

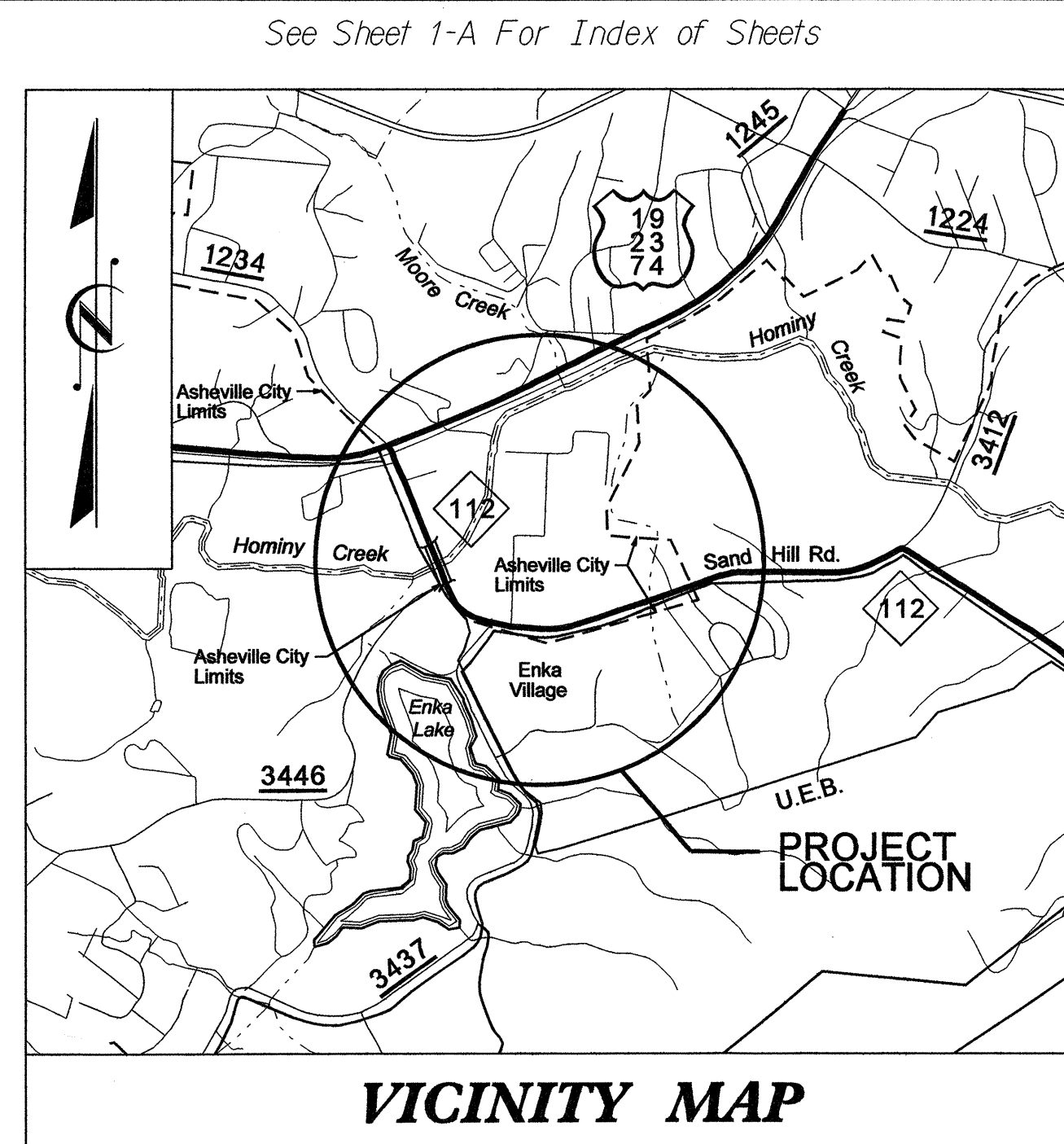
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4033	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33400.1.1	BRSTP-112(1)	PE	
33400.2.2	BRSTP-112(1)	RW & UTILITIES	
33400.3.1	BRSTP-112(1)	CONSTRUCTION	

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

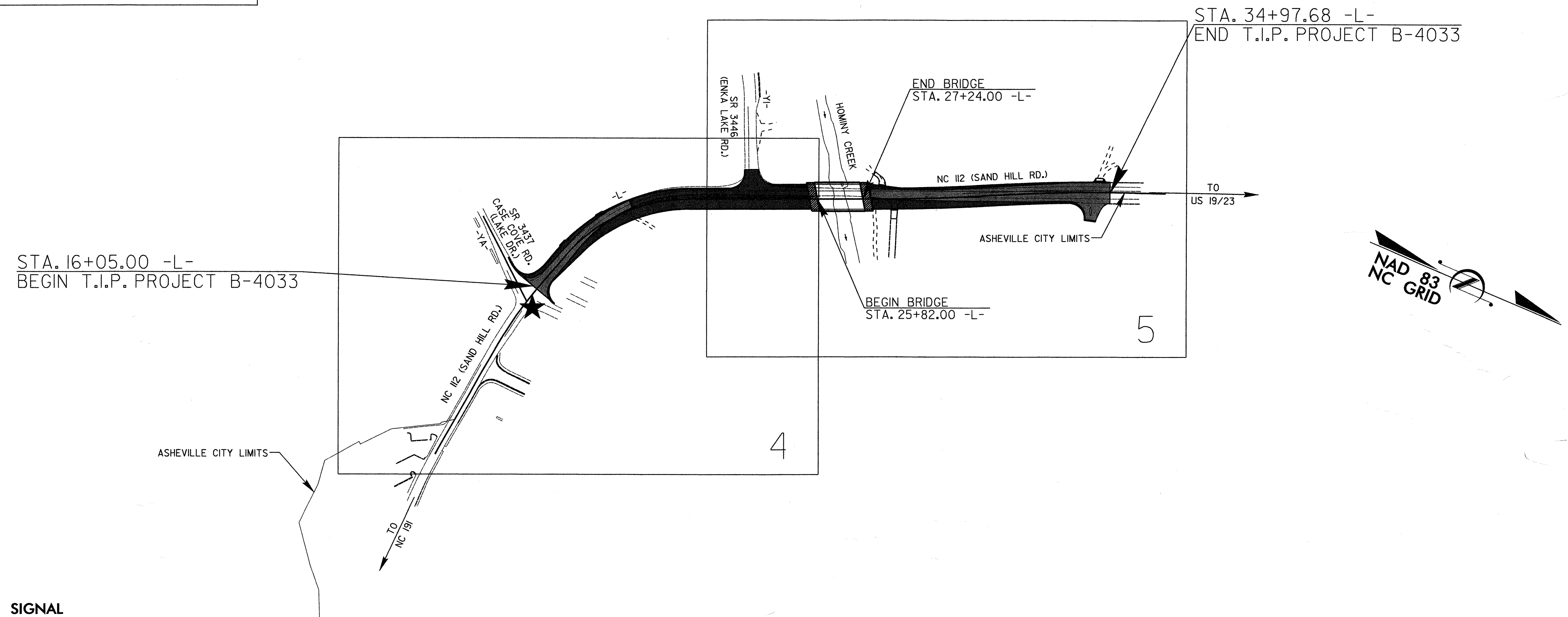
**BUNCOMBE COUNTY**

LOCATION: BRIDGE NO. 85 OVER HOMINY CREEK ON NC 112

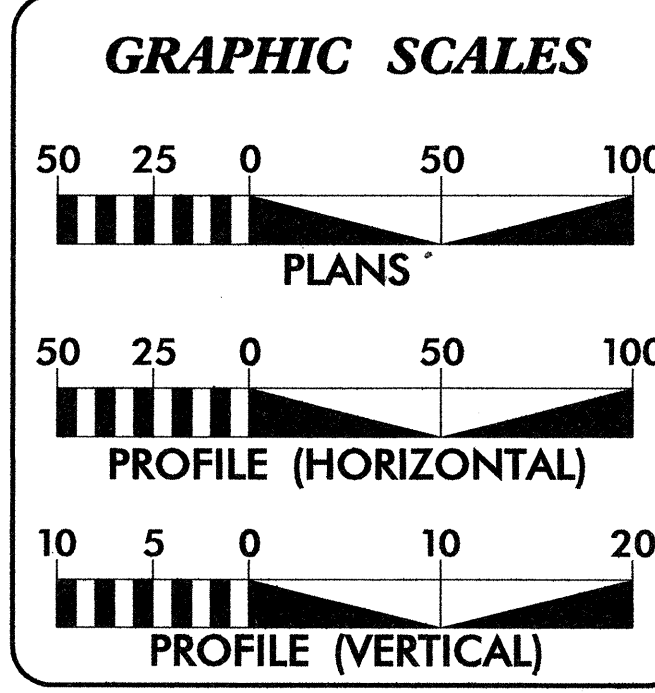
TYPE OF WORK: PAVING, GRADING, DRAINAGE, SIGNALS, AND STRUCTURE



VICINITY MAP



★ PROPOSED TRAFFIC SIGNAL



**DESIGN DATA**

ADT 2006 =	14,600
ADT 2030 =	25,000
DHV =	11 %
D =	55 %
T =	5 % *
V =	40 MPH
* TTST 1%	DUAL 4%
FUNC CLASS =	RURAL MINOR ARTERIAL

**PROJECT LENGTH**

LENGTH ROADWAY T.I.P. PROJECT B-4033	=	0.331 MILES
LENGTH STRUCTURES T.I.P. PROJECT B-4033	=	0.027 MILES
TOTAL LENGTH T.I.P. PROJECT B-4033	=	0.358 MILES

Prepared in the Office of:  
**PBSJ** 5200 77 CENTER DRIVE, SUITE 500  
CHARLOTTE, NORTH CAROLINA 28217  
(704) 522-7275

2006 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
AUGUST 17, 2007

**LETTING DATE:**  
NOVEMBER 18, 2008

**STEVE DRUM, P.E.**  
PROJECT ENGINEER

**VIRGINIA SCHAAR, P.E.**  
PROJECT DESIGN ENGINEER

**CATHY S. HOUSER, P.E.**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

SEAL 29185  
RICHARD L. HINER  
SIGNATURE: [Signature] 06/23/08

**ROADWAY DESIGN ENGINEER**

SEAL 17265  
SIGNATURE: [Signature] 6/23/08

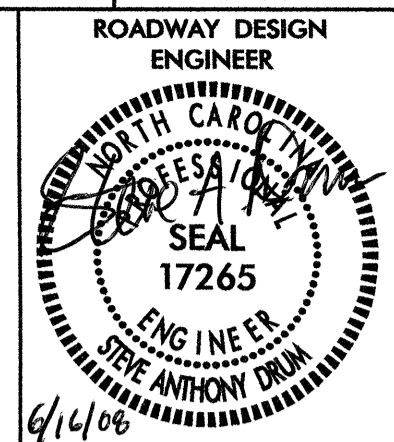
DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA

**STATE HIGHWAY DESIGN ENGINEER**

[Signature]

CONTRACT: C201892  
 TIP PROJECT: B-4033  
 23-JUN-2008 14:50  
 R:\Roadway\Proj\B4033\_Rdy\_tsh.dgn  
 \$\$\$USERNAME\$\$\$

09/08/99



EFF. 07-18-06  
REV. 01-02-07

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARDS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, WEDGING DETAILS, AND TYPICAL SECTIONS
2-A	TEMPORARY SHORING DETAIL
2-B	SIDE BY SIDE HOODED CATCH BASIN WITH DOUBLE SIZE BOX
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF EARTHWORK, EXISTING ASPHALT PAVEMENT REMOVAL, DRAINAGE QUANTITIES AND GUARDRAIL
3-B	PARCEL INDEX SHEET
4	PLAN SHEET
5	PLAN SHEET
6	PROFILE SHEET
TCP-1 THRU TCP-11	TRAFFIC CONTROL PLANS
PM-1 THRU PM-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-5	SIGNING PLANS
SIG-1 THRU SIG-26	TRAFFIC SIGNALS
UC-1 THRU UC-7	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-10	CROSS-SECTIONS
S-1 THRU S-50	STRUCTURE PLANS

**GENERAL NOTES:**

2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-18-06

**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.

**SIDE ROADS:**

THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**UNDERDRAINS:**

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

**DRIVEWAYS:**

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3' RADII OR RADII AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

**STREET TURNOUT:**

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

**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.

**SUBSURFACE PLANS:**

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

**END BENTS:**

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

**UTILITIES:**

UTILITY OWNERS ON THIS PROJECT ARE CITY OF ASHEVILLE AND AT&T OF NORTH CAROLINA

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

**RIGHT-OF-WAY MARKERS:**

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

**WHEELCHAIR RAMPS:**

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH DETAILS IN PLANS.

**TEMPORARY SHORING:**

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING"

2006 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated July 18, 2006 are applicable to this project and by reference hereby are considered a part of these plans:

STD. NO.	TITLE
<b>DIVISION 2 - EARTHWORK</b>	
200.02	Method of Clearing - Method 11
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
<b>DIVISION 3 - PIPE CULVERTS</b>	
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
<b>DIVISION 4 - MAJOR STRUCTURES</b>	
422.10	Reinforced Bridge Approach Fills
<b>DIVISION 6 - ASPHALT BASES AND PAVEMENTS</b>	
654.01	Pavement Repairs
<b>DIVISION 8 - INCIDENTALS</b>	
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
815.03	Pipe Underdrain and Blind Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.45	Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
848.05	Wheelchair Ramp - Curb Cut
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets



**Note: Not to Scale**

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**BOUNDARIES AND PROPERTY:**

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	○ EIP
Property Corner	_____
Property Monument	□ EDM
Parcel/Sequence Number	① 23
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 High Quality Wetland Boundary	-HQ WLB-
Existing Endangered Animal Boundary	-EAB-
Existing Endangered Plant Boundary	-EPB-

**BUILDINGS AND OTHER CULTURE:**

Gas Pump Vent or U/G Tank Cap	○
Sign	○ S
Well	○ W
Small Mine	⊗
Foundation	□
Area Outline	□
Cemetery	□ ⊕
Building	□
School	□
Church	□
Dam	□

**HYDROLOGY:**

Stream or Body of Water	_____
Hydro, Pool or Reservoir	□
River Basin Buffer	_____
Flow Arrow	←
Disappearing Stream	_____
Spring	○
Swamp Marsh	⊗
Proposed Lateral, Tail, Head Ditch	_____
False Sump	□

**RAILROADS:**

Standard Gauge	_____
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	○
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	E
Proposed Temporary Construction Easement	E
Proposed Temporary Drainage Easement	TDE
Proposed Permanent Drainage Easement	PDE
Proposed Permanent Utility Easement	PUE

**ROADS AND RELATED FEATURES:**

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	C
Proposed Slope Stakes Fill	F
Proposed Wheel Chair Ramp	WCFR
Curb Cut for Future Wheel Chair 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	○ S
Storm Sewer	_____ S

**UTILITIES:**

POWER:	
Existing Power Pole	●
Proposed Power Pole	○
Existing Joint Use Pole	●
Proposed Joint Use Pole	○
Power Manhole	○ P
Power Line Tower	□
Power Transformer	□
U/G Power Cable Hand Hole	□ PH
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	○ T
Telephone Booth	□
Telephone Pedestal	□
Telephone Cell Tower	⊗
U/G Telephone Cable Hand Hole	□ PH
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	□ PH
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

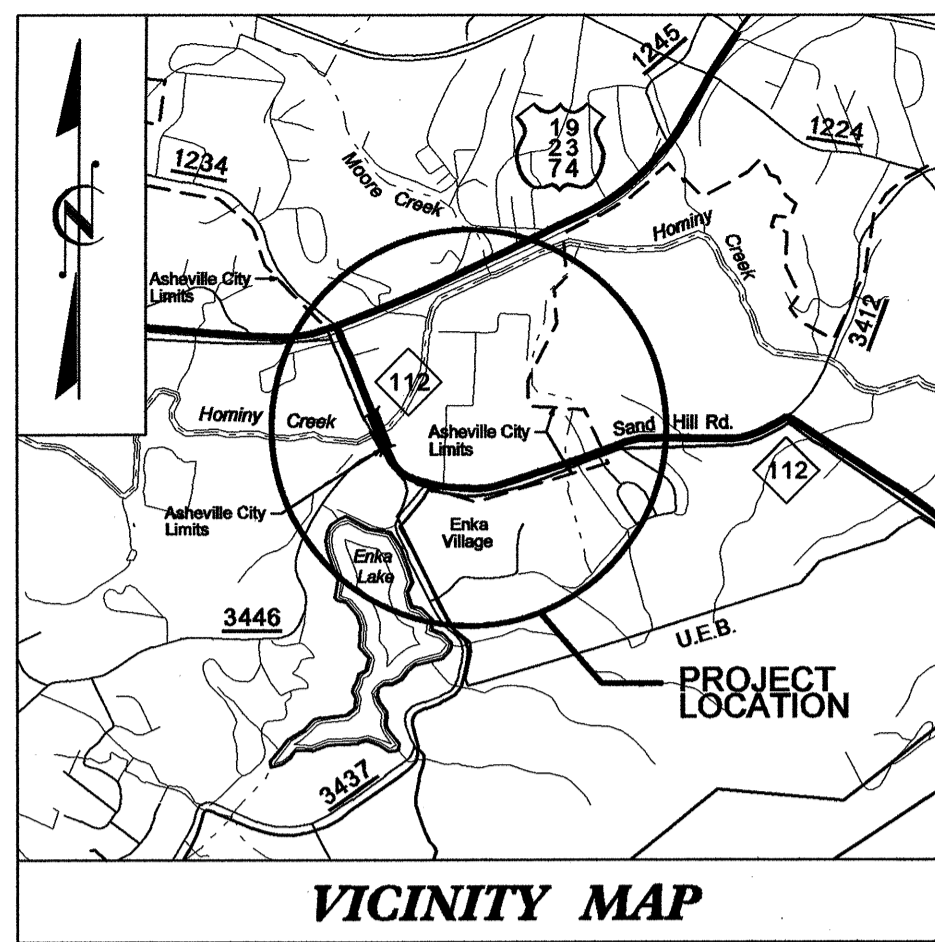
**SANITARY SEWER:**

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	_____ UTIL
U/G Tank; Water, Gas, Oil	□
AG Tank; Water, Gas, Oil	□
U/G Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

# SURVEY CONTROL SHEET B-4033



**VICINITY MAP**

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ASHEVILLE.

**NCGS MON "NAKON"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 673652.7766  
 E = 907664.4382

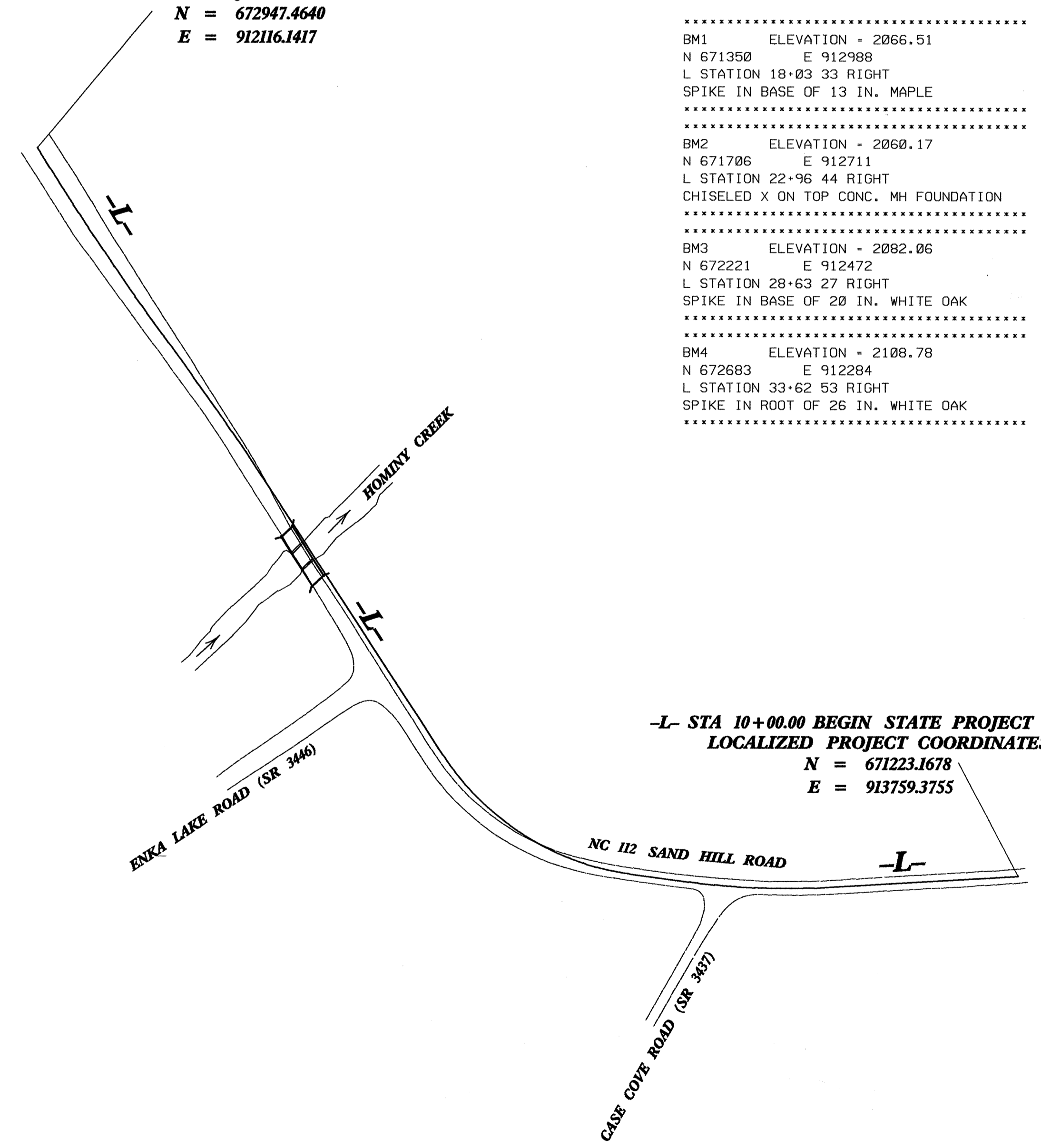
**NCGS MON "DEWEESE"**  
**LOCALIZED PROJECT COORDINATES**  
 N = 673169.3525  
 E = 911534.6435



**-L- STA 36+71.53 END STATE PROJECT 33400.11**  
**LOCALIZED PROJECT COORDINATES**  
 N = 672947.4640  
 E = 912116.1417

.....
BM1 ELEVATION = 2066.51
N 671350 E 912988
L STATION 18+03 33 RIGHT
SPIKE IN BASE OF 13 IN. MAPLE
.....
BM2 ELEVATION = 2060.17
N 671706 E 912711
L STATION 22+96 44 RIGHT
CHISELED X ON TOP CONC. MH FOUNDATION
.....
BM3 ELEVATION = 2082.06
N 672221 E 912472
L STATION 28+63 27 RIGHT
SPIKE IN BASE OF 20 IN. WHITE OAK
.....
BM4 ELEVATION = 2108.78
N 672683 E 912284
L STATION 33+62 53 RIGHT
SPIKE IN ROOT OF 26 IN. WHITE OAK
.....

BL	POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
18	BL-18		671131.8239	913885.2317	2075.61	OUTSIDE PROJECT LIMITS	
1	BL-1		671235.7700	913133.9710	2064.29	16+25.53	27.87 LT
2	BL-2		671388.3530	912798.7260	2072.11	19+80.46	42.77 LT
3	BL-3		671780.8960	912629.9830	2063.86	23+96.48	1.36 LT
4	BL-4		672095.0210	912498.3020	2071.37	27+37.08	0.37 RT
5	BL-5		672697.5410	912275.9440	2108.08	33+78.26	51.73 RT



**-L- STA 10+00.00 BEGIN STATE PROJECT 33400.11**  
**LOCALIZED PROJECT COORDINATES**  
 N = 671223.1678  
 E = 913759.3755

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATIONPROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/locationproject/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4033\_LS\_CONTROL\_060525.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

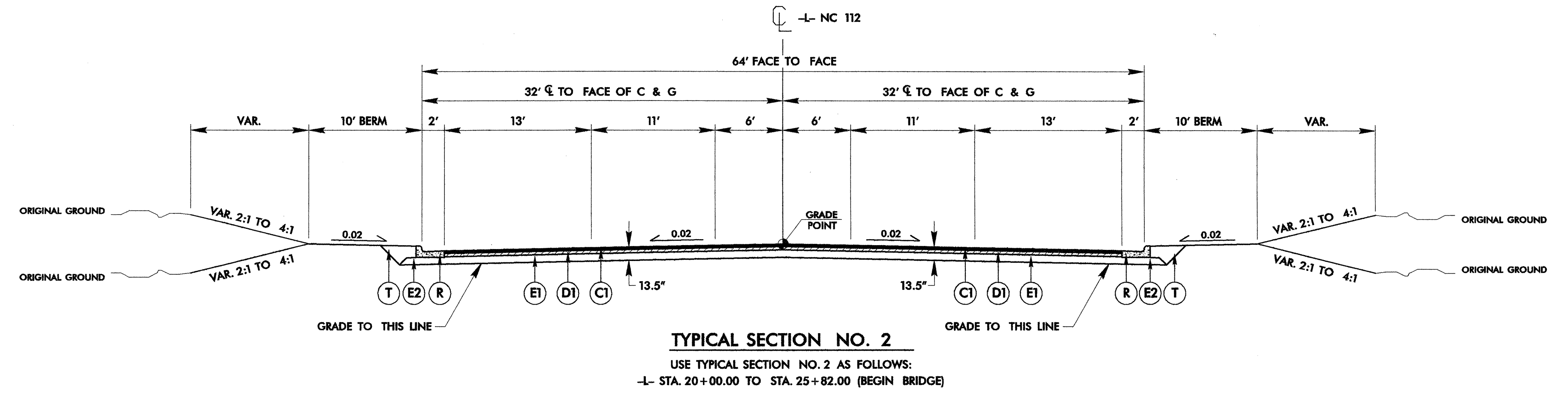
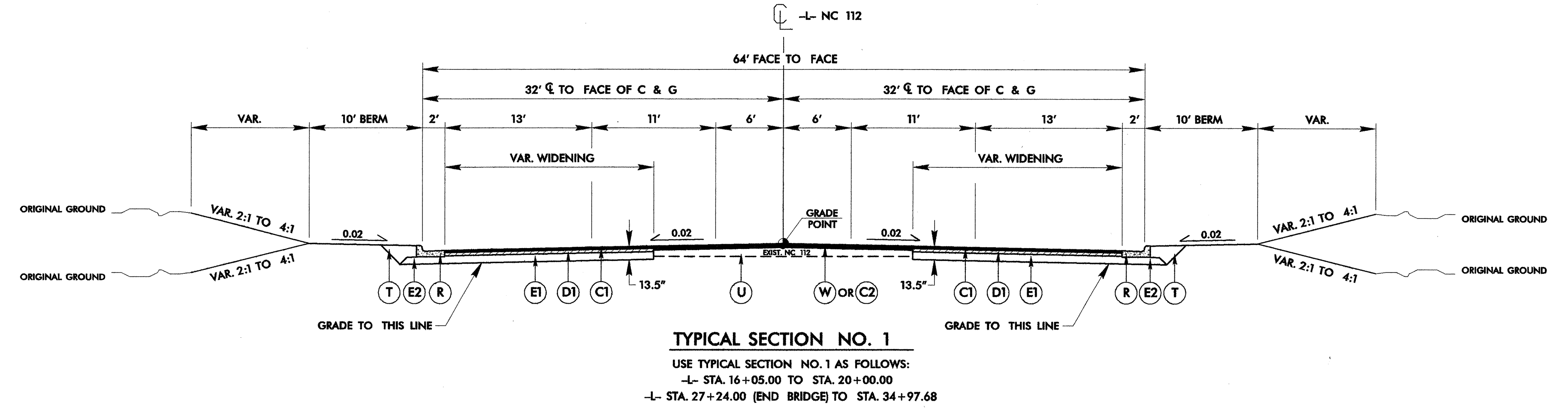
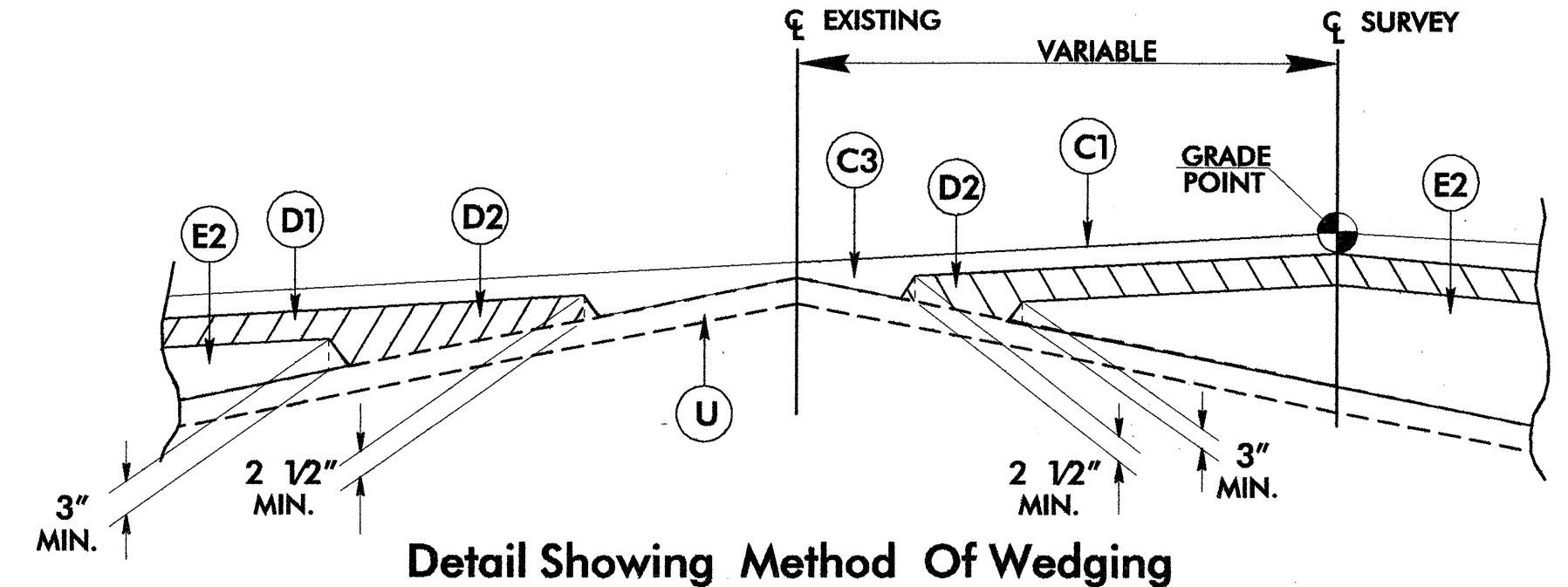
△ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 6½" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 370.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R	2' - 6" CONCRETE CURB AND GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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

PROJECT REFERENCE NO. B-4033	SHEET NO. 2
ROADWAY DESIGN ENGINEER SEAL 17265 5/21/08	PAVEMENT DESIGN ENGINEER SEAL 22896 5/22/08





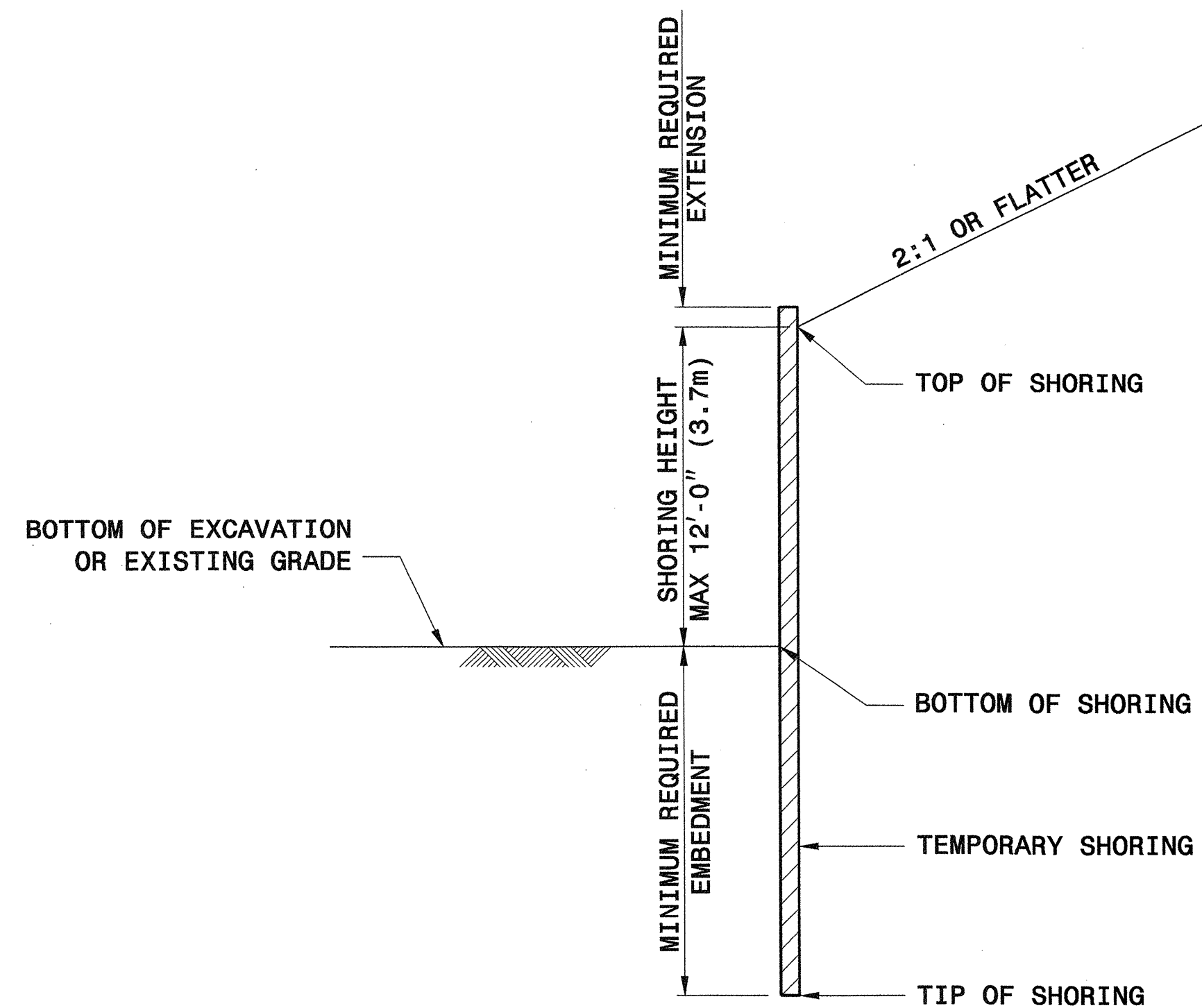
GEOTECHNICAL ENGINEER

ENGINEER

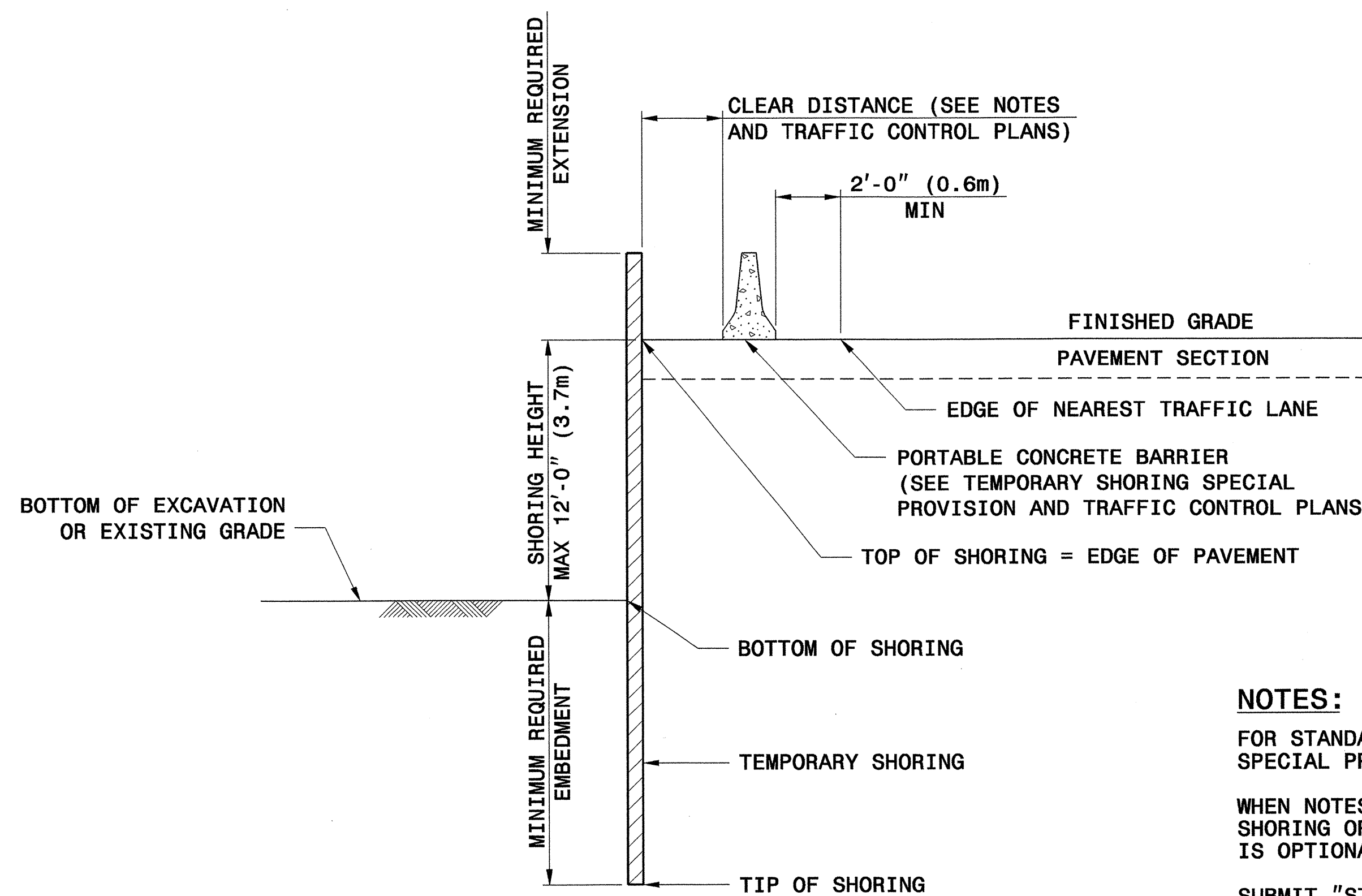


Scott A. Hadden 3/29/07

SIGNATURE DATE SIGNATURE DATE



**SLOPE CASE**



**SURCHARGE CASE**

**NOTES:**

FOR STANDARD TEMPORARY SHORING, SEE TEMPORARY SHORING SPECIAL PROVISION.

WHEN NOTES ON PLANS DO NOT PROHIBIT STANDARD TEMPORARY SHORING OR STANDARD SHORING, STANDARD TEMPORARY SHORING IS OPTIONAL.

SUBMIT "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 14 DAYS BEFORE BEGINNING SHORING CONSTRUCTION. UP TO THREE LOCATIONS MAY BE INCLUDED ON EACH SELECTION FORM.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING CONDITIONS:

- 1) MAXIMUM SHORING HEIGHT IS 12'-0" (3.7m).
- 2) TRAFFIC SURCHARGE IS 240 PSF (11.5 KPA) MAXIMUM OR BACKSLOPE IS 2:1 (H:V) OR FLATTER.
- 3) BOTTOM OF EXCAVATION OR EXISTING GRADE IN FRONT OF SHORING IS 6:1 (H:V) SLOPE OR FLATTER.
- 4) H PILE SPACING IS 6'-0" (1.8m).
- 5) H PILE EMBEDMENT DEPTHS ARE FOR DRIVEN PILES.
- 6) TIMBER LAGGING IS A MINIMUM OF 3" (75mm) THICK.

STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:  
 TOTAL UNIT WEIGHT = 120 PCF (18.8 KN/M<sup>3</sup>)  
 FRICTION ANGLE = 30 DEGREES  
 COHESION = 0 PSF (0 KPA)  
 GROUNDWATER IS ASSUMED TO BE BELOW BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN THE ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE THE BOTTOM OF SHORING.

DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS PRESENT WITHIN THE EMBEDMENT DEPTH.

VERIFY GROUNDWATER ELEVATION BEFORE BEGINNING SHORING CONSTRUCTION.

IF THE CLEAR DISTANCE AVAILABLE IS LESS THAN THE MINIMUM REQUIRED IN ACCORDANCE WITH THE TRAFFIC CONTROL PLANS, SET THE BARRIER AGAINST THE TRAFFIC SIDE OF THE SHORING AND USE THE "SURCHARGE CASE WITH TRAFFIC IMPACT".

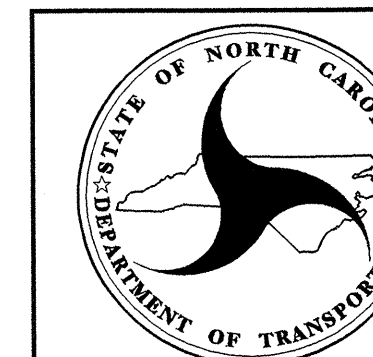
AT THE CONTRACTOR'S OPTION, H PILE EMBEDMENT DEPTHS FOR PILES SET IN DRILLED HOLES MAY BE REDUCED BY 25%. FOR PILE EXCAVATION, SEE TEMPORARY SHORING SPECIAL PROVISION.

CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF THE SHORING. COLLECT AND DIRECT RUNOFF AWAY FROM SHORING.

CONTACT THE ENGINEER IF MINIMUM REQUIRED EMBEDMENT IS NOT ACHIEVED.

GROUNDWATER CONDITION	SHORING HEIGHT FT (m)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H PILES WITH TIMBER LAGGING			SHEET PILES		H PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN <sup>3</sup> /FT (cm <sup>3</sup> /m)	MINIMUM REQUIRED EMBEDMENT FT (m)			MINIMUM REQUIRED EMBEDMENT FT (m)	MINIMUM REQUIRED SECTION MODULUS IN <sup>3</sup> /FT (cm <sup>3</sup> /m)	MINIMUM REQUIRED EMBEDMENT FT (m)		
		HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)				HP 10x42 (HP 250x62)	HP 12x53 (HP 310x79)	HP 14x73 (HP 360x108)	
GROUNDWATER ELEVATION BELOW TIP OF SHORING	< 6 (1.8)	7.5 (2.3)	3.0 (161)	8.0 (2.4)	8.0 (2.4)	8.0 (2.4)	11.0 (3.4)	10.0 (538)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)
	7 (2.1)	8.5 (2.6)	4.5 (242)	9.5 (2.9)	9.5 (2.9)	9.5 (2.9)	12.0 (3.7)	12.0 (645)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)
	8 (2.4)	10.0 (3.0)	6.5 (349)	10.5 (3.2)	10.5 (3.2)	10.5 (3.2)	12.5 (3.8)	14.0 (753)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)
	9 (2.7)	11.0 (3.4)	9.5 (511)	--	12.0 (3.7)	12.0 (3.7)	13.5 (4.1)	16.5 (887)	--	12.5 (3.8)	12.5 (3.8)
	10 (3.0)	12.5 (3.8)	13.0 (699)	--	--	13.5 (4.1)	14.0 (4.3)	19.5 (1048)	--	13.5 (4.1)	13.5 (4.1)
	11 (3.4)	13.5 (4.1)	17.0 (914)	--	--	14.5 (4.4)	15.0 (4.6)	22.5 (1210)	--	--	14.5 (4.4)
12 (3.7)	15.0 (4.6)	21.5 (1156)	--	--	16.0 (4.9)	16.0 (4.9)	25.5 (1371)	--	--	15.5 (4.7)	
GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND TIP OF SHORING	< 6 (1.8)	11.5 (3.5)	4.5 (242)	11.5 (3.5)	11.5 (3.5)	11.5 (3.5)	16.0 (4.9)	12.0 (645)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)
	7 (2.1)	13.0 (4.0)	7.0 (376)	13.0 (4.0)	13.0 (4.0)	13.0 (4.0)	17.0 (5.2)	14.5 (780)	14.5 (4.4)	14.5 (4.4)	14.5 (4.4)
	8 (2.4)	15.0 (4.6)	10.0 (538)	--	15.0 (4.6)	15.0 (4.6)	18.0 (5.5)	17.0 (914)	--	15.5 (4.7)	15.5 (4.7)
	9 (2.7)	17.0 (5.2)	14.0 (753)	--	17.0 (5.2)	17.0 (5.2)	19.0 (5.8)	20.0 (1075)	--	17.0 (5.2)	17.0 (5.2)
	10 (3.0)	18.5 (5.6)	19.5 (1048)	--	--	18.5 (5.6)	20.0 (6.1)	23.5 (1263)	--	--	18.5 (5.6)
	11 (3.4)	20.5 (6.3)	26.0 (1398)	--	--	--	21.0 (6.4)	28.0 (1505)	--	--	20.0 (6.1)
12 (3.7)	22.5 (6.9)	33.0 (1774)	--	--	--	22.0 (6.7)	33.0 (1774)	--	--	21.5 (6.6)	

NOTE: MINIMUM REQUIRED EXTENSION IS 6" (150mm) FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" (800 mm) FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".



**GEOTECHNICAL ENGINEERING UNIT**  
 STATE OF NORTH CAROLINA  
 DEPARTMENT OF TRANSPORTATION  
 RALEIGH

STANDARD DRAWING NO. 1801.01

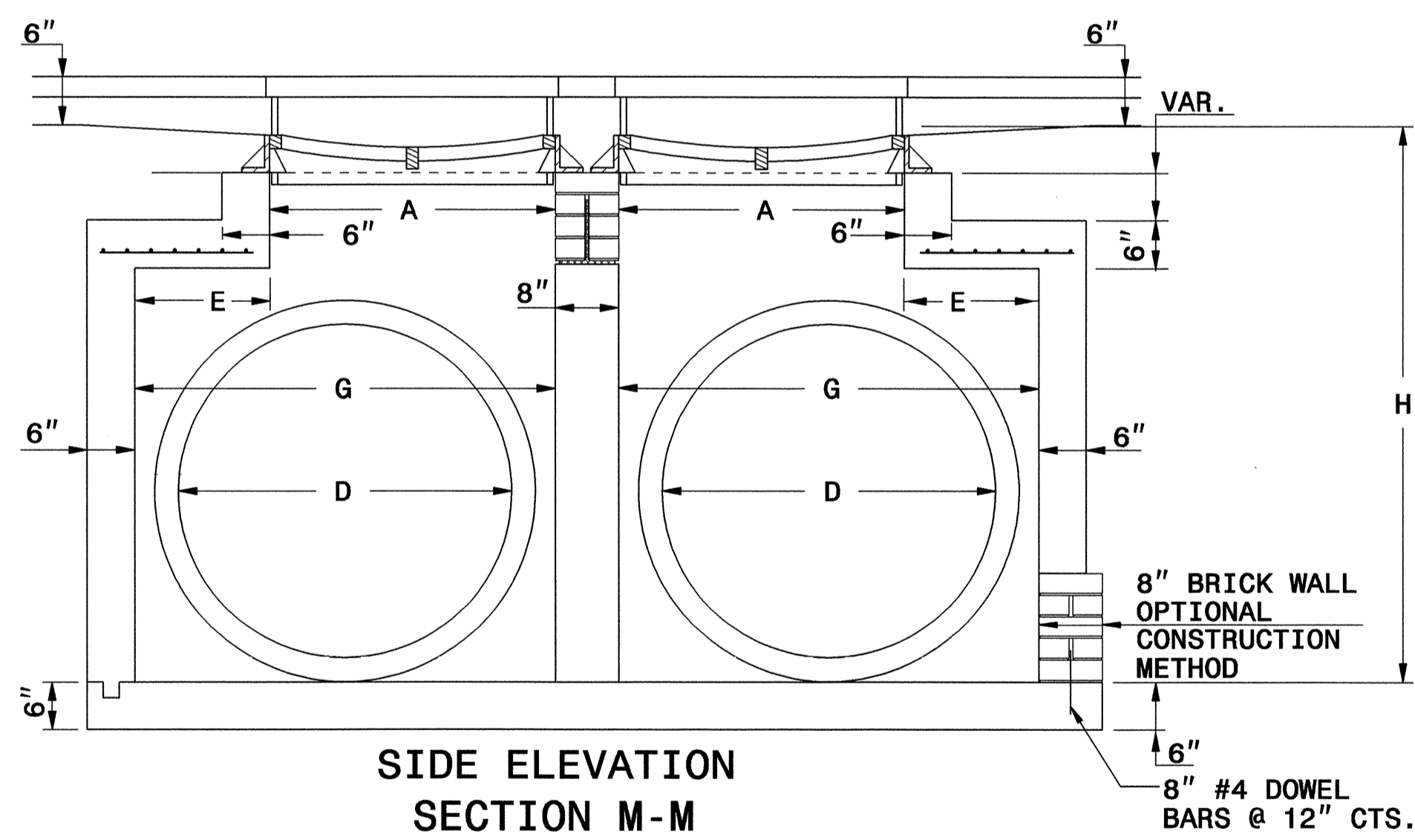
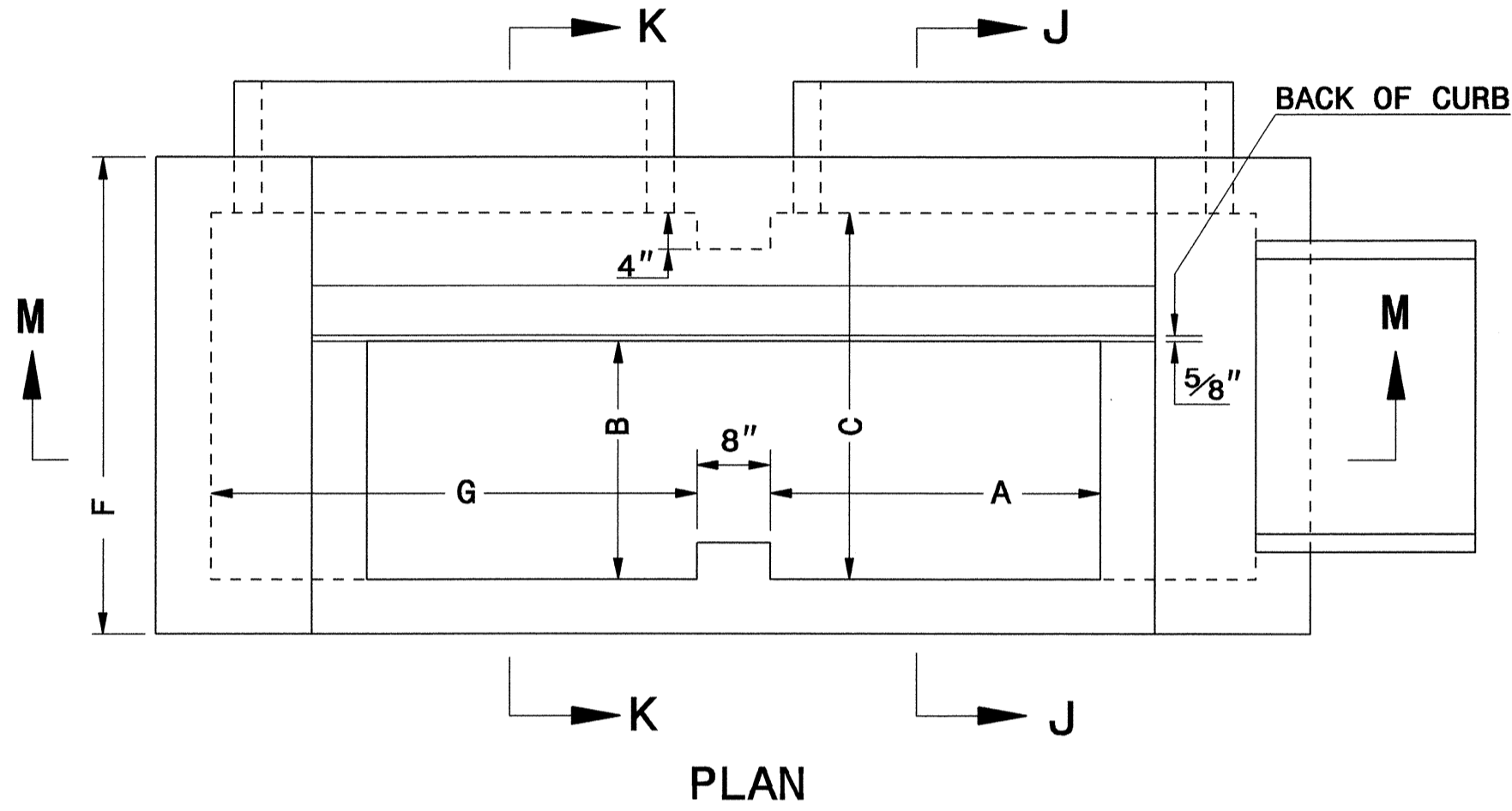
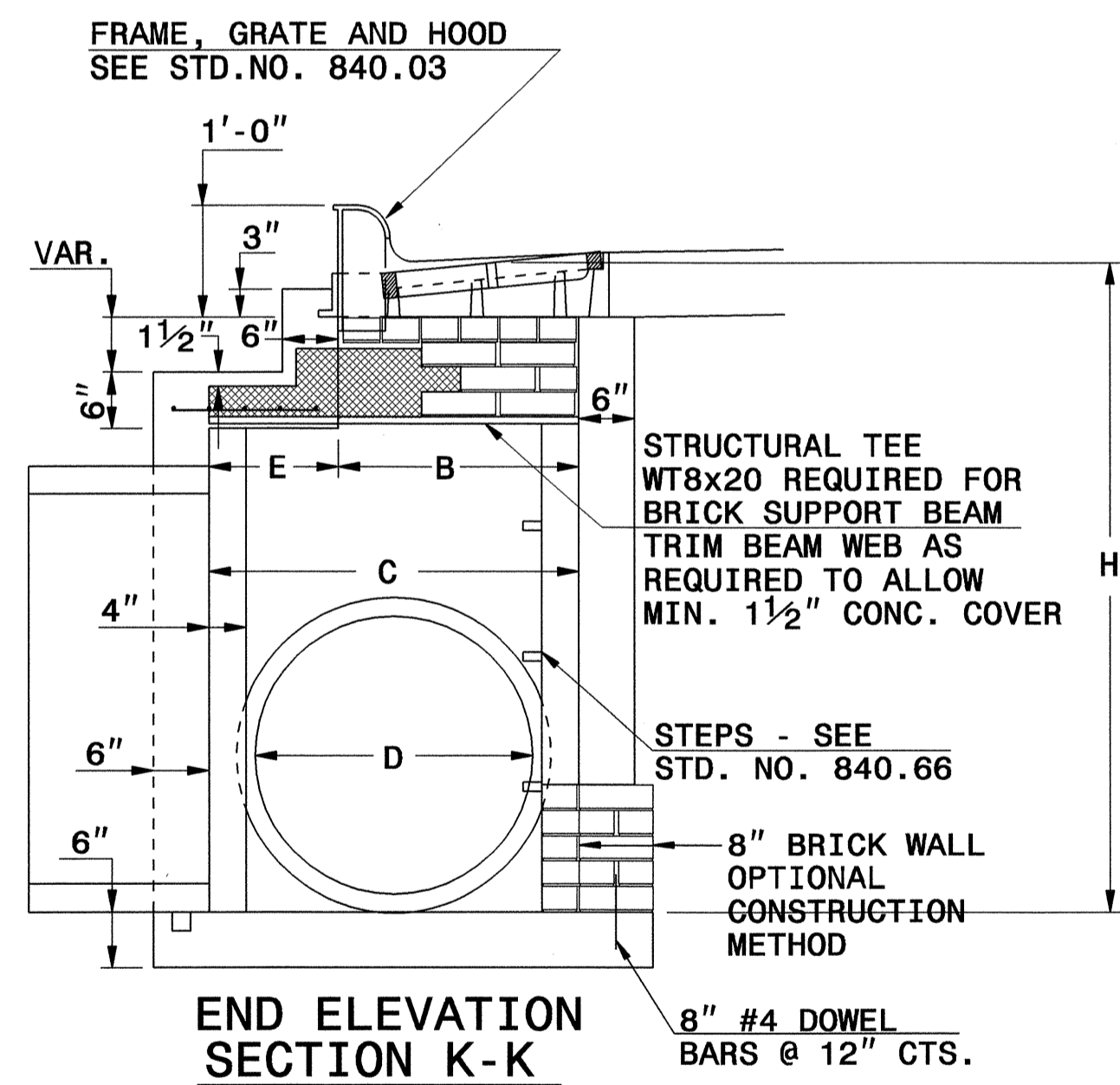
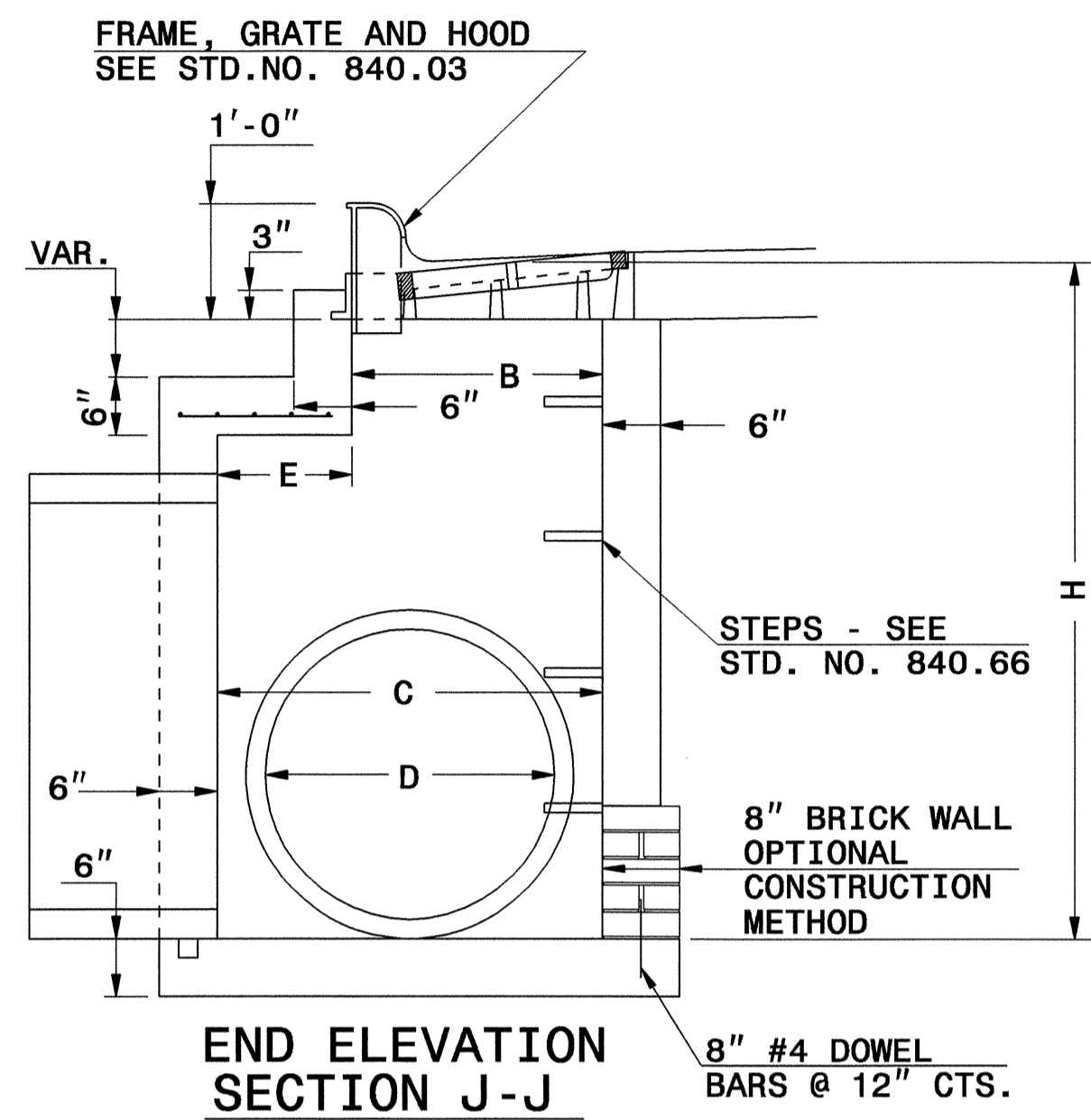
STANDARD TEMPORARY SHORING

DATE: 2-20-07

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

ENGLISH DETAIL DRAWING FOR  
**SIDE BY SIDE HOODED CATCH BASIN WITH DOUBLE SIZE BOX**

SHEET 1 OF 1  
**84002db1**



**GENERAL NOTES:**

CLASS "B" CONCRETE TO BE USED THROUGHOUT.  
ALL CATCH BASINS OVER 3'-6" IN DEPTH WILL BE PROVIDED WITH STEPS ON 12" CENTERS. SEE STD. DWG. NO. 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEY WAY OR #4 BAR DOWELS AT 12" CENTERS AND AS DIRECTED BY THE ENGINEER.

FORMS WILL BE USED IN THE CONSTRUCTION OF THE BOTTOM SLAB.

IF THE PIPE IS SET IN THE BASE SLAB OF THE BOX ADD TO THE BASE AS SHOWN ON STD DWG. NO. 840.00. USE TYPE "E", "F" AND "G" GRATES UNLESS OTHERWISE INDICATED.

WHEN BOX DEPTH IS 8' OR LESS USE 6" WALLS AND BOTTOM SLAB. WHEN DEPTH IS 8' TO 16' USE 8" WALLS AND BOTTOM SLAB. QUANTITIES SHALL BE ADJUSTED ACCORDINGLY.

SEE SHEET 2 OF STD. DWG. NO. 840.02 FOR DIMENSIONS.

SEE STD. DWG. NO. 840.01 FOR BRICK MASONRY CONSTRUCTION INFORMATION.

THE STRUCTURE SHALL BE CONSTRUCTED AND/OR MODIFIED BY THE DIRECTION OF THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR  
**SIDE BY SIDE HOODED CATCH BASIN WITH DOUBLE SIZE BOX**

SHEET 1 OF 1  
**84002db1**



**PROJECT SERVICES UNIT**  
**STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

**SEE PLATE FOR TITLE**

ORIGINAL BY: L.E. Robinson DATE: May 1993  
MODIFIED BY: E.E. Ward DATE: Oct, 2004  
CHECKED BY: *[Signature]* DATE: 5/16/08  
FILE SPEC.: *[Signature]* /usr/details/stand/84002db1.dgn

5/14/99



6/21/00

COMPUTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

### STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. B-4033  
SHEET NO. 3

Item Number	Sec #	Quantity	Unit	Description
000100000-N	800	Lump Sum		MOBILIZATION
002900000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (26+53.00)
004300000-N	226	Lump Sum		GRADING
005000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
005700000-E	226	300	CY	UNDERCUT EXCAVATION
008000000-E	SP	100	TON	CLASS IV SUBGRADE STABILIZATION
013400000-E	240	1,100	CY	DRAINAGE DITCH EXCAVATION
019500000-E	265	200	CY	SELECT GRANULAR MATERIAL
019600000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
019900000-E	SP	876	SF	TEMPORARY SHORING
031800000-E	300	301	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
034400000-E	310	52	LF	18" SIDE DRAIN PIPE
036600000-E	310	264	LF	15" RC PIPE CULVERTS, CLASS III
037200000-E	310	392	LF	18" RC PIPE CULVERTS, CLASS III
037800000-E	310	116	LF	24" RC PIPE CULVERTS, CLASS III
122000000-E	545	50	TON	INCIDENTAL STONE BASE
149100000-E	610	3,650	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
150300000-E	610	2,100	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0C
152300000-E	610	1,950	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
156000000-E	620	260	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
156500000-E	620	120	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 70-22
169300000-E	654	25	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
200000000-N	806	9	EA	RIGHT OF WAY MARKERS
202200000-E	815	90	CY	SUBDRAIN EXCAVATION
203300000-E	815	68	CY	SUBDRAIN FINE AGGREGATE
204400000-E	815	400	LF	6" PERFORATED SUBDRAIN PIPE
205500000-E	815	12	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS
206600000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
207700000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
228600000-N	840	11	EA	MASONRY DRAINAGE STRUCTURES
230800000-E	840	1	LF	MASONRY DRAINAGE STRUCTURES
237400000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
237400000-N	840	10	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
237400000-N	840	7	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
239600000-N	840	1	EA	FRAME WITH COVER, STD 840.54
254900000-E	846	3,380	LF	2'-6" CONCRETE CURB & GUTTER
260500000-N	848	20	EA	CONCRETE WHEELCHAIR RAMPS
261200000-E	848	80	SY	6" CONCRETE DRIVEWAY
283000000-N	858	2	EA	ADJUSTMENT OF MANHOLES
303000000-E	862	162.5	LF	STEEL BM GUARDRAIL
304500000-E	862	37.5	LF	STEEL BM GUARDRAIL, SHOP CURVED
315000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
319500000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
321500000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE III
327000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
338000000-E	862	12.5	LF	TEMPORARY STEEL BM GUARDRAIL
338700000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE ***** TEMPORARY (II)
338910000-N	SP	1	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
364900000-E	876	10	TON	RIP RAP, CLASS B
365600000-E	876	1,425	SY	FILTER FABRIC FOR DRAINAGE
365900000-N	SP	1	EA	PREFORMED SCOUR HOLES WITH LEVEL SPREADER APRON
407200000-E	903	352	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
409600000-N	904	1	EA	SIGN ERECTION, TYPE D
410200000-N	904	16	EA	SIGN ERECTION, TYPE E
411610000-N	904	1	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
415500000-N	907	21	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
440000000-E	1110	96	SF	WORK ZONE SIGNS (STATIONARY)
440500000-E	1110	618	SF	WORK ZONE SIGNS (PORTABLE)
441500000-N	1115	1	EA	FLASHING ARROW PANELS, TYPE C
442000000-N	1120	2	EA	CHANGEABLE MESSAGE SIGN
443000000-N	1130	50	EA	DRUMS
443500000-N	1135	100	EA	CONES
444500000-E	1145	96	LF	BARRICADES (TYPE III)
445500000-N	1150	125	MD	FLAGGER
446500000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
448000000-N	1165	1	EA	TMIA
449000000-E	1170	180	LF	PORTABLE CONCRETE BARRIER (ANCHORED)
465000000-N	1251	69	EA	TEMPORARY RAISED PAVEMENT MARKERS
468600000-E	1205	6,259	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
469500000-E	1205	100	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
609600000-E	1662	100	LB	SEED FOR SUPPLEMENTAL SEEDING
610800000-E	1665	2.5	TON	FERTILIZER TOPDRESSING
611400000-N	SP	2	HR	SPECIALIZED HAND MOWING
611700000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
700000000-E	1705	4	EA	PEDESTRIAN SIGNAL HEAD (**, ** SECTION) (16", 1)
706000000-E	1705	2,490	LF	SIGNAL CABLE
712000000-E	1705	12	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
714400000-E	1705	9	EA	VEHICLE SIGNAL HEAD (12", 5 SECTION)
722800000-N	SP	4	EA	RELOCATE EXISTING VEHICLE SIGNAL HEAD
726400000-E	1710	495	LF	MESSENGER CABLE (3/8")
730000000-E	1715	530	LF	UNPAVED TRENCHING (***** (1, 2"))
730100000-E	1715	330	LF	DIRECTIONAL DRILL (***** (2, 2"))
732400000-N	1716	15	EA	JUNCTION BOX (STANDARD SIZE)
736000000-N	1720	3	EA	WOOD POLE
737200000-N	1721	10	EA	GUY ASSEMBLY
742000000-E	1722	2	EA	2" RISER WITH WEATHERHEAD
744400000-E	1725	2,320	LF	INDUCTIVE LOOP SAWCUT
745600000-E	1726	2,990	LF	LEAD-IN CABLE (***** (14-2))
757514200-N	SP	2	EA	900MHZ WIRELESS RADIO SYSTEM
758800000-N	SP	3	EA	METAL POLE WITH SINGLE MAST ARM
759000000-N	SP	2	EA	METAL POLE WITH DUAL MAST ARM
761300000-N	SP	5	EA	SOIL TEST
761410000-E	SP	34	CY	DRILLED PIER FOUNDATION
762400000-N	1743	1	EA	SIGNAL PEDESTAL WITH FOUNDATION
763100000-N	SP	5	EA	MAST ARM WITH METAL POLE DESIGN

Item Number	Sec #	Quantity	Unit	Description
768400000-N	1750	1	EA	SIGNAL CABINET FOUNDATION
775600000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, BASE MOUNTED)
778000000-N	1751	7	EA	DETECTOR CARD (TYPE 2070L)
790100000-N	1753	1	EA	CABINET BASE EXTENDER
798000000-N	SP	1	EA	GENERIC SIGNAL ITEM FURNISH WIRELESS RADIO LIGHTNING ARRESTOR
798000000-N	SP	1	EA	GENERIC SIGNAL ITEM FURNISH WIRELESS RADIO MODEM
798000000-N	SP	2	EA	GENERIC SIGNAL ITEM POWDER COAT FOR DUAL MAST ARM WITH METAL POLE
798000000-N	SP	3	EA	GENERIC SIGNAL ITEM POWDER COAT FOR SINGLE MAST ARM WITH METAL POLE

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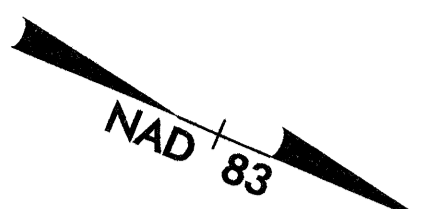






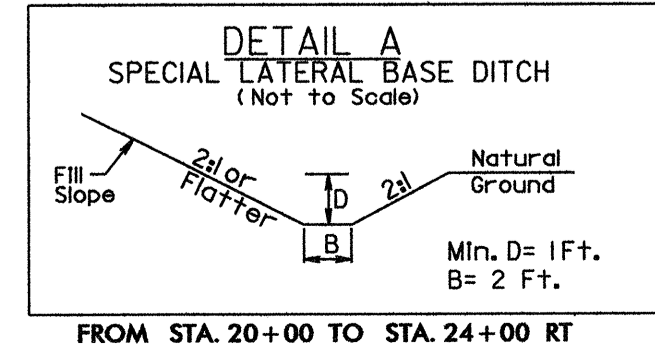
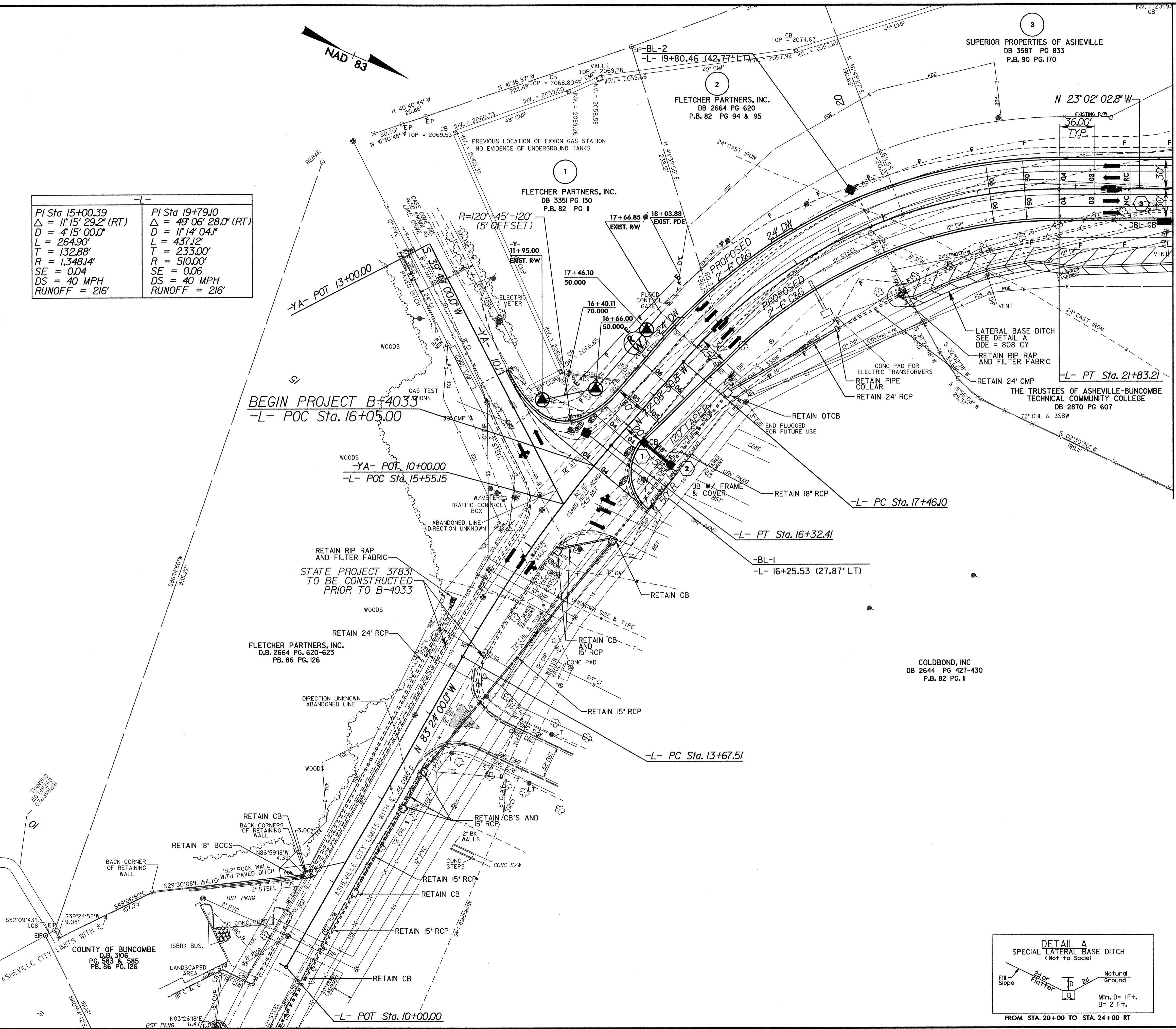
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PI Sta 15+00.39 $\Delta = 11' 15" 29.2" (RT)$ $D = 4' 15" 00.0"$ $L = 264.90'$ $T = 132.88'$ $R = 1,348.14'$ $SE = 0.04$ $DS = 40 MPH$ $RUNOFF = 216'$	PI Sta 19+79.10 $\Delta = 49' 06" 28.0" (RT)$ $D = 11' 14" 04.1"$ $L = 437.12'$ $T = 233.00'$ $R = 510.00'$ $SE = 0.06$ $DS = 40 MPH$ $RUNOFF = 216'$
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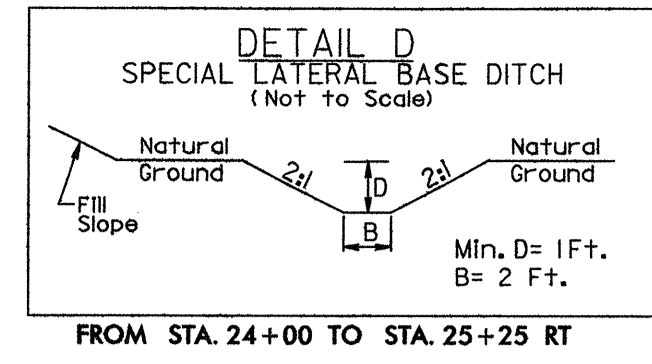
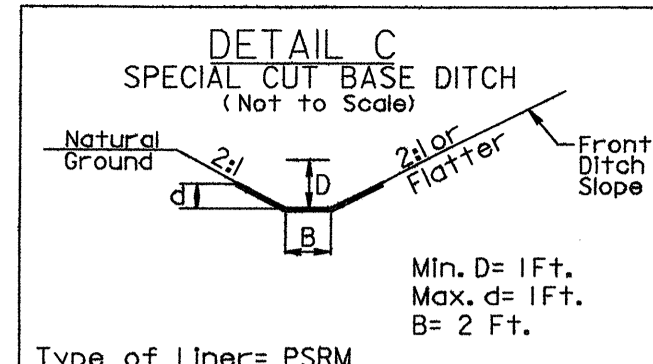
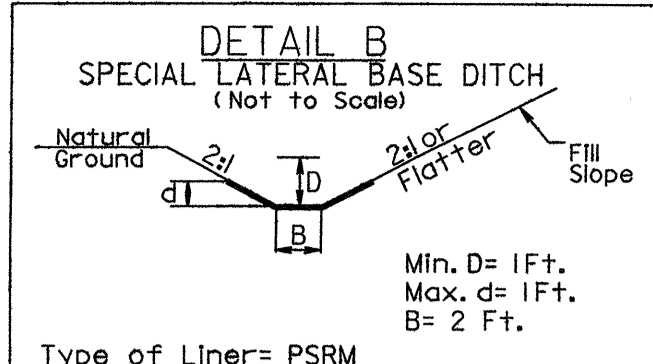
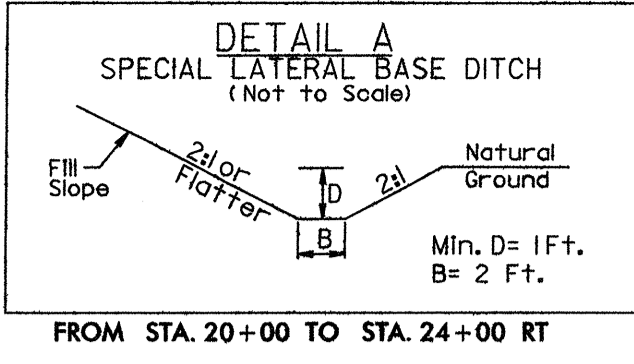
PROJECT REFERENCE NO. B-4033	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 17265 THE ANTHONY DRAIN	HYDRAULICS ENGINEER SEAL 29185 WILLIAM L. HINER
<b>PBSJ</b> 5200 77 CENTER DRIVE, SUITE 500 CHARLOTTE, NORTH CAROLINA 28217 (704) 522-7275	

MATCHLINE STA. 23+00.00  
 SEE SHEET NO. 5

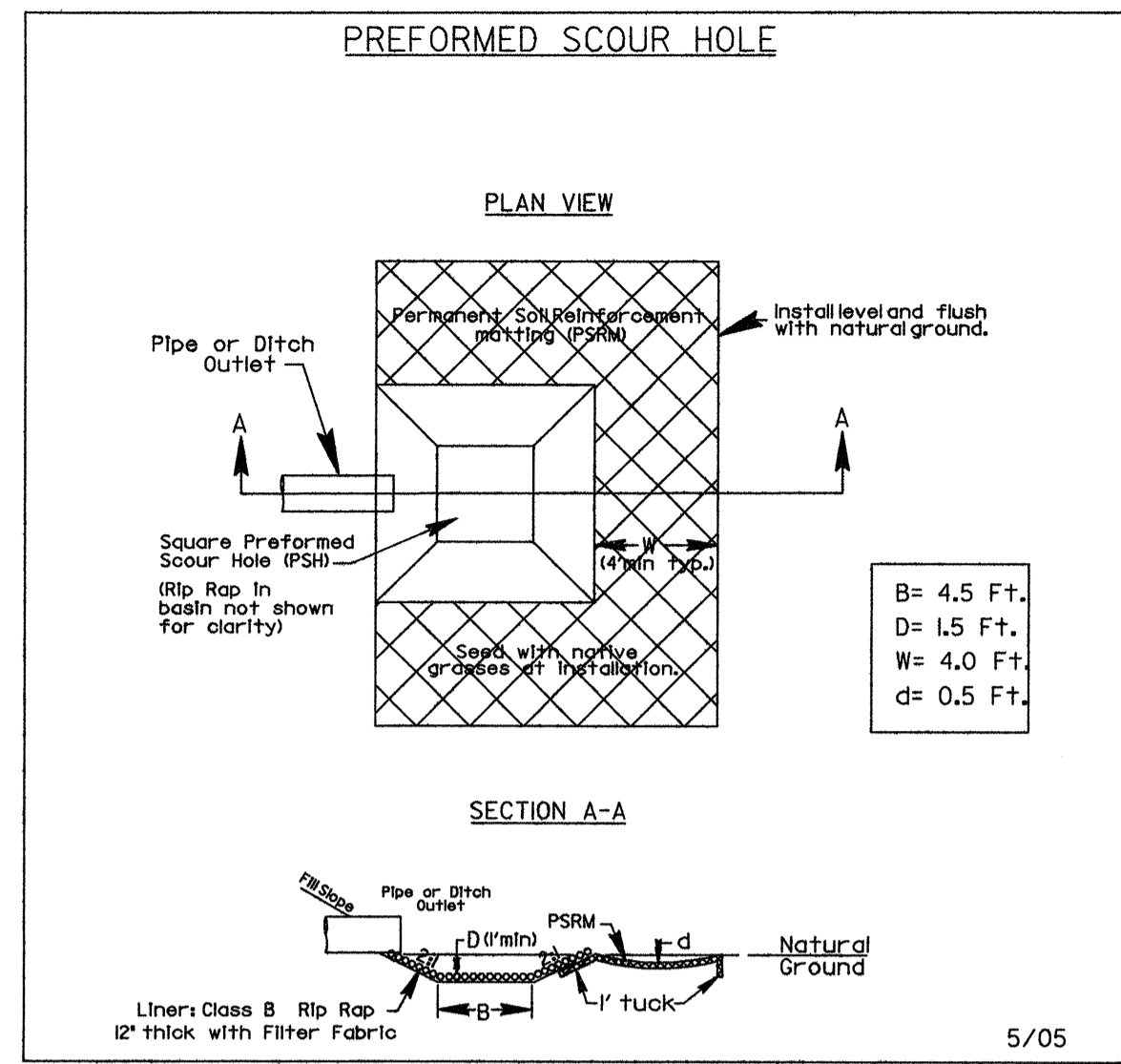


FOR -L- PROFILE, SEE SHEET NO. 6

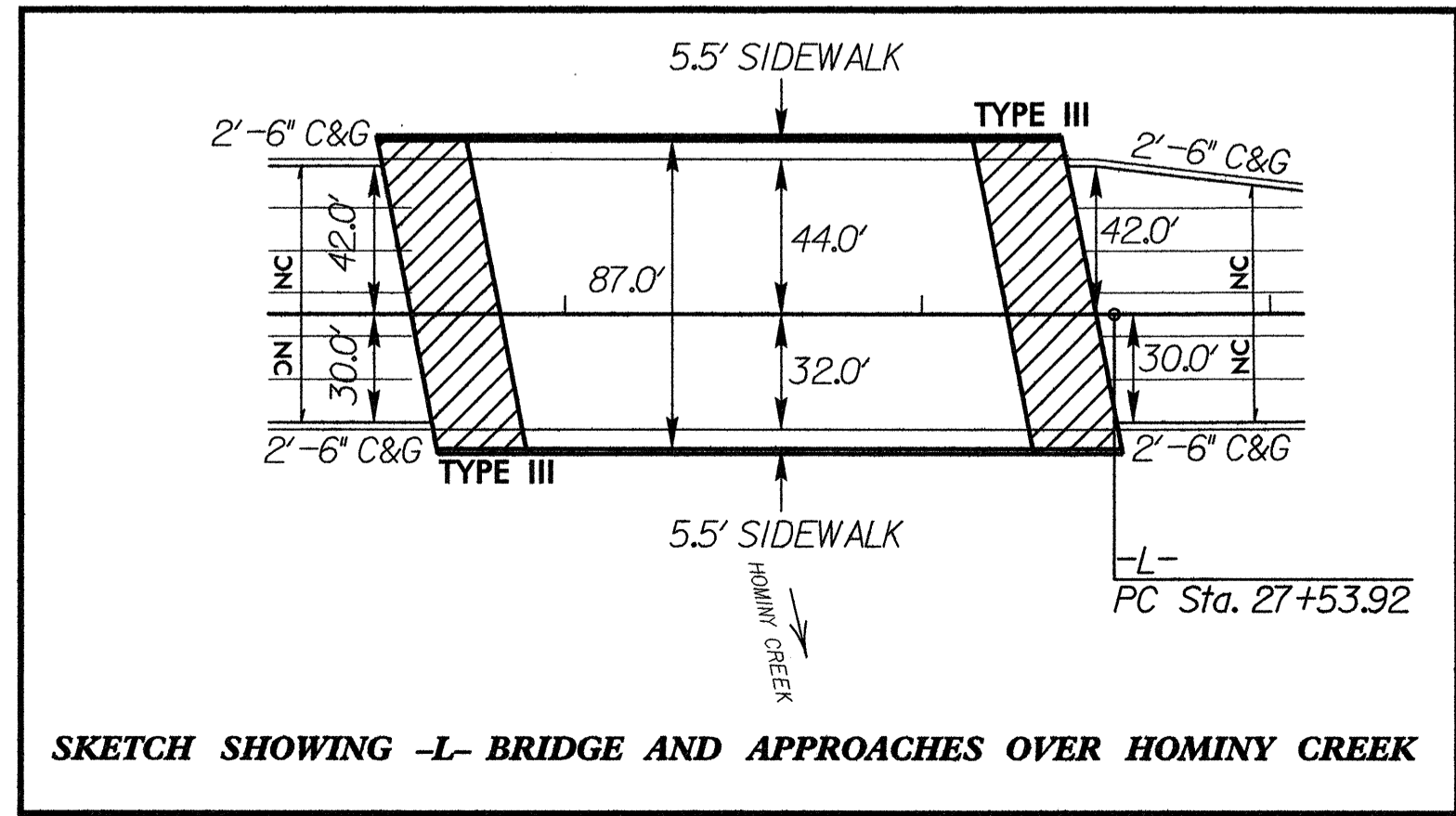
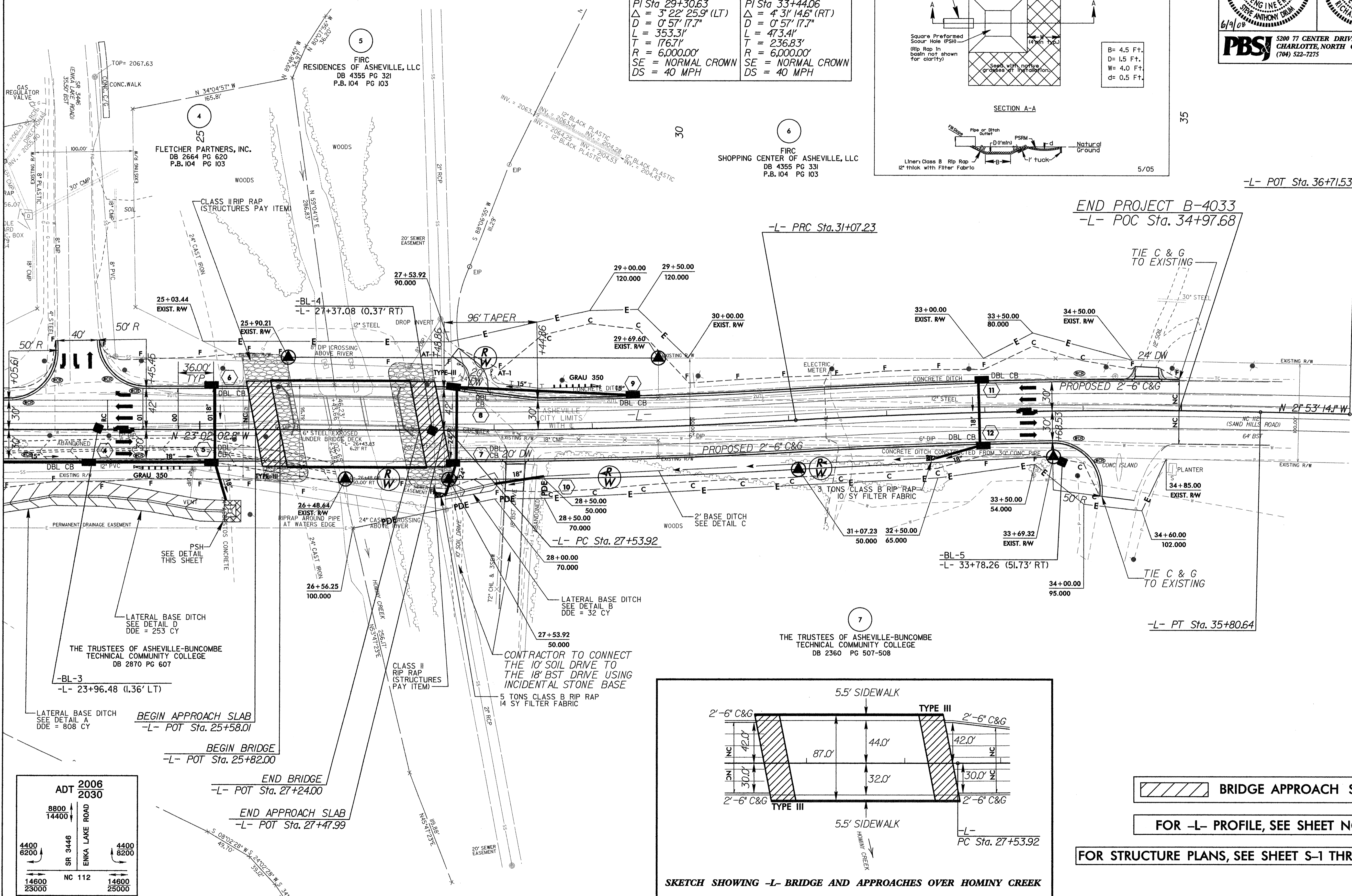




PI Sta 29+30.63 $\Delta = 3' 22' 25.9''$ (LT) $D = 0' 57' 17.7''$ $L = 353.31'$ $T = 176.71'$ $R = 6,000.00'$ $SE = \text{NORMAL CROWN}$ $DS = 40 \text{ MPH}$	PI Sta 33+44.06 $\Delta = 4' 3' 14.6''$ (RT) $D = 0' 57' 17.7''$ $L = 473.41'$ $T = 236.83'$ $R = 6,000.00'$ $SE = \text{NORMAL CROWN}$ $DS = 40 \text{ MPH}$
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MATCHLINE STA. 23+00.00  
SEE SHEET NO. 4



BRIDGE APPROACH SLAB

FOR -L- PROFILE, SEE SHEET NO. 6

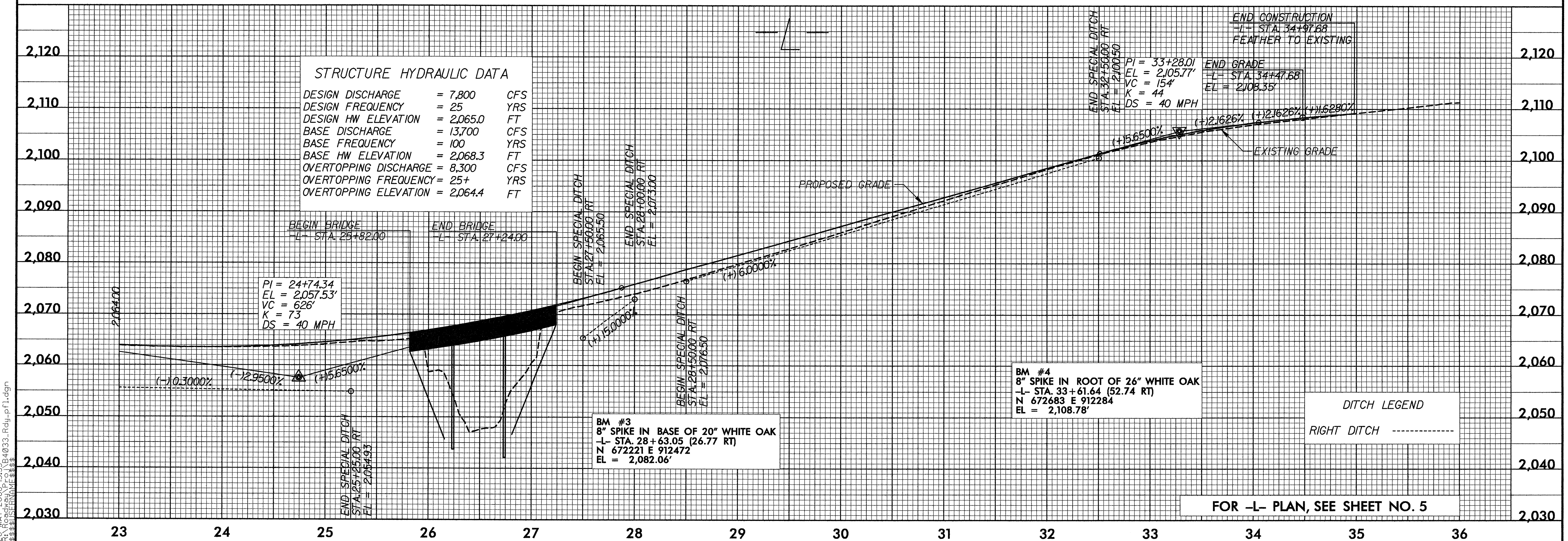
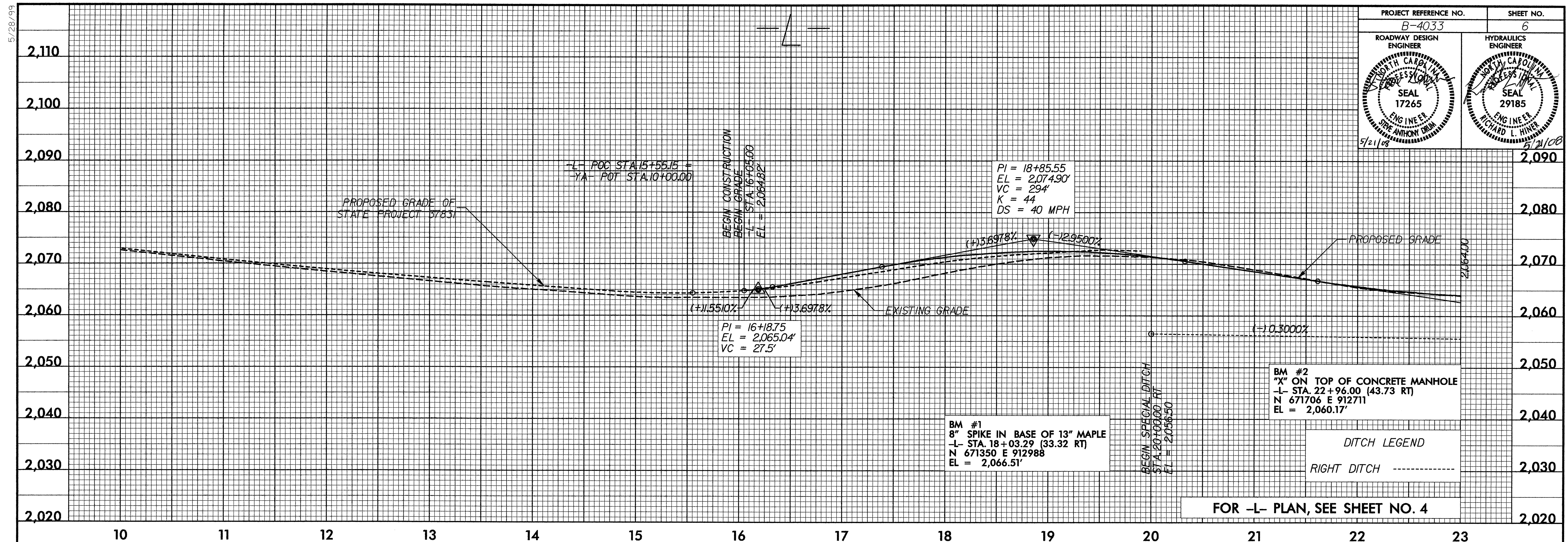
FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-50

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PROJECT REFERENCE NO. B-4033	SHEET NO. 6
ROADWAY DESIGN ENGINEER SEAL 17265 5/21/08	HYDRAULICS ENGINEER SEAL 29185 5/21/08