09/28/99

TIP: B-4861

CONTRACT: C203003

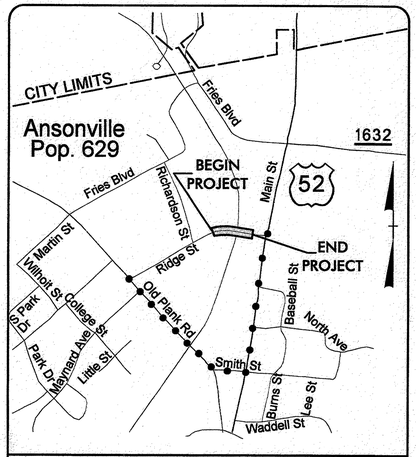
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4861	1	

WBS NO.	F. A. PROJ. NO.	DESCRIPTION
38194.1.1	BRZ-1002(21)	PE
38194.2.1	BRZ-1002(21)	R/W, UTILITY
38194.3.1	BRZ-1002(21)	CONST.

CITY OF ANSONVILLE
ANSON COUNTY
NORTH CAROLINA

LOCATION: BRIDGE NO. 88 ON RIDGE STREET OVER WINSTON SALEM SOUTHBOUND RAILROAD

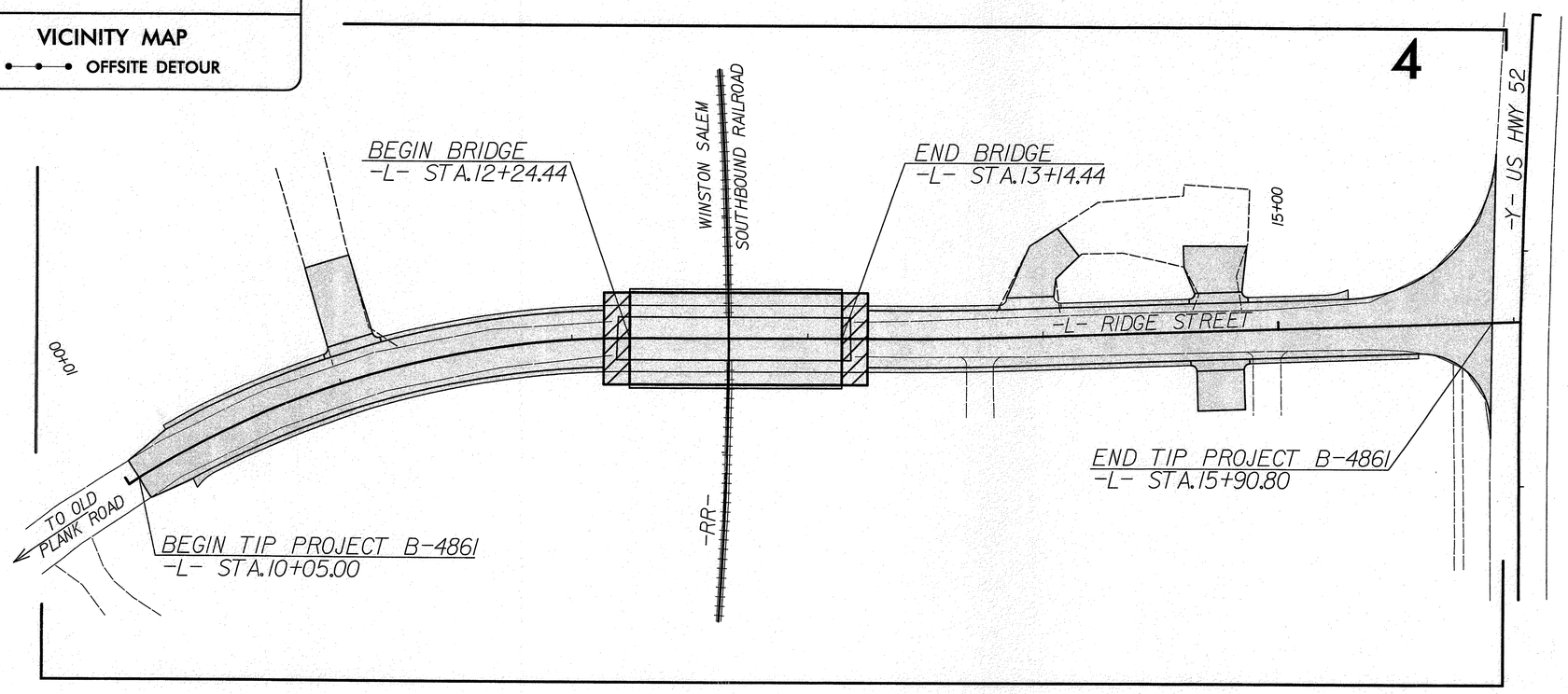
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, & UTILITIES



VICINITY MAP

OFFSITE DETOUR

NAD 83



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 2010 = 100
ADT 2030 = 150
TTST = 3% (2% Dual & 1% TTST)
V = 40 MPH
SUBREGIONAL TIER

DESIGN EXCEPTION REQUIRED FOR HORIZONAL SSD

PROJECT LENGTH

LENGTH ROADWAY PROJECT B-4861	=	0.094 MI
LENGTH STRUCTURE PROJECT B-4861	=	0.017 MI
TOTAL LENGTH PROJECT B-4861	=	0.111 MI

Plans Prepared By:
TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850
CORP. LICENSE NO.: C-0275

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 24, 2009

LETTING DATE:
MAY 15, 2012

Plans Prepared for:
TOWN OF ANSONVILLE
P.O. BOX 437
ANSONVILLE, NC 28007

JIMMY L. TERRY, PE
PROJECT ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY, JR.
SIGNATURE: P.E. 2/8/12

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY, JR.
SIGNATURE: P.E. 2/8/12

DIANNA McLAUGHLIN
P.O. BOX 437
ANSONVILLE, NC 28007
TEL. (704) 826-8404

PROJECT REFERENCE NO.	SHEET NO.
B-4861	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L TERRY JR.

3/1/12

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
2	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
2-A & 2-B	DETAIL OF METHOD OF PIPE INSTALLATION
2-C	DETAIL OF ANCHORAGE OF FRAMES - BRICK OR CONCRETE
3	SUMMARY OF QUANTITIES
3-A	SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, ASPHALT PAVEMENT REMOVAL SUMMARY, AND BREAKING OF PAVEMENT SUMMARY
3-B	SUMMARY OF DRAINAGE QUANTITIES
4	PLAN SHEET
5	PROFILE SHEET
TCP-1 THRU TCP-5	TRAFFIC CONTROL PLANS
PM-1	PAVEMENT MARKING PLAN
EC-1 THRU EC-4	EROSION CONTROL PLANS
UC-1 THRU UC-3	UTILITY CONSTRUCTION PLANS
X-INDEX	CROSS-SECTION INDEX
X-SUM	EARTHWORK VOLUME SUMMARY
X-1 THRU X-7	CROSS-SECTIONS
S-1 THRU S-38	STRUCTURE PLANS

GENERAL NOTES

2006 SPECIFICATIONS
EFFECTIVE: 01-17-12
REVISED: 11-01-11

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.

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

WATER AND SEWER - TOWN OF ANSONVILLE

POWER - PROGRESS ENERGY

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.

STANDARD DRAWINGS

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
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
310.10	Driveway Pipe Construction
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
840.18	Concrete Grated Drop Inlet Type ′B′ - 12″ thru 36″ Pipe
840.24	Frames and Narrow Slot Sag Grates
840.27	Brick Grated Drop Inlet Type ′B′ - 12″ thru 36″ Pipe
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
848.02	Driveway Turnout - Radius Type
848.04	Street Turnout
850.10	Guide for Berm Drainage Outlet - 15″ and 18″ Pipe
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class ′B′ Rip Rap

8/17/99

$$$$$$SYSTIME$$$$
$$$$$$SDGNFILE$$$$
$$$$$$SDGNDATE$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4861	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 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
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

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
- 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 — HH
- 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 — HH
- 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 — HH
- 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.

09/08/09

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PROJECT REFERENCE NO.	SHEET NO.
B-4861	2

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JAMY L. TERRY JR. 2/8/12

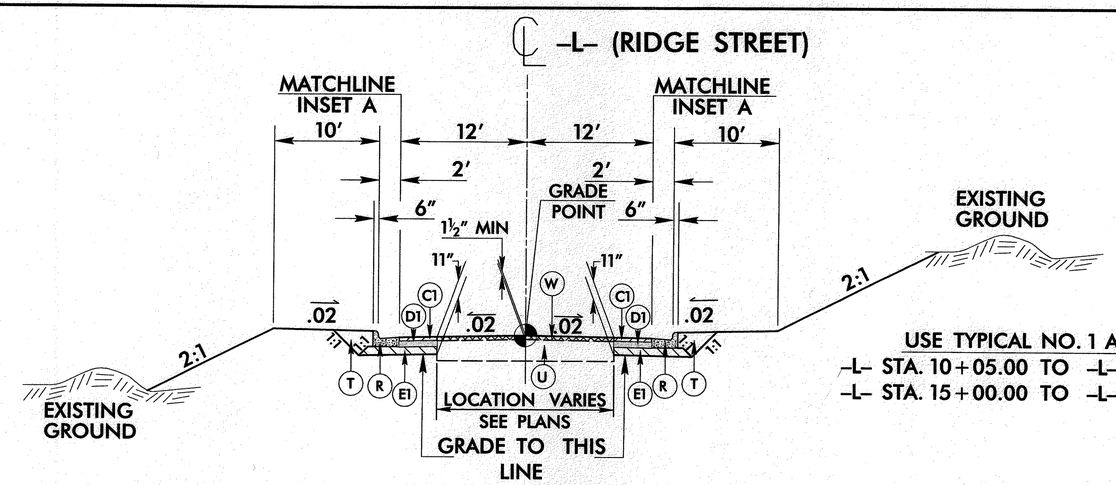
PAVEMENT DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 22886 ENGINEER CLARK S. MORRISON 2/13/12

TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850
CORP. LICENSE NO. C-0275

PAVEMENT SCHEDULE

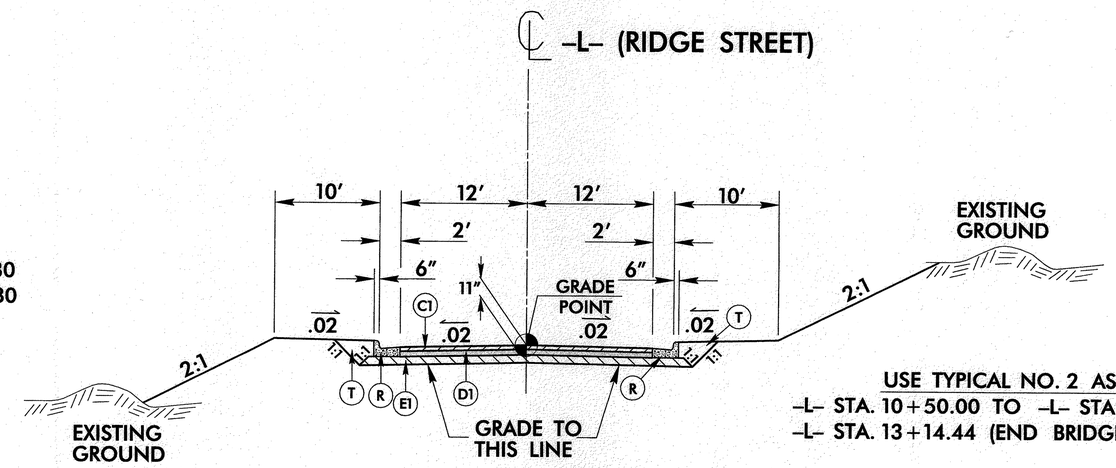
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 1 ½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1½" IN DEPTH OR GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTER. 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 5½" IN DEPTH.
R	2'-6" CONCRETE CURB AND GUTTER.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING EXISTING PAVEMENT (SEE DETAIL ON THIS SHEET)

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



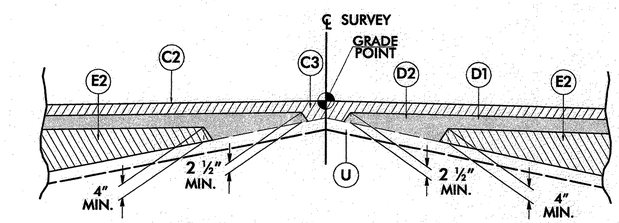
USE TYPICAL NO. 1 AS FOLLOWS:
-L- STA. 10+05.00 TO -L- STA. 10+50.00
-L- STA. 15+00.00 TO -L- STA. 15+90.80

TYPICAL SECTION 1

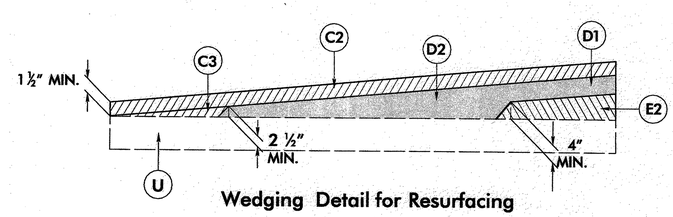


USE TYPICAL NO. 2 AS FOLLOWS:
-L- STA. 10+50.00 TO -L- STA. 12+24.44 (BEGIN BRIDGE)
-L- STA. 13+14.44 (END BRIDGE) TO -L- STA. 15+00.00

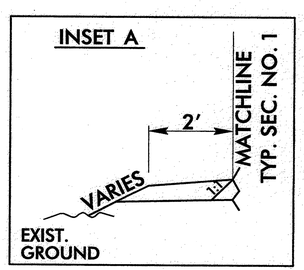
TYPICAL SECTION 2



Detail Showing Method of Wedging

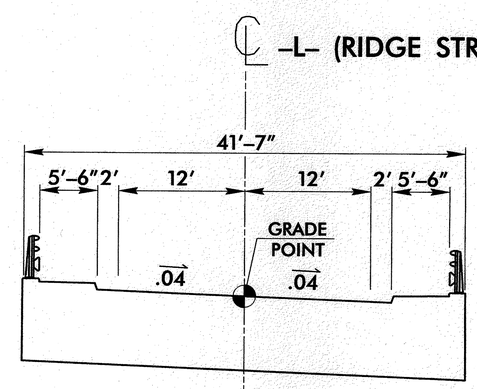


Wedging Detail for Resurfacing



USE INSET A AS FOLLOWS:
-L- STA. 15+29.77 LT TO -L- STA. 15+90.80
-L- STA. 15+58.79 RT TO -L- STA. 15+90.80

NOTE:
TIE TO EXISTING DITCH ELEVATIONS WHEN APPLICABLE



USE STRUCTURE TYPICAL AS FOLLOWS:
-L- STA. 12+24.44 (BEGIN BRIDGE) TO 13+14.44 (END BRIDGE)

STRUCTURE TYPICAL

6/2/99

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$$$$JLEGRANDE$$$$

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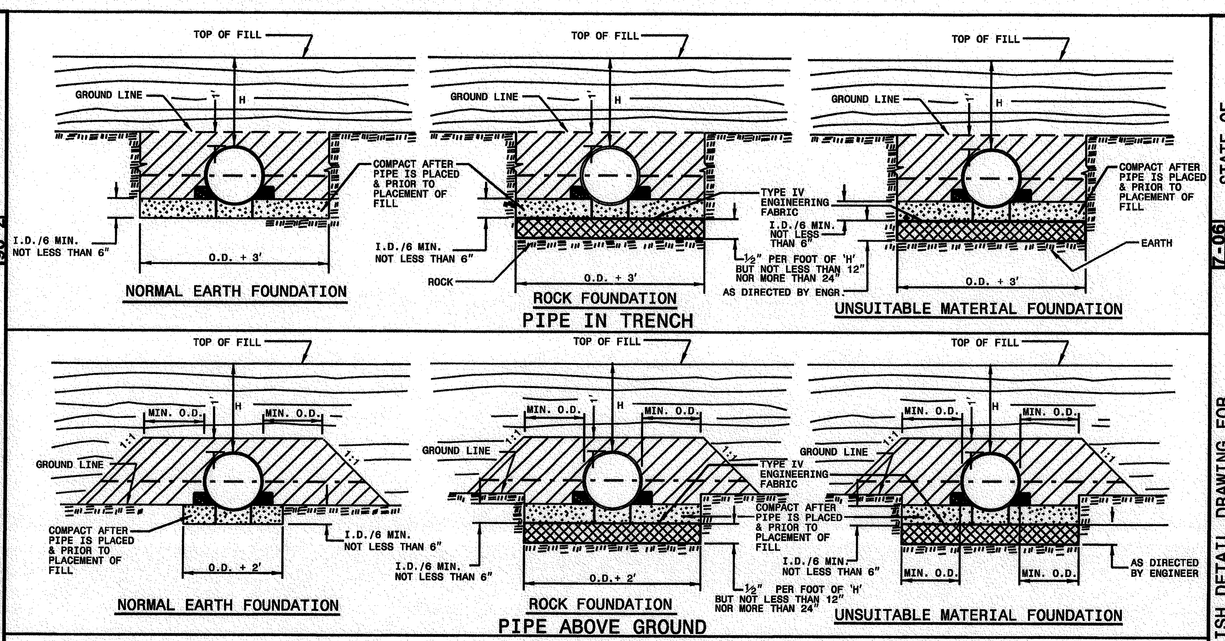
5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FLEXIBLE PIPE



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. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS 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

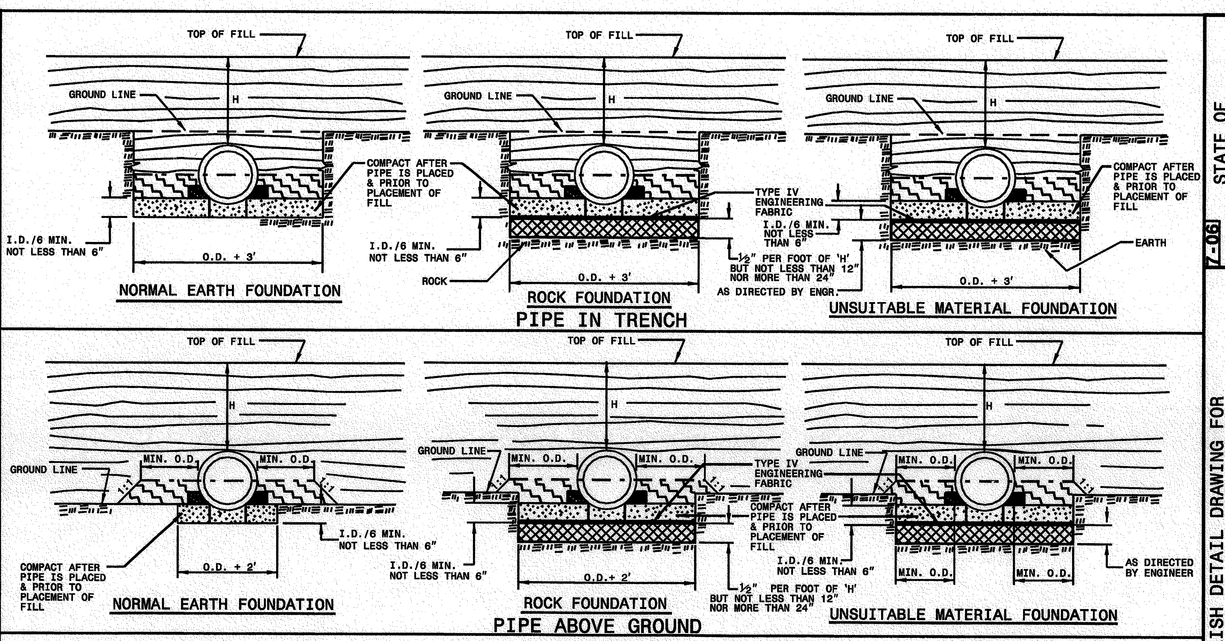
SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

SHEET 1 OF 3
300D01

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
RIGID PIPE



GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

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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. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS 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, 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.

SHEET 2 OF 3
300D01

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

SEE PLATE FOR TITLE

ORIGINAL BY: KGeupf
MODIFIED BY: DATE: 5-15-09
CHECKED BY: DATE:
DATE:
FILE SPEC/s:\ericward\stds\details\30001\0300d01.dgn

NORTH CAROLINA PROFESSIONAL SEAL 02986 ENGINEER
2/13/12

PROJECT REFERENCE NO. B-4861
SHEET NO. 2-A

05-NOV-2009 11:36
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jhowerton AT PS237501

5/14/99

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

FLEXIBLE PIPE

Round Corrugated Steel Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	204	256			
15	12	162	204			
18	12	135	169	239		
21	12	115	145	204		
24	12	100	126	178		
30	12	79	100	142		
36	12	65	83	117	152	
42	12	55	70	100	130	160
48	12	48	61	87	113	139
54	12		54	77	100	123
60	12			69	90	111
66	12				81	100
72	12				74	91
78	12					81
84	12					69

Round Corrugated Aluminum Pipe
2 2/3 x ½ corrugation **

Diameter (inches)	Minimum cover (inches)	Maximum Height of Cover (feet) (Ga) 16	14	12	10	8
12	12	123	155	218	281	344
15	12	98	123	174	224	275
18	12	81	102	144	187	228
21	12	69	87	123	160	195
24	12	60	76	108	139	171
27	12		67	95	123	151
30	12		60	85	111	136
36	12		50	71	92	113
42	12			60	78	96
48	12			52	68	84
54	12			46	50	74
60	12				50	62
66	12					51
72	12					41

** FOR DIFFERENT CORRUGATIONS AND ARCH PIPES REFER TO ROADWAY DESIGN MANUAL OR MANUFACTURERS SPECIFICATION.

HDPE - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 60″
* (Maximum fill) 20′ for pipe diameters ≤ 24″
17′ for pipe diameters ≥ 30″ and ≤ 60″

PVC - * (Minimum fill) 2′ for pipe diameters ≥ 12″ and ≤ 36″
* (Maximum fill) 30′ for pipe diameters ≥ 12″ and ≤ 36″

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

CSP - AASHTO M36
CAAP - AASHTO M196
HDPE - AASHTO M294
PVC - ASTM F949 or AASHTO M304

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

RIGID PIPE

RCP - * (Minimum fill) 1′ for Class IV & CLASS V
2′ for Class III & Class II

* (Maximum fill) 10′ - Class II pipe
20′ - Class III pipe
30′ - Class IV pipe
40′ - Class V pipe

(For fills > 40′ & < 80′ use LRFD Direct Design Method)

* FILL HEIGHT IS MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE PAVEMENT STRUCTURE

REFER TO THE FOLLOWING FOR PIPE SPECIFICATIONS

RCP - AASHTO M170

NOTES: FILL HEIGHTS SHOWN WERE CALCULATED USING AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

1′ MINIMUM COVER FOR ALL SIDE DRAIN PIPE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS

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

7-06

ENGLISH DETAIL DRAWING FOR
METHOD OF PIPE INSTALLATION
FILL HEIGHT TABLES

SHEET 3 OF 3
300D01

NORTH CAROLINA PROFESSIONAL SEAL 022568 ENGINEER
2/9/12

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

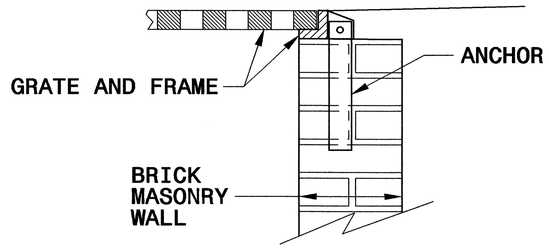
SEE PLATE FOR TITLE

ORIGINAL BY: KKempf DATE: 6-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC: /pw/ewrd/stds/stdstodetail3/30001/0300d01.dgn

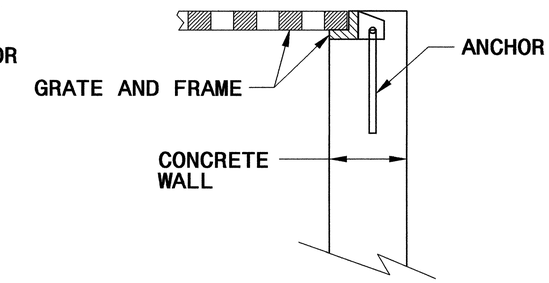
PROJECT REFERENCE NO.	SHEET NO.
B-4861	2-B

PROJECT REFERENCE NO.	SHEET NO.
B-4861	2-C

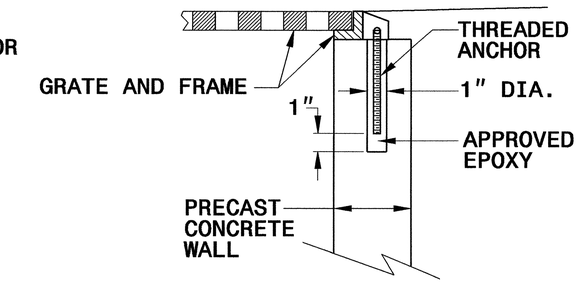
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.



BRICK MASONRY CONSTRUCTION



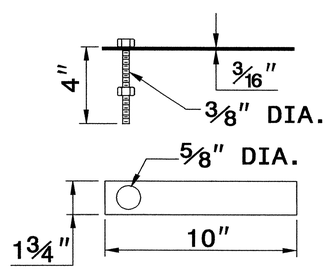
CONCRETE CONSTRUCTION



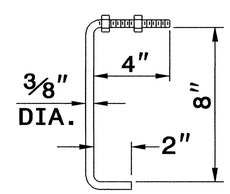
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

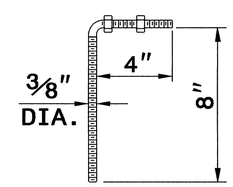
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



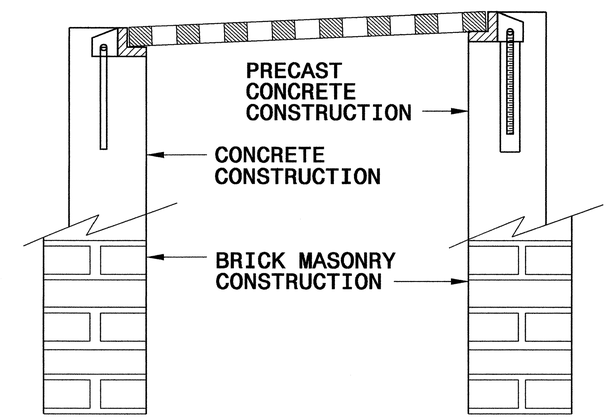
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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

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

SHEET 1 OF 1
840D25

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

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\Contracts\Special Details\erioward\stds\06' Stds to Special Details\840D25 Anchorage for Frames\0840d25.dgn
erioward AT PS222293

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-4861	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0008000000-E	200	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0036000000-E	225	50	CY	UNDERCUT EXCAVATION
0063000000-N	SP	Lump Sum		GRADING
0106000000-E	230	2,860	CY	BORROW EXCAVATION
0195000000-E	SP	50	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	50	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	SP	140	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0320000000-E	SP	230	SY	FOUNDATION CONDITIONING FABRIC
0335200000-E	SP	44	LF	15" DRAINAGE PIPE
0366000000-E	SP	520	LF	15" RC PIPE CULVERTS, CLASS III
0582000000-E	SP	88	LF	15" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")
0995000000-E	340	112	LF	PIPE REMOVAL
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1308000000-E	607	250	SY	MILLING ASPHALT PAVEMENT, ***" TO ******" DEPTH (0" TO 1-1/2")
1489000000-E	610	280	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	230	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	210	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1575000000-E	SP	40	TON	ASPHALT BINDER FOR PLANT MIX
1693000000-E	654	10	TON	ASPHALT PLANT MIX, PAVEMENT REPAIR
2286000000-N	840	9	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	0.3	LF	MASONRY DRAINAGE STRUCTURES
2352000000-N	840	1	EA	FRAME WITH GRATE, STD 840.**** (840.16)
2366000000-N	840	3	EA	FRAME WITH TWO GRATES, STD 840.24
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	1	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2549000000-E	846	720	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	5	SY	4" CONCRETE SIDEWALK
2612000000-E	848	60	SY	6" CONCRETE DRIVEWAY
2619000000-E	850	22	SY	4" CONCRETE PAVED DITCH
2845000000-N	858	1	EA	ADJUSTMENT OF METER BOXES OR VALVE BOXES
3030000000-E	862	125	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	4	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 (TL-2)
3649000000-E	876	20	TON	RIP RAP, CLASS B
3656000000-E	876	340	SY	FILTER FABRIC FOR DRAINAGE
4400000000-E	1110	272	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	96	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	138	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	40	EA	DRUMS
4445000000-E	1145	128	LF	BARRICADES (TYPE III)
4455000000-N	1150	8	MD	FLAGGER
4485000000-E	1170	78	LF	PORTABLE CONCRETE BARRIER

ItemNumber	Sec #	Quantity	Unit	Description
4770000000-E	1205	180	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (I)
4810000000-E	1205	2,282	LF	PAINT PAVEMENT MARKING LINES (4")
4835000000-E	1205	40	LF	PAINT PAVEMENT MARKING LINES (24")
4900000000-N	1251	11	EA	PERMANENT RAISED PAVEMENT MARKERS
5325600000-E	1510	590	LF	6" WATER LINE
5540000000-E	1515	1	EA	6" VALVE
5648000000-N	1515	2	EA	RELOCATE WATER METER
5800000000-E	1530	560	LF	ABANDON 6" UTILITY PIPE
5835700000-E	1540	130	LF	16" ENCASEMENT PIPE
6000000000-E	1605	1,530	LF	TEMPORARY SILT FENCE
6006000000-E	1610	115	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	190	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	105	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
6024000000-E	1622	200	LF	TEMPORARY SLOPE DRAINS
6030000000-E	1630	225	CY	SILT EXCAVATION
6036000000-E	1631	7,500	SY	MATTING FOR EROSION CONTROL
6042000000-E	1632	270	LF	1/4" HARDWARE CLOTH
6084000000-E	1660	1	ACR	SEEDING & MULCHING
6087000000-E	1660	1	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	0.75	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	10	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	18	EA	RESPONSE FOR EROSION CONTROL
8021000000-N	SP	Lump Sum		REMOVAL OF EXISTING STRUCTURE AT STATION ************ (12+66.44-L-)
8097000000-E	SP	140	LF	PILE EXCAVATION NOT IN SOIL
8112730000-N	SP	1	EA	PDA TESTING
8121000000-N	412	Lump Sum		UNCLASSIFIED STRUCTURE EXCAVA-TION AT STATION ******** (12+66.44-L-)
8147000000-E	420	3,673	SF	REINFORCED CONCRETE DECK SLAB
8161000000-E	420	2,673	SF	GROOVING BRIDGE FLOORS
8182000000-E	420	52	CY	CLASS A CONCRETE (BRIDGE)
8210000000-N	422	Lump Sum		BRIDGE APPROACH SLABS, STATION ************ (12+66.44-L-)
8217000000-E	425	9,862	LB	REINFORCING STEEL (BRIDGE)
8274000000-E	430	437	LF	MODIFIED 63" PRESTRESSED CONC GIRDERS
8364000000-E	SP	490	LF	HP12X53 STEEL PILES
8391000000-N	SP	14	EA	STEEL PILE POINTS
8482000000-E	460	162	LF	THREE BAR METAL RAIL
8657000000-N	430	Lump Sum		ELASTOMERIC BEARINGS
8847000000-E	SP	2,603	SF	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 1
8847000000-E	SP	3,008	SF	GENERIC RETAINING WALL ITEM MSE RETAINING WALL NO 2

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

COMPUTED BY: JLT DATE: 2/8/12
CHECKED BY: SGM DATE: 2/8/12

PROJECT NO.	SHEET NO.
B-4861	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Line	Station	Station	Uncl. Excav.	Undercut Excav.	Embank. +%	Borrow	Waste
-L-	10+05.00	12+24.44	8		1,285	1,277	
Bridge							
-L-	13+14.44	15+90.80	14		1,208	1,194	
TOTAL			22		2,493	2,471	
Loss due to Clearing & Grubbing			-1			1	
PROJECT TOTAL			21		2,493	2,472	
Est. for repl. Topsoil on Borrow Pits						124	
GRAND TOTAL			21			2,596	
SAY			25			2,860	

Pavement Structure Volume = 21 yd^3
Contingency Undercut = 50 yd^3

Note: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

Line	Station	Station	Location LT/RT/CL	SY
-L-	10+50.00	11+50.00	CL	190.03
-L-	14+00.00	15+00.00	CL	192.56
			COLUMN TOTAL:	382.59
			SAY:	430

SUMMARY OF BREAKING OF EXISTING PAVEMENT

Line	Station	Station	Location LT/RT/CL	SY
-L-	11+50.00	12+16.98	CL	116.29
-L-	13+19.67	14+00.00	CL	139.77
			COLUMN TOTAL:	256.06
			SAY:	290

"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

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

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS GRAU 350, TL-2	ANCHORS CAT-1	ANCHORS AT-1	ANCHORS III	ANCHORS XI MOD	ANCHORS M-350	ANCHORS	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GRDRAIL	REMARKS
-L-	11+43.19	12+24.44	LT	81.25				12+24.44	7.5'	BERM		62.5'		1.25'	1			1								
-L-	11+43.19	12+24.44	RT	81.25			12+24.44		7.5'	BERM	62.5'		1.25'		1			1								
-L-	13+14.44	13+64.44	LT	50			13+14.44		7.5'	BERM	31.25'		0.625		1			1								
-L-	13+14.44	13+95.69	RT	81.25				13+14.44	7.5'	BERM		62.5'		1.25'	1			1								
		SUB-TOTALS:		293.75																						
	LESS ANCHOR DEDUCTIONS																									
	GRAU-350, TL-2	4@25 ft		100																						
	TYPE III	4@18.75 ft		75																						
	ANCHOR TOTALS			175																						
		GRAND TOTALS		118.75											4			4								
		SAY		125											4			4								

ADDITIONAL GUARDRAIL POSTS = 5 EA

COMPUTED BY: JLT DATE: 5/27/2009

CHECKED BY: SGM DATE: 10/8/2010

PROJECT NO.	SHEET NO.
B-4861	3-B

JIMMY

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL
-L- 10+14	LT	0401		353.20			
		0401	0402		350.45	349.35	
-L- 10+10	RT	0402		352.00			
		0402	0403		349.25	348.19	
-L- 11+45	RT	0403		351.09			
		0403	0404		348.09	347.79	
-L- 12+00	RT	0404		351.40			
		0404	OUT		346.10	346.00	
-L- 10+89	LT	0404A					
-L- 13+40	RT	0405		352.50			
		0405	OUT		347.50	347.40	
		0405	0406		349.68	353.13	
-L- 14+92	RT	0406		356.13			
		0406	0407		353.23	353.57	
-L- 14+92.50	LT	0407		356.71			
		0407	0408		353.67	353.75	
		0407	0409		353.98	354.75	
-L- 14+98	LT	0408		356.00			
-L- 15+52	LT	0409		357.50			
-L- 12+28+/-	LT	0410			342.80	319.10	
-L- 13+11+/-	LT	0411			346.30	319.20	
SHEET TOTALS							

STATION	FROM	TO	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE	C.S. PIPE 12" (.064)	15" (.064)	18" (.064)	24" (.064)	30" (.079)	36" (.079)	42" (.109)	48" (.109)
-L- 10+14	0401																					
	0401	0402																				
-L- 10+10	0402																					
	0402	0403																				
-L- 11+45	0403																					
	0403	0404																				
-L- 12+00	0404																					
	0404	OUT																				
-L- 10+89	0404A			44																		
-L- 13+40	0405																					
	0405	OUT																				
	0405	0406																				
-L- 14+92	0406																					
	0406	0407																				
-L- 14+92.50	0407																					
	0407	0408																				
	0407	0409																				
-L- 14+98	0408																					
-L- 15+52	0409																					
-L- 12+28+/-	0410															40						
-L- 13+11+/-	0411															48						
SHEET TOTALS				44												88						

STATION	FROM	TO	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	** " R.C. PIPE (CLASS V)	***" RC PIPE CULVERTS, CONTRACTOR DESIGN	****" RC PIPE CULVERTS, CONTRACTOR DESIGN	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.
-L- 10+14	0401																						
	0401	0402		32																			
-L- 10+10	0402																						
	0402	0403		128																			
-L- 11+45	0403																						
	0403	0404		60																			
-L- 12+00	0404																						
	0404	OUT		20																			
-L- 10+89	0404A																						
-L- 13+40	0405																						
	0405	OUT		20																			
	0405	0406		156																			
-L- 14+92	0406																						
	0406	0407		28																			
-L- 14+92.50	0407																						
	0407	0408		16																			
	0407	0409		60																			
-L- 14+98	0408																						
-L- 15+52	0409																						
-L- 12+28+/-	0410																						
-L- 13+11+/-	0411																						
SHEET TOTALS				520																			

STATION	FROM	TO	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	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	CORR. STEEL ELBOWS NO. & SIZE	PIPE REMOVAL LIN. FT.	REMARKS
-L- 10+14	0401		1											1	1			
	0401	0402																
-L- 10+10	0402		1											1	1			
	0402	0403																
-L- 11+45	0403		1			1	1											
	0403	0404																
-L- 12+00	0404		1	0.3		1			1									
	0404	OUT																
-L- 10+89	0404A																25	
-L- 13+40	0405		1			1			1									
	0405	OUT																
	0405	0406															87	
-L- 14+92	0406		1			1			1									
	0406	0407																
-L- 14+92.50	0407		1			1		1										
	0407	0408																
	0407	0409																
-L- 14+98	0408		1									1	1					
-L- 15+52	0409		1											1	1			
-L- 12+28+/-	0410															1 @ 15"		BERM OUTLET
-L- 13+11+/-	0411															1 @ 15"		BERM OUTLET
SHEET TOTALS			9	0.3		5	1	1	3			1	1	3	3	2 @ 15"	112	

THICKNESS OR GAUGE / SIZE

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I.(N.S.)	(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-4861	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY JR. 2/8/12

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY JR. 2/8/12

TGS ENGINEERS
SUITE 141
975 WALNUT STREET
CARY, NC 27511
PH (919) 319-8850
CORP. LICENSE NO.: C-0275

8/17/99

REVISIONS

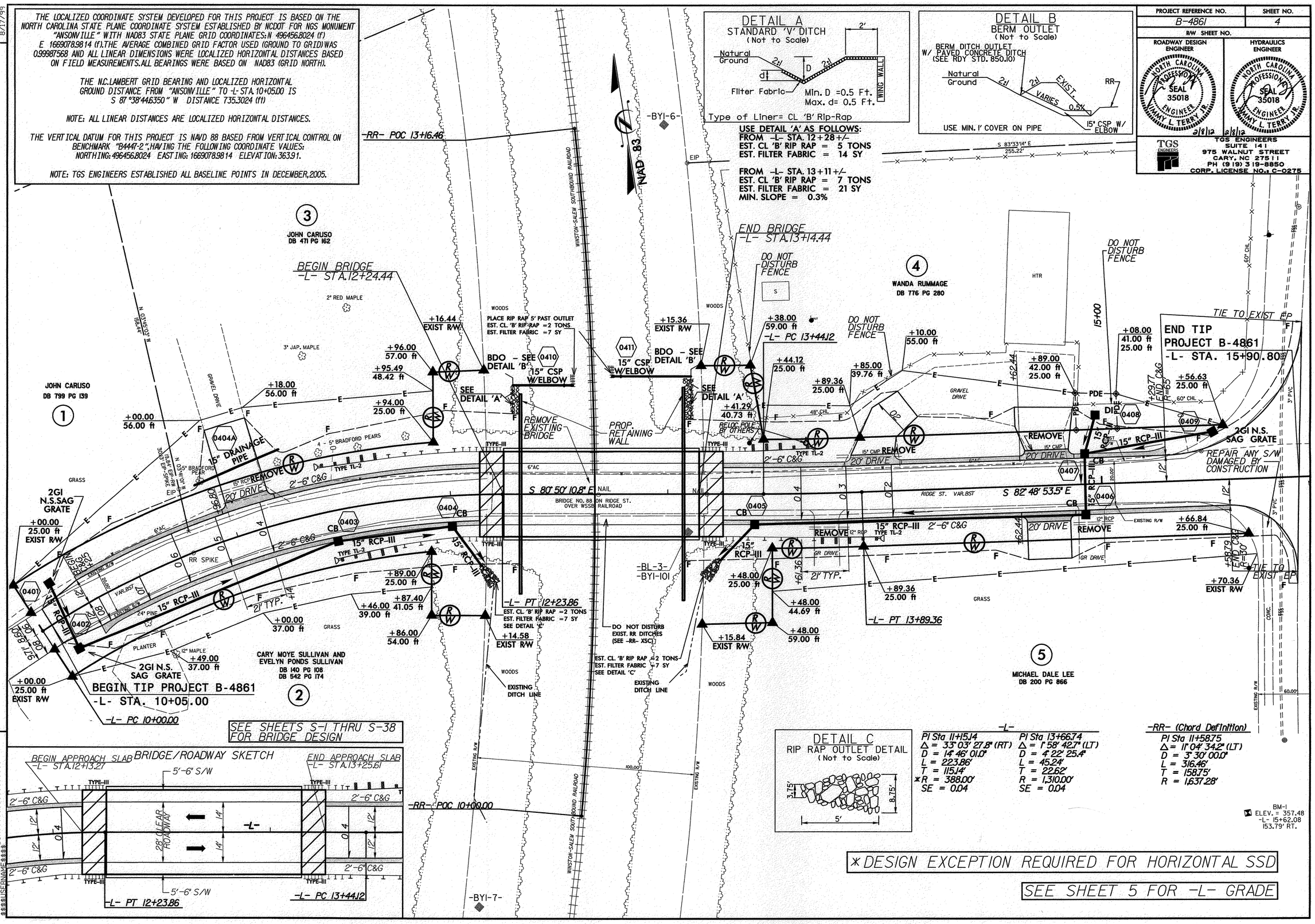
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE NORTH CAROLINA STATE PLANE COORDINATE SYSTEM ESTABLISHED BY NCDOT FOR NGS MONUMENT "ANSONVILLE" WITH NAD83 STATE PLANE GRID COORDINATES: N 496456.8024 (f) E 1669078.9814 (f). THE AVERAGE COMBINED GRID FACTOR USED (GROUND TO GRID) WAS 0.99987568 AND ALL LINEAR DIMENSIONS WERE LOCALIZED HORIZONTAL DISTANCES BASED ON FIELD MEASUREMENTS. ALL BEARINGS WERE BASED ON NAD83 (GRID NORTH).

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "ANSONVILLE" TO -L- STA. 10+05.00 IS S 87°38'44.6350" W DISTANCE 735.3024 (ft)

NOTE: ALL LINEAR DISTANCES ARE LOCALIZED HORIZONTAL DISTANCES.

THE VERTICAL DATUM FOR THIS PROJECT IS NAVD 88 BASED FROM VERTICAL CONTROL ON BENCHMARK "B4447-2", HAVING THE FOLLOWING COORDINATE VALUES: NORTHING: 496456.8024 EASTING: 1669078.9814 ELEVATION: 363.91.

NOTE: TGS ENGINEERS ESTABLISHED ALL BASELINE POINTS IN DECEMBER, 2005.



BM1 ELEVATION = 357.48
N 496253 E 1668874
-L- STA. 15+62.08, OFFSET 153.79' RT
RR SPIKE SET IN 14" PINE TREE 150'
SOUTH OF RIDGE ST. ON WEST SIDE
OF HWY 52

PROJECT REFERENCE NO.	SHEET NO.
B-4861	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 35018 ENGINEER JIMMY L. TERRY, JR. 12/23/11

HYDRAULICS ENGINEER
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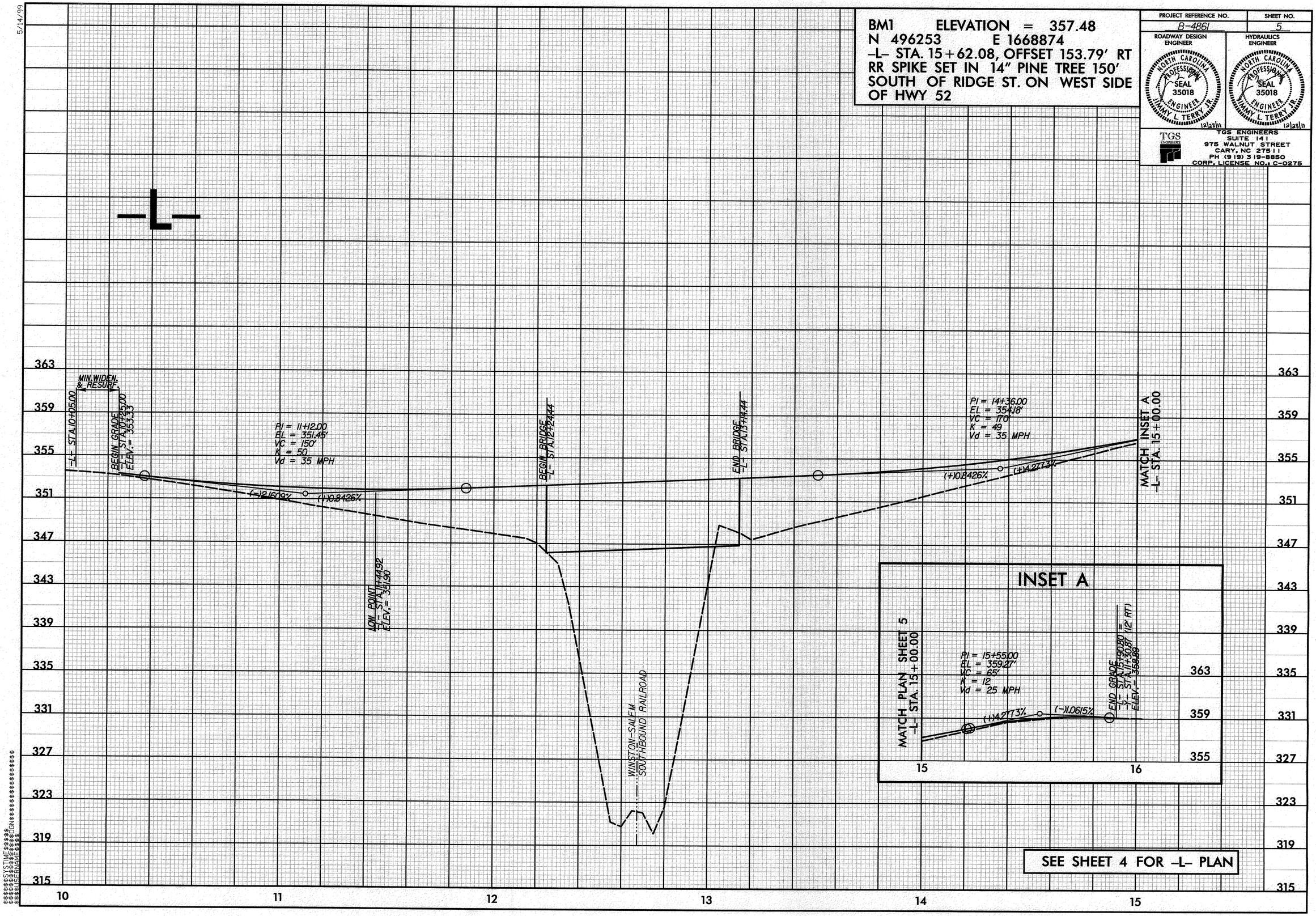

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