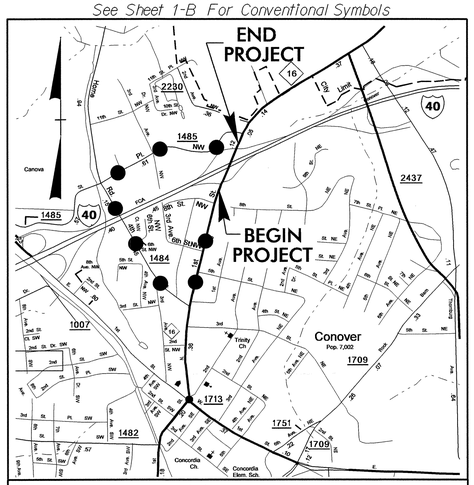
09/08/99

TIP PROJECT: B-4456

CONTRACT: C202729

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

OFF-SITE DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

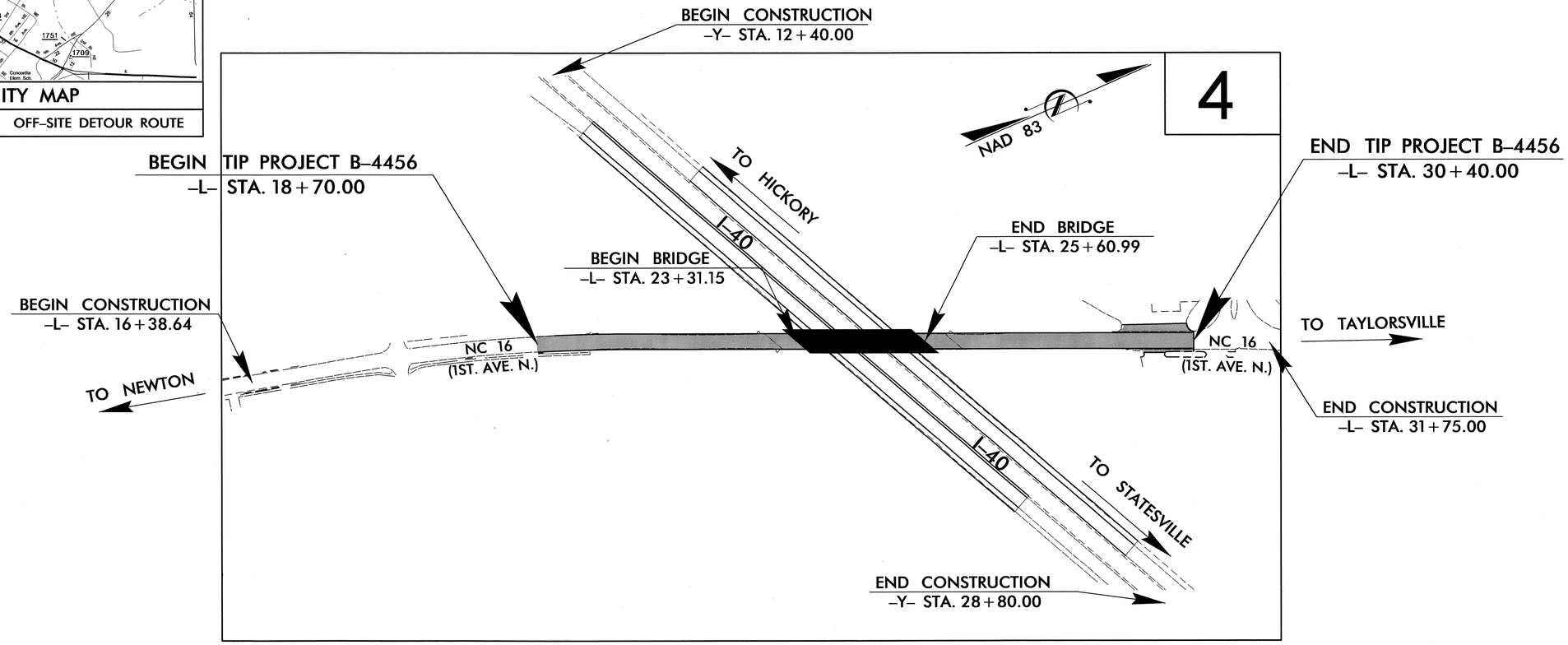
CATAWBA COUNTY

	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4456	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33708.1.1	BRSTP-16 (25)	PE
33708.2.1	BRSTP-16 (25)	R/W & UTIL.
33708.3.1	BRSTP-16 (25)	CONST.

LOCATION: BRIDGE NO. 49 OVER I-40 ON NC 16 (FIRST AVENUE NORTH)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, AND WALLS



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 2011 = 8110 VPD
ADT 2030 = 15000 VPD
DHV = 10 %
D = 60 %
T = 5 % *
V = 50 MPH
* TTST 3% DUAL 2%
FUNC CLASS = URBAN ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4456 = 0.178 MI
LENGTH STRUCTURE TIP PROJECT B-4456 = 0.044 MI
TOTAL LENGTH OF TIP PROJECT B-4456 = 0.222 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 19, 2010

LETTING DATE: January 17, 2012

JAMES A. SPEER, PE
PROJECT ENGINEER

NYA K. BOAYUE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 23240 ENGINEER LINDA M. JOHNS
8-31-11
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20111 ENGINEER K. BOAYUE
8/31/11
P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

Art McMillan P.E.
STATE HIGHWAY DESIGN ENGINEER

31-AUG-2011 11:45
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$$$$USERNAME$$$$

ROADWAY DESIGN ENGINEER

9/15/11

8/17/99

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C	SURVEY CONTROL SHEET
2 THRU 2-B	TYPICAL SECTIONS, PAVEMENT SCHEDULE, AND CROSSOVER PATTERN DETAILS
2-C THRU 2-E	ANCHORGE FOR FRAMES AND METHOD OF PIPE INSTALLATION
2-F	TRAFFIC BEARING DROP INLET
2-G	GUARDRAIL TRANSITION
2-H	BRIDGE APPROACH FILL - SUB REGIONAL TIER
3	SUMMARY OF QUANTITIES
3-A THRU 3-B	PAVEMENT REMOVAL SUMMARY, EARTHWORK SUMMARY, CONCRETE SIDEWALK SUMMARY, CURB AND GUTTER SUMMARY, SUMMARY OF GUARDRAIL,AND SUMMARY OF DRAINAGE QUANTITIES.
4	PLAN SHEET
5 THRU 6	PROFILE SHEET
TMP-1 THRU TMP-15	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-1 THRU SIGN-4	SIGNING PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS
X-1A	CROSS-SECTION SUMMARY
X-1 THRU X-22	CROSS-SECTIONS
S-1 THRU S-32	STRUCTURE PLANS
W-1 THRU W-4	MSE RETAINING WALL

GENERAL NOTES

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 AND NO. 225.05 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 AND NO.560.02.

UNDERDRAINS:

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

GUARDRAIL:

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

TEMPORARY SHORING:

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

SUBSURFACE PLANS:

NO SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT. THE CONTRACTOR SHOULD MAKE HIS OWN INVESTIGATION AS TO THE SUBSURFACE CONDITIONS.

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE City of Conover

AT&T North Carolina

Duke Energy

Charter Communications

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED 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	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II
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
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35	Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
848.01	Concrete Sidewalk
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
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

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3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4456	1B

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:

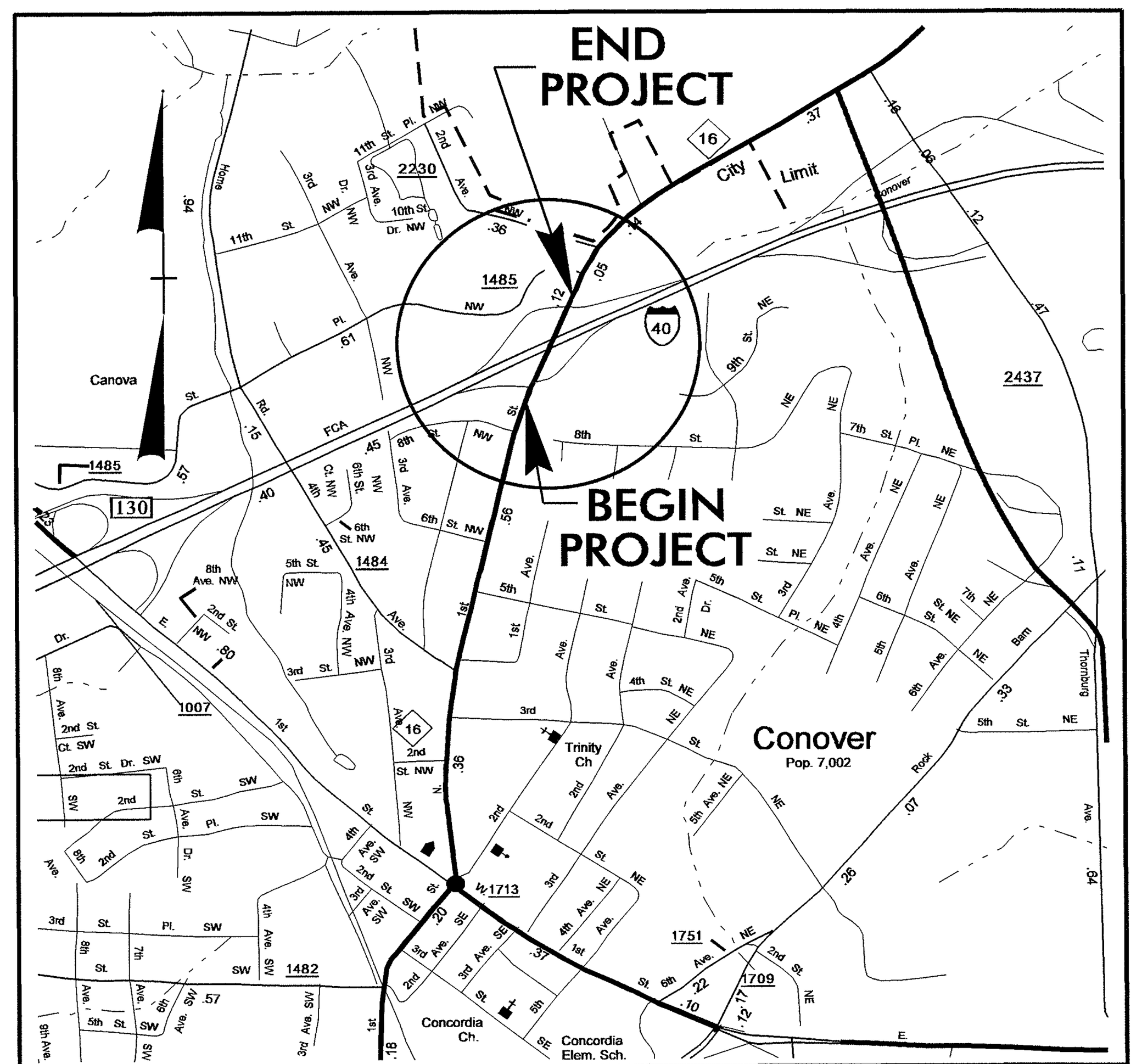
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.
33708.1.1	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4456



VICINITY MAP

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BL3	BL-3	723146.0211	1341888.1777	1001.76	14+38.94	21.36 LT
BL4	BL-4	723354.3549	1341940.3923	995.88	16+52.80	22.20 LT
B44561	GPS B4456-1	723831.8860	1342173.4480	983.67	21+81.85	25.90 RT
B44562	GPS B4456-2	724379.2240	1342409.1060	982.85	27+77.76	23.59 RT
BL5	BL-5	724762.9754	1342504.8411	977.36	31+65.36	43.98 LT
BL6	BL-6	725021.8634	1342692.4454	967.92	34+76.68	30.87 LT

BY1

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY17	BY1-7	723345.9599	1341817.5163	994.89	16+12.70	138.27 LT
BY18	BL-4	723354.3549	1341940.3923	995.88	16+52.80	22.20 LT

BY2

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY29	BL-4	723354.3549	1341940.3923	995.88	16+52.80	22.20 LT
BY210	BY2-10	723270.1236	1342107.7998	999.78	16+16.03	161.74 RT

BY4

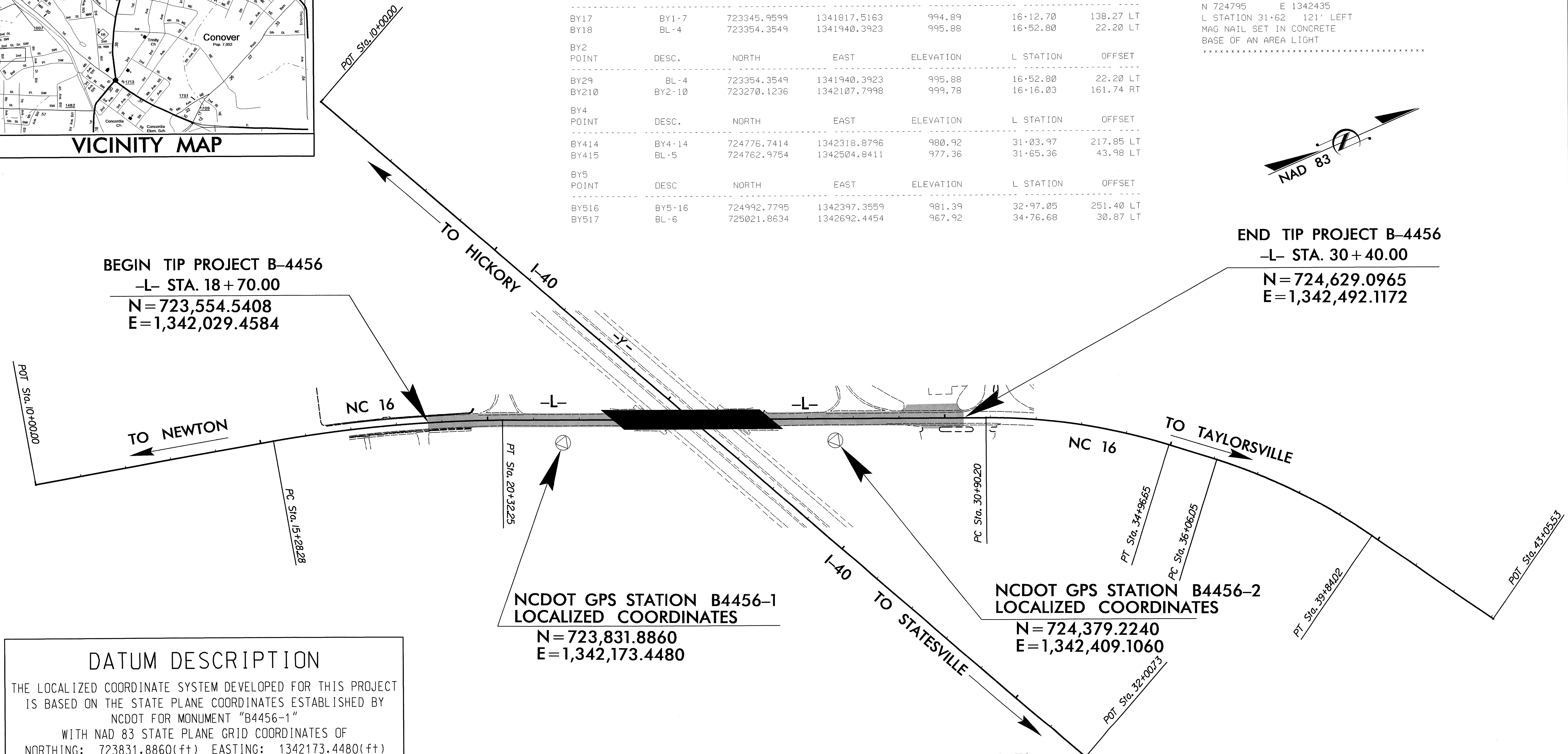
POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY414	BY4-14	724776.7414	1342318.8796	980.92	31+03.97	217.85 LT
BY415	BL-5	724762.9754	1342504.8411	977.36	31+65.36	43.98 LT

BY5

POINT	DESC	NORTH	EAST	ELEVATION	L STATION	OFFSET
BY516	BY5-16	724992.7795	1342397.3559	981.39	32+97.05	251.40 LT
BY517	BL-6	725021.8634	1342692.4454	967.92	34+76.68	30.87 LT

BM#1 ELEVATION = 973.20′
N 723821 E 1341960
L STATION 20+87 166′ LEFT
8" SPIKE SET IN ROOT OF 18" MAPLE

BM#2 ELEVATION = 978.33′
N 724795 E 1342435
L STATION 31+62 121′ LEFT
MAG NAIL SET IN CONCRETE
BASE OF AN AREA LIGHT



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4456-1"
WITH NAD 83 STATE PLANE GRID COORDINATES OF
NORTHING: 723831.8860(ft) EASTING: 1342173.4480(ft)
ELEVATION: 983.67(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999863909
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4456-1" TO -L- STATION 18+70 IS
S 27°26′13″ W 312.50
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4456_LS_CONTROL.TXT
   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

△ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

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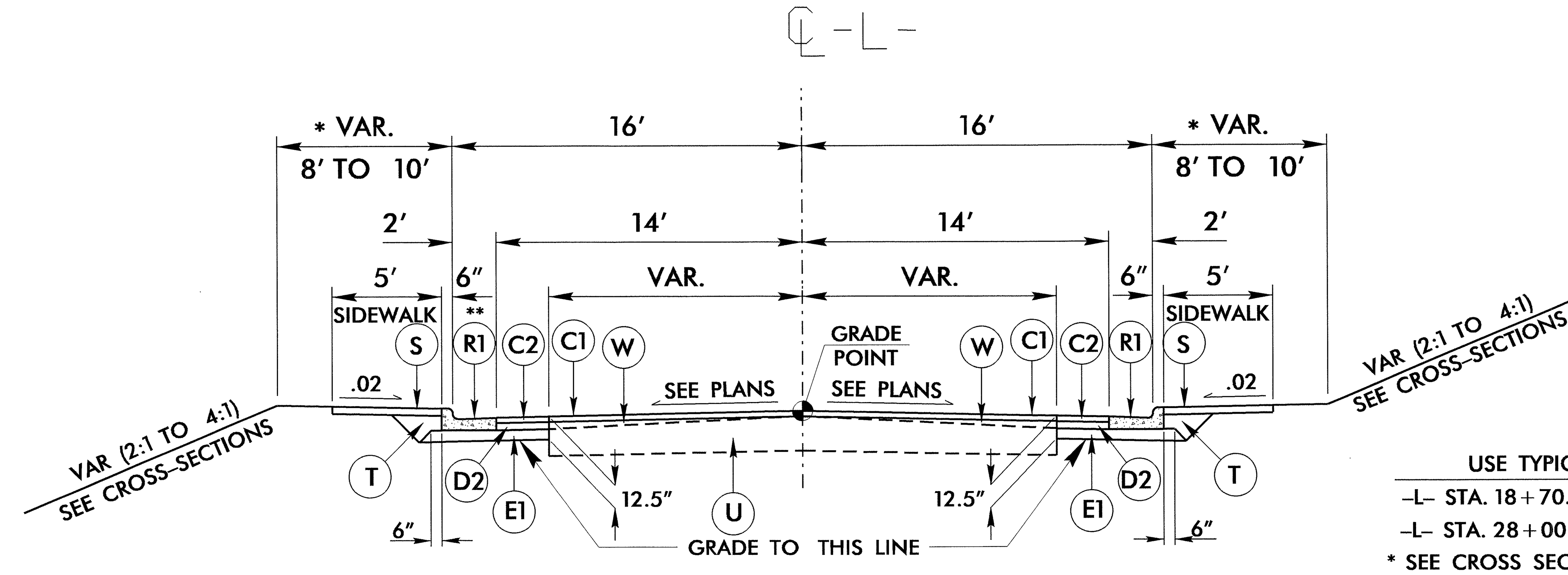
PROJECT REFERENCE NO.	SHEET NO.
B-4456	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PAVEMENT SCHEDULE

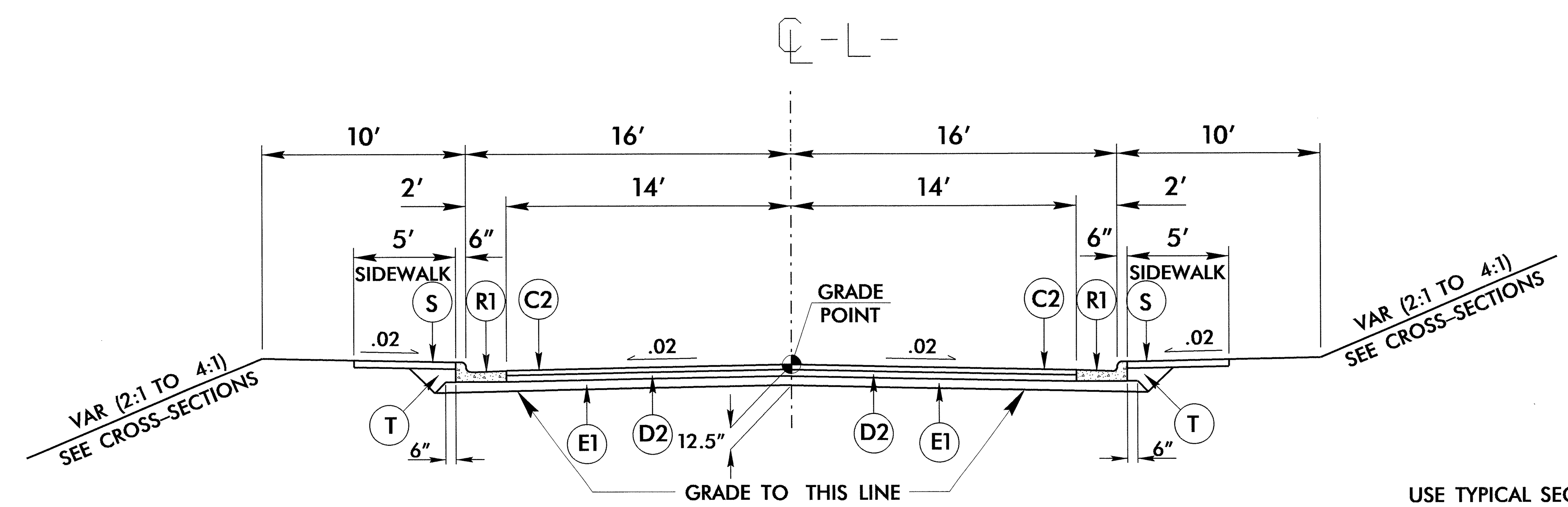
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH
C4	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C5	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C6	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
E3	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. APPROX. 9" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
R1	2'-6" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	PROP. MILLING EXISTING PAVEMENT, 0 TO 1.5" DEPTH.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL 1)

NOTE: ALL SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



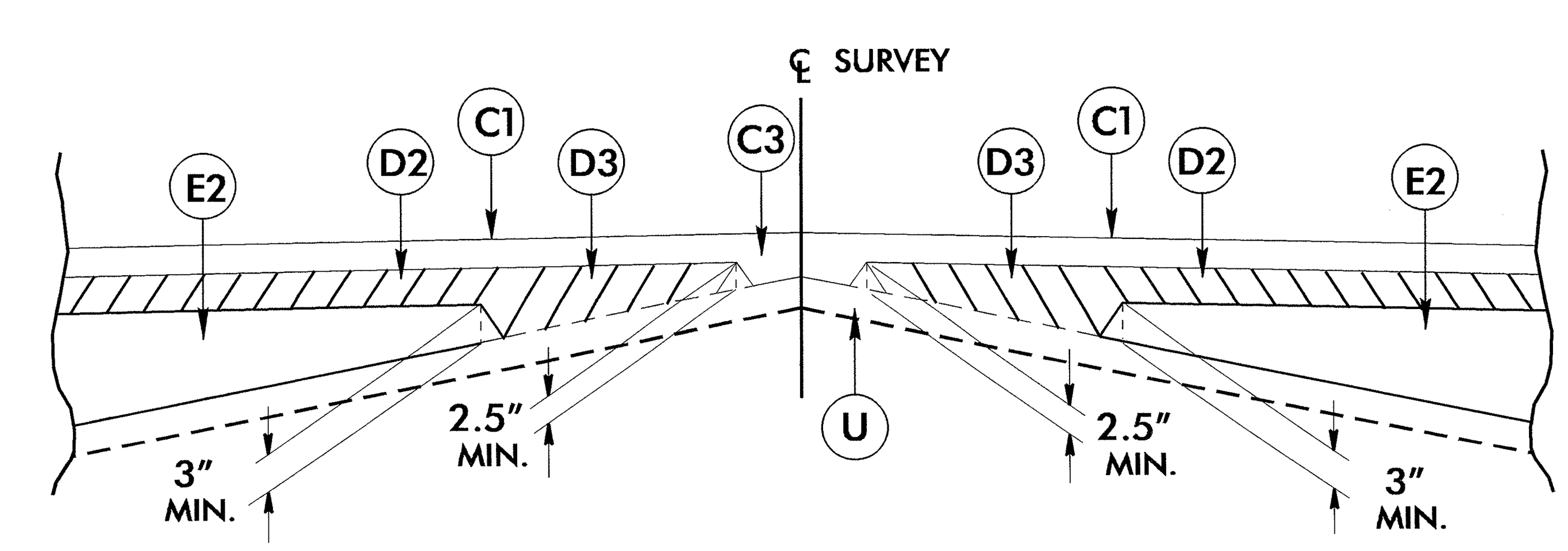
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 18+70.00 to -L- STA. 20+50.00
-L- STA. 28+00.00 to -L- STA. 30+40.00
* SEE CROSS SECTIONS FOR BERM WIDTHS
** BEGIN CURB & GUTTER AT -L- STA. 19+00.00 (LT)



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STA. 20+50.00 to -L- STA. 23+31.15 (BEGIN BRIDGE)
-L- STA. 25+60.99 (END BRIDGE) to -L- STA. 28+00.00



Detail Showing Method of Wedging

DETAIL 1

6/2/99

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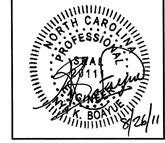
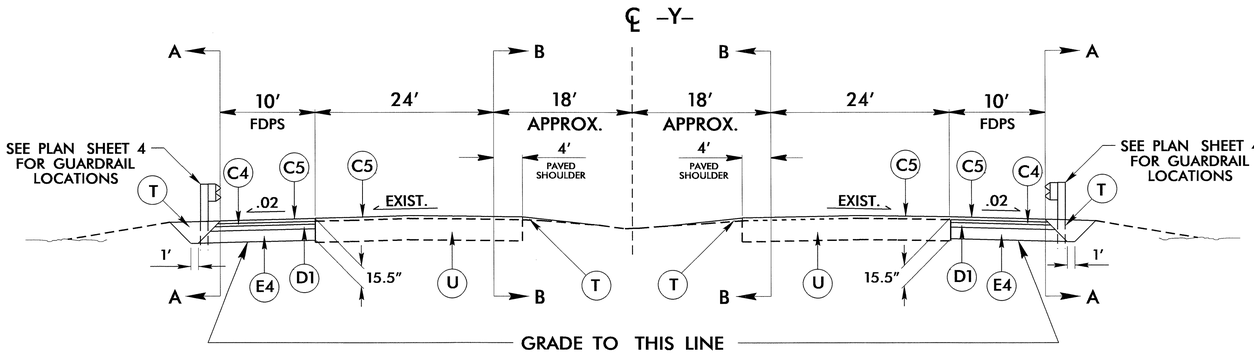
PROJECT REFERENCE NO.	SHEET NO.
B-4456	2-A

ROADWAY DESIGN ENGINEER



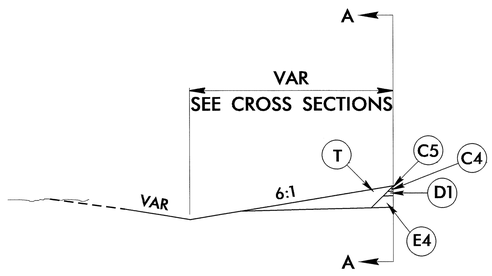
PAVEMENT DESIGN ENGINEER



TYPICAL SECTION NO. 3

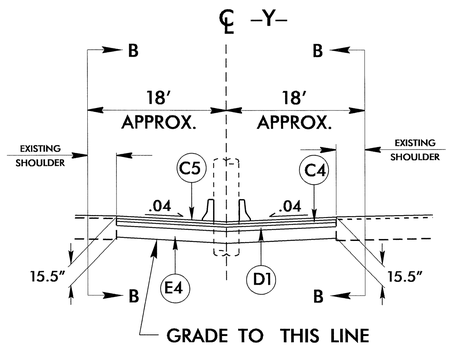
USE TYPICAL SECTION NO. 3
-Y- STA. 14+50.00 to -Y- STA. 24+75.00 (RT.)
-Y- STA. 16+50.00 to -Y- STA. 26+75.00 (LT.)

PAVEMENT SCHEDULE	
C4	1.5" S9.5C
C5	1.5" S9.5D
C6	3.0" S9.5C
D1	3.5" I19.0C
E3	7" B25.0C
E4	9" B25.0C
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	MILLING 0 TO 1.5" DEPTH



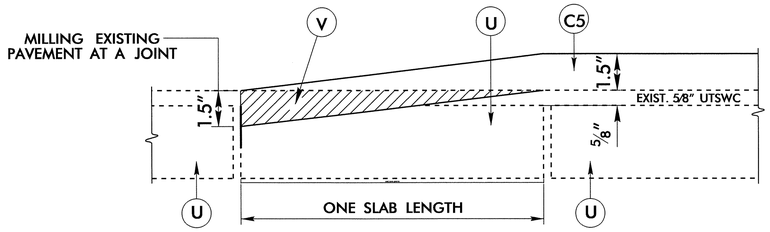
SECTION A-A

-Y- STA. 21+80.00 to -Y- STA. 23+09.00 (RT.)
-Y- STA. 18+50.00 to -Y- STA. 20+50.00 (LT.)
-Y- STA. 22+00.00 to -Y- STA. 23+00.00 (LT.)

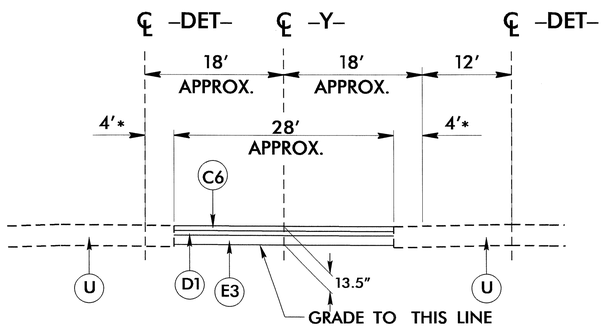


SECTION B-B

-Y- STA. 20+09.00 to -Y- STA. 21+25.00
SEE ROADWAY STD. DRAWINGS 862.01, SHEET 1 OF 11



-Y- OVERLAY TIE-IN DETAIL



TYPICAL SECTION NO. 4

SEE DETAILS ON SHEET 2-B

USE TYPICAL SECTION NO. 4
-Y- STA. 13+90.00 to -Y- STA. 17+03.00
-Y- STA. 24+23.00 to -Y- STA. 27+26.00
* EXISTING FULL DEPTH PAVED SHOULDER

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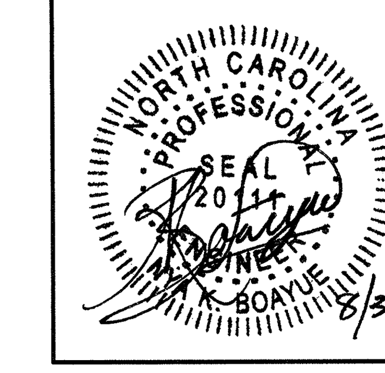
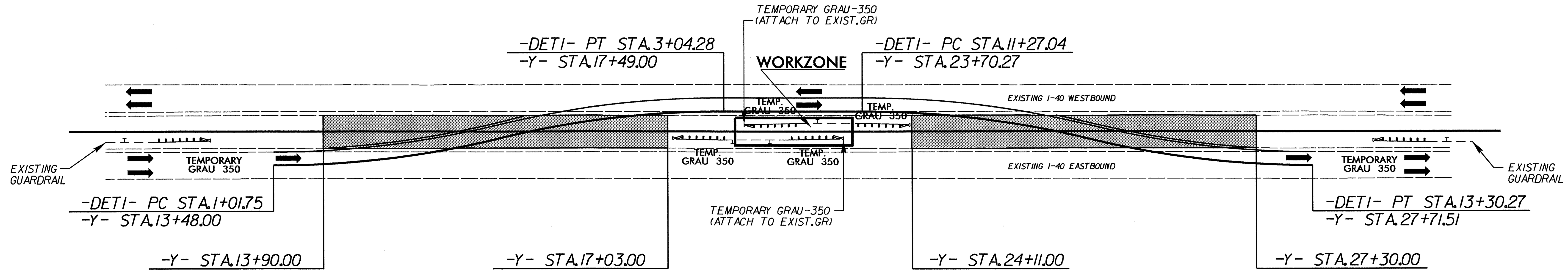
PROJECT REFERENCE NO.	SHEET NO.
B-4456	2-B

ROADWAY DESIGN ENGINEER



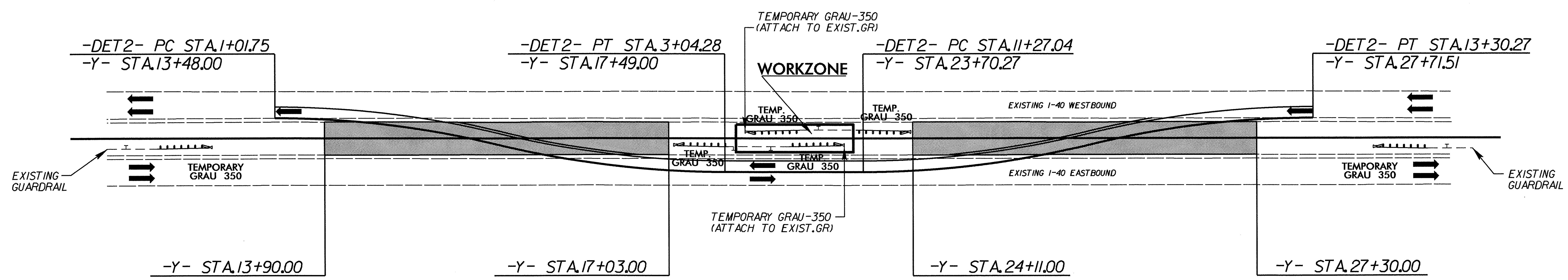
SKETCH OF CROSSOVER PAVEMENT IN RELATION TO TRAFFIC PATTERN



EASTBOUND

MEDIAN CROSSOVER, SEE TRAFFIC CONTROL PLANS
SEE SHEET 2-A "TYPICAL SECTION NO.4"
SCALE: NOT TO SCALE

-DET1-	
PI Sta 1+01.75 Δ = 13° 39′ 07.3″ (LT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′	PI Sta 3+04.28 Δ = 13° 39′ 07.3″ (RT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′
PI Sta 11+27.04 Δ = 13° 39′ 07.3″ (RT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′	PI Sta 13+30.27 Δ = 13° 39′ 07.3″ (LT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′



WESTBOUND

MEDIAN CROSSOVER, SEE TRAFFIC CONTROL PLANS
SEE SHEET 2-A "TYPICAL SECTION NO.4"
SCALE: NOT TO SCALE

-DET2-	
PI Sta 1+01.75 Δ = 13° 39′ 07.3″ (RT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′	PI Sta 3+04.28 Δ = 13° 39′ 07.3″ (LT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′
PI Sta 11+27.04 Δ = 13° 39′ 07.3″ (LT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′	PI Sta 13+30.27 Δ = 13° 39′ 07.3″ (RT) D = 6° 44′ 26.4″ L = 202.53′ T = 101.75′ R = 850.00′

MEDIAN CROSSOVER PAVEMENT

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-4456	2-C

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

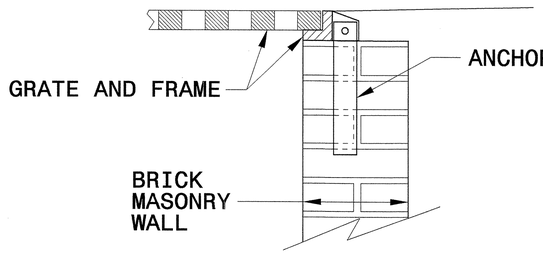
ENGLISH DETAIL DRAWING FOR

ANCHORAGE FOR FRAMES

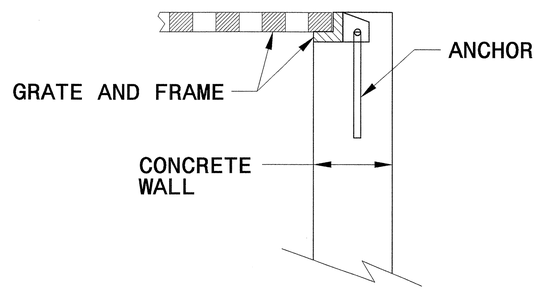
BRICK/CONCRETE/PRECAST CONCRETE

SHEET 1 OF 1

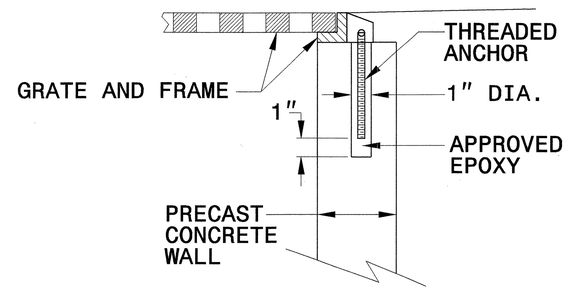
840D25



BRICK MASONRY CONSTRUCTION



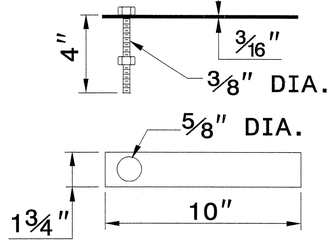
CONCRETE CONSTRUCTION



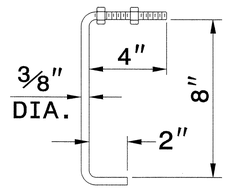
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

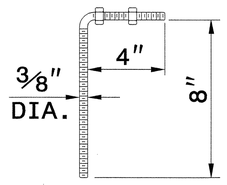
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



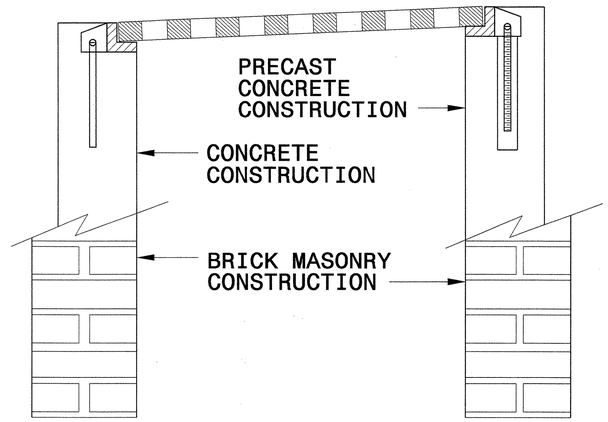
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



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 JOE S. HOWARD
8/31/11

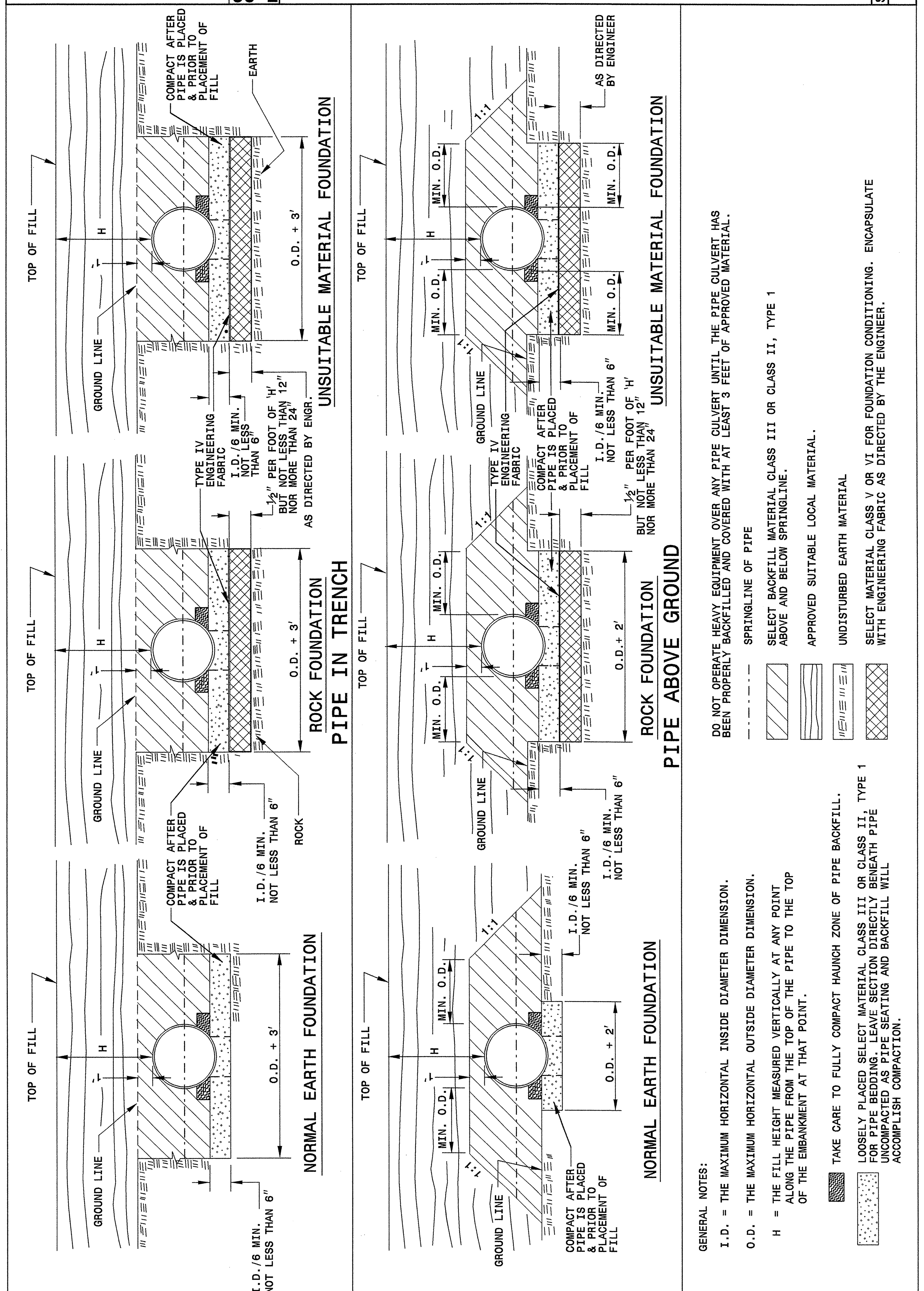
PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

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: 11/3/08
FILE SPEC.:

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$SCENAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4456	2-D

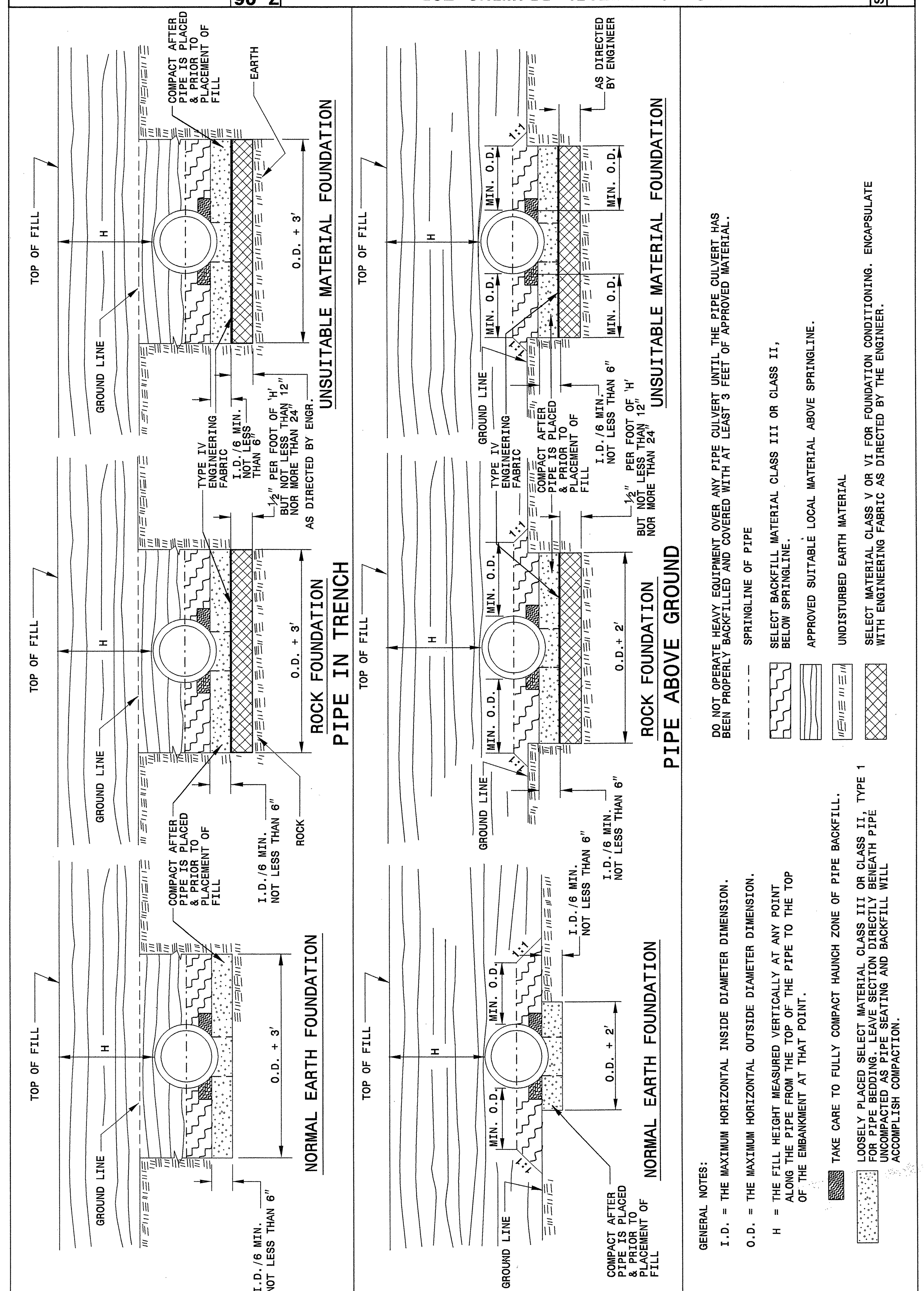

NORMAL EARTH FOUNDATION
ROCK FOUNDATION
PIPE IN TRENCH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
TOP OF FILL
GROUND LINE
COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6"
O.D. + 3'
O.D. + 2'
MIN. O.D.
TYPE IV ENGINEERING FABRIC
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGR.
AS DIRECTED BY ENGINEER
ROCK
EARTH
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.

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

SHEET 1 OF 3
300D01


NORMAL EARTH FOUNDATION
ROCK FOUNDATION
PIPE IN TRENCH
UNSUITABLE MATERIAL FOUNDATION
PIPE ABOVE GROUND
TOP OF FILL
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COMPACT AFTER PIPE IS PLACED & PRIOR TO PLACEMENT OF FILL
I.D./6 MIN. NOT LESS THAN 6"
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TYPE IV ENGINEERING FABRIC
½" PER FOOT OF 'H' BUT NOT LESS THAN 12" NOR MORE THAN 24"
AS DIRECTED BY ENGR.
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EARTH
GENERAL NOTES:
I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.
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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.
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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.

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

SHEET 2 OF 3
300D01

NORTH CAROLINA PROFESSIONAL SEAL 022966 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: DATE:
CHECKED BY: DATE: 7/30/09
FILE SPEC: ericward/stds/stdstodetails/30001/0300d01.dgn

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jhowerton AT PS237501

5/14/99

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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

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

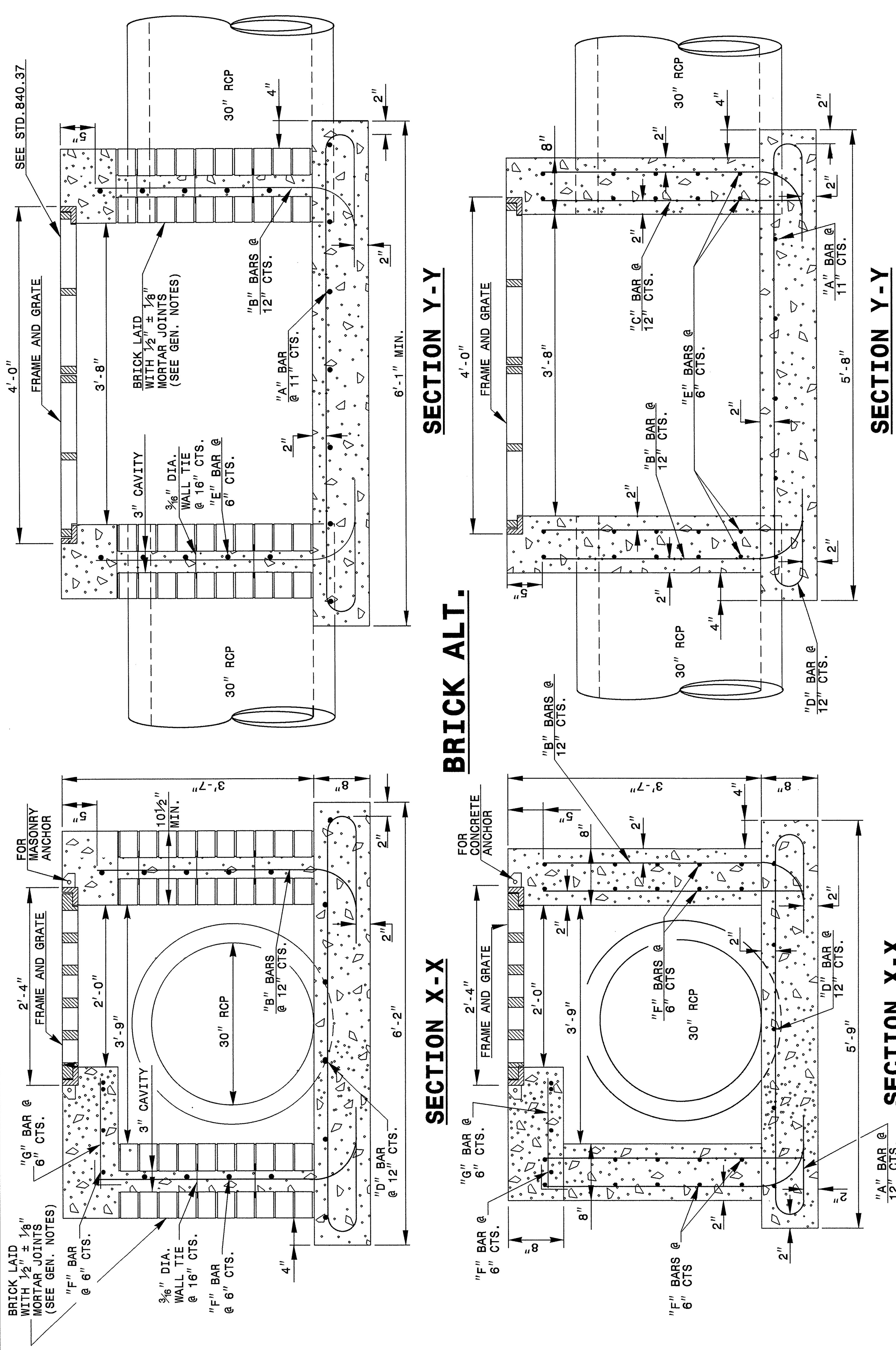
SEE PLATE FOR TITLE

ORIGINAL BY: KKaspf DATE: 5-15-09
MODIFIED BY: DATE:
CHECKED BY: DATE: 7/5/09
FILE SPEC: /ericward/stds/stdstodetails/30001/0300d01.dgn

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 022986

PROJECT REFERENCE NO. B-4456
SHEET NO. 2-E

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING DROP INLET FOR DOUBLE FRAME AND GRATES — SHEET 1 OF 2 840D35



NOTES:
- HORIZONTAL AND VERTICAL DIMENSIONS MAY BE ADJUSTED AS THE FIELD CONDITIONS AND/OR ALTERNATE DESIGN REQUIRE.
- MAXIMUM HEIGHT FOR THIS STRUCTURE SHALL BE 14'-0".
- ALL ADJUSTMENTS ARE TO BE MADE AS DIRECTED BY THE ENGINEER.
- DEPTH OF STEEL GRATE WILL REQUIRE DEEPER SEAT ALONG SHORT WALLS.

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

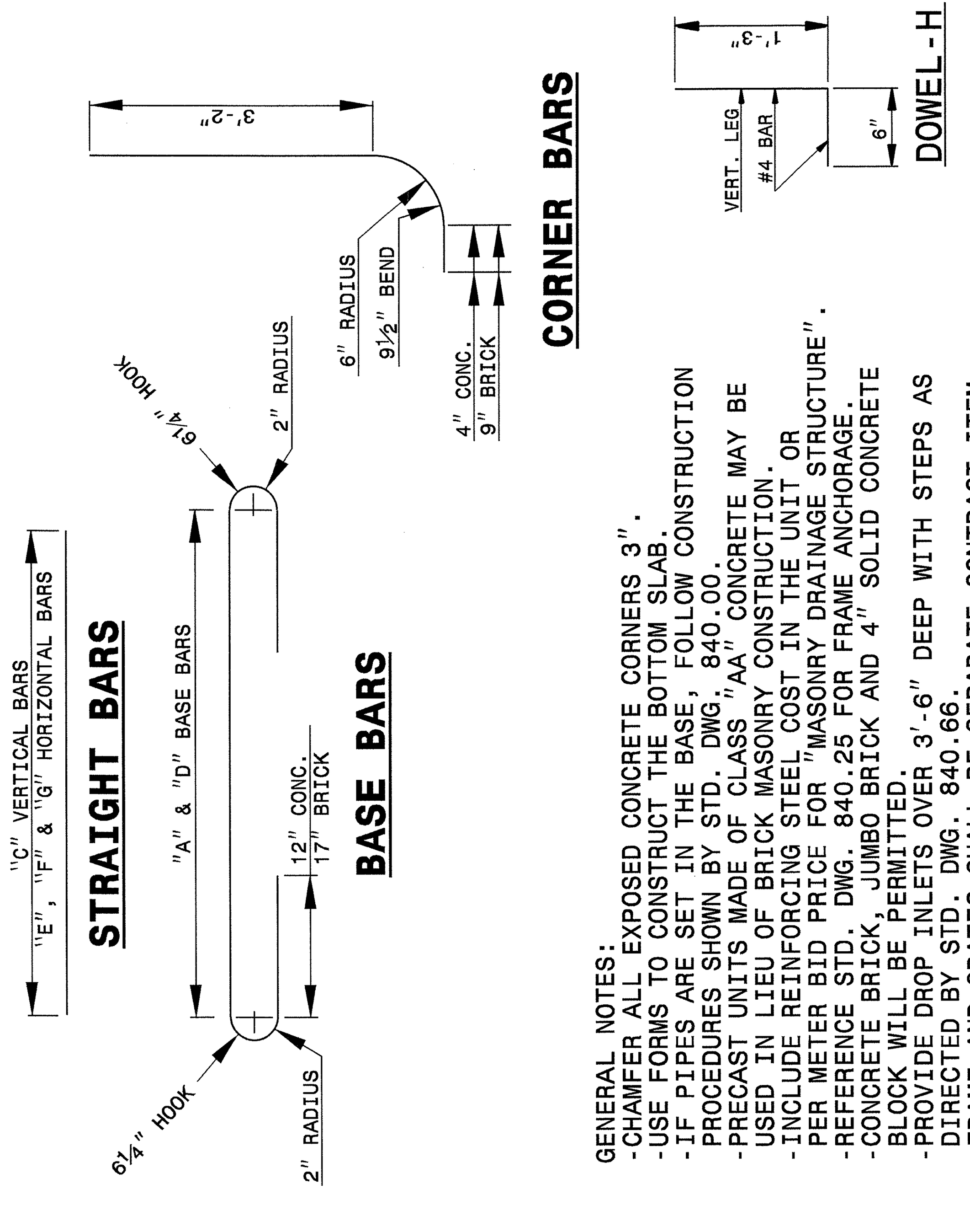
ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR DOUBLE FRAME AND GRATES

SHEET 1 OF 2
840D35

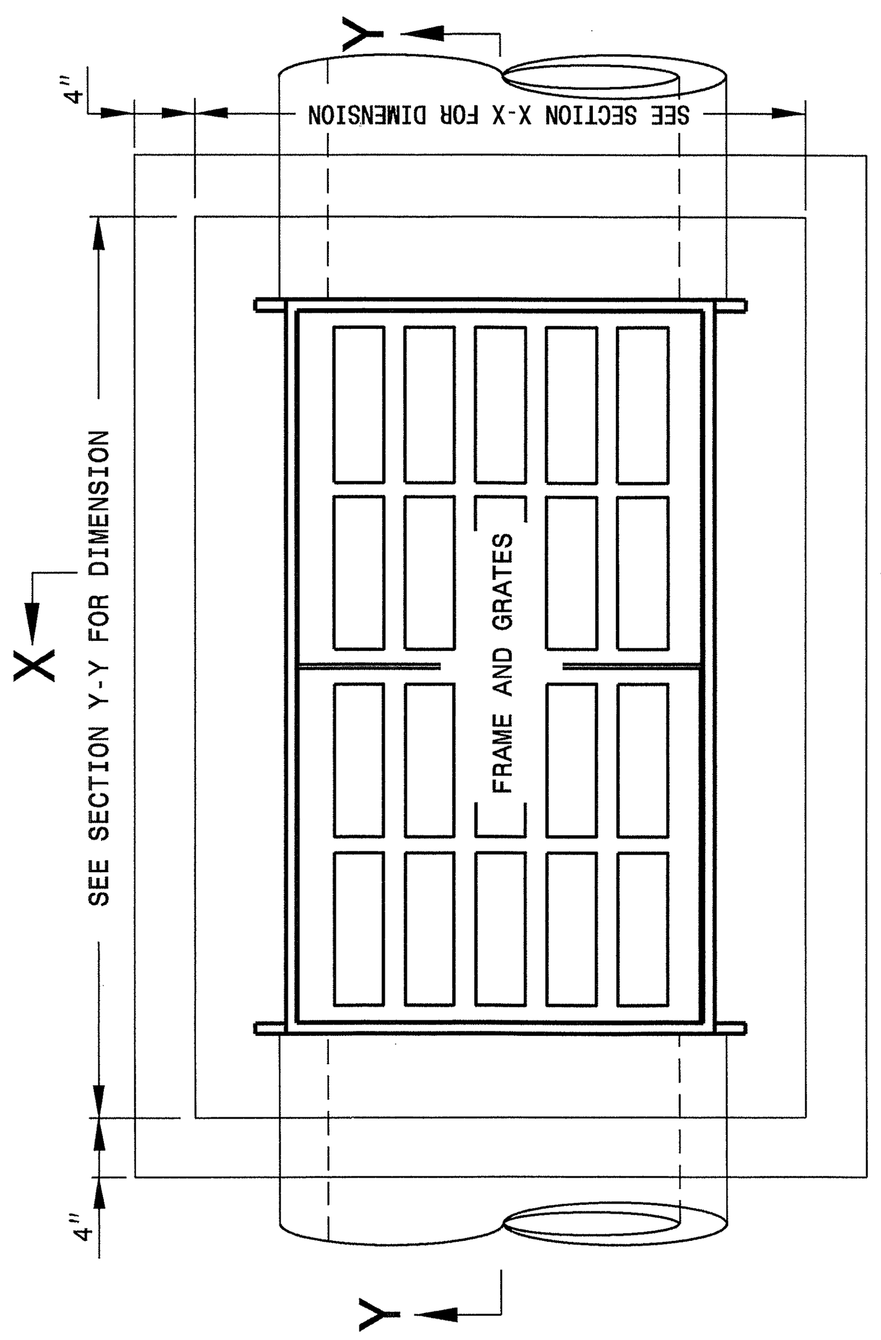
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C. — ENGLISH DETAIL DRAWING FOR TRAFFIC BEARING DROP INLET FOR DOUBLE FRAME AND GRATES — SHEET 2 OF 2 840D35

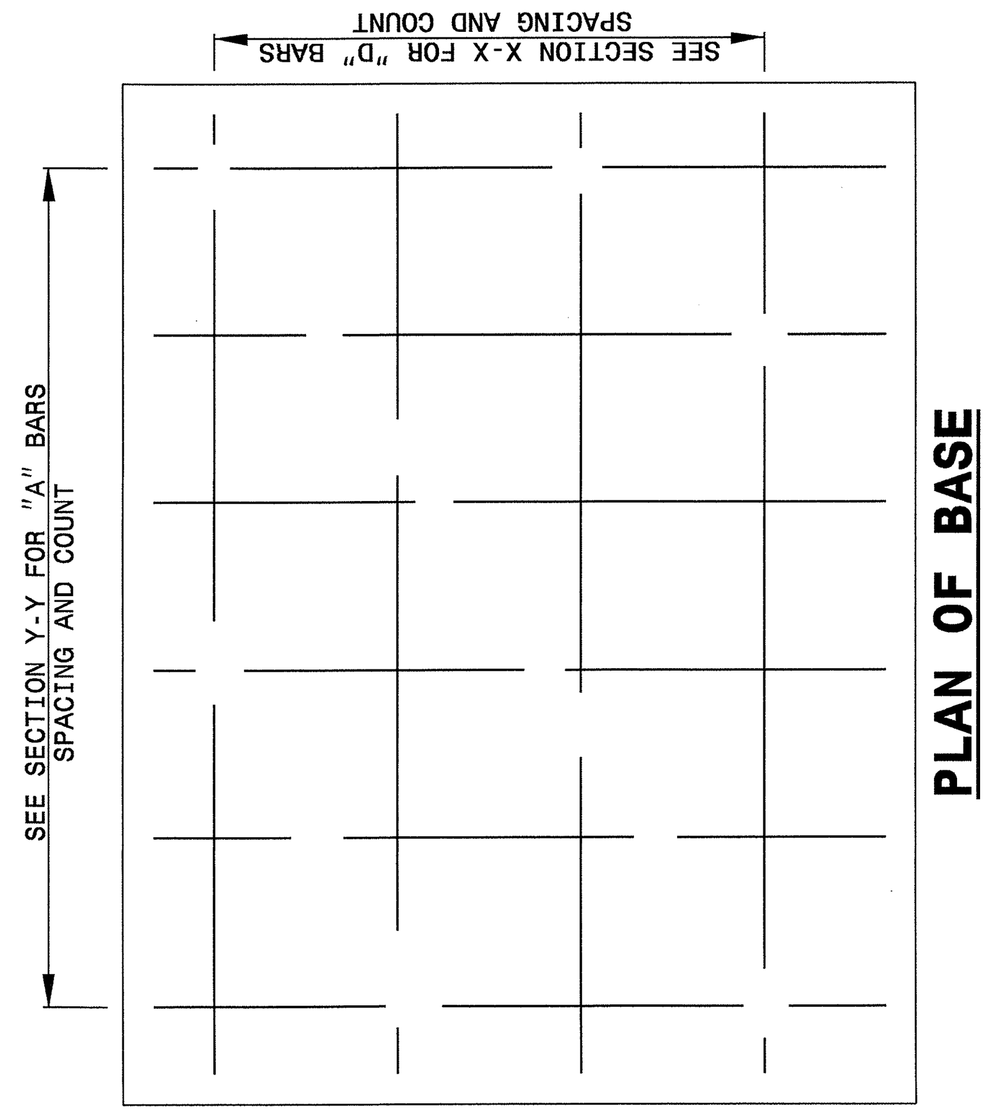
BILL OF MATERIALS

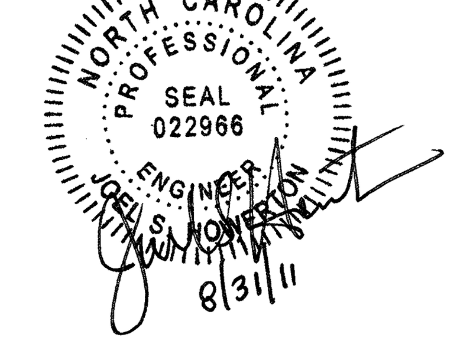
COMMON		CONCRETE ALT.			BRICK ALT.		
BAR	SIZE	LENGTH	QUANTITY	WEIGHT	LENGTH	QUANTITY	WEIGHT
A	#5	8'-1"	6	51	9'-4½"	6	59
B	#5	4'-3½"	12	58	5'-4½"	12	67
C	#5	3'-8"	12	46	0	0	0
D	#5	8'-0"	6	50	9'-3½"	6	58
E	#5	4'-9"	24	119	4'-9"	12	59
F	#5	4'-8"	24	117	4'-8"	12	58
G	#5	2'-3½"	7	9	2'-3½"	4	11
H	#4	1'-9"	5	6	1'-9"	5	6
REINF. STEEL (TOTAL WEIGHT LBS.)				456			318
CONCRETE IN TOP SLAB (CU.YDS.)				0.22			0.24
CONCRETE IN BASE (CU.YDS.)				0.80			0.93
CONCRETE IN WALLS (CU.YDS.)				1.52			0.50
BRICK IN WALLS (CU.YDS.)				-0-			0.67
CONCRETE TOTAL (CU.YDS.)				2.54			1.67
BRICK & CONCRETE TOTAL (CU.YDS.)				2.54			2.34
CONC. CU.YDS. IN WALL/FOOT OF HEIGHT				0.35			0.11
BRICK CU.YDS. IN WALL/FOOT OF HEIGHT				-0-			0.15
LBS. OF REINF. STEEL IN WALL/FOOT OF HEIGHT				103.2			72.0



GENERAL NOTES:
- CHAMFER ALL EXPOSED CONCRETE CORNERS 3".
- USE FORMS TO CONSTRUCT THE BOTTOM SLAB.
- IF PIPES ARE SET IN THE BASE, FOLLOW CONSTRUCTION PROCEDURES SHOWN BY STD. DWG. 840.00.
- PRECAST UNITS MADE OF CLASS "AA" CONCRETE MAY BE USED IN LIEU OF BRICK MASONRY CONSTRUCTION.
- INCLUDE REINFORCING STEEL COST IN THE UNIT OR PER METER BID PRICE FOR "MASONRY DRAINAGE STRUCTURE".
- REFERENCE STD. DWG. 840.25 FOR FRAME ANCHORAGE.
- CONCRETE BRICK, JUMBO BRICK AND 4" SOLID CONCRETE BLOCK WILL BE PERMITTED.
- PROVIDE DROP INLETS OVER 3'-6" DEEP WITH STEPS AS DIRECTED BY STD. DWG. 840.66.
- FRAME AND GRATES SHALL BE SEPARATE CONTRACT ITEM.







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

ENGLISH DETAIL DRAWING FOR
TRAFFIC BEARING DROP INLET
FOR DOUBLE FRAME AND GRATES

SHEET 2 OF 2
840D35

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

ORIGINAL BY: T.S.Spell DATE: Sept.2000
MODIFIED BY: DATE:
CHECKED BY: [illegible] DATE: 8/9/11
FILE SPEC.: w:details/metric/stand/840d35m&e.dgn

09-AUG-2011 09:48
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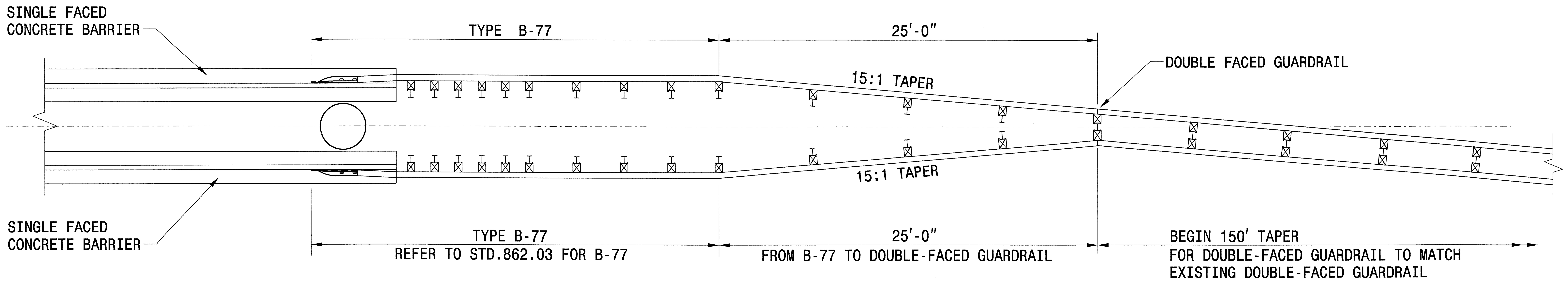
tspell AT CSD244552

PROJECT REFERENCE NO.	SHEET NO.
B - 4456	2 - G



NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER
8/31/11

CONTRACT STANDARDS AND DEVELOPMENT UNIT
PLANS AND STANDARDS SECTION
Office 919-707-6950 FAX 919-250-4119

GUARDRAIL TRANSITION

ORIGINAL BY: TSS DATE: 8-16-11
MODIFIED BY: DATE:
CHECKED BY: DATE: 8/16/11
FILE SPEC.: s:details/stand/grtransition.dgn

16-AUG-2011 11:18
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$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
B-4456	2-H

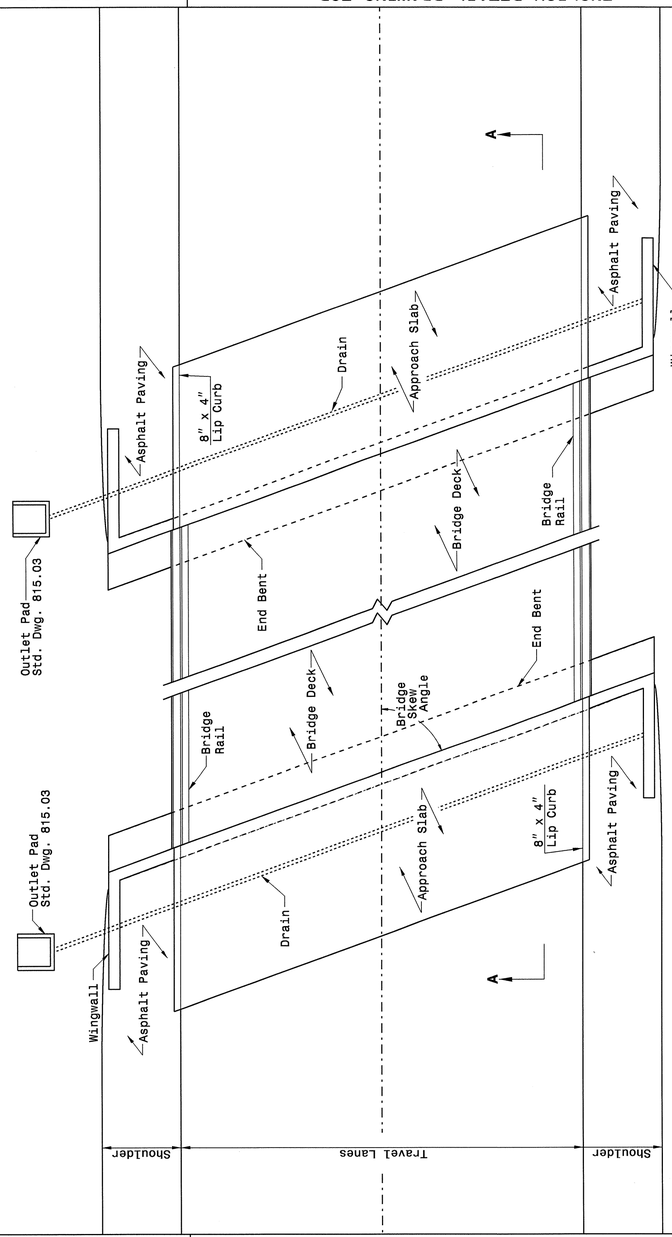
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SUB REGIONAL TIER

BRIDGE APPROACH FILLS

ENGLISH DETAIL DRAWING FOR

SHEET 1 OF 2
422D11



PLAN VIEW
12' APPROACH SLAB

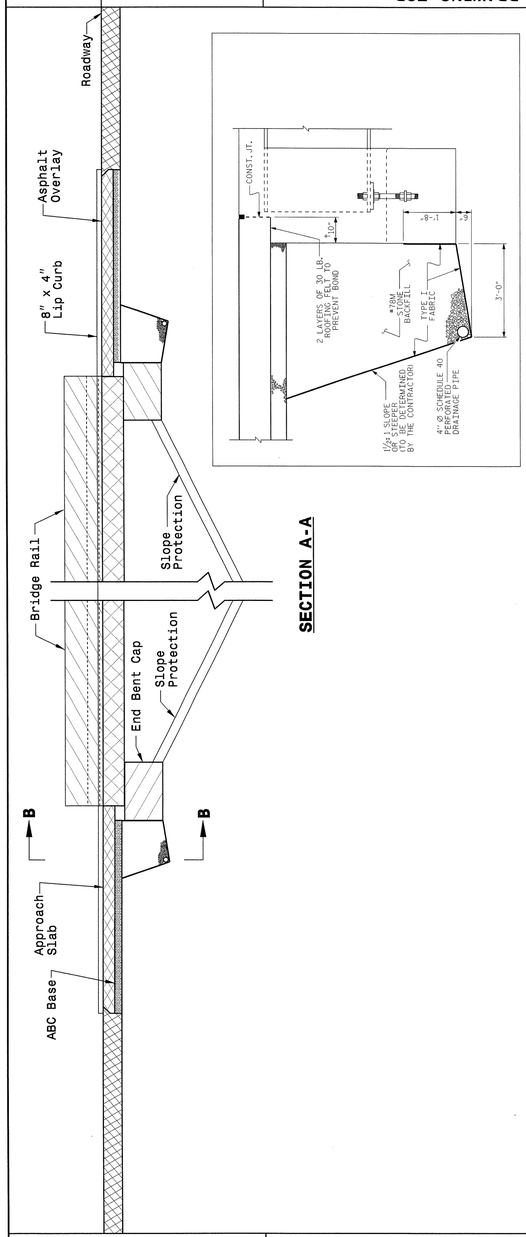
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

SUB REGIONAL TIER

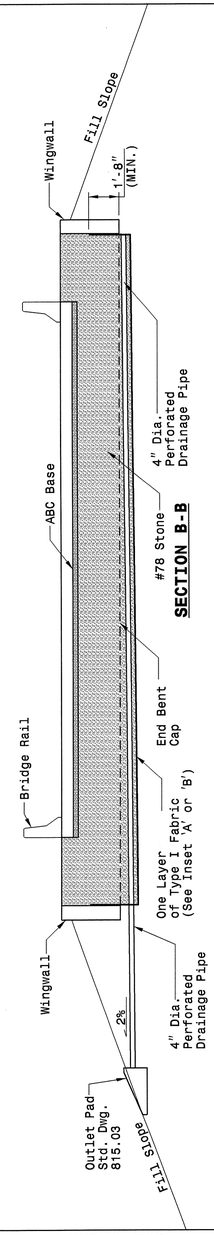
BRIDGE APPROACH FILLS

ENGLISH DETAIL DRAWING FOR

SHEET 2 OF 2
422D11



SECTION A-A



SECTION B-B

12' APPROACH SLAB

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

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
SUB REGIONAL TIER

SHEET 1 OF 2
422D11

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

ENGLISH DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
SUB REGIONAL TIER

SHEET 2 OF 2
422D11

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

BRIDGE APPROACH FILLS

SUB REGIONAL TIER

ORIGINAL BY: K. A. Kempf DATE: 6-10-08
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: kkempf\english\bridge approach fills.dgn

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOHN S. HOWARD
9/15/11

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

52899

PROJECT REFERENCE NO.	SHEET NO.
B-4456	3

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202729

ItemNumber	Sec #	Quantity	Unit	Description
0000100000-N	800	Lump Sum		MOBILIZATION
0000400000-N	801	Lump Sum		CONSTRUCTION SURVEYING
0030000000-N	SP	Lump Sum		BRIDGE APPROACH FILL - SUB REGIONAL TIER, STATION ******* (24+46.07-L-)
0038000000-E	SP	100	CY	SHALLOW UNDERCUT
0043000000-N	226	Lump Sum		GRADING
0050000000-E	226	1	ACR	SUPPLEMENTARY CLEARING & GRUBBING
0057000000-E	226	250	CY	UNDERCUT EXCAVATION
0080000000-E	SP	200	TON	CLASS IV SUBGRADE STABILIZATION
0134000000-E	240	540	CY	DRAINAGE DITCH EXCAVATION
0196000000-E	270	950	SY	FABRIC FOR SOIL STABILIZATION
0318000000-E	SP	143	TON	FOUNDATION CONDITIONING MATERIAL, MINOR STRS
0320000000-E	SP	450	SY	FOUNDATION CONDITIONING FABRIC
0343000000-E	SP	196	LF	15" SIDE DRAIN PIPE
0354000000-E	SP	244	LF	**" RC PIPE CULVERTS, CLASS ***** (18", V)
0366000000-E	SP	84	LF	15" RC PIPE CULVERTS, CLASS III
0448300000-E	SP	204	LF	18" RC PIPE CULVERTS, CLASS IV
0448400000-E	SP	392	LF	24" RC PIPE CULVERTS, CLASS IV
0582000000-E	SP	92	LF	15" CS PIPE CULVERTS, 0.064" THICK
0588000000-E	SP	120	LF	18" CS PIPE CULVERTS, 0.064" THICK
0594000000-E	SP	16	LF	24" CS PIPE CULVERTS, 0.064" THICK
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (15", 0.064")
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (18", 0.064")
0636000000-E	SP	2	EA	**" CS PIPE ELBOWS, *****" THICK (24", 0.064")
0995000000-E	340	1,069	LF	PIPE REMOVAL
0996000000-N	350	2	EA	PIPE CLEAN-OUT
1220000000-E	545	100	TON	INCIDENTAL STONE BASE
1489000000-E	610	710	TON	ASPHALT CONC BASE COURSE, TYPE B25.0B
1491000000-E	610	2,420	TON	ASPHALT CONC BASE COURSE, TYPE B25.0C
1498000000-E	610	520	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B
1503000000-E	610	1,010	TON	ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0C
1519000000-E	610	510	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5B
1523000000-E	610	600	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5C
1524200000-E	610	780	TON	ASPHALT CONC SURFACE COURSE, TYPE S9.5D
1575000000-E	SP	280	TON	ASPHALT BINDER FOR PLANT MIX
1577000000-E	SP	45	TON	POLYMER MODIFIED ASPHALT BINDER FOR PLANT MIX
1891000000-E	SP	800	SY	GENERIC PAVING ITEM MILLING CONCRETE PAVEMENT, 0" TO 1-1/2" DEPTH
2022000000-E	SP	56	CY	SUBDRAIN EXCAVATION
2033000000-E	SP	42	CY	SUBDRAIN FINE AGGREGATE
2044000000-E	SP	250	LF	6" PERFORATED SUBDRAIN PIPE
2070000000-N	SP	1	EA	SUBDRAIN PIPE OUTLETS
2077000000-E	SP	6	LF	6" OUTLET PIPE (SUBDRAINS)
2253000000-E	840	1.79	CY	PIPE COLLARS
2286000000-N	840	21	EA	MASONRY DRAINAGE STRUCTURES
2308000000-E	840	7.48	LF	MASONRY DRAINAGE STRUCTURES
2364000000-N	840	2	EA	FRAME WITH TWO GRATES, STD 840.16
2365000000-N	840	7	EA	FRAME WITH TWO GRATES, STD 840.22
2374000000-N	840	2	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (E)
2374000000-N	840	4	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (F)
2374000000-N	840	3	EA	FRAME WITH GRATE & HOOD, STD 840.03, TYPE ** (G)
2396000000-N	840	3	EA	FRAME WITH COVER, STD 840.54
2549000000-E	846	1,570	LF	2'-6" CONCRETE CURB & GUTTER
2591000000-E	848	830	SY	4" CONCRETE SIDEWALK
2724000000-E	857	150	LF	PRECAST REINFORCED CONCRETE BARRIER, SINGLE FACED
3030000000-E	862	1,537.5	LF	STEEL BM GUARDRAIL
3060000000-E	862	1,537.5	LF	STEEL BM GUARDRAIL, DOUBLE FACED
3150000000-N	862	5	EA	ADDITIONAL GUARDRAIL POSTS
3210000000-N	862	2	EA	GUARDRAIL ANCHOR UNITS, TYPE CAT-1
3215000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE III
3270000000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350
3317000000-N	862	4	EA	GUARDRAIL ANCHOR UNITS, TYPE B-77
3360000000-E	863	2,582	LF	REMOVE EXISTING GUARDRAIL
3389100000-N	SP	6	EA	GUARDRAIL ANCHOR UNITS, TYPE 350 TEMPORARY
3649000000-E	876	9	TON	RIP RAP, CLASS B
3656000000-E	876	495	SY	FILTER FABRIC FOR DRAINAGE
4072000000-E	903	105	LF	SUPPORTS, 3-LB STEEL U-CHANNEL
4102000000-N	904	3	EA	SIGN ERECTION, TYPE E
4108000000-N	904	4	EA	SIGN ERECTION, TYPE F
4155000000-N	907	9	EA	DISPOSAL OF SIGN SYSTEM, U-CHANNEL
4400000000-E	1110	404	SF	WORK ZONE SIGNS (STATIONARY)
4405000000-E	1110	558	SF	WORK ZONE SIGNS (PORTABLE)
4410000000-E	1110	157	SF	WORK ZONE SIGNS (BARRICADE MOUNTED)
4415000000-N	1115	2	EA	FLASHING ARROW PANELS, TYPE C
4422000000-N	1120	240	DAY	CHANGEABLE MESSAGE SIGN (SHORT TERM)
4430000000-N	1130	510	EA	DRUMS
4445000000-E	1145	115	LF	BARRICADES (TYPE III)
4465000000-N	1160	2	EA	TEMPORARY CRASH CUSHIONS
4480000000-N	1165	2	EA	TMIA
4485000000-E	1170	670	LF	PORTABLE CONCRETE BARRIER
4510000000-N	SP	480	HR	LAW ENFORCEMENT
4650000000-N	1251	52	EA	TEMPORARY RAISED PAVEMENT MARKERS
4815000000-E	1205	18,452	LF	PAINT PAVEMENT MARKING LINES (6")
4847000000-E	1205	4,650	LF	POLYUREA PAVEMENT MARKING LINES (4", **********) (HIGHLY REFLECTIVE ELEMENTS)
4847100000-E	1205	4,612	LF	POLYUREA PAVEMENT MARKING LINES (6", **********) (HIGHLY REFLECTIVE ELEMENTS)
4855000000-E	1205	4,612	LF	REMOVAL OF PAVEMENT MARKING LINES (6")
4905000000-N	1253	93	EA	SNOWPLOWABLE PAVEMENT MARKERS
6000000000-E	1605	2,650	LF	TEMPORARY SILT FENCE
6006000000-E	1610	270	TON	STONE FOR EROSION CONTROL, CLASS A
6009000000-E	1610	290	TON	STONE FOR EROSION CONTROL, CLASS B
6012000000-E	1610	320	TON	SEDIMENT CONTROL STONE
6015000000-E	1615	5	ACR	TEMPORARY MULCHING
6018000000-E	1620	200	LB	SEED FOR TEMPORARY SEEDING
6021000000-E	1620	1.75	TON	FERTILIZER FOR TEMPORARY SEEDING
6024000000-E	1622	500	LF	TEMPORARY SLOPE DRAINS
6027000000-N	1622	8	EA	INLET PROTECTION AT TEMPORARY SLOPE DRAINS
6029000000-E	SP	1,000	LF	SAFETY FENCE
6030000000-E	1630	550	CY	SILT EXCAVATION
6036000000-E	1631	5,500	SY	MATTING FOR EROSION CONTROL
6037000000-E	SP	10	SY	COIR FIBER MAT
6038000000-E	SP	800	SY	PERMANENT SOIL REINFORCEMENT MAT
6042000000-E	1632	950	LF	1/4" HARDWARE CLOTH
6071010000-E	SP	525	LF	WATTLE
6071020000-E	SP	140	LB	POLYACRYLAMIDE (PAM)
6071030000-E	SP	130	LF	COIR FIBER BAFFLE
6071050000-E	SP	1	EA	**" SKIMMER (1-1/2")
6084000000-E	1660	6	ACR	SEEDING & MULCHING
6087000000-E	1660	3	ACR	MOWING
6090000000-E	1661	50	LB	SEED FOR REPAIR SEEDING
6093000000-E	1661	0.25	TON	FERTILIZER FOR REPAIR SEEDING
6096000000-E	1662	125	LB	SEED FOR SUPPLEMENTAL SEEDING
6108000000-E	1665	3.75	TON	FERTILIZER TOPDRESSING
6114500000-N	SP	30	MHR	SPECIALIZED HAND MOWING
6117000000-N	SP	30	EA	RESPONSE FOR EROSION CONTROL

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12/06/07

COMPUTED BY: TAH	DATE: 2/09/10		
CHECKED BY: NKB	DATE: 2/09/10		

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4456	3-A

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
18+70.00 -L-	24+25.00 -L-	36	6064	6028	
SUBTOTAL:		36	6064	6028	
24+75.00 -L-	29+50.00 -L-	5	5585	5580	
SUBTOTAL:		5	5585	5580	
14+50.00 -Y- (RT)	26+75.00 -Y- (RT)	897	66		831
SUBTOTAL:		897	66		831
14+50.00 -Y- (LT)	26+75.00 -Y- (LT)	618	116		502
SUBTOTAL:		618	116		502
TOTAL:		1556	11831	11776	1333
DEDUCTION FOR MSE WALL REINF.			-2880	-2880	
WATSE IN LIEU OF BORROW				-1333	-1333
PROJECT TOTALS:		1556	8951	7395	
5% FOR BORROW PIT				370	
GRAND TOTALS:		1556		7765	
SAY:		1600		8000	

DRAINAGE DITCH EXCAVATION = 540 CY
UNDERCUT EXCAVATION CONTINGENCY = 250 CY
SHALLOW UNDERCUT CONTINGENCY = 100 CY

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Clearing and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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.

PAVEMENT REMOVAL SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	20+50.00	23+09.00	CL	695.59
-L-	25+97.00	28+00.00	CL	584.43
-Y-	14+50.00	24+75.00	RT	985.38
-Y-	16+50.00	26+75.00	LT	1026.70
-Y-	13+90.00	17+03.00	CL	1045.60
-Y-	24+11.00	27+30.00	CL	1058.44
			TOTAL:	5396.14
			SAY:	5400

4" CONCRETE SIDEWALK SUMMARY

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	YD^2
-L-	19+40.00	22+85.79	LT	192.11
-L-	18+70.00	23+29.57	RT	255.32
-L-	25+62.57	29+08.48	LT	192.17
-L-	26+06.35	29+47.92	RT	189.76
			TOTAL:	829.36
			SAY:	830.00

2'-6" CURB AND GUTTER SUMMARY

SURVEY LINE	STATION	STATION	LENGTH
-L-	19+00.00 (LT)	22+89.25 (LT)	389.25
-L-	18+70.00 (RT)	23+26.11 (RT)	456.11
-L-	26+02.89 (RT)	29+37.92 (RT)	335.03
-L-	29+37.92 (RT)		22.54
-L-	25+86.03 (LT)	29+00.11 (LT)	334.08
-L-	29+00.11 (LT)		28.52
		TOTAL:	1565.53
		SAY:	1570

"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
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS					IMPACT ATTENUATOR TYPE 350			REMOVE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	TYPE 350	CAT-1	TYPE III	TYPE B-77	TEMP. TYPE 350	NO.	PERMITTED G	PERMITTED NG		
-L-	21+75.00	23+06.38	LT.	137.50'				21+75.00	7'-6"	12'-0"		62.63'		1.25'	1		1							
-L-	25+36.22	27+50.00	LT.	225.00'			27+50.00		7'-6"	12'-0"	145.03'		2.90'		1		1							
-L-	21+50.00	23+55.92	RT.	212.50'			21+50.00		7'-6"	12'-0"	137.17'		2.74'		1		1							
-L-	25+85.76	27+50.00	RT.	150.00'				27+25.00	7'-6"	12'-0"		70.49'		1.41'	1		1							
-L-	21+42.33	22+68.34	LT.																				127'	
-L-	21+88.54	23+13.79	RT.																				126'	
-L-	25+89.12	27+15.77	LT.																				127'	
-L-	26+35.19	27+61.80	RT.																				127'	
-Y-	12+40.00	20+30.00	MEDIAN	50.00'		790.00'		20+30.00	10'-0"	13'-0" +/-		150.00'		5'				2	3					
-Y-	21+05.00	28+80.00	MEDIAN	50.00'		775.00'		21+05.00	10'-0"	13'-0" +/-		150.00'		4'				2	3					
-Y-	15+84.00	20+34.00	RT.	550.00'			18+84.64	21+11.00	10'-0"	13'-0" +/-	50.00'				1	1								
-Y-	20+17.00	25+67.00	LT.	550.00'			22+66.73	20+28.93	10'-0"	13'-0" +/-	50.00'				1	1								
-Y-	18+32.24	19+68.60	RT.																				137'	
-Y-	21+66.33	22+53.24	LT.																				87'	
-Y-	12+40.00	21+73.00	MEDIAN																				933'	
-Y-	19+63.00	28+80.00	MEDIAN																				918'	
SUBTOTAL				1925.00'		1565.00'									6	2	4	4	6					
		LESS ANCHOR DEDUCTIONS:																						
		GRAU-350	6 @ 50 ft.	300.00'																				
		TYPE III	4 @ 18.75 ft.	75.00'																				
		TYPE B-77	4 @ 18.75 ft.			37.50'																		
		CAT-1	2 @ 6.25 ft.	12.50'																				
		ANCHOR TOTALS:		387.50'		37.50'																		
TOTAL				1537.50		1527.50'									6	2	4	4	6				2582'	
SAY				1537.50		1537.50'									6	2	4	4	6				2582'	
		ADDITIONAL GUARDRAIL POST = 5 EA																						

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RD244542

COMPUTED BY: TAH DATE: 5/3/2011

CHECKED BY: NKB DATE: 7/22/2011

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-4456	3-B

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
19+65.00 -L-	LT	0409					
19+58.00 -L-	RT	0403					
19+58.00 -L-	RT	0403	0405		984.81	983.46	
20+10.00 -L-	RT	0404		987.84	984.84		
20+10.00 -L-	RT	0404	0405		984.84	983.71	
20+10.00 -L-	RT	0405		988.36	983.36		
20+10.00 -L-	RT	0405	0406		983.36	980.71	
21+18.00 -L-	LT	0411		987.23	982.37		
21+18.00 -L-	CL	0411	0410		982.37	982.23	
21+18.00 -L-	RT	0410		987.23	982.23		
21+18.00 -L-	RT	0410	0413		982.23	979.72	
22+15.00 -L-	LT	0412		987.72	982.86		
22+15.00 -L-	CL	0412	0418		982.86	982.72	
22+15.00 -L-	RT	0418		987.72	982.72		
22+15.00 -L-	RT	0418	0414		982.72	976.18	
22+63.00 -L-	LT	0412	0425				
22+97.00 -L-	RT	0418	0428				
25+11.00 -L-	LT	0412	0425				
25+73.00 -L-	RT	0418	0428				
26+67.00 -L-	LT	0425		986.36	981.5		
26+67.00 -L-	CL	0425	0428		981.5	981.36	
26+67.00 -L-	RT	0428		986.36	981.36		
26+67.00 -L-	RT	0428	0430		981.36	954.16	
28+40.00 -L-	LT	0433		983.5	981.25		
28+40.00 -L-	LT	0433	0434		981.25	981.15	
28+95.00 -L-	RT	0431		982.59	979.59		
28+95.00 -L-	RT	0431	0432		979.59	979.1	
30+78.00 -L-	LT	0427					
31+65.00 -L-	LT	0429					
13+60.00 -Y-	LT	0401					
13+78.00 -Y-	CL	0438		971.20	968.95		
13+78.00 -Y-	CL	0438	0439		968.95	965.89	
18+65.00 -Y-	RT	0437		963.44	961.27		
18+65.00 -Y-	RT	0437	0435		961.27	961.21	
18+65.00 -Y-	RT	0435		965.74	961.21		
18+65.00 -Y-	RT	0435	0415		961.21	960.87	
19+77.00 -Y-	RT	0415		964.34	960.87		
20+00.00 -Y-	LT	0436		962.57	957.67		
20+00.00 -Y-	LT	0436	0417		957.67	957.15	
20+36.00 -Y-	CL	0416					
21+05.00 -Y-	LT	0417		961.55	957.04		
21+05.00 -Y-	LT	0417	0430		957.04	954.16	
23+00.00 -Y-	LT	0430		958.91	954.16		
23+00.00 -Y-	LT	0430	0419		954.16	952.19	
23+29.00 -Y-	RT	0422		958.39	955.57		
23+29.00 -Y-	RT	0422	0423		955.57		
23+51.00 -Y-	RT	0423					
23+89.00 -Y-	CL	0440		957.9	955.65		
23+89.00 -Y-	CL	0440	0424		955.65	953.34	
25+03.00 -Y-	LT	0419		956.44	952.19		
25+03.00 -Y-	LT	0419	0420		952.19	948.55	
27+06.00 -Y-	LT	0420		953.55	941.64		
SHEET TOTALS							

SIZE / THICKNESS OR GAUGE

STATION	SIDE DRAIN 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
19+65.00 -L-												
19+58.00 -L-												
19+58.00 -L-												
20+10.00 -L-												
20+10.00 -L-		12										
20+10.00 -L-												
20+10.00 -L-												
21+18.00 -L-												
21+18.00 -L-												
21+18.00 -L-												
21+18.00 -L-		44										
22+15.00 -L-												
22+15.00 -L-												
22+15.00 -L-												
22+15.00 -L-												
22+63.00 -L-												
22+97.00 -L-												
25+11.00 -L-												
25+73.00 -L-												
26+67.00 -L-												
26+67.00 -L-												
26+67.00 -L-												
26+67.00 -L-												
28+40.00 -L-												
28+40.00 -L-		20										
28+95.00 -L-												
28+95.00 -L-		28										
30+78.00 -L-												
31+65.00 -L-												
13+60.00 -Y-												
13+78.00 -Y-												
13+78.00 -Y-		40										
18+65.00 -Y-												
18+65.00 -Y-												
18+65.00 -Y-												
18+65.00 -Y-												
19+77.00 -Y-												
20+00.00 -Y-												
20+00.00 -Y-												
20+36.00 -Y-												
21+05.00 -Y-												
21+05.00 -Y-												
23+00.00 -Y-												
23+00.00 -Y-												
23+29.00 -Y-												
23+29.00 -Y-												
23+51.00 -Y-												
23+89.00 -Y-												
23+89.00 -Y-		52										
25+03.00 -Y-												
25+03.00 -Y-												
27+06.00 -Y-												
SHEET TOTALS		196										

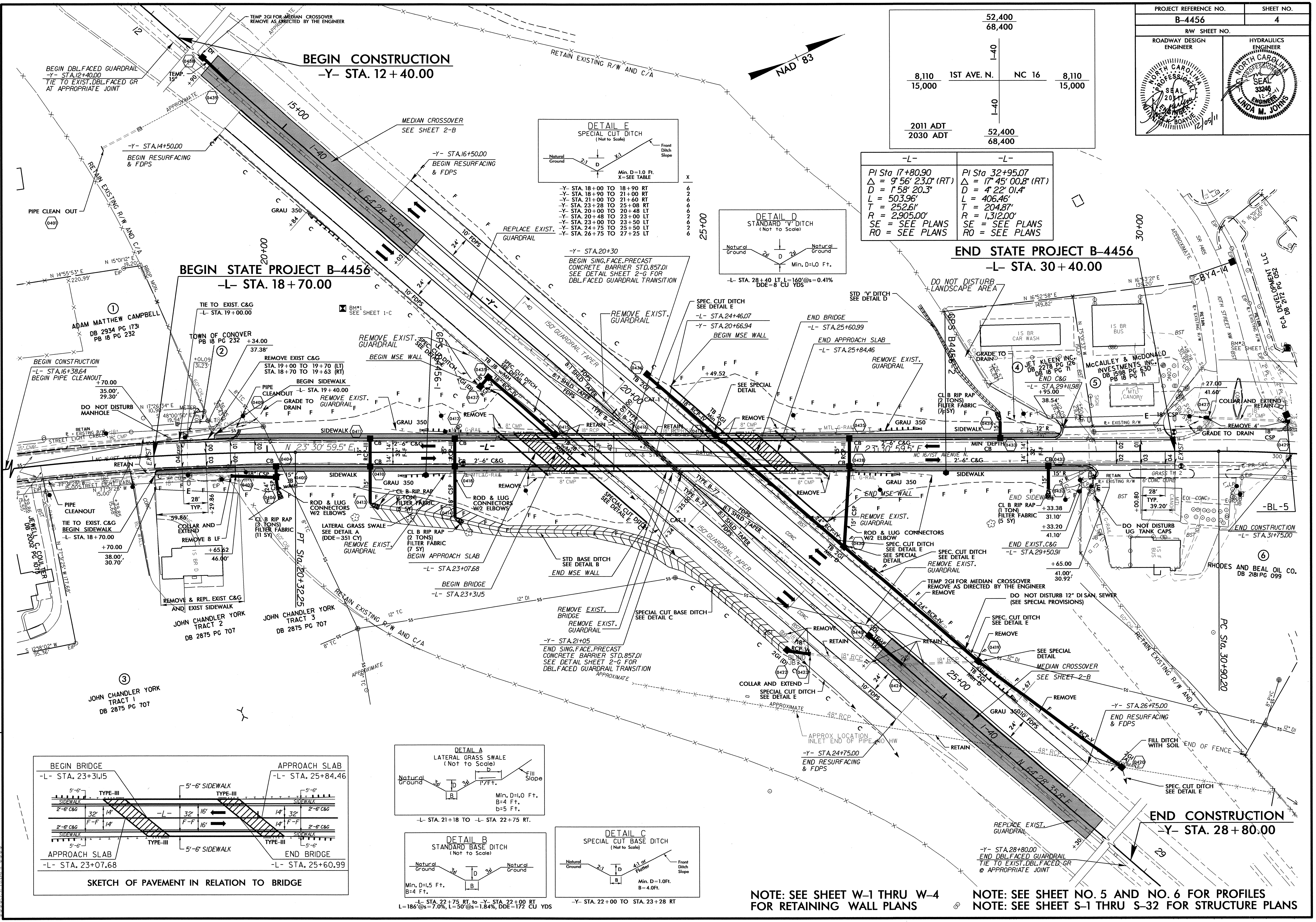
STATION	C.S. PIPE 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	R.C. PIPE CLASS III 12"	15"	18"	24"	30"	36"	42"	48"
19+65.00 -L-																
19+58.00 -L-																
19+58.00 -L-			52													
20+10.00 -L-																
20+10.00 -L-																
20+10.00 -L-																
20+10.00 -L-				16												
21+18.00 -L-																
21+18.00 -L-										28						
21+18.00 -L-																
21+18.00 -L-																
22+15.00 -L-																
22+15.00 -L-										28						
22+15.00 -L-																
22+15.00 -L-			60													
22+63.00 -L-																
22+97.00 -L-																
25+11.00 -L-																
25+73.00 -L-																
26+67.00 -L-																
26+67.00 -L-										28						
26+67.00 -L-																
26+67.00 -L-		92														
28+40.00 -L-																
28+40.00 -L-																
28+95.00 -L-																
28+95.00 -L-																
30+78.00 -L-			4													
31+65.00 -L-			4													
13+60.00 -Y-																
13+78.00 -Y-																
13+78.00 -Y-																
18+65.00 -Y-																
18+65.00 -Y-																
18+65.00 -Y-																
18+65.00 -Y-																
19+77.00 -Y-																
20+00.00 -Y-																
20+00.00 -Y-																
20+36.00 -Y-																
21+05.00 -Y-																
21+05.00 -Y-																
23+00.00 -Y-																
23+00.00 -Y-																
23+29.00 -Y-																
23+29.00 -Y-																
23+51.00 -Y-																
23+89.00 -Y-																
23+89.00 -Y-																
25+03.00 -Y-																
25+03.00 -Y-																
27+06.00 -Y-																
SHEET TOTALS		92	120	16						84						

STATION	R.C. PIPE CLASS IV 12"	15"	18"	24"	30"	36"	42"	48"	18" 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.	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
19+65.00 -L-																						
19+58.00 -L-																						
19+58.00 -L-																						
20+10.00 -L-														1			1		1			
20+10.00 -L-																						
20+10.00 -L-														1								
20+10.00 -L-																						
21+18.00 -L-														1			1	1				
21+18.00 -L-																						
21+18.00 -L-														1			1	1				
21+18.00 -L-																						
22+15.00 -L-														1			1		1			
22+15.00 -L-																						
22+15.00 -L-														1			1			1		
22+15.00 -L-																						
22+63.00 -L-																						
22+97.00 -L-																						
25+11.00 -L-																						
25+73.00 -L-																						
26+67.00 -L-														1			1			1		
26+67.00 -L-																						
26+67.00 -L-														1			1		1			
26+67.00 -L-																						
28+40.00 -L-														1			1			1		
28+40.00 -L-																						
28+95.00 -L-														1			1		1			
28+95.00 -L-																						
30+78.00 -L-																						
31+65.00 -L-																						
13+60.00 -Y-																						
13+78.00 -Y-														1								
13+78.00 -Y-																						
18+65.00 -Y-														1								
18+65.00 -Y-									12													
18+65.00 -Y-														1								
18+65.00 -Y-			100																			
19+77.00 -Y-														1								
20+00.00 -Y-														1								
20+00.00 -Y-			104																			
20+36.00 -Y-																						
21+05.00 -Y-														1								
21+05.00 -Y-				192																		
23+00.00 -Y-														1								
23+00.00 -Y-				200																		
23+29.00 -Y-														1								
23+29.00 -Y-									28													
23+51.00 -Y-																						
23+89.00 -Y-														1								
23+89.00 -Y-																						
25+03.00 -Y-														1								
25+03.00 -Y-									204													
27+06.00 -Y-														1	5	1.91						
SHEET TOTALS			204	392					244					21	5	1.91	9	2	4	3		
															SAY 7.48 LF							

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND 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. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	T.B.G.D.I.. STD. 840.35	T.B.J.B. STD. 840.34	J.B. STD. 840.31 OR 840.32	M.H. FRAME AND COVER STD. 840.54	TRAFFIC BEARING DI (SEE DETAIL SHEET 2-F)		PIPE CLEANOUT	C.S. PIPE ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
19+65.00 -L-																1				PIPE CLEANOUT
19+58.00 -L-																		0.4465		18" PIPE
19+58.00 -L-																			8	REMOVE 18" CMP
20+10.00 -L-																				
20+10.00 -L-																				
20+10.00 -L-												1	1							
20+10.00 -L-																	24"(2)			ROD & LUG CONNECTORS W/ 2 ELBOWS
21+18.00 -L-																				
21+18.00 -L-																				
21+18.00 -L-																				
21+18.00 -L-																				
22+15.00 -L-																				
22+15.00 -L-																				
22+15.00 -L-																				
22+15.00 -L-																	18"(2)			ROD & LUG CONNECTORS W/ 2 ELBOWS
22+63.00 -L-																			77	REMOVE 8" CMP AT END BENT
22+97.00 -L-																			93	REMOVE 8" CMP AT END BENT
25+11.00 -L-																			104	REMOVE 8" CMP AT END BENT
25+73.00 -L-																			78	REMOVE 8" CMP AT END BENT
26+67.00 -L-																				
26+67.00 -L-																				
26+67.00 -L-																				
26+67.00 -L-																	15"(2)			ROD & LUG CONNECTORS W/ 2 ELBOWS
28+40.00 -L-																				MIN. DEPTH CB
28+40.00 -L-																				
28+95.00 -L-																				
28+95.00 -L-																				
30+78.00 -L-																		0.4465	4	REMOVE 18" CMP
31+65.00 -L-																		0.4465	4	REMOVE 18" CMP
13+60.00 -Y-																1				PIPE CLEANOUT
13+78.00 -Y-	1	1																		TEMP. 2GI
13+78.00 -Y-																			40	TEMPORARY
18+65.00 -Y-					1		1													
18+65.00 -Y-																				
18+65.00 -Y-											1		1							USE TBJB FOR FUTURE WIDENING
18+65.00 -Y-																				
19+77.00 -Y-											1		1							MIN DEPTH TBJB FOR FUTURE WIDENING
20+00.00 -Y-							1			1										USE TB2G1 FOR FUTURE WIDENING
20+00.00 -Y-																				
20+36.00 -Y-																				RETAIN EXISTING STRUCTURE
21+05.00 -Y-							1							1						MIN DEPTH TB2GI FOR FUTURE WIDENING
21+05.00 -Y-																			195	
23+00.00 -Y-							1							1						MIN DEPTH TB2GI FOR FUTURE WIDENING
23+00.00 -Y-																			202	
23+29.00 -Y-					1		1													
23+29.00 -Y-																			30	
23+51.00 -Y-																		0.4465		
23+89.00 -Y-	1	1																		TEMP. 2GI
23+89.00 -Y-																			52	TEMPORARY
25+03.00 -Y-							1							1						MIN DEPTH TB2GI FOR FUTURE WIDENING
25+03.00 -Y-																			182	
27+06.00 -Y-			1				1													
SHEET TOTALS	2	2	1		2		7			1	2	1	3	3		2	15" (2)	1.786	1069	
																	18" (2)	SAY 1.79		
																	24" (2)			

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



BEGIN CONSTRUCTION
-Y- STA. 12+40.00
TEMP 2GI FOR MEDIAN CROSSOVER REMOVE AS DIRECTED BY THE ENGINEER
BEGIN DBL.FACED GUARDRAIL -Y- STA.12+40.00 TIE TO EXIST.DBL.FACED GR AT APPROPRIATE JOINT
RETAIN EXISTING R/W AND C/A
NAD 83
MEDIAN CROSSOVER SEE SHEET 2-B
-Y- STA.14+50.00 BEGIN RESURFACING & FDPS
-Y- STA.16+50.00 BEGIN RESURFACING & FDPS
I-40
N 64°28' 35.8" E
PIPE CLEAN OUT
REPLACE EXIST. GUARDRAIL
BEGIN STATE PROJECT B-4456
-L- STA. 18+70.00
ADAM MATTHEW CAMPBELL DB 2934 PG 1731 PB 18 PG 232
TOWN OF CONOVER PB 18 PG 232
BEGIN CONSTRUCTION -L- STA.16+38.64 BEGIN PIPE CLEANOUT
DO NOT DISTURB MANHOLE
REMOVE EXIST C&G STA. 19+00 TO 19+70 (LT) STA. 18+70 TO 19+63 (RT)
BEGIN SIDEWALK -L- STA. 19+40.00
REMOVE EXIST. GUARDRAIL
BEGIN MSE WALL
-Y- STA.20+30 BEGIN SING.FACE.PRECAST CONCRETE BARRIER STD.857.01 SEE DETAIL SHEET 2-G FOR DBL.FACED GUARDRAIL TRANSITION
SPEC. CUT DITCH SEE DETAIL E
-L- STA.24+46.07
-Y- STA.20+66.94
BEGIN MSE WALL
END BRIDGE -L- STA.25+60.99
END APPROACH SLAB -L- STA.25+84.46
END STATE PROJECT B-4456
-L- STA. 30+40.00
DO NOT DISTURB LANDSCAPE AREA
STD 'V' DITCH SEE DETAIL D
JET KLEEN INC. DB 2278 PG 126 PB 18 PG 71
McCAULEY & McDONALD INVESTMENTS, INC. DB 1598 PG 630 PB 18 PG 71
PCA DEVELOPMENT LLC DB 2712 PG 052
N 23°30' 59.5" E
ROD & LUG CONNECTORS W/2 ELBOWS
LATERAL GRASS SWALE SEE DETAIL A (DDE=351 CY)
CL B RIP RAP (3 TONS) FILTER FABRIC (11 SY)
BEGIN APPROACH SLAB -L- STA.23+07.68
BEGIN BRIDGE -L- STA.23+31.15
STD BASE DITCH SEE DETAIL B
END MSE WALL
JOHN CHANDLER YORK TRACT 2 DB 2875 PG 707
JOHN CHANDLER YORK TRACT 3 DB 2875 PG 707
JOHN CHANDLER YORK TRACT 1 DB 2875 PG 707
REMOVE EXIST. BRIDGE
-Y- STA.21+05 END SING.FACE.PRECAST CONCRETE BARRIER STD.857.01 SEE DETAIL SHEET 2-G FOR DBL.FACED GUARDRAIL TRANSITION
SPECIAL CUT BASE DITCH SEE DETAIL C
RHODES AND BEAL OIL CO. DB 2181 PG 099
DO NOT DISTURB 12" DI SAN. SEWER (SEE SPECIAL PROVISIONS)
DO NOT DISTURB UG TANK CAPS
END CONSTRUCTION -L- STA.31+75.00
-Y- STA.26+75.00 END RESURFACING & FDPS
-Y- STA.24+75.00 END RESURFACING & FDPS
FILL DITCH WITH SOIL
END OF FENCE
PC Sta. 30+90.20
APPROX LOCATION INLET END OF PIPE, NO HW
END CONSTRUCTION
-Y- STA. 28+80.00
-Y- STA.28+80.00 END DBL.FACED GUARDRAIL TIE TO EXIST.DBL.FACED GR @ APPROPRIATE JOINT
REVISIONS
DETAIL A LATERAL GRASS SWALE (Not to Scale) Min. D=1.0 Ft. B=4 Ft. b=5 Ft. -L- STA. 21+18 TO -L- STA 22+75 RT.
DETAIL B STANDARD BASE DITCH (Not to Scale) Min. D=1.5 Ft. B=4 Ft. -L- STA. 22+75 RT. to -Y- STA. 22+00 RT L=186'@s=7.0%, L=50'@s=1.84%, DDE=172 CU YDS
DETAIL C SPECIAL CUT BASE DITCH (Not to Scale) Min. D=1.0Ft. B=4.0Ft. -Y- STA. 22+00 TO STA. 23+28 RT
DETAIL D STANDARD 'V' DITCH (Not to Scale) Min. D=1.0 Ft. -L- STA. 28+40 LT. L=160'@s=0.41% DDE=8 CU YDS
SKETCH OF PAVEMENT IN RELATION TO BRIDGE
BEGIN BRIDGE -L- STA. 23+31.15
APPROACH SLAB -L- STA. 25+84.46
APPROACH SLAB -L- STA. 23+07.68
END BRIDGE -L- STA. 25+60.99
5'-6" SIDEWALK

PROJECT REFERENCE NO.	SHEET NO.
B-4456	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

	52,400 / 68,400		
8,110 / 15,000	1ST AVE. N.	NC 16	8,110 / 15,000
2011 ADT / 2030 ADT	52,400 / 68,400		

-L-	-L-
PI Sta 17+80.90	PI Sta 32+95.07
Δ = 9° 56' 23.0" (RT)	Δ = 17° 45' 00.8" (RT)
D = 1° 58' 20.3"	D = 4° 22' 01.4"
L = 503.96'	L = 406.46'
T = 252.61'	T = 204.87'
R = 2,905.00'	R = 1,312.00'
SE = SEE PLANS	SE = SEE PLANS
RO = SEE PLANS	RO = SEE PLANS

DETAIL E
SPECIAL CUT DITCH (Not to Scale)
Min. D=1.0 Ft. X=SEE TABLE

	X
-Y- STA. 18+00 TO 18+90 RT	6
-Y- STA. 18+90 TO 21+00 RT	2
-Y- STA. 21+00 TO 21+60 RT	6
-Y- STA. 23+28 TO 25+08 RT	6
-Y- STA. 20+00 TO 20+48 LT	6
-Y- STA. 20+48 TO 23+00 LT	2
-Y- STA. 23+00 TO 23+50 LT	6
-Y- STA. 24+75 TO 25+50 LT	2
-Y- STA. 26+75 TO 27+25 LT	6

NOTE: SEE SHEET W-1 THRU W-4 FOR RETAINING WALL PLANS

NOTE: SEE SHEET NO. 5 AND NO. 6 FOR PROFILES
NOTE: SEE SHEET S-1 THRU S-32 FOR STRUCTURE PLANS

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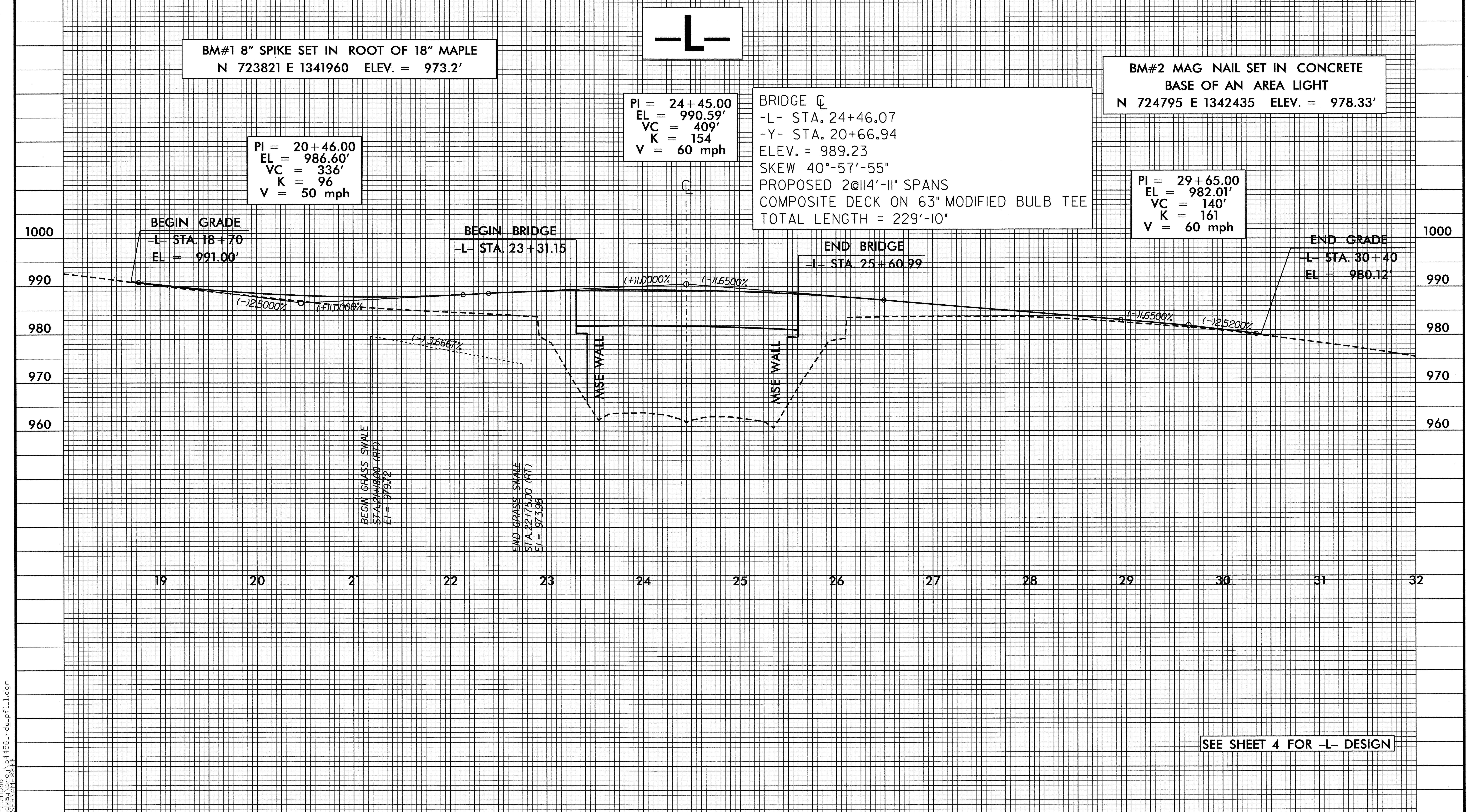
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4456	5

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20117 ENGINEER NYAN K. BOAYUE 12/05/11	NORTH CAROLINA PROFESSIONAL SEAL 33246 12-2-11 ENGINEER LINDA M. JOHNS



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PROJECT REFERENCE NO.	SHEET NO.
B-4456	6

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER