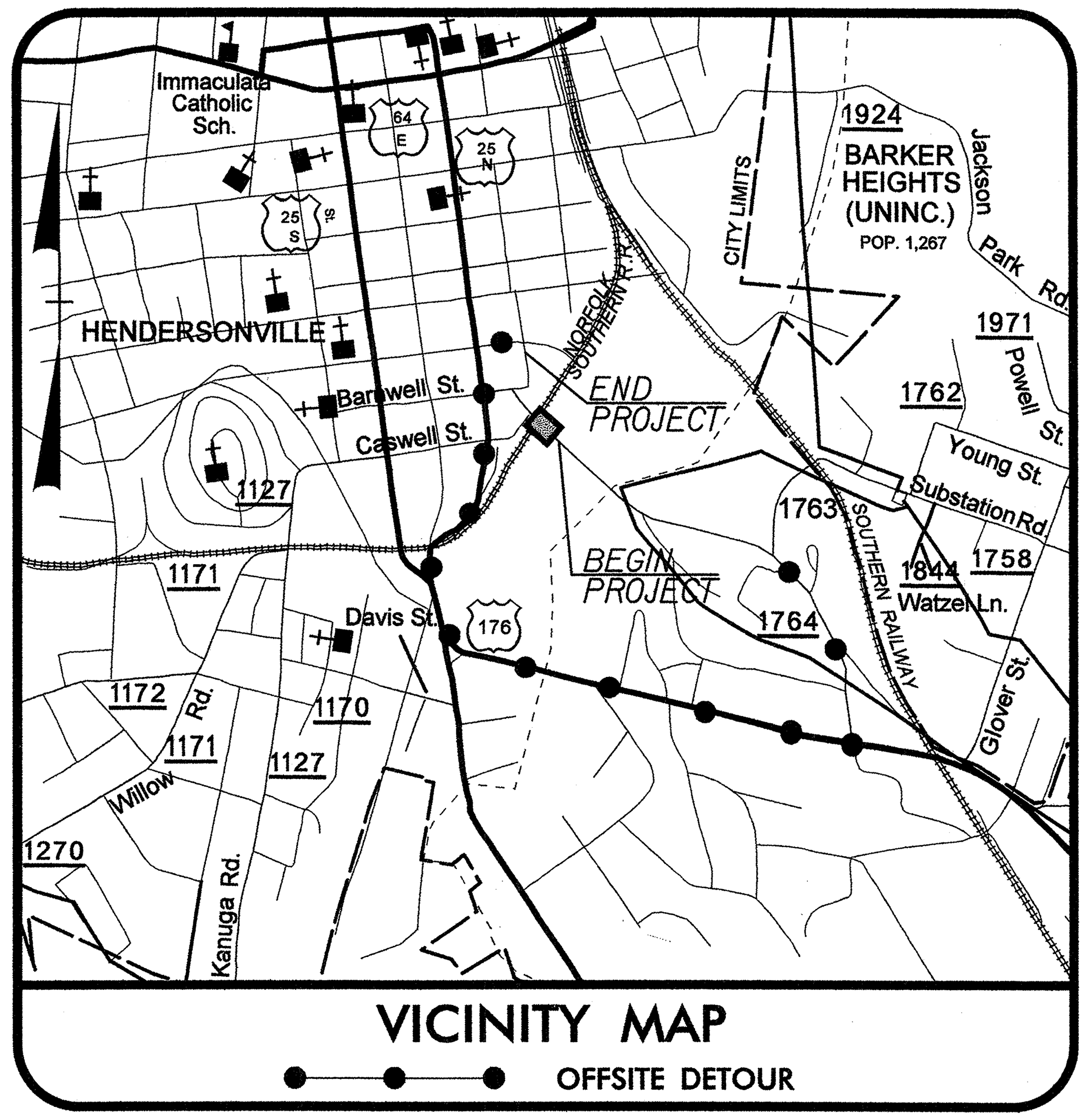
WBS ELEMENT: 47015

CONTRACT: C202141

See Sheet 1-A For Index of Sheets



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

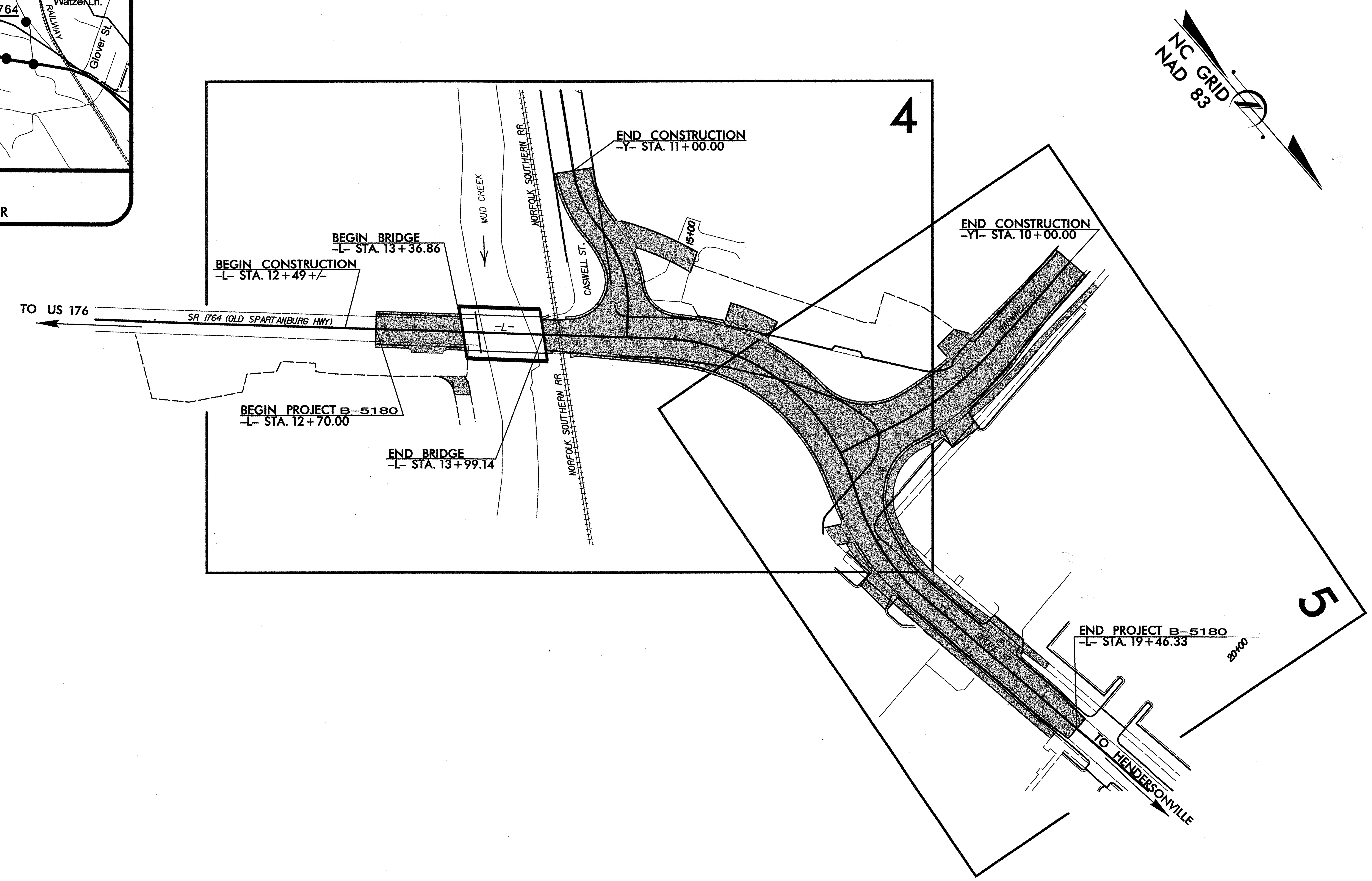
HENDERSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5180	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47015.3.1		PE,R/W,CONST.

LOCATION: BRIDGE NO. 205 ON SR 1764 (OLD SPARTANBURG HWY) OVER MUD CREEK

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



GRAPHIC SCALES

20 10 0 20 40
PLANS

20 10 0 20 40
PROFILE (HORIZONTAL)

4 2 0 4 8
PROFILE (VERTICAL)

DESIGN DATA

ADT(2008) = 7,525
ADT(2028) = 7,025
TTST = 20%
Vd = 40 MPH

PROJECT LENGTH B-5180

LENGTH ROADWAY PROJECT	=	.116 MI
LENGTH STRUCTURE PROJECT	=	.012 MI
TOTAL LENGTH PROJECT	=	.128 MI

Plans Prepared By:
TGS ENGINEERS
TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850

2006 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 19, 2009

Plans Prepared for:
NCDOT DIVISION 14
NCDOT Contact:
RALPH CANNADY
DIVISION PROJECT MANAGER

CHARLES L. FLOWE, PE
PROJECT ENGINEER

W. CRAIG PARKER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR.
SIGNATURE: William T. Stephens Jr. 11-7-08 P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER
SIGNATURE: W. Craig Parker 11-7-08 P.E.

$$$$SYSTIME$$$$
$$$$USERNAME$$$$
$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
09/08/99

5/28/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-5180	1-A

ROADWAY DESIGN ENGINEER

INDEX OF SHEETS

SHEET NO.	SHEET
1	Title Sheet
1-A	Index of Sheets, General Notes, and Standards
1-B	Conventional Symbols
2 and 2-A	Pavement Schedule, Typical Sections, and Bridge Typical
2-B	Anchorage for Frames Special Detail
3	Summary of Quantities
3-A	Summary of Earthwork, Guardrail, and Asphalt Pavement Removal
3-B	Summary of Drainage
3-C	Right of Way Area Data Sheet
4 and 5	Plan Sheets
6 and 7	Profile Sheets
TCP-1 thru TCP-5	Traffic Control Plans
PM-1	Pavement Marking Plan
NCMA-1	Advance Warning Work Zone Signs for "Moving Ahead"
NCMA-2	Sign Design for Contractor's Company Name
EC-1 and EC-5	Erosion Control Plans
UC-1 thru UC-4	Utility Construction Plans
X-INDEX	Cross Section Index
X-SUM	Earthwork Volume Summaries
X-1 thru X-8	Cross Sections
S-1 thru S-18	Structure Plans

LIST OF STANDARDS

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

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
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
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
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
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
866.01	Chain Link Fence - 4', 5' and 6' High Fence
876.02	Guide for Rip Rap at Pipe Outlets

GENERAL NOTES

GENERAL NOTES: 2006 SPECIFICATIONS

EFFECTIVE: 07-18-06
REVISED: 07-30-08

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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. 848.02 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.

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 DUKE POWER, CITY OF HENDERSON,

PSNC, MEDIACOM, AND AT&T.

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.

WHEELCHAIR RAMPS:

WHEELCHAIR RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. THE CONSTRUCTION OF ALL WHEELCHAIR RAMPS SHALL BE IN ACCORDANCE WITH STD. NO. 848.05.

$$$$SYSTIME$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5180	1-B

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 — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- 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 — RBB
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Guage — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line
- 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 — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equaility 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
- 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 — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- 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 — C
- TV Tower
- U/G TV Cable Hand Hole
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

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

SANITARY SEWER:

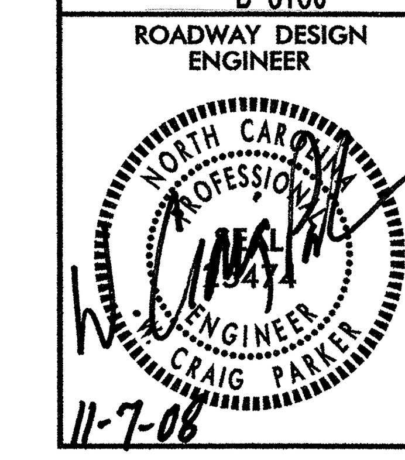
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

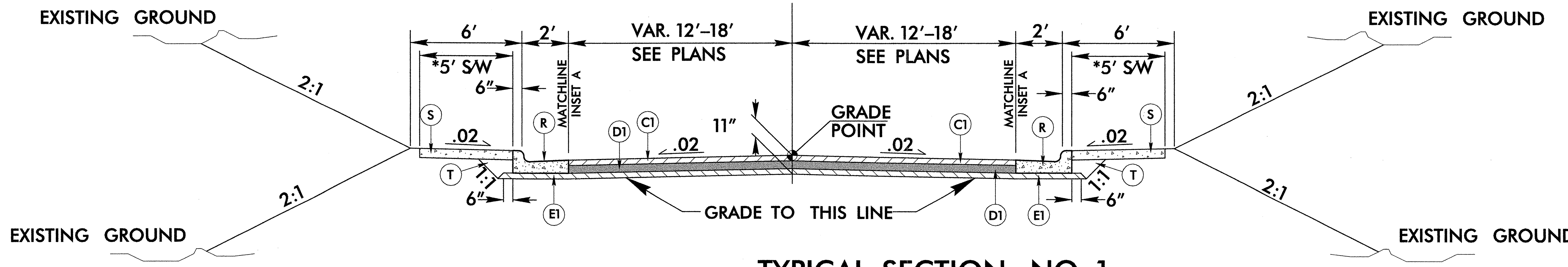
MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- 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.

PROJECT REFERENCE NO.	SHEET NO.
B-5180	2

ROADWAY DESIGN ENGINEER





TYPICAL SECTION NO. 1

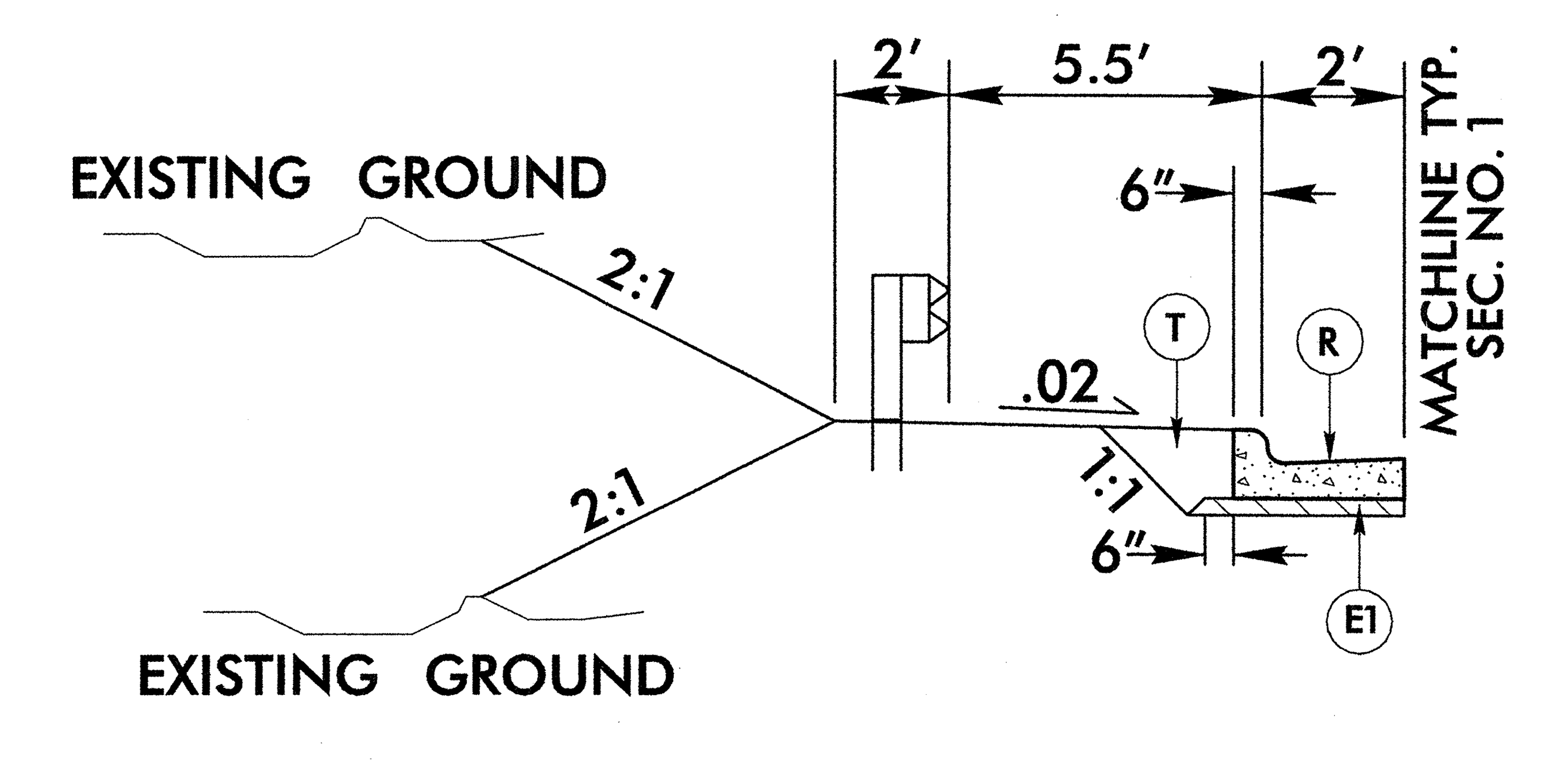
USE TYPICAL SECTION NO. 1 AS FOLLOWS:

-L- 12+90.00 TO 13+36.86(BEGIN BRIDGE)
-L- 13+99.14(END BRIDGE) TO 19+16.33
*CONSTRUCT SIDEWALK -L- 17+25+/- TO 18+98+/- LT
-L- 17+25+/- TO 19+36+/- RT

NOTE: TRANSITION FROM EXIST. TO TYPICAL SECTION NO.1 FROM:

-L- 12+70.00 TO 12+90.00
-L- 19+16.33 TO 19+46.33

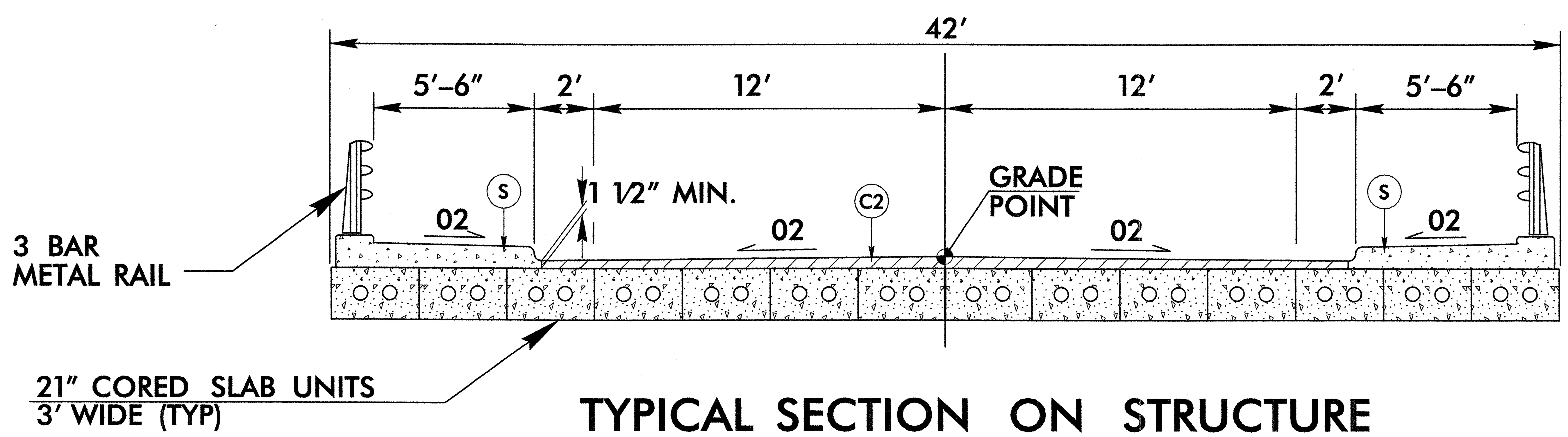
INSET A



USE INSET 'A' AS FOLLOWS:
-L- STA. 13+00.00 TO 13+36.86 (BEGIN BRIDGE) LT

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. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R	2'-6" CURB AND GUTTER.
S	SIDEWALK
T	EARTH MATERIAL.

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



TYPICAL SECTION ON STRUCTURE

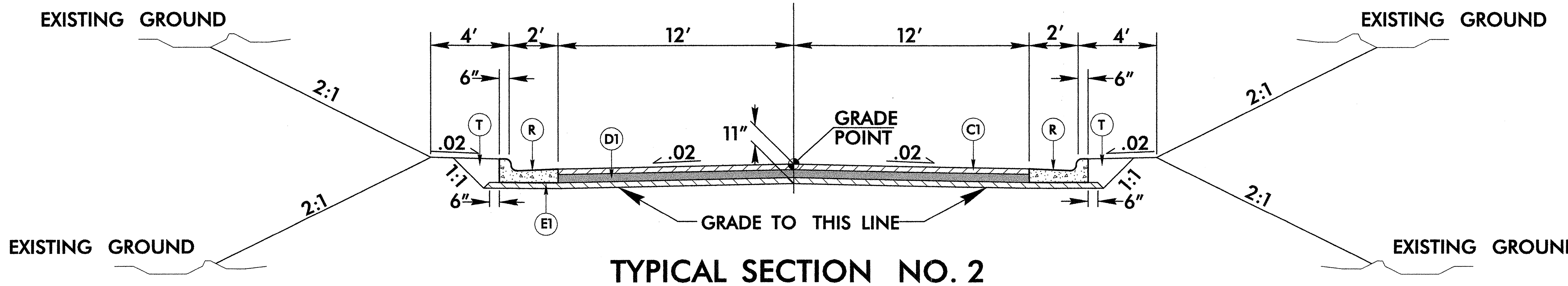
-L- 13+36.86(BEGIN BRIDGE) TO 13+99.14(END BRIDGE)

PROJECT REFERENCE NO.	SHEET NO.
B-5180	2-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25474 W. CRAIG PARKER 10-13-08

℄ -Y- (CASWELL STREET)



TYPICAL SECTION NO. 2

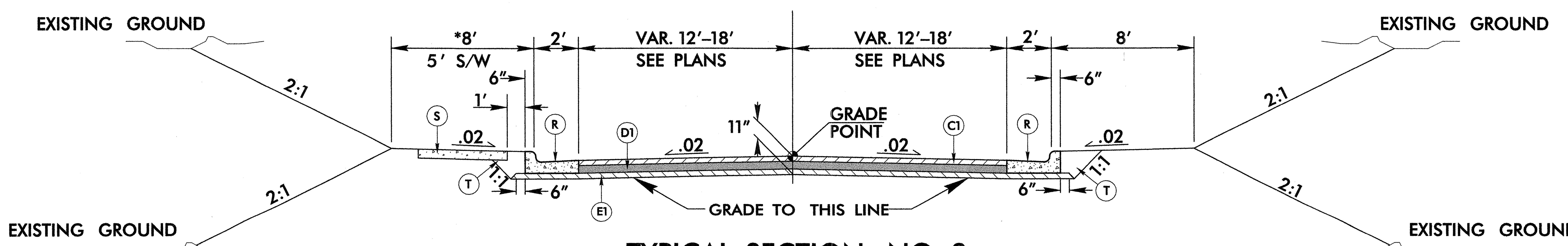
USE TYPICAL SECTION NO. 2 AS FOLLOWS:
-Y- 11+20.00 TO 12+22.08

NOTE: TRANSITION FROM EXIST. TO TYPICAL SECTION NO.2 FROM:
-Y- 11+00.00 TO 11+20.00

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B
R	2'-6" CURB AND GUTTER
S	SIDEWALK
T	EARTH MATERIAL

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

℄ -Y1- (BARNWELL STREET)



TYPICAL SECTION NO. 3

*TIE TO EXISTING WALL FROM:
-Y1- STA. 10+21.75 TO 11+35.08 LT

USE TYPICAL SECTION NO. 3 AS FOLLOWS:
-Y1- 10+30.00 TO 12+14.82

NOTE: TRANSITION FROM EXIST. TO TYPICAL SECTION NO.3 FROM:
-Y1- 10+00.00 TO 10+30.00

6/2/99

$$$$SYSTIME$$$$ $$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$ $$$USERNAME$$$$

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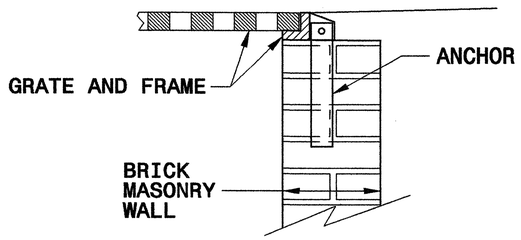
PROJECT REFERENCE NO.	SHEET NO.
B-5180	2-B

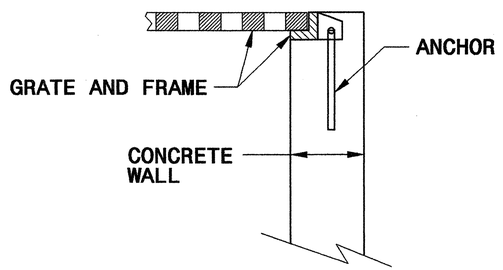
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

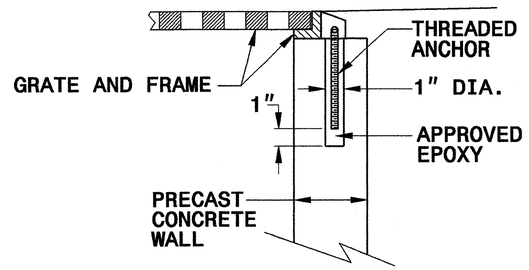
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



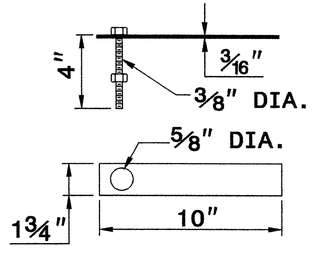
CONCRETE CONSTRUCTION



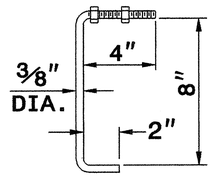
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

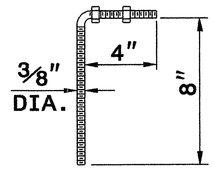
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



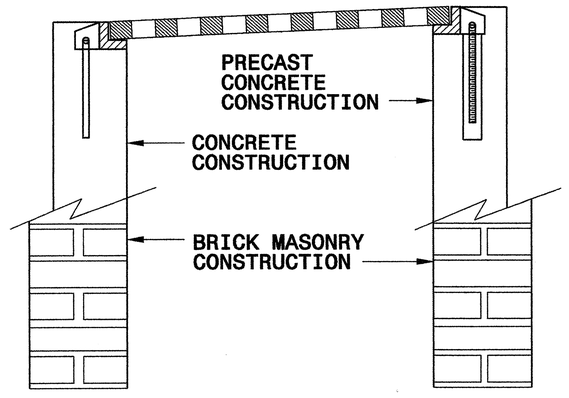
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

ENGLISH DETAIL DRAWING FOR
ANCHORAGE FOR FRAMES
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1
840D25

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
12/3/06

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

SEE PLATE FOR TITLE

ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

27-SEP-2006 08:59
S:\Contracts\projects\Special Details\ericward\stds\06' Stds to Special Details\840D25 Anchorage for Frames\0840d25.dgn
ericward AT PS222293

PROJECT REFERENCE NO.	SHEET NO.
B-5180	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202141

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0001010000-N	200	7	EA	SELECT TREE REMOVAL
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	100	CY	UNDERCUT EXCAVATION
0318000000-E	300	111	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0366000000-E	310	584	LF	15" RC PIPE CULVERTS, CLASS III
0378000000-E	310	144	LF	24" RC PIPE CULVERTS, CLASS III
0974000000-E	SP	32	LF	**" WELDED STEEL PIPE, *****" THICK, GRADE B, (UNDER RR) (36", 0.500")
0995000000-E	340	201.3	LF	PIPE REMOVAL
1220000000-E	545	150	TON	INCIDENTAL STONE BASE
1297000000-E	607	270	SY	MILLING ASPHALT PAVEMENT, ***" DEPTH (1-1/2")
1489000000-E	610	1,040	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	760	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	530	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	113	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
1693000000-E	654	130	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2264000000-E	840	0.686	CY	PIPE PLUGS
2275000000-E	SP	8.8	CY	FLOWABLE FILL
2286000000-N	840	21	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	5.36	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.16
2367000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	7	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	8	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	3	EA	FRAME WITH COVER, STD 840.54
2549000000-E	846	1,580	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	320	SY	4" CONCRETE SIDEWALK
2605000000-N	848	8	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	136	SY	6" CONCRETE DRIVEWAY
2830000000-N	858	4	EA	ADJUSTMENT OF MANHOLES
2845000000-N	858	2	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
3045000000-E	862	50	LF	STEEL BM GUARDRAIL, SHOP CURVED
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3435000000-N	SP	1	EA	GENERIC GUARDRAIL ITEM IMPACT ATTENUATOR UNIT, TYPE 350, TL-2
3554000000-E	866	2	EA	METAL GATE POSTS FOR **" CHAIN LINK FENCE, DOUBLE GATE (72")
3565000000-E	866	1	EA	DOUBLE GATES, **" HIGH, **' WIDE, **' OPENING (72", 8', 16')
3628000000-E	876	12	TON	RIP RAP, CLASS I
3656000000-E	876	794	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	353	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	165	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	40	EA	DRUMS
4445000000-E	1145	112	LF	BARRICADES (TYPE III)
4455000000-N	1150	180	MD	FLAGGER
4810000000-E	1205	10,014	LF	PAINT PAVEMENT MARKING LINES (4")
4820000000-E	1205	464	LF	PAINT PAVEMENT MARKING LINES (8")
4830000000-E	1205	200	LF	PAINT PAVEMENT MARKING LINES (16")
4835000000-E	1205	272	LF	PAINT PAVEMENT MARKING LINES (24")
4840000000-N	1205	4	EA	PAINT PAVEMENT MARKING CHARAC-TER
4845000000-N	1205	20	EA	PAINT PAVEMENT MARKING SYMBOL
4905000000-N	1253	48	EA	SNOWPLOWABLE PAVEMENT MARKERS
5325600000-E	1510	50	LF	6" WATER LINE
5326000000-E	1510	40	LF	10" WATER LINE
5326200000-E	1510	170	LF	12" WATER LINE
5552000000-E	1515	2	EA	10" VALVE
5800000000-E	1530	40	LF	ABANDON 6" UTILITY PIPE
5802000000-E	1530	200	LF	ABANDON 10" UTILITY PIPE
5836000000-E	1540	94	LF	24" ENCASEMENT PIPE
5872200000-E	1550	94	LF	TRENCHLESS INSTALLATION OF 24" IN SOIL
6000000000-E	1605	1,485	LF	TEMPORARY SILT FENCE
6006000000-E	1610	115	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	75	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	345	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	1	ACR	TEMPORARY MULCHING
6018000000-E	1620	50	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEED-ING
6029000000-E	SP	200	LF	SAFETY FENCE
6030000000-E	1630	115	CY	SILT EXCAVATION
6036000000-E	1631	960	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	480	LF	1/4" HARDWARE CLOTH
6070000000-N	SP	8	EA	SPECIAL STILLING BASINS
6084000000-E	1660	0.5	ACR	SEEDING & MULCHING
6087000000-E	1660	0.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	50	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	0.5	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	0.5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL

COMPUTED BY: JLT DATE: 02/29/08
CHECKED BY: WCP DATE: 3/10/08

PROJECT NO.	SHEET NO.
B-5180	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Line	Station	Station	Uncl. Excav.	Undercut Excav.	Embank. +%	Borrow	Waste
-L-	12+70.00	13+36.86	53		35		18
BRIDGE							
-L-	13+99.14	19+46.33	1,038		305		733
-Y-	11+00.00	12+22.08	106		83		23
-Y1-	10+00.00	12+14.82	182		145		37
PROJECT TOTALS			1,379		568	0	811
Loss due to Clearing & Grubbing			-69			69	
Earth Waste to replace Borrow						-69	-69
Undercut Excavation				100			
GRAND TOTAL			1,310	100	568	0	742
SAY			1,380	100		0	

PAVEMENT STRUCTURE VOLUME = 1,670 CY

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

Line	Station	Station	Location LT/RT/CL	SY
-L-	12+90.00	13+47.02	LT/RT	128.77
-L-	14+00.60	14+08.29	LT/RT	23.22
-L-	14+13.38	14+45.90	LT/RT	127.23
-L-	14+45.90	14+90.90	LT/RT	155.76
-L-	14+90.90	14+99.80	LT/RT	30.12
-L-	14+99.80	19+16.40	RT/CL	1769.78
-Y-	11+20.00	12+16.80	RT/CL	320.69
-Y1-	10+30.00	11+19.82	CL	283.13
			TOTAL:	2,838.69
			SAY:	2,980.00

"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

Approximate quantities only. Unclassified excavation, fine grading, and removal of existing pavement will be paid for at the lump sum price for "Grading".

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH		W		ANCHORS							IMPACT ATTENUATOR TEST LEVEL 2			REMOVE EXISTING GRDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	GRAU 350	CAT-1	AT-1	III	XI MOD	M-350		EA	NG			
-L-	12+94+/-	13+33.38	LT	18.75	43.75			BRIDGE	7.5	BERM							1	1								20' RADIUS SHOP CURVED GUARDRAIL
-L-	13+25.32	13+40.32	RT				BRIDGE		7.5	BERM												1	X			SEE SPEC.
		SUB-TOTALS:		18.75	43.75																					
	LESS ANCHOR DEDUCTIONS																									
	TYPE III	1@18.75 ft		18.75																						
	AT-1	1@6.25 ft			6.25																					
	ANCHOR TOTALS			18.75	6.25																					
		GRAND TOTALS		0.00	37.50													1				1				
		SAY		0	50													1				1				

COMPUTED BY: RWZ DATE: 2/20/2008

CHECKED BY: WTS DATE: 2/20/2008

PROJECT NO.	SHEET NO.
B-5180	3-B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TGS-GOLFER-IBM

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	WELDED STEEL PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	*TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	T.B. DROP INLET STD. 840.35	FRAMES AND NARROW SLOT FLAT GRATES STD. 840.29	J.B. STD. 840.31 OR 840.32	T.B.J.B. STD. 840.34	M.H. FRAME AND COVER STD. 840.54	CORR. STEEL ELBOWS NO. & SIZE	FLOWABLE FILL, C.Y.	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN. FT.	REMARKS
THICKNESS OR GAUGE																					.500																										
-L- 12+51	RT	1		2084.20																									1									1	1								REMOVE DI
		1	2		2081.45	2081.25			40																																					105.3	
-L- 12+93	RT	2		2085.23																									1			1			1												
	CL	2	3		2081.25	2082.14			24																																						
	RT	2	4		2081.25	2082.75			36																																						
	RT	2	5		2081.15	2080.95			20																																						
-L- 12+93	LT	3		2084.97																									1			1		1													
-L- 13+30	RT	4		2085.58																									1			1			1												
-L- 12+93	RT	5		2085.20																									1							1	1										
	RT	5	6		2080.85	2080.00			64																																						
-L- 14+02	RT	7																																													
	RT	7	8		2079.00	2079.20															32																							2.80	0.364	12	
-L- 14+34	RT	8		2084.60																									1	0.40										1		1					
	RT	8	9		2080.20	2080.90					12																																			20	
-L- 14+40	RT	9		2086.82																									1	0.92		1			1												REMOVE DI
	RT	9	9A		2081.00	2082.68					32																																			32	
-L- 14+75	RT	9A		2088.00																									1			1			1												
-L- 14+66	LT	10																																										1.60	0.090		REMOVE DI
-L- 15+75	RT	11		2094.28																									1	0.80											1	1					
	RT	11	EXIS		2088.48	2088.48																																									
	RT	11	12		2090.76	2094.36			36																																						
-L- 16+15	RT	12		2097.19																									1			1			1												
		12	13		2094.46	2102.05			72																																						
-L- 16+98	RT	13		2105.05																									1			1			1												
	CL	13	14		2102.15	2102.92			40																																						
-L- 17+12	LT	14		2105.75																									1			1		1													
	LT	14	15		2103.02	2106.10			56																																						
-L- 17+77	LT	15		2108.93																									1			1		1													
	LT	15	16		2106.20	2112.00			116																																						
-L- 18+96	LT	16		2115.05																									1			1		1													
	CL	16	17		2112.10	2112.25			24																																						
-L- 18+96	RT	17		2115.08																									1			1			1												
-Y1- 10+10	LT	18		2110.36	2105.82																								1			1			1												
-Y1- 11+45	LT	19		2105.20																									1												1	1					REMOVE DI
	CL	19	20		2098.15	2097.90					44																																	4.40	0.232		
-Y1- 11+45	RT	20		2102.96																									1			1		1													
	RT	20	21		2097.80	2097.00					32																																				
-Y1- 11+82	RT	21		2102.00																									1			1		1													
	CL	21	22		2099.00	2101.55			56																																						
	RT	21	23		2096.80	2096.30					24																																			32	
-Y1- 11+81	LT	22		2103.80																									1							1	1										
-Y1- 12+04	RT	23		2101.49																									1	3.24		1		1													
	RT	23	EXIS		2093.25	2093.25																																									
MA14013B TOTALS									584		144										32								21	5.36		15		7	8	2	2	1	1	1	2	3		8.8	0.686	201.3	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
M.D.I.	MEDIAN DROP INLET
M.D.I.(N.S.)	MEDIAN DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

PROJECT REFERENCE NO.	SHEET NO.
B-5180	3-C

TGS ENGINEERS
TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850

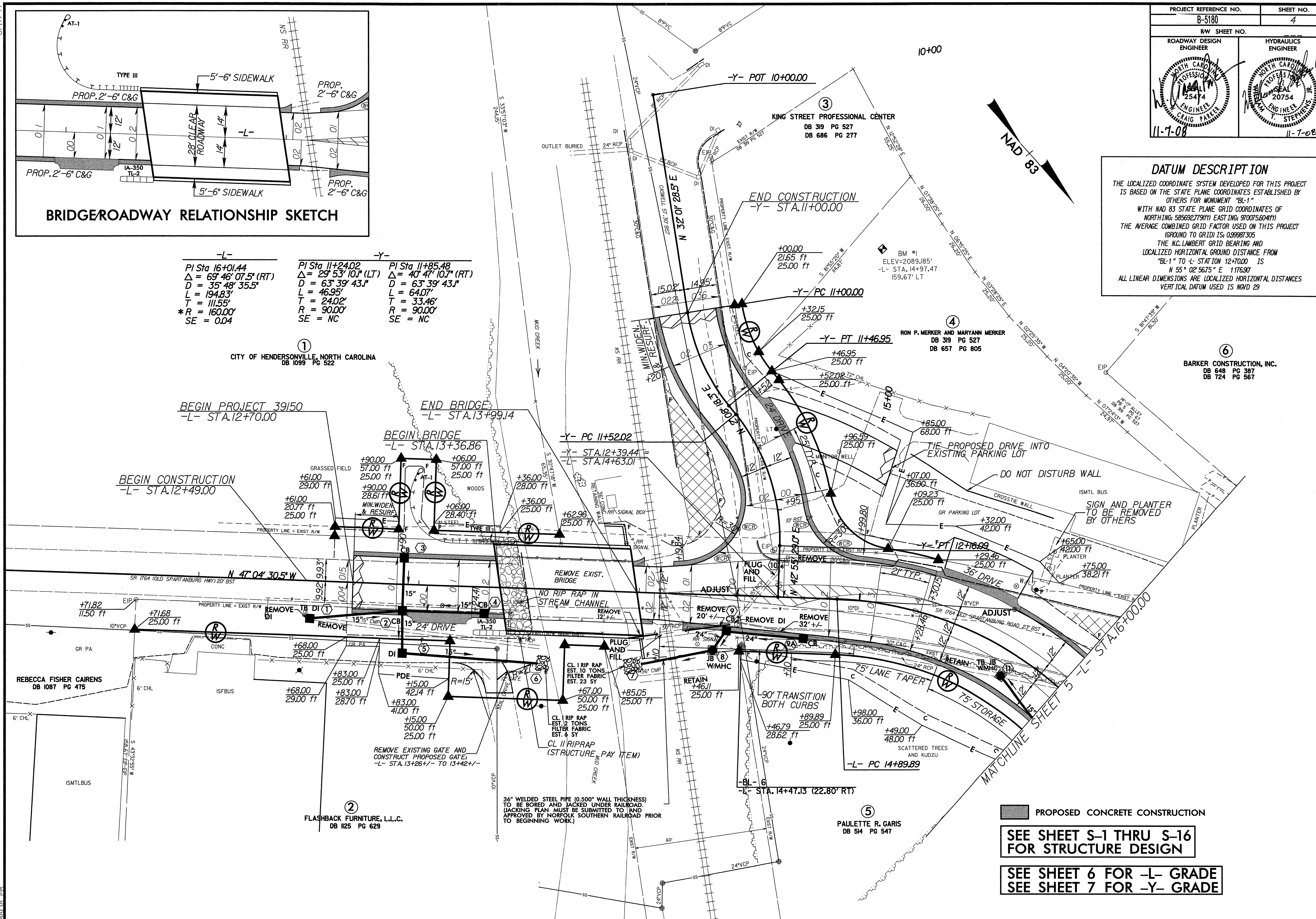
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RIGHT OF WAY AREA DATA SHEET

		RIGHT OF WAY		PERMANENT DRAINAGE EASEMENT		TEMPORARY CONTRUCTION EASEMENT		TEMPORARY DRAINAGE EASEMENT	
PARCEL NO.	PROPERTY OWNER NAME	AREA (sf)	AREA (Ac)	AREA (sf)	AREA (Ac)	AREA (sf)	AREA (Ac)	AREA (sf)	AREA (Ac)
1	CITY OF HENDERSONVILLE, NORTH CAROLINA	938.78	0.022	0.00	0.00	206.40	0.005	0.00	0.00
2	FLASHBACK FURNITURE, L.L.C.	3865.71	0.089	530.29	0.012	57.74	0.001	0.00	0.00
3	KING STREET PROFESSIONAL CENTER	128.64	0.003	0.00	0.00	0.00	0.000	0.00	0.00
4	RON P. MERKER AND MARYANN MERKER	2493.73	0.057	0.00	0.00	3411.83	0.078	0.00	0.00
5	PAULETTE R. GARIS	5104.31	0.117	0.00	0.00	2976.50	0.068	0.00	0.00
6	BARKER CONSTRUCTION, INC.	131.29	0.003	0.00	0.00	684.83	0.016	0.00	0.00
7	KENNINGTON SQUARE	677.18	0.016	0.00	0.00	559.49	0.013	0.00	0.00
8	GRIFFIN GATE PROPERTIES, LLC	147.79	0.003	0.00	0.00	627.87	0.014	0.00	0.00
9	BROOKSHIRE PROPERTIES, LLC	334.98	0.008	0.00	0.00	0.00	0.000	0.00	0.00

$$$$$SYSTIME$$$$$
$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-5180	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 25474 — CRAIG PARKER — 11-7-08	SEAL 20754 — T. STEPHENS, JR. — 11-7-08



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY OTHERS FOR MONUMENT "BL-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 585692.779(ft) EASTING: 970075.604(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987305 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "BL-1" TO -L- STATION 12+70.00 IS N 55° 02' 56.75" E 117.690' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NGVD 29

PROPOSED CONCRETE CONSTRUCTION

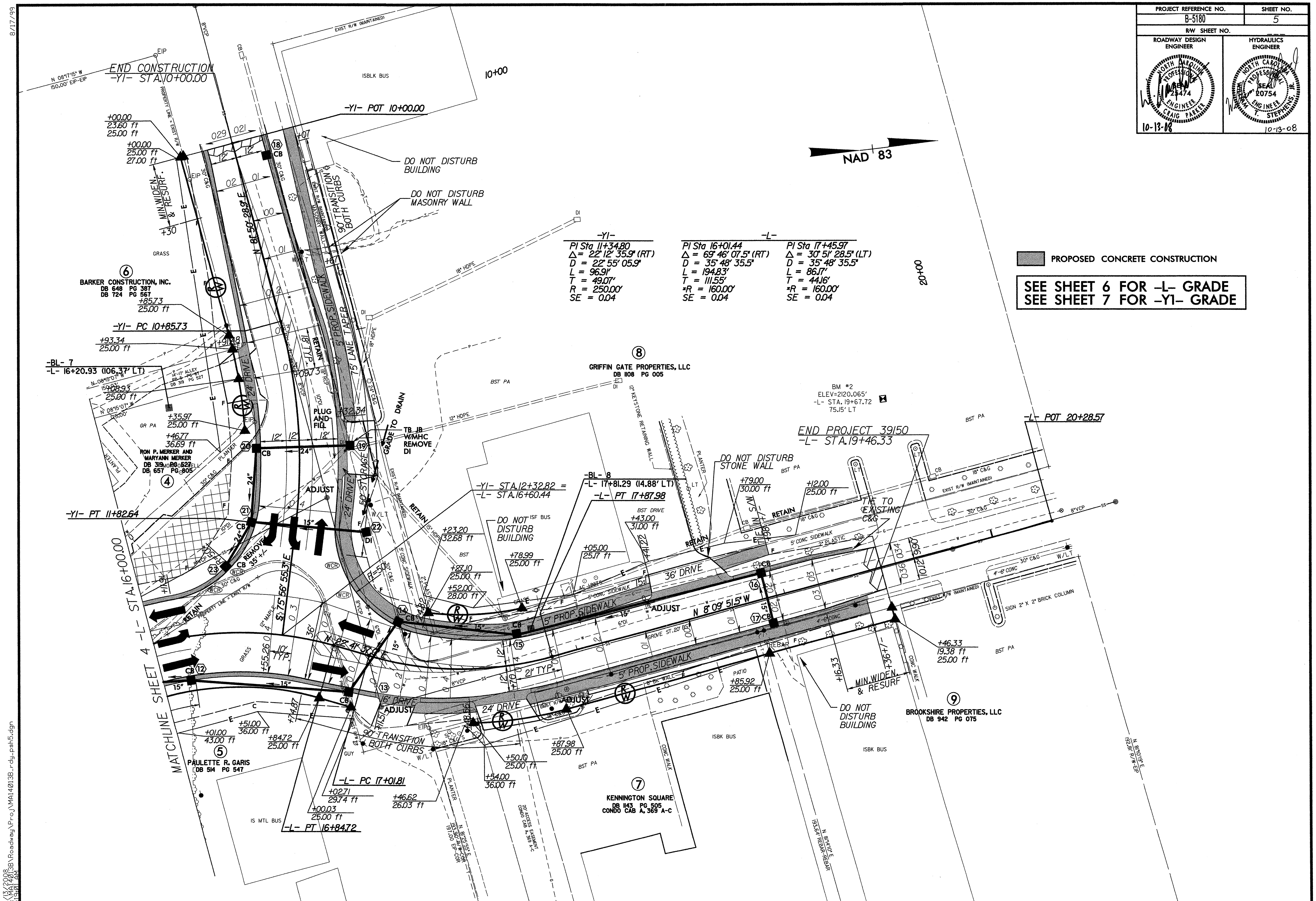
SEE SHEET S-1 THRU S-16 FOR STRUCTURE DESIGN

SEE SHEET 6 FOR -L- GRADE
SEE SHEET 7 FOR -Y- GRADE

8/17/99

11/6/2008 R:\MA14013B\Roadway\Proj\MA14013B_rdy_psh4.dgn 1:08:38 PM

PROJECT REFERENCE NO.	SHEET NO.
B-5180	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
10-13-08	10-13-08



-Y1-	-L-	-L-
PI Sta 11+34.80	PI Sta 16+01.44	PI Sta 17+45.97
Δ = 22° 12' 35.9" (RT)	Δ = 69° 46' 07.5" (RT)	Δ = 30° 51' 28.5" (LT)
D = 22° 55' 05.9"	D = 35° 48' 35.5"	D = 35° 48' 35.5"
L = 96.91'	L = 194.83'	L = 86.17'
T = 49.07'	T = 111.55'	T = 44.16'
R = 250.00'	*R = 160.00'	*R = 160.00'
SE = 0.04	SE = 0.04	SE = 0.04

PROPOSED CONCRETE CONSTRUCTION

SEE SHEET 6 FOR -L- GRADE
SEE SHEET 7 FOR -Y1- GRADE

8/17/99

10/13/2008
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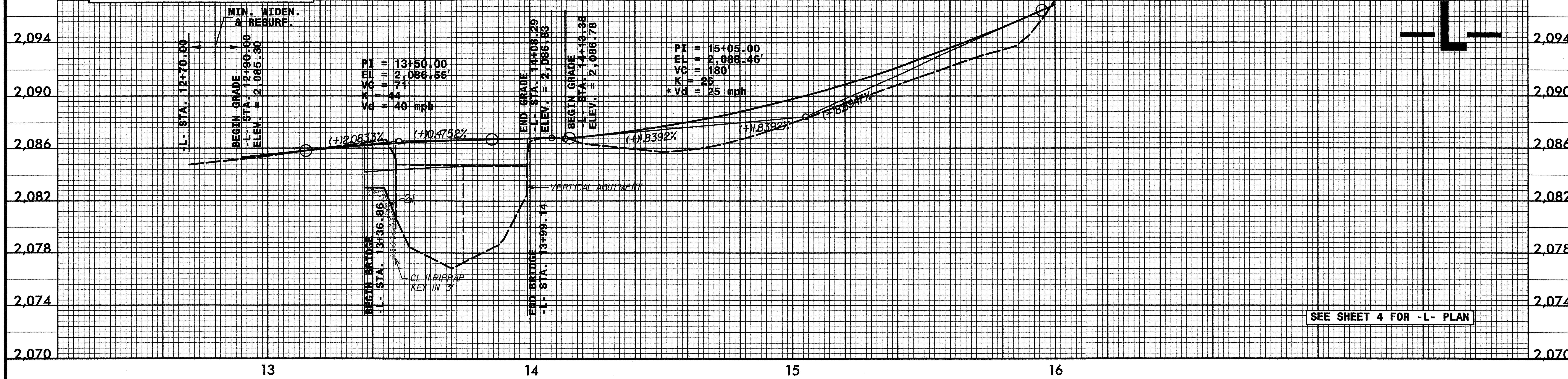
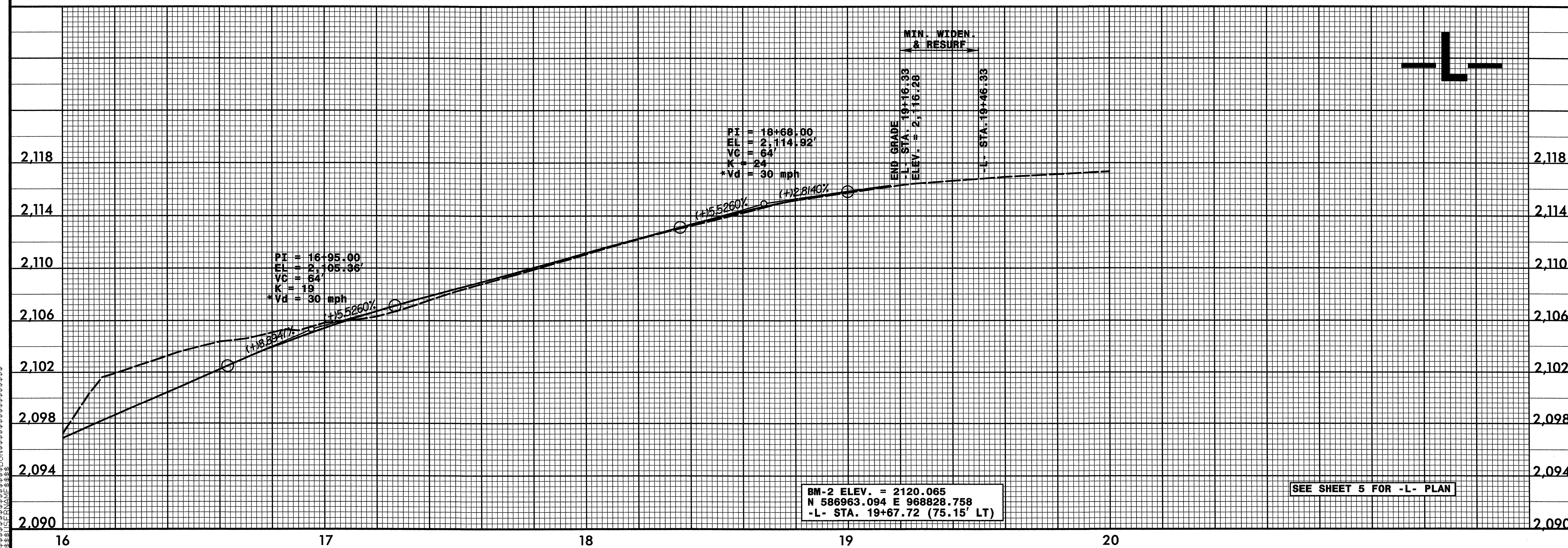
PROJECT REFERENCE NO.	SHEET NO.
B-5180	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 25474, W. CRAIG PARKER, 11-7-08	SEAL 20754, STEPHENS, JR., 11-7-08

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 5700 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 2088.0 FT
BASE DISCHARGE	= 7500 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 2089.2 FT
OVERTOPPING DISCHARGE	= 1500 CFS
OVERTOPPING FREQUENCY	= <10 YRS
OVERTOPPING ELEVATION	= 2083.1 FT

BM-1 ELEV.= 2089.185'
N 586410.398 E 968830.369
-L- STA. 14+97.47 (159.67' LT)

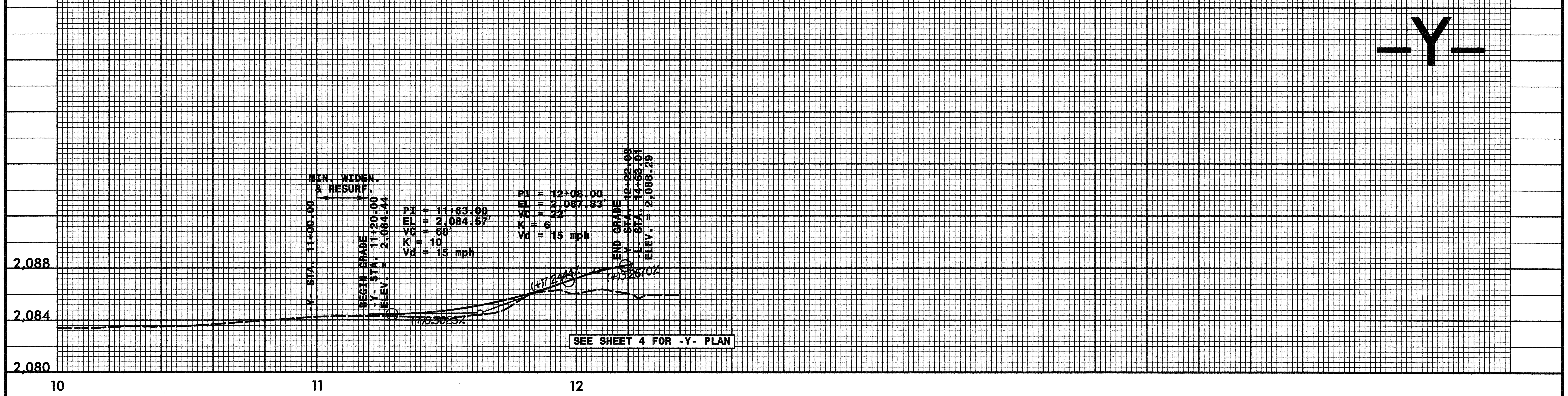


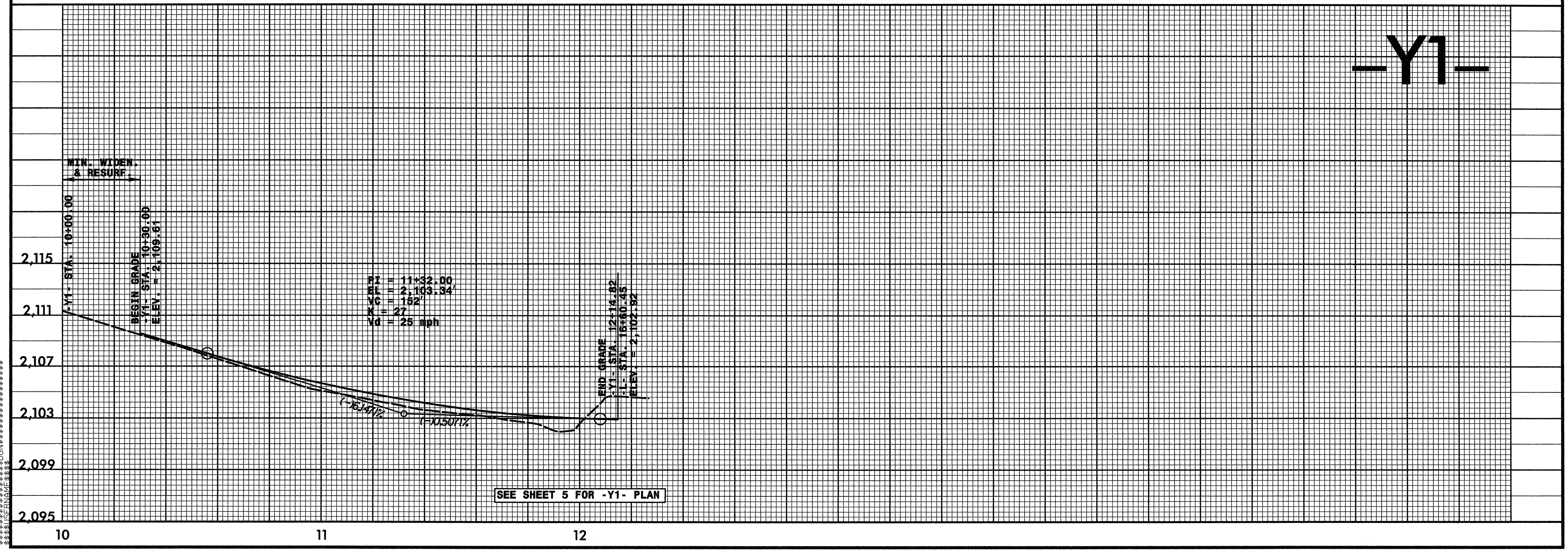


5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5180	7

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER 10-13-08	NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR. 12-3-08





$$$$$$SYSTIME$$$$$$ $$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$ $$$$$$USERNAME$$$$$$

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