

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4061	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33425.1.1	BRZ-1727(1)	P.E.	
33425.2.1	BRZ-1727(1)	RW, UTIL	
33425.3.1	BRZ-1727(1)	CONST	



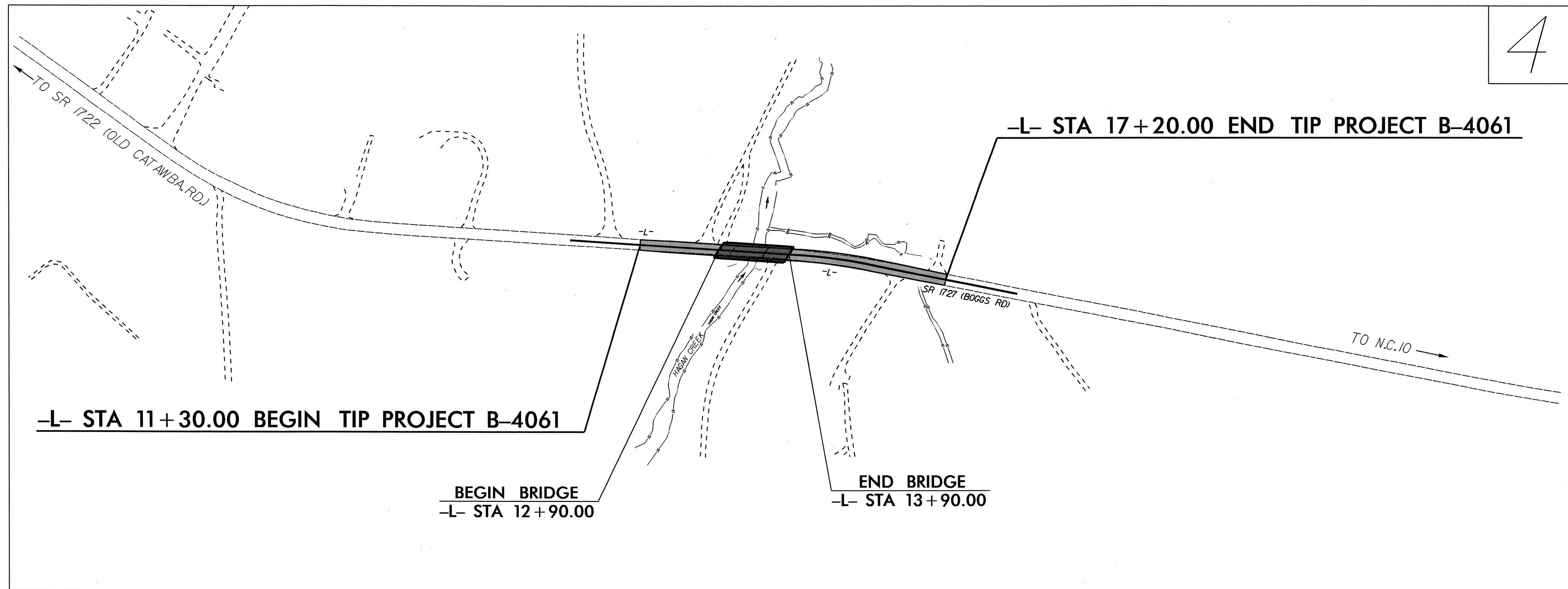
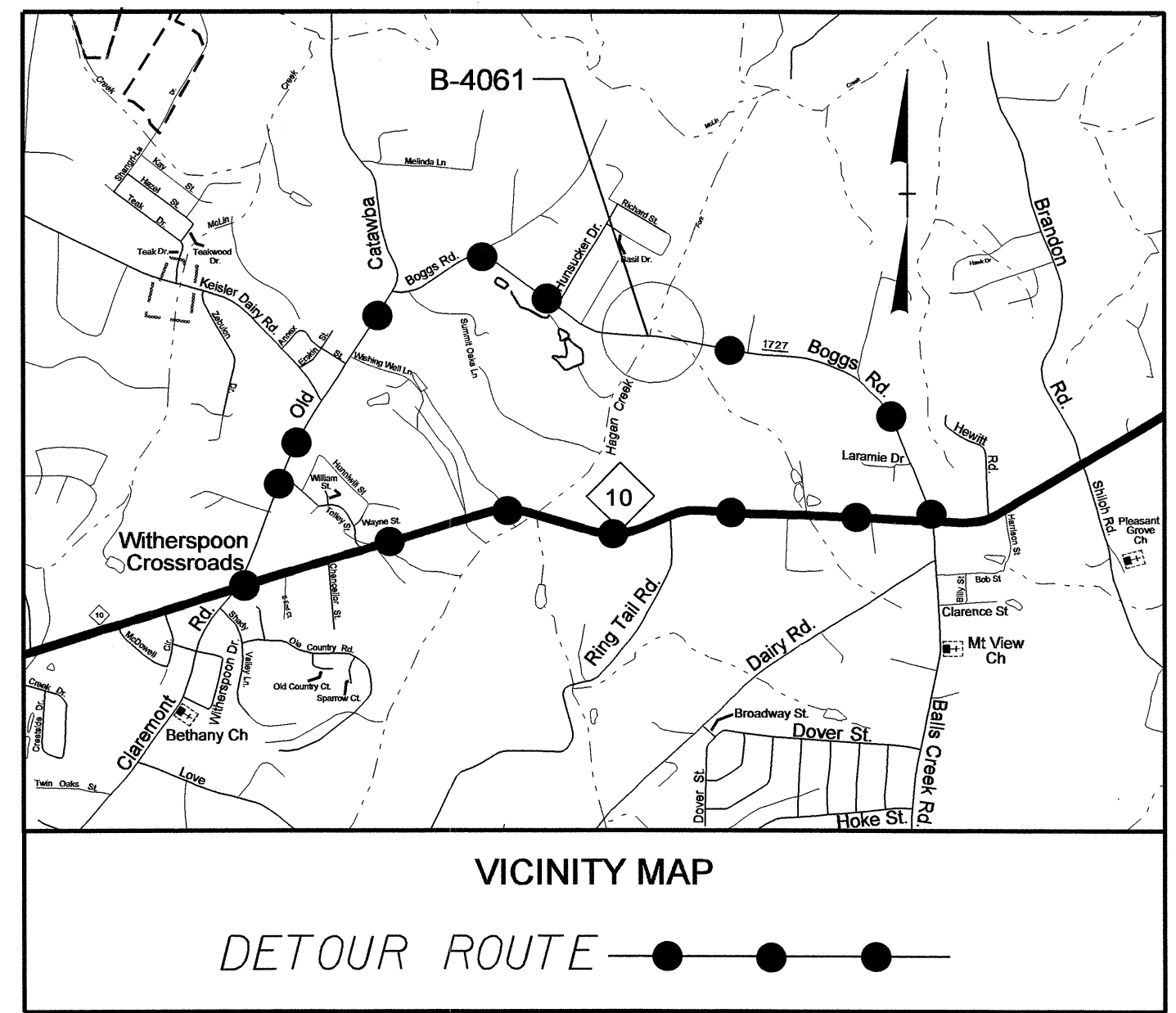
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CATAWBA COUNTY

LOCATION: BRIDGE NO. 90 OVER HAGAN CREEK
ON SR 1727 (BOGGS ROAD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING
AND STRUCTURE

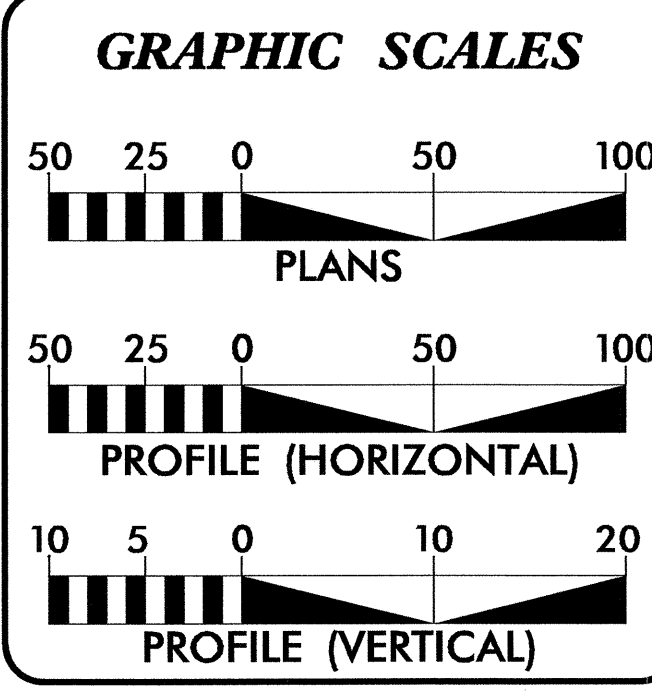
See Sheet 1-A For Index of Sheets



4

TIP PROJECT: B-4061

CONTRACT: C202775



DESIGN DATA

ADT 2012	=	3860
ADT 2035	=	6060
DHV	=	12 %
D	=	70 %
T	=	4 % *
V	=	50 MPH
* TTST 1% DUAL 3%		
FUNC CLASS	=	RURAL MINOR COLLECTOR SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4061	=	0.093 MILES
LENGTH STRUCTURE TIP PROJECT B-4061	=	0.019 MILES
TOTAL LENGTH TIP PROJECT B-4061	=	0.112 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 22, 2011	TED S. WALLS PROJECT ENGINEER
LETTING DATE: FEBRUARY 21, 2012	ALLISON K. WHITE PROJECT DESIGN ENGINEER

HYDRAULIC ENGINEER

11/21/11
P.E.

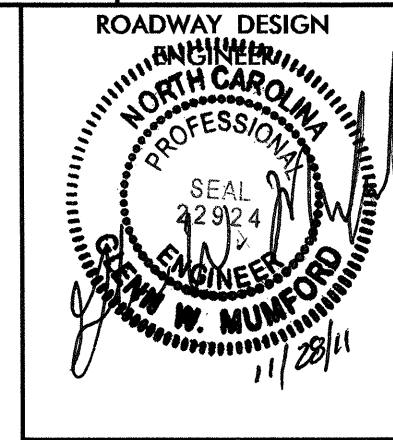
PROFESSIONAL DESIGN ENGINEER

11/21/11
P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER

15-NOV-2011 14:39 R:\Roadway\Proj\11-b-4061\rdy-tsh.dgn \$\$\$USERNAME\$\$\$



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A	DETAIL OF REINFORCED CONC ENDWALL 78" DIA PIPE 90° SKEW
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF DRAINAGE QUANTITIES, SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND SHOULDER BERM GUTTER
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-3	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-2	SIGNING PLANS
UC-1 THRU UC-2	UTILITIES CONSTRUCTION PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1A	CROSS SECTION VOLUME SHEET
X-1 THRU X-4	CROSS-SECTIONS
S-1 THRU S-22	STRUCTURE PLANS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 08/31/11

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

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.

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.

DRIVEWAYS:

DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.03 AT LOCATIONS SHOWN ON PLANS OR AS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

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

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 Catawba County/City of Conover
Duke Energy, CenturyLink
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 OTHERS.

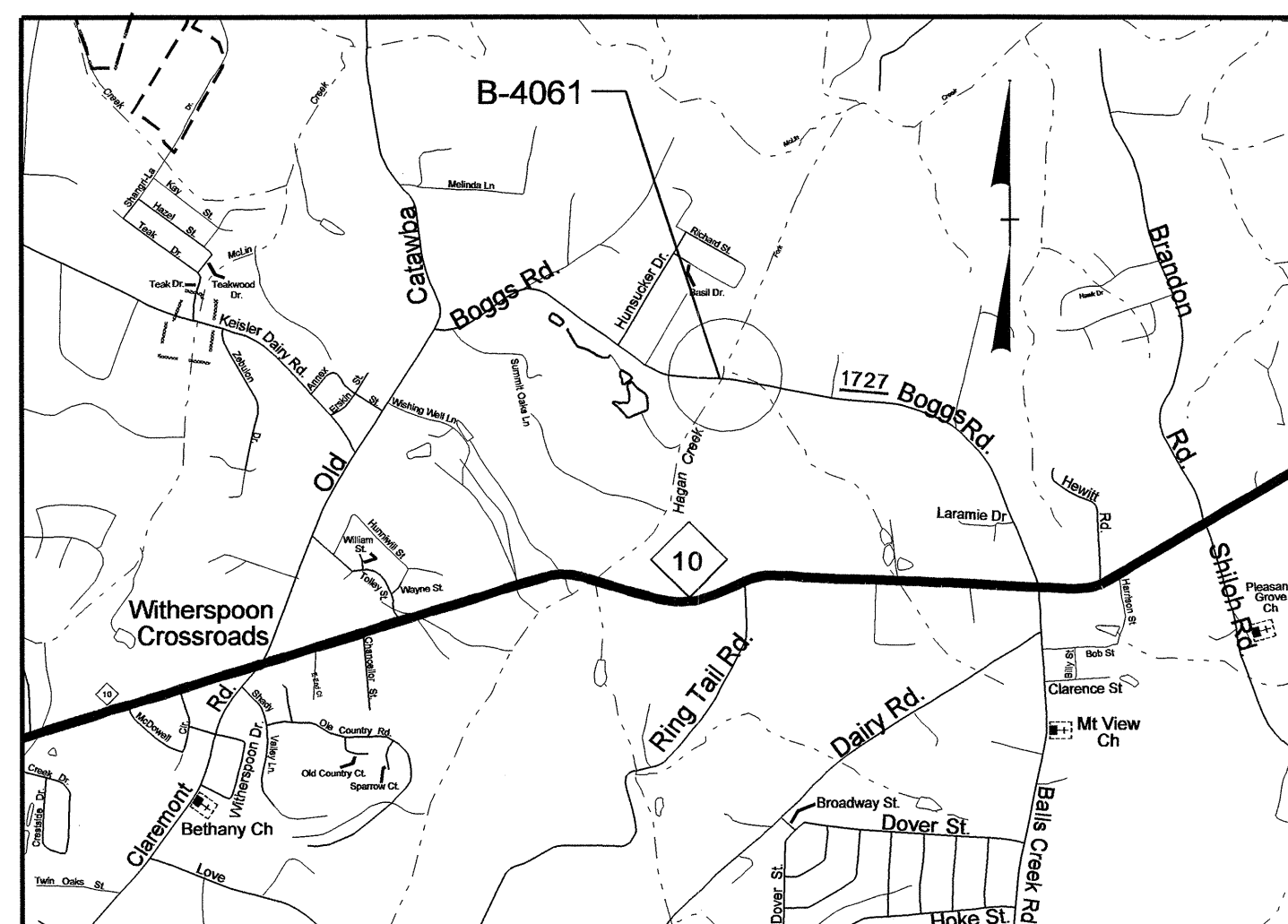
2012 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.11	Reinforced Bridge Approach Fills - Sub Regional Tier
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.46	Traffic Bearing Precast Drainage Structure
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.03	Driveway Turnout - Drop Curb Type
848.04	Street Turnout
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class "B" Rip Rap

6/2/99

SURVEY CONTROL SHEET B-4061



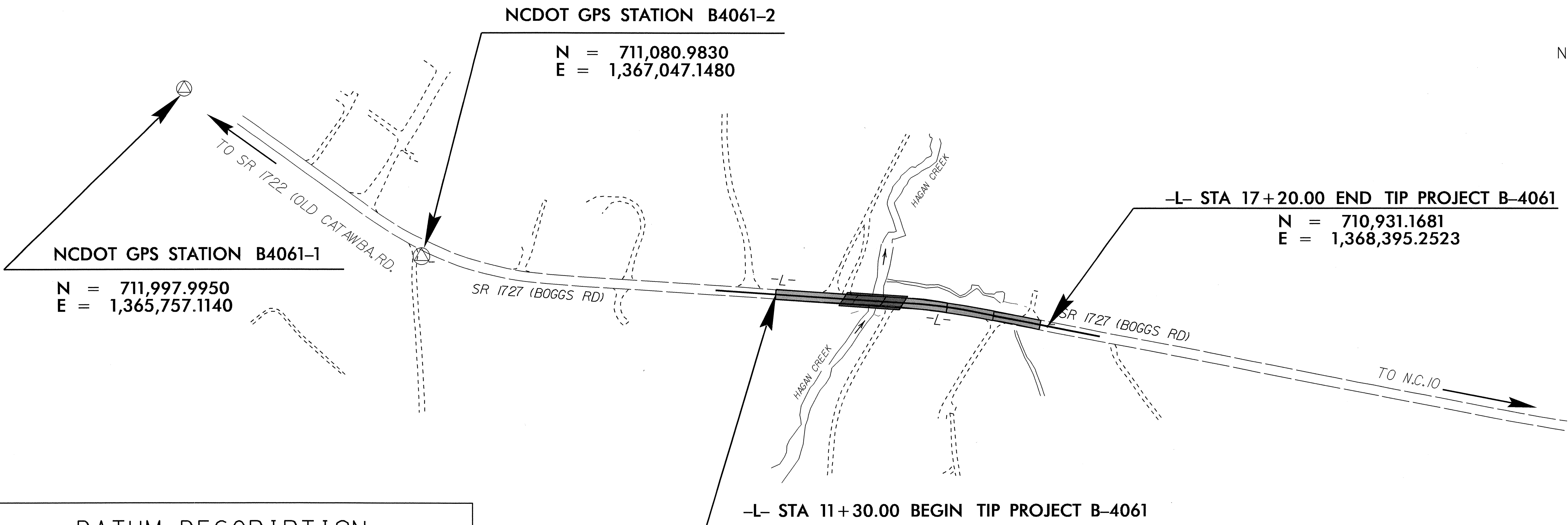
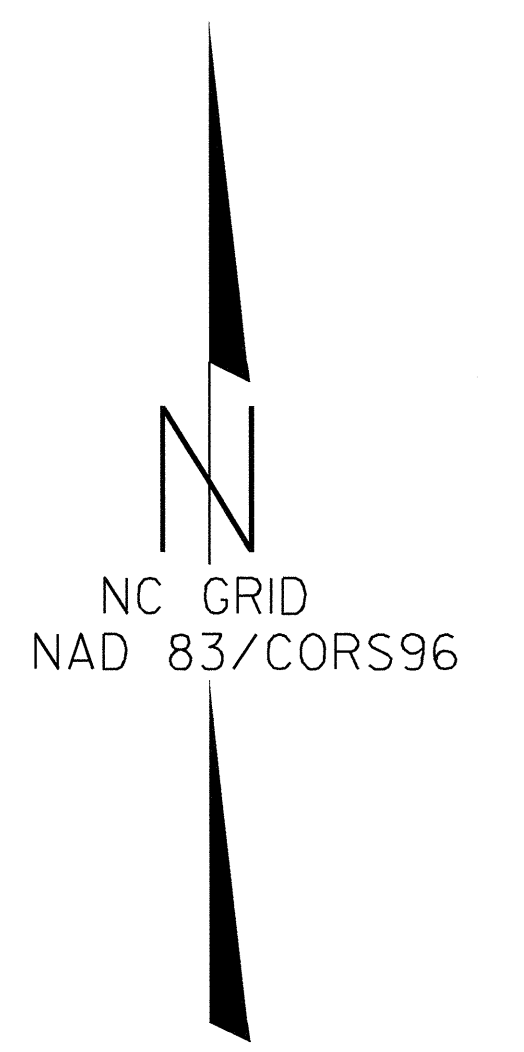
VICINITY MAP

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B40611	(GPS B4061-1)	711997.9950	1365757.1140	885.25'		OUTSIDE PROJECT LIMITS
B40612	(GPS B4061-2)	711080.9830	1367047.1480	854.77'		OUTSIDE PROJECT LIMITS
BL3	(BL-3)	711007.0131	1367460.9904	821.10'		OUTSIDE PROJECT LIMITS
BL4	(BL-4)	710964.7621	1368062.8293	811.80'	13+84.46	17.54 RT
BL5	(BL-5)	710890.7329	1368521.5895	824.80'		OUTSIDE PROJECT LIMITS
BL6	(BL-6)	710778.3522	1369097.6281	870.13'		OUTSIDE PROJECT LIMITS

 BM 1 ELEVATION = 856.05'
 N 711355 E 1366747
 OUTSIDE PROJECT LIMITS
 8" SPIKE IN BASE OF POWER POLE

 BM 2 ELEVATION = 808.20'
 N 711080 E 1367982
 L STATION 12+96 92' LEFT
 8" SPIKE IN ROOT OF ALDER TREE

 BM 3 ELEVATION = 866.06'
 N 710912 E 1369009
 OUTSIDE PROJECT LIMITS
 8" SPIKE IN ROOT OF 14" DOUBLE POPLAR TREE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4061-2"
 WITH NAD 83/CORS96 STATE PLANE GRID COORDINATES OF
 NORTHING: 711080.983(ft) EASTING: 1367047.148(ft)
 ELEVATION: 854.772(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986476
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4061-2" TO -L- STATION 11+30 IS
 S 83°54'46" E 767.33
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

N = 710,999.6149
 E = 1,367,810.1542

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/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)
 THE FILES TO BE FOUND ARE AS FOLLOWS:
 B4061_LS_CONTROL.TXT
 SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- ⊗ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
 PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

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 4061-1

6/2/99

SURVEY CONTROL SHEET B-4061

PROJECT REFERENCE NO.	SHEET NO.
33425.1.1	1-CA
Location and Surveys	

L			
TYPE	STATION	NORTH	EAST
POT	10+00.00	711008.4791	1367680.4568
PC	14+25.15	710979.4897	1368104.6187
PT	15+56.87	710962.3774	1368235.1339
POT	18+35.08	710909.1526	1368508.2021

ROW Marker Iron Pin and Cap-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	16+65.90	-65.00	711005.3162	1368354.5938
L	16+97.42	-30.00	710964.9348	1368378.8239
L	12+79.00	-30.39	711019.7743	1367960.8796
L	12+79.00	-55.00	711044.3272	1367962.5577
L	13+55.85	-55.00	711039.0874	1368039.2244
L	16+24.03	-65.00	711013.3286	1368313.4864
L	13+68.92	-99.37	711082.4649	1368055.2949
L	15+50.14	-98.31	711060.2535	1368246.7197

ROW Marker Permanent Easement-E				
ALIGN	STATION	OFFSET	NORTH	EAST
L	17+13.00	30.00	710903.0614	1368382.6422
L	17+04.00	38.00	710896.9310	1368372.2779
L	16+74.02	40.71	710900.0089	1368342.3386
L	16+45.92	66.92	710879.6604	1368309.7348
L	16+13.59	66.92	710885.8442	1368278.0091
L	16+13.59	39.65	710912.6032	1368283.2248
L	14+85.67	41.17	710932.7994	1368159.6985
L	14+06.53	53.09	710927.7930	1368082.4206
L	13+50.00	55.00	710929.7420	1368025.8920
L	12+56.49	51.17	710939.9346	1367932.8600
L	11+30.00	46.00	710953.7220	1367807.0177
L	11+30.00	30.00	710969.6847	1367808.1086
L	12+38.00	-30.11	711022.2924	1367919.9561
L	12+48.00	-53.00	711044.4456	1367931.4935
L	12+58.00	-53.00	711043.7637	1367941.4702
L	12+48.00	-30.18	711021.6776	1367929.9374

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 S 83°54'46" E 767.33

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

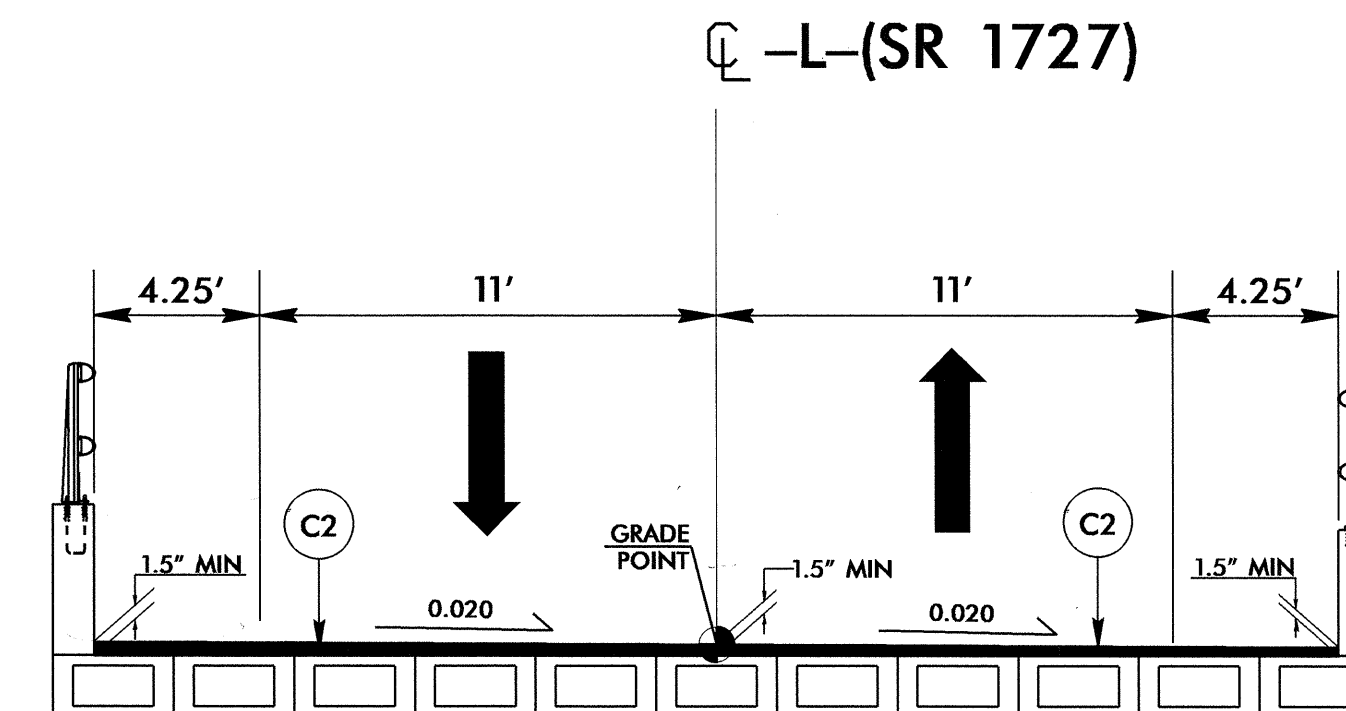
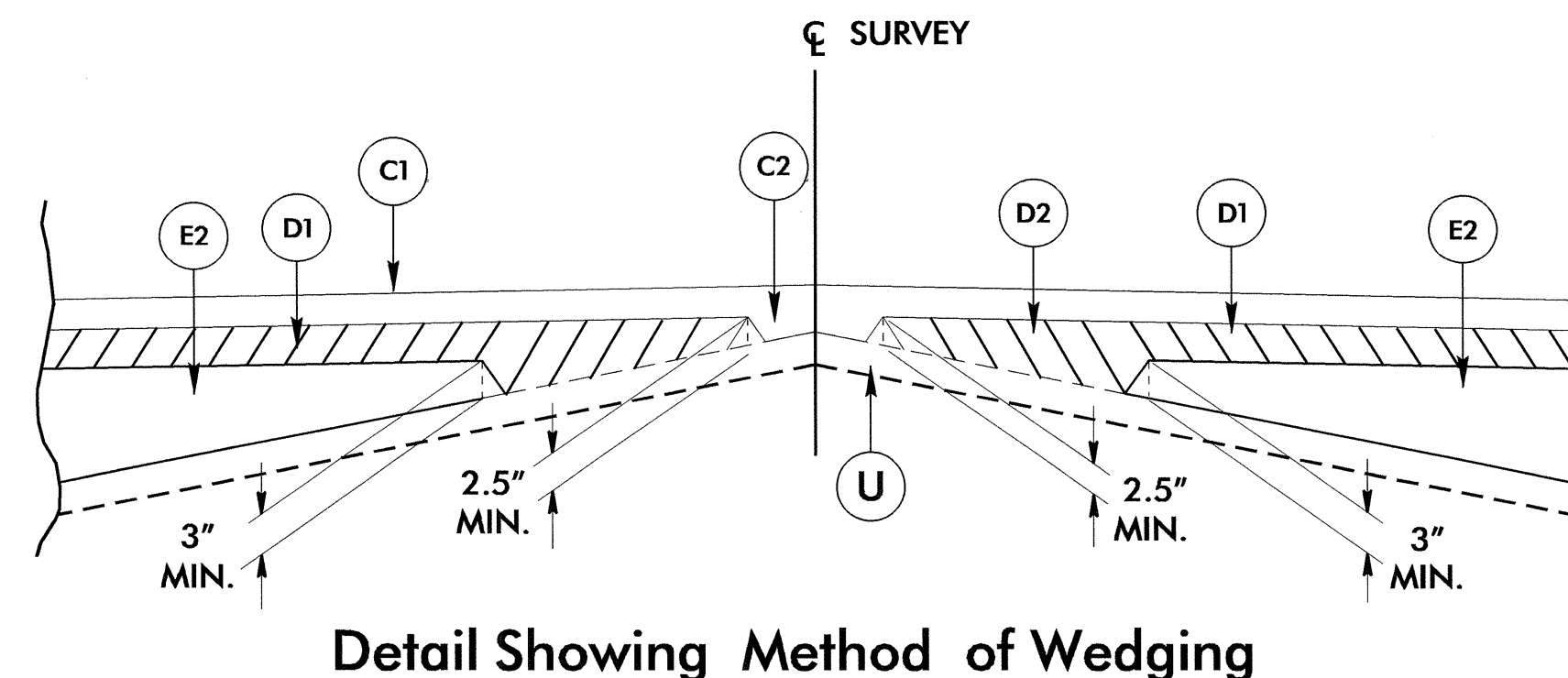
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 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

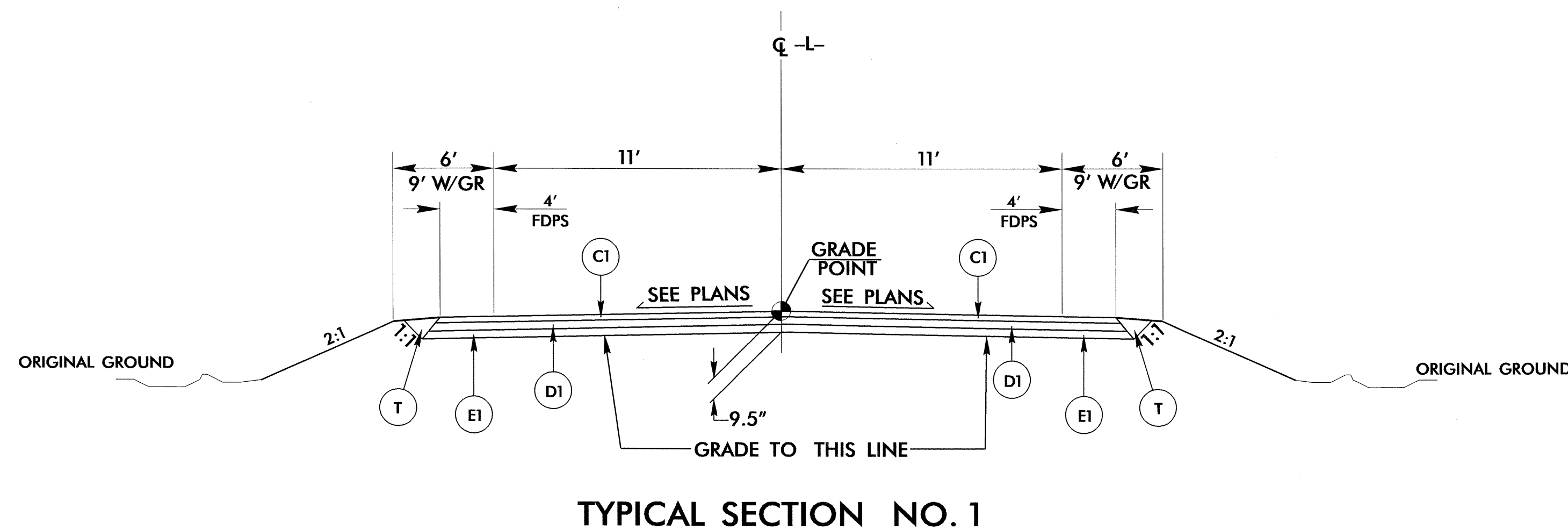
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FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

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



(DETAIL SHOWING WEARING SURFACE ON BOX BEAM BRIDGE)

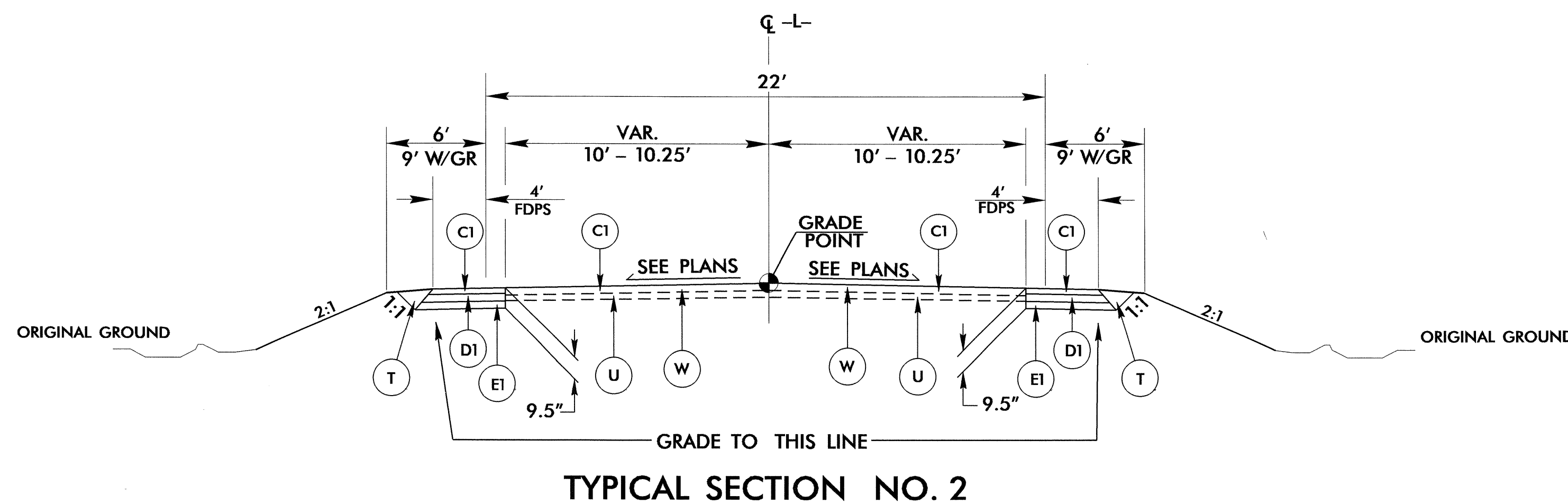


TYPICAL SECTION NO. 1

TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1
-L- STA 11+30.00 TO STA 11+80.00

USE TYPICAL SECTION NO. 1 AS FOLLOWS:

- L- STA. 11+80.00 TO STA. 12+90.00 (BEGIN BRIDGE)
- L- STA. 13+90.00 (END BRIDGE) TO STA. 15+55.00



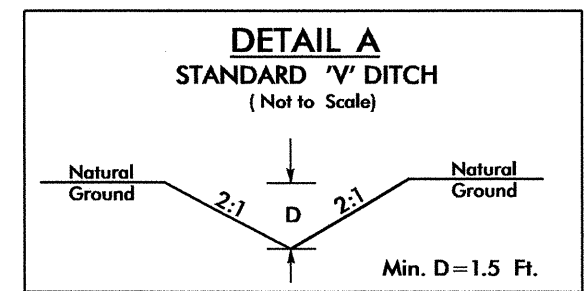
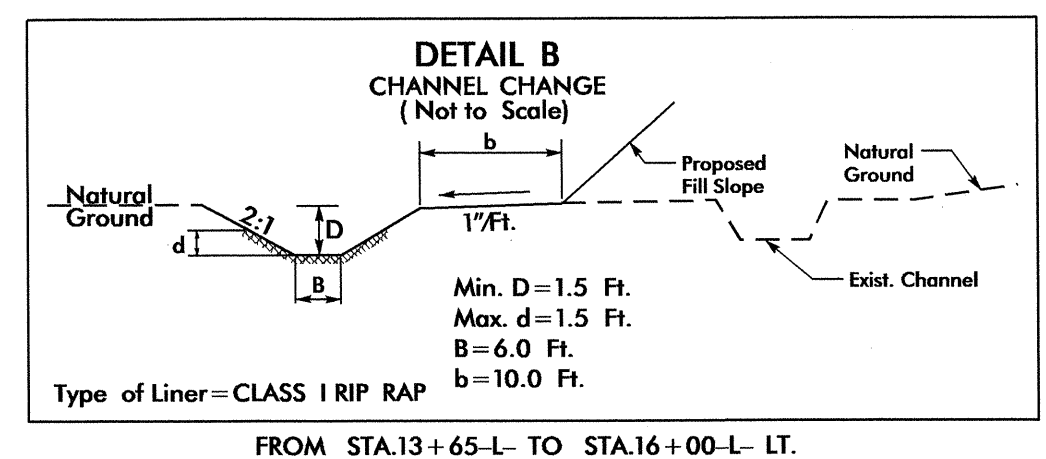
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:

- L- STA. 15+55.00 TO STA. 16+70.00

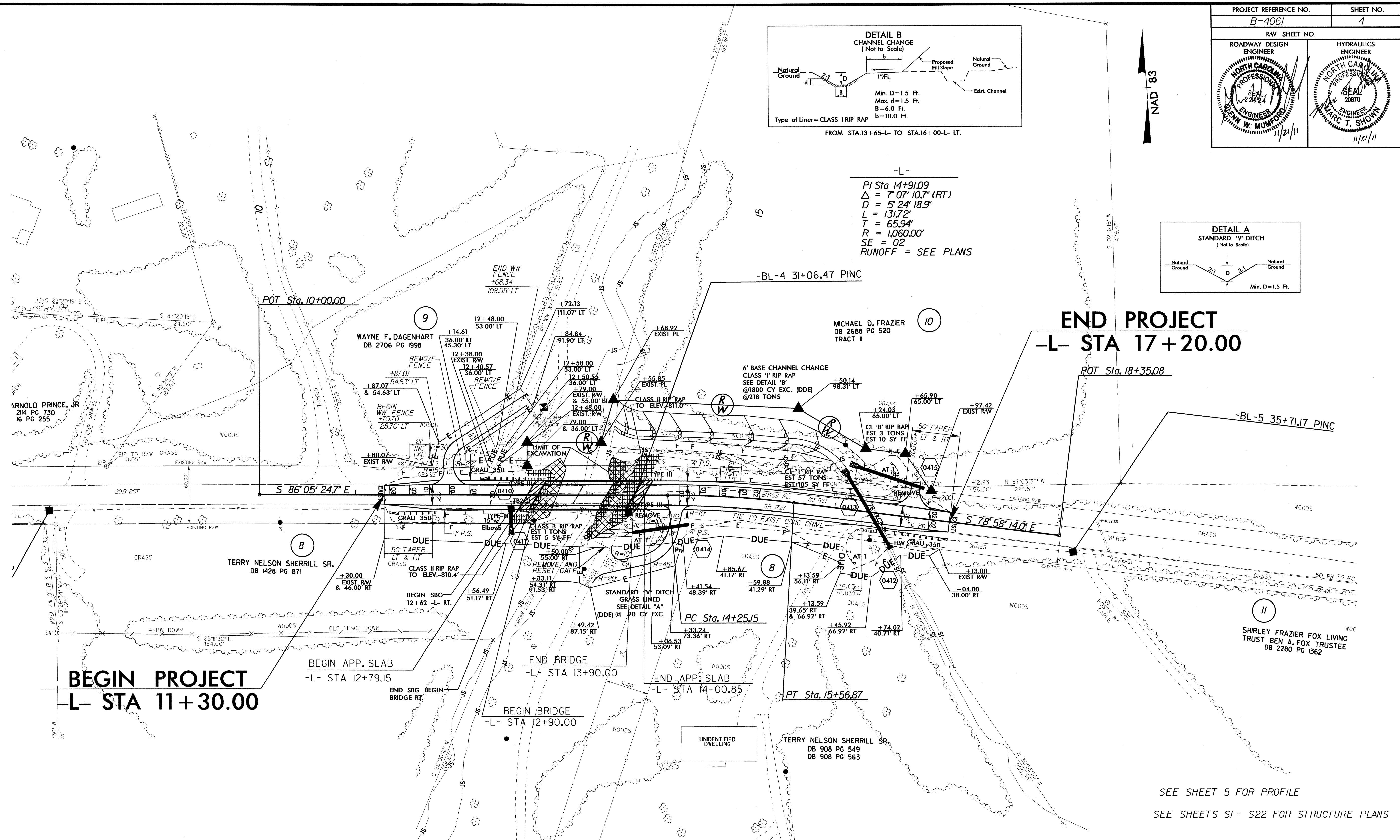
TRANSITION FROM TYPICAL SECTION NO. 2 TO EXISTING
-L- STA 16+70.00 TO STA 17+20.00

NAD 83



-L-
PI Sta 14+91.09
 $\Delta = 7' 07'' 10.7'' (RT)$
 $D = 5' 24'' 18.9''$
 $L = 131.72'$
 $T = 65.94'$
 $R = 1,060.00'$
 $SE = 02$
RUNOFF = SEE PLANS

END PROJECT
-L- STA 17+20.00

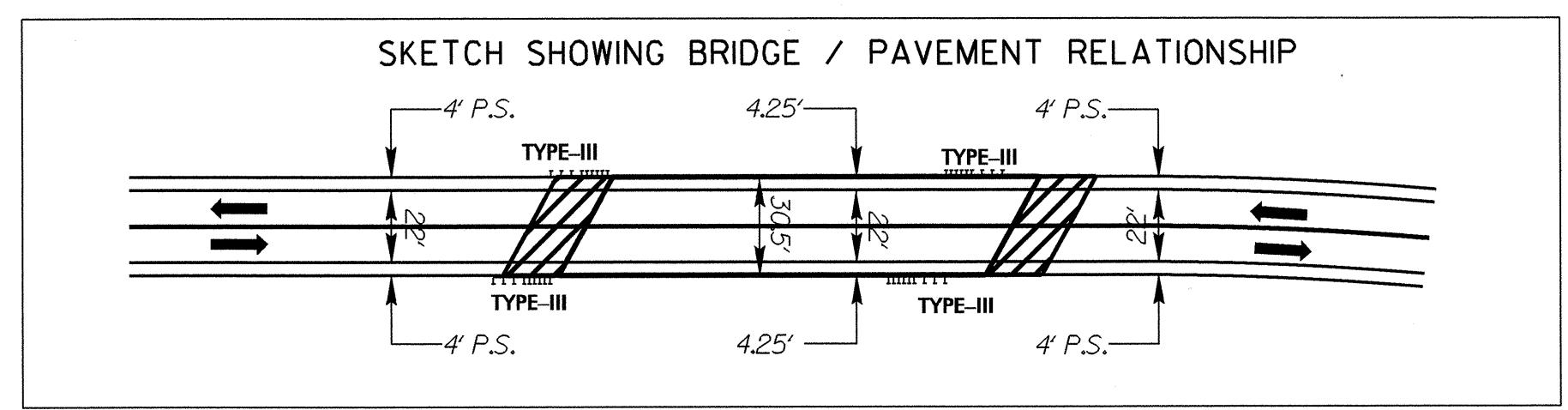


BEGIN PROJECT
-L- STA 11+30.00

BEGIN APP. SLAB -L- STA 12+79.15
END BRIDGE -L- STA 13+90.00
BEGIN BRIDGE -L- STA 12+90.00

END APP. SLAB -L- STA 14+00.85

SEE SHEET 5 FOR PROFILE
SEE SHEETS S1 - S22 FOR STRUCTURE PLANS



REVISIONS

8/17/99

21-NOV-2011 09:41
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5/14/99

920
910
900

BM2
8" SPIKE IN ROOT OF ALDER TREE
91.60' LEFT OF -L- STA 12+96.11
E.L. = 808.20'

SEE PLAN SHEET 4 FOR PLAN VIEW
SEE SHEETS S1 - S22 FOR STRUCTURE PLANS

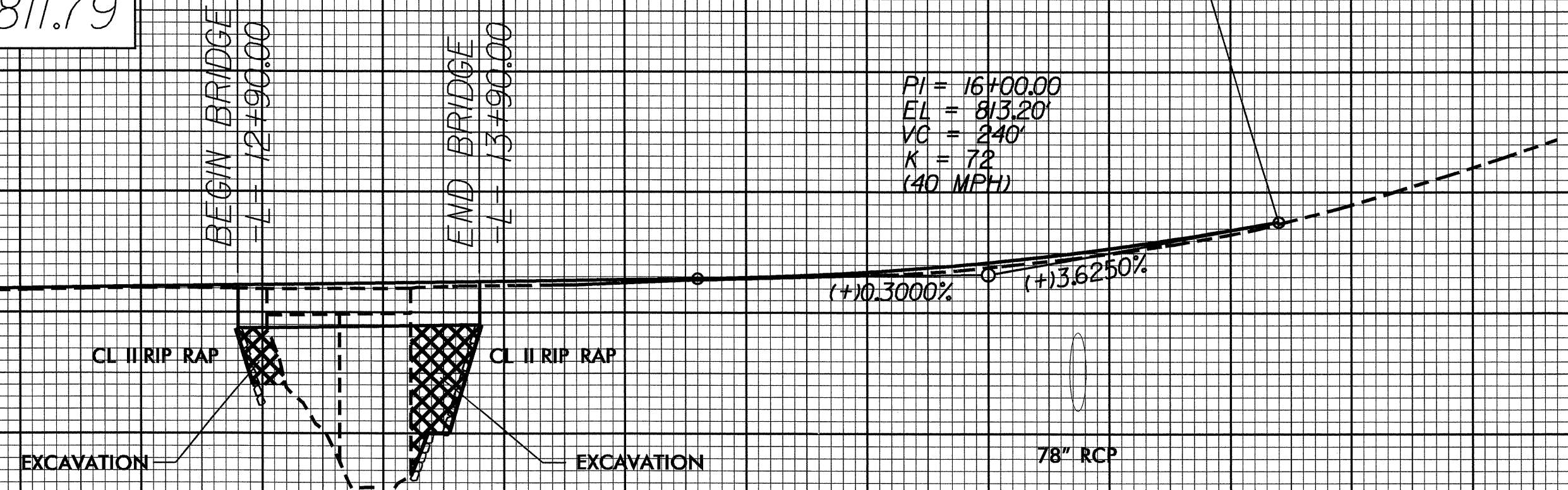
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720

BRIDGE HYDRAULIC DATA		
DESIGN DISCHARGE	= 2360	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 808.0	FT
BASE DISCHARGE	= 3290	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 809.6	FT
OVERTOPPING DISCHARGE	= 6500	CFS
OVERTOPPING FREQUENCY	= 500 +	YRS
OVERTOPPING ELEVATION	= 811.7	FT
DATE OF SURVEY = 8-17-2010		
W.S. ELEVATION AT DATE OF SURVEY = 796.3 FT		

END GRADE
-L- 17+20.00
ELEV. = 817.55'

BEGIN GRADE
-L- 11+30.00
ELEV. = 811.79

PI = 16+00.00
EL = 813.20'
VC = 240'
K = 7.2
(40 MPH)



15 NOV 2011 10:39 AM
C:\WORK\PROJECTS\B-4061\RDY_PFL_5.dgn

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00