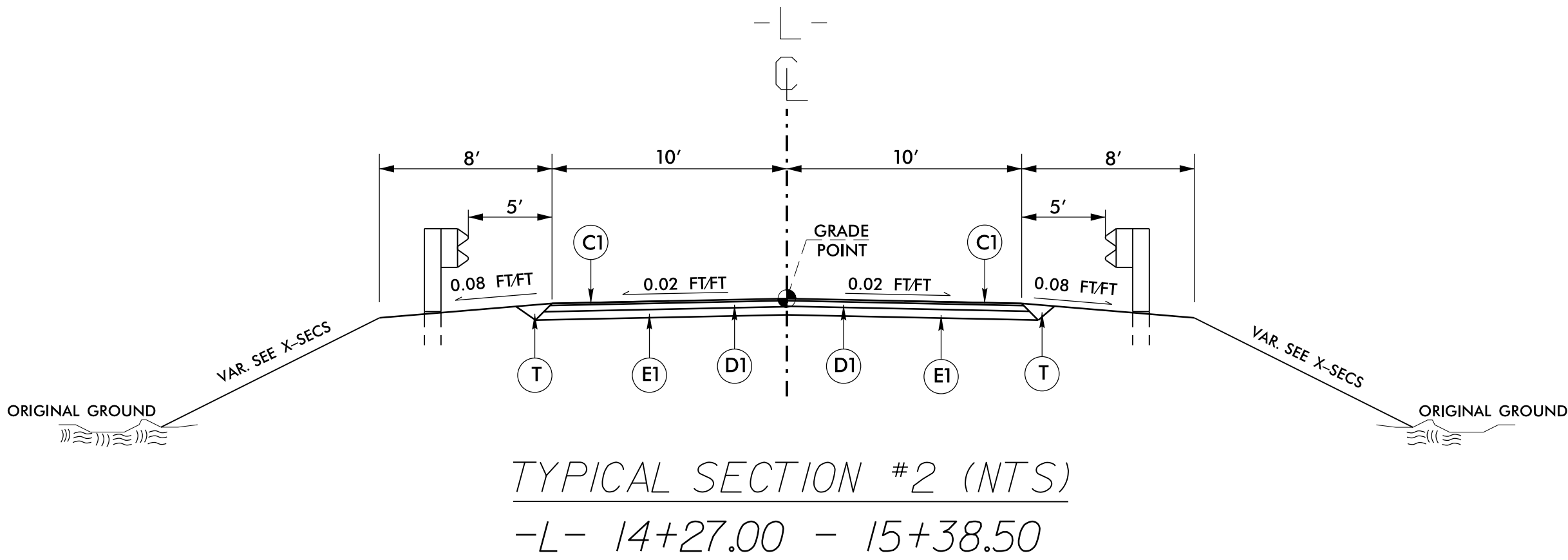
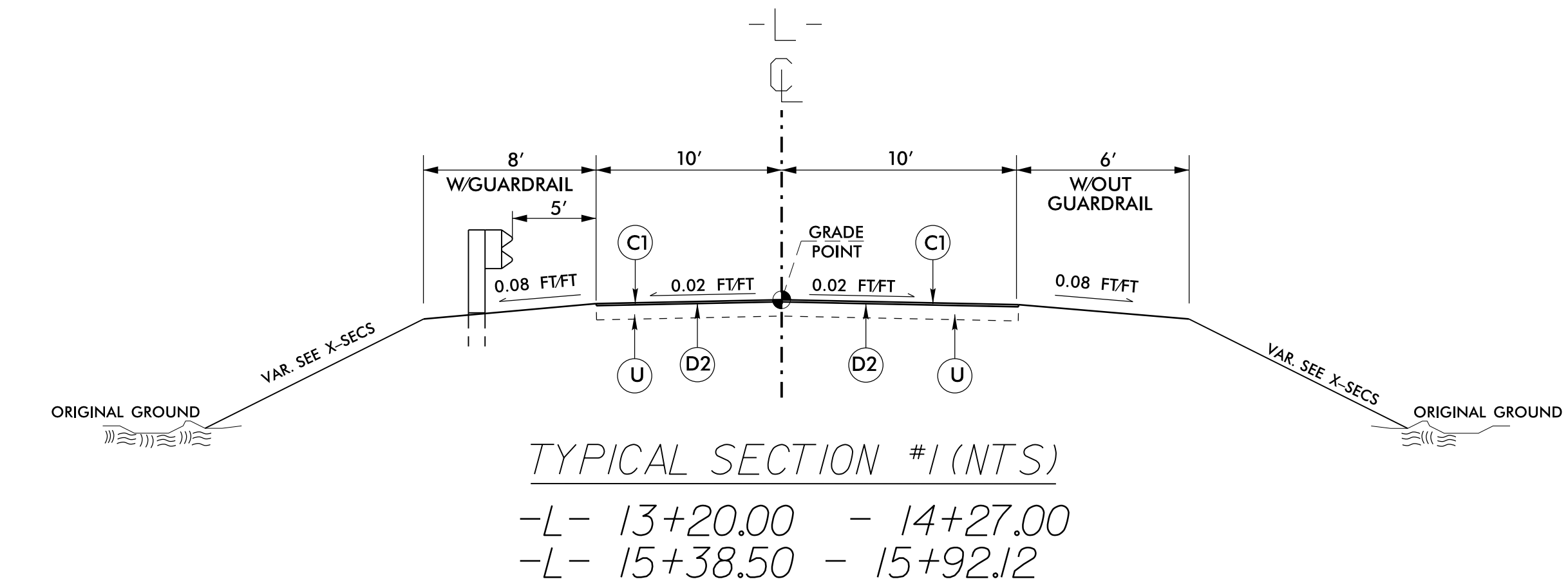
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\$\$\$\$\$ UNIFORM \$\$\$\$\$\$

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 168 LBS. PER SQ.YD.
D1	PROP. APPROX. 3" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.
D2	PROP. VARIABLE DEPTH WEDGING ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B.
E1	PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.
J	APPROX. 12" AGGREGATE BASE COURSE
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.

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



WEDGING DETAIL
NOT TO SCALE



TYPICAL BOX CULVERT SECTION (NTS)
SEE SHEETS C1-C5 FOR BOX CULVERT DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-5420	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ITEM	SECT	QUANTITY	UNIT	ITEM DESCRIPTION	ITEM	SECT	QUANTITY	UNIT	ITEM DESCRIPTION
1	800	1	LS	MOBILIZATION	39	402	1	LS	REMOVAL OF EXISTING STRUCTURE AT -L- STATION 14+82
2	801	1	LS	CONSTRUCTION SURVEYING	40	414	1	LS	CULVERT EXCAVATION, -L- STA.14+82
3	SP	1	LS	GRADING	41	414	220	TON	FOUNDATION CONDITIONING MATERIAL,BOX CULVERT
4	SP	200	CY	UNDERCUT EXCAVATION	42	420	190.6	CY	CLASS A CONCRETE (BOX CULVERT)
5	300	20	TON	FOUNDATION CONDITIONING MATERIAL,MINOR STRUCTURES	43	425	21,535	LB	REINFORCING STEEL (BOX CULVERT)
6	300	50	SY	FOUNDATION CONDITIONING GEOTEXTILE					
7	310	148	LF	18" R.C.PIPE CULVERTS,CLASS III					
8	340	70	LF	PIPE REMOVAL					
9	416	150	CY	CHANNEL EXCAVATION					
10	520	200	TON	AGGREGATE BASE COURSE					
11	610	90	TON	ASPHALT CONCRETE BASE COURSE,TYPE B25.0B					
12	610	60	TON	ASPHALT CONCRETE INTERMEDIATE COURSE,TYPE 119.0B					
13	610	70	TON	ASPHALT CONCRETE SURFACE COURSE,TYPE SF9.5A					
14	620	15	TON	ASPHALT BINDER FOR PLANT MIX					
15	862	95	LF	STEEL BEAM GUARDRAIL					
16	862	4	EA	GUARDRAIL ANCHOR UNITS,TYPE 350					
17	876	120	TON	RIP RAP,CLASS I					
18	876	180	SY	GEOTEXTILE FOR DRAINAGE					
19	1605	500	LF	TEMPORARY SILT FENCE					
20	1610	5	TON	STONE FOR EROSION CONTROL,CLASS B					
21	1610	5	TON	SEDIMENT CONTROL STONE					
22	1615	0.5	ACRE	TEMPORARY MULCHING					
23	1620	25	LB	SEED FOR TEMPORARY SEEDING					
24	1620	0.1	TON	FERTILIZER FOR TEMPORARY SEEDING					
25	SP	300	LF	SAFETY FENCE					
26	1630	30	CY	SILT EXCAVATION					
27	1631	400	SY	MATTING FOR EROSION CONTROL					
28	SP	60	SY	COIR FIBER MAT					
29	1632	50	LF	1/4" HARDWARE CLOTH					
30	SP	50	SY	FLOATING TURBIDITY CURTAIN					
31	1639	1	EA	SPECIAL STILLING BASIN					
32	SP	200	LF	WATTLE					
33	SP	5	LB	POLYACRYLAMIDE (PAM)					
34	1660	1	ACRE	SEEDING AND MULCHING					
35	1661	50	LB	SEED FOR REPAIR SEEDING					
36	1661	0.2	TON	FERTILIZER FOR REPAIR SEEDING					
37	SP	100	LF	IMPERVIOUS DIKE					
38	SP	3	EA	RESPONSE FOR EROSION CONTROL					

COMPUTED BY: LJ _____ DATE: 11-05-12 _____
CHECKED BY: DA _____ DATE: 11-05-12 _____

PROJECT REFERENCE NO.	SHEET NO.
B-5420	3A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

LIST OF PIPES, ENDWALLS, ETC.

STATION	LOCATION (L, RT, OR CL)	STRUCTURE NO.		TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	R.C. PIPE (CLASS III)							PIPE REMOVAL LIN FT.		REINFORCED CONCRETE BOX CULVERT
SIZE																	
THICKNESS OR GAUGE		FROM	TO														
-L- 14+82.00	CL	1			13.20	13.10	0.23%									47'-0"	
-L- 13+93.89	LT	2			18.85	17.80	0.71%	148									
-L- 14+46.86	LT													48			
-L- 14+46.88	RT													22			
TOTALS								148						70		47'-0"	

NOTE: Invert Elevations are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

SUMMARY OF EARTHWORK IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	BOX CULVERT EXCAVATION	UNDERCUT	EMBT + %	BORROW	WASTE
–L– 13 + 50.00 – 15 + 50.00	50	1858	0	350	300	1858
UNDERCUT (CONTINGENCY)	0	0	200	240	240	200
SUB TOTAL	50	1858	200	590	540	2058
SAY	50	1860	200	590	540	2060

PAVEMENT REMOVAL SUMMARY IN SQUARE YARDS

LINE	STATION – STATION	LOCATION	REMOVAL (SY)
–L–	14 + 27.00 – 15 + 38.50	CL	155
TOTAL			155
SAY			160

NOTE:

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

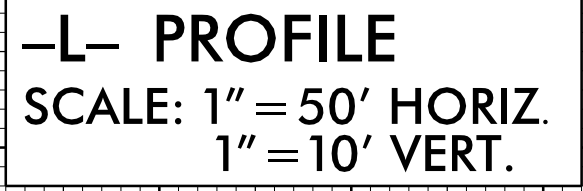
N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING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

GUARDRAIL SUMMARY

[illegible]

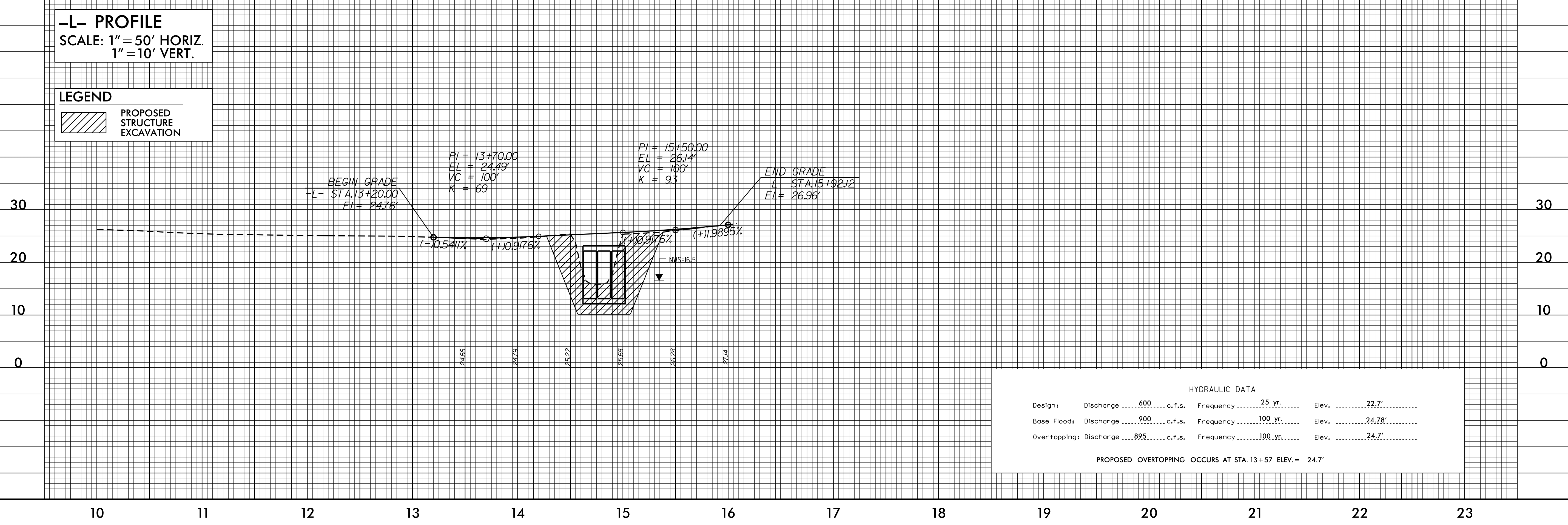
1. A MINIMUM OF 12 INCHES OF CLASS VI FOUNDATION CONDITIONING MATERIAL IS REQUIRED TO REPLACE THE UNSUITABLE MATERIAL ENCOUNTERED AT THE PLAN BOTTOM OF THE CULVERT.
2. SCOUR PROTECTIONS ARE REQUIRED AT BOTH INLET AND OUTLET OF THE CULVERT. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.
3. THE SCOUR CRITICAL ELEVATIONS ARE THE AS BUILT BOTTOM OF BOX CULVERT ELEVATIONS. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT
IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY
NCDOT FOR MONUMENT "2"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 591873.8730(+) EASTING: 2486708.0230(++)
ELEVATION: 24.23(++)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT
(GROUND TO GRID) IS: 0.9998790872
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"2" TO "L- STATION 10+00.00 IS
S 29°33' 17" W 516.6616'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88



LEGEND

 PROPOSED
STRUCTURE
EXCAVATION



HYDRAULIC DATA			
Design:	Discharge	600 c.f.s.	Frequency 25 yr. Elev. 22.7'
Base Flood:	Discharge	900 c.f.s.	Frequency 100 yr. Elev. 24.78'
Overtopping:	Discharge	895 c.f.s.	Frequency 100 yr. Elev. 24.7'

PROPOSED OVERTOPPING OCCURS AT STA 13+57 ELEV = 24.7'

8/17/99

RIGHT OF WAY AREA SUMMARY

PARCEL NO.	PROPERTY OWNER NAME	LOCATION	TOTAL PARCEL AREA [ACRES]	AREA TO BE DEDICATED (PERM. UTILITY EASEMENT) [ACRES]	AREA TO BE DEDICATED (PERM. DRAIN EASEMENT) [ACRES]	PARCEL AREA REMAINING [ACRES]
1	ELEANOR NETHERCUTT SUGG	LT/RT -L-	40.12	0.010	0.088	40.02
2	CRAIG S. EDWARDS	LT -L-	1.04	0.042	0.065	0.93
3	JOSEPHUS PLUMMER JR ESTATE	RT -L-	51.57		0.046	51.52
4	CHARLES L. THORNTON	LT -L-	0.68	0.025		0.65
8	ELEANOR NETHERCUTT SUGG	LT -Y-	1.22	0.022		1.20

PROJECT REFERENCE NO.
B-5420

SHEET NO.
4A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL
146710
06/09/2013

PROFESSIONAL ENGINEER
DWAYNE H. ALLIGOOD

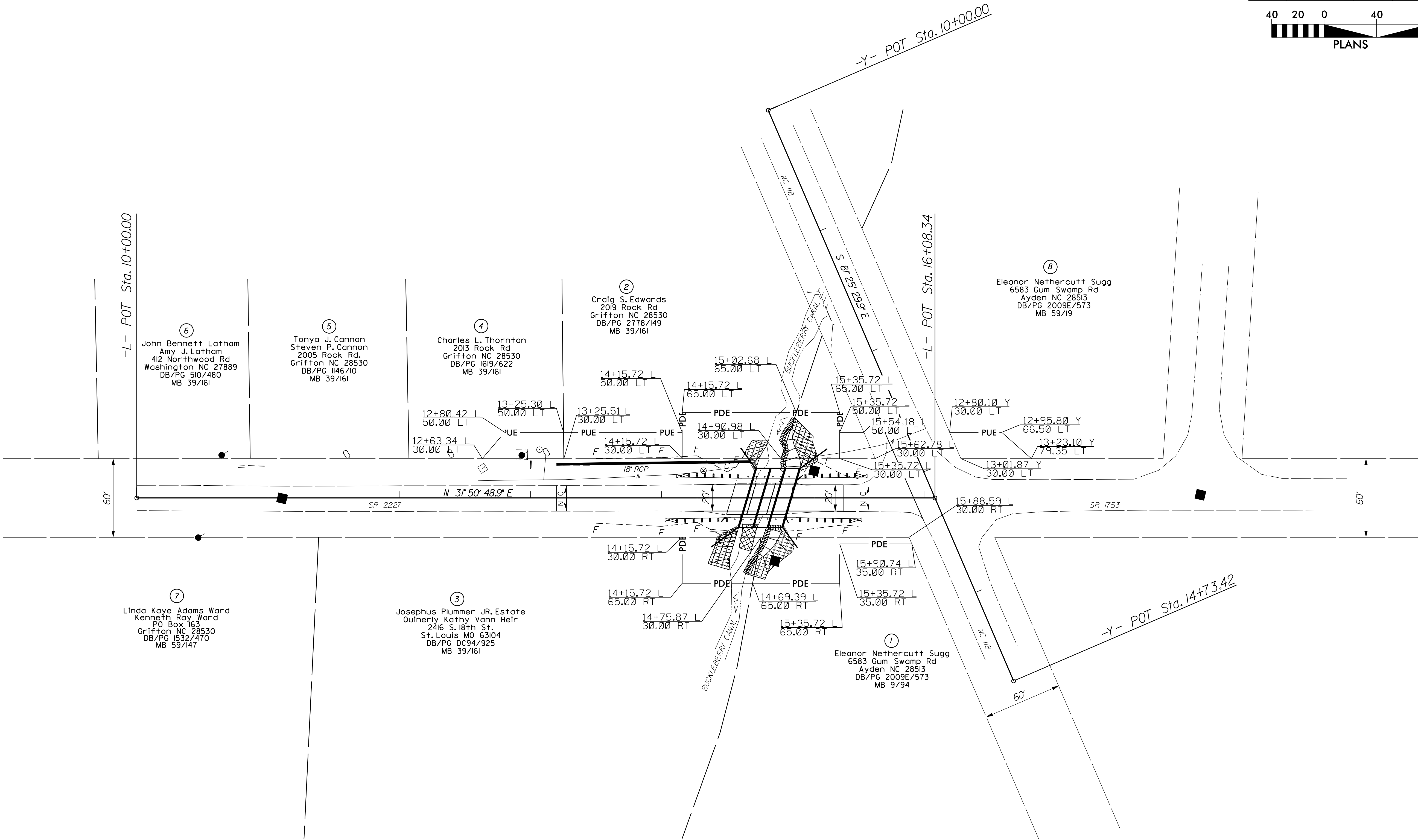
SEAL
146710
06/09/2013

PROFESSIONAL ENGINEER
DWAYNE H. ALLIGOOD



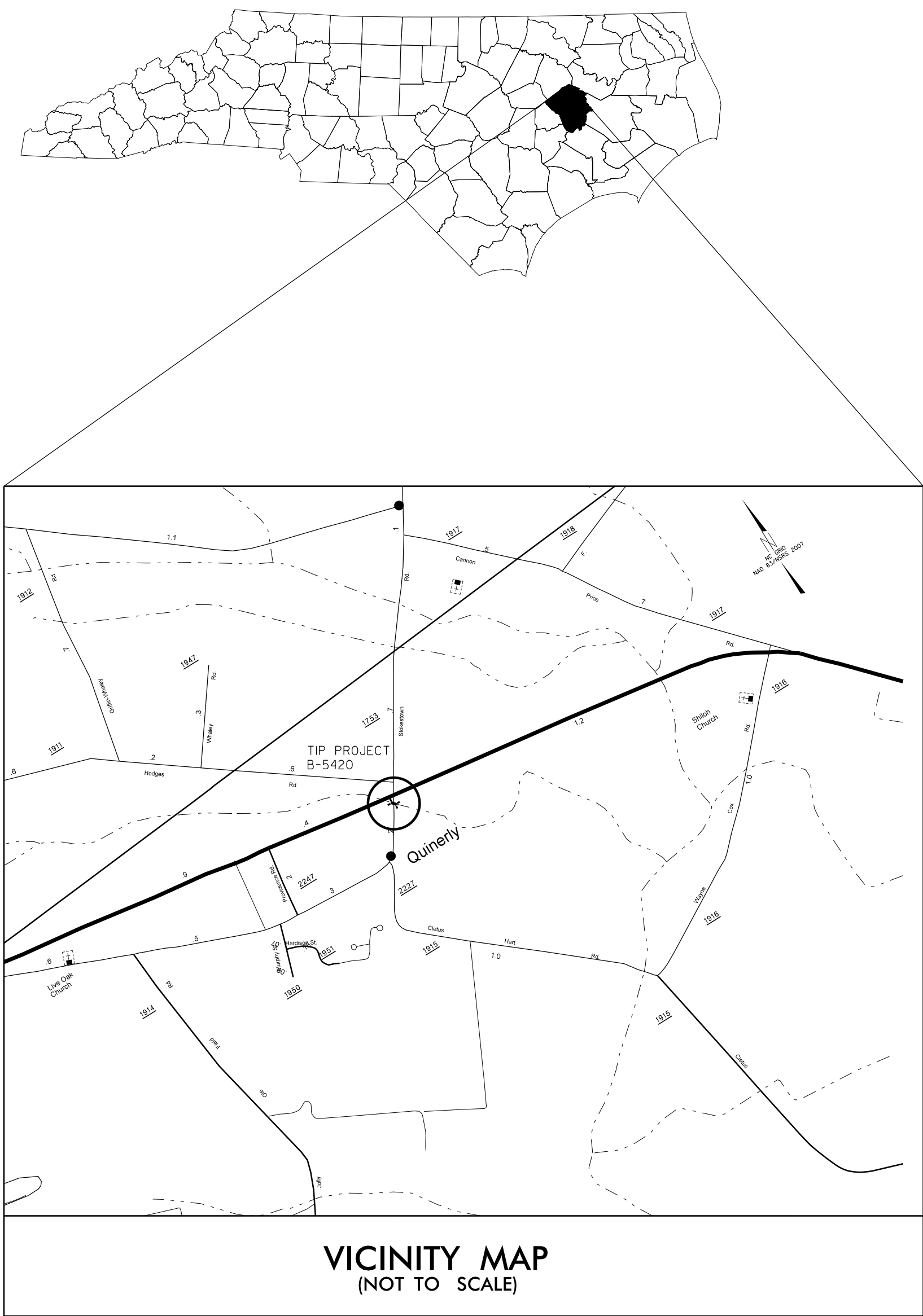
REVISIONS

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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN
PITT COUNTY



VICINITY MAP
(NOT TO SCALE)

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET WITH VICINITY MAP & INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND.
TMP-2	PROJECT NOTES, DETOUR AND PLANS.

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.03 (SHT. 1 OF 9)	TEMPORARY ROAD CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1145.01	BARRICADES (TYPE III)

LEGEND

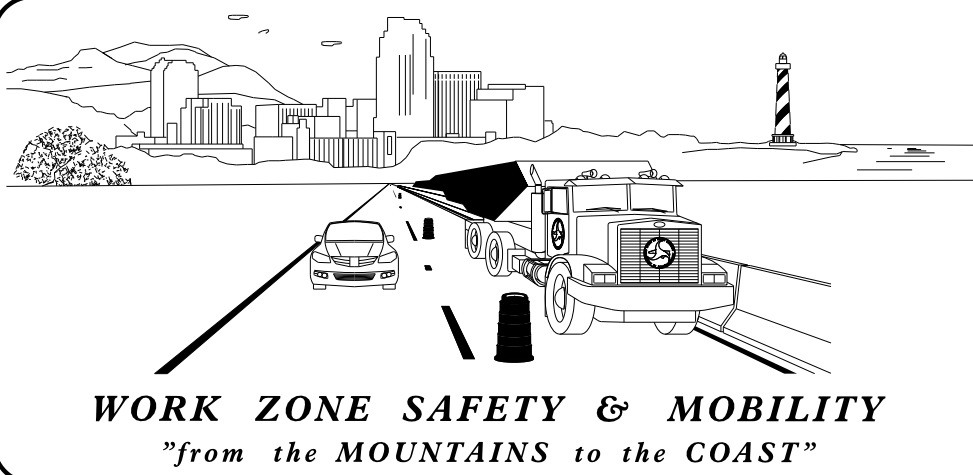
GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- NORTH ARROW
- PROPOSED PVMT.
- EXIST. PVMT.

WORK AREA

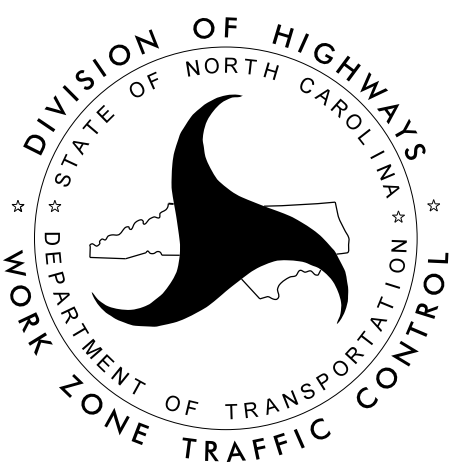
TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)



N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
P.O. BOX 1587, GREENVILLE, NC 27835
105 PACTOLUS HWY. (NC 33), GREENVILLE, NC 27835
PHONE: (252) 830-3490 FAX: (252) 830-3352

STEVEN HAMILTON, PE TRAFFIC ENGINEER
D. H. ALLIGOOD, PE TRAFFIC CONTROL PROJECT ENGINEER
D. H. ALLIGOOD, PE TRAFFIC CONTROL PROJECT DESIGN ENGINEER
LANG JONES TRAFFIC CONTROL DESIGN ENGINEER



APPROVED: *Dwayne H. Alligood*
DATE: 06/09/2013

SEAL

SEAL
16710
ENGINEER
DWAYNE H. ALLIGOOD

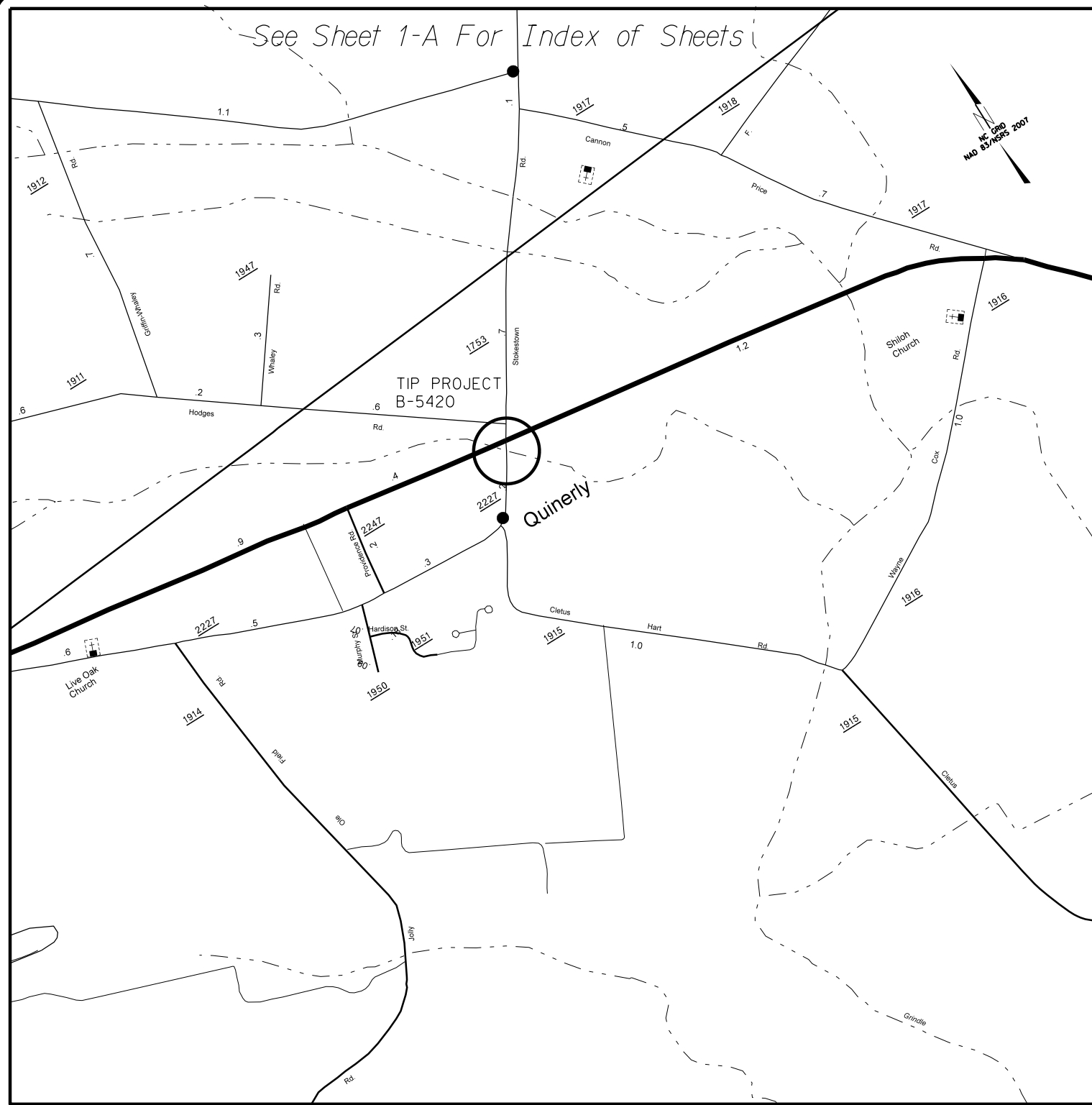
SHEET NO.
TMP-1

B-5420

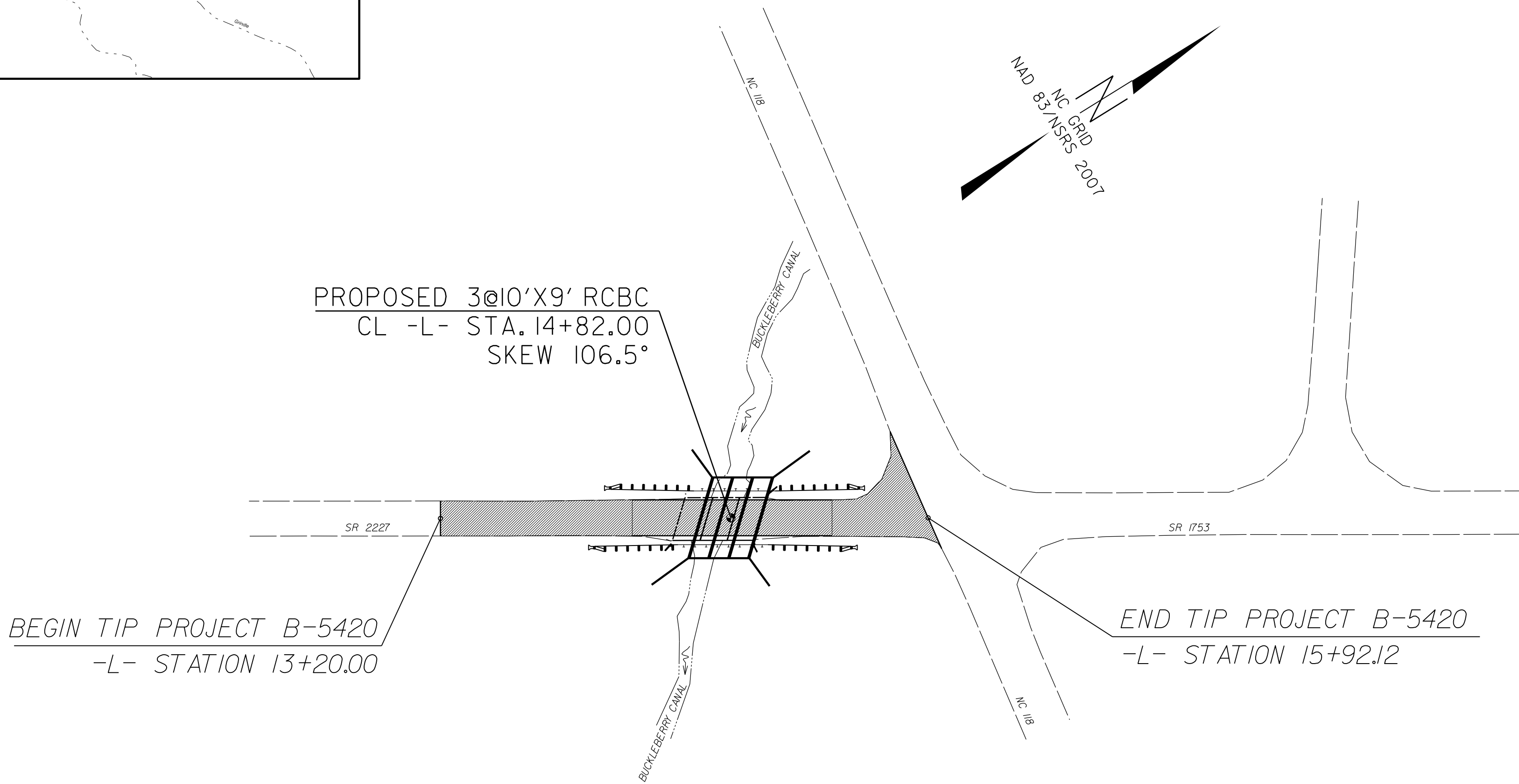
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TIP PROJECT: B-5420



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



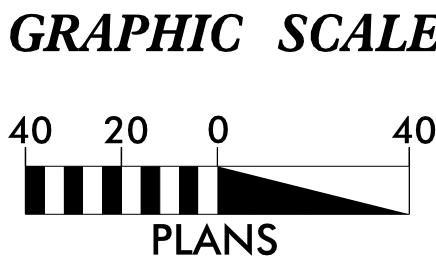
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5420	EC-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
45481.1.1	BRZ-1753(4)	PE	
45481.2.1	BRZ-1753(4)	RW	
45481.3.1	BRZ-1753(4)	CONST	

EROSION AND SEDIMENT CONTROL MEASURES

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

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.



ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

Prepared In the Office of:
DIVISION 2 DDC
1704 North Greene Street
Greenville, NC 27835
2012 STANDARD SPECIFICATIONS

LANG JONES, DDC ENGINEER
LEVEL III CERTIFICATION #276

Roadway Standard Drawings

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

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

8/17/99

REVISIONS

05 JUN 2013 09:34
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SOIL STABILIZATION TIMEFRAMES

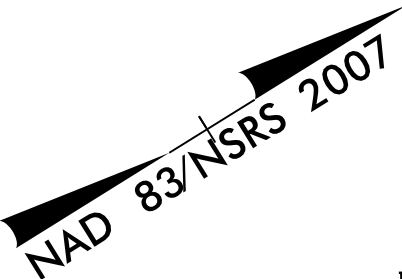
SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HOW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS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

- NOTES:
1. PUMPS AND DIFFUSER BARREL SIZES TO BE DETERMINED BY THE CONTRACTOR.
 2. AVERAGE DAILY FLOW OF STREAM = cfs
 3. SHEET PILING CUTOFF ELEVATION = 20'

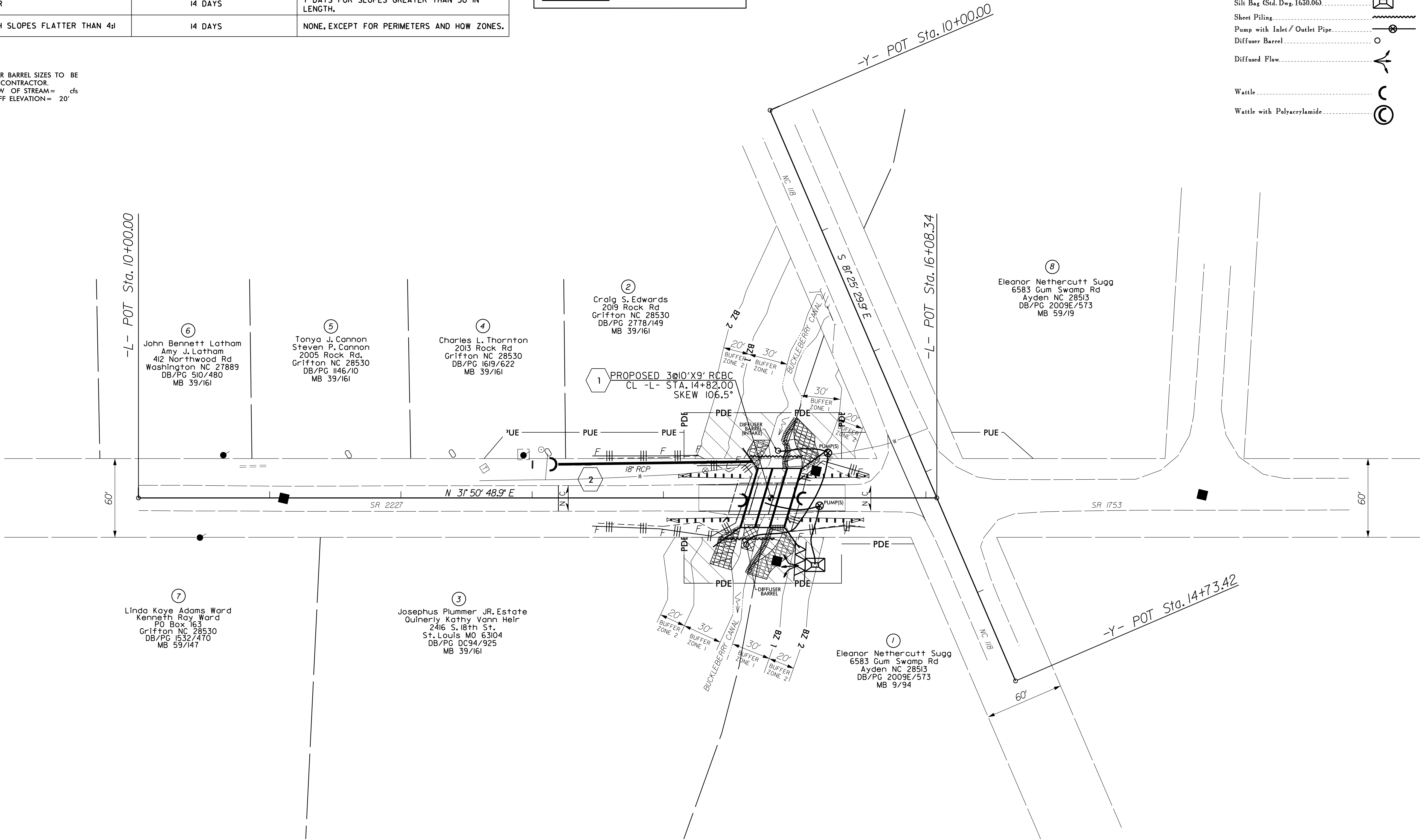
NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

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

CONTRACTOR SHALL INSTALL SPECIAL SEDIMENT CONTROL FENCE OR WATTLES IN LOW AREAS OF SILT FENCE AS NEEDED OR DIRECTED BY THE ENGINEER.

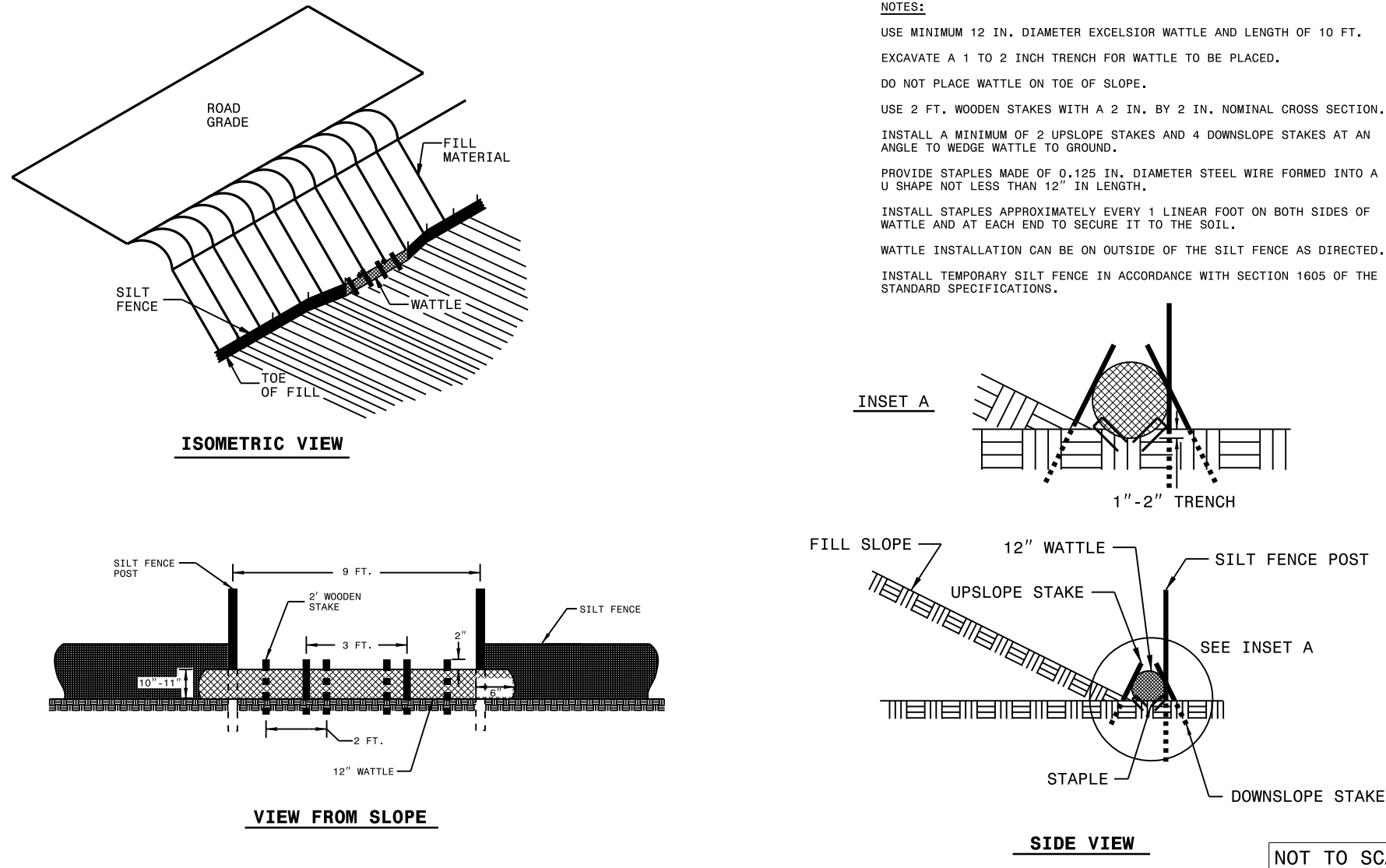


- LEGEND:
- High Visibility Temporary Silt Fence.....
 - Special Sediment Control Fence.....
 - Silt Bag (Std. Dwg. 1630.06).....
 - Sheet Piling.....
 - Pump with Inlet / Outlet Pipe.....
 - Diffuser Barrel.....
 - Diffused Flow.....
 - Wattle.....
 - Wattle with Polyacrylamide.....



REVISIONS

SILT FENCE WATTLE BREAK DETAIL



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

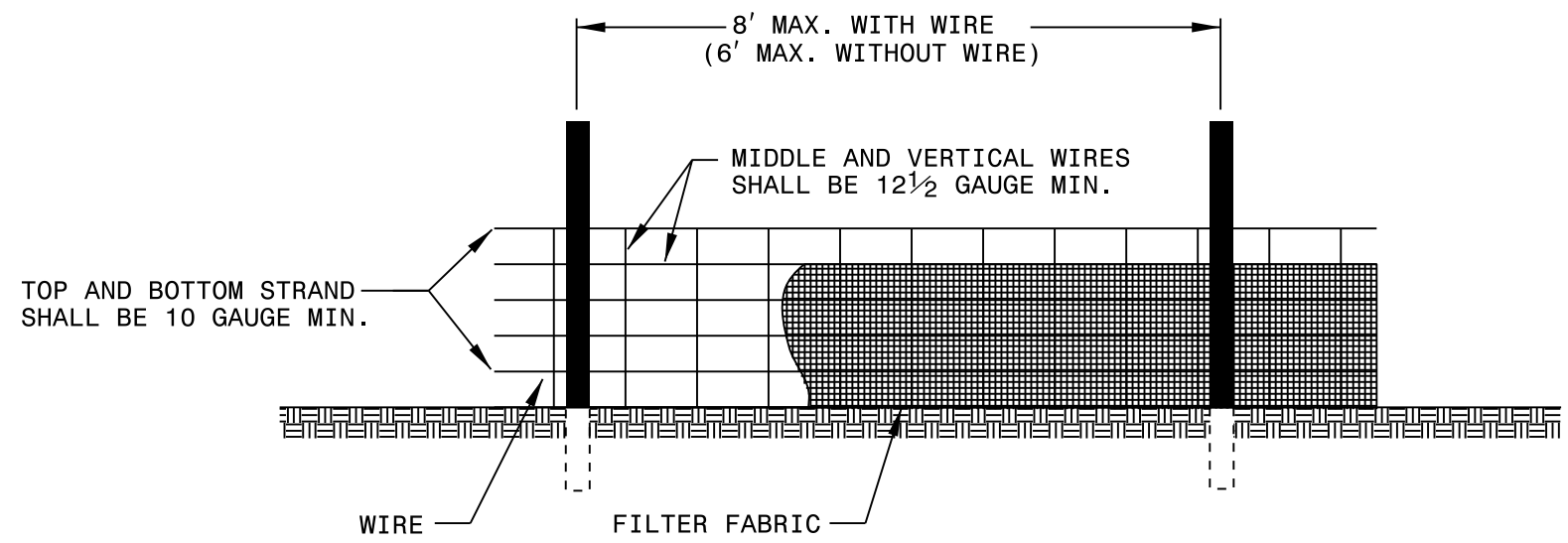
ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

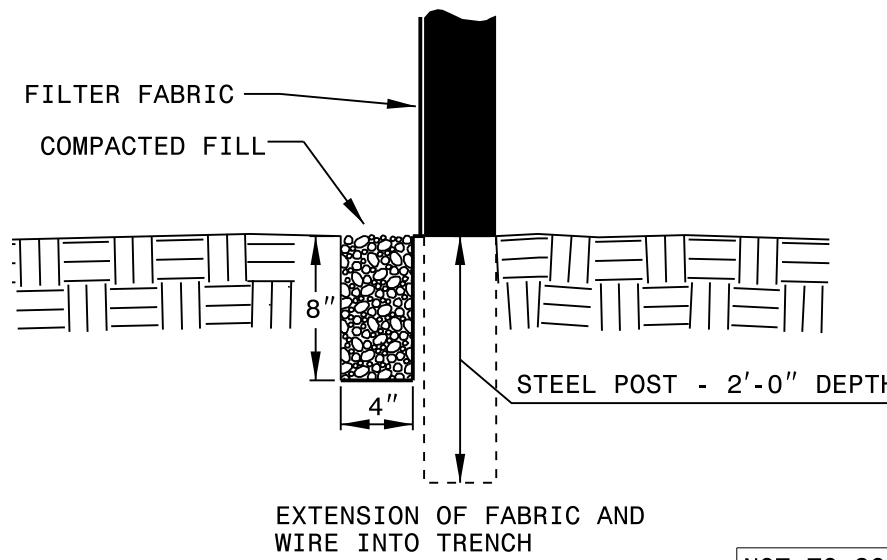
ENGLISH STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE

SHEET 1 OF 1
1606.01



NOTES

- USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 6 LINE WIRES WITH 12" STAY SPACING.
- USE FILTER FABRIC A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE WIRE AS DIRECTED BY THE ENGINEER.
- PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.



STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01

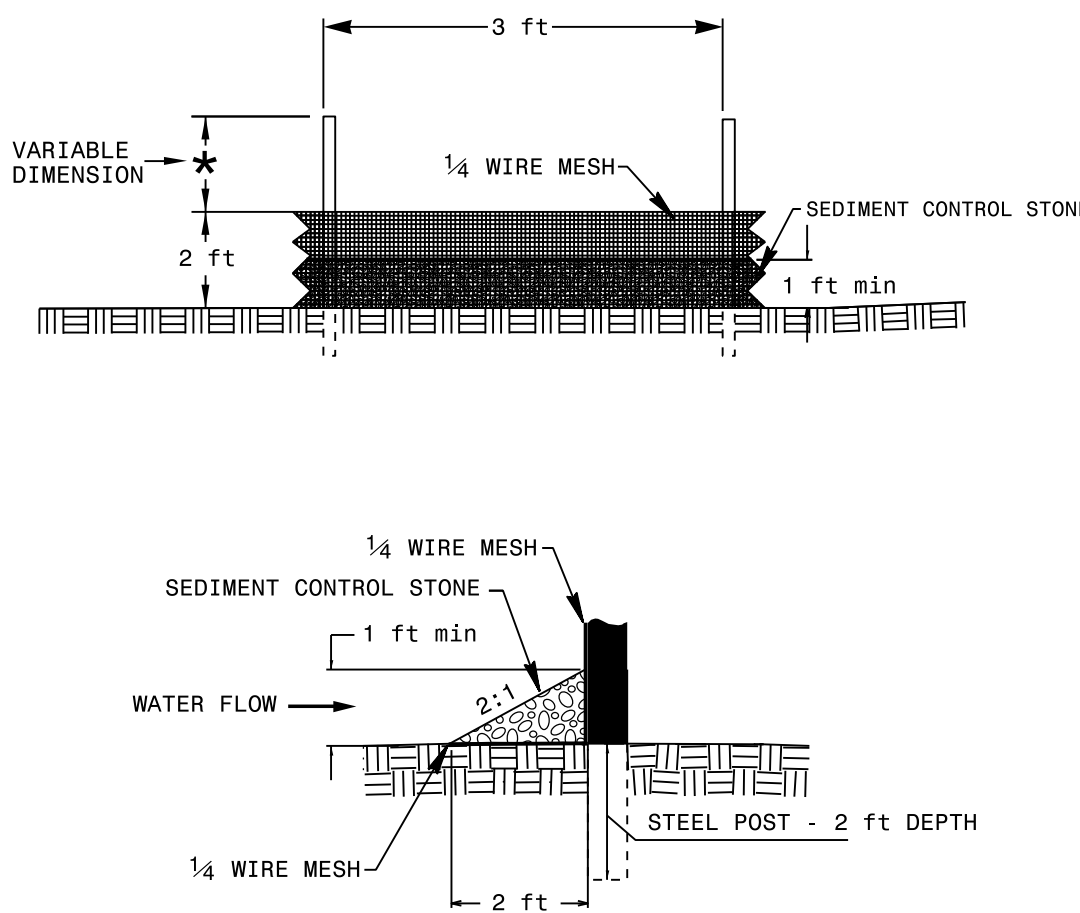
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE

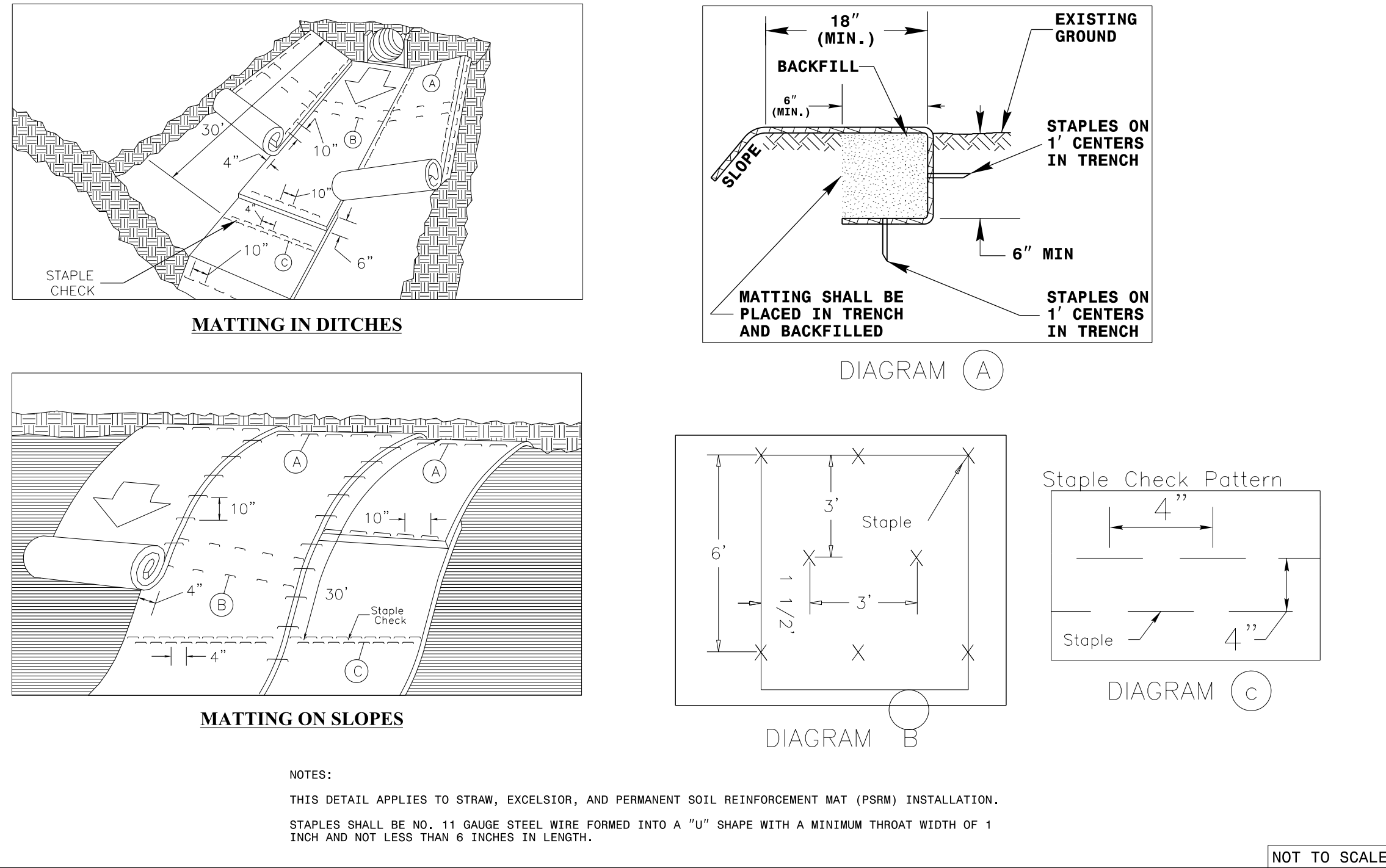
SHEET 1 OF 1
1606.01

GENERAL NOTES:

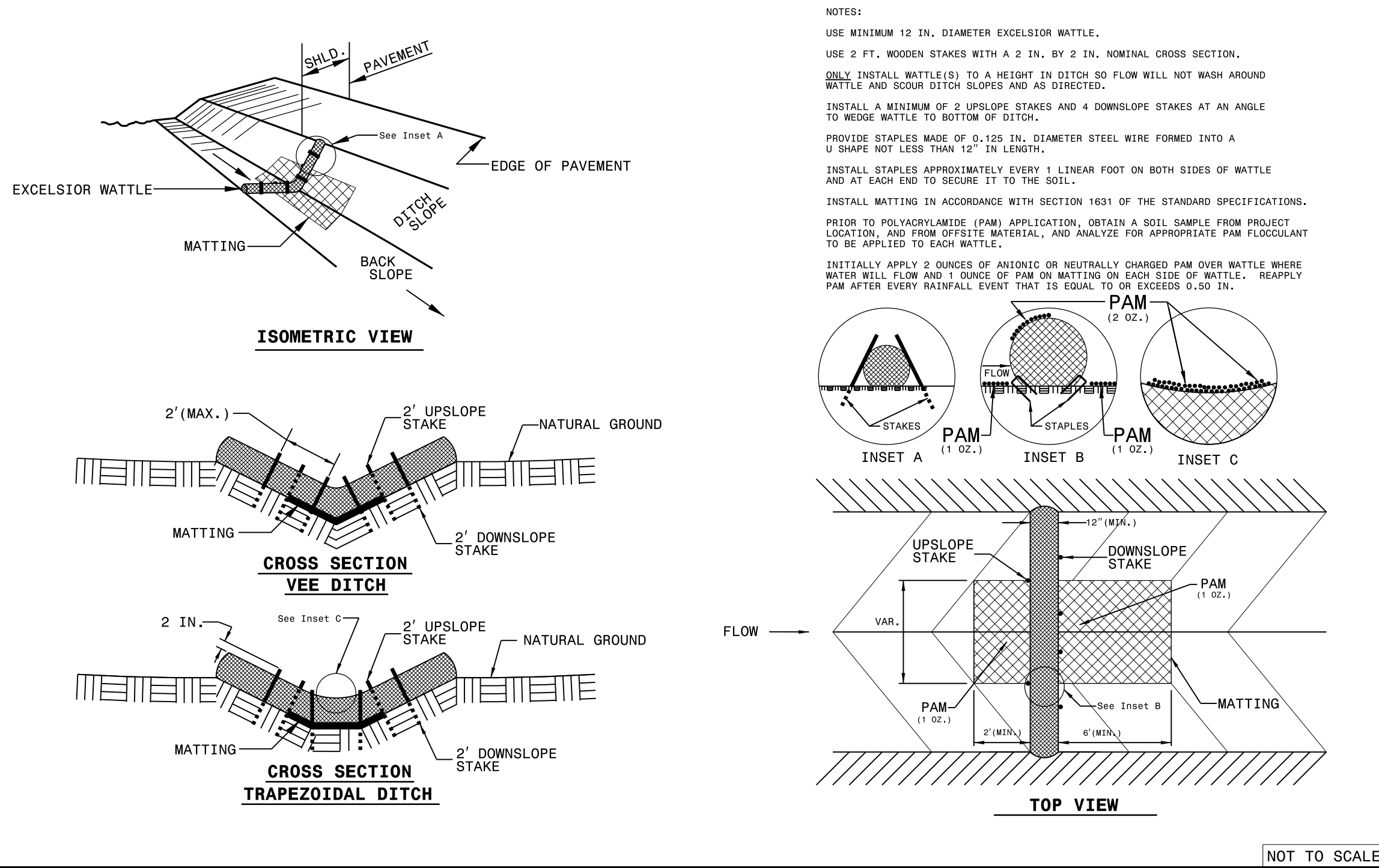
- USE NO. 5 OR NO. 67 STONE FOR SEDIMENT CONTROL STONE.
- USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH 1/4 INCH MESH OPENINGS.
- INSTALL 5 FT. SELF FASTENER ANGLE STEEL POST 2 FT. DEEP MINIMUM.
- SPACE POST A MAXIMUM OF 3 FT.



MATting INSTALLATION DETAIL



WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



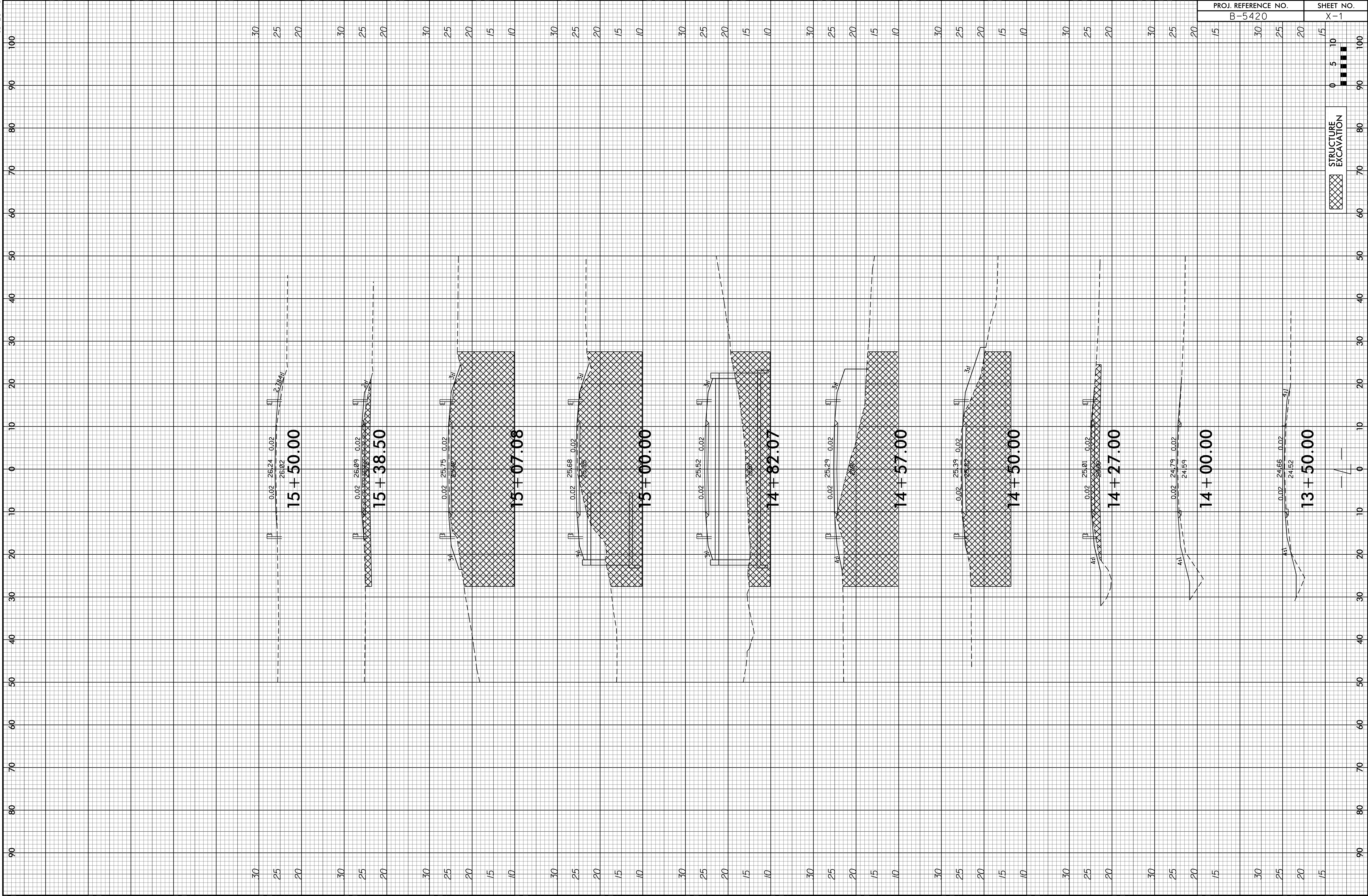
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

CROSS-SECTION SUMMARY
IN CUBIC YARDS

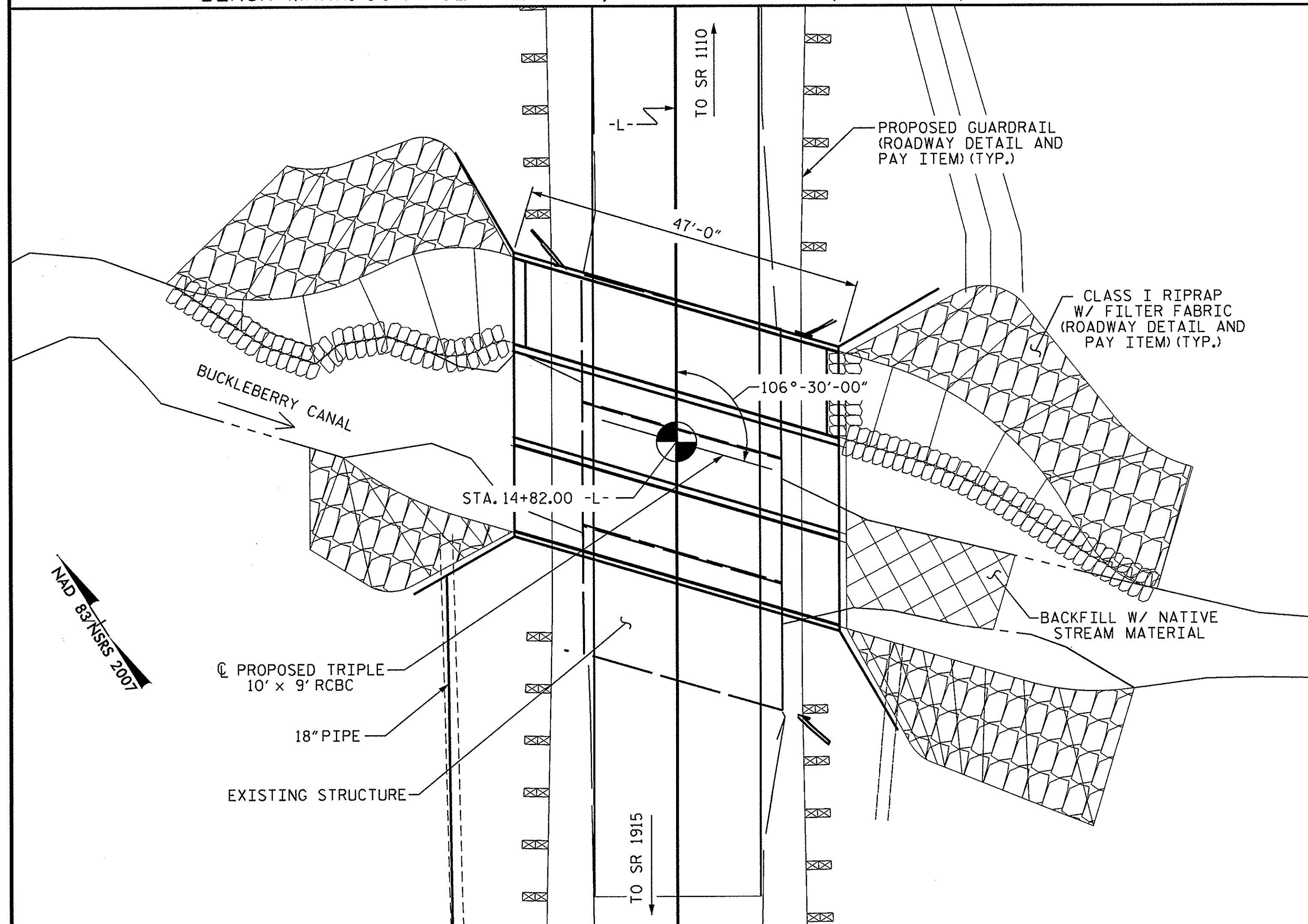
LOCATION (-L-)	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANKMENT	BOX CULVERT EXCAVATION
13 + 50.00	0	0	0	0
14 + 00.00	2	0	49	0
14 + 27.00	10	0	31	0
14 + 50.00	17	0	25	257
14 + 57.00	3	0	27	148
14 + 82.07	0	0	168	435
15 + 00.00	1	0	19	343
15 + 07.08	2	0	12	192
15 + 38.50	13	0	16	483
15 + 50.00	2	0	3	0

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT.

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



BENCH MARK: CONTROL POINT #2, STA. 15+16.25 -L-, 20.66' LT, ELEV. 24.23'



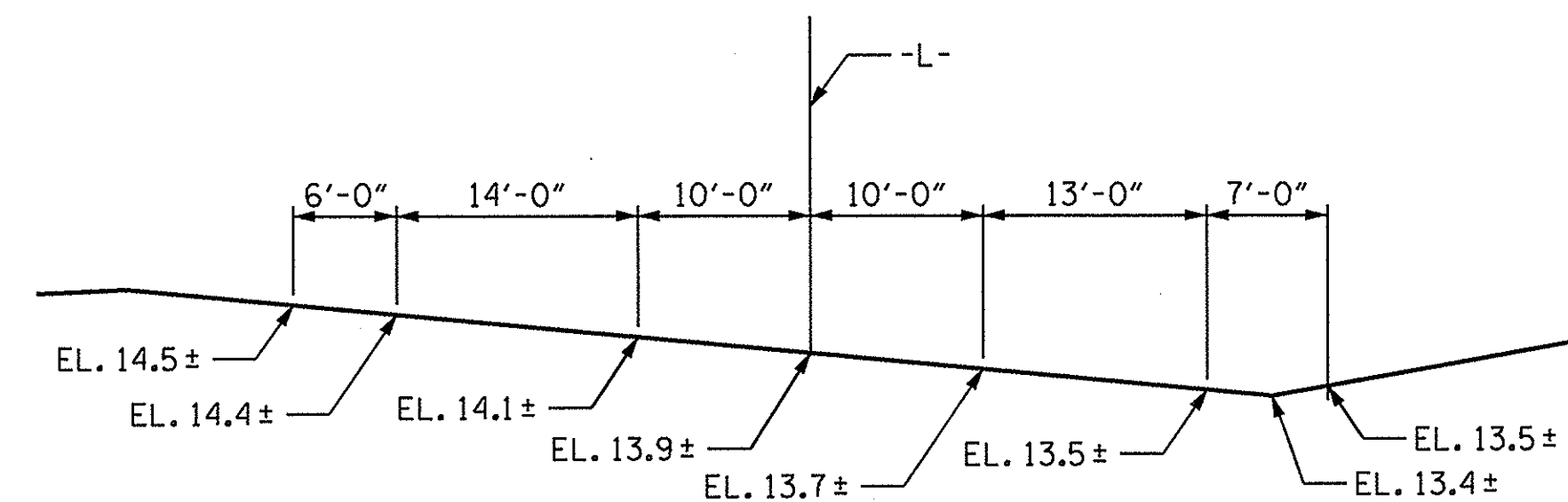
LOCATION SKETCH

HYDRAULIC DATA

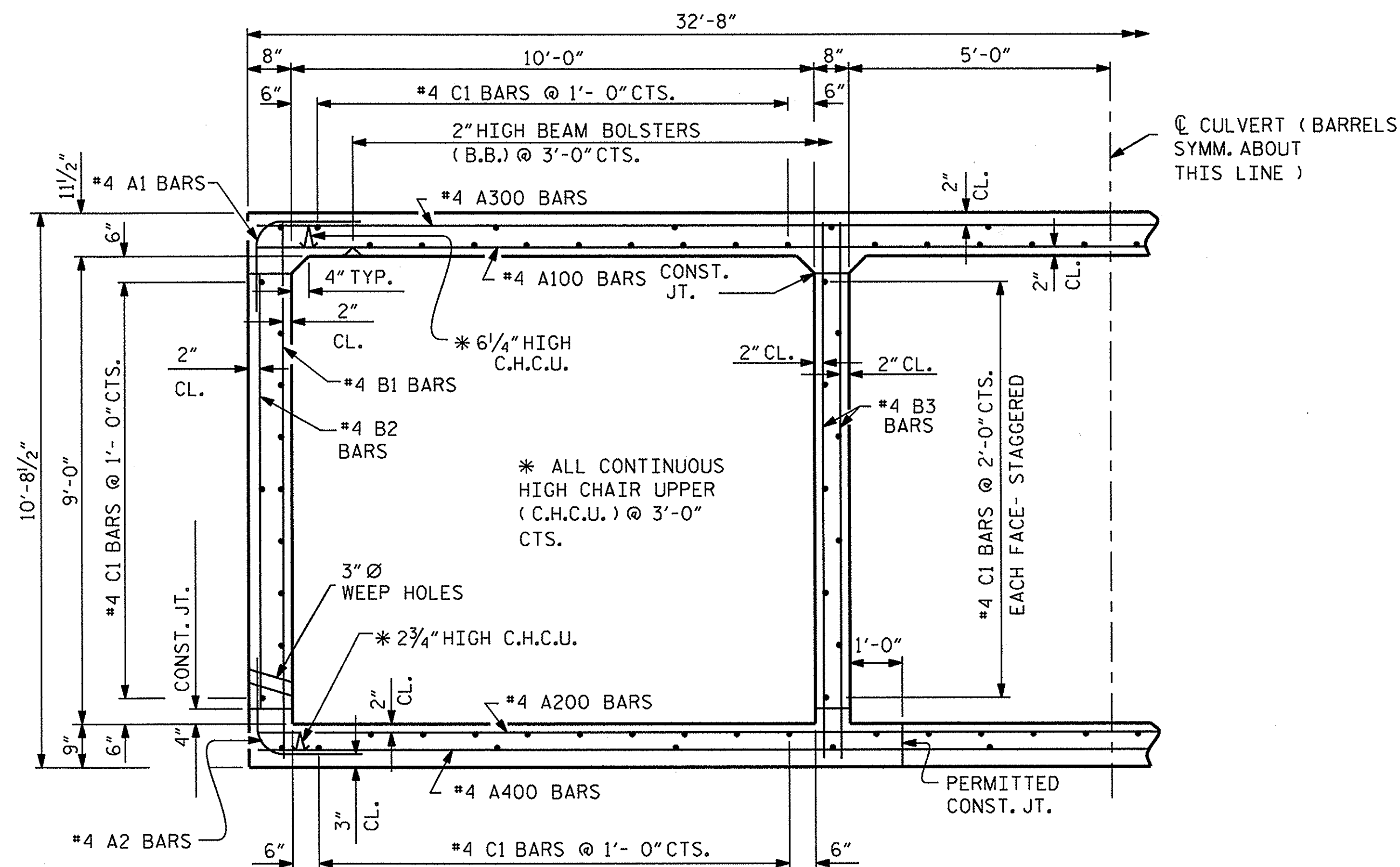
DESIGN DISCHARGE = 600 CFS
FREQUENCY OF DESIGN FLOOD = 25 YRS.
DESIGN HIGH WATER ELEVATION = 22.7'
DRAINAGE AREA = 4.4 SQ. MI.
BASE DISCHARGE (Q100) = 900 CFS
BASE HIGH WATER ELEVATION = 24.78'

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE = 895 CFS
FREQUENCY OF OVERTOPPING FLOOD = 100 YRS.
OVERTOPPING FLOOD ELEVATION = 24.7'



PROFILE ALONG CULVERT



RIGHT ANGLE SECTION OF BARREL

THERE ARE 118 "C" BARS IN SECTION OF BARREL.

NOTES:

ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.

DESIGN FILL: 3.51'

FOR OTHER DESIGN DATA AND NOTES SEE STANDARD NOTE SHEET.

3" Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:
1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

THE EXISTING STRUCTURE CONSISTING OF 3 SPANS, 1 @ 16', 1 @ 15'-1" AND 1 @ 15'-8" 20' CLEAR ROADWAY WIDTH AND REINFORCED CONCRETE FLOOR WITH TIMBER JOISTS ON TIMBER CAPS AND PILES AND LOCATED AT THE PROPOSED STRUCTURE SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

STEEL IN THE BOTTOM SLAB MAY BE SPICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPICES WILL BE PAID FOR BY THE CONTRACTOR.

A MINIMUM OF 12 INCHES OF CLASS VI FOUNDATION CONDITIONING MATERIAL IS REQUIRED TO REPLACE THE UNSUITABLE MATERIAL ENCOUNTERED AT THE PLAN BOTTOM OF THE CULVERT.

THE CONTRACTOR SHALL PROVIDE INDEPENDENT ASSURANCE SAMPLES OF REINFORCING STEEL AS FOLLOWS: FOR PROJECTS REQUIRING UP TO 400 TONS OF REINFORCING STEEL, ONE 30 INCH SAMPLE OF EACH SIZE BAR USED, AND FOR PROJECTS REQUIRING OVER 400 TONS OF REINFORCING STEEL, TWO 30 INCH SAMPLES OF EACH SIZE BAR USED. THE BARS FROM WHICH THE SAMPLES ARE TAKEN MUST THEN BE SPICED WITH REPLACEMENT BARS OF THE SIZE AND LENGTH OF THE SAMPLE, PLUS A MINIMUM LAP SPICE OF THIRTY BAR DIAMETERS. PAYMENT FOR THE SAMPLES OF REINFORCING STEEL SHALL BE CONSIDERED INCIDENTAL TO VARIOUS PAY ITEMS.

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.

AT THE CONTRACTOR'S OPTION, HE MAY SPICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF THE EXTERIOR WALL AND BOTH FACES OF THE INTERIOR WALLS ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPICE LENGTH SHALL BE AS PROVIDED IN THE SPICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF THE STEEL DUE TO THE SPICES SHALL BE PAID BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

SCOUR PROTECTION IS REQUIRED AT BOTH INLET AND OUTLET ENDS OF THE CULVERT. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

THE SCOUR CRITICAL ELEVATIONS ARE THE AS BUILT BOTTOM OF BOX CULVERT ELEVATIONS. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE			
BARREL @	2.968	CY/FT	139.5 C.Y.
WINGS ETC.			51.1 C.Y.
TOTAL			190.6 C.Y.
REINFORCING STEEL			
BARREL			18,823 LBS.
WINGS ETC.			2,712 LBS.
TOTAL			21,535 LBS.
REMOVAL OF EXISTING STRUCTURE @ STA. 14+82.00 -L-		LUMP SUM	

PROJECT NO. B-5420

PITT COUNTY

STATION: 14+82.00 -L-

SHEET 1 OF 5 REPLACES BRIDGE NO. 211

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD
TRIPLE 10 FT. X 9 FT.
CONCRETE BOX CULVERT

AUGUST						1990
REVISIONS						SHEET NO C-1 TOTAL SHEETS 5
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			
2			4			

DRAWN BY: E. K. POPE DATE: 5-23-13
CHECKED BY: O. PUIGCERVER DATE: 5-23-13
DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 5-23-13

LOAD AND RESISTANCE FACTOR RATING (LRFR)
SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING #	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE								COMMENT NUMBER	
							LIVE-LOAD FACTORS (LL)	MOMENT				SHEAR				
								RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE		DISTANCE FROM LEFT END OF ELEMENT (ft)
DESIGN LOAD RATING	HL-93 (INVENTORY)	N/A	1	1.02	--	1.75	1.02	1	TOP SLAB	4.80	1.16	1	TOP SLAB	9.64		
	HL-93 (OPERATING)	N/A		1.32	--	1.35	1.32	1	TOP SLAB	4.80	1.51	1	TOP SLAB	9.64		
	HS-20 (INVENTORY)	36.000	2	1.14	41.07	1.75	1.14	1	TOP SLAB	4.80	1.24	1	BOTTOM SLAB	9.79		
	HS-20 (OPERATING)	36.000		1.48	53.24	1.35	1.48	1	TOP SLAB	4.80	1.61	1	BOTTOM SLAB	9.79		
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.08	28.04	1.40	2.08	1	TOP SLAB	4.53	2.48	1	TOP SLAB	9.64	
		SNGARBS2	20.000		1.94	38.85	1.40	1.94	1	TOP SLAB	4.80	2.32	1	TOP SLAB	9.64	
		SNAGRIS2	22.000		2.08	45.70	1.40	2.08	1	TOP SLAB	4.53	2.47	1	TOP SLAB	9.64	
		SNCOTTS3	27.250		1.27	34.58	1.40	1.27	1	TOP SLAB	4.80	1.46	1	TOP SLAB	9.64	
		SNAGGRS4	34.925		1.58	55.26	1.40	1.58	1	BOTTOM SLAB	10.40	1.59	1	BOTTOM SLAB	9.79	
		SNS5A	35.550		1.50	53.31	1.40	1.50	1	TOP SLAB	4.80	1.57	1	BOTTOM SLAB	9.79	
		SNS6A	39.950		1.39	55.68	1.40	1.39	1	BOTTOM SLAB	10.40	1.40	1	BOTTOM SLAB	9.79	
		SNS7B	42.000		1.35	56.71	1.40	1.35	1	BOTTOM SLAB	10.40	1.36	1	BOTTOM SLAB	9.79	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		1.70	56.18	1.40	1.72	1	BOTTOM SLAB	10.40	1.70	1	BOTTOM SLAB	9.79	
		TNT4A	33.075		1.51	49.94	1.40	1.51	1	TOP SLAB	4.80	1.71	1	BOTTOM SLAB	9.79	
		TNT6A	41.600		1.41	58.71	1.40	1.41	1	BOTTOM SLAB	10.40	1.42	1	BOTTOM SLAB	9.79	
		TNT7A	42.000		1.42	59.45	1.40	1.44	1	BOTTOM SLAB	10.40	1.42	1	BOTTOM SLAB	9.79	
		TNT7B	42.000		1.41	59.29	1.40	1.49	1	BOTTOM SLAB	10.40	1.41	1	BOTTOM SLAB	9.79	
		TNAGRIT4	43.000		1.32	56.56	1.40	1.35	1	BOTTOM SLAB	10.40	1.32	1	BOTTOM SLAB	9.79	
		TNAGT5A	45.000	3	1.24	55.80	1.40	1.27	1	BOTTOM SLAB	10.40	1.24	1	BOTTOM SLAB	9.79	
		TNAGT5B	45.000		1.24	55.82	1.40	1.25	1	BOTTOM SLAB	10.40	1.24	1	BOTTOM SLAB	9.79	

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

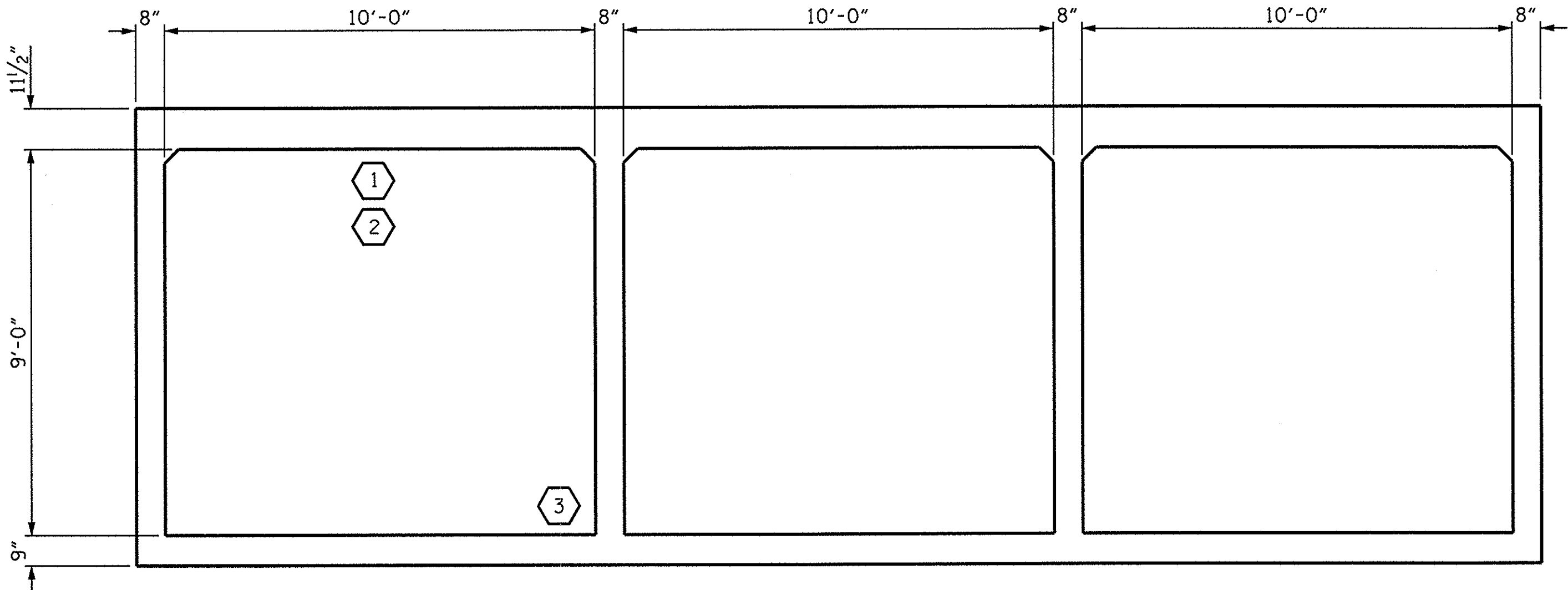
NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

-
-
-
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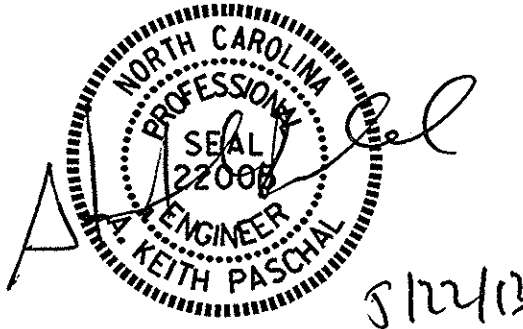
#	CONTROLLING LOAD RATING
1	DESIGN LOAD RATING (HL-93)
2	DESIGN LOAD RATING (HS-20)
3	LEGAL LOAD RATING **
** SEE CHART FOR VEHICLE TYPE	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

PROJECT NO. B-5420
PITT COUNTY
STATION: 14+82.00 -L-

SHEET 2 OF 5



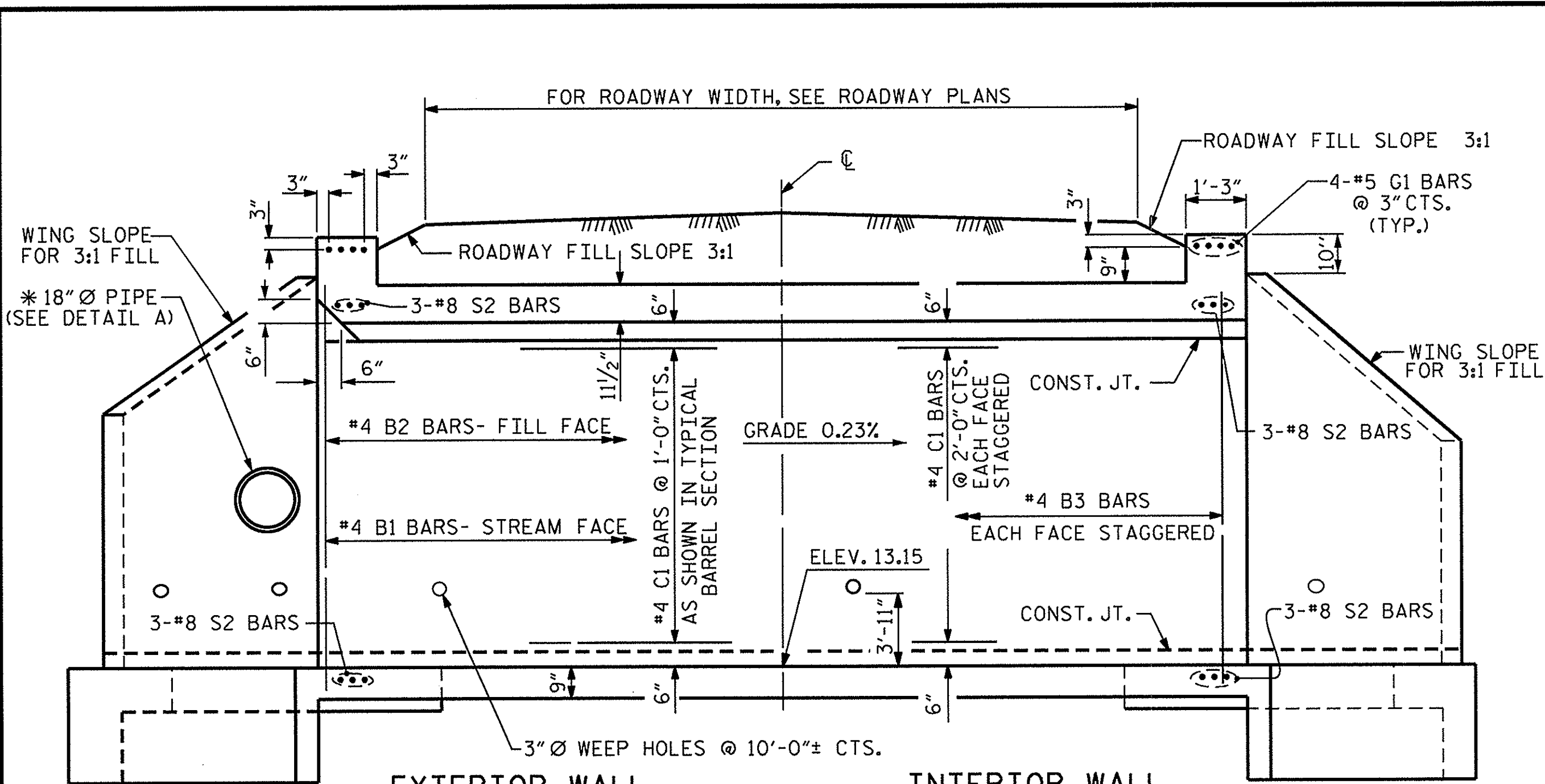
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD
LRFR SUMMARY FOR
REINFORCED CONCRETE
BOX CULVERT
(NON-INTERSTATE TRAFFIC)

DRAWN BY : E. K. POPE DATE : 5-13-13
CHECKED BY : O. PUIGCERVER DATE : 5-15-13
DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE : 5-15-13

22-MAY-2013 09:38
S:\DPO1\Keith\B-5420\ekpope\B-5420_SD_CU.dgn
kpaschal

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			5

STD. NO. LRFR5

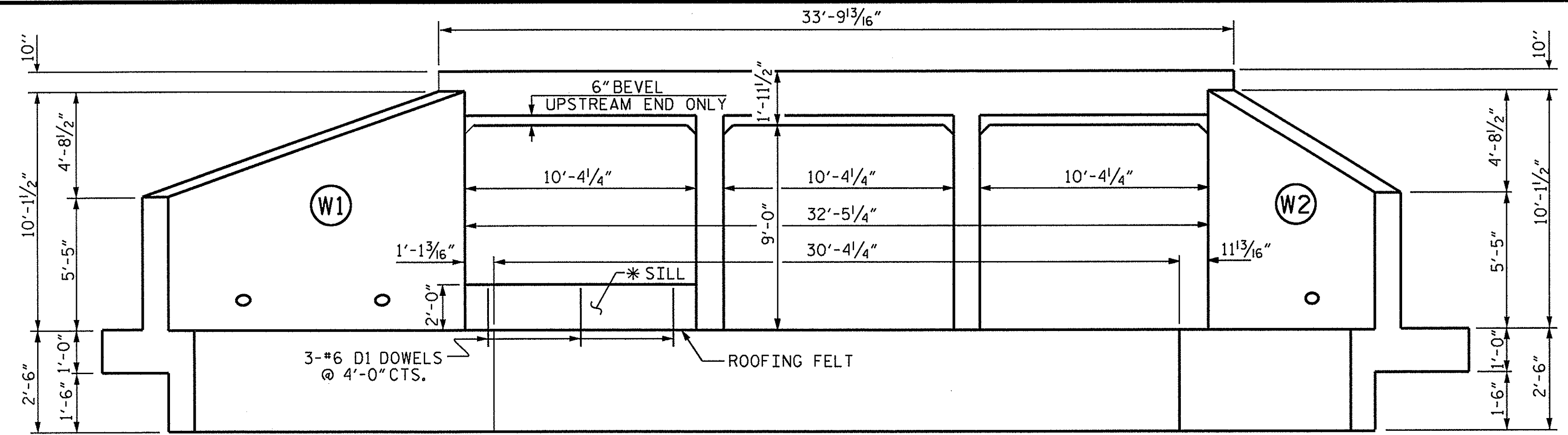


EXTERIOR WALL

INTERIOR WALL

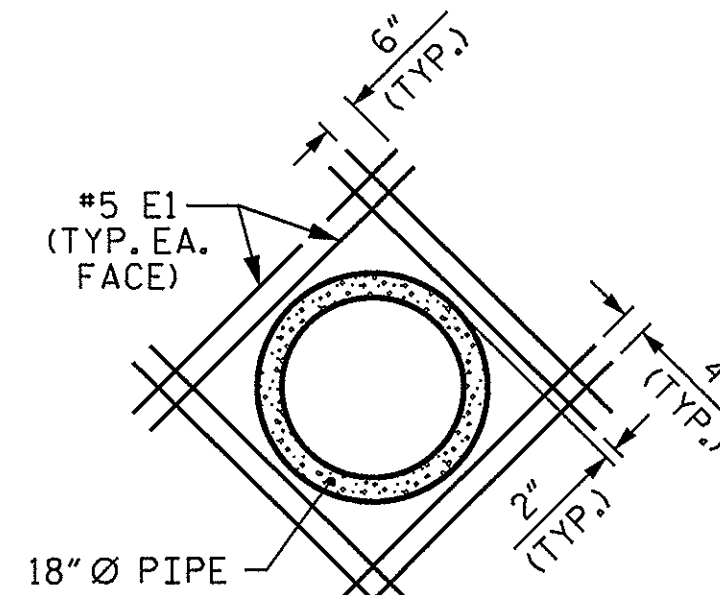
CULVERT SECTION NORMAL TO ROADWAY

* THE 18" Ø PIPE THROUGH THE CULVERT WING WILL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL WILL BE CUT OR FIELD BENT AS NECESSARY TO CLEAR THE PIPE.



END ELEVATION NORMAL TO SKEW

* EASTERN BARREL (BOTH ENDS) SEE DETAIL "A" FOR LOW FLOW SILL

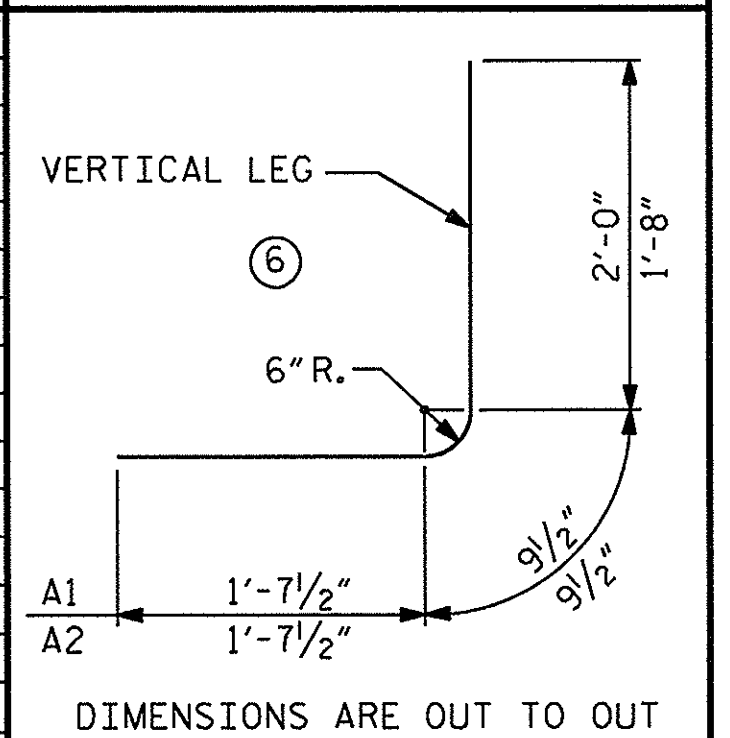


DETAIL A

BILL OF MATERIAL									
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE
A1	126	#4	6	4'-5"	372	A307	4	#4	STR
A2	150	#4	6	4'-1"	409	A308	4	#4	STR
						A309	4	#4	STR
A100	182	#4	STR	17'-1"	2077				
A101	4	#4	STR	29'-9"	79	A400	228	#4	STR
A102	4	#4	STR	26'-8"	71	A401	4	#4	STR
A103	4	#4	STR	23'-7"	63	A402	4	#4	STR
A104	4	#4	STR	20'-5"	55	A403	4	#4	STR
A105	4	#4	STR	17'-4"	46	A404	4	#4	STR
A106	4	#4	STR	14'-3"	38	A405	4	#4	STR
A107	4	#4	STR	11'-1"	30	A406	4	#4	STR
A108	4	#4	STR	8'-0"	21	A407	4	#4	STR
A109	4	#4	STR	4'-11"	13	A408	4	#4	STR
A110	4	#4	STR	1'-9"	5	A409	4	#4	STR
						A410	4	#4	STR
A200	166	#4	STR	17'-1"	1894	A411	4	#4	STR
A201	4	#4	STR	29'-4"	78	A412	4	#4	STR
A202	4	#4	STR	25'-11"	69	A413	2	#4	STR
A203	4	#4	STR	22'-6"	60				
A204	4	#4	STR	19'-0"	51	B1	94	#4	STR
A205	4	#4	STR	15'-7"	42	B2	126	#4	STR
A206	4	#4	STR	12'-2"	33	B3	188	#4	STR
A207	4	#4	STR	8'-9"	23				
A208	4	#4	STR	5'-4"	14	C1	236	#4	STR
A209	4	#4	STR	1'-11"	5				
						D1	6	#6	STR
A300	166	#4	STR	17'-1"	1894				
A301	4	#4	STR	29'-4"	78	E1	16	#5	STR
A302	4	#4	STR	25'-11"	69				
A303	4	#4	STR	22'-6"	60	G1	8	#5	STR
A304	4	#4	STR	19'-0"	51				
A305	4	#4	STR	15'-7"	42	S2	12	#8	STR
A306	4	#4	STR	12'-2"	33				

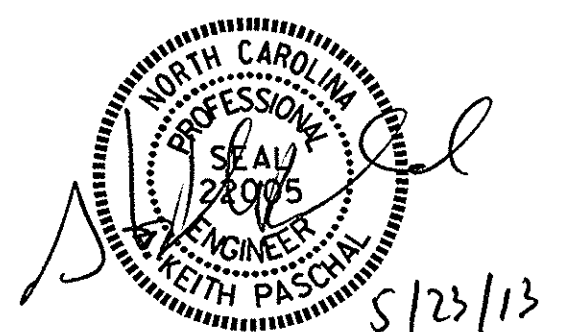
REINFORCING STEEL = 18,823 LBS

BAR TYPES



SPLICE LENGTH

BAR	SIZE	SPLICE LENGTH
A100	#4	1'-9"
A200	#4	1'-9"
A300	#4	1'-9"
A400	#4	1'-9"
C1	#4	1'-11"



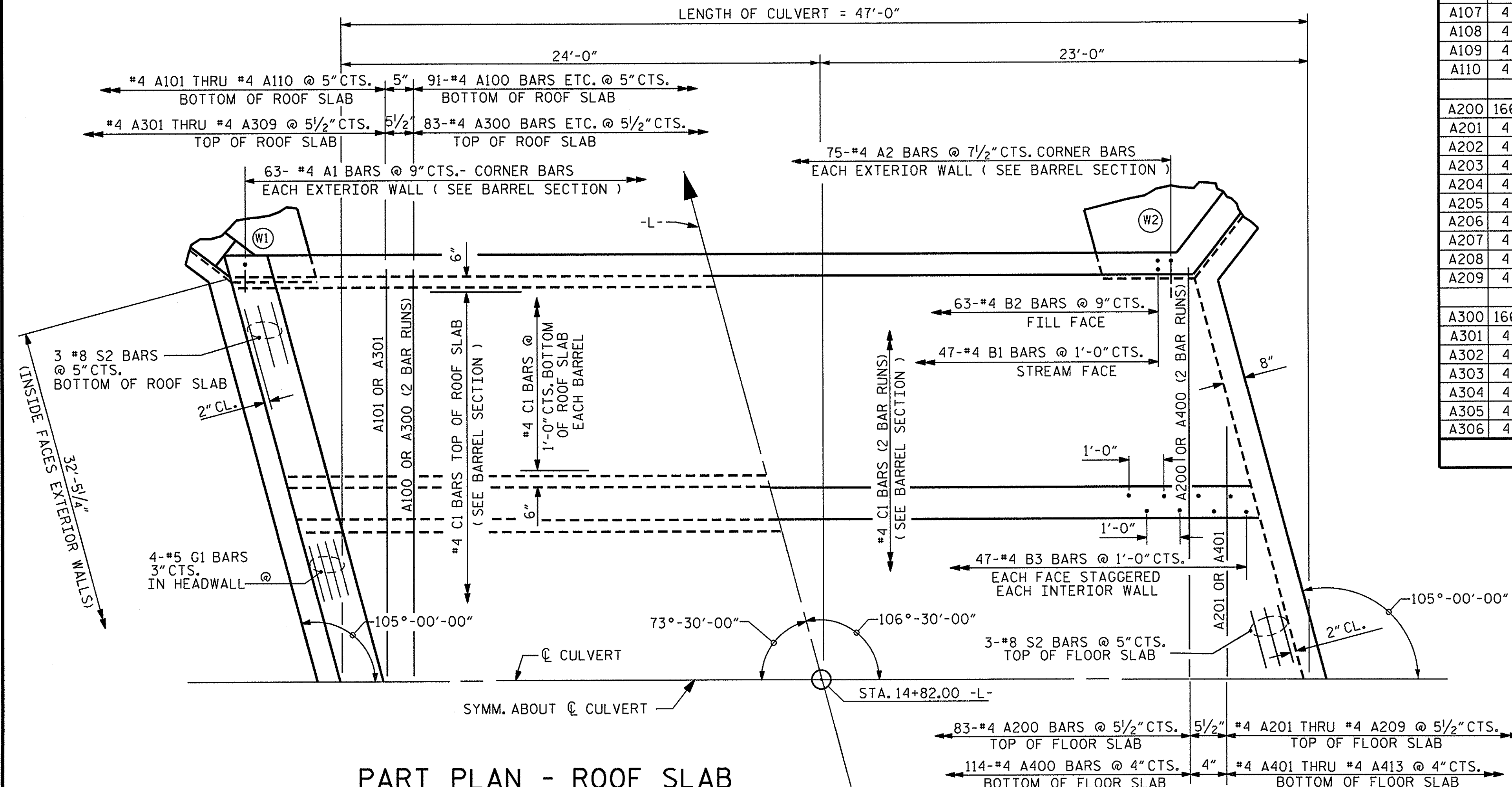
PROJECT NO. B-5420
PITT COUNTY
STATION: 14+82.00 -L-

SHEET 3 OF 5

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
BARREL STANDARD
TRIPLE 10 FT. X 9 FT.
CONCRETE BOX CULVERT

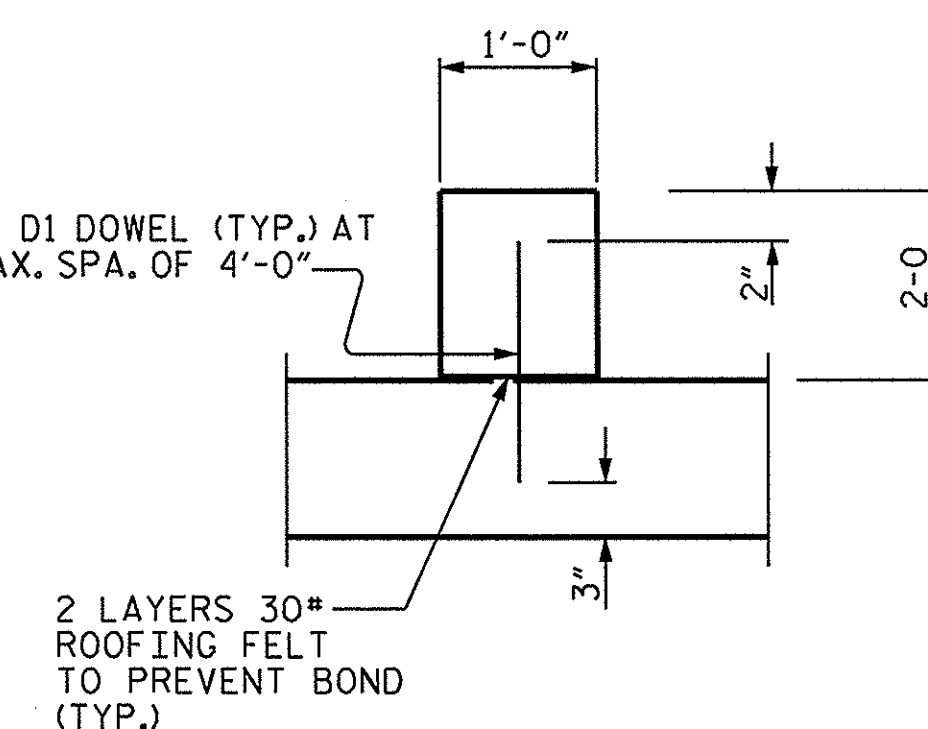
REVISIONS				SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
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				TOTAL SHEETS	5

STD. NO. CB223



PART PLAN - ROOF SLAB

PART PLAN - FLOOR SLAB

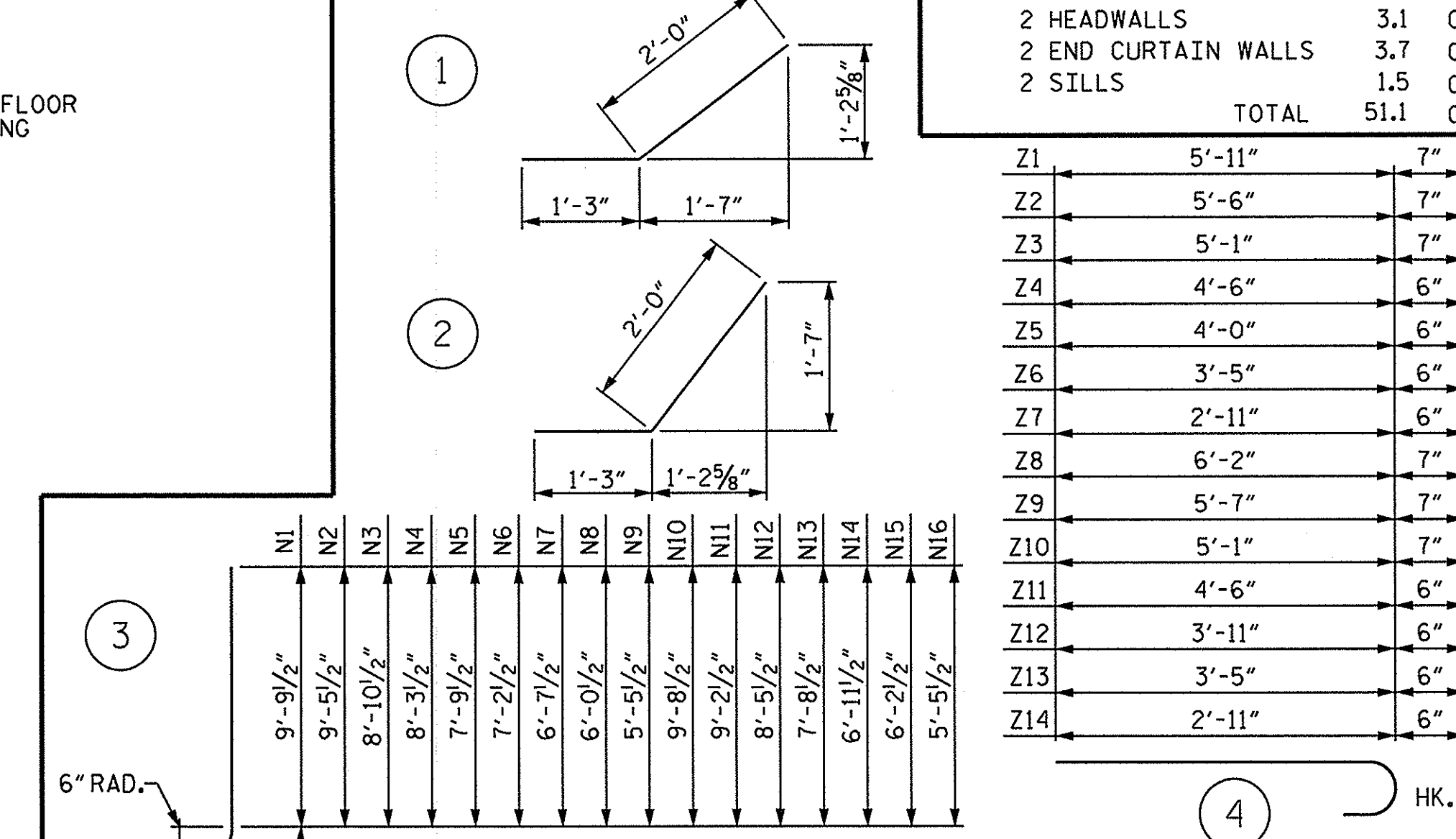
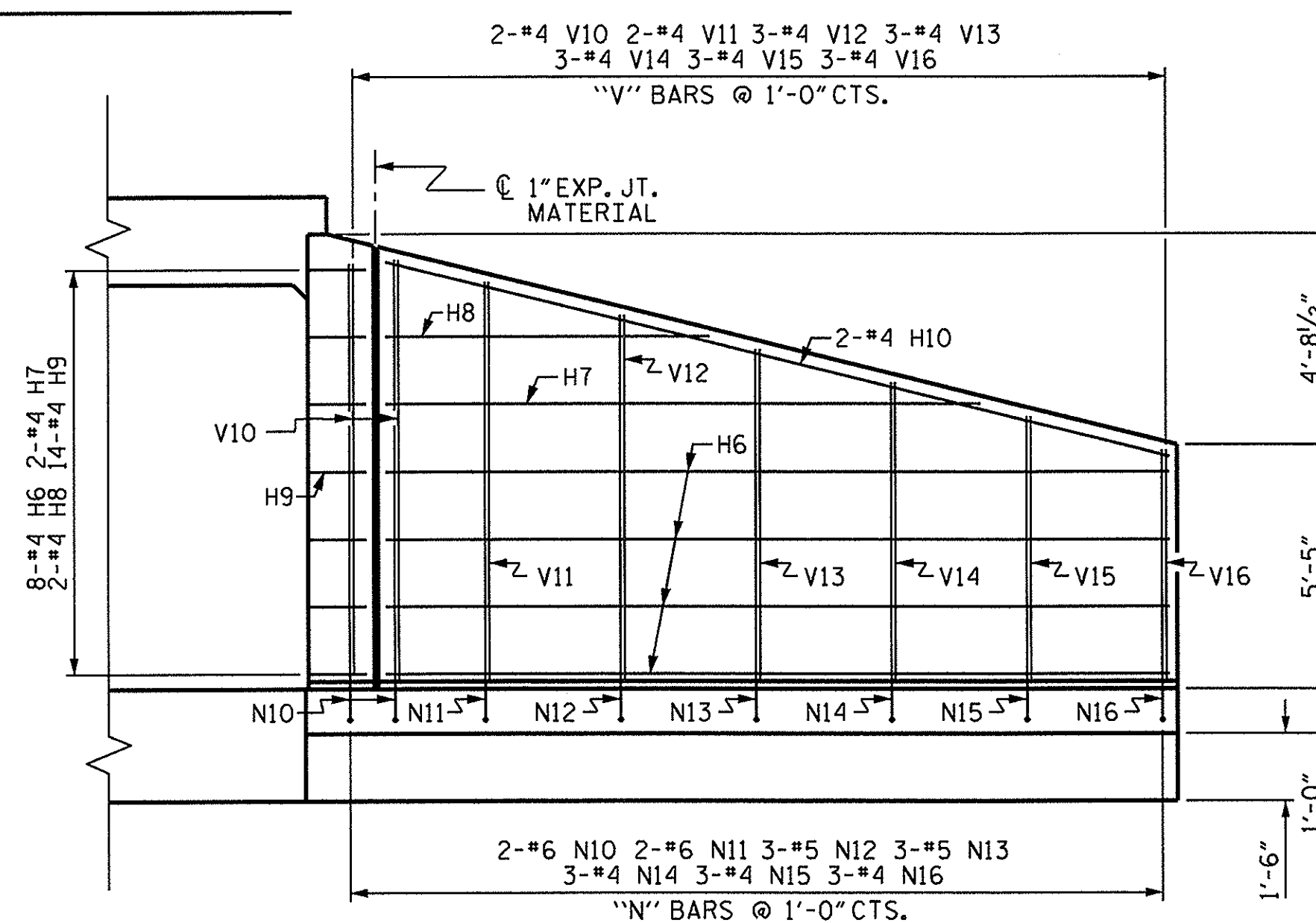
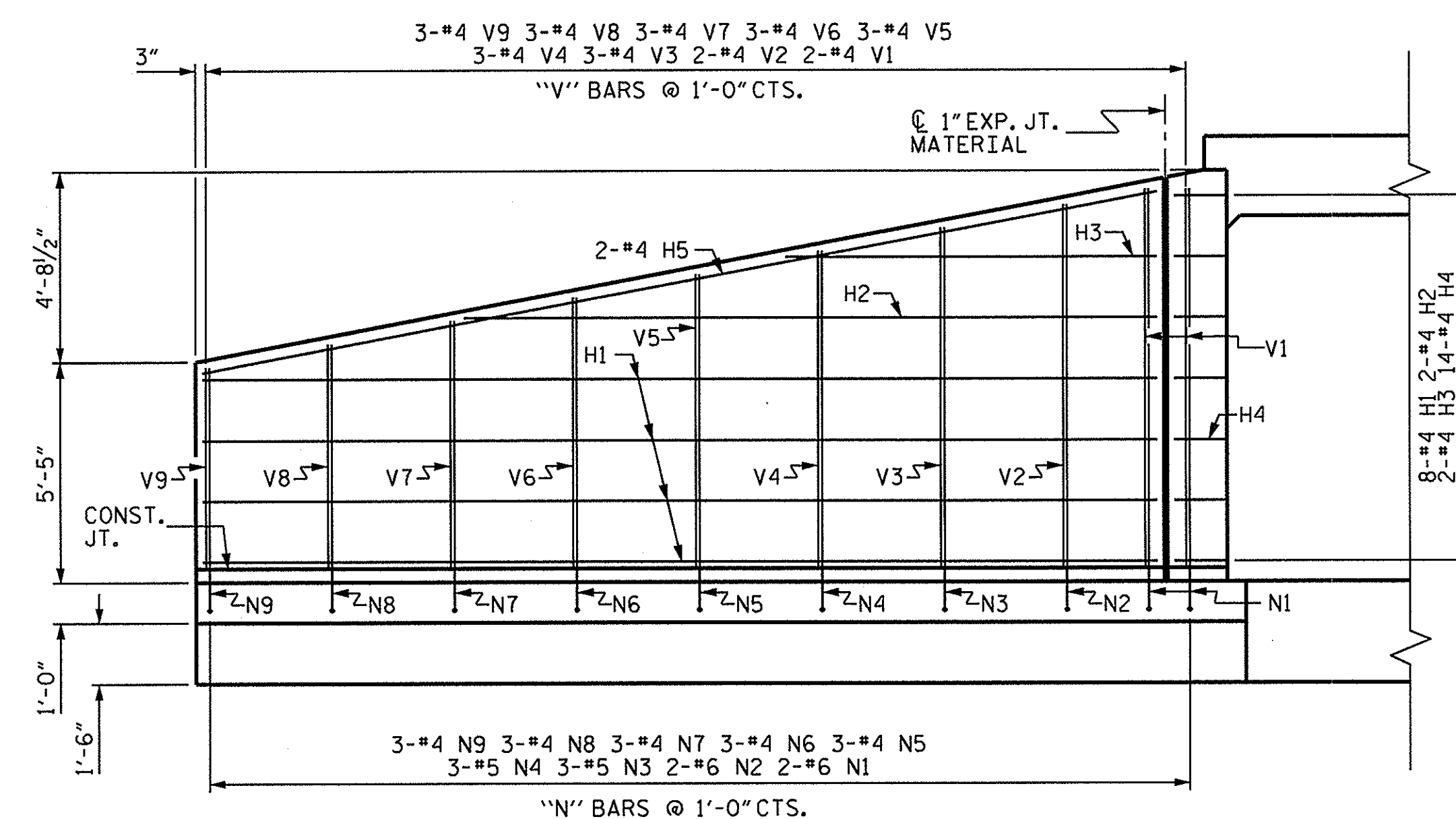
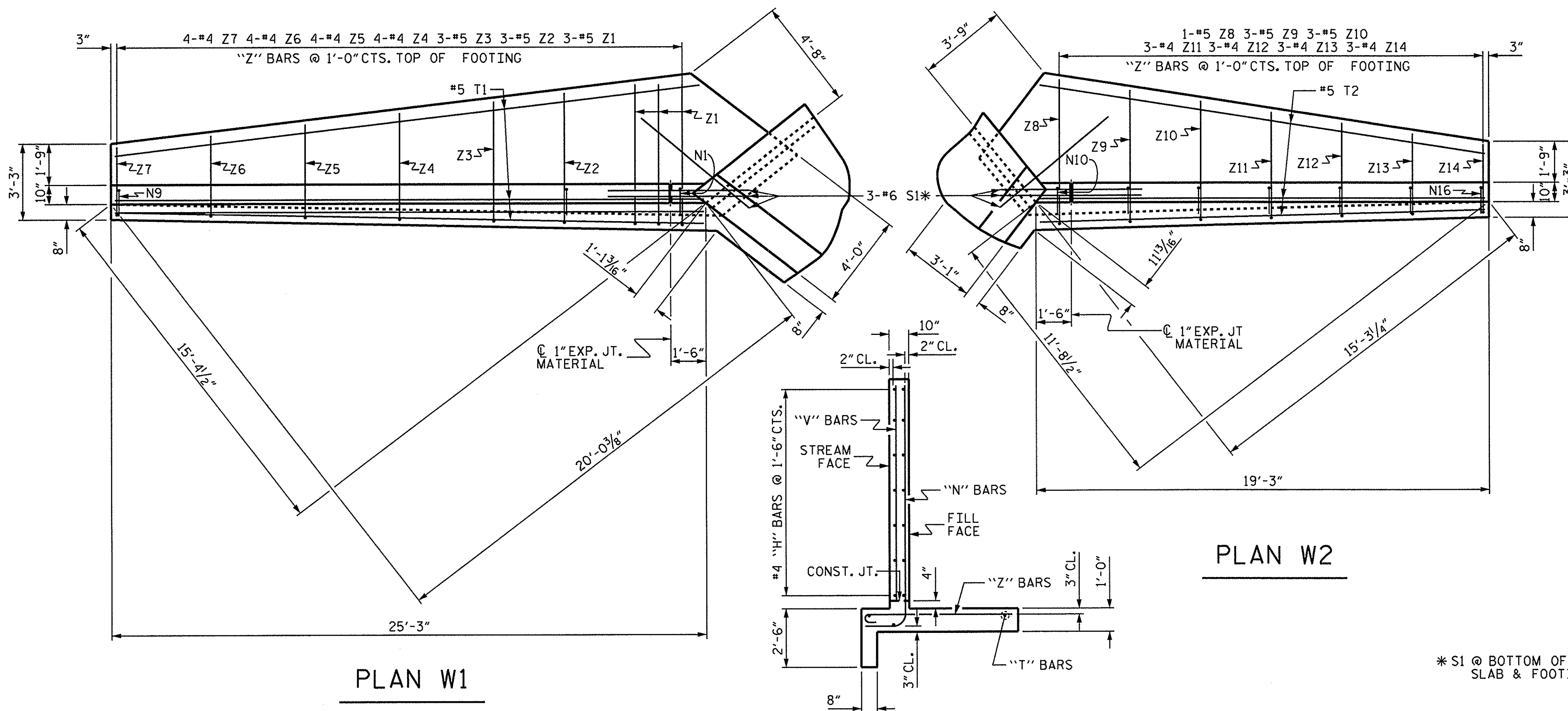


DETAIL "A" SECTION THROUGH SILL

* DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

REVISED 11-19-99 BY M.M. CHECKED BY P.M.W.
REVISED 8-28-92 BY E.M.P. CHECKED BY G.R.P.
REDRAWN 8-27-90 BY C.O.C. CHECKED BY M.A.J.

DRAWN BY: E.K. POPE DATE: 5-23-13
CHECKED BY: O. PUIGCERVER DATE: 5-23-13
DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE: 5-23-13



BILL OF MATERIAL											
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT	BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	16	#4	STR	23'-4"	249	V1	4	#4	STR	9'-4"	25
H2	4	#4	STR	16'-11"	45	V2	4	#4	STR	8'-11"	24
H3	4	#4	STR	9'-1"	24	V3	6	#4	STR	8'-4"	33
H4	28	#4	1	3'-3"	61	V4	6	#4	STR	7'-9"	31
H5	4	#4	STR	23'-9"	63	V5	6	#4	STR	7'-3"	29
H6	16	#4	STR	17'-4"	185	V6	6	#4	STR	6'-8"	27
H7	4	#4	STR	13'-2"	35	V7	6	#4	STR	6'-1"	24
H8	4	#4	STR	7'-2"	19	V8	6	#4	STR	5'-6"	22
H9	28	#4	2	3'-3"	61	V9	6	#4	STR	4'-11"	20
H10	4	#4	STR	17'-11"	48	V10	4	#4	STR	9'-4"	25
						V11	4	#4	STR	8'-10"	24
N1	4	#6	3	11'-3"	68	V12	6	#4	STR	8'-1"	32
N2	4	#6	3	10'-11"	66	V13	6	#4	STR	7'-4"	29
N3	6	#5	3	10'-4"	65	V14	6	#4	STR	6'-7"	26
N4	6	#5	3	9'-9"	61	V15	6	#4	STR	5'-10"	23
N5	6	#4	3	9'-3"	37	V16	6	#4	STR	5'-1"	20
N6	6	#4	3	8'-8"	35						
N7	6	#4	3	8'-1"	32	Z1	6	#5	4	6'-6"	41
N8	6	#4	3	7'-6"	30	Z2	6	#5	4	6'-1"	38
N9	6	#4	3	6'-11"	28	Z3	6	#5	4	5'-8"	35
N10	4	#6	3	11'-2"	67	Z4	8	#4	4	5'-0"	27
N11	4	#6	3	10'-8"	64	Z5	8	#4	4	4'-6"	24
N12	6	#5	3	9'-11"	62	Z6	8	#4	4	3'-11"	21
N13	6	#5	3	9'-2"	57	Z7	8	#4	4	3'-5"	18
N14	6	#4	3	8'-5"	34	Z8	2	#5	4	6'-9"	14
N15	6	#4	3	7'-8"	31	Z9	6	#5	4	6'-2"	39
N16	6	#4	3	6'-11"	28	Z10	6	#5	4	5'-8"	35
						Z11	6	#4	4	5'-0"	20
S1	12	#6	STR	6'-0"	108	Z12	6	#4	4	4'-5"	18
						Z13	6	#4	4	3'-11"	16
T1	6	#5	STR	25'-0"	156	Z14	6	#4	4	3'-5"	14

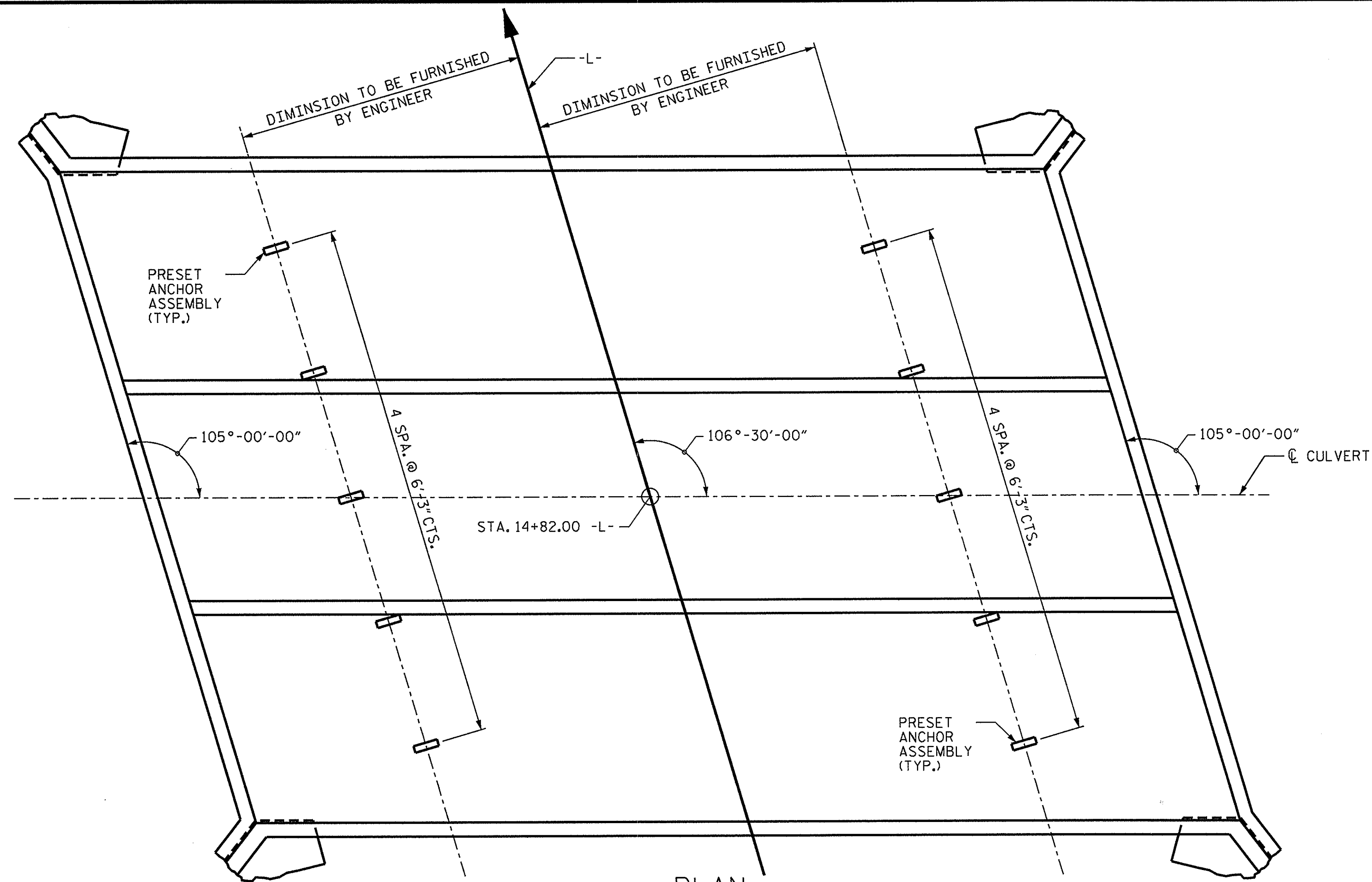
T2	6	#5	STR	19'-1"	119
BAR TYPES					
ALL BAR DIMENSIONS ARE OUT TO OUT.					
(1)	A diagram of a rectangular reinforcement bar. The top horizontal dimension is labeled "2'-0\"/>				
REINFORCING STEEL = 2,712 LBS FOR 4 WINGS					
CLASS A CONCRETE					
4 WINGS					42.8 CY
2 HEADWALLS					3.1 CY
2 END CURTAIN WALLS					3.7 CY
2 SILLS					1.5 CY
TOTAL					51.1 CY

PROJECT NO. B-5420
PITT COUNTY
 STATION: 14+82.00 -L-

SHEET 4 OF 5

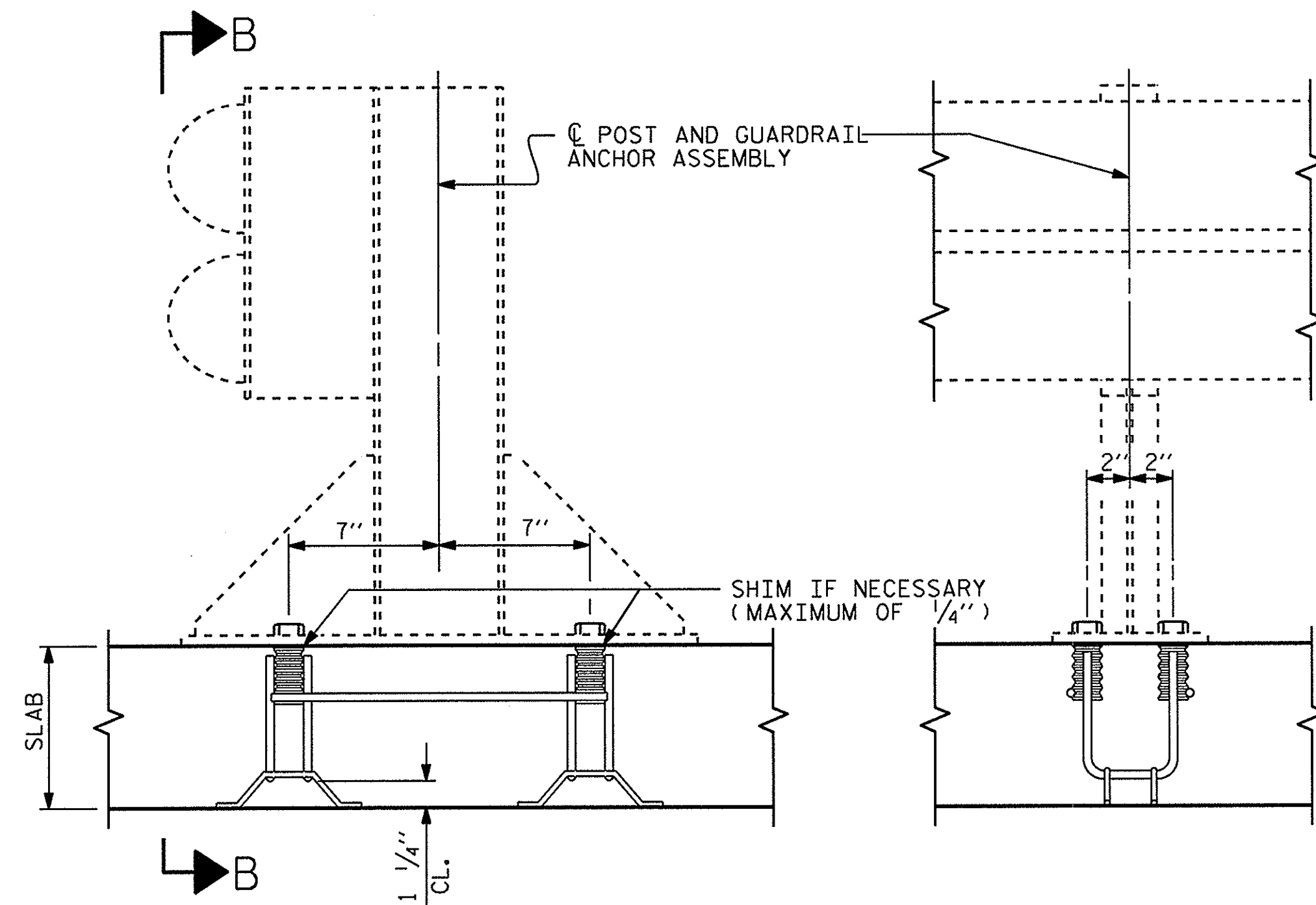
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
STANDARD WINGS
FOR
CONCRETE BOX CULVERT
H = 9'-0" SLOPE = 3:1
105° SKEW

REVISIONS						SHEET NO. C-4
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			TOTAL SHEETS 5
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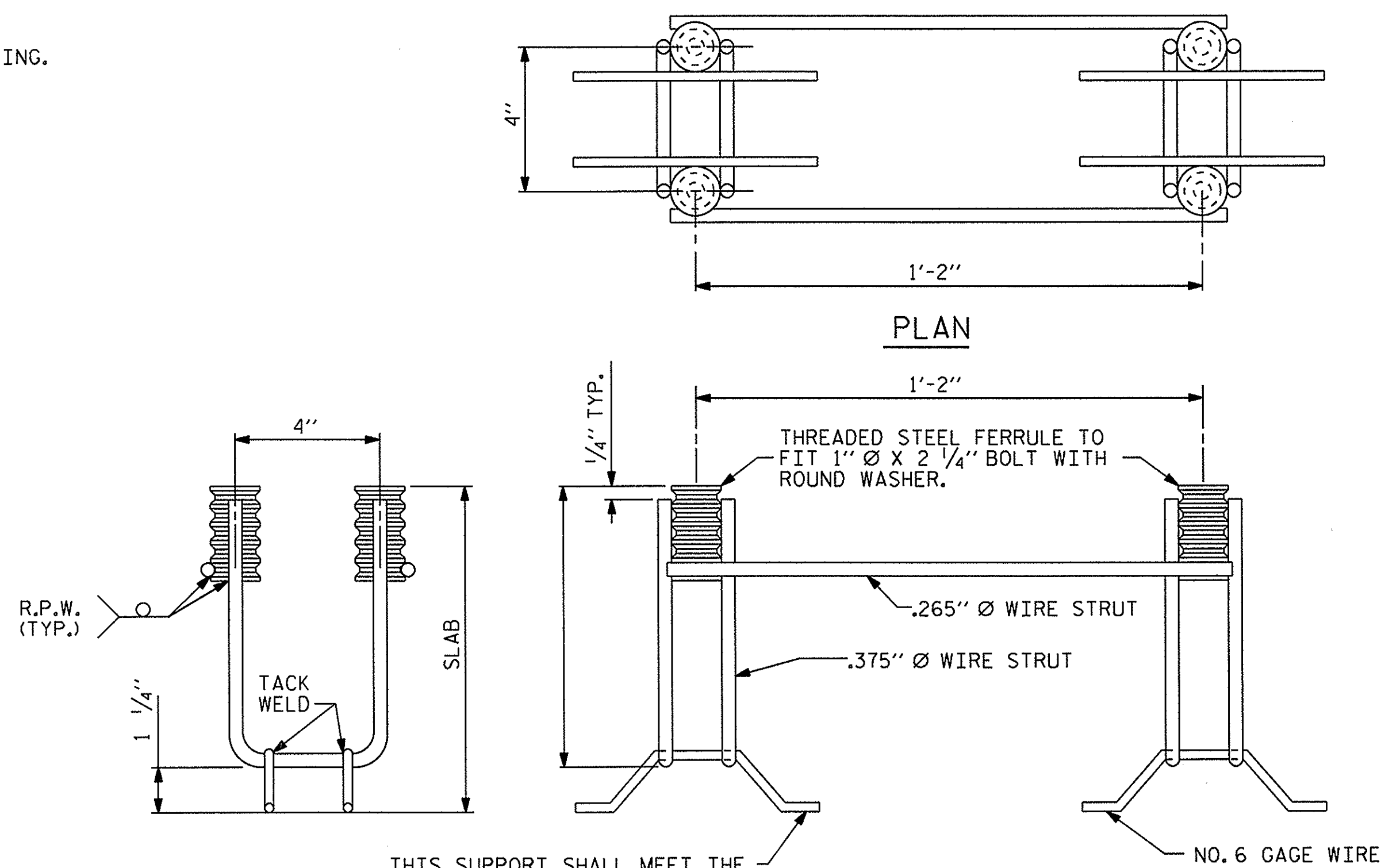
PLAN

SHOWING : GUARDRAIL ANCHOR ASSEMBLY SPACING.



SECTION A-A

SECTION B-B



ELEVATION

SIDE VIEW

GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS SHALL CONSIST OF THE FOLLOWING COMPONENTS :

- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF $2\frac{1}{2}$ ".
- 4 - $1" \varnothing \times 2\frac{1}{4}"$ BOLTS WITH WASHERS, BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE $1" \varnothing \times 2\frac{1}{4}"$ GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
- WIRE STRUTS SHOWN IN THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS DETAIL ARE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 P.S.I. AS AN OPTION, A $\frac{1}{16}" \varnothing$ WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.

GUARDRAIL ANCHOR ASSEMBLY WITH BOLTS SHALL BE ASSEMBLED IN THE SHOP. BOLT THREADS MAY BE RECUT AS NECESSARY TO INSURE FIT.

THE COST OF THE GUARDRAIL ANCHOR ASSEMBLY FOR CULVERTS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR CLASS "A" CONCRETE.

FERRULES TO BE PLUGGED DURING POURING OF SLAB AS RECOMMENDED BY THE MANUFACTURER.

AT THE CONTRACTOR'S OPTION, FERRULES WITH OPEN OR CLOSED ENDS MAY BE USED.

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

SLAB REINFORCING STEEL MAY BE SHIFTED AS NECESSARY TO CLEAR GUARDRAIL ANCHOR ASSEMBLY. CARE SHOULD BE TAKEN TO KEEP THE SHIFTING OF REINFORCING STEEL TO A MINIMUM.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF GUARDRAIL ANCHOR ASSEMBLY. LEVEL TWO FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE $1" \varnothing$ BOLT IS 21.8 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE STANDARD SPECIFICATIONS.



PROJECT NO. B-5420
PITT COUNTY
 STATION: 14+82.00 -L-

SHEET 5 OF 5

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 ANCHORAGE DETAILS FOR
 GUARDRAIL ANCHOR ASSEMBLY
 FOR CULVERTS

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	
1			3			C-5
2			4			
TOTAL SHEETS						5

DRAWN BY : E. K. POPE DATE : 5-21-13
 CHECKED BY : O. PUIGCERVER DATE : 5-21-13
 DESIGN ENGINEER OF RECORD: O. PUIGCERVER DATE : 5-21-13

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