CONTRACT: C201731 TIP PROJECT: B-4019

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4019	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33386.1.1	BRSTP-32(3)	P.E.
33386.2.1	BRSTP-32(3)	R/W, UTIL.
33386.3.1	BRSTP-32(7)	CONST.

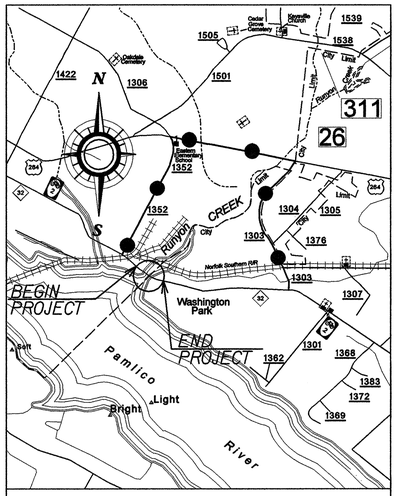
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

LOCATION: BRIDGE NO. 103 OVER RUNYON CREEK ON NC 32 IN WASHINGTON

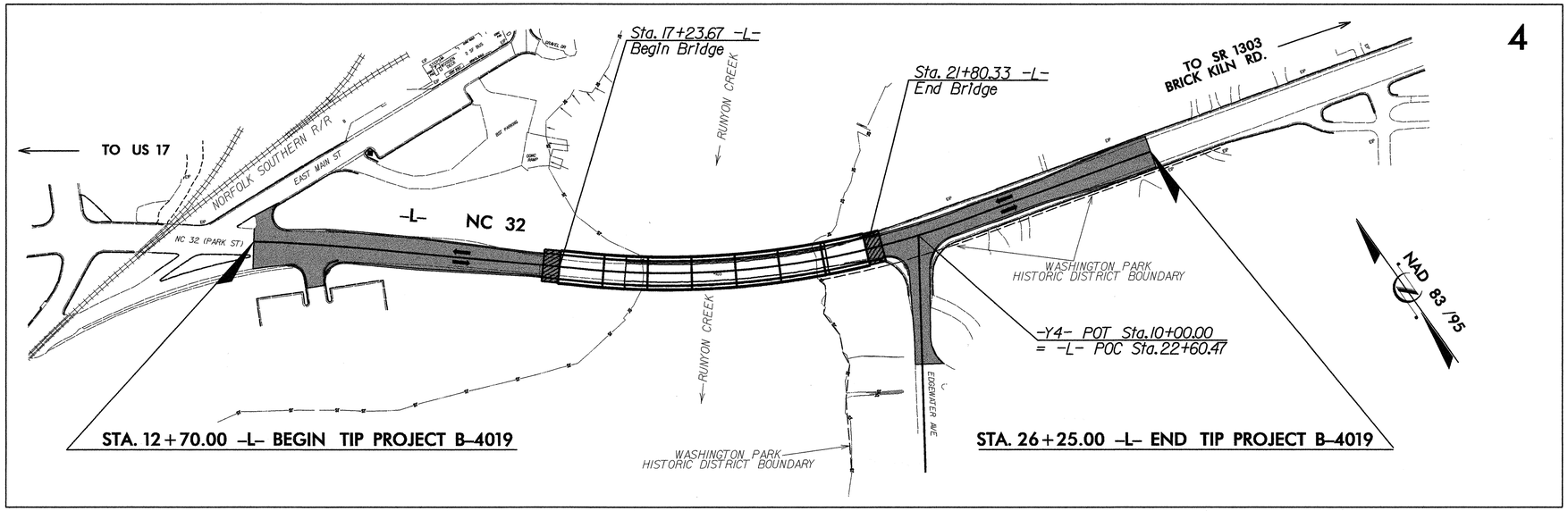
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

See Sheet 1-A For Index of Sheets



VICINITY MAP

LEGEND	
●—●—●	Studied Detour Route



NCDOT CONTACT: CATHY HOUSER, P.E.; PROJECT ENGINEER - ROADWAY DESIGN

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2009 = 12700
ADT 2030 = 19900
DHV = 10 %
D = 60 %
T = 6 % *
V = 40 MPH
FUNC. CLASS = RURAL MINOR ARTERIAL
* TTST 2 % DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4019 = 0.171 mi.
LENGTH STRUCTURE TIP PROJECT B-4019 = 0.086 mi.
TOTAL LENGTH TIP PROJECT B-4019 = 0.257 mi.

Prepared In the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
September 11, 2007

LETTING DATE:
March 17, 2009

CLIFTON T. REGISTER, P.E.
PROJECT ENGINEER

SCOTT L. KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SEAL 9334
W. HENRY WELLS JR.
12/23/08
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
SEAL 028392
CLIFTON T. REGISTER
12/22/08
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

C. T. McMillan
P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

09/08/09

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

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PROJECT REFERENCE NO.	SHEET NO.
B-4019	1-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028392 ENGINEER CLIFTON T. REGISTER

12/22/08

INDEX OF SHEETS

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reiforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
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
840.45	Precast Drainage Structure

STD.NO.	TITLE
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
848.05	Wheelchair Ramp - Curb Cut
852.01	Concrete Islands
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units

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 III.

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01.

SIDE ROADS:

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

UNDERDRIANS:

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

DRIVEWAYS:

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

STREET TURNOUTS:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 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.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLAN, DETAILS, AND CROSS-SECTIONS PRIOR TO SETTING THE SLOPE STAKES FOR EMBANKMENT OR EXCAVATION APPROACHING A BRIDGING

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE

City of Washington (Power) — Piedmont Natural Gas
Mediacom (Cable)
Embark (Telephone)

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

PROJECT REFERENCE NO.	SHEET NO.
B-4019	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 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
- 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.

PROJECT REFERENCE NO.	SHEET NO.
B-4019	1C
LOCATION AND SURVEYS	

SURVEY CONTROL SHEET B-4019

CONTROL DATA

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL3	BL3	656356.6280	2582511.9810	5.99'	OUTSIDE PROJECT LIMITS	
BL4	BL4	656177.8590	2582693.6710	5.95'	11+12.90	31.02' RT
BL5	BL5	655773.7900	2583257.2420	7.29'	18+06.37	16.40' LT
BL6	BL6	655591.1670	2583585.8170	4.04'	21+89.72	24.03' LT
BL7	BL7	655335.9150	2584274.5840	6.97'	29+24.41	31.65' RT

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY18	BY1-8	656448.7160	2582688.7150	6.08'	OUTSIDE PROJECT LIMITS	
BL4	BL4	656177.8590	2582693.6710	5.95'	11+12.90	31.02' RT

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL4	BL4	656177.8590	2582693.6710	5.95'	11+12.90	31.02' RT
BY29	BY2-9	656113.8540	2583053.2860	1.26'	14+29.17	141.21' LT

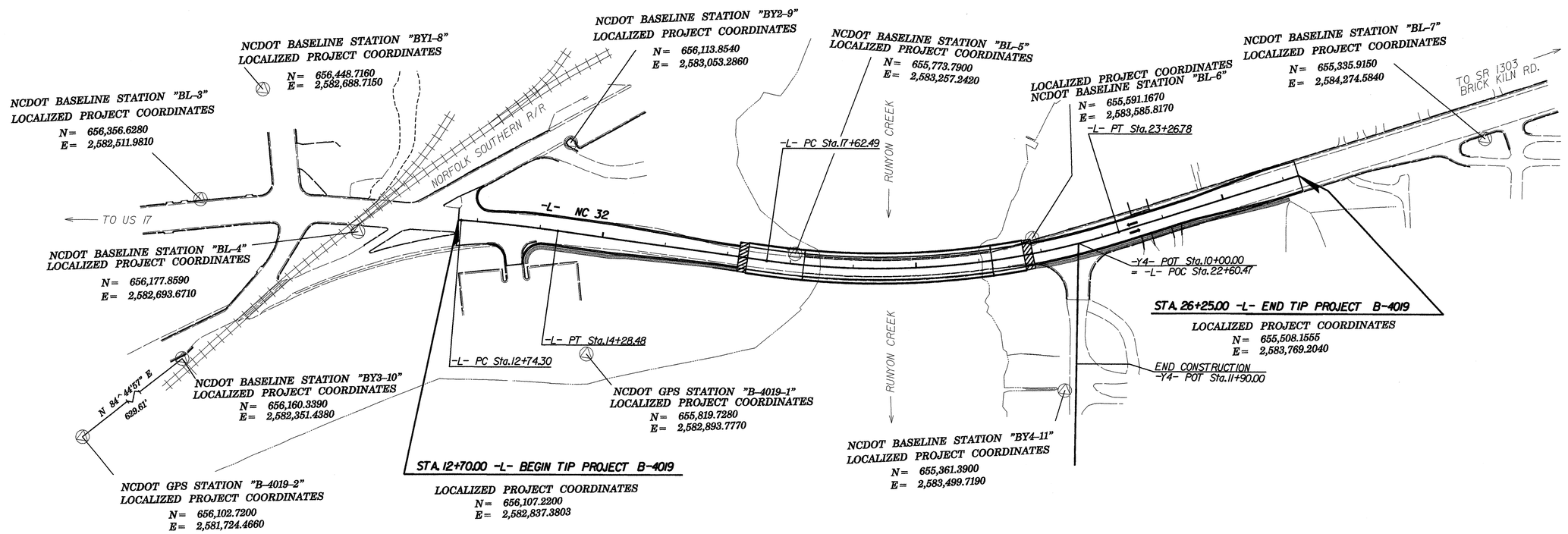
NC GRID NAD 83/95

CONTROL DATA

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY31	GPS MON B4019-1	655819.7280	2582893.7770	2.47'	15+00.69	185.65' RT
BY32	GPS MON B4019-2	656102.7200	2581724.4660	2.16'	OUTSIDE PROJECT LIMITS	
BY310	BY3-10	656160.3390	2582351.4380	3.96'	OUTSIDE PROJECT LIMITS	
BL4	BL4	656177.8590	2582693.6710	5.95'	11+12.90	31.02' RT

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL6	BL6	655591.1670	2583585.8170	4.04'	21+89.72	24.03' LT

POINT	DESC.	NORTH	EAST	ELEVATION	Y4 STATION	OFFSET
BY411	BY4-11	655361.3900	2583499.7190	2.34'	12+32.20	17.84' RT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4019-1"
WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF
NORTHING: 655819.728(ft) EASTING: 2582893.778(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989054
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4019-1" TO -L- STATION 12+70.00 IS N 11°05'55" W 292.97 ft
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

```
**************************************
BM12        ELEVATION = 3.61'
N 656108       E 2582258
L STATION 10+00
S 65° 53' 03.7" W  DIST    399.92'
R/R SPIKE IN BASE OF 22" PINE
**************************************
**************************************
BM13        ELEVATION = 6.86'
N 655313       E 2584286
L STATION 29+41 51' RIGHT
R/R SPIKE IN ROOT OF 18" BEECH
**************************************
```

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT

FILE: b4019_ls_control_060223.txt

SITE CALIBRATION PARAMETERS HAVE NOT BEEN DETERMINED 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 UTILIZING GLOBAL POSITIONING SYSTEM.

NETWORK FOR GPS "B4019-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-4019	2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 028392 ENGINEER CLINTON A. HEGGIE

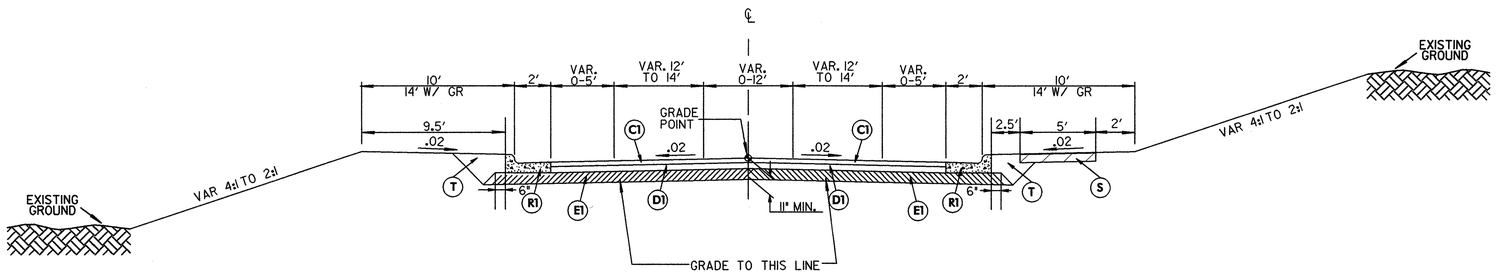
12/22/08

WANG ENGINEERING

PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON

12/22/08



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS

-L- Sta. 12+95.00 to Sta. 17+23.67 (BEGIN BRIDGE)
-L- Sta. 21+80.33 (END BRIDGE) to Sta. 26+00.00

TRANSITION FROM EXIST. TO T.S. NO. 1

-L- Sta. 12+70.00 to Sta. 12+95.00

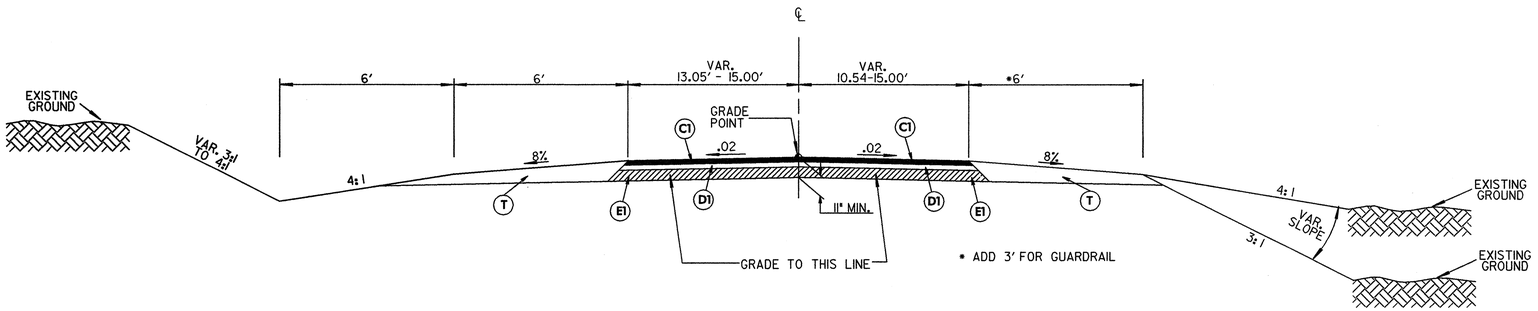
TRANSITION FROM T.S. NO. 1 TO EXIST.

-L- Sta. 26+00.00 to Sta. 26+25.00

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONC. BINDER COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS PER SQ. YD.
R1	2'-6" CONCRETE CURB & GUTTER
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 1 AS FOLLOWS

-Y4- Sta. 10+58.65 to Sta. 11+90.00

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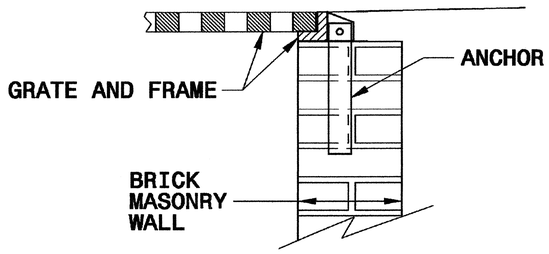
PROJECT REFERENCE NO.	SHEET NO.
B-4019	2-A

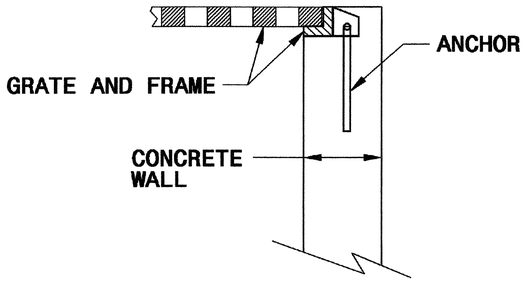
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

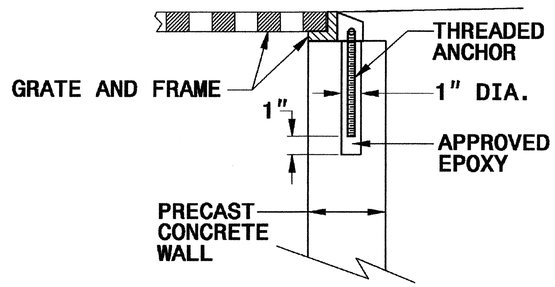
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



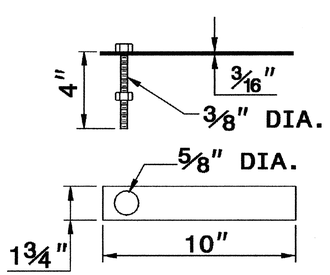
CONCRETE CONSTRUCTION



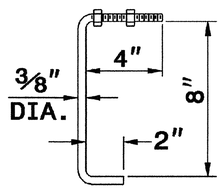
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

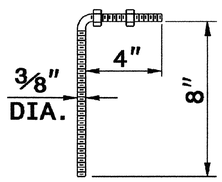
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



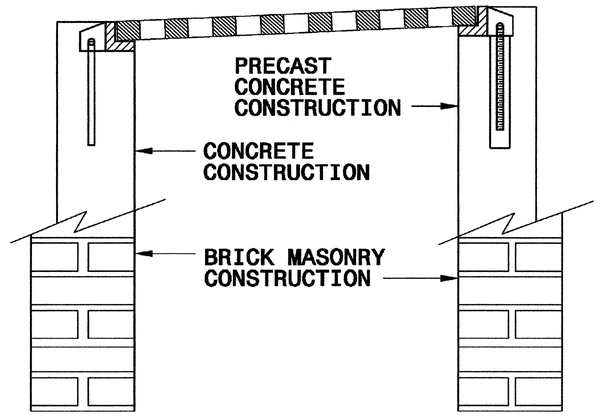
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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

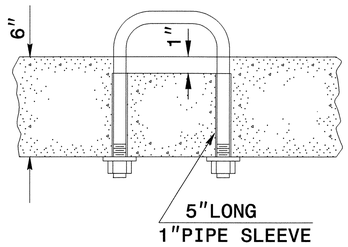
NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON
12/29/06

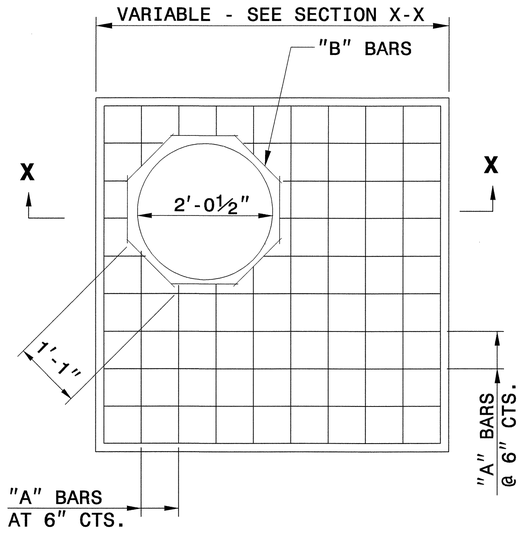
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

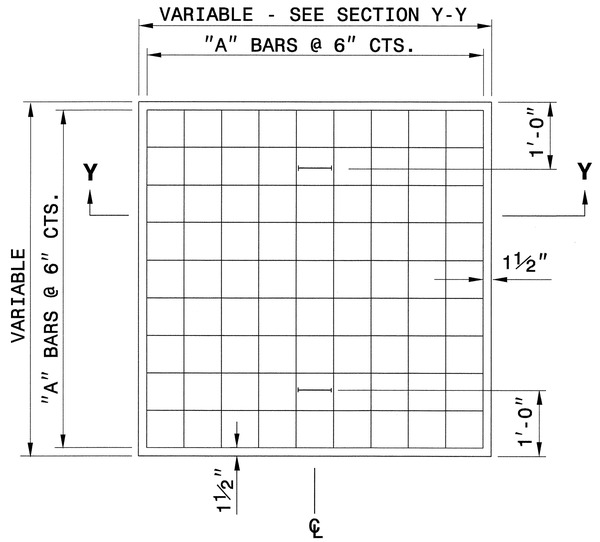
SEE PLATE FOR TITLE

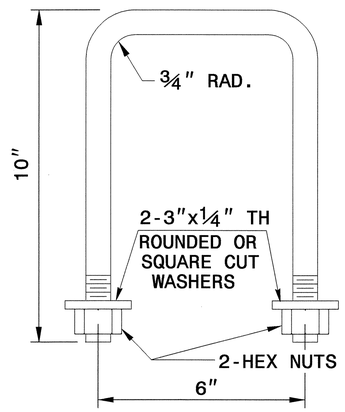
ORIGINAL BY: 2006 STD 840.25 DATE: 07/18/06
MODIFIED BY: E.E. WARD DATE: 9/25/06
CHECKED BY: DATE:
FILE SPEC.:

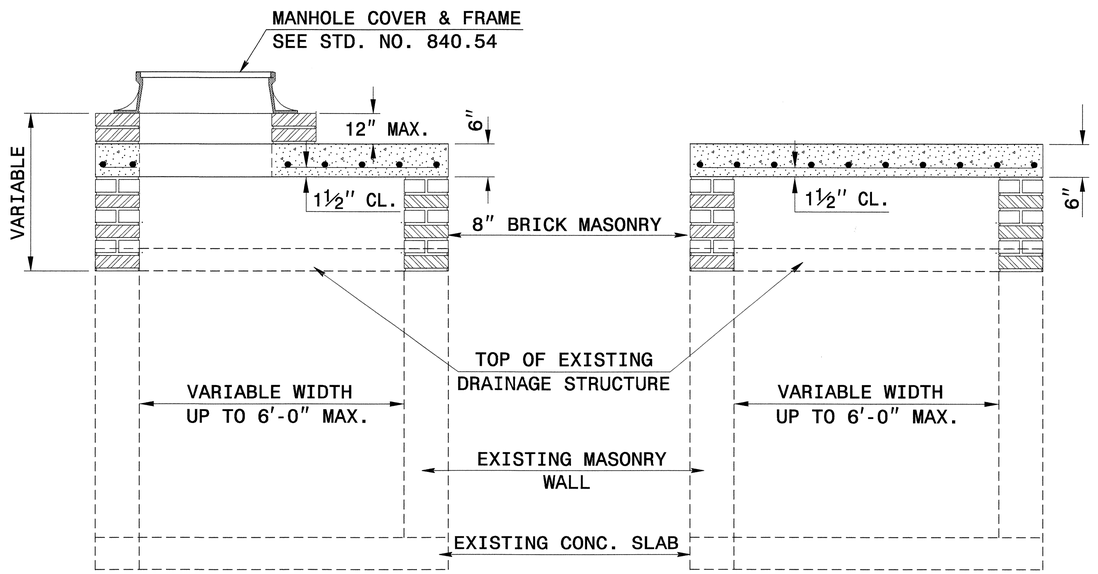
...\Proj\b4019_fdy_SHT2-A.dgn 12/27/2006 1:41:28 PM

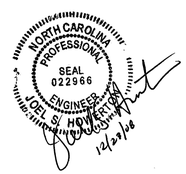












PROJECT REFERENCE NO.	SHEET NO.
B-4019	2-B

PARTIAL SECTION

PLAN

PLAN

GENERAL NOTES:

CONSTRUCT IN ACCORDANCE WITH SECTION 859 OF THE STANDARD SPECIFICATIONS.

THE DIMENSIONS FOR THE EXISTING BOXES ARE APPROXIMATE AND MAY VARY SLIGHTLY.

DETAIL INTENDED FOR NON-TRAFFIC BEARING DRAINAGE STRUCTURES.

BILL OF MATERIALS

REINFORCING STEEL				
CODE	SIZE	QTY.	LENGTH	REINF. STEEL LBS.
A	#4	20	4'-6"	60.12
B	#4	8	1'-1"	5.79
TOTAL				65.91 *

MASONRY	CU YDS
TOP SLAB CONCRETE CLASS "B"	.4326 *
BRICK MASONRY PER FT HT (MIN)	.4111

* NOTE:
QUANTITIES BASED ON 3'-6" X 3'-6" DRAINAGE STRUCTURE. ADJUST QUANTITIES FOR LARGER STRUCTURES AND MANHOLE CONSTRUCTION.

DETAIL OF HANDLE

SECTION X-X

SECTION Y-Y

SEAL 022966
JOEL S. HOWERTON
12/29/08

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

DETAIL TO CONVERT EXISTING DROP INLET OR CATCH BASIN TO JUNCTION BOX (MANHOLE OPTIONAL)

ORIGINAL BY: T.S.S. DATE: NOV.1997
MODIFIED BY: T.S.S. DATE: FEB.2000
CHECKED BY: DATE: 11/25/08
FILE SPEC.: ds174:/usr/details/stand/boxtojbe.dgn

PROJECT REFERENCE NO.	SHEET
33386JJ (B-4019)	2-C

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027869 ENGINEER DAVID L. TEAGUE

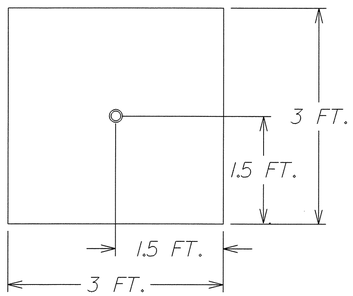
D.L. Teague 1/7/09

SIGNATURE DATE

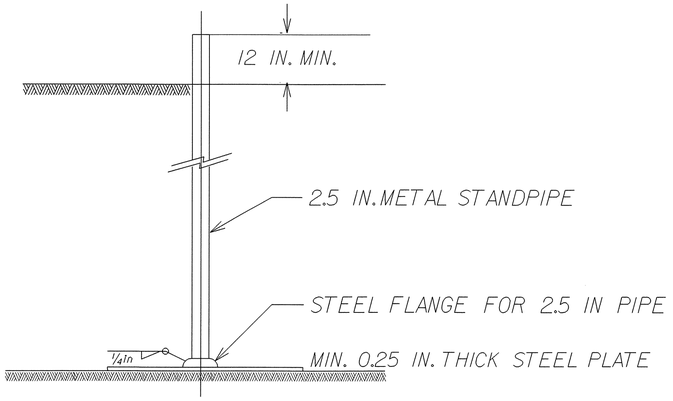
ENGINEER

SIGNATURE DATE

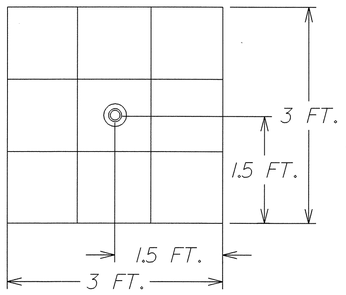
SETTLEMENT GAUGE DETAIL



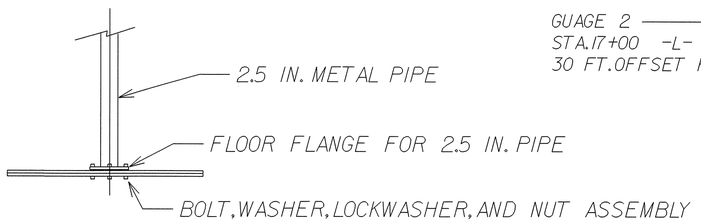
STEEL BASE



DETAIL OF STEEL BASE



WOOD BASE

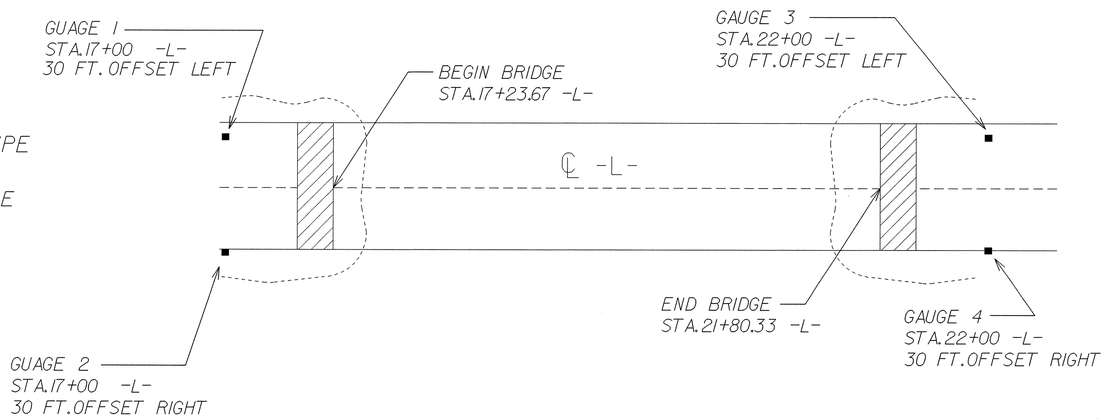


DETAIL OF WOOD BASE

SIX - 1 IN. X 1 FT. X 3 FT. PLANKS OF LUMBER OR TWO PIECES 1 IN. X 3 FT. X 3 FT. EXTERIOR GRADE PLYWOOD, SECURELY FASTENED AND THEN COATED WITH WOOD PRESERVATIVE

PLAN VIEW

N.T.S.



QUANTITIES

SETTLEMENT GAUGES..... 4 EACH

NOTES

1. THE USE OF EITHER THE WOOD BASE OR THE STEEL BASE SETTLEMENT GUAGE SHALL BE THE CONTRACTOR'S OPTION.
2. SETTLEMENT GUAGES SHALL BE INSTALLED BEFORE ANY FILL IS PLACED.
3. SETTLEMENT GUAGE ELEVATIONS ARE TO BE DETERMINED AND RECORDED WEEKLY BY THE RESIDENT ENGINEER. THE INITIAL ELEVATION OF THE SETTLEMENT GUAGE PLATE (AT TOP OF PLATE) SHALL BE DETERMINED AT THE TIME OF INSTALLATION ALONG WITH THE EMBANKMENT ELEVATION. WHEN NEW SECTIONS OF THE PIPE ARE ADDED, ELEVATIONS SHALL BE RECORDED AT THE TOP OF EXISTING PIPE AND AT THE TOP OF THE NEW PIPE. THIS IS TO TAKE INTO ACCOUNT INTERIM SETTLEMENT, VARIABLE PIPE LENGTHS, AND THREAD LENGTHS IN COUPLING. RESULTS OF SETTLEMENT GUAGE READINGS SHALL BE FORWARDED TO MR. K.J. KIM, EASTERN REGIONAL GEOTECHNICAL MANAGER, WITHIN THREE DAYS.

PREPARED BY: D.TEAGUE	DATE: 11/06		
REVIEWED BY: J.BATTS	DATE: 11/06		

GEOTECHNICAL ENGINEERING UNIT

■ EASTERN REGIONAL OFFICE

□ WESTERN REGIONAL OFFICE

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

EMBANKMENT MONITORING DETAIL

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE
1			3		
2			4		

GEC248235 1/7/2009 b4019_geo_ embankment monitoring detail kbmiller GE-Oce34bond

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C201731

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0029000000-N	SP	Lump Sum		REINFORCED BRIDGE APPROACH FILL, STATION *********** (19+52.00)
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUB-BING
0057000000-E	226	200	CY	UNDERCUT EXCAVATION
0127000000-N	SP	4	EA	EMBANKMENT SETTLEMENT GAUGES
0134000000-E	240	6	CY	DRAINAGE DITCH EXCAVATION
0195000000-E	265	100	CY	SELECT GRANULAR MATERIAL
0196000000-E	270	100	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	300	65	TON	FOUNDATION CONDITIONING MATE-RIAL, MINOR STRS
0366000000-E	310	500	LF	15" RC PIPE CULVERTS, CLASS III
0372000000-E	310	20	LF	18" RC PIPE CULVERTS, CLASS III
0995000000-E	340	144	LF	PIPE REMOVAL
0996000000-N	350	4	EA	PIPE CLEAN-OUT
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1489000000-E	610	1,090	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1498000000-E	610	970	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1519000000-E	610	730	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1560000000-E	620	140	TON	ASPHALT BINDER FOR PLANT MIX, GRADE PG 64-22
2022000000-E	815	23	CY	SUBDRAIN EXCAVATION
2033000000-E	815	17	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	815	100	LF	6" PERFORATED SUBDRAIN PIPE
2055000000-E	815	3	EA	6" SUBDRAIN PIPE WYES, TEES, & ELBOWS

ItemNumber	Sec #	Quantity	Unit	Description
2066000000-N	815	1	EA	CONCRETE PAD FOR SUBDRAIN PIPE OUTLET
2077000000-E	815	6	LF	6" OUTLET PIPE (SUBDRAINS)
2286000000-N	840	8	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	2	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.16
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	1	EA	FRAME WITH COVER, STD 840.54
2549000000-E	846	1,590	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	430	SY	4" CONCRETE SIDEWALK
2605000000-N	848	3	EA	CONCRETE WHEELCHAIR RAMPS
2612000000-E	848	40	SY	6" CONCRETE DRIVEWAY
2655000000-E	852	30	SY	5" MONOLITHIC CONCRETE ISLANDS (KEYED IN)
2800000000-N	858	1	EA	ADJUSTMENT OF CATCH BASINS
2893000000-N	SP	1	EA	CONVERT EXISTING CATCH BASIN TO JUNCTION BOX WITH MANHOLE COVER
3030000000-E	862	162.5	LF	STEEL BM GUARDRAIL
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3215000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	2	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3656000000-E	876	350	SY	FILTER FABRIC FOR DRAINAGE
4082000000-E	903	324	LF	SUPPORTS, WOOD
4096000000-N	904	2	EA	SIGN ERECTION, TYPE D
4102000000-N	904	17	EA	SIGN ERECTION, TYPE E
4108000000-N	904	1	EA	SIGN ERECTION, TYPE F

ItemNumber	Sec #	Quantity	Unit	Description
4116100000-N	904	2	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (D)
4116100000-N	904	4	EA	SIGN ERECTION, RELOCATE, TYPE **** (GROUND MOUNTED) (E)
4141000000-N	907	4	EA	DISPOSAL OF SUPPORT, WOOD
4155000000-N	907	4	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4158000000-N	907	14	EA	DISPOSAL OF SIGN SYSTEM, WOOD
4238000000-N	907	1	EA	DISPOSAL OF SIGN, D, E OR F
4400000000-E	1110	295	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	144	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	124	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4430000000-N	1130	35	EA	DRUMS
4435000000-N	1135	31	EA	CONES
4445000000-E	1145	152	LF	BARRICADES (TYPE III)
4450000000-N	1150	240	HR	FLAGGER
4685000000-E	1205	1,521	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS)
4686000000-E	1205	2,750	LF	THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS)
4695000000-E	1205	52	LF	THERMOPLASTIC PAVEMENT MARKING LINES (8", 90 MILS)
4705000000-E	1205	43	LF	THERMOPLASTIC PAVEMENT MARKING LINES (16", 120 MILS)
4710000000-E	1205	24	LF	THERMOPLASTIC PAVEMENT MARKING LINES (24", 120 MILS)
4721000000-E	1205	2	EA	THERMOPLASTIC PAVEMENT MARKING CHARACTER (120 MILS)
4725000000-E	1205	2	EA	THERMOPLASTIC PAVEMENT MARKING SYMBOL (90 MILS)
4770000000-E	1205	1,824	LF	COLD APPLIED PLASTIC PAVEMENT MARKING LINES, TYPE ** (4") (III)
4900000000-N	1251	17	EA	PERMANENT RAISED PAVEMENT MARKERS
5325600000-E	1510	130	LF	6" WATER LINE
5648000000-N	1515	3	EA	RELOCATE WATER METER
6000000000-E	1605	1,600	LF	TEMPORARY SILT FENCE
6006000000-E	1610	135	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	155	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	280	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	50	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	2	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	500	LF	SAFETY FENCE
6030000000-E	1630	200	CY	SILT EXCAVATION
6036000000-E	1631	350	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	15	SY	COIR FIBER MAT
6042000000-E	1632	900	LF	1/4" HARDWARE CLOTH
6048000000-E	SP	750	SY	FLOATING TURBIDITY CURTAIN
6071030000-E	SP	100	LF	COIR FIBER BAFFLES
6084000000-E	1660	5	ACR	SEEDING & MULCHING
6087000000-E	1660	1.5	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	1.75	TON	FERTILIZER TOPDRESSING
6114000000-N	SP	5	HR	SPECIALIZED HAND MOWING
6117000000-N	SP	12	EA	RESPONSE FOR EROSION CONTROL
6123000000-E	1670	0.25	ACR	REFORESTATION

COMPUTED BY: GSP	DATE: 9/20/2005
CHECKED BY: SLK	DATE: 9/20/2005

PROJECT NO.	SHEET NO.
B-4019	3-A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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 EARTHWORK

LINE	Station	Station	Uncl. Excav. YD^3	Undercut YD3	Embank. + % YD^3	Borrow YD^3	Waste YD^3
BEFORE BRIDGE							
-L-	12+95.00	17+23.67	72		2959	2901	14
STRUCTURE EXCAVATION							
	17+23.67	18+21.35	824		0		824
		SUB TOTAL	896		2959	2901	838
AFTER BRIDGE							
-L-	21+80.33	26+00.00	39		2113	2082	8
-Y4-	10+16.50	11+90.00	26		387	366	5
STRUCTURE EXCAVATION							
	21+20.31	21+80.33	623		0		623
SUB TOTAL			688		2500	2448	636
TOTAL			**1584**		**5459**	**5349**	**1474**
		SUBTOTAL	**1584**		**5459**	**5349**	**1474**
Shoulder Material						169	
Waste to replace Borrow						-1157	-1157
Estimate 5% for topsoil repl.						276	
GRAND TOTALS:			**1584**		**5459**	**4637**	**317**
SAY:			**1600**			**4650**	**317**

Undercut = 200 CY
DDE = 6 CY
Select Granular Material = 100 CY

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

SUMMARY OF BREAKING OF EXISTING ASPHALT PAVEMENT

LINE	STATION TO STATION		LOC LT/RT/CL	YD^2
-L-	16+00.00	17+23.67	CL	462
-L-	21+80.33	24+00.00	CL	1,072
-Y4-	10+19.00	11+20.00	CL	498
			TOTAL	**2,032**
			SAY	**2,040**

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION TO STATION		LOC LT/RT/CL	YD^2
-L-	12+95.00	16+00.00	CL	1,503
-L-	24+00.00	26+00.00	CL	1,059
-Y4-	11+20.00	11+90.00	CL	207
			TOTAL	**2,770**
			SAY	**2,770**

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOLDER 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
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

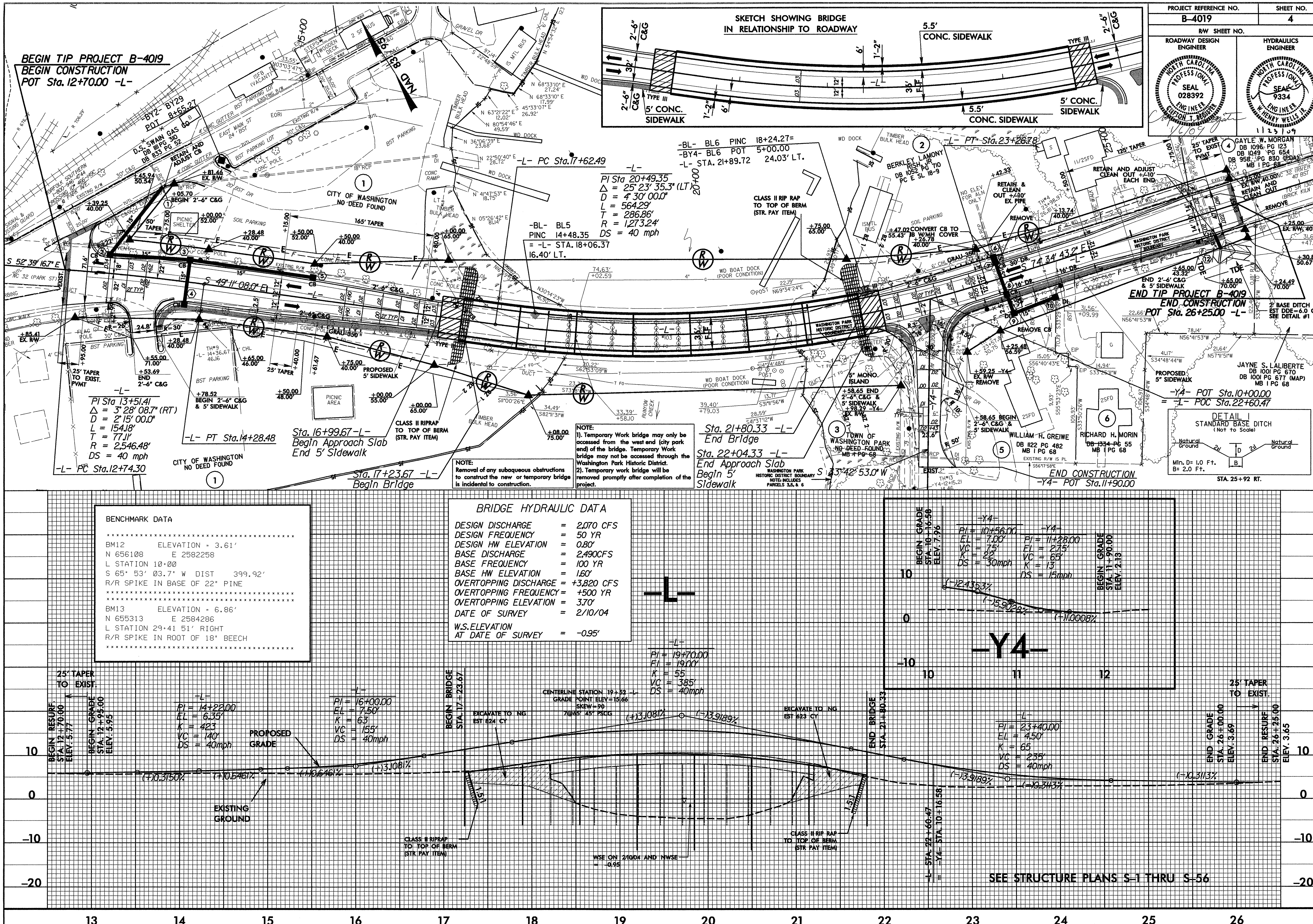
				LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS							IMP. ATTEN. TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
LINE	BEG. STA.	END STA.	LOC.	STRAIGHT	SHOP CURVED	DOUBLE FACED	APPR. END	TRAIL. END			APPR. END	TRAIL. END	APPR. END	TRAIL. END	XI MOD	TYPE III	GRAU 350	TEMP. GRAU-350	AT-1	CAT-1	VI MOD	EA	G	NG		
-L-	15+61.67	17+11.67	RT.	150.00			17+12.50		7.5		131.25		5.000			1	1									
-L-	21+92.33	23+42.33	LT.	150.00			21+91.50		7.5		131.25		5.000			1	1									
SUBTOTAL				**300.00**												**2**	**2**									
TYPE III @ 18.75' X 2				**-37.50**																						
TYPE GRAU-350 50' X 2				**-100.00**																						
TOTAL				**162.50**												**2**	**2**									
SAY				**162.50**												**2**	**2**									
ADDITIONAL GR POSTS - 5 EA																										

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

STATION / SIZE / THICKNESS OR GAUGE	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT IN ELEVATION	INVERT OUT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) 12" 0.064	15" 0.064	18" 0.064	24" 1.63	30" 0.079	36" 0.079	42" 0.109	48" 0.109
13+69.39	LT.	1																					
13+19.00	LT.	2		5.1																			
13+45.00	LT.	2	1		2.1	-1.5			96														
14+09.00	LT.	3		5.6																			
13+64.00	LT.	3	2		2.5	2.1			92														
14+09.00	RT.	4		5.6																			
14+09.00	RT.	4	3		2.6	2.5			52														
14+80.00	LT.	5	4		3.5	2.5			140														
15+50.00	LT.	5		6.5																			
22+80.00	RT.																						
23+43.00	LT.																						
23+43.00	LT.	6		5.8																			
23+43.00	LT.	7		4.9																			
23+43.00	LT.	7	6		-1.5	-1.8			4														
23+43.00	CL																						
23+43.00	CL	8	7		0.5	0.4			40														
23+43.00	RT.	8		4.9																			
23+43.00	RT.	9	8		0.7	0.5			24														
23+43.00	RT.	9		2.8																			
23+71.00	RT.	10	9		0.8	0.7			52														
23+96.00	RT.	10		2.8																			
25+86.00	LT.																						
25+90.00	RT.																						
25+90.00	LT.																						
25+90.00	RT.	11																					
25+90.00	RT.	12	11		0.0	-0.1				20													
25+96.00	RT.																						
							TOTAL:		**500**	**20**													

STATION	LOCATION	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.	QUANITIES FOR DRAINAGE STRUCTURES *TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') PER EACH (0' THRU 5.0')	LIN. FT. A 5' THRU 10.0'	LIN. FT. 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 TWO GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.29	ADJUSTMENT OF CATCH BASINS	CONVERT EX. CB TO JB W/ MH COVER	MH COVER AND FRAME STD. 840.54	PIPE CLEANOUT	TRAFFIC BEARING DI, STD. 840.35	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" YD^3 STD. 840.72	CONC. & BRICK PIPE PLUG, YD^3 STD. 840.71	PIPE REMOVAL (FEET)	REMARKS
13+69.39	LT.																					1									
13+19.00	LT.						1			1		1																			
13+45.00	LT.																														
14+09.00	LT.						1			1		1																			
13+64.00	LT.																														
14+09.00	RT.						1			1			1																		
14+09.00	RT.																														
14+80.00	LT.																														
15+50.00	LT.						1			1		1																			
22+80.00	RT.																													131	REMOVE EXIST. PIPE (SIZE UNKNOWN) & CATCH BASIN
23+43.00	LT.																								1						RETAIN & CLEAN OUT EX. 18" RCP LT.
23+43.00	LT.																						1	1							
23+43.00	LT.						1	2		1			1																		
23+43.00	LT.																														
23+43.00	CL																														
23+43.00	CL																														
23+43.00	RT.						1			1		1																			
23+43.00	RT.																														
23+43.00	RT.						1							1	1																
23+71.00	RT.																														
23+96.00	RT.						1							1	1																
25+86.00	LT.																								1						
25+90.00	RT.																								1						
25+90.00	LT.																								1						
25+90.00	RT.																														RETAIN EXISTING STRUCTURE
25+90.00	RT.																														
25+96.00	RT.																													13	REMOVE EXIST. PIPE (SIZE UNKNOWN)
TOTAL:							**8**	**2**		**6**		**4**	**2**	**2**	**2**							**1**	**1**	**1**	**4**					**144**	

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.) GRATED 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



BENCHMARK DATA

BM12 ELEVATION = 3.61'
N 656108 E 2582258
L STATION 10+00
S 65° 53' 03.7" W DIST 399.92'
R/R SPIKE IN BASE OF 22" PINE

BM13 ELEVATION = 6.86'
N 655313 E 2584286
L STATION 29+41 51' RIGHT
R/R SPIKE IN ROOT OF 18" BEECH

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	2,070 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	0.80'
BASE DISCHARGE	=	2,490CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	1.60'
OVERTOPPING DISCHARGE	=	+3,820 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	3.70'
DATE OF SURVEY	=	2/10/04
W.S.ELEVATION AT DATE OF SURVEY	=	-0.95'