

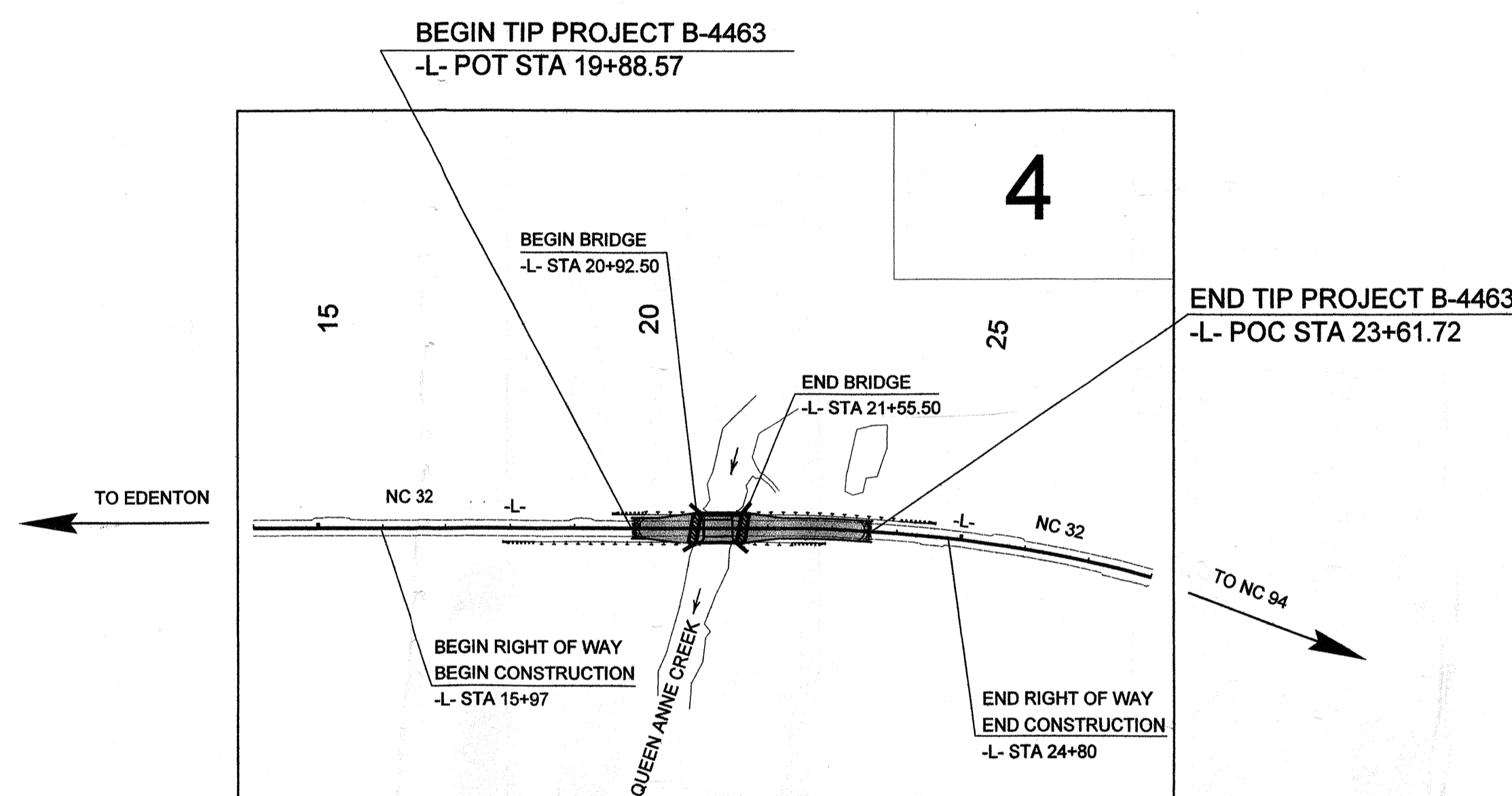
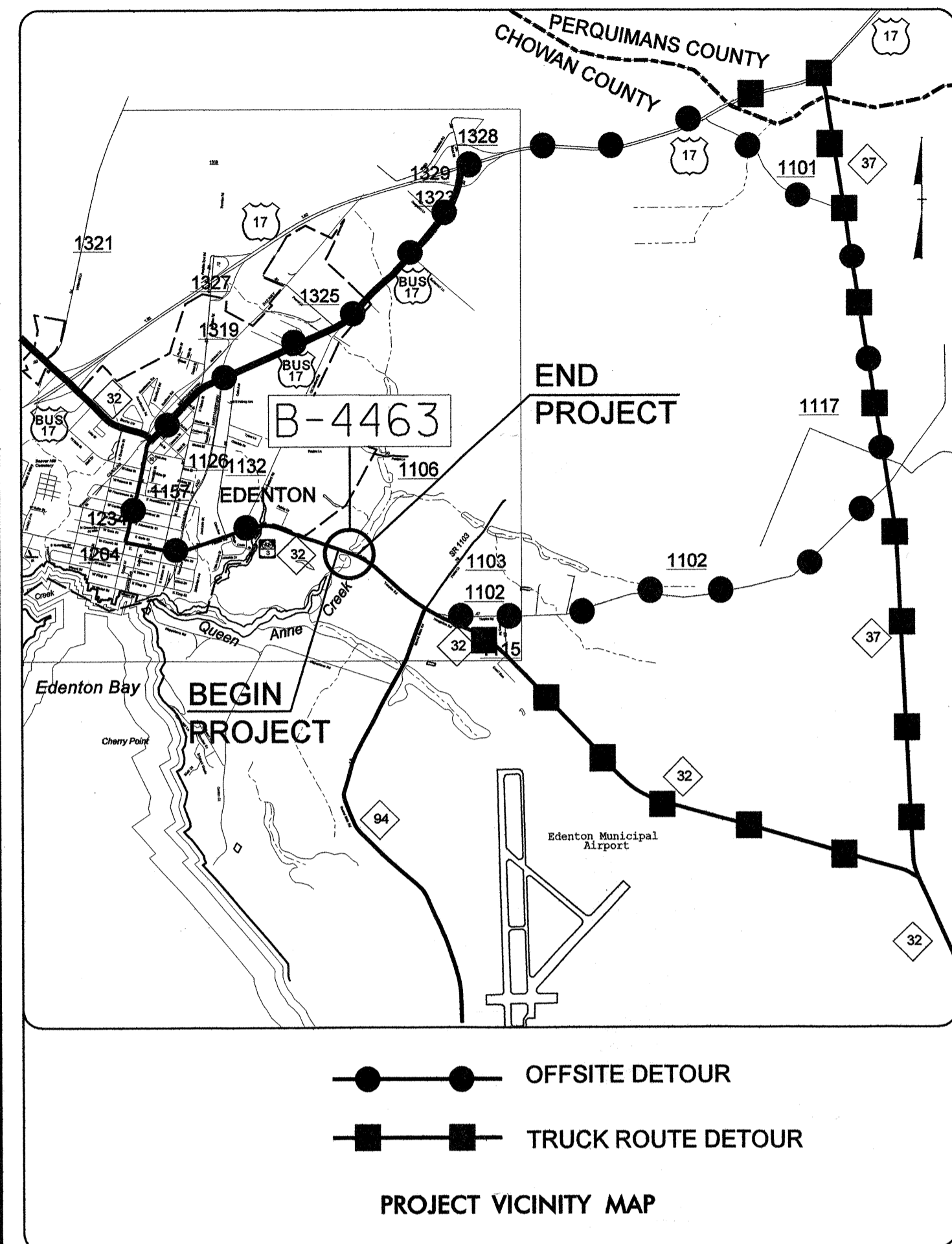
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|--------------|
| N.C. | B-4463 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 33713.1.2 | STP-0032(8) | P.E. | |
| 33713.2.1 | STP-0032(8) | R.W. & UTILITY | |
| 33713.3.1 | BRSTP-0032(8) | CONST. | |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CHOWAN COUNTY

LOCATION: BRIDGE NO.12 OVER QUEEN ANNE CREEK
ON NC 32

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

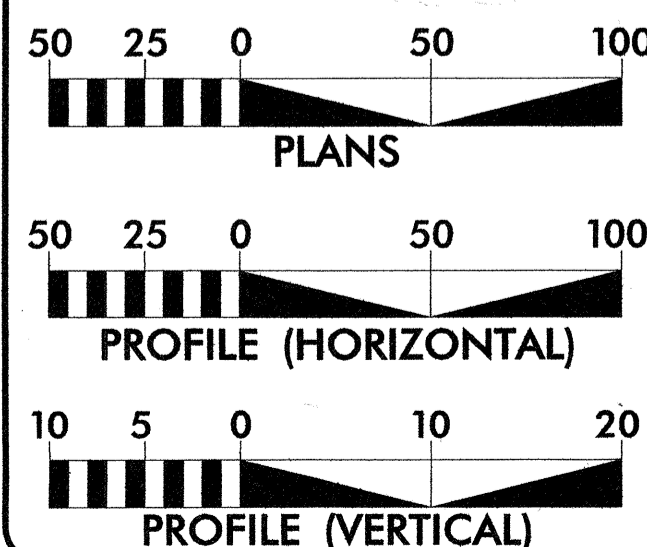


NCDOT Contact: Ron E McCollum, PE
Roadway Design-Engineering Coordination

TIP PROJECT: B-4463

CONTRACT: C202908

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 6280
ADT 2031 = 9360
DHV = 10 %
D = 60 %
T = 5% (TTST 2%, DUAL 3%)
V = 60 MPH
FUNC CLASS = MAJOR COLLECTOR
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4463 = 0.059 MILE
LENGTH STRUCTURE TIP PROJECT B-4463 = 0.012 MILE
TOTAL LENGTH TIP PROJECT B-4463 = 0.071 MILE

Prepared In the Office of
DYER, RIDDLE, MILLS & PRECOURT, INC. (DRMP)
5950 FAIRVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289 NC LICENSE NO. C-2213

2006 STANDARD SPECIFICATIONS

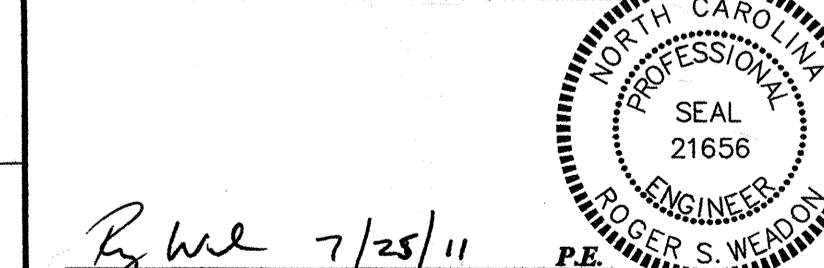
RIGHT OF WAY DATE:
OCTOBER 15, 2010

LETTING DATE:
January 17, 2012

James E. Beck, PE
PROJECT ENGINEER

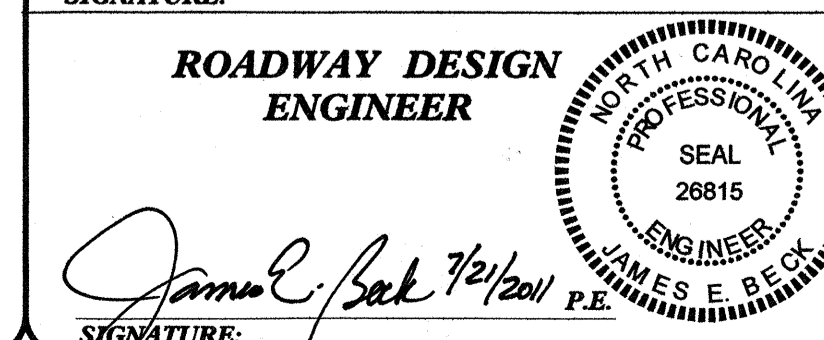
Garrett S. McCaffety, EI
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER



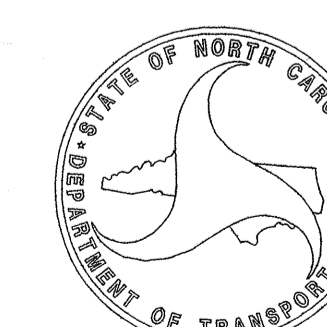
Signature: R. Weadon 7/25/11

ROADWAY DESIGN ENGINEER

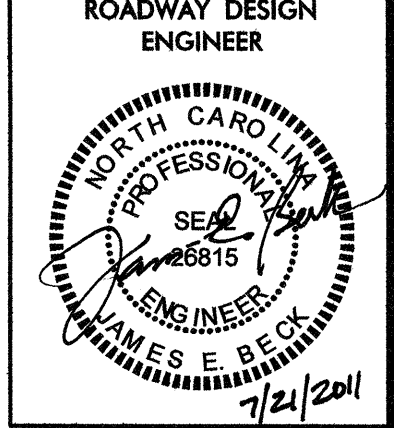


Signature: James E. Beck 7/21/2011

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**



Signature: Art Miller
STATE HIGHWAY DESIGN ENGINEER



| 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 | PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS |
| 2-A THRU 2-B | METHOD OF PIPE INSTALLATION |
| 2-C | ANCHORAGE FOR FRAMES AND GRATES |
| 3 | SUMMARY OF QUANTITIES |
| 3-A | SUMMARY OF GUARDRAIL AND EARTHWORK SUMMARY |
| 3-B | SUMMARY OF DRAINAGE QUANTITIES |
| 4 | PLAN SHEET |
| 5 | PROFILE SHEET |
| TMP-1 THRU TMP-2 | TRANSPORTATION MANAGEMENT PLANS |
| PM-1 THRU PM-2 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-4 | EROSION CONTROL PLANS |
| UC-1 THRU UC-5 | UTILITIES CONSTRUCTION PLANS |
| UO-1 THRU UO-2 | UTILITIES BY OTHERS |
| X-1 THRU X-6 | CROSS-SECTIONS |
| S-1 THRU S-3 | STRUCTURE PLANS |

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.

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.

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 EDENTON POWER,
CENTURY-LINK (TELEPHONE), MEDIA-COM TELECOM (CATV),
PIEDMONT NATURAL GAS (GAS), CHOWAN COUNTY WATER
ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

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 Super-elevation - Two Lane Pavement |
| 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 Super-elevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 815.03 | Pipe Underdrain and Blind Drain |
| 840.00 | Concrete Base Pad for Drainage Structures |
| 840.18 | Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe |
| 840.27 | Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.45 | Precast Drainage Structure |
| 846.04 | Drop Inlet Installation in Shoulder Berm Gutter |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 862.03 | Structure Anchor Units |
| 876.02 | Guide for Rip Rap at Pipe Outlets |

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Note: Not to Scale
***S.U.E. = Subsurface Utility Engineering**

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 | EDM |
| Parcel/Sequence Number | 123 |
| Existing Fence Line | —x—x—x— |
| Proposed Woven Wire Fence | —○— |
| Proposed Chain Link Fence | —□— |
| Proposed Barbed Wire Fence | —◇— |
| Existing Wetland Boundary | —WLB— |
| Proposed Wetland Boundary | —WLB— |
| Existing Endangered Animal Boundary | —EAB— |
| Existing Endangered Plant Boundary | —EPB— |
| Known Soil Contamination: Boundary or Site | ☠ ☠ |
| Potential Soil Contamination: Boundary or Site | ☠ ? |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|---|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ○ |
| Well | ⊕ |
| Small Mine | ⊗ |
| Foundation | ▭ |
| Area Outline | ▭ |
| Cemetery | ⊕ |
| Building | ▭ |
| School | ▭ |
| Church | ▭ |
| Dam | ▭ |

HYDROLOGY:

| | |
|------------------------------------|--------|
| Stream or Body of Water | _____ |
| Hydro, Pool or Reservoir | ▭ |
| Jurisdictional Stream | —JS— |
| Buffer Zone 1 | —BZ 1— |
| Buffer Zone 2 | —BZ 2— |
| Flow Arrow | → |
| Disappearing Stream | → |
| Spring | ○ |
| Wetland | ▭ |
| Proposed Lateral, Tail, Head Ditch | → |
| False Sump | ▭ |

RAILROADS:

| | |
|--------------------|-----------------------------------|
| Standard Gauge | _____ |
| RR Signal Milepost | CSX TRANSPORTATION MILEPOST 35 |
| Switch | SWITCH |
| RR Abandoned | _____ |
| RR Dismantled | _____ |

RIGHT OF WAY:

| | |
|--|-------|
| Baseline Control Point | ◆ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | _____ |
| Proposed Right of Way Line | —R/W— |
| Proposed Right of Way Line with Iron Pin and Cap Marker | —R/W— |
| Proposed Right of Way Line with Concrete or Granite Marker | —R/W— |
| Existing Control of Access | ⊗ |
| Proposed Control of Access | ⊗ |
| Existing Easement Line | —E— |
| Proposed Temporary Construction Easement | —E— |
| Proposed Temporary Drainage Easement | —TDE— |
| Proposed Permanent Drainage Easement | —PDE— |
| Proposed Permanent Drainage / Utility Easement | —DUE— |
| Proposed Permanent Utility Easement | —PUE— |
| Proposed Temporary Utility Easement | —TUE— |
| Proposed Aerial Utility Easement | —AUE— |
| Proposed Permanent Easement with Iron Pin and Cap Marker | ◆ |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|---------|
| Existing Edge of Pavement | _____ |
| Existing Curb | _____ |
| Proposed Slope Stakes Cut | —C— |
| Proposed Slope Stakes Fill | —F— |
| Proposed Curb Ramp | —CR— |
| Curb Cut Future Ramp | —CCFR— |
| Existing Metal Guardrail | —T—T—T— |
| Proposed Guardrail | —T—T—T— |
| Existing Cable Guiderail | —T—T—T— |
| Proposed Cable Guiderail | —T—T—T— |
| Equality Symbol | ⊕ |
| Pavement Removal | ▭ |

VEGETATION:

| | |
|--------------|-------|
| Single Tree | ○ |
| Single Shrub | ○ |
| Hedge | _____ |
| Woods Line | _____ |

| | |
|----------|----------|
| Orchard | _____ |
| Vineyard | Vineyard |

EXISTING STRUCTURES:

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

UTILITIES:

| | |
|-------------------------------------|-------|
| POWER: | _____ |
| Existing Power Pole | ● |
| Proposed Power Pole | ○ |
| Existing Joint Use Pole | ● |
| Proposed Joint Use Pole | ○ |
| Power Manhole | ⊕ |
| Power Line Tower | ⊗ |
| Power Transformer | ⊗ |
| U/G Power Cable Hand Hole | _____ |
| H-Frame Pole | —●—●— |
| Recorded U/G Power Line | —P— |
| Designated U/G Power Line (S.U.E.*) | —P— |

TELEPHONE:

| | |
|---|--------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊕ |
| Telephone Booth | ⊕ |
| Telephone Pedestal | ⊕ |
| Telephone Cell Tower | ⊕ |
| U/G Telephone Cable Hand Hole | _____ |
| Recorded U/G Telephone Cable | —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 | ⊕ |
| 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 | ⊕ |
| TV Tower | ⊕ |
| U/G TV Cable Hand Hole | _____ |
| Recorded U/G TV Cable | —TV— |
| Designated U/G TV Cable (S.U.E.*) | —TV— |
| Recorded U/G Fiber Optic Cable | —TV FO— |
| Designated U/G Fiber Optic Cable (S.U.E.*) | —TV FO— |

GAS:

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

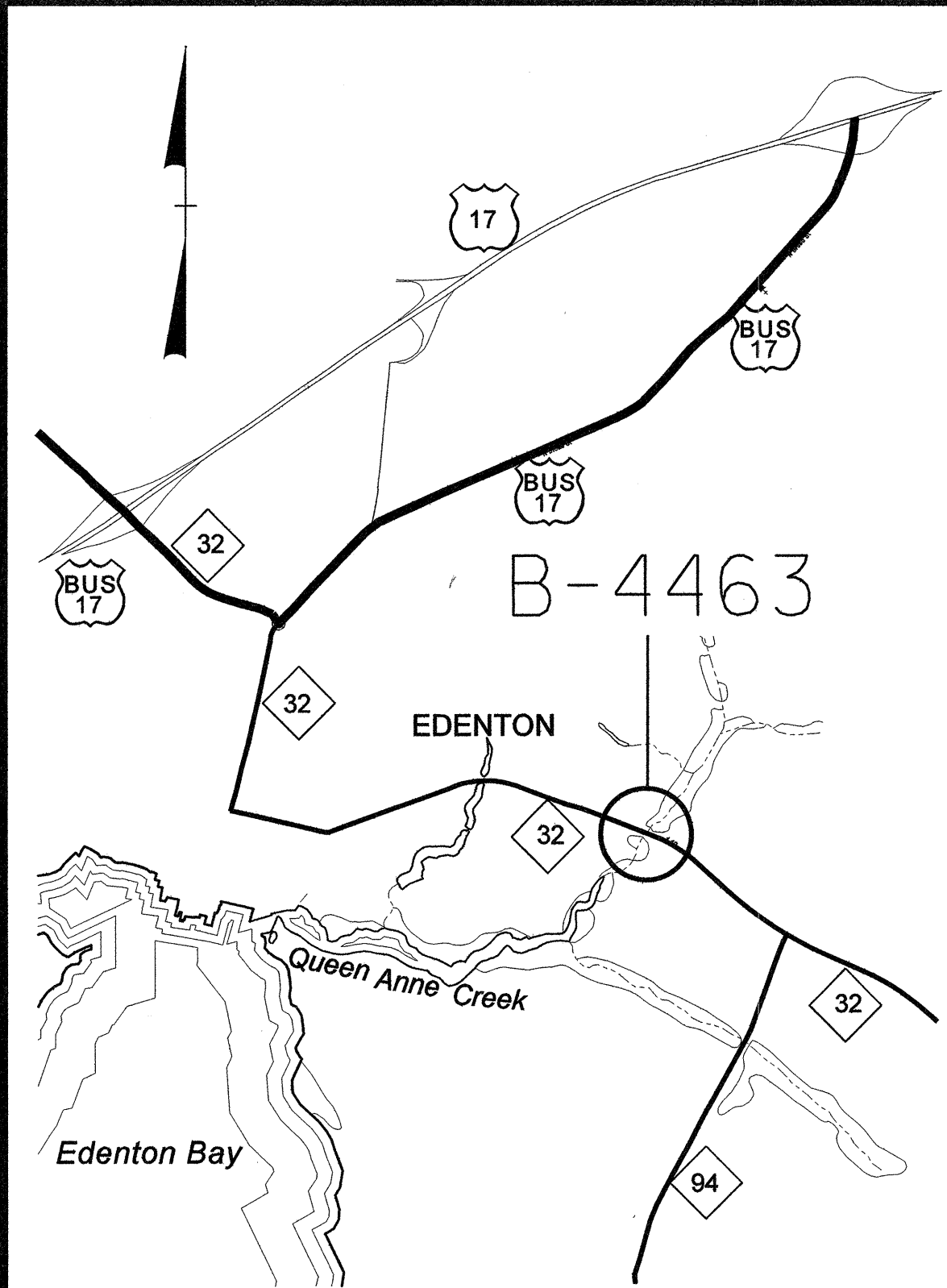
SANITARY SEWER:

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

MISCELLANEOUS:

| | |
|--|--------|
| Utility Pole | ● |
| Utility Pole with Base | ⊕ |
| Utility Located Object | ○ |
| Utility Traffic Signal Box | ⊕ |
| Utility Unknown U/G Line | —UTL— |
| U/G Tank; Water, Gas, Oil | ▭ |
| Underground Storage Tank, Approx. Loc. | ⊕ |
| A/G Tank; Water, Gas, Oil | ▭ |
| Geoenvironmental Boring | ⊕ |
| U/G Test Hole (S.U.E.*) | ⊕ |
| Abandoned According to Utility Records | AATUR |
| End of Information | E.O.I. |

SURVEY CONTROL SHEET B-4463



PROJECT VICINITY MAP

CONTROL DATA

| BL | POINT | DESC. | NORTH | EAST | ELEVATION | L STATION | OFFSET |
|--------|---------|---------|-------------|--------------|-----------|------------------------|----------|
| B44631 | GPS MON | B4463-1 | 849855.8240 | 2712004.6850 | 12.20 | OUTSIDE PROJECT LIMITS | |
| B44632 | GPS MON | B4463-2 | 849342.2600 | 2713380.6510 | 7.99 | 16+79.50 | 16.51 RT |
| BL3 | | BL3 | 849208.1810 | 2713835.1570 | 4.81 | 21+52.20 | 16.79 LT |
| BL4 | | BL4 | 848799.5010 | 2714561.0850 | 11.56 | 29+83.79 | 18.25 LT |



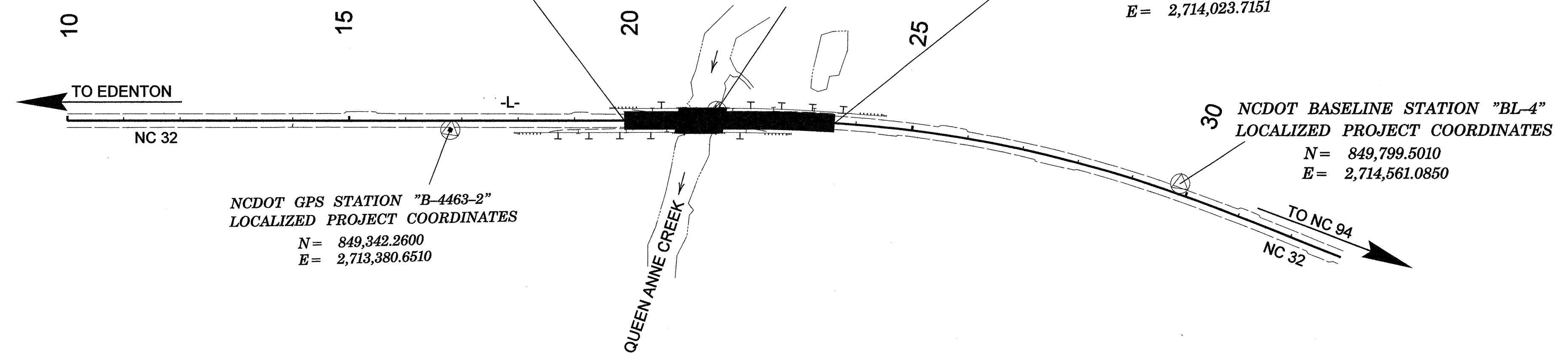
NCDOT GPS STATION "B-4463-1"
 LOCALIZED PROJECT COORDINATES
 N = 849,855.8240
 E = 2,712,004.6850

NCDOT GPS STATION "B-4463-2"
 LOCALIZED PROJECT COORDINATES
 N = 849,342.2600
 E = 2,713,380.6510

BEGIN TIP PROJECT B-4463
-L- STA 19+88.57
 LOCALIZED PROJECT COORDINATES
 N = 849,249.6585
 E = 2,713,675.9843

NCDOT BASELINE STATION "BL-3"
 LOCALIZED PROJECT COORDINATES
 N = 849,208.1810
 E = 2,713,835.1570

END TIP PROJECT B-4463
-L- STA 23+61.72
 LOCALIZED PROJECT COORDINATES
 N = 849,114.5051
 E = 2,714,023.7151



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4463-1"
 WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
 NORTHING: 849855.824(ft) EASTING: 2712004.685(ft)
 ELEVATION: 12.20(ft)
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99997746
 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4463-1" TO -L- STATION 15+97.00 IS
 S70°03'53"E 1,777.83'
 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

BENCHMARK DATA

| | |
|-----------------|------------------|
| BMS | ELEVATION = 8.11 |
| N 849171 | E 2713349 |
| L STATION 17+09 | 188 RIGHT |

| | |
|-----------------|-------------------|
| BM6 | ELEVATION = 13.53 |
| N 848737 | E 2714693 |
| L STATION 31+24 | 58 LEFT |

NOTES:

- THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project)
 FILE: b4463_ls_control_090218.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 "B4463-1" ESTABLISHED FROM NGS ONLINE POSITIONING USER SERVICE (OPUS)

NOTE: DRAWING NOT TO SCALE

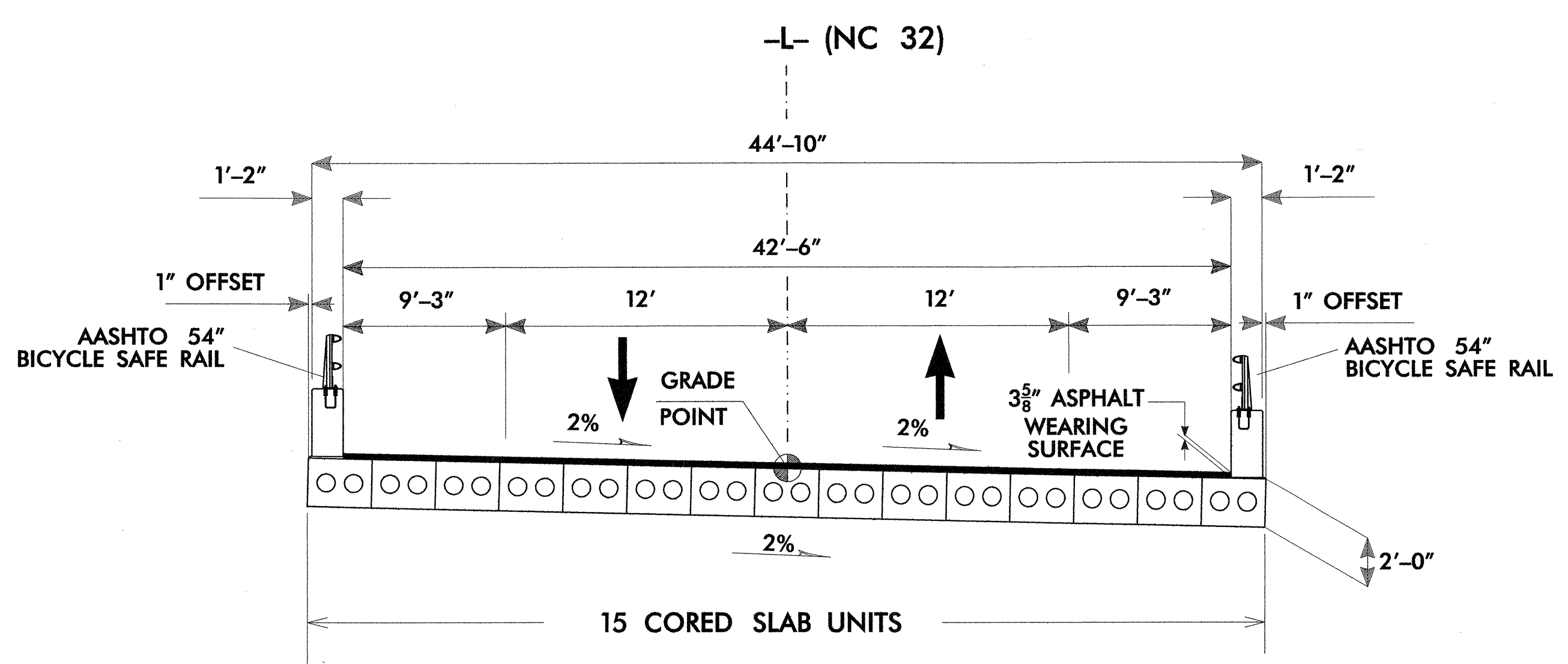
6/2/05

| | |
|--|--|
| PROJECT REFERENCE NO. B-4463 | SHEET NO. 2 |
| ROADWAY DESIGN ENGINEER JAMES E. BECK 7/2/2011 | PAVEMENT DESIGN ENGINEER CLARK S. MORRISON 7/24/11 |

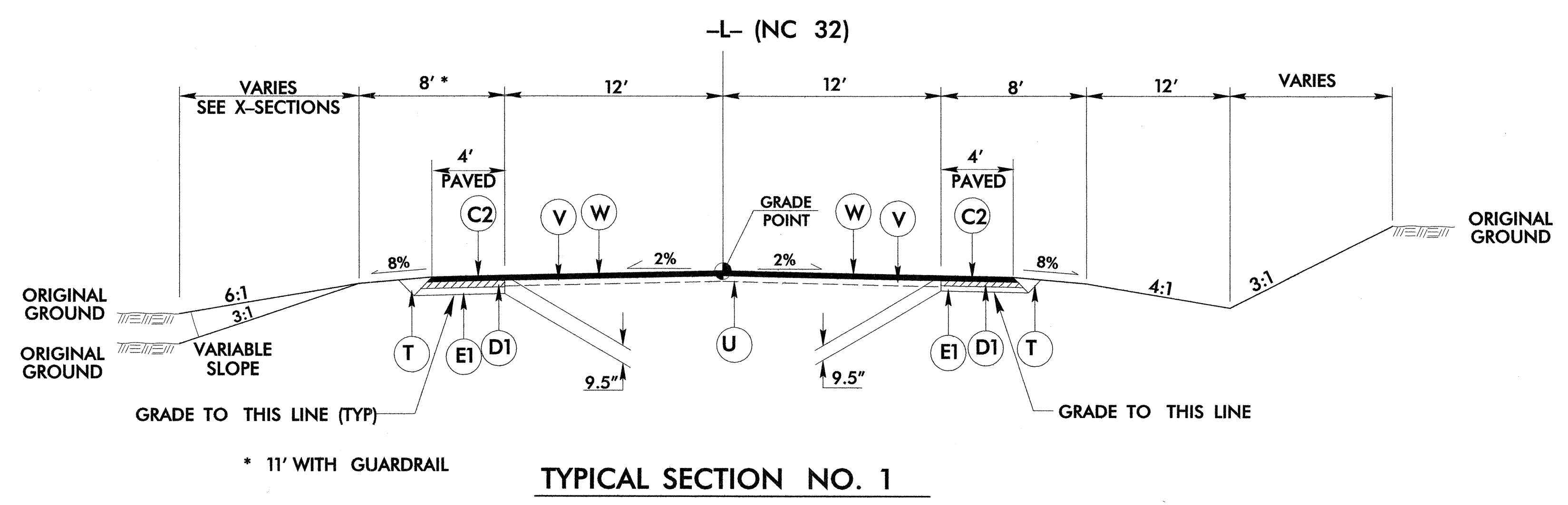
DRMP
ENGINEERS - PLANNERS - SCIENTISTS
DYER, RIDGLE, MILLS & PRECOURT, INC.
5950 FARVIEW RD., SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 332-2289
NC LICENSE NO. C-2213

| 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. 3.0" 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 LESS THAN 1.5" IN DEPTH OR GREATER THAN 2.0" IN DEPTH. |
| D1 | PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD. |
| D2 | 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 4.0" IN DEPTH. |
| E1 | PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. |
| E2 | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH. |
| V | PROP. APPROX. 1.5" MILLING ASPHALT PAVEMENT |
| T | EARTH MATERIAL. |
| U | EXISTING PAVEMENT. |
| W | WEDGING. (SEE WEDGING DETAIL, THIS SHEET) |

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

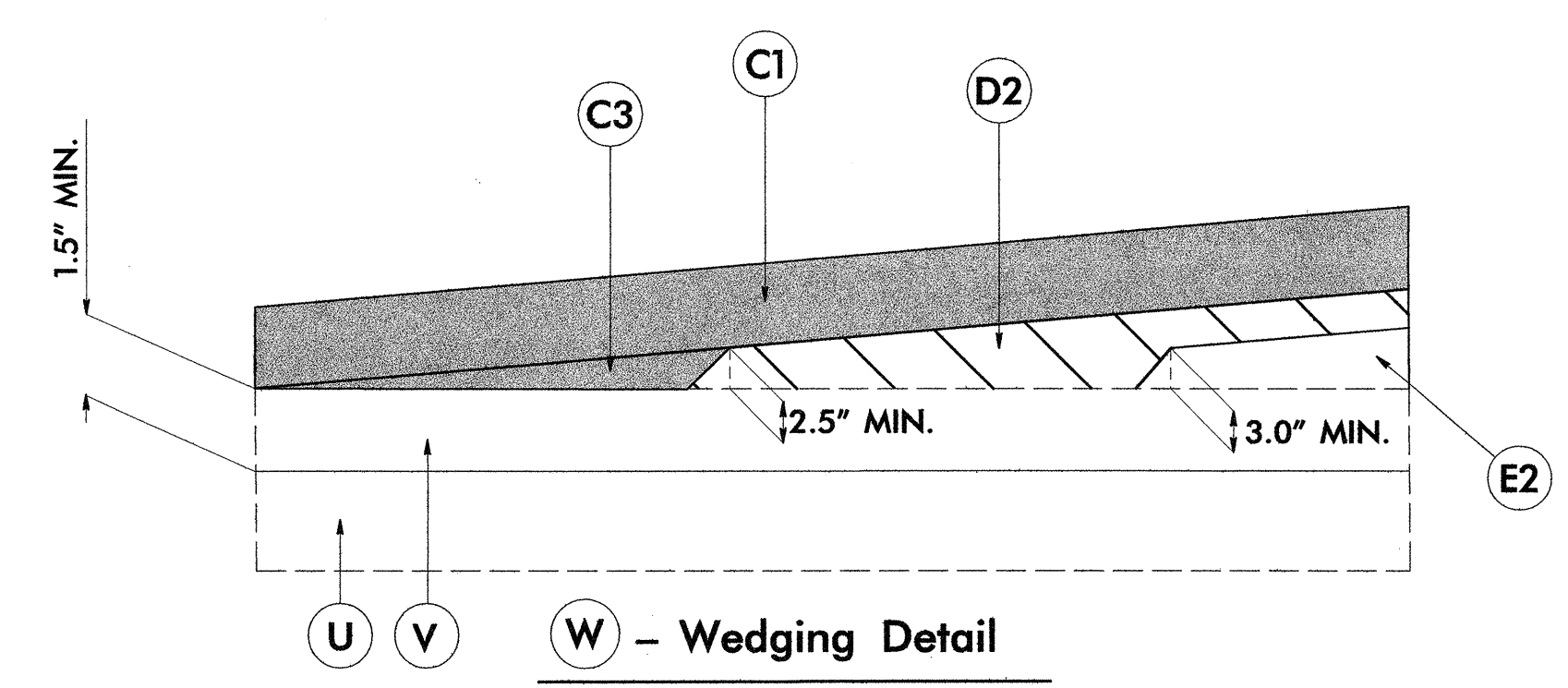


TYPICAL SECTION NO. 2
USE TYPICAL SECTION NO. 2
-L- STA 20+92.50 (BEGIN BRIDGE) TO -L- STA 21+55.50 (END BRIDGE)

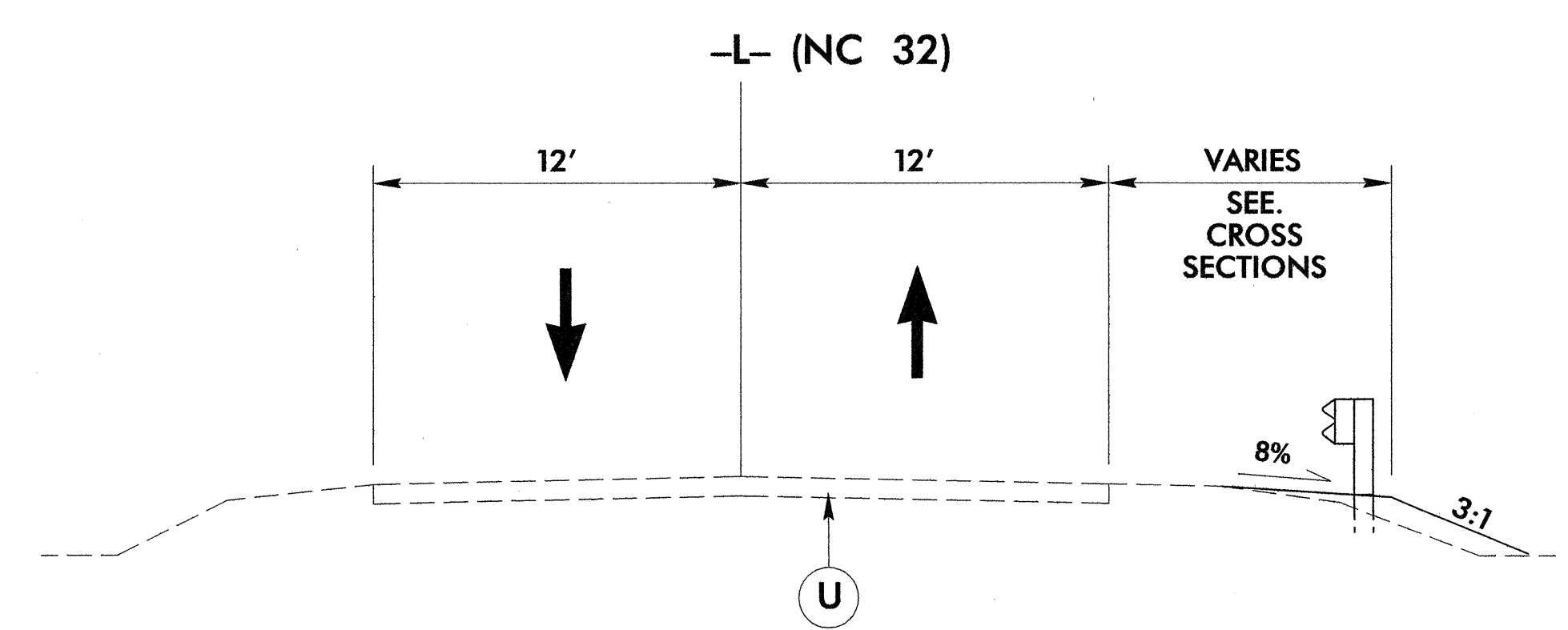


TYPICAL SECTION NO. 1
USE TYPICAL SECTION NO. 1
-L- STA 20+03.57 TO -L- STA 20+92.50 (BEGIN BRIDGE)
-L- STA 21+55.50 (END BRIDGE) TO -L- STA 23+46.72

TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING (INCLUDES FEATHERING)
-L- STA 19+88.57 (BEGIN PROJECT) TO -L- STA 20+03.57
-L- STA 23+46.72 TO -L- STA 23+61.72 (END PROJECT)



W - Wedging Detail



TYPICAL SECTION NO. 3 SHOULDER CONSTRUCTION
USE TYPICAL SECTION NO. 3
-L- STA 17+71.27 TO -L- STA 19+88.57 RT.
-L- STA 19+30.76 TO -L- STA 19+88.57 LT.

R:\Roadway\Proj\B4463_Rdy_Typ.dgn 10:34:25 AM 7/20/2011

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

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 UNDER 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
 RIGID PIPE

SHEET 2 OF 3
300D01

GENERAL NOTES:

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

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.
 LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 UNDER 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 BELOW SPRINGLINE.
 APPROVED SUITABLE LOCAL MATERIAL ABOVE SPRINGLINE.
 UNDISTURBED EARTH MATERIAL
 SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH ENGINEERING FABRIC AS DIRECTED BY THE ENGINEER.

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

SEE PLATE FOR TITLE

| | |
|---------------------------------|---------------|
| ORIGINAL BY: K Kempf | DATE: 5-15-09 |
| MODIFIED BY: <i>[Signature]</i> | DATE: 7/20/09 |
| CHECKED BY: <i>[Signature]</i> | DATE: 7/20/09 |
| FILE SPEC: <i>[Signature]</i> | DATE: 7/21/11 |



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

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 1/2 corrugation ** | | | |
|---|------------------------|--------------------|--------------------------------|
| Diameter (inches) | Minimum cover (inches) | Maximum cover (Ga) | Maximum Height of Cover (feet) |
| 12 | 12 | 204 | 16 14 12 10 8 |
| 15 | 12 | 162 | 256 204 |
| 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 | 44 | 54 77 100 123 |
| 60 | 12 | 40 | 50 69 90 111 |
| 66 | 12 | 36 | 46 65 81 100 |
| 72 | 12 | 32 | 42 58 74 91 |
| 78 | 12 | 28 | 38 54 70 81 |
| 84 | 12 | 24 | 34 50 66 74 69 |

- 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

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

| Round Corrugated Aluminum Pipe 2 2/3 x 1/2 corrugation ** | | | |
|--|------------------------|--------------------|--------------------------------|
| Diameter (inches) | Minimum cover (inches) | Maximum cover (Ga) | Maximum Height of Cover (feet) |
| 12 | 12 | 123 | 16 14 12 10 8 |
| 15 | 12 | 98 | 155 218 281 344 |
| 18 | 12 | 81 | 123 174 224 275 |
| 21 | 12 | 69 | 102 144 187 228 |
| 24 | 12 | 60 | 87 123 160 195 |
| 27 | 12 | 54 | 76 108 139 171 |
| 30 | 12 | 48 | 67 95 123 151 |
| 36 | 12 | 42 | 60 85 111 136 |
| 42 | 12 | 36 | 50 71 92 113 |
| 48 | 12 | 30 | 42 58 78 96 |
| 54 | 12 | 24 | 34 50 68 84 |
| 60 | 12 | 20 | 30 46 64 80 74 |
| 66 | 12 | 16 | 26 42 60 76 70 |
| 72 | 12 | 12 | 22 38 56 72 66 |
| 78 | 12 | 8 | 18 34 52 68 62 |
| 84 | 12 | 4 | 14 30 48 64 58 |

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

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

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.

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

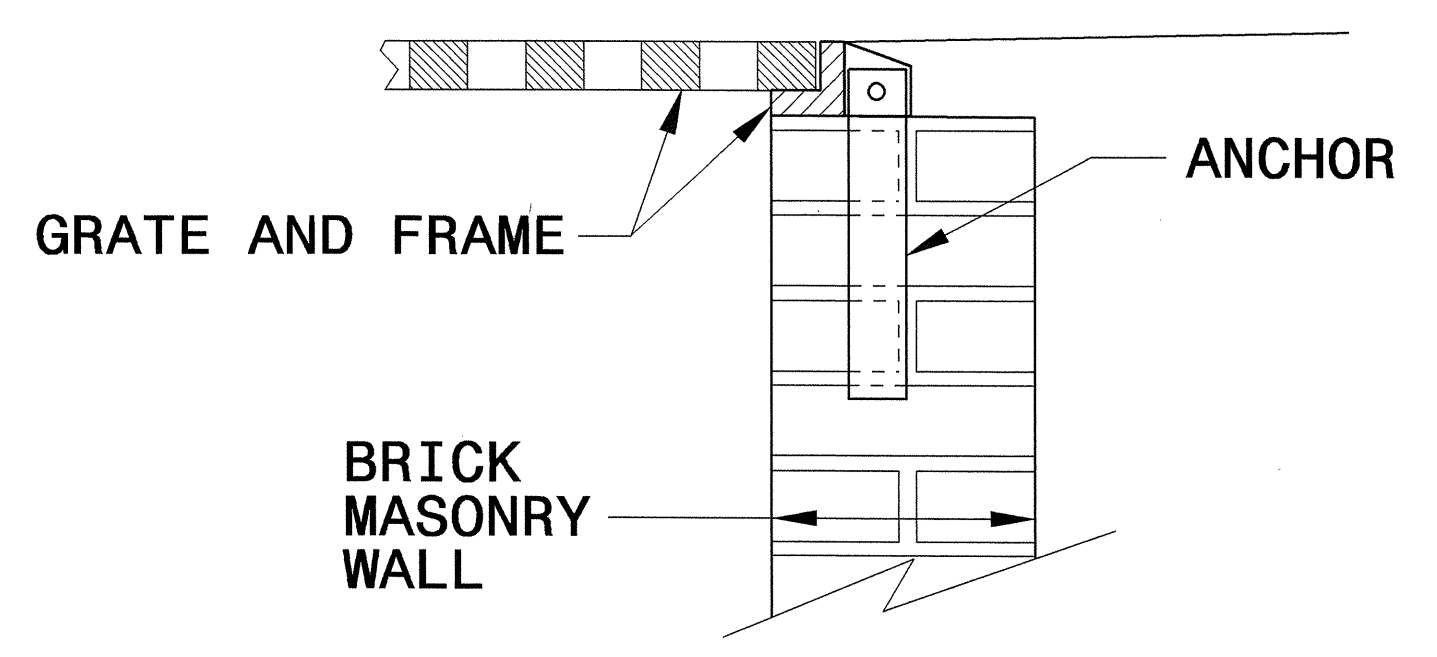
ORIGINAL BY: KKempf DATE: 5-15-09
 MODIFIED BY: *[Signature]* DATE: *[Date]*
 CHECKED BY: *[Signature]* DATE: 7/30/09
 FILE SPEC: *[Path]*



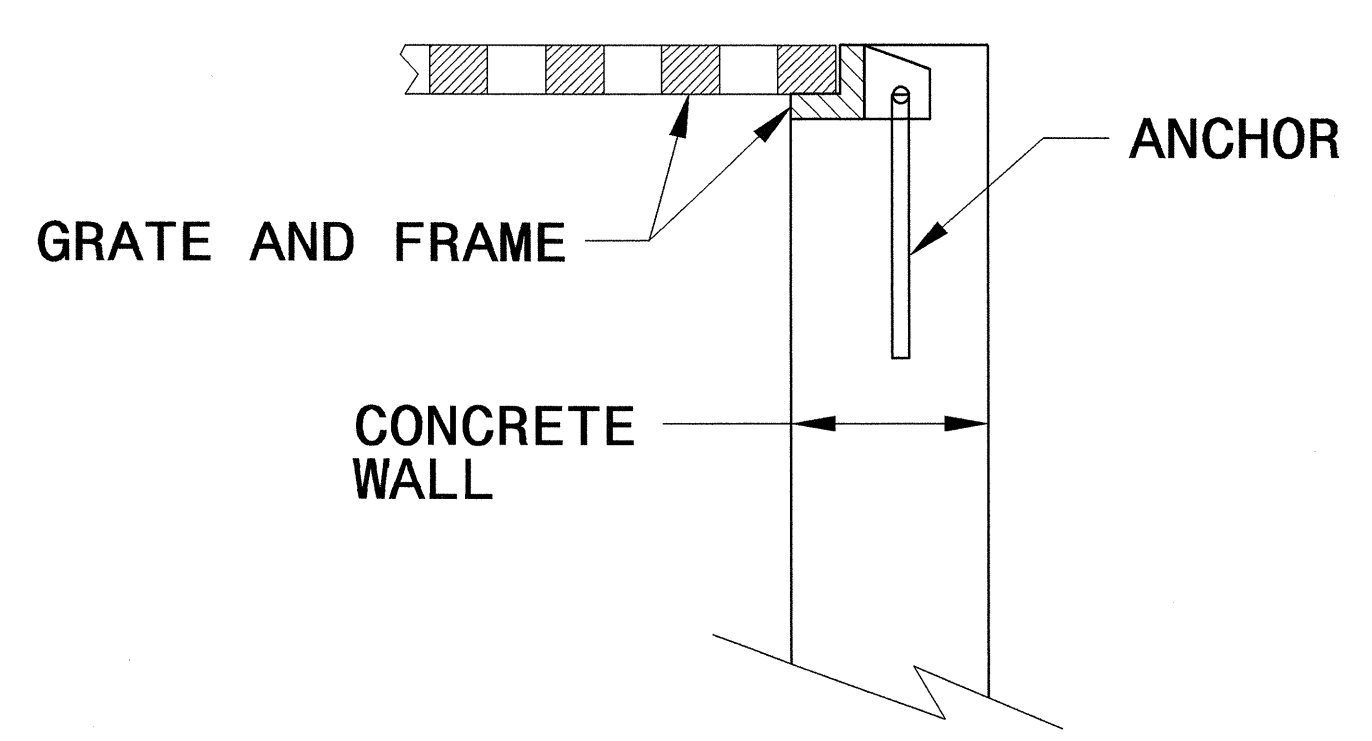
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

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

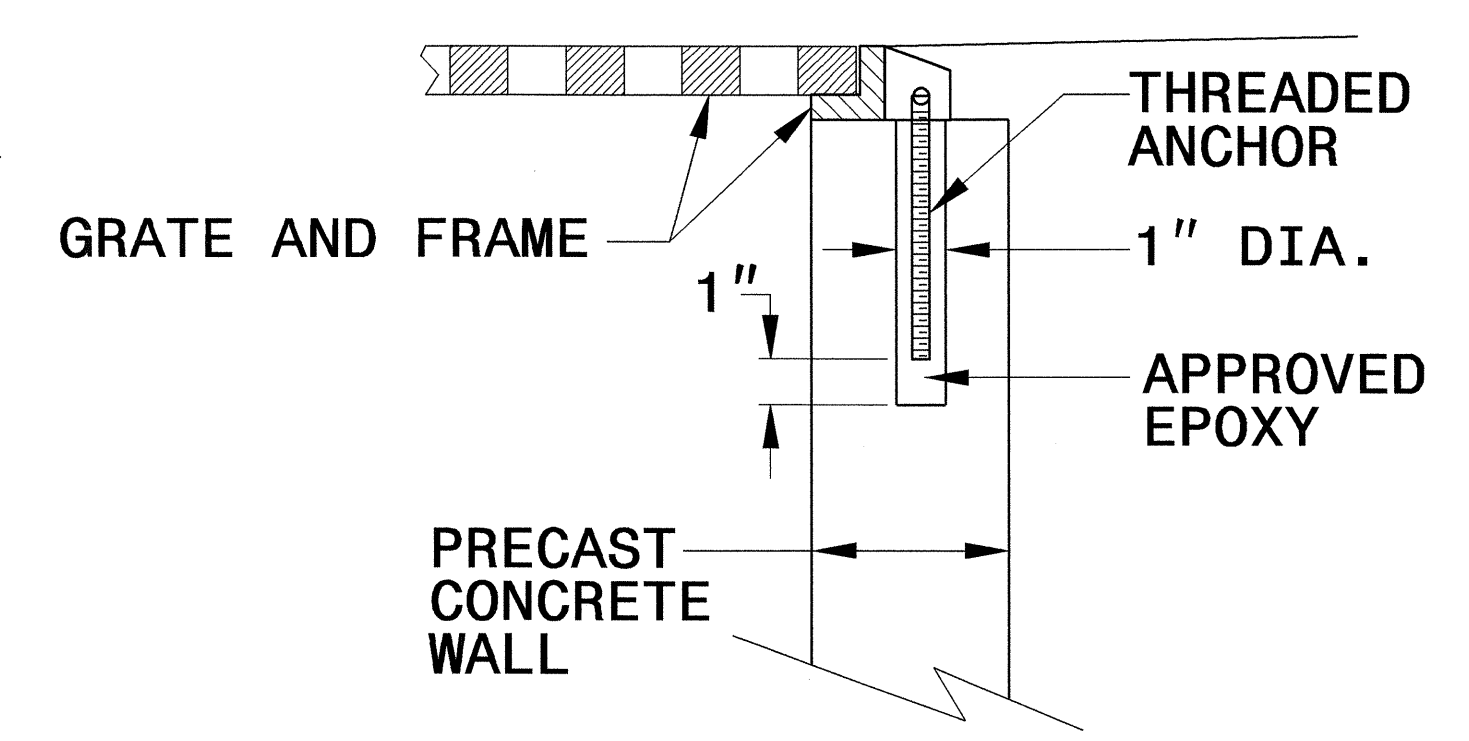
SHEET 1 OF 1
840D25



BRICK MASONRY CONSTRUCTION



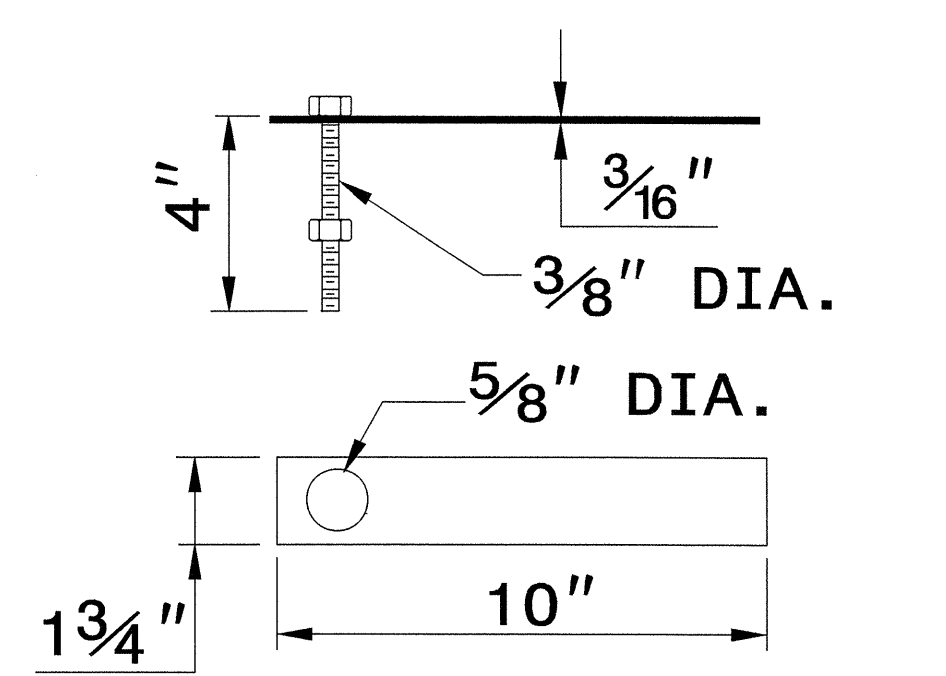
CONCRETE CONSTRUCTION



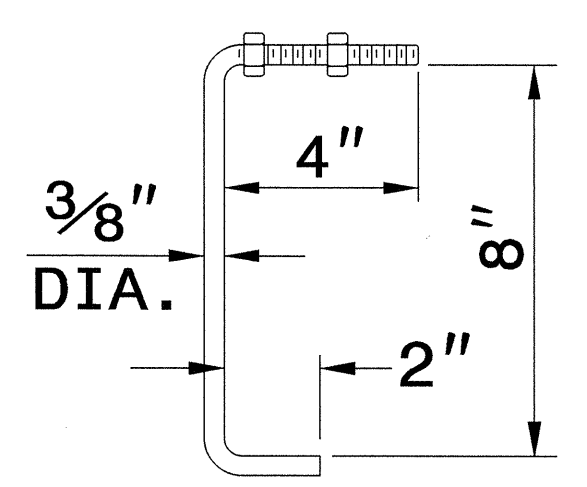
PRECAST CONCRETE CONSTRUCTION

DETAIL SHOWING ANCHORAGE OF FRAME FOR GRATED DROP INLET

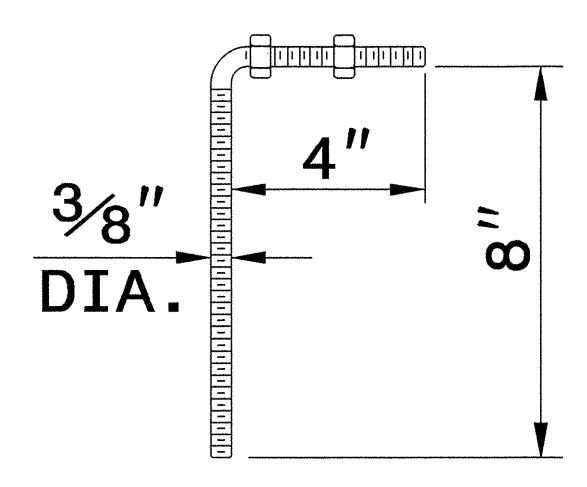
NOTE:
CONSTRUCT GRATED DROP INLET TO COINCIDE WITH NORMAL OR SUPERELEVATED SHOULDER OR PAVEMENT SLOPE.



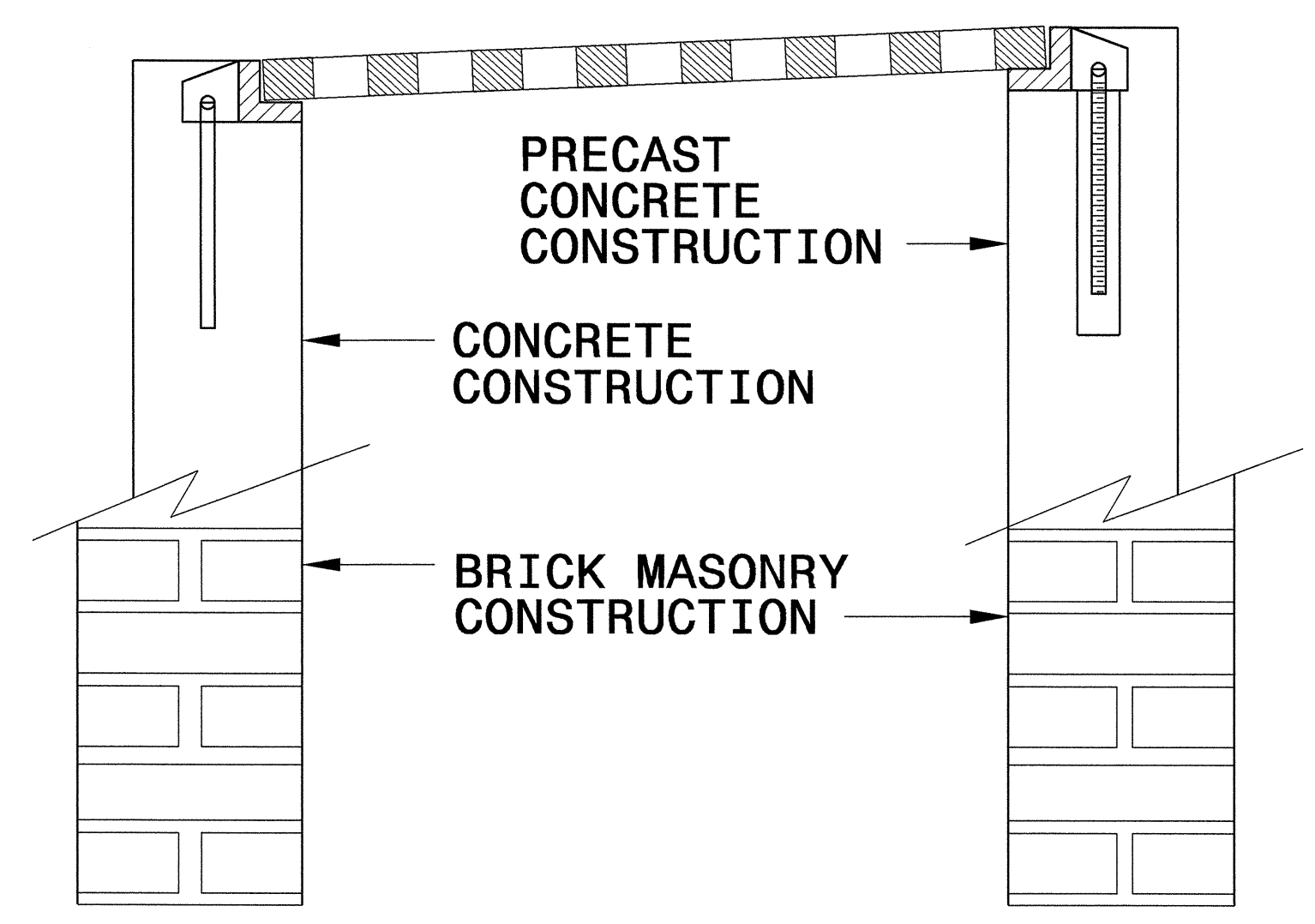
MASONRY ANCHOR
3/8" DIA. BOLT WITH PLATE



CONCRETE ANCHOR
3/8" DIA. BENT BAR



PRECAST CONCRETE ANCHOR
3/8" DIA. BENT BAR



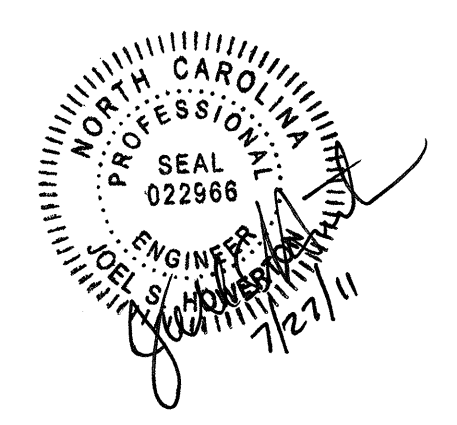
FRAME AND GRATE INSTALLATION FOR NORMAL CROWN AND SUPERELEVATED SECTIONS

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

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

SHEET 1 OF 1
840D25

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DUNN\$\$\$\$\$
\$\$\$\$\$PRNAME\$\$\$\$\$



**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.: | |

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
ROADWAY SUMMARY OF QUANTITIES FOR CONTRACT - C202659

| ItemNumber | Sec # | Quantity | Unit | Description |
|--------------|-------|----------|------|---|
| 0000100000-N | 800 | Lump Sum | | MOBILIZATION |
| 0008000000-E | 200 | 1 | ACR | SUPPLEMENTARY CLEARING & GRUB-BING |
| 0029000000-N | SP | Lump Sum | | REINFORCED BRIDGE APPROACH FILL, STATION ***** (21+24.00) |
| 0043000000-N | 226 | Lump Sum | | GRADING |
| 0057000000-E | 226 | 400 | CY | UNDERCUT EXCAVATION |
| 0195000000-E | SP | 400 | CY | SELECT GRANULAR MATERIAL |
| 0196000000-E | 270 | 400 | SY | FABRIC FOR SOIL STABILIZATION |
| 0318000000-E | SP | 69 | TON | FOUNDATION CONDITIONING MATERIAL, MINOR STRS |
| 0320000000-E | SP | 2,132 | SY | FOUNDATION CONDITIONING FABRIC |
| 0335200000-E | SP | 16 | LF | 15" DRAINAGE PIPE |
| 1220000000-E | 545 | 25 | TON | INCIDENTAL STONE BASE |
| 1297000000-E | 607 | 770 | SY | MILLING ASPHALT PAVEMENT, **** DEPTH (1-1/2") |
| 1489000000-E | 610 | 120 | TON | ASPHALT CONC BASE COURSE, TYPE B25.0B |
| 1498000000-E | 610 | 120 | TON | ASPHALT CONC INTERMEDIATE COURSE, TYPE I19.0B |
| 1519000000-E | 610 | 260 | TON | ASPHALT CONC SURFACE COURSE, TYPE S9.5B |
| 1575000000-E | SP | 30 | TON | ASPHALT BINDER FOR PLANT MIX |
| 1693000000-E | 654 | 15 | TON | ASPHALT PLANT MIX, PAVEMENT REPAIR |
| 2022000000-E | SP | 23 | CY | SUBDRAIN EXCAVATION |
| 2033000000-E | SP | 17 | CY | SUBDRAIN FINE AGGREGATE |
| 2044000000-E | SP | 100 | LF | 6" PERFORATED SUBDRAIN PIPE |
| 2070000000-N | SP | 1 | EA | SUBDRAIN PIPE OUTLETS |
| 2077000000-E | SP | 6 | LF | 6" OUTLET PIPE (SUBDRAINS) |
| 2286000000-N | 840 | 1 | EA | MASONRY DRAINAGE STRUCTURES |
| 2367000000-N | 840 | 1 | EA | FRAME WITH TWO GRATES, STD 840.29 |

| ItemNumber | Sec # | Quantity | Unit | Description |
|--------------|-------|----------|------|---|
| 2556000000-E | 846 | 14 | LF | SHOULDER BERM GUTTER |
| 3030000000-E | 862 | 625 | LF | STEEL BM GUARDRAIL |
| 3150000000-N | 862 | 5 | EA | ADDITIONAL GUARDRAIL POSTS |
| 3215000000-N | 862 | 4 | EA | GUARDRAIL ANCHOR UNITS, TYPE III |
| 3270000000-N | SP | 4 | EA | GUARDRAIL ANCHOR UNITS, TYPE 350 |
| 3649000000-E | 876 | 1 | TON | RIP RAP, CLASS B |
| 3656000000-E | 876 | 455 | SY | FILTER FABRIC FOR DRAINAGE |
| 4400000000-E | 1110 | 386 | SF | WORK ZONE SIGNS (STATIONARY) |
| 4405000000-E | 1110 | 96 | SF | WORK ZONE SIGNS (PORTABLE) |
| 4410000000-E | 1110 | 119 | SF | WORK ZONE SIGNS (BARRICADE MOUNTED) |
| 4435000000-N | 1135 | 20 | EA | CONES |
| 4445000000-E | 1145 | 80 | LF | BARRICADES (TYPE III) |
| 4450000000-N | 1150 | 640 | HR | FLAGGER |
| 4685000000-E | 1205 | 747 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (4", 90 MILS) |
| 4686000000-E | 1205 | 747 | LF | THERMOPLASTIC PAVEMENT MARKING LINES (4", 120 MILS) |
| 4900000000-N | 1251 | 10 | EA | PERMANENT RAISED PAVEMENT MARKERS |
| 5325600000-E | 1510 | 638 | LF | 6" WATER LINE |
| 5540000000-E | 1515 | 2 | EA | 6" VALVE |
| 5800000000-E | 1530 | 541 | LF | ABANDON 6" UTILITY PIPE |
| 5871400000-E | 1550 | 423 | LF | TRENCHLESS INSTALLATION OF 6" IN SOIL |
| 5871410000-E | 1550 | 47 | LF | TRENCHLESS INSTALLATION OF 6" NOT IN SOIL |
| 6000000000-E | 1605 | 180 | LF | TEMPORARY SILT FENCE |
| 6006000000-E | 1610 | 225 | TON | STONE FOR EROSION CONTROL, CLASS A |
| 6009000000-E | 1610 | 30 | TON | STONE FOR EROSION CONTROL, CLASS B |
| 6012000000-E | 1610 | 320 | TON | SEDIMENT CONTROL STONE |

| ItemNumber | Sec # | Quantity | Unit | Description |
|--------------|-------|----------|------|--|
| 6015000000-E | 1615 | 1 | ACR | TEMPORARY MULCHING |
| 6018000000-E | 1620 | 50 | LB | SEED FOR TEMPORARY SEEDING |
| 6021000000-E | 1620 | 0.25 | TON | FERTILIZER FOR TEMPORARY SEEDING |
| 6024000000-E | 1622 | 200 | LF | TEMPORARY SLOPE DRAINS |
| 6027000000-N | 1622 | 4 | EA | INLET PROTECTION AT TEMPORARY SLOPE DRAINS |
| 6029000000-E | SP | 1,700 | LF | SAFETY FENCE |
| 6030000000-E | 1630 | 40 | CY | SILT EXCAVATION |
| 6036000000-E | 1631 | 1,550 | SY | MATting FOR EROSION CONTROL |
| 6042000000-E | 1632 | 1,600 | LF | 1/4" HARDWARE CLOTH |
| 6048000000-E | SP | 90 | SY | FLOATING TURBIDITY CURTAIN |
| 6084000000-E | 1660 | 1.5 | ACR | SEEDING & MULCHING |
| 6087000000-E | 1660 | 0.5 | ACR | MOWING |
| 6090000000-E | 1661 | 50 | LB | SEED FOR REPAIR SEEDING |
| 6093000000-E | 1661 | 0.25 | TON | FERTILIZER FOR REPAIR SEEDING |
| 6096000000-E | 1662 | 50 | LB | SEED FOR SUPPLEMENTAL SEEDING |
| 6108000000-E | 1665 | 0.5 | TON | FERTILIZER TOPDRESSING |
| 6114500000-N | SP | 10 | MHR | SPECIALIZED HAND MOWING |
| 6117000000-N | SP | 25 | EA | RESPONSE FOR EROSION CONTROL |

COMPUTED BY: GSM DATE: 8/1/2011
 CHECKED BY: JEB DATE: 8/1/2011

PROJECT NO. B-4463 SHEET NO. 3-A

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

| Station | Station | TOTAL UNCLASS. EXCAV. | UNDERCUT | Embank. +% | Borrow | Waste |
|--|------------------------|-----------------------|----------|------------|------------|----------|
| -L- 17+71.27 | 20+92.50 (BEG. BRIDGE) | 15 | | 286 | 271 | |
| SUBTOTAL: | | 15 | | 286 | 271 | |
| -L- 21+55.50 (END BRIDGE) | 23+61.72 | 18 | | 241 | 223 | |
| SUBTOTAL: | | 18 | | 241 | 223 | |
| SUMMARY SUBTOTAL: | | 33 | | 527 | 494 | 0 |
| EST. LOSS DUE TO CLEARING & GRUBBING | | 0 | | | 0 | |
| PROJECT TOTALS: | | 33 | | 527 | 494 | 0 |
| EST. 5% FOR REPLACING TOP SOIL ON BORROW PITS | | | | | 25 | |
| GRAND TOTALS: | | 33 | | | 519 | |
| SAY: | | 40 | | | 520 | |

SUMMARY OF PAVEMENT REMOVAL/BREAKING

| LINE | STATION TO STATION | LOC | ASPHALT REMOVAL (SY) | ASPHALT BREAKING (SY) | CONCRETE REMOVAL (SY) | CONCRETE BREAKING (SY) |
|---------------------|--------------------|-----|----------------------|-----------------------|-----------------------|------------------------|
| -L- | 20+81 TO 21+00 | | | | 49.50 | |
| -L- | 21+45 TO 21+68 | | | | 58.04 | |
| GRAND TOTAL: | | | | | 107.54 | |
| SAY: | | | | | 110 | |

EST. UNDERCUT = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. SELECT GRANULAR MATERIAL = 400 CY (CONTINGENCY FROM GEOTECHNICAL REPORT)
 EST. FABRIC FOR SOIL STABILIZATION = 400 SY (CONTINGENCY FROM GEOTECHNICAL REPORT)

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.

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

"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

| LINE | BEG. STA. | END STA. | LOC. | LENGTH | | | WARRANT POINT | | "N" DIST FROM E.O.L. | TOTAL SHLDR WIDTH | FLARE LENGTH | | W | | ANCHORS | | | | | | | IMP. ATTEN. TYPE 350 | | | REMOVE EXISTING GRDRAIL | REMARKS | | | | | | | | | | | | |
|-----------------|-----------|----------|------|---------------|-------------|--------------|---------------|------------|----------------------|-------------------|--------------|------------|-----------|------------|---------|----|----------|-------|-----|-----|------|----------------------|---|----|-------------------------|---------|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | STRAIGHT | SHOP CURVED | DOUBLE FACED | APPR. END | TRAIL. END | | | APPR. END | TRAIL. END | APPR. END | TRAIL. END | XI MOD | XI | GRAU 350 | M-350 | XII | III | B-77 | EA | G | NG | | | | | | | | | | | | | | |
| -L- | 17+88.75 | 20+88.75 | RT | 300.00 | | | 20+88.75 | | 9.25 | 8 | 231.25 | | 0.75 | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- | 19+58.75 | 20+96.25 | LT | 137.50 | | | | 20+96.25 | 9.25 | 8 | | 68.75 | | 0.75 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- | 21+51.75 | 22+89.25 | RT | 137.50 | | | | 21+51.75 | 9.25 | 8 | | 68.75 | | 0.75 | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- | 21+59.25 | 24+59.25 | LT | 300.00 | | | 21+59.25 | | 9.25 | 8 | 231.25 | | 0.75 | | | | | | | | | | | | | | | | | | | | | | | | | |
| SUBTOTAL | | | | 875.00 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

ANCHOR UNIT DEDUCTIONS
 GRAU 350 = 4 x 50 = -200.00
 TYPE III = 4 x 18.75 = -75.00
TOTAL 600.00
SAY 625.00
 (5 ADDITIONAL GUARDRAIL POST)

DRMP
ENGINEERS • PLANNERS • SCIENTISTS
 DYER, RIDDLE, MILLS & PRECOURT, INC.
 5950 FAIRVIEW RD., S-320
 CHARLOTTE, NC 28210
 704-332-2289 NC LICENSE NO. C-2213

COMPUTED BY: RSW DATE: 7/21/2011
 CHECKED BY: GSM DATE: 7/21/2011

PROJECT NO. B-4463 SHEET NO. 3-B

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

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

CHARSMITH

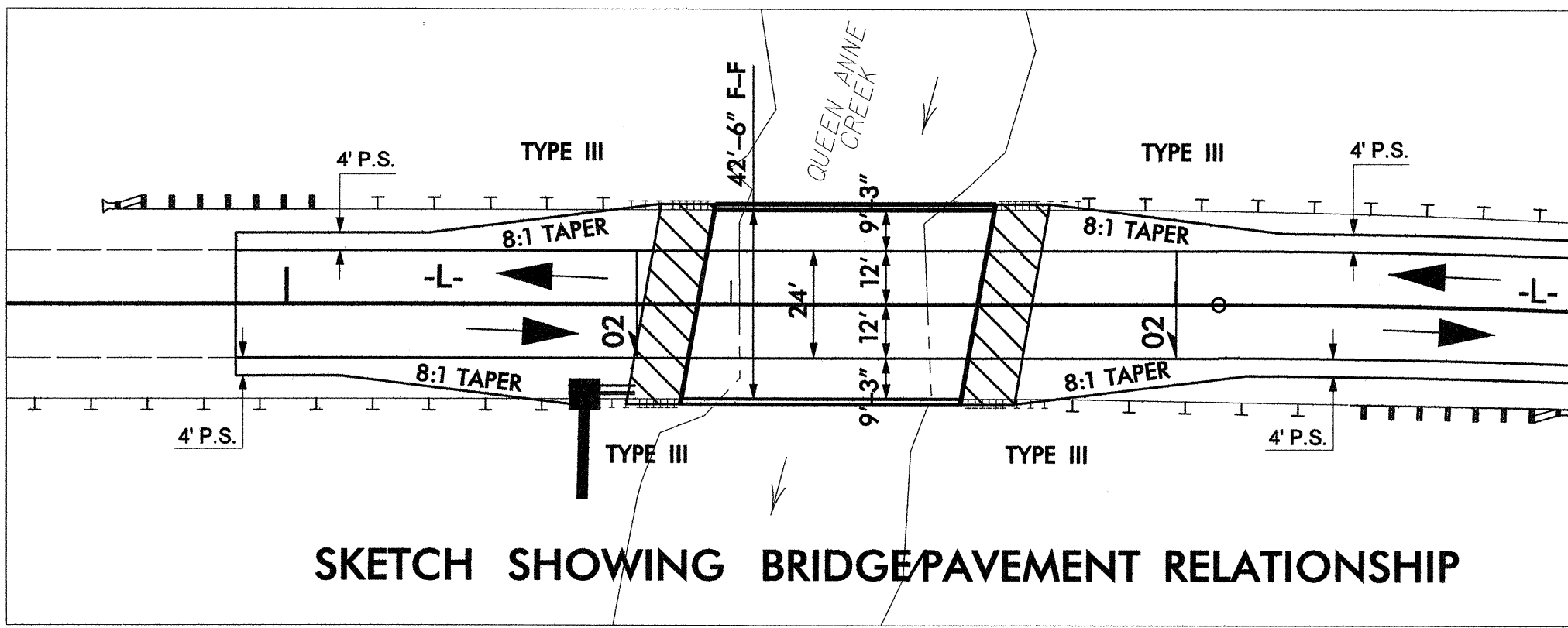
| STATION | LOCATION (LT, RT, OR CL) | STRUCTURE NO. | TOP ELEVATION | INVERT ELEVATION | INVERT ELEVATION | SLOPE CRITICAL | DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) | | | | | | | | C.S. PIPE TYPE B (UNLESS NOTED OTHERWISE) | | | | | | | | CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) | | | | | | | | ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) | QUANTITIES FOR DRAINAGE STRUCTURES TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL "B") | FRAME, GRATES, AND HOOD STANDARD 840.03 | CONCRETE TRANSITIONAL SECTION | PREFORMED SCOUR HOLE (SEE DETAIL 'A' ON SHEET 5) | CORR. STEEL ELBOWS NO. & SIZE | CONC. COLLARS CL. "B" C.Y. STD. 840.72 | CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71 | PIPE REMOVAL LIN. FT. | REMARKS | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------|--------------------------|---------------|---------------|------------------|------------------|----------------|---|-----|-----|-----|-----|-----|-----|-----|--|-----|-----|-----|-----|-----|-----|-----|---|-----|-----|-----|-----|-----|-----|-----|--|---|---|----------------------------------|--|-------------------------------|--|---|-----------------------|---------|-----------|------------------|------------|-------------|---------------------------------|----------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-------------------------------------|--|---|--|----------------------------|----------------------|----------------------------|----------------------------------|-------------------------------------|--|--|--|--|--|--|--|--|--|
| | | | | | | | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | 12" | 15" | 18" | 24" | 30" | 36" | 42" | 48" | | | | | | | | | | | CU. YARDS | TYPE OF GRATE | DROP INLET | CATCH BASIN | D.I. STD. 840.14 OR STD. 840.15 | D.I. FRAME AND GRATE STD. 840.16 | G.D.I. TYPE "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. 840.22 | G.D.I. FRAME WITH TWO GRATES STD. 840.22 | G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29 | G.D.I. FRAME WITH TWO GRATES STD. 840.20 | J.B. STD. 840.31 OR 840.32 | T.B.D.I. STD. 840.35 | M.H. STD. 840.51 OR 840.53 | M.H. FRAME AND COVER STD. 840.54 | BICYCLE SAFE STEEL FRAME AND GRATES | | | | | | | | | |
| THICKNESS OR GAUGE | FROM | TO | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| -L- 20+67 | RT | 1 | 4.9 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | 1 | OUT | 2.0 | 1.2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHEET TOTALS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

DRMP DYER, RIDDLE, MILLS & PRECOURT, INC.
 ENGINEERS • PLANNERS • SCIENTISTS
 5950 FAIRVIEW ROAD, S. 320
 CHARLOTTE, NC 28210
 704-332-2289 NC LICENSE NO. C-2213

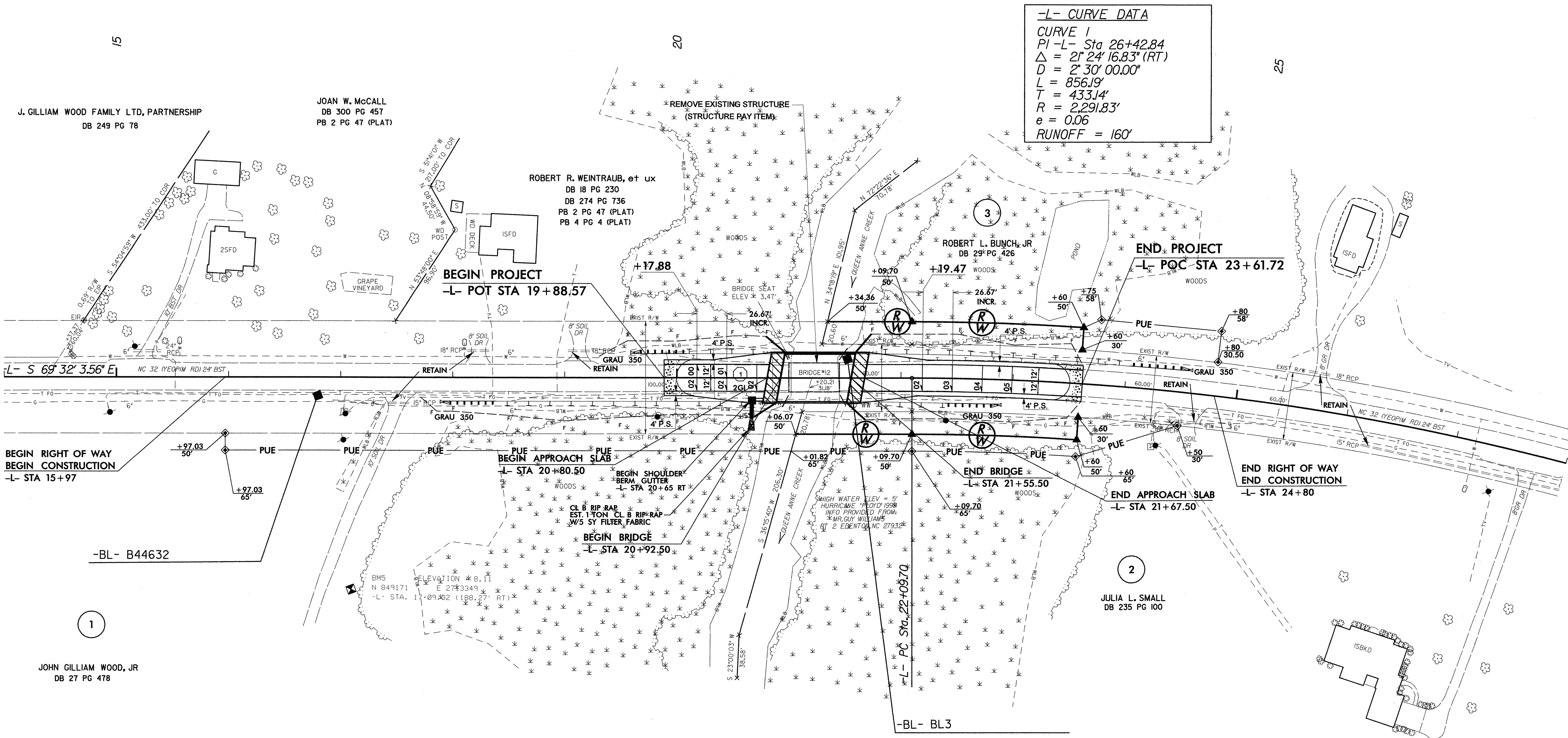
MA Engineering
 CONSULTANTS, INC.
 598 East Chatham Street, Suite 137
 Cary, NC 27511
 Phone: 919.297.0220 Fax: 919.297.0221 NC LICENSE NO. F-0160

8/17/99

| | |
|--|-------------------------|
| PROJECT REFERENCE NO. B-4463 | SHEET NO. 4 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| DRMP MA Engineering ENGINEERS - PLANNERS - SCIENTISTS DYE, RIDOLE, MILLS & FREEDMAN, INC. 5550 FARMVIEW RD., SUITE 300 CHARLOTTE, NORTH CAROLINA 28202 Phone: 919.297.0220 Fax: 919.297.0221 NC License No. E-293 | |



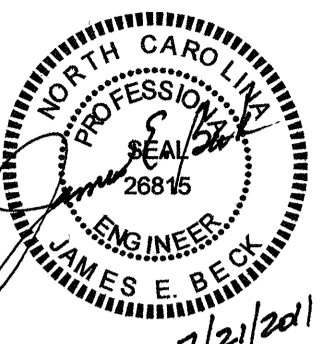

FOR STRUCTURE PLANS, SEE SHEET S-1 THRU S-3
FOR -L- PROFILE, SEE SHEET NO. 5





REVISIONS

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5/14/99

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|---|---|
| ROADWAY DESIGN ENGINEER  | HYDRAULICS ENGINEER  |
|---|---|

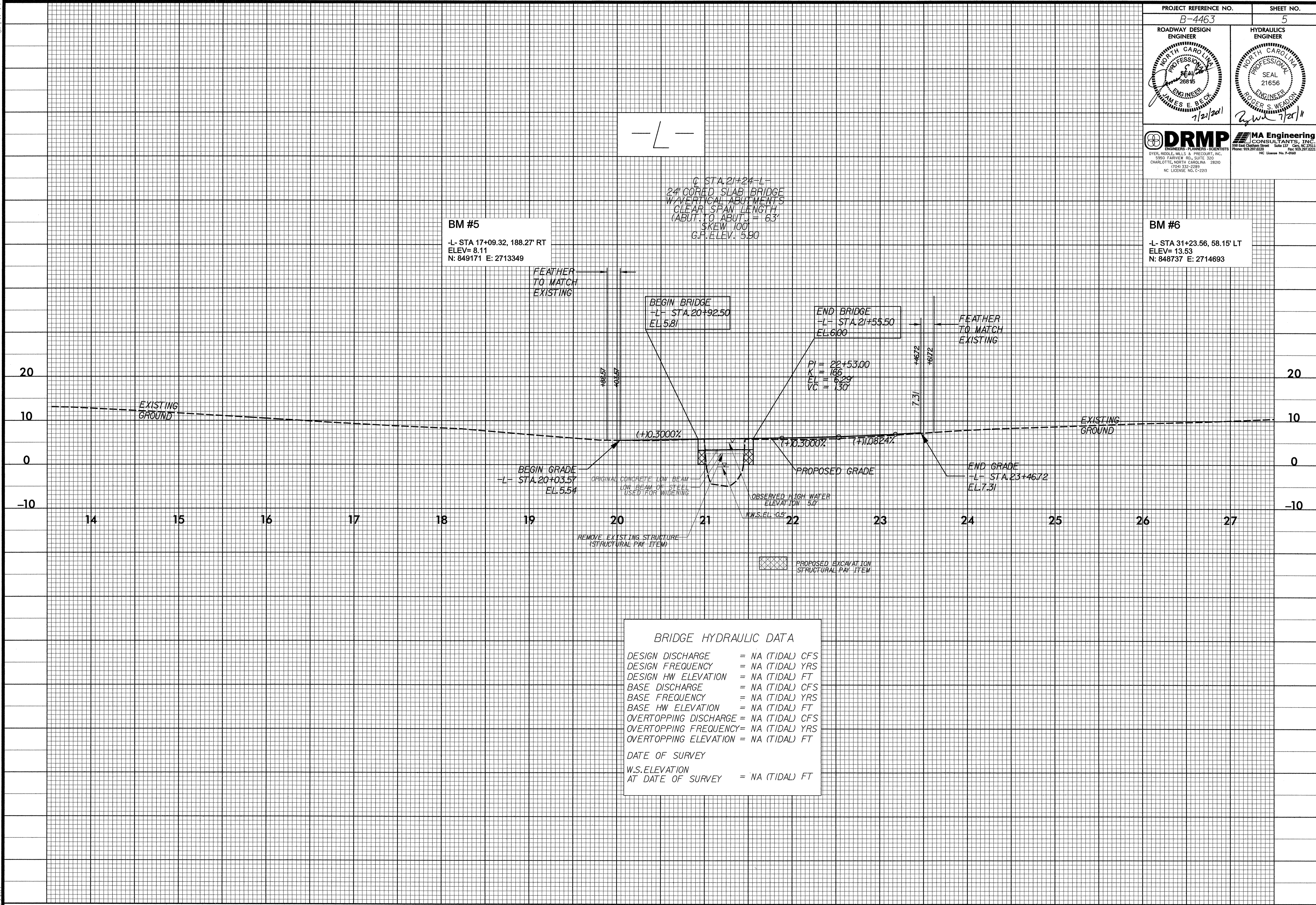
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|--|--|
|  DRMP ENGINEERS - PLANNERS - SCIENTISTS 2550 PARKVIEW RD., SUITE 303 CHARLOTTE, NORTH CAROLINA 28210 (704) 332-2289 NC LICENSE NO. C-223 |  MA Engineering CONSULTANTS, INC. 598 East Chatham Street, Suite 137, Cary, NC 27513 (919) 272-0220 NC License No. F-6060 |
|--|--|

BM #6
 -L- STA 31+23.56, 58.15' LT
 ELEV= 13.53
 N: 848737 E: 2714693

BM #5
 -L- STA 17+09.32, 188.27' RT
 ELEV= 8.11
 N: 849171 E: 2713349

-L-

C STA 21+24=-L-
 24' CORED SLAB BRIDGE
 W/VERTICAL ABUTMENTS
 CLEAR SPAN LENGTH
 (ABUT. TO ABUT.) = 63'
 SKEW 100°
 G.F. ELEV. 5.90



BRIDGE HYDRAULIC DATA

| | |
|----------------------------------|------------------|
| DESIGN DISCHARGE | = NA (TIDAL) CFS |
| DESIGN FREQUENCY | = NA (TIDAL) YRS |
| DESIGN HW ELEVATION | = NA (TIDAL) FT |
| BASE DISCHARGE | = NA (TIDAL) CFS |
| BASE FREQUENCY | = NA (TIDAL) YRS |
| BASE HW ELEVATION | = NA (TIDAL) FT |
| OVERTOPPING DISCHARGE | = NA (TIDAL) CFS |
| OVERTOPPING FREQUENCY | = NA (TIDAL) YRS |
| OVERTOPPING ELEVATION | = NA (TIDAL) FT |
| DATE OF SURVEY | |
| W.S. ELEVATION AT DATE OF SURVEY | = NA (TIDAL) FT |

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