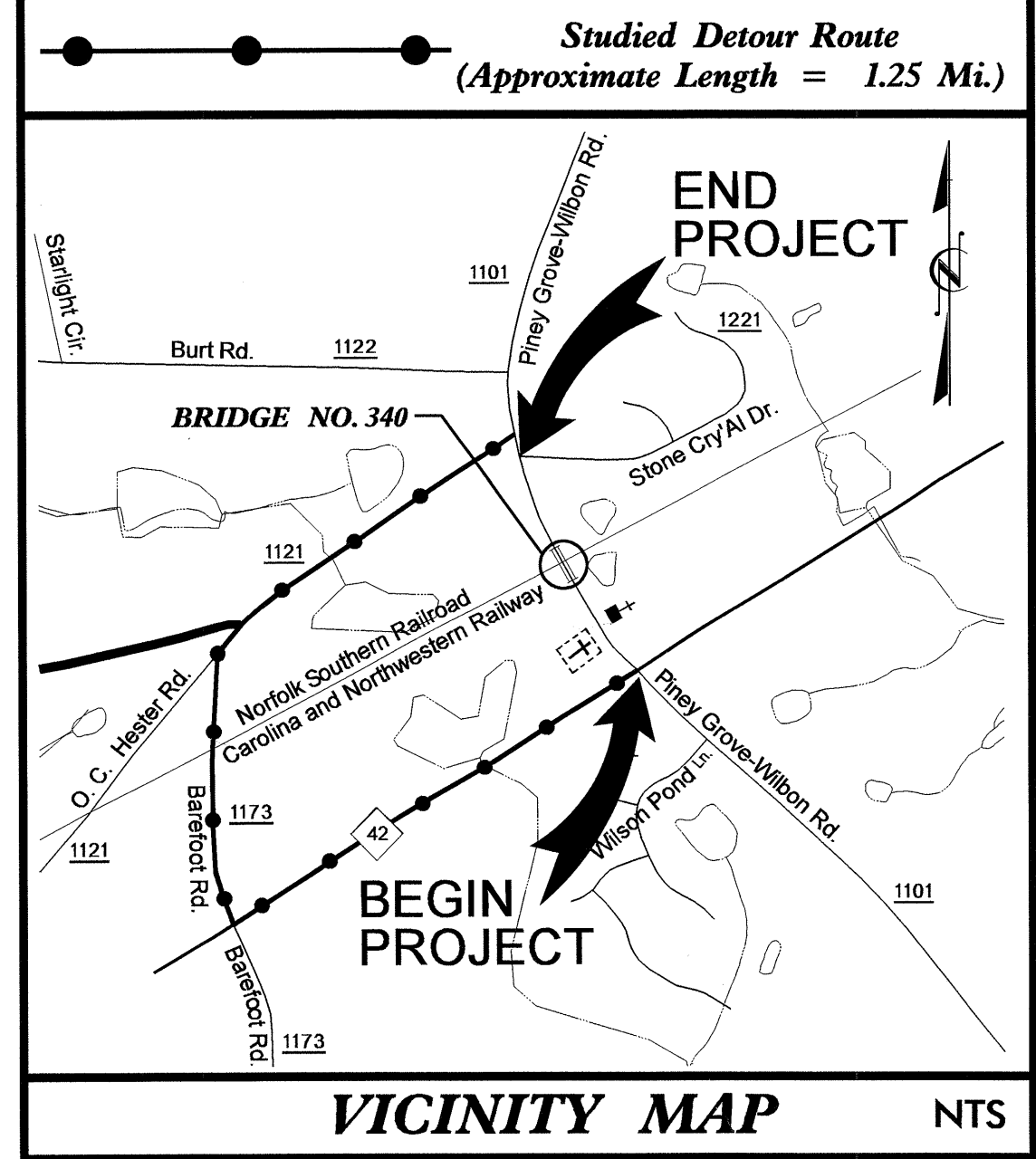


SEE 1-A FOR INDEX OF SHEETS

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

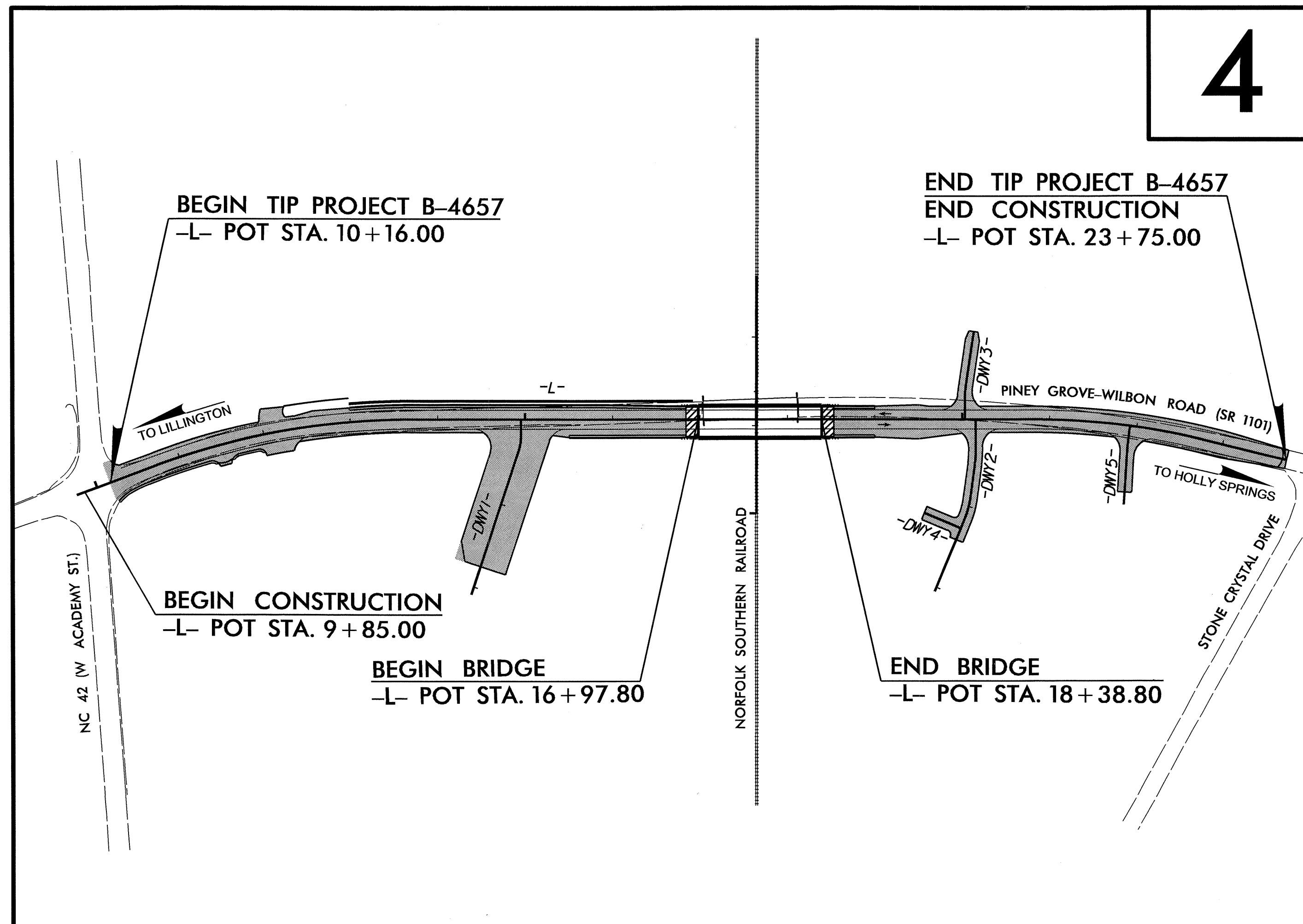
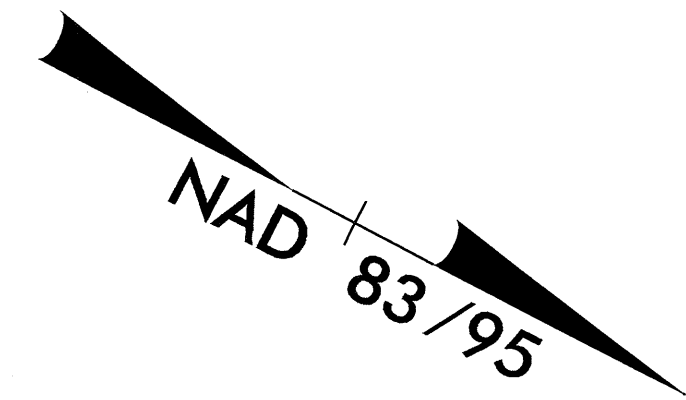
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4657	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
55820.1.1	BRSTP-1101(9)	PE	
55820.2.1	BRSTP-1101(9)	ROW&UTILITIES	
55820.3.1	BRSTP-1101(9)	CONST.	

**LEGEND**



**WAKE COUNTY**

**LOCATION: BRIDGE NO. 340 OVER NORFOLK/SOUTHERN RAILROAD  
ON SR 1101 (PINEY GROVE-WILBON ROAD)**  
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, AND STRUCTURES**



TIP PROJECT: B-4657

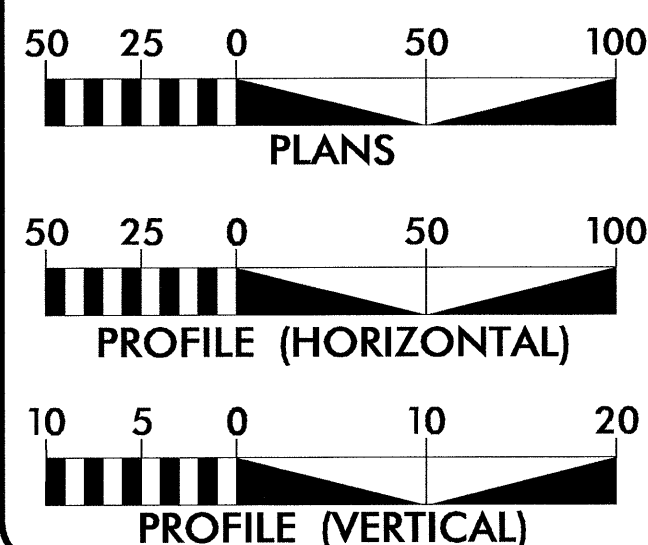
CONTRACT: C202733

REVISIONS

08-AUG-2011 12:27  
R:\Roadway\Proj\B4657\_rdy.tsh.dgn  
\$TIME\$

NCDOT CONTACT: K. ZAK HAMIDI, PE ROADWAY DESIGN PROJECT ENGINEER

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2011 = 6,818  
ADT 2031 = 11,364  
DHV = 10 %  
D = 60 %  
T = 7% \*  
V = 50 MPH  
\* TTST 3% DUAL 4%  
Functional Class.: Rural  
Minor Collector  
SUB REGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY PROJECT B-4657 = 0.230 MILES  
LENGTH STRUCTURES PROJECT B-4657 = 0.027 MILES  
TOTAL LENGTH PROJECT B-4657 = 0.257 MILES

Prepared in the Office of:  
**THE LOUIS BERGER GROUP, Inc.**  
1001 Wade Avenue, Suite 400  
Raleigh, North Carolina 27605

**2006 STANDARD SPECIFICATIONS**

**RIGHT OF WAY DATE:**  
October 16, 2009

**LETTING DATE:**  
November 15, 2011

DEAN HATFIELD, PE  
PROJECT ENGINEER

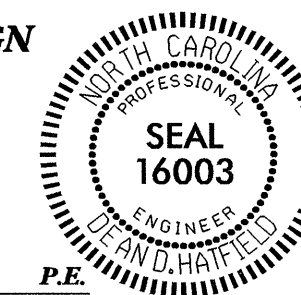
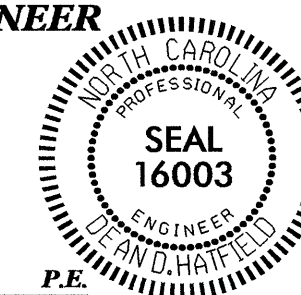
WILLIAM TILLITT, PE  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

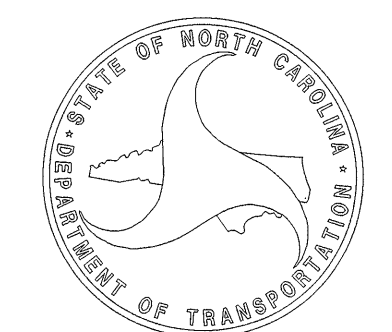
Dean Hatfield  
SIGNATURE:

ROADWAY DESIGN  
ENGINEER

Dean Hatfield  
SIGNATURE:



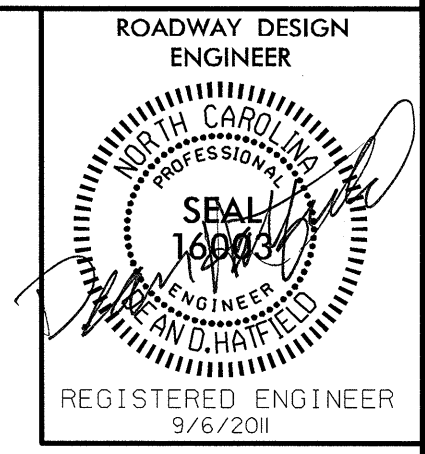
**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**



Art McMillon, P.E.  
STATE HIGHWAY DESIGN ENGINEER

# INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

PROJECT REFERENCE NO.	SHEET NO.
B-4657	1A
RW SHEET NO.	



GENERAL NOTES: 2006 SPECIFICATIONS  
EFFECTIVE: 07-18-06  
REVISED: 07-30-08

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 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.

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 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.

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 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 HARNETT COUNTY DEPARTMENT OF PUBLIC UTILITIES.  
  
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.

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
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
300.01	Method of Pipe Installation - Method 'A'
310.10	Driveway Pipe Construction
422.10	Reinforced Bridge Approach Fills
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
654.01	Pavement Repairs
806.01	Concrete Right-of-Way Marker
806.02	Granite Right-of-Way Marker
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
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.35	Traffic Bearing Grated Drop Inlet
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
848.02	Driveway Turnout - Radius Type
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets

## INDEX OF SHEETS

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 Sheets
2 THRU 2-A	Typical Sections, Pavement Schedule, and Wedging Detail
2-B	Anchorage for Frames Detail
2-C THRU 2-D	Method of Pipe Installation
3	Summary of Quantities
3-A	Summary of Drainage Quantities
3-B	Guardrail Summary, Summary of Earthwork,  Shoulder Berm Gutter Summary and Summary of Breaking Asphalt Pavement
4 THRU 5	Plan Sheets
TMP-1 THRU TMP-4	Traffic Control Plans
PM-1 THRU PM-2	Pavement Marking Plans
EC-1 THRU EC-5	Erosion Control Plans
SIGN-1 THRU SIGN-2	Signing Plans
SIG-1 THRU SIG-8	Signal Plans
UC-1 THRU UC-2	Utility Construction Plans
UO-1 THRU UO-2	Utilities by others Plans
X-1 THRU X-26	Cross-Sections
W-1 THRU W-2	Retaining Wall Details
S-1 THRU S-39	Structure Plans

REVISIONS

9/6/2011  
\$\$\$\$\$DGN\$\$\$\$\$  
\$TIME\$

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

**Note: Not to Scale**

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

**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	⑫
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	--- WLB ---
Proposed Wetland Boundary	--- WLB ---
Existing Endangered Animal Boundary	--- EAB ---
Existing Endangered Plant Boundary	--- EPB ---
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ☠

**BUILDINGS AND OTHER CULTURE:**

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

**HYDROLOGY:**

Stream or Body of Water	-----
Hydro, Pool or Reservoir	□
Jurisdictional Stream	--- JS ---
Buffer Zone 1	--- BZ 1 ---
Buffer Zone 2	--- BZ 2 ---
Flow Arrow	←
Disappearing Stream	→
Spring	○
Wetland	▬
Proposed Lateral, Tail, Head Ditch	▬
False Sump	▽

**RAILROADS:**

Standard Gauge	-----
RR Signal Milepost	CSX TRANSPORTATION 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	-----
Proposed Temporary Construction Easement	-----
Proposed Temporary Drainage Easement	-----
Proposed Permanent Drainage Easement	-----
Proposed Permanent Drainage / Utility Easement	-----
Proposed Permanent Utility Easement	-----
Proposed Temporary Utility Easement	-----
Proposed Aerial Utility Easement	-----

**ROADS AND RELATED FEATURES:**

Proposed Permanent Easement with Iron Pin and Cap Marker	◆
Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C ---
Proposed Slope Stakes Fill	--- F ---
Proposed Curb Ramp	○ CR
Existing Metal Guardrail	-----
Proposed Guardrail	-----
Existing Cable Guiderail	-----
Proposed Cable Guiderail	-----
Equality Symbol	⊕
Pavement Removal	▬

**VEGETATION:**

Single Tree	☼
Single Shrub	☼
Hedge	-----
Woods Line	-----

Orchard	☼ ☼ ☼ ☼
Vineyard	□ Vineyard

**EXISTING STRUCTURES:**

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

**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:**

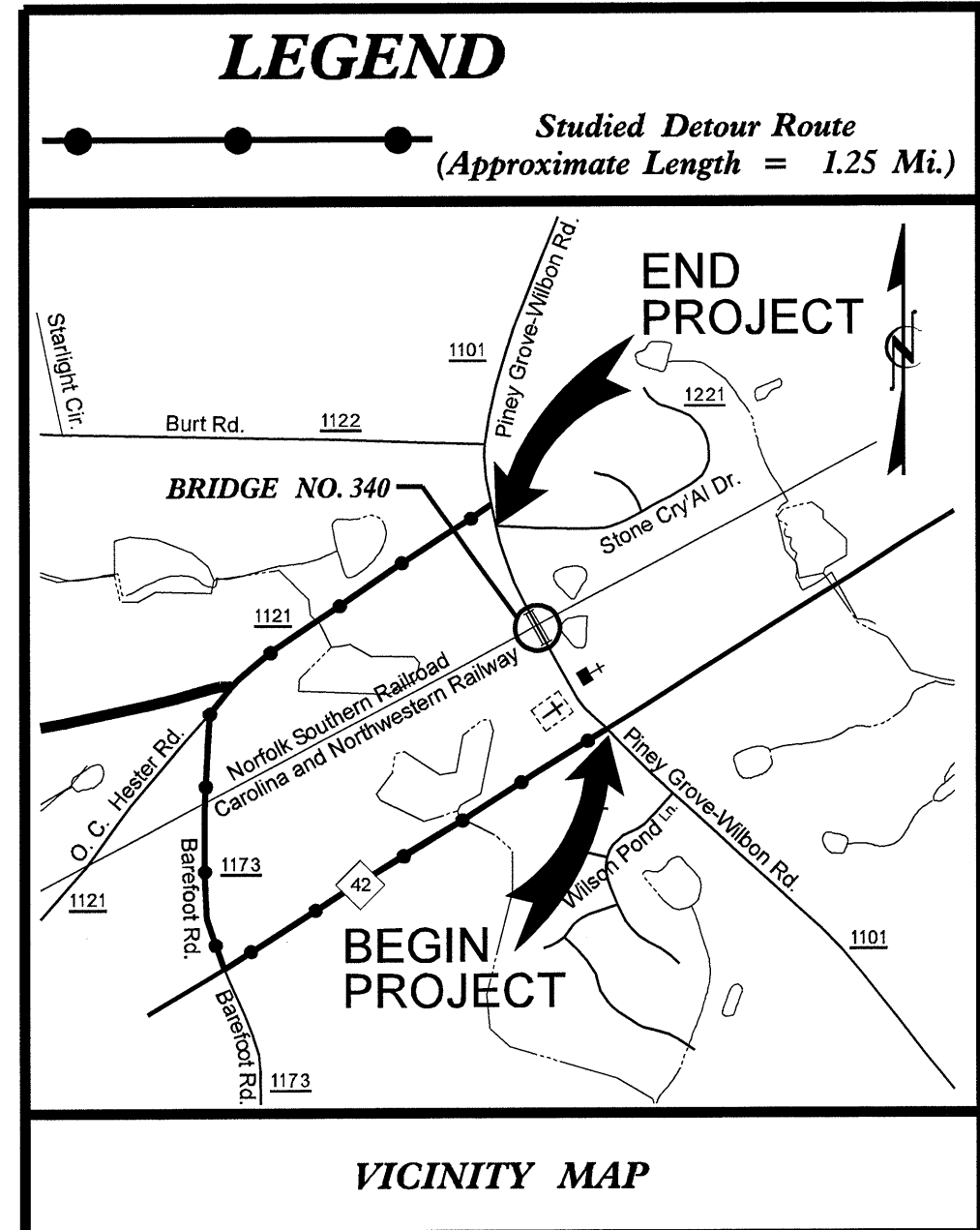
Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
Recorded SS Forced Main Line	-----
Designated SS Forced Main Line (S.U.E.*)	-----

**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	□
Underground Storage Tank, Approx. Loc.	⊕
A/G Tank; Water, Gas, Oil	□
Geoenvironmental Boring	⊗
U/G Test Hole (S.U.E.*)	⊗
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.



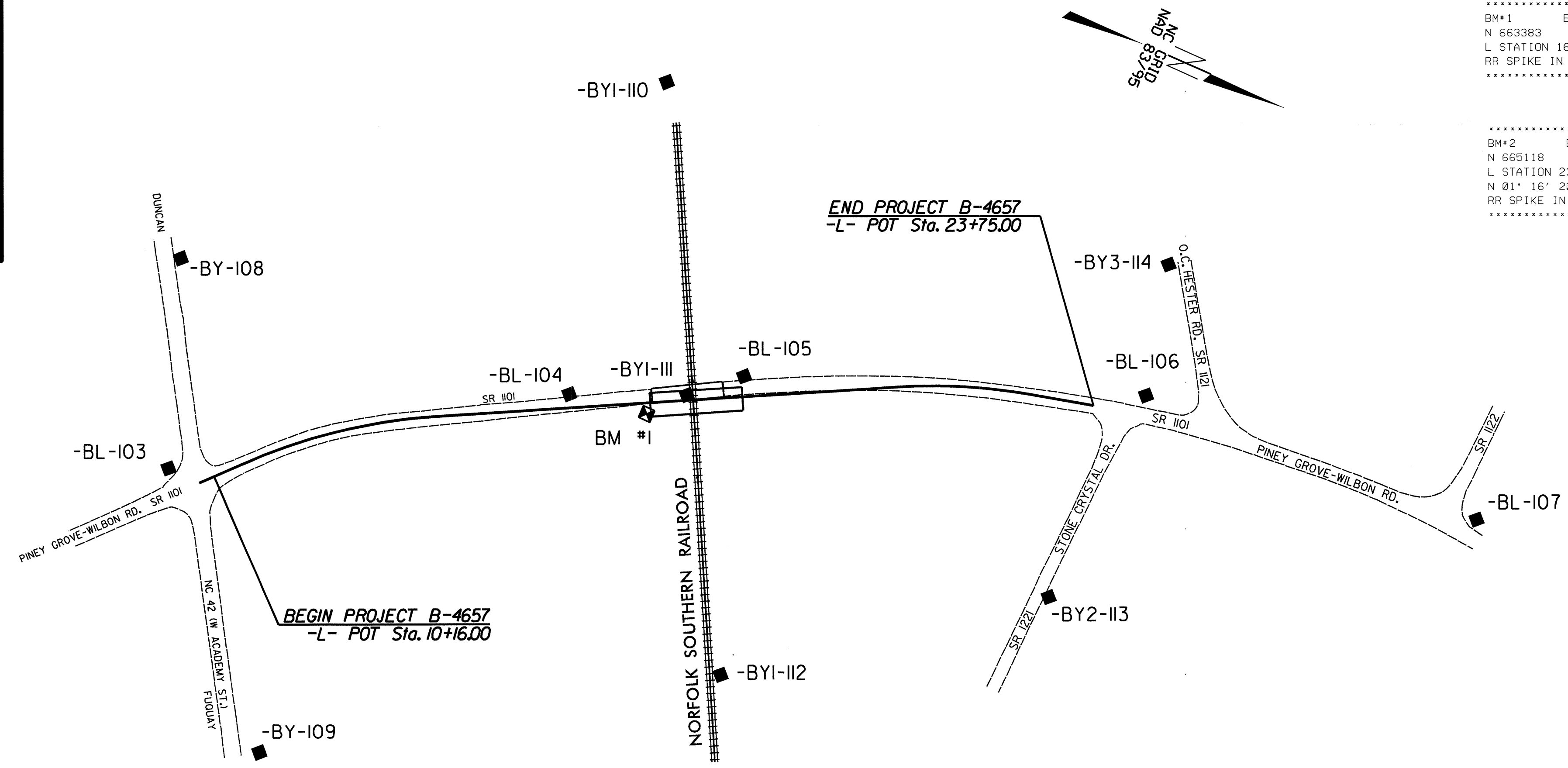
B-4657



# SURVEY CONTROL SHEET B-4657

## WAKE COUNTY

**LOCATION: BRIDGE NO. 340 OVER NORFOLK/SOUTHERN RAILROAD  
ON SR 1101 (PINEY GROVE-WILBON ROAD)**



.....  
 BM#1 ELEVATION = 463.46  
 N 663383 E 2046516  
 L STATION 16+93.16 RIGHT  
 RR SPIKE IN 14' ELM  
 .....

.....  
 BM#2 ELEVATION = 479.80  
 N 665118 E 2046249  
 L STATION 23+84  
 N 01' 16' 20" E DIST 1114  
 RR SPIKE IN 18' PINE  
 .....

NCDOT GPS STATION B4657-2  
 LOCALIZED PROJECT COORDINATES:  
 N = 665,209.267  
 E = 2,046,346.114

NCDOT GPS STATION B4657-1  
 LOCALIZED PROJECT COORDINATES:  
 N = 666,964.171  
 E = 2,047,076.811

BL POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
102	B4657 BL-102	662504.2400	2047269.5730	448.21	OUTSIDE PROJECT LIMITS	
103	B4657 BL-103	662755.6370	2046886.7370	446.38	OUTSIDE PROJECT LIMITS	
104	B4657 BL-104	663264.0480	2046536.5110	463.00	15+78.63	20.98 LT
105	B4657 BL-105	663494.2360	2046483.2020	470.37	18+44.43	31.44 LT
106	B4657 BL-106	664061.5320	2046179.5200	473.02	OUTSIDE PROJECT LIMITS	
107	B4657 BL-107	664594.8210	2046143.6570	476.59	OUTSIDE PROJECT LIMITS	
BY POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
108	B4657 BY-108	662642.7420	2046590.1160	447.93	11+00.74	322.70 LT
A103	B4657 BY-109	662755.6370	2046886.7370	446.47	OUTSIDE PROJECT LIMITS	
109	B4657 BY-109	663092.6860	2047299.8470	434.90	OUTSIDE PROJECT LIMITS	
BY1 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
110	B4657 BY1-110	663204.6810	2046044.9550	449.50	17+55.55	483.42 LT
111	B4657 BY1-111	663426.8020	2046464.7110	445.12	17+56.08	8.52 LT
112	B4657 BY1-112	663642.5590	2046831.2500	439.60	17+75.82	416.35 RT
BY2 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
A106	B4657 BY2-113	664061.5320	2046179.5200	UNKNOWN	OUTSIDE PROJECT LIMITS	
113	B4657 BY2-113	664051.9950	2046517.0930	467.01	23+57.54	295.68 RT
BY3 POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
114	B4657 BY3-114	664011.4080	2045984.9860	470.31	OUTSIDE PROJECT LIMITS	
B106	B4657 BY3-114	664061.5320	2046179.5200	UNKNOWN	OUTSIDE PROJECT LIMITS	

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4657-2"  
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF  
 NORTHING: 665209.267(ft) EASTING: 2046346.114(ft)  
 ELEVATION: 473.95(ft)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987120  
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4657-2" TO -L- STATION 10+25.00 IS  
 S 12°23'11.5" E 2441.84  
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

- NOTES:**
- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.NCDOT.ORG/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.ncdot.org/DOH/RECONSTRUCT/HIGHWAY/LOCATION/PROJECT/)  
 THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B4657\_LS\_CONTROL\_090527.HTML  
 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.

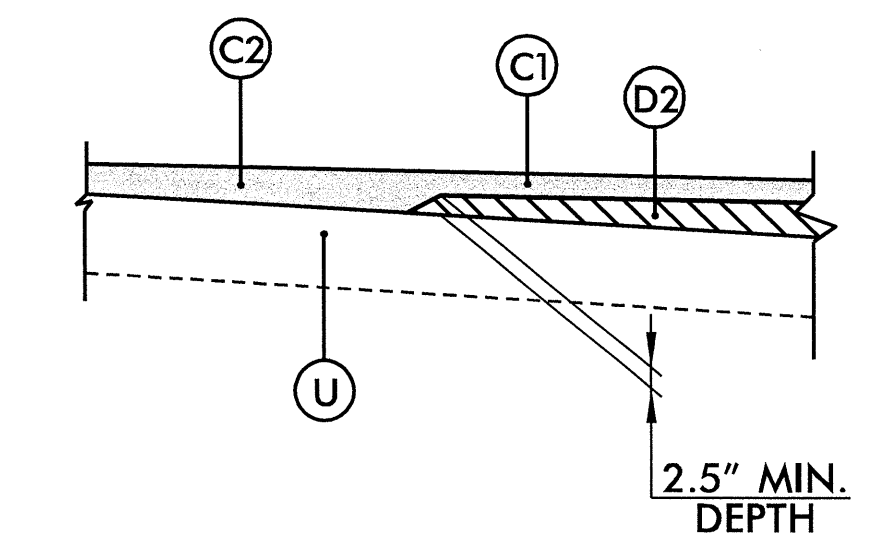
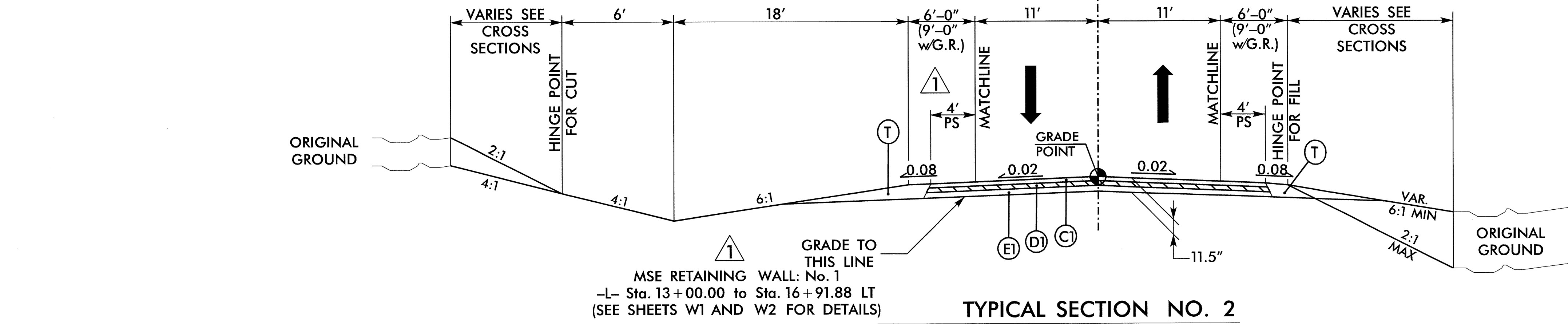
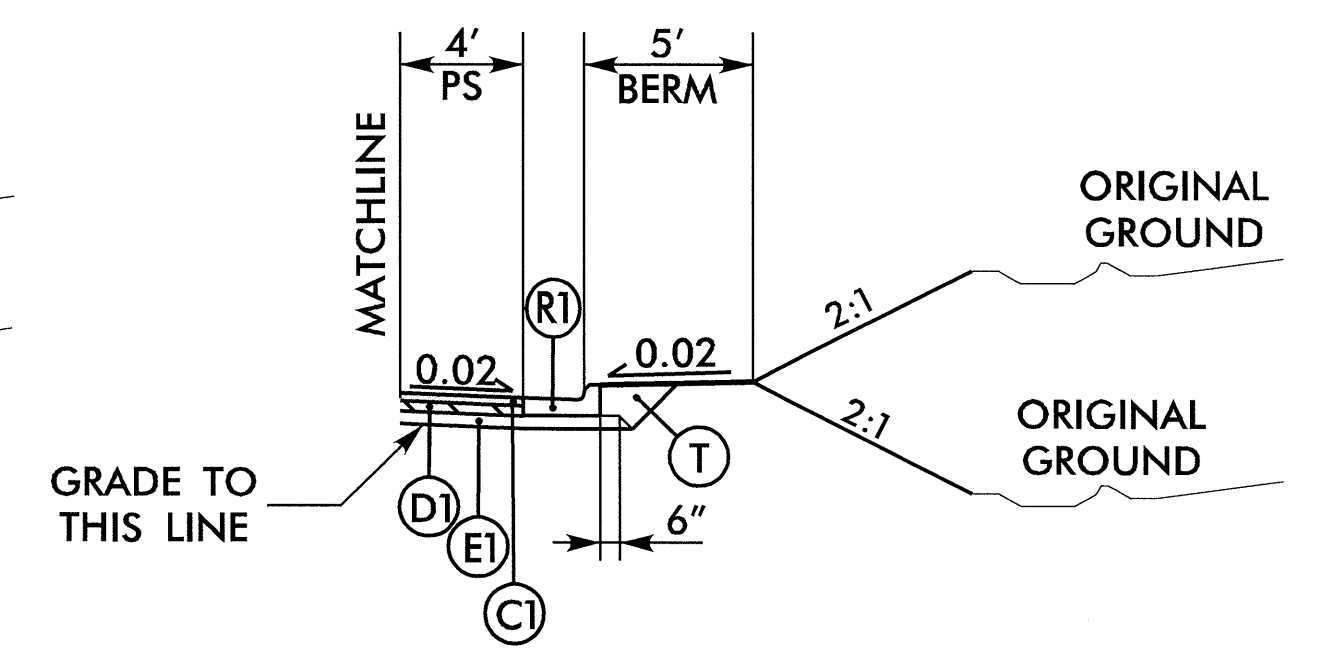
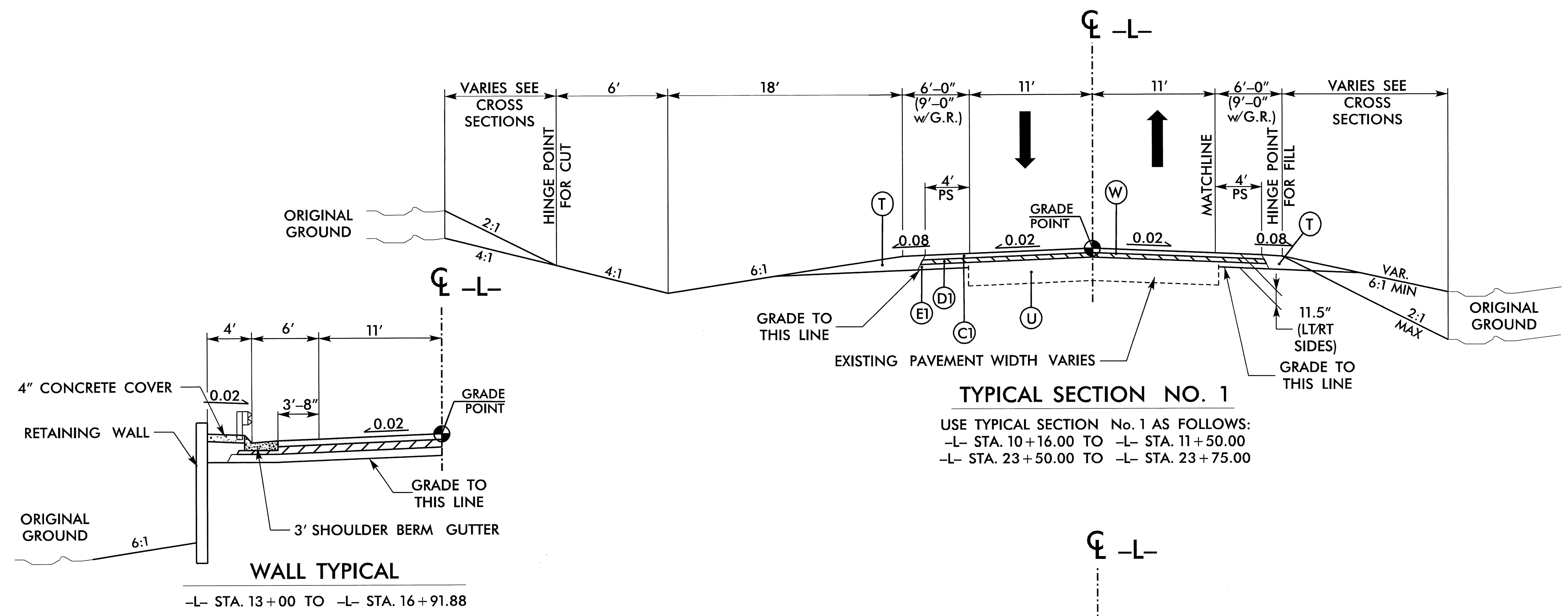
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05/27/09 07/22/2011

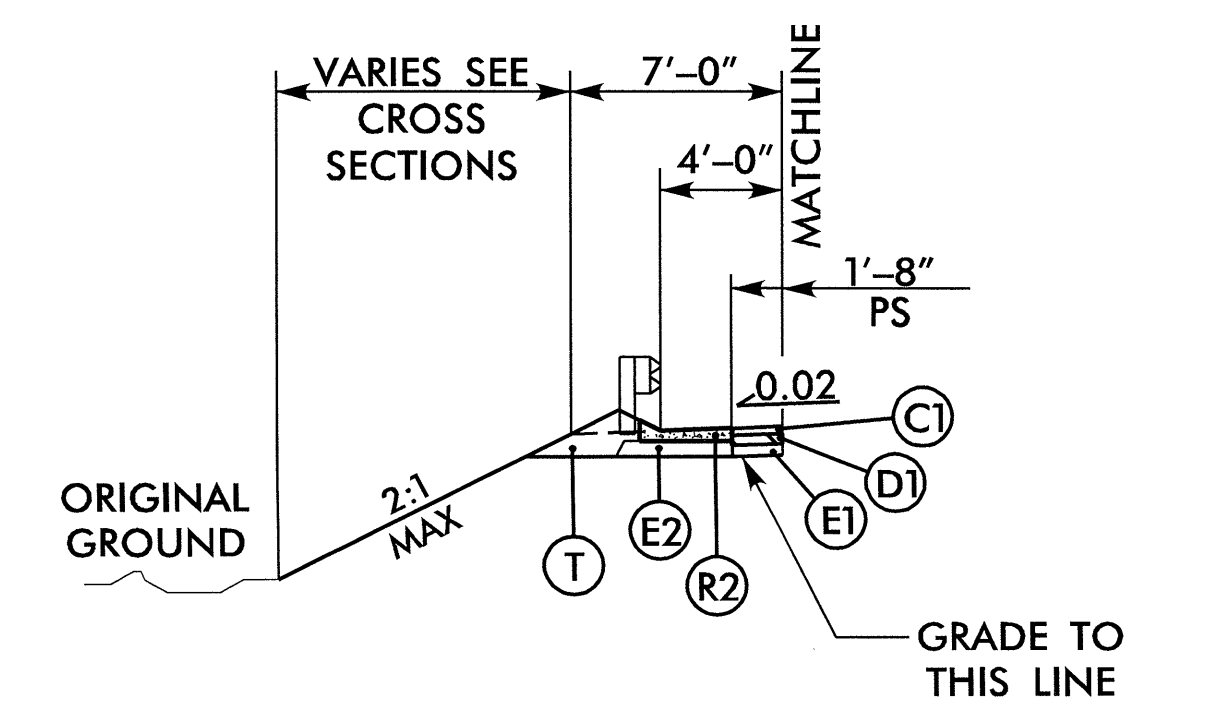
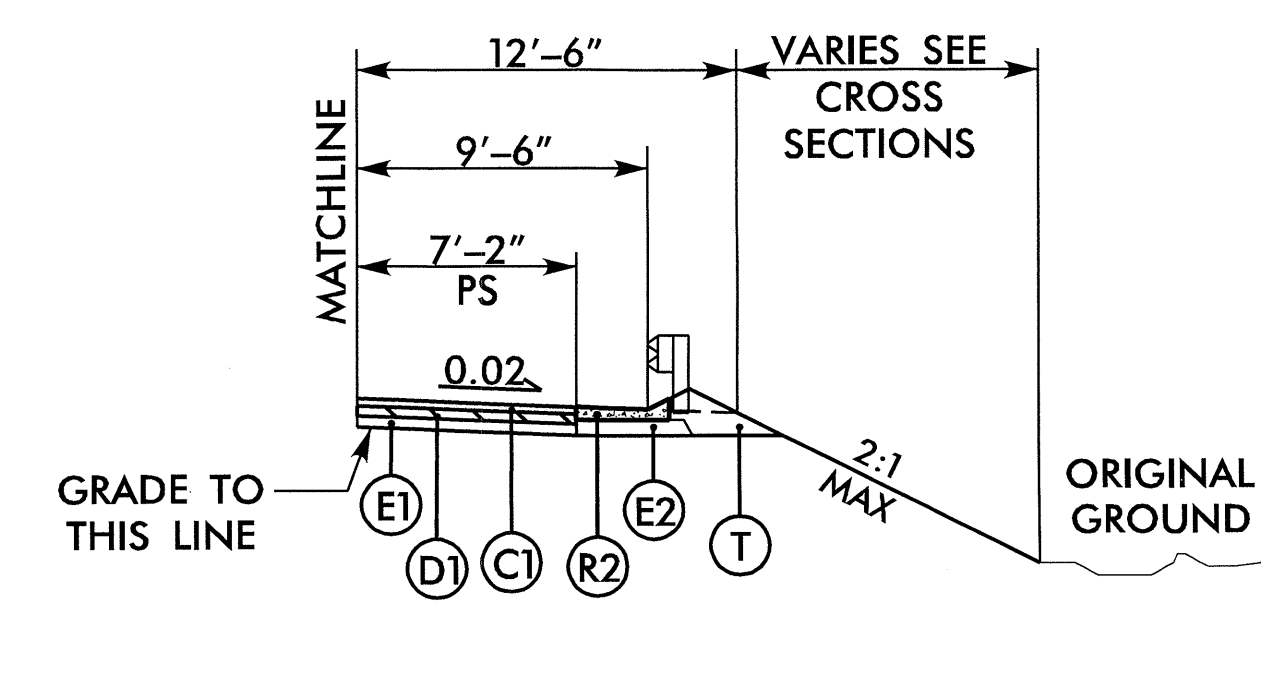
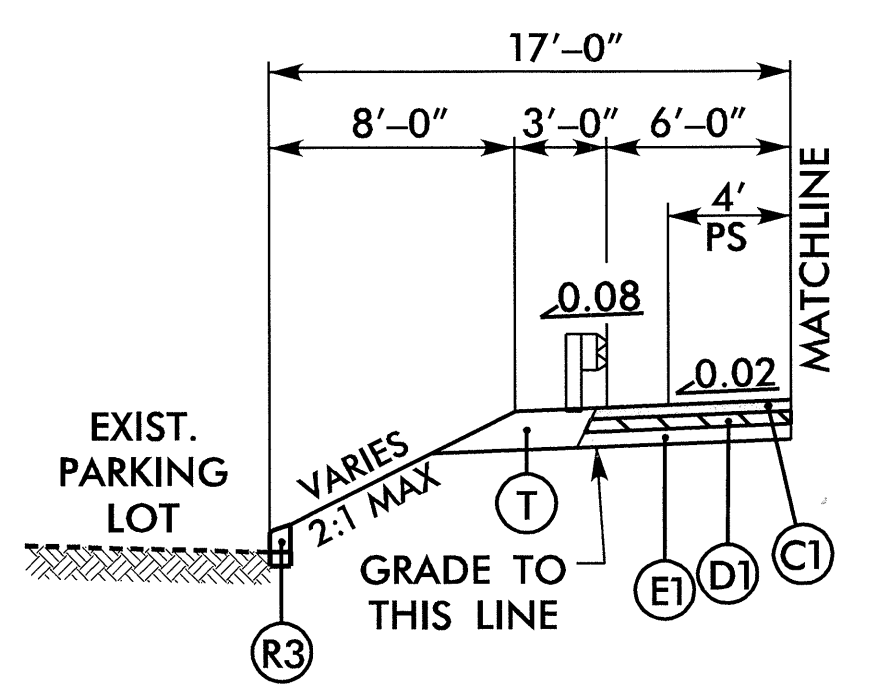


NOT TO SCALE

PROJECT REFERENCE NO. <b>B-4657</b>	SHEET NO. <b>2</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER 	PAVEMENT DESIGN ENGINEER 



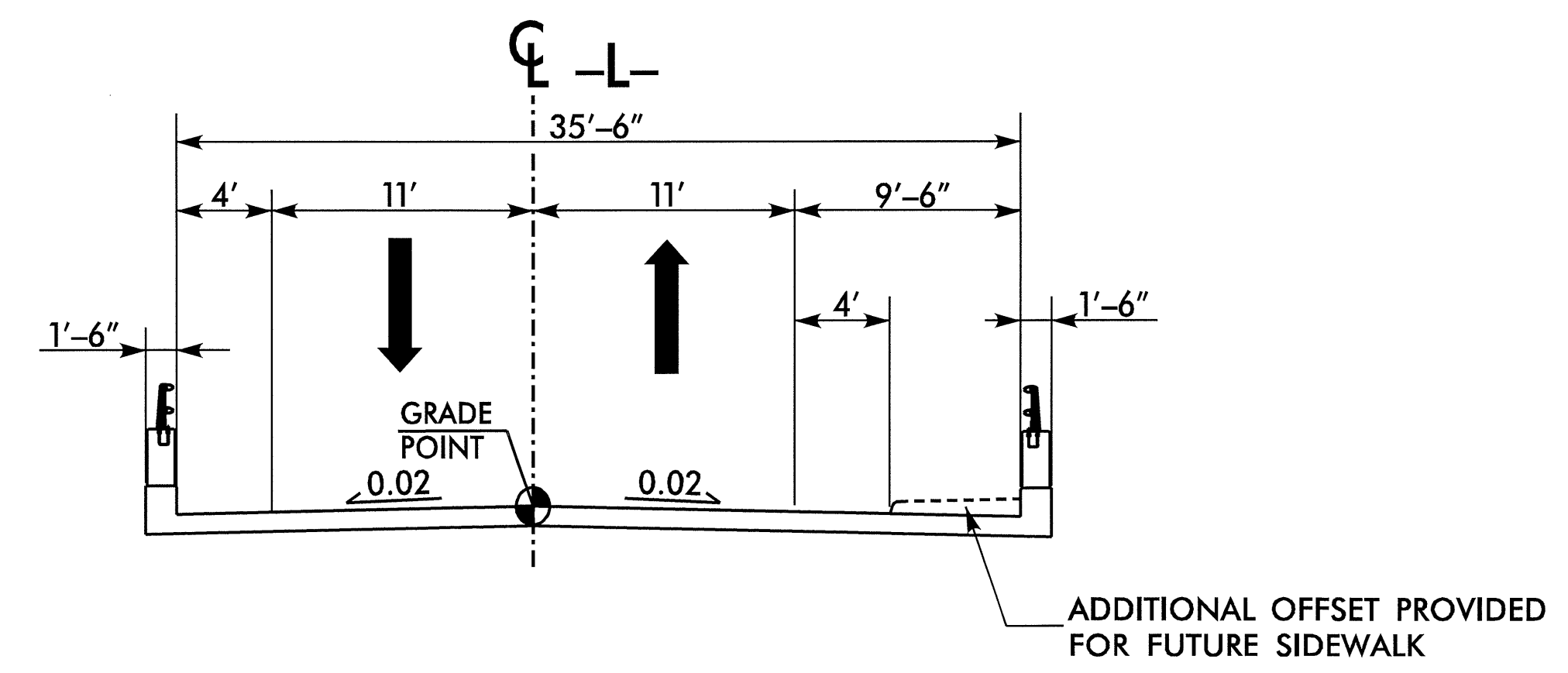
PAVEMENT SCHEDULE	
ITEM	DESCRIPTION
(C)	Prop. Approx 3.0" Asphalt Concrete Surface Course, Type S9.5B, at an Average Rate of 168 lbs. Per sq. yard in each of two layers.
(C2)	Prop. Var. Depth Asphalt Concrete Surface Course, Type S9.5B, at an Average Rate of 112 lbs. Per sq. yard Per 1" Depth, to be placed in layers not less than 1.5" or greater than 2" in depth.
(D)	Prop. Approx 4.0" Asphalt Concrete Intermediate Course, Type I19.0B, at an Average Rate of 456 lbs. Per sq. yard.
(D2)	Prop. Var. Depth Asphalt Concrete Intermediate Course, Type I19.0B, at an Average Rate of 114 lbs. Per sq. yard Per 1" Depth, to be placed in layers not less than 2.5" or greater than 4.0" in depth.
(E)	Prop. Approx 4.5" Asphalt Concrete Base Course, Type B25.0B, at an Average Rate of 513 lbs. Per sq. yard.
(E2)	Prop. Var. Depth Asphalt Concrete Base Course, Type B25.0B, at an Average Rate of 114 lbs. Per sq. yard Per 1" Depth, to be placed in layers not less than 4" or greater than 5.5" in depth.
(J)	Prop. Approx 6.0" Aggregate Base Course
(J2)	Prop. Approx 8.0" Aggregate Base Course
(P)	Proposed Prime Coat at a Rate of 0.35 gal./sq. yd.
(R)	2'-6" Concrete Curb and Gutter
(R2)	Concrete Shoulder Berm Gutter
(R3)	9" x 12" Concrete Curb
(T)	Earth Material
(U)	Existing Pavement
(W)	Var. Depth Asphalt Pavement



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

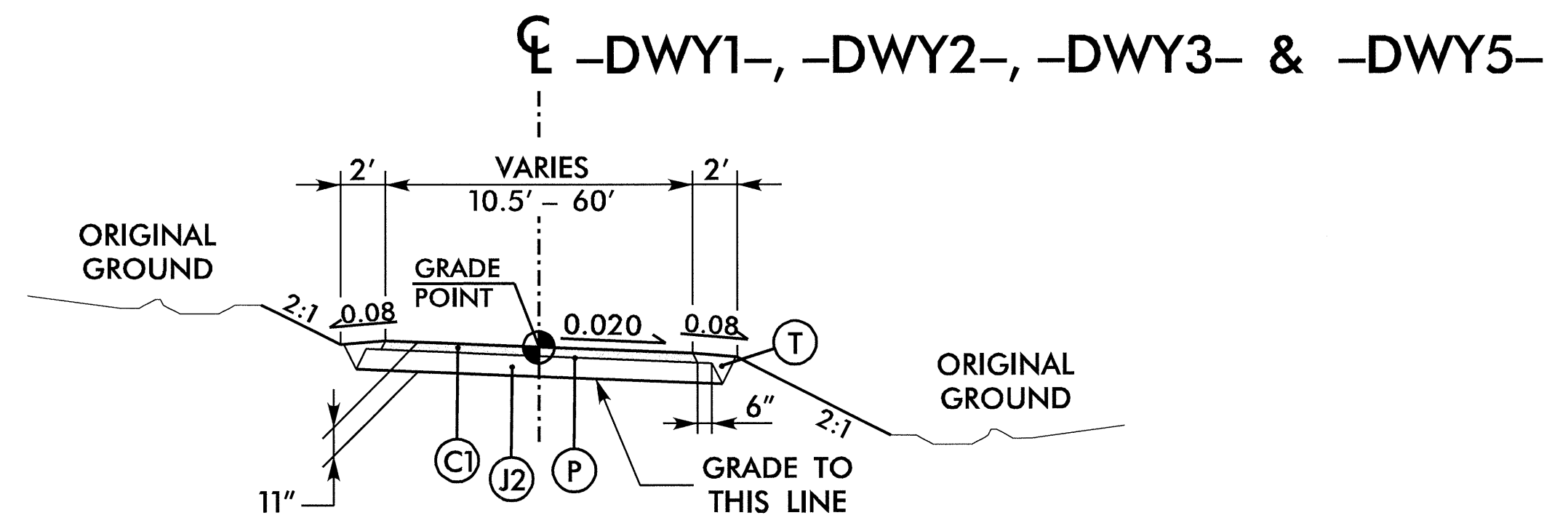
NOT TO SCALE

PROJECT REFERENCE NO. B-4657	SHEET NO. 2A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER SEAL 10008 ANDREW D. HAFFIELD REGISTERED ENGINEER 8/23/2011	PAVEMENT DESIGN ENGINEER SEAL 22893 CLARK S. MORRISON REGISTERED ENGINEER 8/23/2011



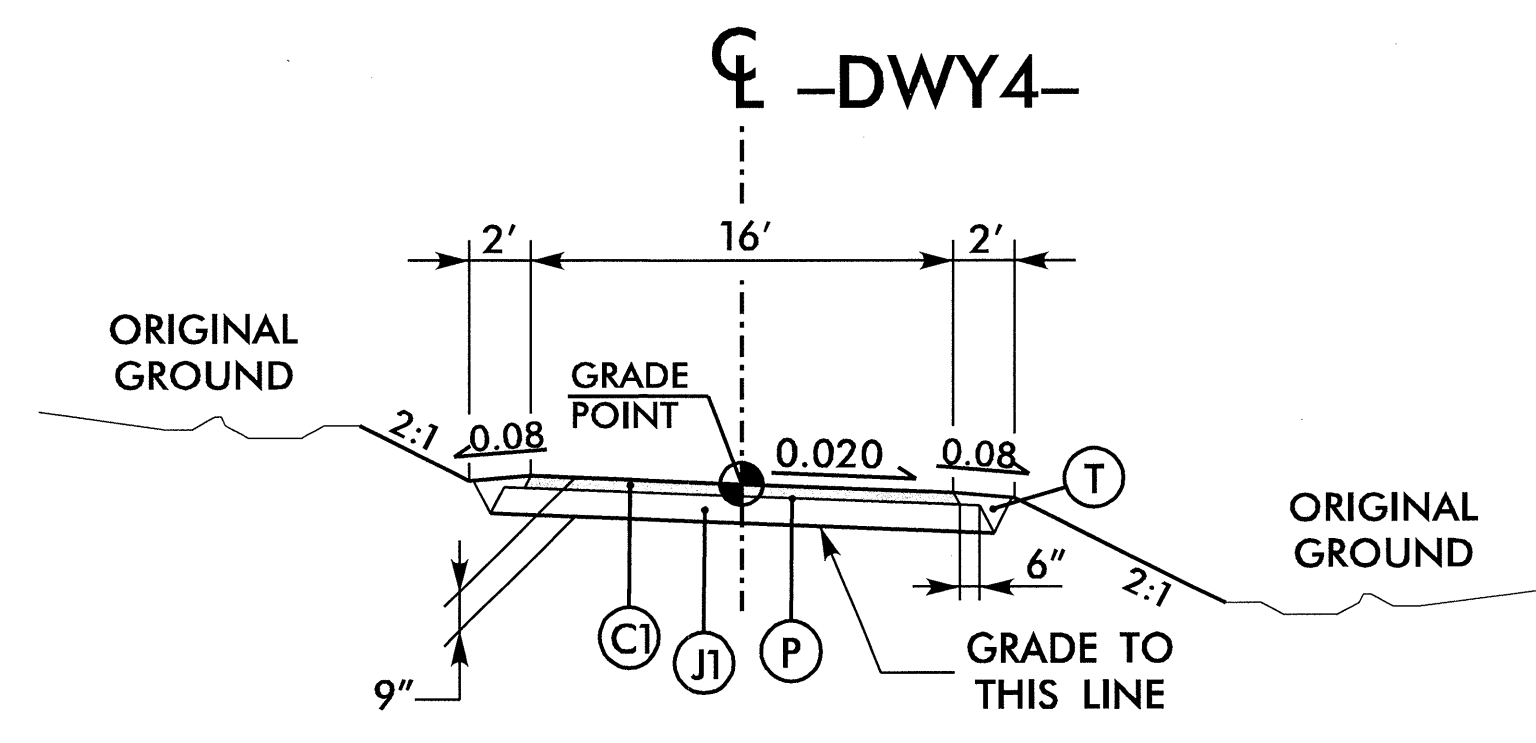
**TYPICAL SECTION NO. 3 ON BRIDGE**

USE TYPICAL SECTION No. 3 AS FOLLOWS:  
-L- STA. 16+97.80 TO -L- STA. 18+38.80



**TYPICAL SECTION NO. 4**

USE TYPICAL SECTION No. 4 AS FOLLOWS:  
-DWY1- STA. 10+15.00 TO -DWY1- STA. 11+75.00  
-DWY2- STA. 10+15.00 TO -DWY2- STA. 11+40.00  
-DWY3- STA. 10+15.00 TO -DWY3- STA. 11+00.00  
-DWY5- STA. 10+15.00 TO -DWY5- STA. 10+75.00



**TYPICAL SECTION NO. 5**

USE TYPICAL SECTION No. 5 AS FOLLOWS:  
-DWY4- STA. 10+08.00 TO -DWY4- STA. 10+45.00

C1	3.0" Type S9.5B
C2	Var. Type S9.5B
D1	4.0" Type I19.0B
D2	Var. Type I19.0B
E1	4.5" Type B25.0B
E2	Var. Type B25.0B
J1	6.0" ABC
J2	8.0" ABC
P	Prop Prime Coat
R1	2'-6" Curb & Gutter
R2	Conc. Shld. Berm Gutter
R3	Conc. 9"x12" Curb
T	Earth Material
U	Existing Pavement
W	Var. Depth Asphalt Pavement

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

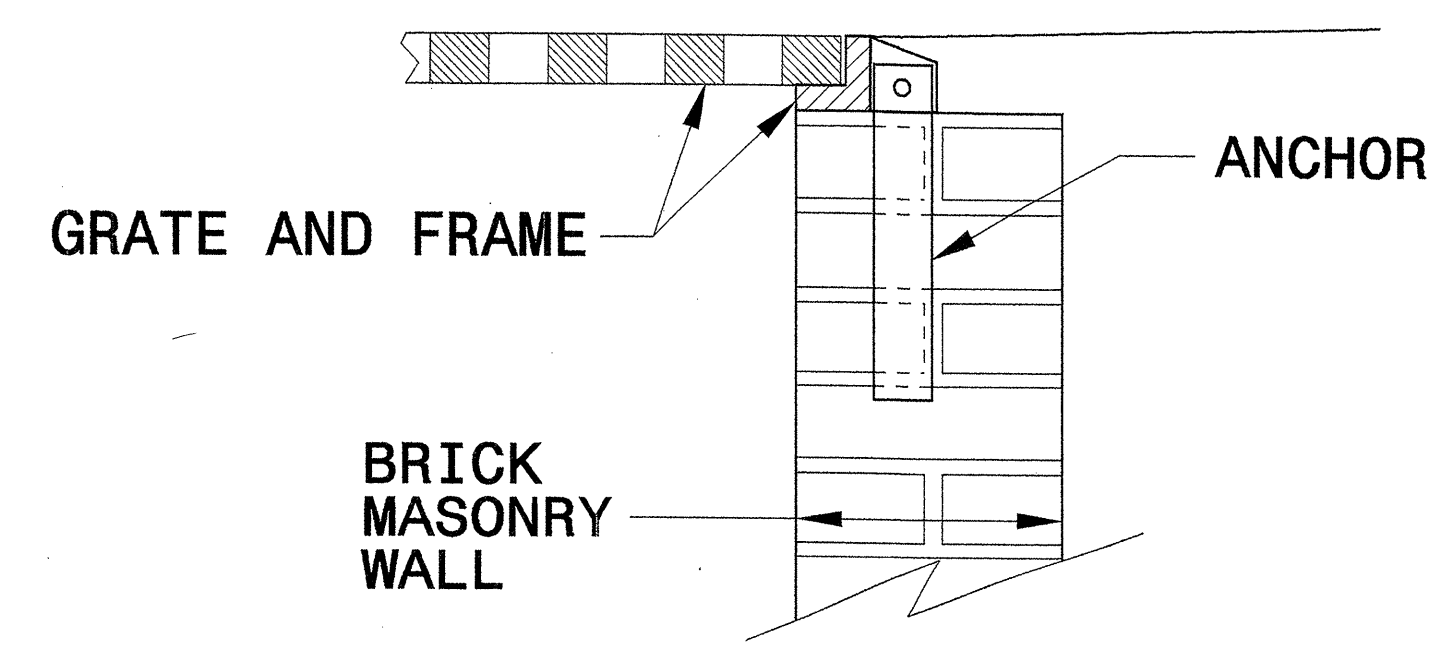
**THE LOUIS BERGER GROUP, Inc.**  
1001 Wade Avenue, Suite 400  
Raleigh, North Carolina 27605

8/23/2011 8:11:58 AM 8 TIMES

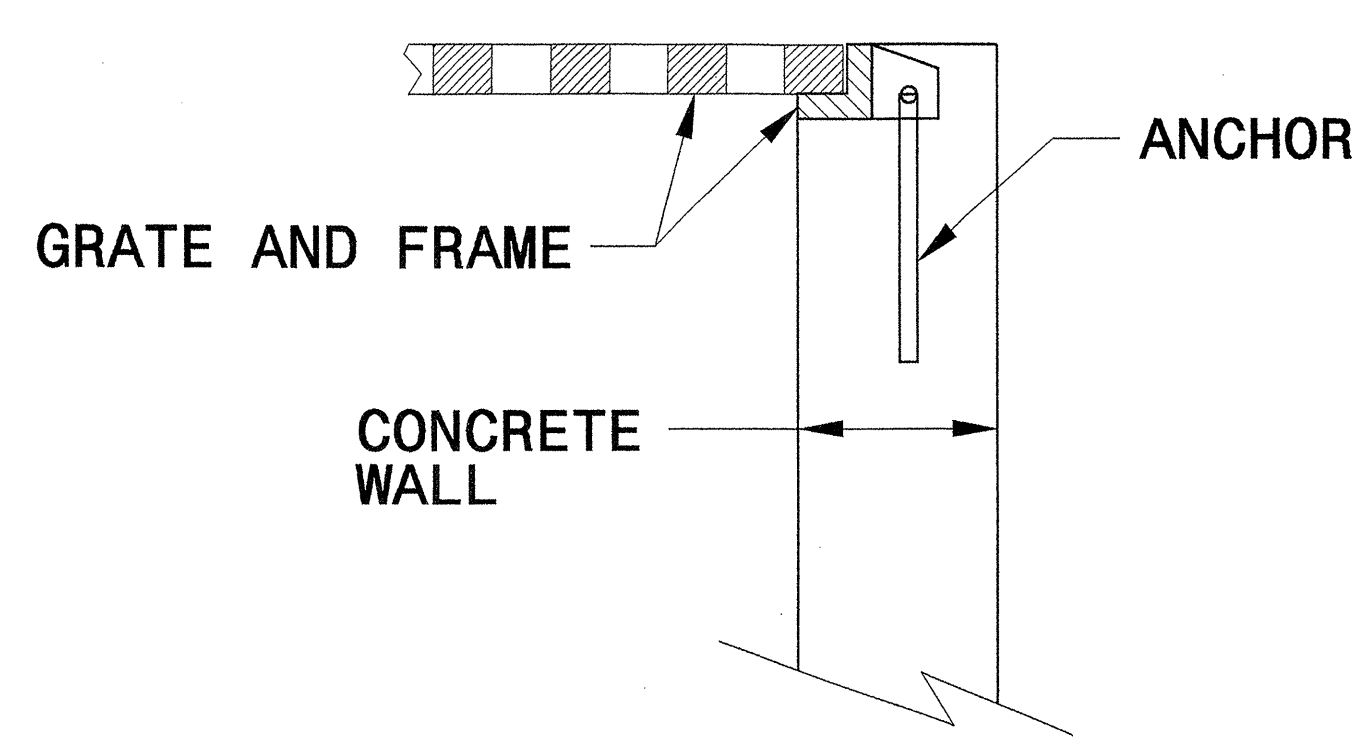
STATE OF NORTH CAROLINA  
DEPT. OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
RALEIGH, N.C.

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

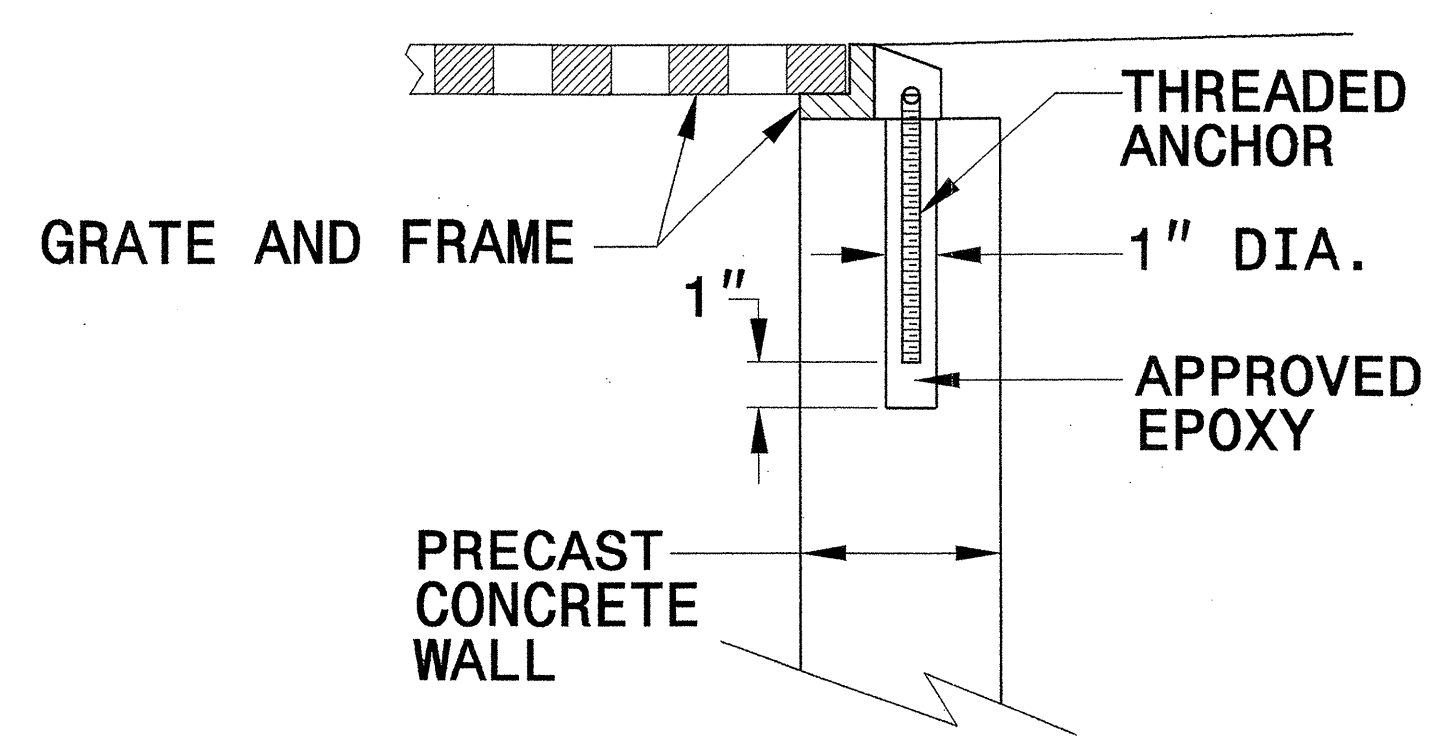
SHEET 1 OF 1  
**840D25**



**BRICK MASONRY CONSTRUCTION**



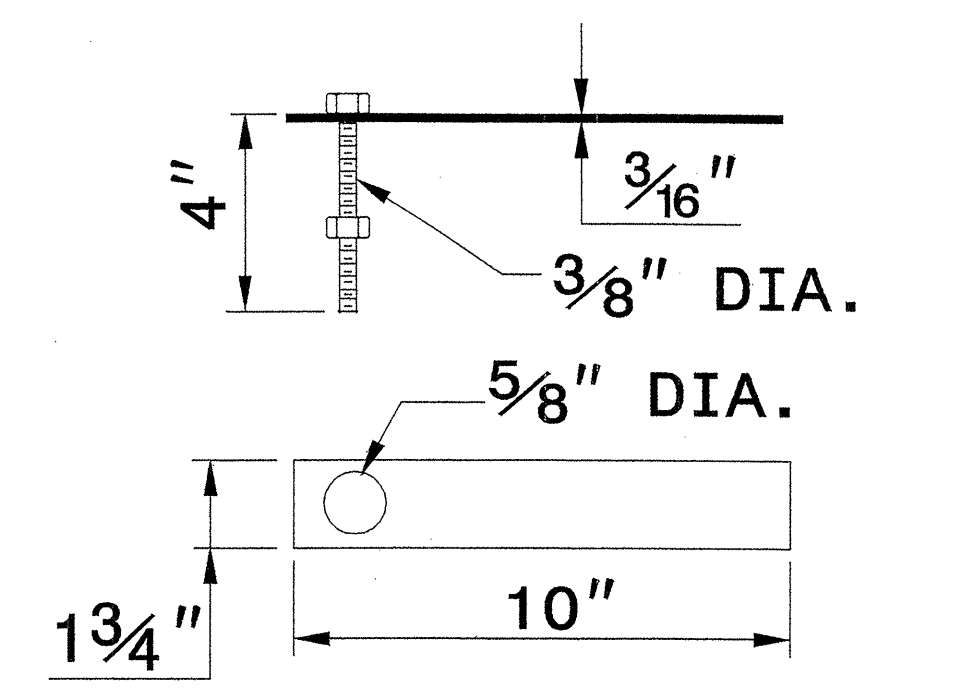
**CONCRETE CONSTRUCTION**



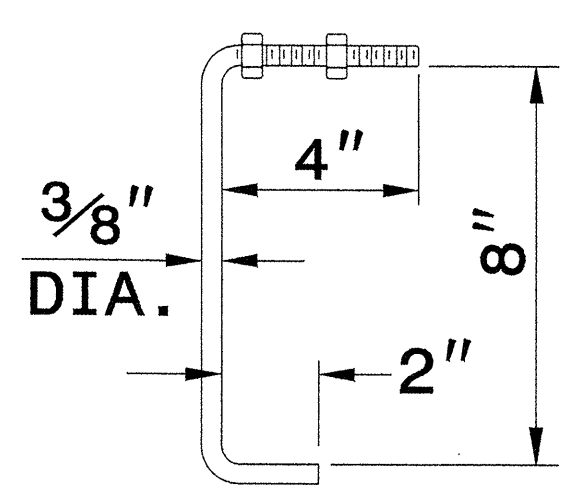
**PRECAST CONCRETE CONSTRUCTION**

**DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET**

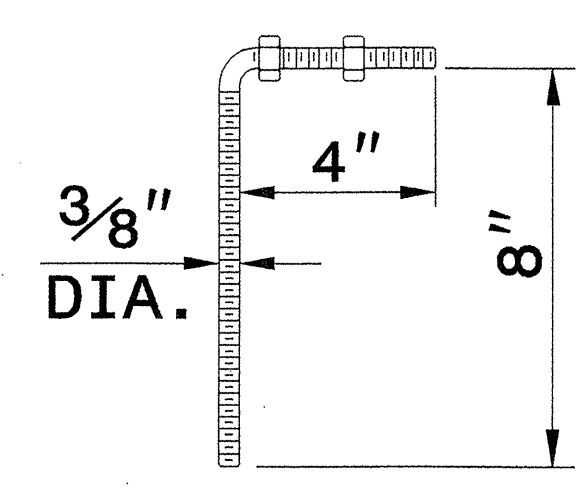
NOTE:  
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



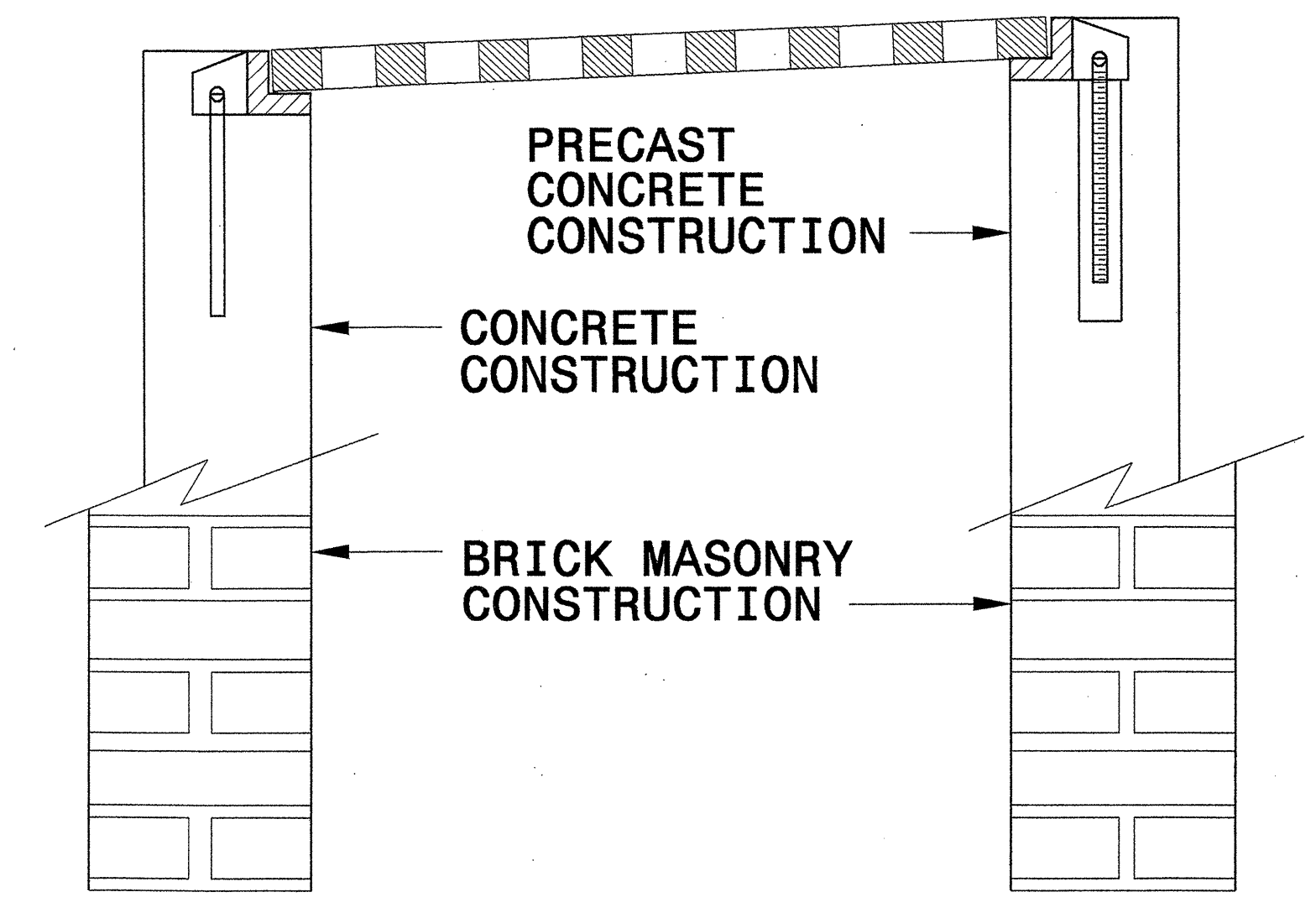
**MASONRY ANCHOR**  
3/8" DIA. BOLT WITH PLATE



**CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



**PRECAST CONCRETE ANCHOR**  
3/8" DIA. BENT BAR



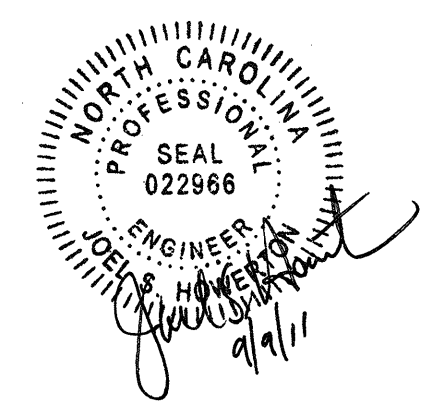
**FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS**

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**

\$\$\$\$\$SYTIME\$\$\$\$\$  
\$\$\$\$\$LOGON\$\$\$\$\$  
\$\$\$\$\$USERNAME\$\$\$\$\$



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

**SEE PLATE FOR TITLE**

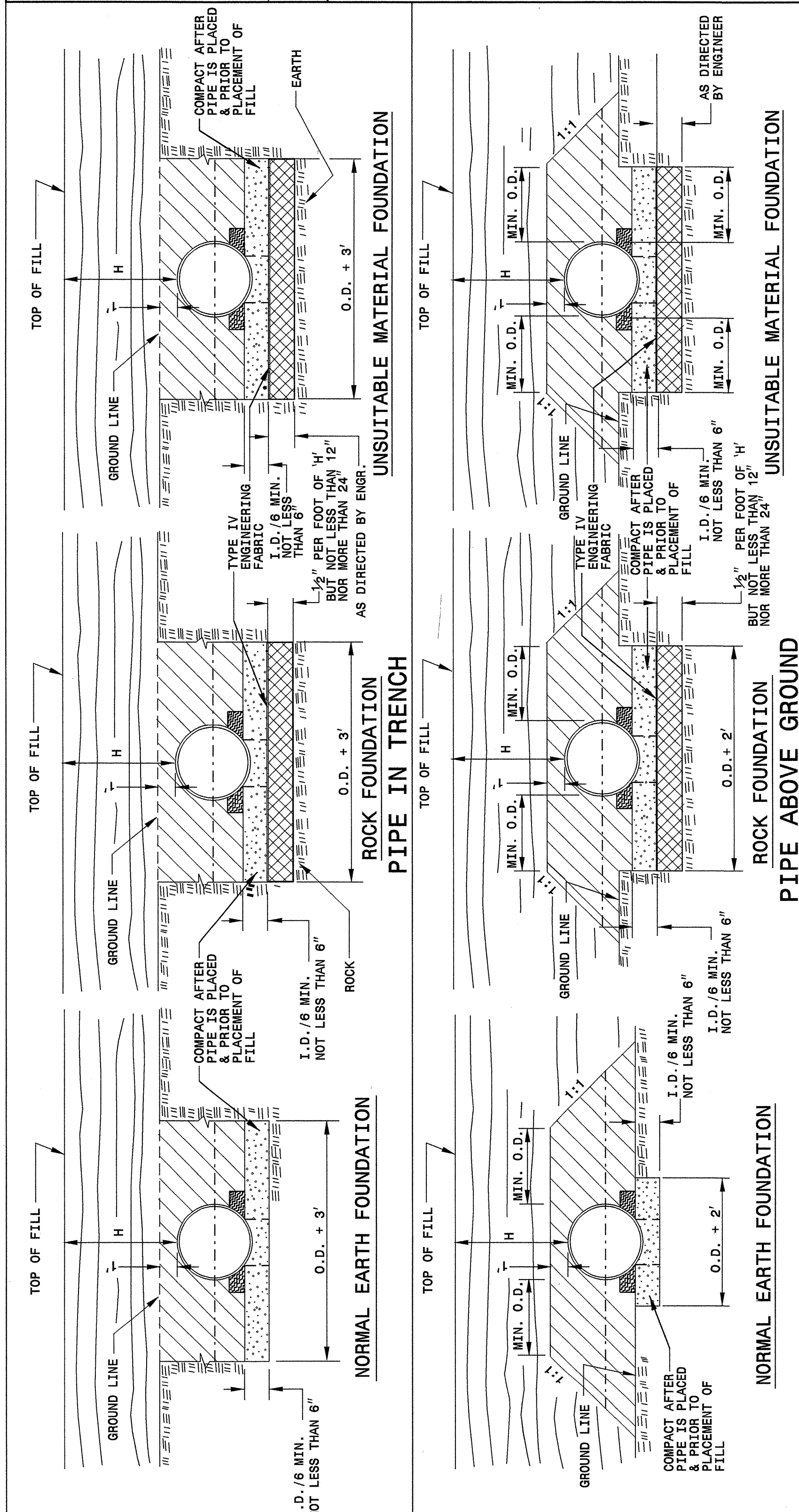
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06  
MODIFIED BY: E. E. WARD DATE: 9/25/06  
CHECKED BY: *[Signature]* DATE: 4/13/08  
FILE SPEC: *[Signature]*



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

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE

SHEET 1 OF 3  
**300D01**



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

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 FLEXIBLE PIPE

SHEET 1 OF 3  
**300D01**

**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING; PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

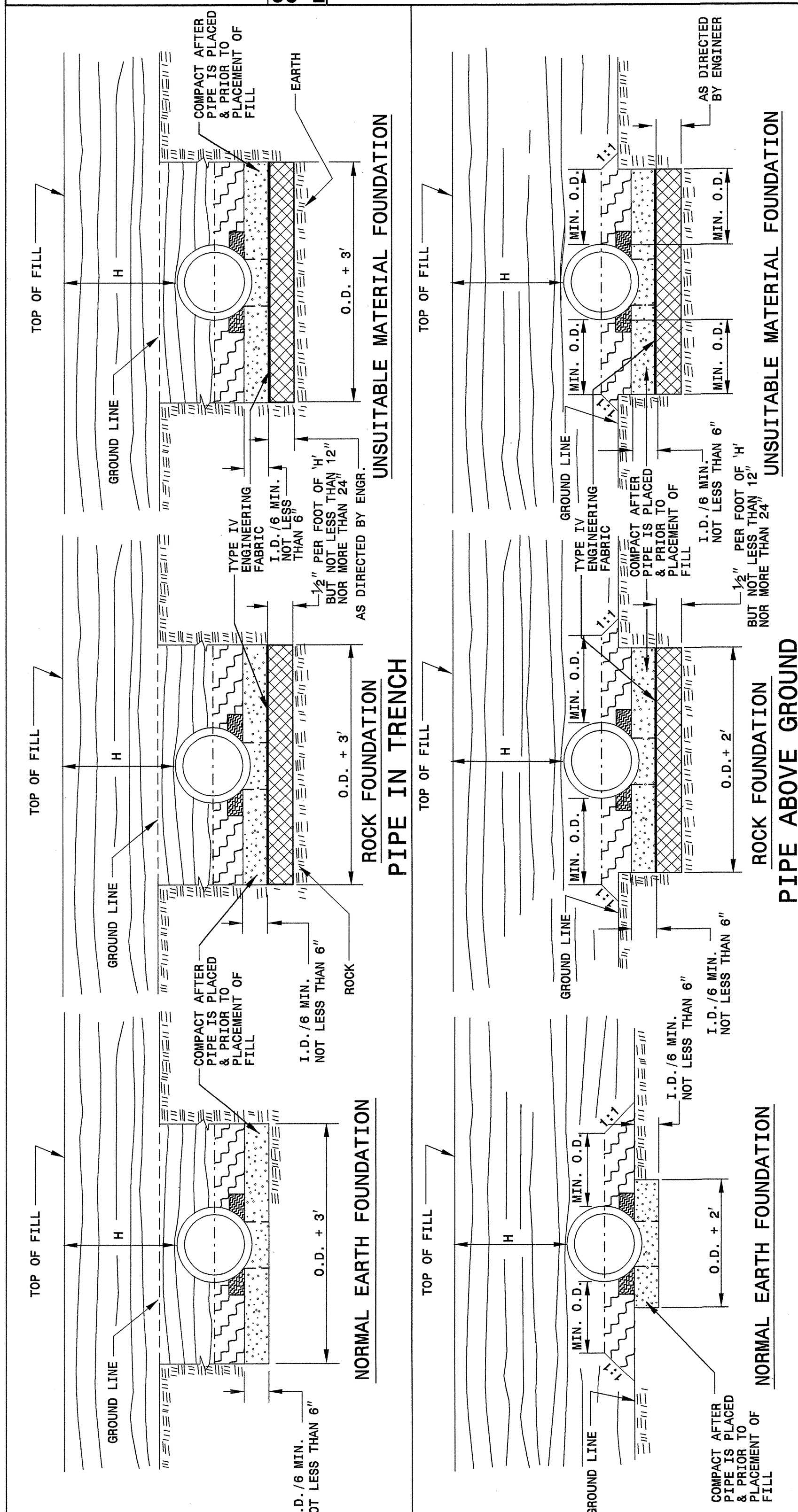
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, TYPE 1 ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE

SHEET 2 OF 3  
**300D01**



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

ENGLISH DETAIL DRAWING FOR  
**METHOD OF PIPE INSTALLATION**  
 RIGID PIPE

SHEET 2 OF 3  
**300D01**

**GENERAL NOTES:**  
 I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.  
 O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.  
 H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.  
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING; PIPE SEATING AND BACKFILL WILL UNCOMPACTED AS PIPE SEATING AND BACKFILL COMPACTION.

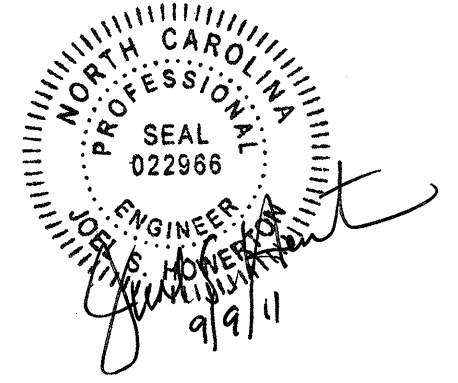
DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

SPRINGLINE OF PIPE  
 SELECT BACKFILL MATERIAL CLASS III OR CLASS II, ABOVE AND BELOW SPRINGLINE.  
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.  
 UNDISTURBED EARTH MATERIAL  
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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

**SEE PLATE FOR TITLE**

ORIGINAL BY: KKempf DATE: 5-15-09  
 MODIFIED BY: *[Signature]* DATE: 7/20/09  
 CHECKED BY: *[Signature]* DATE: 7/20/09  
 FILE SPEC: ericward/stds/stdstodetails/30001/0300d01.dgn







STATE OF NORTH CAROLINA  
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202733

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION ***** (17+68.30)
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB- BING
0057000000-E	226	200	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	19,400	CY	BORROW EXCAVATION
0134000000-E	240	20	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	SP	200	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	200	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	SP	90	TON	FOUNDATION CONDITIONING MATE- RIAL, MINOR STRS
0320000000-E	SP	260	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	164	LF	15" DRAINAGE PIPE
0335400000-E	SP	80	LF	24" DRAINAGE PIPE
0366000000-E	SP	404	LF	15" RC PIPE CULVERTS, CLASS III
0378000000-E	SP	56	LF	24" RC PIPE CULVERTS, CLASS III
0582000000-E	SP	60	LF	15" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	SP	4	EA	*** CS PIPE ELBOWS, ***** THICK (15", 0.064")
0995000000-E	340	244	LF	PIPE REMOVAL
1121000000-E	520	809	TON	AGGREGATE BASE COURSE
1220000000-E	545	200	TON	INCIDENTAL STONE BASE
1275000000-E	600	578	GAL	PRIME COAT
1330000000-E	607	290	SY	INCIDENTAL MILLING
1489000000-E	610	1,020	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	860	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE 119.0B
1519000000-E	610	1,080	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	SP	155	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	7	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2000000000-N	806	5	EA	RIGHT OF WAY MARKERS
2286000000-N	840	10	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	3.86	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.16
2366000000-N	840	1	EA	FRAME WITH TWO GRATES, STD 840.24
2367000000-N	840	7	EA	FRAME WITH TWO GRATES, STD 840.29
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2535000000-E	846	80	LF	***X*** CONCRETE CURB (9" X 12")
2549000000-E	846	170	LF	2'-6" CONCRETE CURB & GUTTER
2556000000-E	846	614	LF	SHOULDER BERM GUTTER
2612000000-E	848	10	SY	6" CONCRETE DRIVEWAY
2627000000-E	852	140	SY	4" CONCRETE ISLAND COVERS
3030000000-E	862	220	LF	STEEL BM GUARDRAIL
3045000000-E	862	25	LF	STEEL BM GUARDRAIL, SHOP CURVED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3195000000-N	862	1	EA	GUARDRAIL ANCHOR UNITS, TYPE AT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	3	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3420000000-E	SP	380	LF	GENERIC GUARDRAIL ITEM STEEL BEAM GUARDRAIL WITH 8" POST
3649000000-E	876	10	TON	RIP RAP, CLASS B

ItemNumber	Sec #	Quantity	Unit	Description
3656000000-E	876	485	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	64	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	2	EA	SIGN ERECTION, TYPE E
4108000000-N	904	2	EA	SIGN ERECTION, TYPE F
4155000000-N	907	15	EA	DISPOSAL OF SIGN SYSTEM, U- CHANNEL
4400000000-E	1110	328	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	192	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	52	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	50	EA	DRUMS
4435000000-N	1135	50	EA	CONES
4445000000-E	1145	96	LF	BARRICADES (TYPE III)
4450000000-N	1150	640	HR	FLAGGER
4516000000-N	1180	50	EA	SKINNY DRUM
4650000000-N	1251	22	EA	TEMPORARY RAISED PAVEMENT MARKERS
4685000000-E	1205	2,428	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	2,428	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4710000000-E	1205	23	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4770000000-E	1205	564	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (II)
4810000000-E	1205	13,600	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	96	LF	PAINT PAVEMENT MARKING LINES (24")
4870000000-E	1205	24	LF	REMOVAL OF PAVEMENT MARKING LINES (24")
4900000000-N	1251	18	EA	PERMANENT RAISED PAVEMENT MARKERS
5325200000-E	1510	93	LF	2" WATER LINE
5325600000-E	1510	130	LF	6" WATER LINE

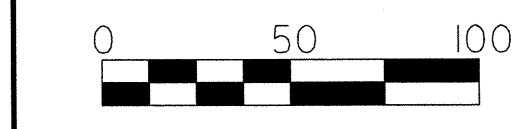
ItemNumber	Sec #	Quantity	Unit	Description
5606000000-E	1515	1	EA	2" BLOW OFF
6000000000-E	1605	4,100	LF	TEMPORARY SILT FENCE
6006000000-E	1610	270	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	440	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	340	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	2.5	ACR	TEMPORARY MULCHING
6018000000-E	1620	100	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	0.25	TON	FERTILIZER FOR TEMPORARY SEED- ING
6024000000-E	1622	300	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	6	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	200	LF	SAFETY FENCE
6030000000-E	1630	700	CY	SILT EXCAVATION
6036000000-E	1631	4,000	SY	MATting FOR EROSION CONTROL
6042000000-E	1632	800	LF	1/4" HARDWARE CLOTH
6071030000-E	SP	300	LF	COIR FIBER BAFFLE
6084000000-E	1660	3.6	ACR	SEEDING & MULCHING
6087000000-E	1660	2.5	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	75	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	2.25	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	15	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
7060000000-E	1705	550	LF	SIGNAL CABLE
7120000000-E	1705	8	EA	VEHICLE SIGNAL HEAD (12", 3 SECTION)
7264000000-E	1710	270	LF	MESSENGER CABLE (3/8")
7288000000-E	1715	50	LF	PAVED TRENCHING (***** (1, 2")
7300000000-E	1715	1,210	LF	UNPAVED TRENCHING (***** (1, 2")
7324000000-N	1716	9	EA	JUNCTION BOX (STANDARD SIZE)
7360000000-N	1720	2	EA	WOOD POLE
7372000000-N	1721	8	EA	GUY ASSEMBLY
7408000000-E	1722	1	EA	1" RISER WITH WEATHERHEAD
7420000000-E	1722	5	EA	2" RISER WITH WEATHERHEAD
7444000000-E	1725	480	LF	INDUCTIVE LOOP SAWCUT
7456000000-E	1726	1,790	LF	LEAD-IN CABLE (***** (14-2)
7768000000-N	1751	1	EA	CONTROLLER WITH CABINET (TYPE 2070L, POLE MOUNTED)
7780000000-N	1751	4	EA	DETECTOR CARD (TYPE 2070L)
7948000000-N	SP	1	EA	TRAFFIC SIGNAL REMOVAL



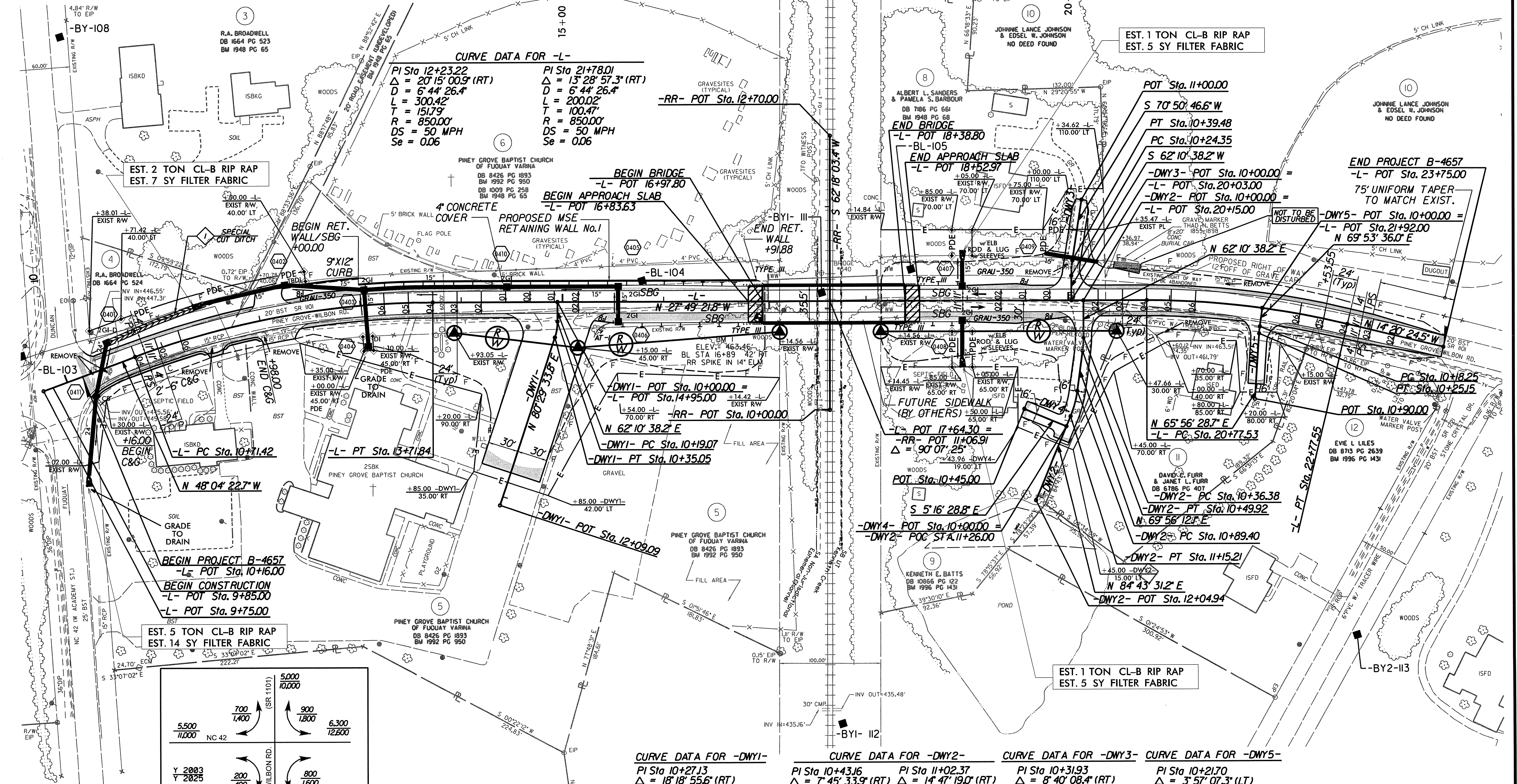
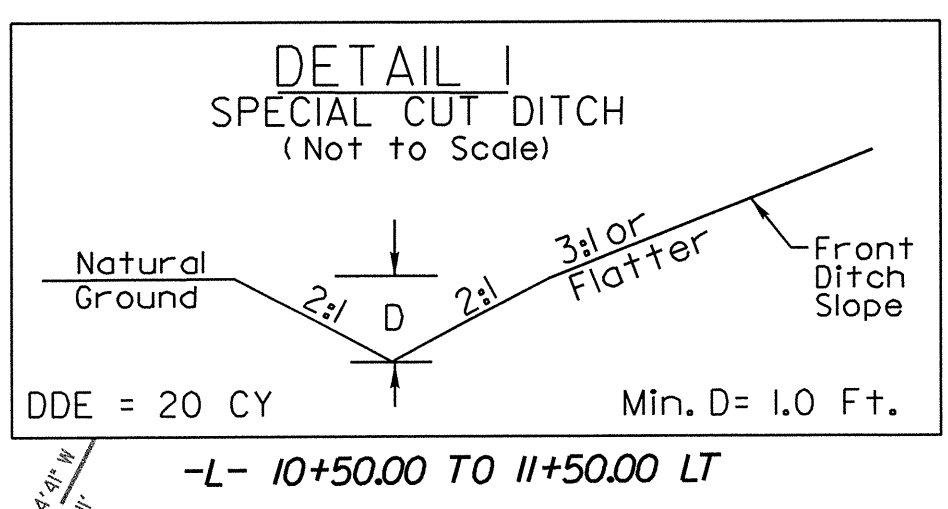
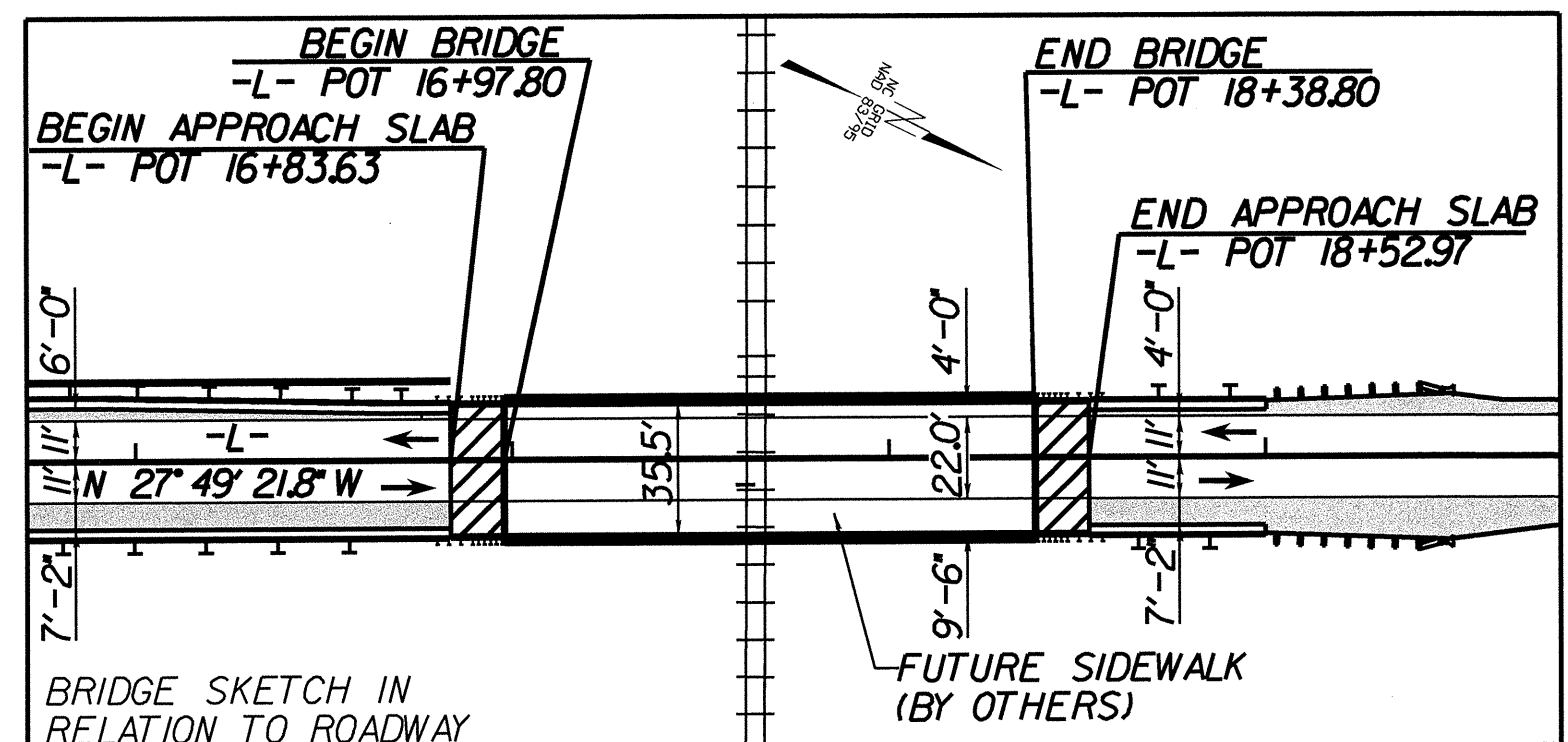








PROJECT REFERENCE NO. <b>B-4657</b>		SHEET NO. <b>4</b>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
REGISTERED ENGINEER 9/2/2011		REGISTERED ENGINEER 9/2/2011	



**CURVE DATA FOR -L-**

PI Sta 12+23.22	PI Sta 21+78.01
$\Delta = 20' 15' 00.9''$ (RT)	$\Delta = 13' 28' 57.3''$ (RT)
$D = 6' 44' 26.4''$	$D = 6' 44' 26.4''$
$L = 300.42'$	$L = 200.02'$
$T = 151.79'$	$T = 100.47'$
$R = 850.00'$	$R = 850.00'$
$DS = 50$ MPH	$DS = 50$ MPH
$Se = 0.06$	$Se = 0.06$

**CURVE DATA FOR -DWHY1-**

PI Sta 10+27.13	PI Sta 10+43.16
$\Delta = 18' 18' 55.6''$ (RT)	$\Delta = 7' 45' 33.9''$ (RT)
$D = 114' 35' 30.4''$	$D = 57' 17' 44.8''$
$L = 15.98'$	$L = 13.54'$
$T = 8.06'$	$T = 6.78'$
$R = 50.00'$	$R = 100.00'$

**CURVE DATA FOR -DWHY2-**

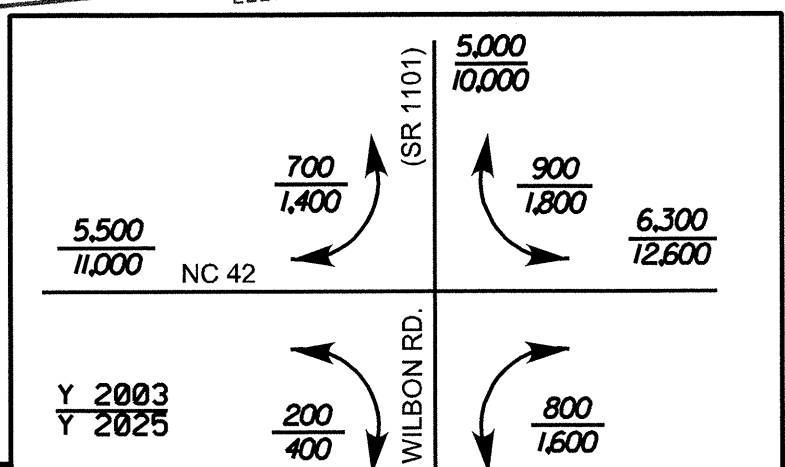
PI Sta 11+02.37	PI Sta 10+31.93
$\Delta = 14' 47' 19.0''$ (RT)	$\Delta = 8' 40' 08.4''$ (RT)
$D = 57' 17' 44.8''$	$D = 57' 17' 44.8''$
$L = 25.81'$	$L = 15.13'$
$T = 7.98'$	$T = 6.78'$
$R = 100.00'$	$R = 100.00'$

**CURVE DATA FOR -DWHY3-**

PI Sta 10+21.70	PI Sta 10+21.70
$\Delta = 3' 57' 07.3''$ (LT)	$\Delta = 3' 57' 07.3''$ (LT)
$D = 57' 17' 44.8''$	$D = 57' 17' 44.8''$
$L = 6.90'$	$L = 6.90'$
$T = 3.45'$	$T = 3.45'$
$R = 100.00'$	$R = 100.00'$

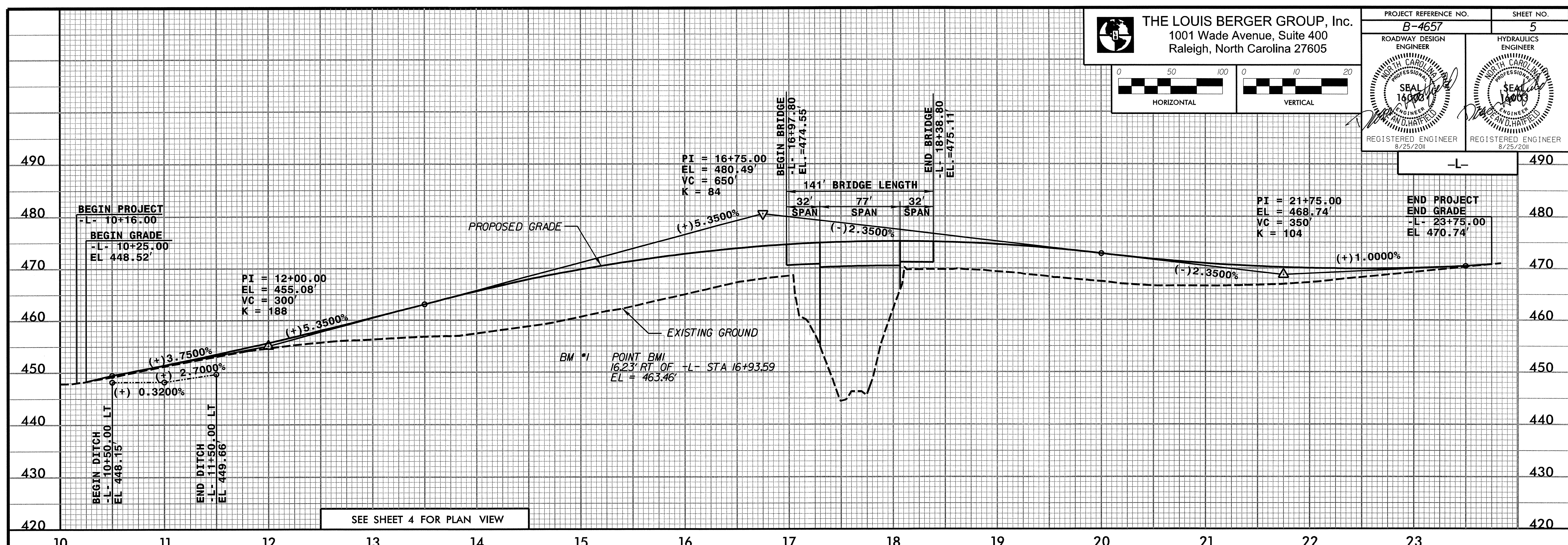
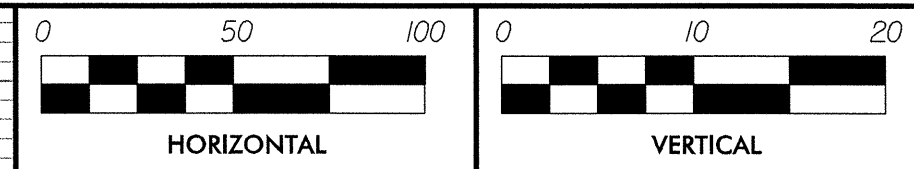
**CURVE DATA FOR -DWHY5-**

PI Sta 10+21.70	PI Sta 10+21.70
$\Delta = 3' 57' 07.3''$ (LT)	$\Delta = 3' 57' 07.3''$ (LT)
$D = 57' 17' 44.8''$	$D = 57' 17' 44.8''$
$L = 6.90'$	$L = 6.90'$
$T = 3.45'$	$T = 3.45'$
$R = 100.00'$	$R = 100.00'$

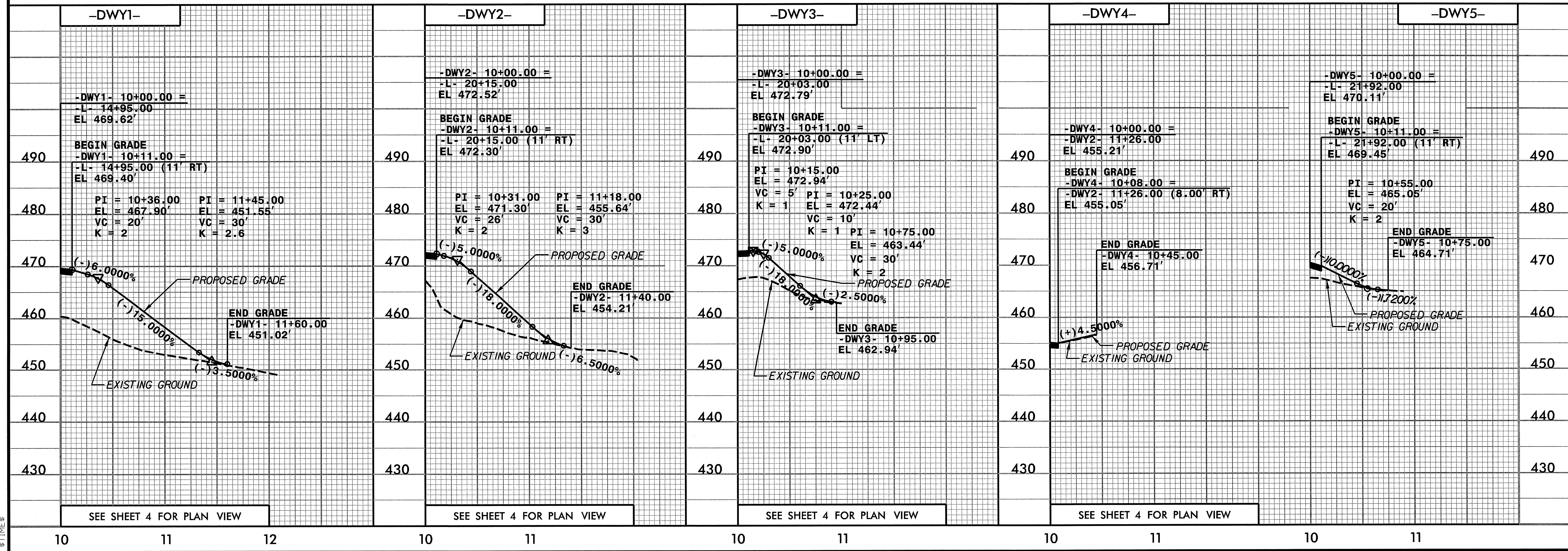


SEE SHEET 2B FOR WALL DETAILS  
SEE SHEET 5 FOR PROFILES  
SEE SHEETS S-1 THRU S-39  
FOR STRUCTURE PLANS  
SEE SHEETS W-1 AND W-2  
FOR MSE RET. WALL #1





SEE SHEET 4 FOR PLAN VIEW



B/25/2011  
 \*\*\*\*\*DOWNS\*\*\*\*\*  
 \$TIME\$