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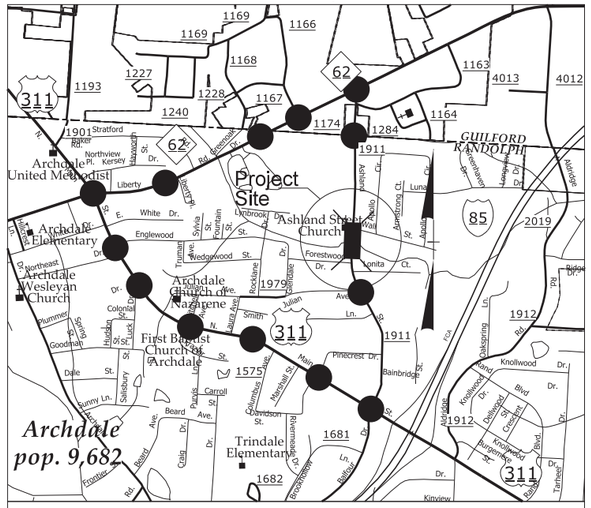
This file or an individual page shall not be considered a certified document.

SUMMIT
DESIGN AND ENGINEERING SERVICES

09/08/99

TIP PROJECT: 17BP.8.R.76

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



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ARCHDALE.

DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

LOCATION: BRIDGE NO. 750416 ON SR 1911 (ASHLAND ST) OVER DALE CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

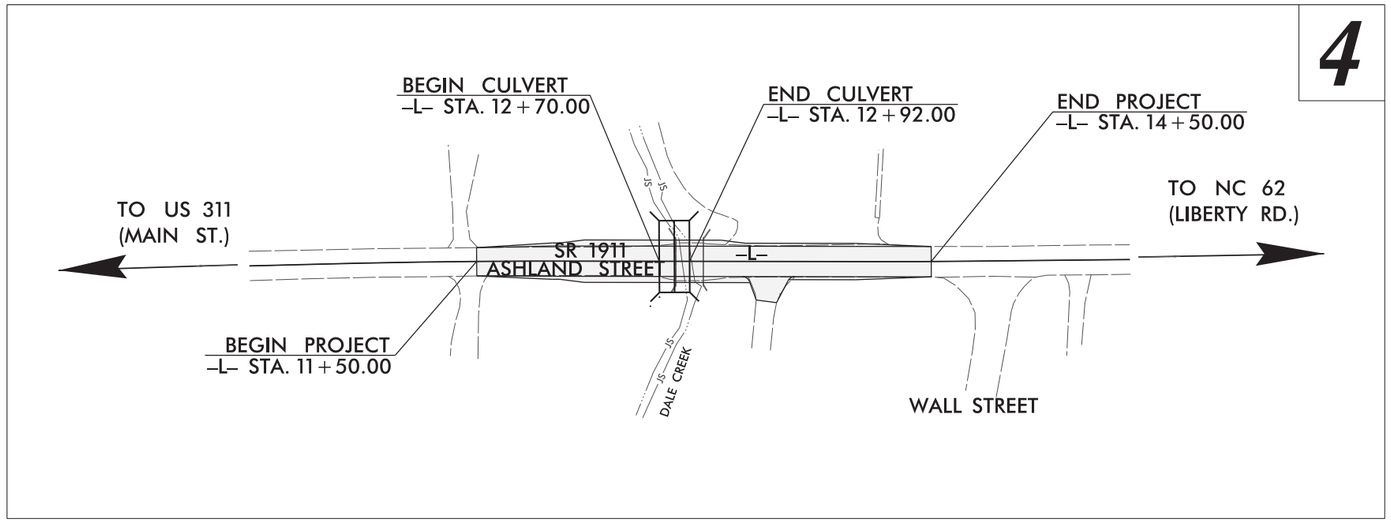
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.76	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
17BP.8.R.76	NA	PE
17BP.8.R.76	NA	R/W
17BP.8.R.76	NA	CONST

Prepared in the Office of:
SUNGATE DESIGN GROUP, P.A.
NC FIRM LICENSE No: C-0890
915 Jones Franklin Road
Raleigh, NC 27606
(919) 859-2243
(919) 859-6258 (FAX)

Prepared in the Office of:
MI ENGINEERING
NC FIRM LICENSE No: P-0671
1011 Schaub Drive, Suite 100
Raleigh, NC 27606
(919) 851-6606
(919) 851-6645 (FAX)

NC GRID NAD 83 NA 2011



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

CONTRACT:

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2011 = 1850
T = 7 % *
V = 40 MPH
* TTST = 3% DUAL 4%
FUNC CLASS =
LOCAL RURAL

SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY PROJECT = 0.057 MILES
LENGTH STRUCTURES PROJECT = 0.004 MILES
TOTAL LENGTH PROJECT = 0.057 MILES

NCDOT CONTACT: TIM WELCH, PE
NCDOT TPMU

Prepared in the Office of:
SUMMIT DESIGN AND ENGINEERING SERVICES
FIRM NO. P-0339
504 Meadowland Drive
Hillsborough, NC 27278-8551
Voice: (919) 732-3883
Fax: (919) 732-6776
www.summitde.net

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 2014

LETTING DATE: SEPTEMBER 11, 2018

TRACY N. PARROTT, PE
PROJECT ENGINEER

BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
8/16/2018
Documents signed by: Joshua G. Dalton
NORTH CAROLINA PROFESSIONAL SEAL 26971 ENGINEER JOSHUA G. DALTON P.E.

ROADWAY DESIGN ENGINEER
8/16/2018
Documents signed by: Brandon W. Johnson
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON P.E.

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	1A

ROADWAY DESIGN ENGINEER
5/29/2018

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON M. JOHNSON

Documents by:
Brandon W. Johnson
PRINT NAME
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3B-1	SUMMARY OF DRAINAGE QUANTITIES SUMMARY OF GUARDRAIL, EARTHWORK SUMMARY, AND PARCEL INDEX
4	PLAN SHEET AND PROFILE SHEET
TMP-1 THRU TMP-4	TRAFFIC CONTROL PLANS
PMP-1	PAVEMENT MARKING PLANS
RF-1	REFORESTATION PLANS
EC-1 THRU EC-6	EROSION CONTROL PLANS
UC-1 THRU UC-4	UTILITY CONSTRUCTION PLANS
X-1 THRU X-3	CROSS-SECTIONS
C-1 THRU C-6	STRUCTURE PLANS

GENERAL NOTES:

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADE LINE:
GRADING AND SURFACING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD [II].

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02

SIDE ROADS:

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

STREET TURNOUT:

STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII NOTED ON PLANS.

GUARDRAIL:

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

TEMPORARY SHORING:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE PIEDMONT NATURAL GAS.
RANDOLPH COUNTY PUBLIC WORKS, RANDOLPH EMC.
AND RANDOLPH TELEPHONE MEM. CORP.

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.

EFF. 01-16-2018
REV.

2018 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 January, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
840.00	Concrete Base Pad for Drainage Structures
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
840.24	Frames and Narrow Slot Sag Grates
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
I7BP.8.R.76	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed 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
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

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 & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line — RW
- New Right of Way Line with Pin and Cap — RW
- New Right of Way Line with Concrete or Granite R/W Marker — RW
- New Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- New Control of Access — CA
- Existing Easement Line — E
- New Temporary Construction Easement — E
- New Temporary Drainage Easement — TDE
- New Permanent Drainage Easement — PDE
- New Permanent Drainage / Utility Easement — DUE
- New Permanent Utility Easement — PUE
- New Temporary Utility Easement — TUE
- New Aerial Utility Easement — AUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — 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
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (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
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

SURVEY CONTROL SHEET 17BP.8.R.76

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	IC-1

Location and Surveys

Prepared in the Office of: SUMMIT
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

BL

POINT	DESC.	NORTH	EAST	ELEVATION	EL STATION	OFFSET
101	BL-101	788181.2500	1716472.1820	782.65	10+63.89	20.55 LT
1	750416-1	788427.7840	1716488.8950	783.15	13+10.49	18.03 LT
2	750416-2	788893.0300	1716546.4210	800.22	OUTSIDE PROJECT LIMITS	

BM1 ELEVATION = 781.40
N 788371.5120 E 1716424.0670
L STATION 12+50.15 78.09 LEFT
RR SPIKE IN BASE OF 15" SWEETGUM TREE

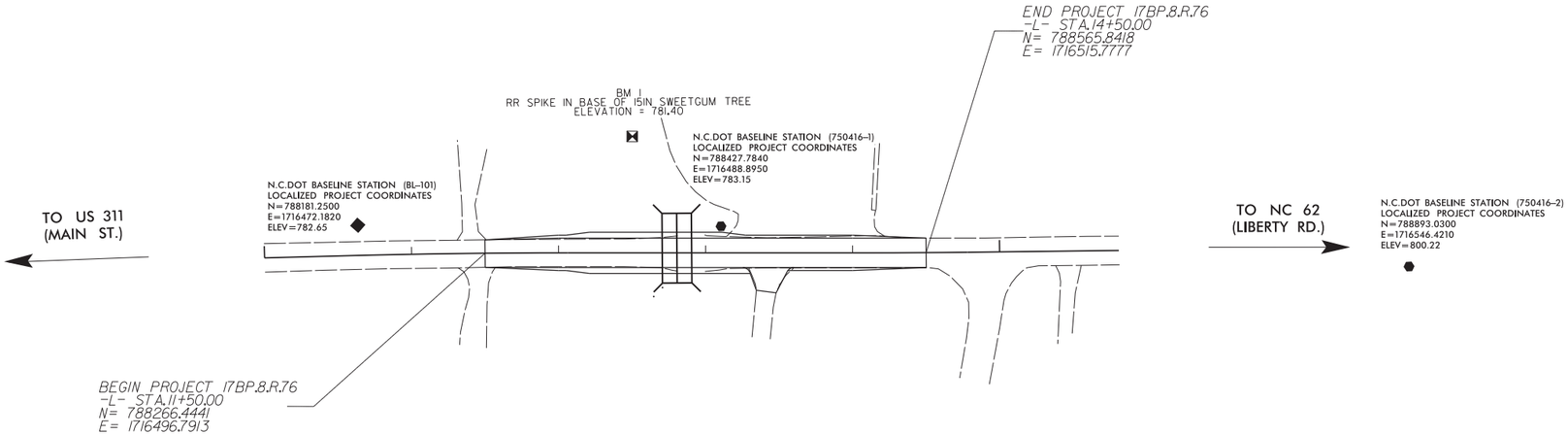
ROW MARKER / PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+70.00	-30.00	788187.7642	1716462.9849
L	10+78.00	-42.00	788196.3069	1716451.3004
L	12+56.00	-68.00	788376.6351	1716435.8115
L	12+80.00	-68.00	788400.5849	1716437.0629
L	14+38.00	-50.00	788558.8695	1716465.1609
L	14+78.00	-38.00	788598.8276	1716478.2769
L	14+76.00	-30.00	788593.4010	1716487.2655
L	11+48.00	30.00	788262.8118	1716526.8373
L	12+55.00	50.00	788368.0091	1716553.2000
L	12+55.00	82.00	788365.9405	1716588.1331
L	12+77.00	82.00	788387.8845	1716586.5553
L	13+14.00	30.00	788428.1786	1716537.0559
L	14+58.00	30.00	788572.1351	1716546.1870
L	14+52.00	50.00	788564.0635	1716565.8103
L	14+68.00	54.00	788580.8589	1716570.7098
L	14+74.00	30.00	788588.1945	1716547.0726

L

TYPE	STATION	NORTH	EAST
POT	10+00.00	788116.5885	1716490.2632
PC	10+54.55	788171.0956	1716492.3483
PT	12+06.14	788322.2788	1716500.1457
PC	14+10.97	788526.8865	1716513.3873
PT	14+78.22	788594.0168	1716517.3407
POT	15+81.08	788696.7362	1716522.7852

NC GRID
NAD 83 NA 2011



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "750416-1"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 788427.7840(ft) EASTING: 1716488.8950(ft)
ELEVATION: 783.149(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999064220
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "750416-1" TO -L- STATION IS

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: HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/*

   THE FILES TO BE FOUND ARE AS FOLLOWS: 750416_LS_BASELINE.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.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	2A-1

ROADWAY DESIGN ENGINEER
7/31/2017

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W JOHNSON

DocuSigned by: Brandon W. Johnson
5C06144C1F4N

Prepared for: Inc.
Office of: SUMMIT

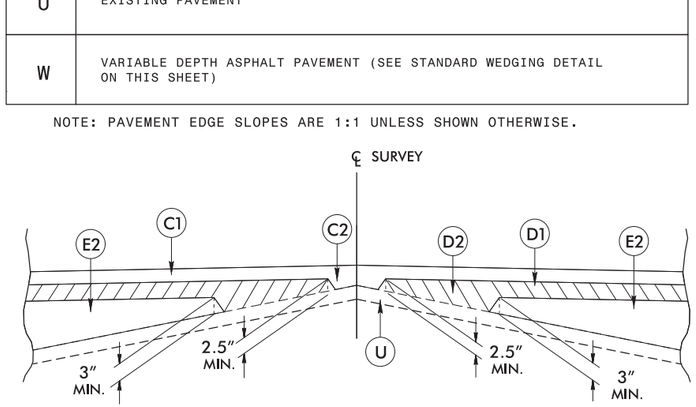
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

PAVEMENT DESIGN ENGINEER

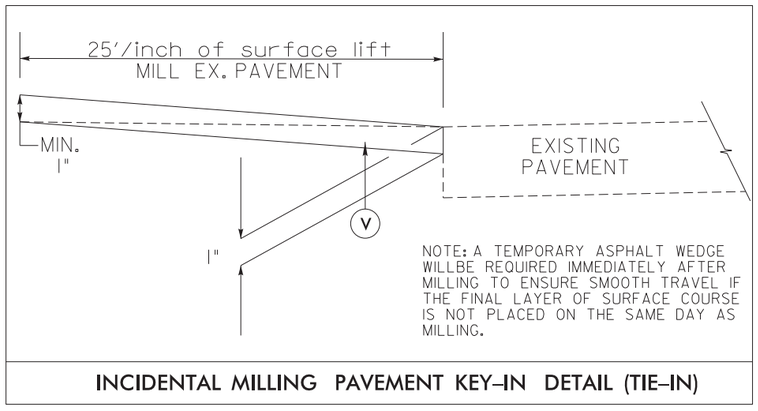
PAVEMENT SCHEDULE

C1	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5″ IN DEPTH.
D1	PROP. APPROX. 3″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 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″ 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. VARIABLE 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
T	EARTH MATERIAL
V	MILLING BITUMINOUS PAVEMENT.
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL ON THIS SHEET)

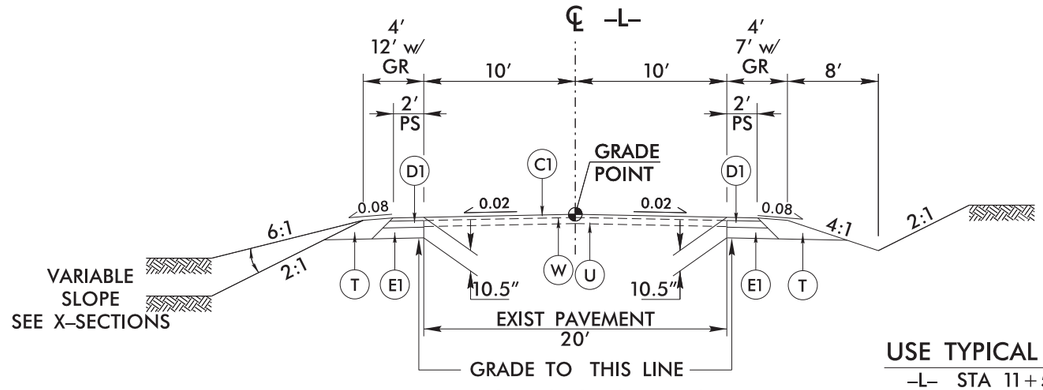
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method of Wedging



INCIDENTAL MILLING PAVEMENT KEY–IN DETAIL (TIE–IN)



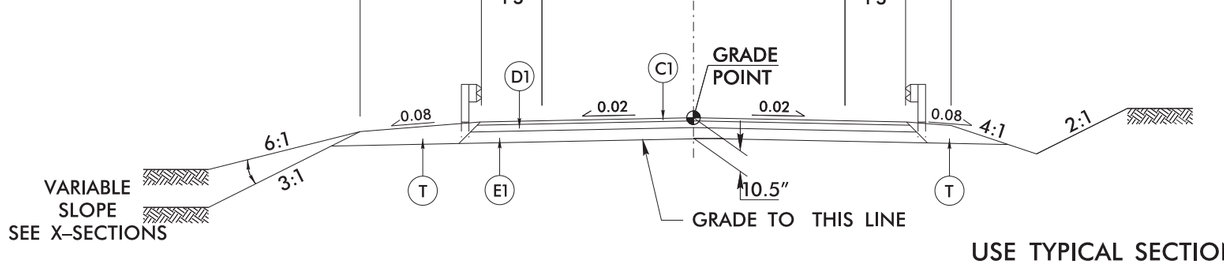
TYPICAL SECTION NO. 1

–L– (ASHLAND ST)

NOTE: PLACE FDPS TO FACE OF GUARDRAIL AS SHOWN ON PLANS

USE TYPICAL SECTION NO. 1

–L– STA 11+50.00 TO STA 12+46.00
–L– STA 13+16.00 TO STA 14+50.00

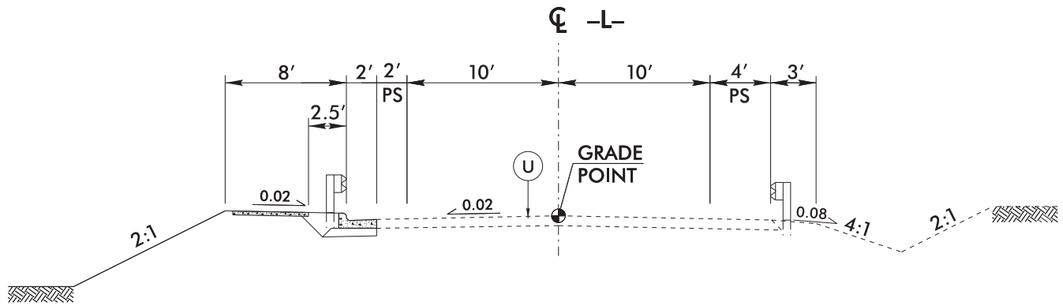


TYPICAL SECTION NO. 2

–L– (ASHLAND ST)

USE TYPICAL SECTION NO. 2

–L– STA 12+46.00 TO STA 13+16.00



DETAIL 1

FUTURE WIDENING FOR SIDEWALK CONSTRUCTION DONE BY OTHERS

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	3B-1

Prepared in the Office of: SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883 - (919) 732-6676 (FAX)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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

"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 SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	TYPE-III	GREU TL-2	M-350	XIII	CAT-1	VI MOD	BIC	AT-1	EA	G	NG				
-L-	12+21.00	13+28.06	RT	62.50	37.5		12+71.00	12+91.00	4.00	7.00	25						1						1							
-L-	12+21.00	13+22.24	LT	56.25	37.5		12+91.00	12+71.00	4.00	7.00		25					1						1							
TOTALS				118.75	75												2						2							

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

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 (UNLESS NOTED OTHRWISE)													CLASS III R.C. PIPE (UNLESS OTHERWISE NOTED)								15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
SIZE								8"	12"	15"	18"	24"	30"	36"	42"	12"	15"	18"	24"		30"		36"		42"		48"		12"	15"	18"	24"	30"	36"	42"	48"			
THICKNESS OR GAUGE		FROM	TO													.064	.064	.064	.064		.079		.079		.109		.109												
-L- 12+90	LT	0401																																					
	LT	0401	0402		778.0	784.0	2.3																								132								
-L- 14+23	LT	0402		787.9																																			
	LT	0402	0403																																				
-L- 14+62	LT	0403																																					
	LT	0403	0404																																				
TOTALS																															132								

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS.		QUANTITIES FOR DRAINAGE STRUCTURES * TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B')			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES AND HOOD STANDARD 840.03 TYPE OF GRATE				D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & 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 GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32								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
				R.C.P.	C.S.P.	PER EACH (0' THRU 5.0')	LIN. *FT. A 5.0' THRU 10.0'	LIN. *FT. B 10.0' AND ABOVE		E	F	G																							
-L- 12+90	LT	0401																																	INSTALL PIPE OUTLET THRU RCBC SIDE WALL
	LT	0401	0402																															118	REMOVE & REPLACE EX. 18" RCP
-L- 14+23	LT	0402				1												1				1													REMOVE & REPLACE EX. DI
	LT	0402	0403																																RETAIN EXISTING 18" RCP
-L- 14+62	LT	0403																																	RETAIN EXISTING DI
	LT	0403	0404																																RETAIN EXISTING 18" RCP
TOTALS						1												1				1												118	

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

SUMMARY OF EARTHWORK

IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+20%	BORROW	WASTE
-L- LT STA. 11+50.00 TO 14+50.00	83		185	102	
TOTAL	83		185	102	
ESTIMATED SHOULDER CONSTRUCTION			108	108	
LOSS DUE TO CLEARING & GRUBBING			97	97	
PROJECT TOTALS	83		390	307	
5% TO REPLACE TOP SOIL				15	
GRAND TOTALS	83		390	322	
SAY	90		390	325	

PARCEL INDEX

PARCEL NO.	OWNER	TYPE	AREA (SF)	AREA (AC)
1	JAMES A. & WILLIE R. CARRELL DB 915 PG 284 PB 8 PG 3	DUE	2699.44	0.062
2	BENJAMIN CHAD HINES DB 2104 PG 542 PB 8 PG 3	DUE	2460.27	0.057
3	ASHLAND STREET CHURCH DB 2080 PG 1463 PB 8 PG 3	DUE	7775.50	0.179
4	JEFF HAZELTON & LORENE KING DB 1206 PG 1313 DB 1239 PG 216 PB 8 PG 3	DUE	722.68	0.017
4	JEFF HAZELTON & LORENE KING DB 1206 PG 1313 DB 1239 PG 216 PB 8 PG 3	PUE	105.18	0.002

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8/17/99

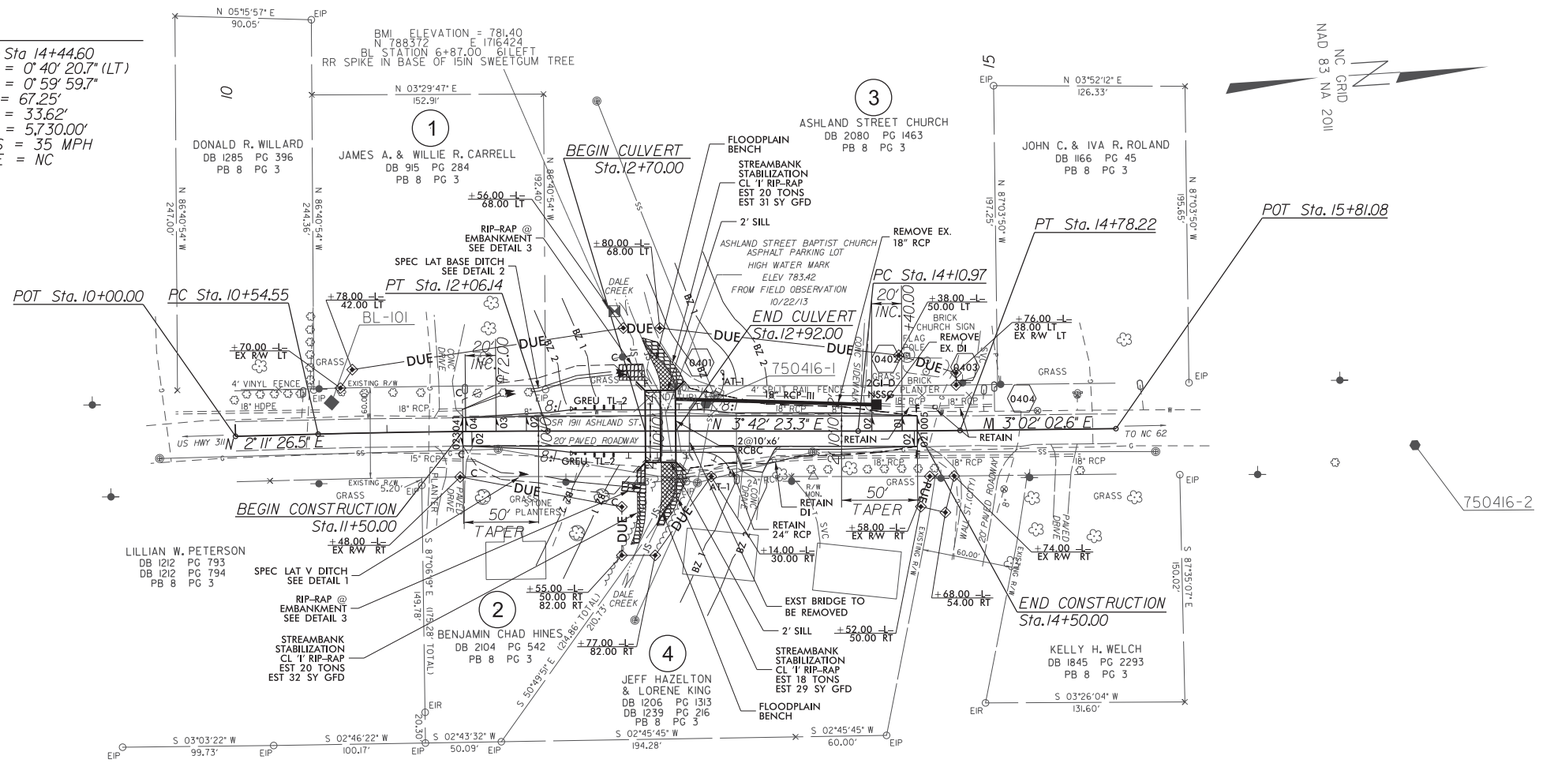
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER 5/29/2018 — SEAL 034371 — ENGINEER — BRANDON JOHNSON — Docusigned by: Brandon W. Johnson	HYDRAULICS ENGINEER 5/29/2018 — SEAL 26971 — ENGINEER — JOSHUA DALTON — Docusigned by: Joshua G. Dalton

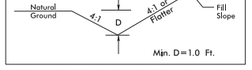
-L-

PI Sta 11+30.35	PI Sta 14+44.60
Δ = 1° 30' 56.8" (RT)	Δ = 0° 40' 20.7" (LT)
D = 0° 59' 59.7"	D = 0° 59' 59.7"
L = 151.59'	L = 67.25'
T = 75.80'	T = 33.62'
R = 5,730.00'	R = 5,730.00'
DS = 35 MPH	DS = 35 MPH
SE = NC	SE = NC

NAD 83 NA 2011 NC GRID



DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)

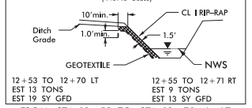


FROM STA. 11+58 TO STA. 12+65 -L- RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)

FROM STA. 11+50 TO STA.12+65 -L- LT

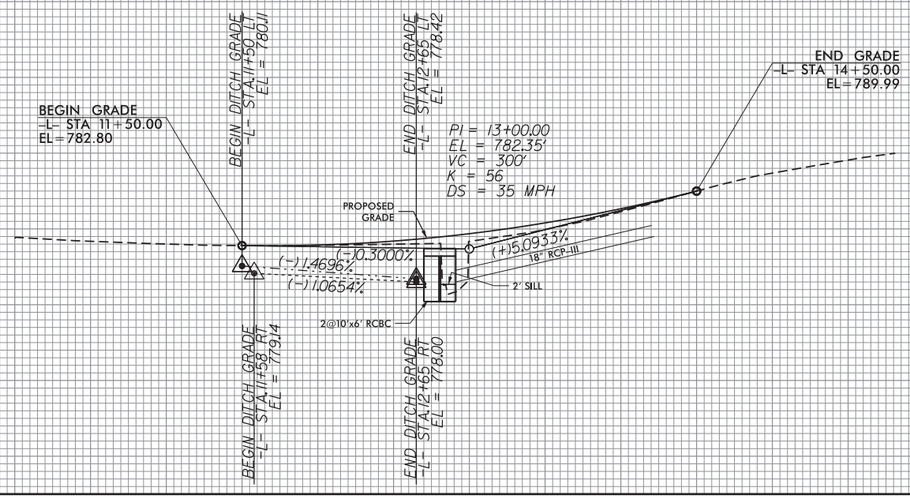
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



12+53 TO 12+70 LT	12+55 TO 12+71 RT
EST 13 TONS	EST 9 TONS
EST 19 SY GFD	EST 13 SY GFD

FROM STA. 12+53 TO STA. 12+70 -L- LT
FROM STA. 12+55 TO STA. 12+71 -L- RT

BM #1:
RR SPIKE IN BASE OF 15" SWEETGUM
-BL- STA 6+87.00, 60.87' LT
-L- STA 12+50.15, 79.09' LT
EL 781.40'



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 691	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 782.1	FT
BASE DISCHARGE	= 1270	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 783.80	FT
OVERTOPPING DISCHARGE	= 691+	CFS
OVERTOPPING FREQUENCY	= 10+	YRS
OVERTOPPING ELEVATION	= 782.8	FT

DITCH LEGEND

LEFT DITCH	-·-·-·-·-
RIGHT DITCH	----------

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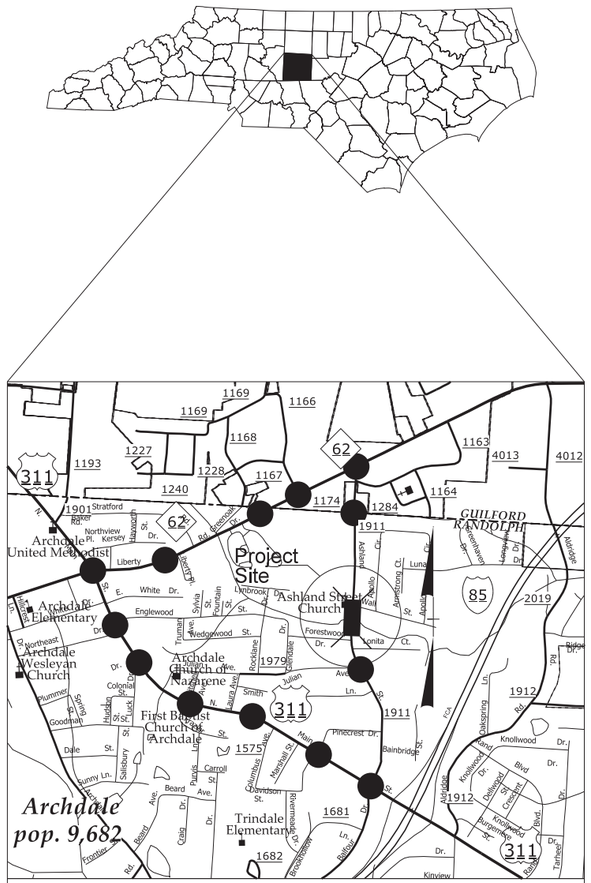
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

RANDOLPH COUNTY

(BRIDGE NO. 750416)



VICINITY MAP

DETOUR ROUTE

INDEX OF SHEETS

ROADWAY STANDARD DRAWINGS

THE FOLLOWING ROADWAY STANDARDS AS SHOWN IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1101.03	TEMPORARY ROAD CLOSURES

LEGEND

- DIRECTION OF TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- BARRICADE (TYPE III)
- STATIONARY SIGN

SHEET NO.
TMP-1

17BP.8.R.76

TIP PROJECT:

WORK ZONE SAFETY & MOBILITY
"from the MOUNTAINS to the COAST"

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 773-2800 FAX: (919) 771-2745

J. E. HUMMER, P.E. — *STATE TRAFFIC MANAGEMENT ENGINEER*
T.N. PARROTT, P.E. — *TRAFFIC CONTROL PROJECT ENGINEER*
B.W. JOHNSON, P.E. — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*
S.W. MERRITT, E.I. — *TRAFFIC CONTROL DESIGN ENGINEER*

DIVISION OF HIGHWAYS * STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION * WORK ZONE TRAFFIC CONTROL

Prepared in the Office of:
SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

APPROVED Documents by: Brandon W. Johnson
DATE:

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

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Prepared in the Office of: SUMMIT
NC FIRM LICENSE No: P-0339
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Hillsborough, NC 27278
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PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	TMP-1A

MANAGEMENT STRATEGIES

BRIDGE #416 ON SR 1911 (ASHLAND ST.) REPLACEMENT TO BE PERFORMED UNDER ROAD CLOSURE WITH AN INTERMEDIATE CONTRACT TIME.

LOCAL ACCESS TO ALL RESIDENCES AND BUSINESSES WILL BE MAINTAINED BETWEEN CLOSURE POINTS AT ALL TIMES DURING CONSTRUCTION.

PHASING

INTERMEDIATE CONTRACT TIME: 120 DAYS

PROVIDE ENGINEER A THIRTY (30) DAY WRITTEN NOTICE PRIOR TO ROAD CLOSURE.

STEP 1:

IMPLEMENT OFF–SITE DETOUR AND ROAD CLOSURE FOR SR 1911 AT BRIDGE #416 AS SHOWN ON SHEET TMP–2 AND TMP–3 AND IN ACCORDANCE WITH THE GENERAL NOTES. COVER ALL ADVANCE WARNING SIGNS AND DETOUR SIGNS PRIOR TO ROAD CLOSURE.

STEP 2:

WITH SR 1911 CLOSED TO TRAFFIC PERFORM ALL BRIDGE REPLACEMENT OPERATIONS. PRIOR TO OPENING THE ROADWAY TO TRAFFIC, PLACE FINAL PAVEMENT MARKINGS.

STEP 3:

UPON COMPLETION OF BRIDGE WORK REMOVE THE ROAD CLOSURE AND DETOUR SIGNS AND OPEN SR 1911 TO TRAFFIC.

LOCAL NOTES

NOTIFY RANDOLPH COUNTY SCHOOLS AT (336) 318–6100 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

NOTIFY RANDOLPH COUNTY EMERGENCY SERVICES AT (336) 318–6911 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

NOTIFY CITY OF ARCHDALE AT (336) 431–9141 AT LEAST ONE MONTH PRIOR TO ROAD CLOSURE.

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSION IN THE DETAIL DRAWINGS, STANDARD DETAILS AND ROADWAY DETAILS ARE NOT ATTAINABLE TO MEET FIELD CONDITIONS, OR RESULT IN DUPLICATE OR UNDESIRED OVERLAPPING OF DEVICES. MODIFICATION MAY INCLUDE: MOVING, SUPPLEMENTING, COVERING OR REMOVAL OF DEVICES, AS DIRECTED BY THE ENGINEER.

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN, OR DIRECTED BY THE ENGINEER.

TRAFFIC PATTERN ALTERATIONS

1. NOTIFY THE ENGINEER ONE MONTH PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

2. PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TMP SHEETS.

3. PROVIDE SIGNING REQUIRED FOR THE OFF–SITE DETOUR ROUTE AS SHOWN IN THE TMP SHEETS. COVER OR REMOVE SIGNS WHEN DETOUR IS NOT IN OPERATION.

4. ENSURE ALL NECESSARY SIGNING IS IN PLACE PRIOR TO ALTERING ANY TRAFFIC PATTERN.

TRAFFIC CONTROL DEVICES

PLACE TYPE III BARRICADES, WITH "ROAD CLOSED" SIGN R11–2 ATTACHED, OF SUFFICIENT LENGTH TO CLOSE ENTIRE ROADWAY.

PAVEMENT MARKINGS AND MARKERS

1. INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE, AS SHOWN IN THE PAVEMENT MARKING PLAN.

2. TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

APPROVED: Brandon W. Johnson DATE: 7/31/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

TRANSPORTATION OPERATIONS PLAN

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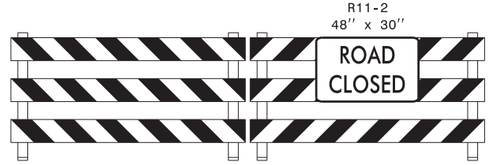
Prepared in the Office of:
SUMMIT
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	TMP-2

A

B



TYPE III BARRICADE(S)

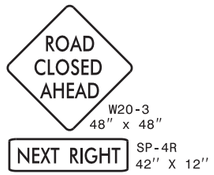
C

TYPE III BARRICADE

D

E

F



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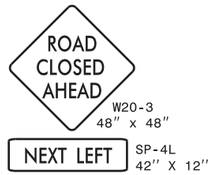

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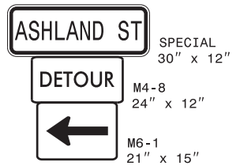

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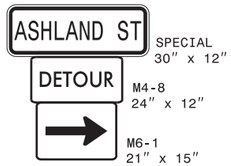

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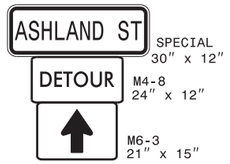

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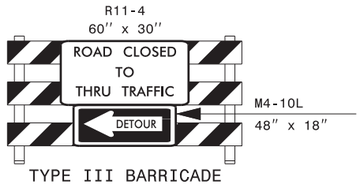
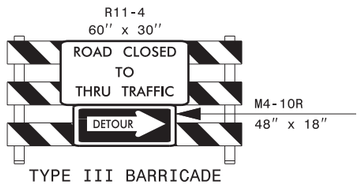


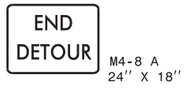
TYPE III BARRICADE

L



TYPE III BARRICADE

M



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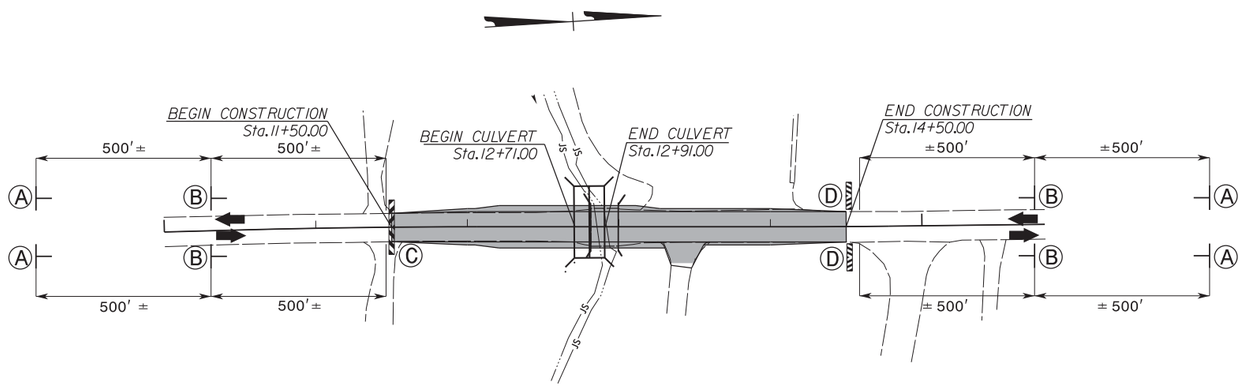

APPROVED	Drawn by: Brandon W. Johnson	E: 7/31/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

PHASE 1 DETAIL DRAWING

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faith.jahnke

Prepared in the Office of: SUMMIT
NC FIRM LICENSE Nos P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	TMP-3

Archdale pop. 9,682

PROJECT LOCATION

SEE TMP-2

DETOUR

Archdale United Methodist

Archdale Elementary

Archdale Wesleyan Church

Archdale Church of Nazarene

First Baptist Church of Archdale

Ashland Street Church

Trindale Elementary

GUILFORD
RANDOLPH

Rd. 1901 · Rd. 1911 · Rd. 1912 · Rd. 1979 · Rd. 1575 · Rd. 1681 · Rd. 1682 · Rd. 2019

1169 · 1166 · 1168 · 1227 · 1193 · 1228 · 1167 · 1240 · 1163 · 4013 · 4012 · 1164 · 1284

Baker · Northview Pl. · Kersey · Hayworth · Liberty · Liberty Pl. · White · Englewood · Hillcrest Ln. · Northeast · Sylvia · Fountain · Lynbrook · Wedgewood · Truman · Julian · Rocklane · Glendale · Forestwood · Lonita Ct. · Ashland · Apollo · Armstrong Ct. · Lunar · Greenhaven Dr. · Longview Dr. · Aldridge · Colonial · Plummer · Spring · Goodman · Hudson · Luck · Dale · Salisbury · Sunny Ln. · Beard · Craig · Purvis · Carroll · Columbus · Marshall · Davidson · Rivermeade · Brookhollow · Balfour · Kinview · Pinecrest · Bainbridge · Laura · Smith · Mitchell · Oakspring · Rand · Knollwood · Dellwood · Crescent · Burgemere · Ridge · FCA

311 · 62 · 85 · 1911 · 1912 · 1979 · 1575 · 1681 · 1682 · 2019

500'± · 400'± · 1500'±

Archdale

Trindale

Julian

Main

N. Main

Rd. Greenoak Dr.

Ave. · St. · Dr. · Ln. · Cir. · Ct. · Blvd · Pl. · Rd.

I · J · K · M · N · G · H · F · E · L

Prepared by: Brandon W. Johnson
E-mail: bwjohnson@summitdesign.net
DATE: 7/31/2017

APPROVED

SEAL
NORTH CAROLINA PROFESSIONAL
SEAL 034371
ENGINEER
BRANDON W. JOHNSON

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
WORK ZONE TRAFFIC CONTROL

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PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	TMP-4

SIGN NUMBER: ASHLAND ST
TYPE: STATIONARY
QUANTITY: SEE PLANS

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

SIGN WIDTH: 2'-6"
HEIGHT: 12"
TOTAL AREA: 2.50 SF

BORDER TYPE: FLUSH
RECESS: 0.47"
WIDTH: 0.63"
RADII: 1.50"

NO. Z BARS: N/A
LENGTH: N/A

SYMBOL	X	Y	WID	HT

MAT'L: 0.063" ALUMINUM

USE NOTES: 1,2

1. Legend and border shall be direct applied black non-reflective sheeting.
2. Background shall be NC GRADE B fluorescent orange retroreflective sheeting.

DESIGN BY: JAC
PROJECT ID: 17BP.8.R.76
CHECKED BY:
DIV: 8
DATE: April 2014

BORDER
R=1.50"
TH=0.63"
IN=0.47"

Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

Series/Size: C 2000
Text Length: 23.8

		A	S	H	L	A	N	D		S	T																
	3.1	2.3	2.1	2.6	2.1	2.4	2.6	2.2	4.0	1.9	1.6	3.1															

FILENAME: 750416_TC_TMP_4.dgn

SUMMIT DESIGN & ENGINEERING SIGN DETAIL

APPROVED — Docusigned by: Brandon W. Johnson — E.7/31/2017

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · WORK ZONE TRAFFIC CONTROL

SIGN DESIGN

07-JUN-2017 14:20
750416_TC_TMP_4.dgn
faith.jahnke

TIP PROJECT: 17BP.8.R.76

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RANDOLPH COUNTY

TIP NO.	SHEET NO.
17BP.8.R.76	PMP–1

APPROVED DocuSigned by: Brandon W. Johnson

DATE: 5/29/2018

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 034371 ENGINEER BRANDON W. JOHNSON

LOCATION: BRIDGE NO. 750416 ON SR 1111 (ASHLAND STREET) OVER DALE CREEK.

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

ROADWAY STANDARD DRAWING

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" - PROJECT SERVICES UNIT - N.C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N.C., DATED JANUARY 2018 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTILANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES

PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	QUANTITY
	PAINT (4", 2 COATS)	
PI	YELLOW DOUBLE CENTER	1200 LF
	PAINT (4", 2 COATS)	
PA	WHITE EDGE LINE	1200 LF

GENERAL NOTES

THE FOLLOWING GENERAL NOTES APPLY AT ALL TIMES FOR THE DURATION OF THE CONSTRUCTION PROJECT, EXCEPT WHEN OTHERWISE NOTED IN THE PLAN OR DIRECTED BY THE ENGINEER.

A) INSTALL PAVEMENT MARKINGS AND PAVEMENT MARKERS ON THE FINAL SURFACE AS FOLLOWS:

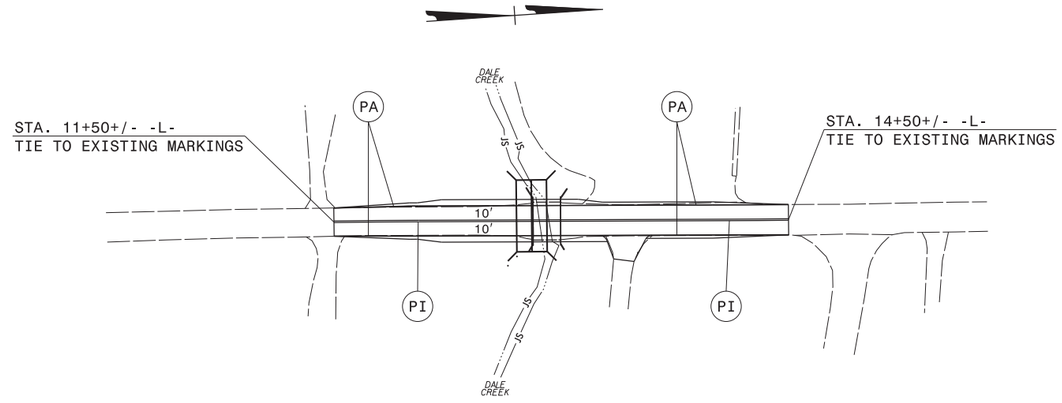
ROAD NAME	MARKING	MARKER
ASHLAND STREET	PAINT	NONE

B) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

C) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS.

D) PASSING ZONES WILL BE DETERMINED IN THE FIELD AND MUST BE APPROVED BY THE ENGINEER.

PAVEMENT MARKING DETAIL



Prepared in the Office of:
SUMMIT DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

TRACY N. PARROTT, PE *PROJECT ENGINEER*

BRANDON W. JOHNSON, PE *PROJECT DESIGN ENGINEER*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

INDEX

29-MAY-2018 09:57
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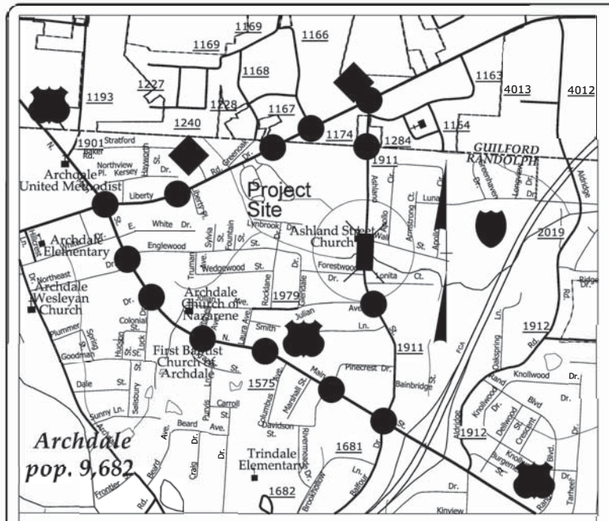
spencer.merritt

TIP PROJECT: 17BP.8.R.76



VICINITY MAP

THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF ARCHDALE.
DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

RANDOLPH COUNTY

LOCATION: BRIDGE NO. 750416 ON SR 1911 (ASHLAND ST) OVER DALE CREEK

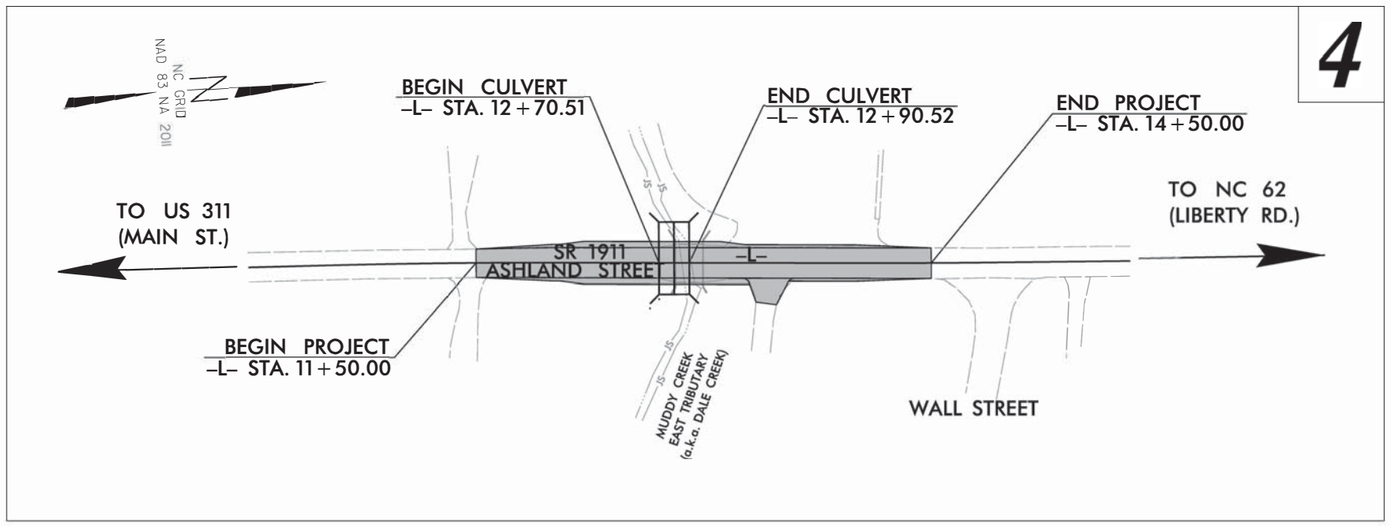
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.76	EC-1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Berms and Slope Drains	
1630.02	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1634.01	Temporary Rock Sediment Dam Type-A	
1634.02	Temporary Rock Sediment Dam Type-B	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Stilling Basin	
1630.06	Special Stilling Basin	
	Rock Inlet Sediment Trap:	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C
	Skimmer Basin	
	Tiered Skimmer Basin	
	Infiltration Basin	



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II.

THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT

Refer To E. C. Special Provisions for Special Considerations.

RANDAL C. HOWARD, EI, PLS
LEVEL III NAME

3491
LEVEL III CERTIFICATION NO.

THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE

40 20 0 40 80
PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG–010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 3, 2011 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared In the Office of:

SUNGATE DESIGN GROUP, P.A.
915 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
NC COA No. C-0890

2012 STANDARD SPECIFICATIONS

Designed by:

RANDAL C. HOWARD, EI, PLS ***3491***
NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS

Reviewed by:

Roadway Standard Drawings

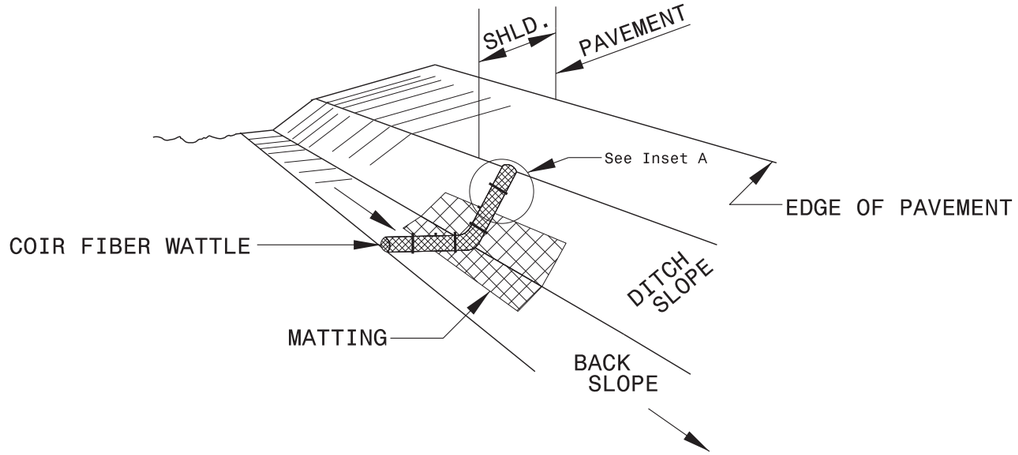
The following roadway english standards as appear in "Roadway Standard Drawings" – Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2018 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type A
1622.01	Temporary Berms and Slope Drains	1633.02	Temporary Rock Silt Check Type B
1630.01	Riser Basin	1634.01	Temporary Rock Sediment Dam Type A
1630.02	Silt Basin Type B	1634.02	Temporary Rock Sediment Dam Type B
1630.03	Temporary Silt Ditch	1635.01	Rock Pipe Inlet Sediment Trap Type A
1630.04	Stilling Basin	1635.02	Rock Pipe Inlet Sediment Trap Type B
1630.05	Temporary Diversion	1640.01	Coir Fiber Baffle
1630.06	Special Stilling Basin	1645.01	Temporary Stream Crossing
1631.01	Matting Installation		

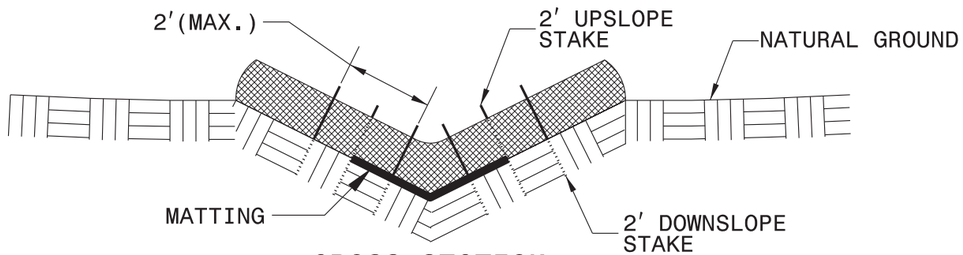
12/11/2014
SF_750416_EC_dsn_TSH.dgn
tsh.nc2

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

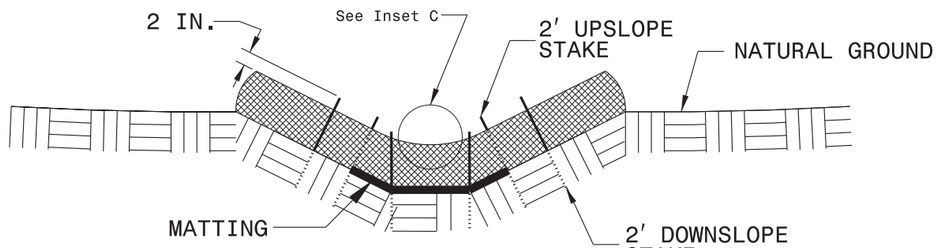
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE.

USE 2 FT. WOODEN STAKES WITH A 2 IN. BY 2 IN. NOMINAL CROSS SECTION.

ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

INSTALL A MINIMUM OF 2 UPSLOPE STAKES AND 4 DOWNSLOPE STAKES AT AN ANGLE TO WEDGE WATTLE TO BOTTOM OF DITCH.

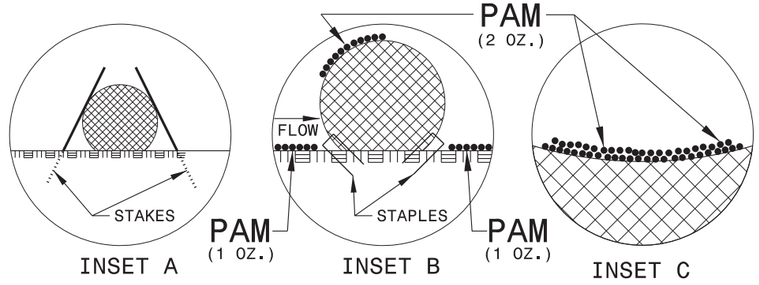
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

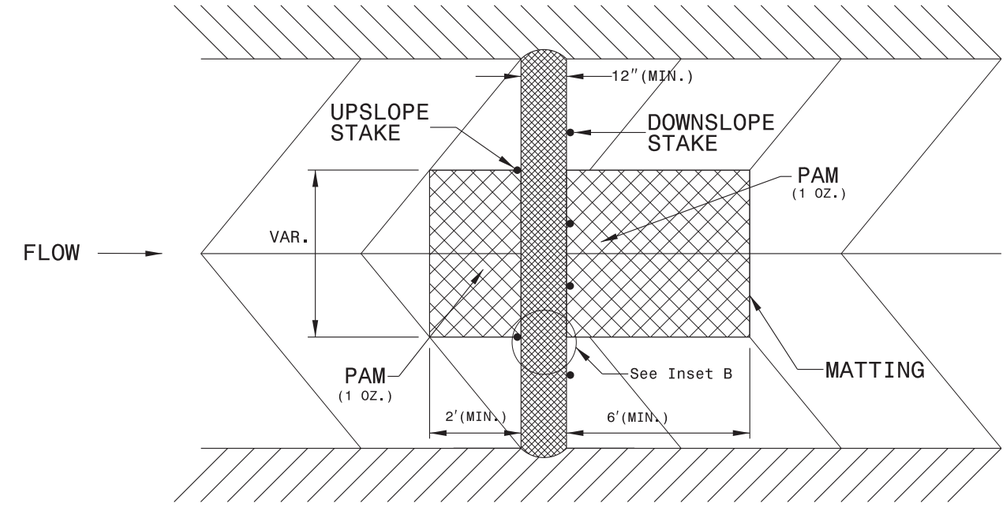
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.

PRIOR TO POLYACRYLAMIDE (PAM) APPLICATION, OBTAIN A SOIL SAMPLE FROM PROJECT LOCATION, AND FROM OFFSITE MATERIAL, AND ANALYZE FOR APPROPRIATE PAM FLOCCULANT TO BE APPLIED TO EACH WATTLE.

INITIALLY APPLY 2 OUNCES OF ANIONIC OR NEUTRALLY CHARGED PAM OVER WATTLE WHERE WATER WILL FLOW AND 1 OUNCE OF PAM ON MATTING ON EACH SIDE OF WATTLE. REAPPLY PAM AFTER EVERY RAINFALL EVENT THAT IS EQUAL TO OR EXCEEDS 0.50 IN.





TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

MATTING FOR EROSION CONTROL

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	11+58	12+65	RT	100
4	-L-	11+50	12+65	LT	130
			SUBTOTAL		230
MISCELLANEOUS MATTING TO BE INSTALLED AS DIRECTED BY THE ENGINEER					2500
				TOTAL	2730
				SAY	2730

PERMANENT SOIL REINFORCEMENT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4					
			SUBTOTAL		
	ADDITIONAL PSRM TO BE INSTALLED				
				TOTAL	
				SAY	

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-3A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION TIMEFRAMES

SITE DESCRIPTION	STABILIZATION TIME	TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES, DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED.
SLOPES 3:1 OR FLATTER	14 DAYS	7 DAYS FOR SLOPES GREATER THAN 50' IN LENGTH.
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE, EXCEPT FOR PERIMETERS AND HQW ZONES.

EROSION CONTROL PLAN

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

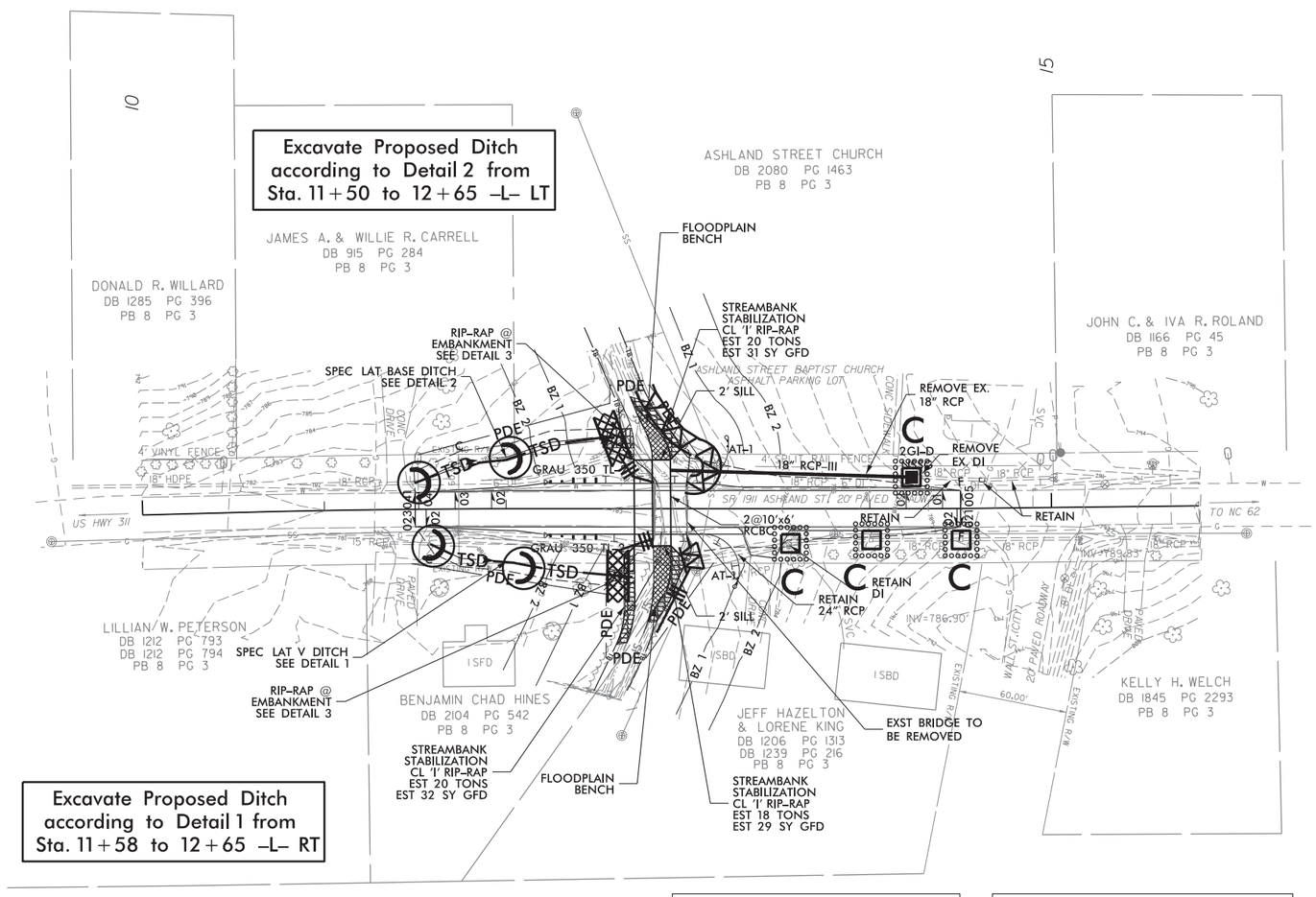
CLEARING AND GRUBBING EROSION CONTROL FOR CONSTRUCTION SHEET 04

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

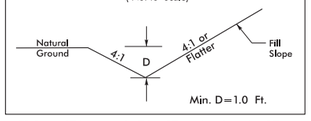
ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

NOTE:
PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.

NOTE:
PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE – B AND TEMPORARY ROCK SILT CHECKS TYPE – A AT DRAINAGE OUTLETS.

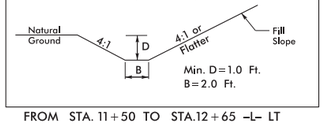


DETAIL 1
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



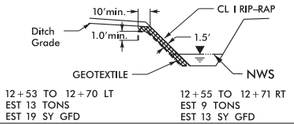
FROM STA. 11+58 TO STA. 12+65 –L– RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)



FROM STA. 11+50 TO STA.12+65 –L– LT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



12+53 TO 12+70 LT
EST 13 TONS
EST 19 SY GFD

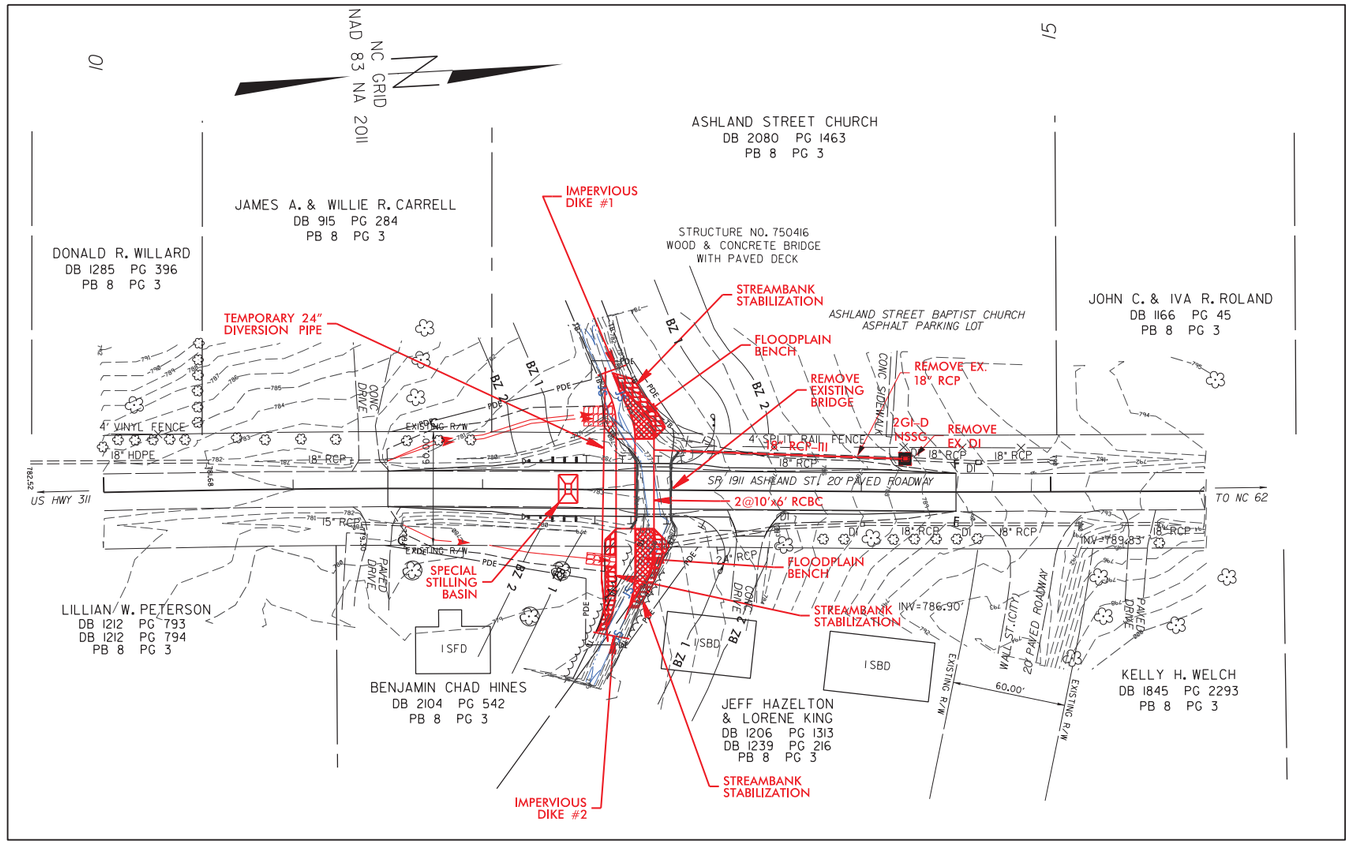
12+55 TO 12+71 RT
EST 9 TONS
EST 13 SY GFD

FROM STA. 12+53 TO STA. 12+70 –L– LT
FROM STA. 12+55 TO STA. 12+71 –L– RT

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PHASE 1



40 20 0 40 80

PLANS

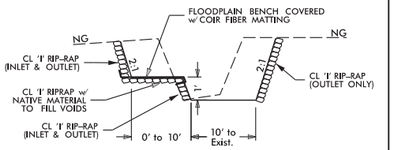
SF-750416
RANDOLPH COUNTY

CONSTRUCTION SEQUENCE FOR 2@10'x6' RCBC STA. 12+81 -L- MUDDY CREEK EAST TRIBUTARY

PHASE 1

1. REMOVE EXISTING BRIDGE.
2. CONSTRUCT SPECIAL STILLING BASIN.
3. INSTALL TEMPORARY 24" DIVERSION PIPE.
4. CONSTRUCT IMPERVIOUS DIKE #1.
5. CONSTRUCT IMPERVIOUS DIKE #2.
6. DEWATER CONSTRUCTION AREA.
7. CONSTRUCT CULVERT, 18" RCP-III, WINGWALLS, INLET AND OUTLET CHANNELS AND STREAMBANK STABILIZATION.
8. REMOVE IMPERVIOUS DIKE #2.
9. REMOVE IMPERVIOUS DIKE #1.
10. REMOVE TEMPORARY 18" DIVERSION PIPE.
11. REMOVE SPECIAL STILLING BASIN.

INLET & OUTLET CHANNEL DETAIL
NOT TO SCALE



*THE FLOODPLAIN BENCH SHALL BE COVERED WITH COIR FIBER MATTING AND THE PERIMETER SHALL BE LINED WITH CLASS 'I' RIP RAP. IF FILL IS NEEDED FOR THE BENCH, USE CLASS 'I' ALONG WITH NATIVE MATERIAL TO FILL VOIDS.

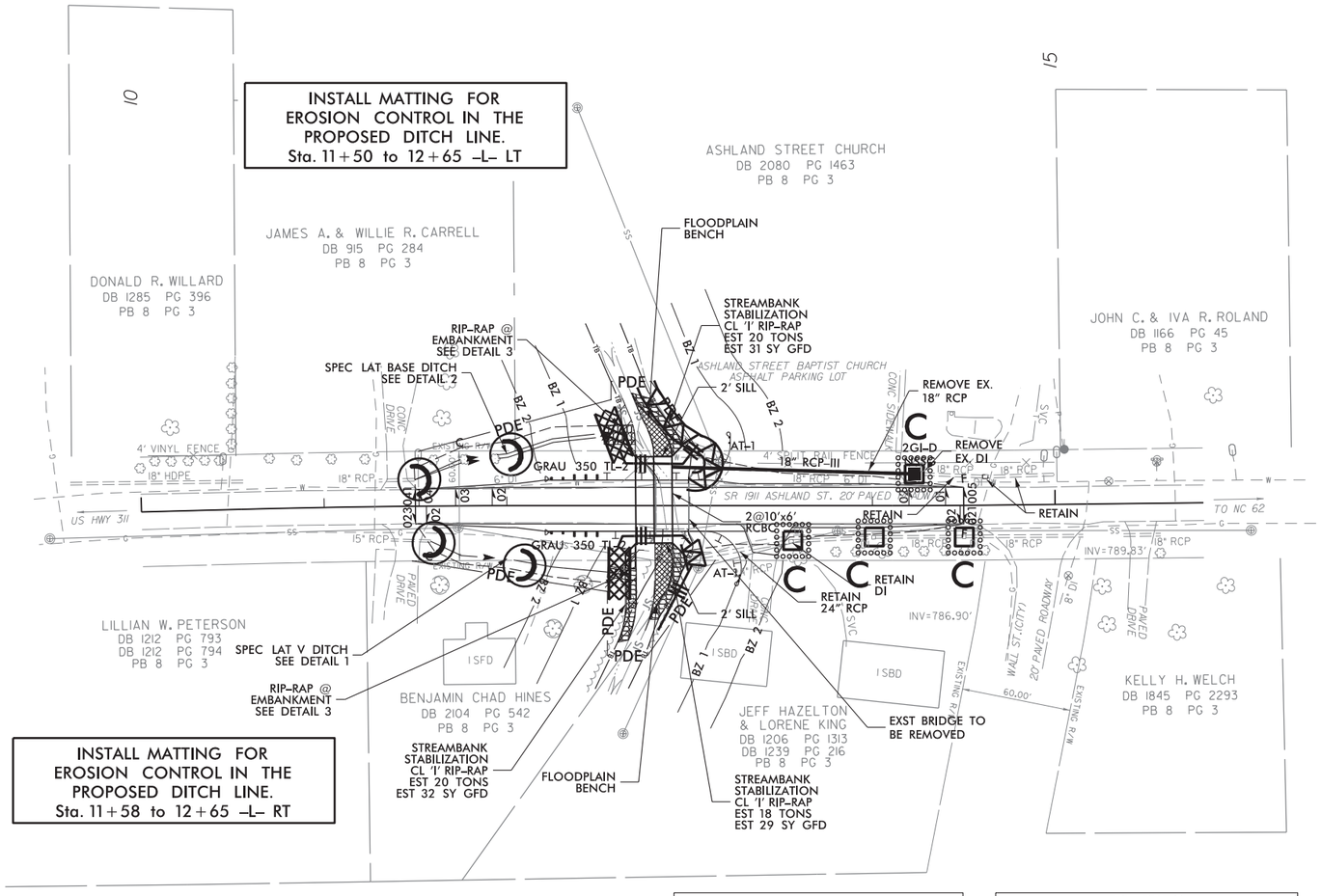
SF750416EC_dsn_culvert_phasing.dgn
6/6/2017
dbaird

EROSION CONTROL PLAN

NOTES: ANY DEVIATION FROM OPTIONS GIVEN WILL REQUIRE PRIOR APPROVAL BY ENGINEER.

ADDITIONAL EROSION CONTROL DEVICES MAY NEED TO BE INSTALLED AS DIRECTED BY THE ENGINEER.

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	EC-06/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



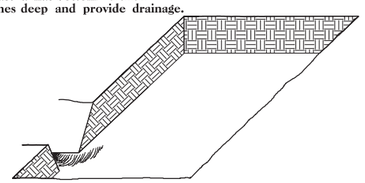
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.8.R.76	RF-1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

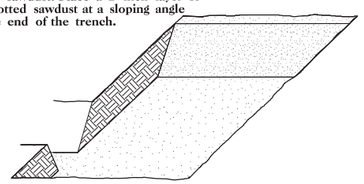
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

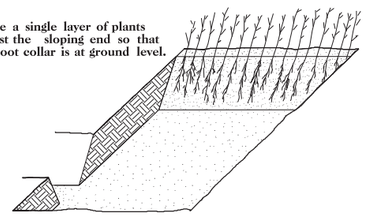
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



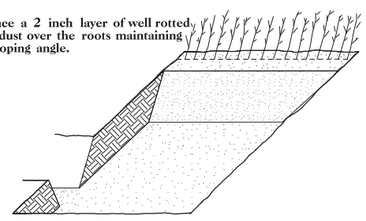
3. Backfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



4. Place a single layer of plants against the sloping end so that the root collar is at ground level.

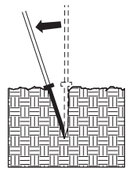


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

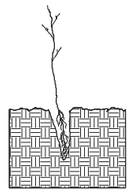


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

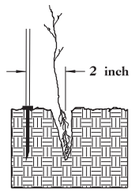
DIBBLE PLANTING METHOD
USING THE KBC PLANTING BAR



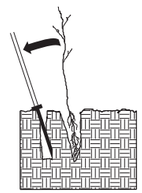
1. Insert planting bar as shown and pull handle toward planter.



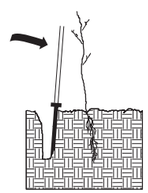
2. Remove planting bar and place seedling at correct depth.



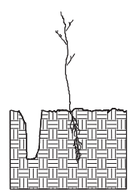
3. Insert planting bar 2 inches toward planter from seedling.



4. Pull handle of bar toward planter, firming soil at bottom.



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

PLANTING BAG
During planting, seedlings shall be kept in a moist canvas bag or similar container to prevent the root systems from drying.

KBC PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.

ROOT PRUNING
All seedlings shall be root pruned, if necessary, so that no roots extend more than 10 inches below the root collar.

REFORESTATION

☐ TREE REFORESTATION SHALL BE PLANTED 6 FT. TO 10 FT. ON CENTER, RANDOM SPACING, AVERAGING 8 FT. ON CENTER, APPROXIMATELY 680 PLANTS PER ACRE.

REFORESTATION

MIXTURE, TYPE, SIZE, AND FURNISH SHALL CONFORM TO THE FOLLOWING:

25%	LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in – 18 in BR
25%	PLATANUS OCCIDENTALIS	SYCAMORE	12 in – 18 in BR
25%	FRAXINUS PENNSYLVANICA	GREEN ASH	12 in – 18 in BR
25%	BETULA NIGRA	RIVER BIRCH	12 in – 18 in BR

REFORESTATION DETAIL SHEET

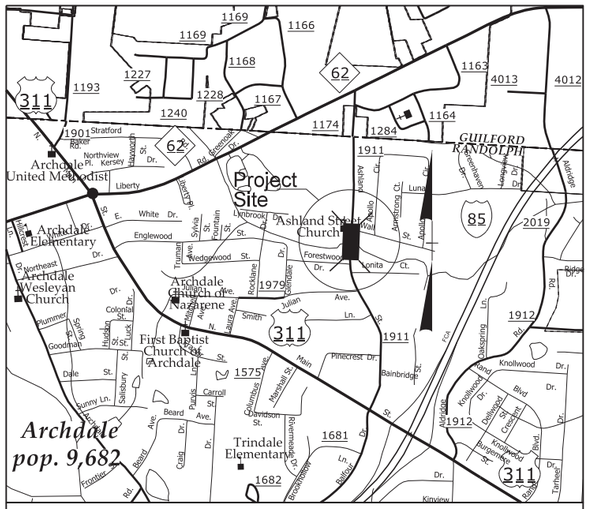
N.C.D.O.T. - ROADSIDE ENVIRONMENTAL UNIT

09/08/99

TIP PROJECT: 17BP.8.R.76

T.I.P. NO.	SHEET NO.
17BP.8.R.76	UC–1

See Sheet UC-2 For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

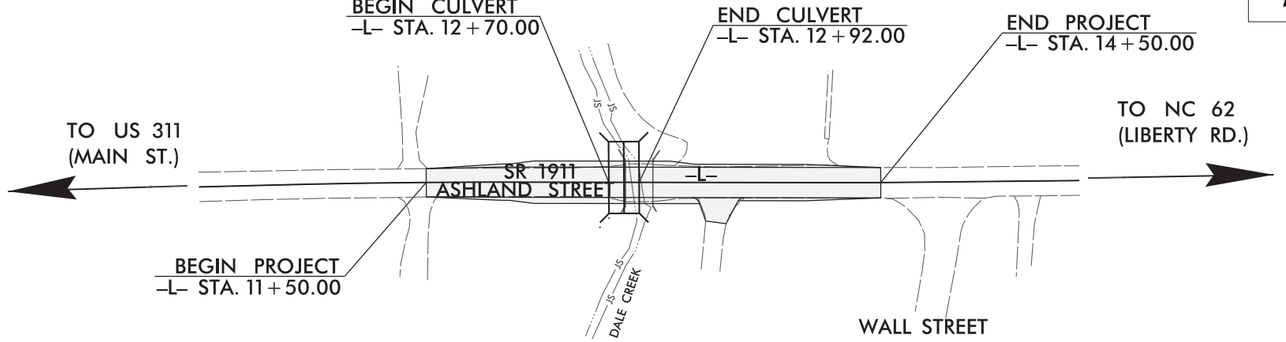
UTILITY CONSTRUCTION PLANS
RANDOLPH COUNTY

LOCATION: BRIDGE NO. 750416 ON SR 1911 (ASHLAND ST) OVER DALE CREEK

TYPE OF WORK: UTILITY CONSTRUCTION (WATER & SEWER)

NC GRID NAD 83 NA 2011

(UC–4) **4**



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

INDEX OF SHEETS

WATER AND SEWER OWNERS ON PROJECT

(1) WATER– CITY OF ARCHDALE WATER DEPARTMENT
(2) SEWER– CITY OF ARCHDALE WATER DEPARTMENT

SEAL

5/29/2018

NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY NEAL PARROTT

DocuSigned by: Tracy N. Parrott

Prepared In the Office of:

SUMMIT DESIGN AND ENGINEERING SERVICES FIRM NO. P-0339

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Hillsborough, NC 27278-8551
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2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 2014

LETTING DATE:
JANUARY 27, 2015

TRACY N. PARROTT, PE
PROJECT ENGINEER

BRANDON W. JOHNSON, PE
PROJECT DESIGN ENGINEER

29-MAY-2018 09:59
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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	UC-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES PLAN SHEET SYMBOLS

PROPOSED WATER SYMBOLS

- Water Line (Sized as Shown) — 12" WL
- 11¼ Degree Bend
- 22½ Degree Bend
- 45 Degree Bend
- 90 Degree Bend
- Plug
- Tee
- Cross
- Reducer
- Gate Valve — GV
- Butterfly Valve — BV
- Tapping Valve — TGV
- Line Stop — LS
- Line Stop with Bypass — LS/BP
- Blow Off — BO
- Fire Hydrant — PFH
- Relocate Fire Hydrant — RFH
- Remove Fire Hydrant — REM FH
- Water Meter — PWM
- Relocate Water Meter — RWM
- Remove Water Meter — REM WM
- Water Pump Station — PS(W)
- RPZ Backflow Preventer — PBPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RBPZ
- Relocate DCV Backflow Preventer — RBFP

PROPOSED SEWER SYMBOLS

- Gravity Sewer Line (Sized as Shown) — 12" SS
- Force Main Sewer Line (Sized as Shown) — 12" FSS
- Manhole (Sized per Note)
- Sewer Pump Station — PS(SS)

PROPOSED MISCELLANOUS UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Telephone Pedestal — TEL PED
- Utility Line by Others (Type as Shown)
- Trenchless Installation — 12" TL INSTALL
- Encasement by Open Cut — 24" ENCAS BY OC
- Encasement — 24" ENCASEMENT
- Thrust Block
- Air Release Valve — AR
- Utility Vault — UV
- Concrete Pier — CP
- Steel Pier — SP
- Plan Note — NOTE
- Pay Item Note — PAY ITEM

EXISTING UTILITIES SYMBOLS

- Power Pole
- Telephone Pole
- Joint Use Pole
- Utility Pole
- Utility Pole with Base
- H-Frame Pole
- Power Transmission Line Tower
- Water Manhole
- Power Manhole
- Telephone Manhole
- Sanitary Sewer Manhole
- Hand Hole for Cable
- Power Transformer
- Telephone Pedestal
- CATV Pedestal
- Gas Valve
- Gas Meter
- Located Miscellaneous Utility Object
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.
- *Underground Power Line
- *Underground Telephone Cable
- *Underground Telephone Conduit
- *Underground Fiber Optics Telephone Cable
- *Underground TV Cable
- *Underground Fiber Optics TV Cable
- *Underground Gas Pipeline
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line
- Underground Unknown Utility Line
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

- Utility Line Drawn from Record (Type as Shown)
- Designated Utility Line (Type as Shown)

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spencer.merritt

REV: 2/1/2012

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	UC-4

DESIGNED BY: SWM
DRAWN BY:
CHECKED BY: BWJ
APPROVED BY: TNP
REVISED:

8/16/2018

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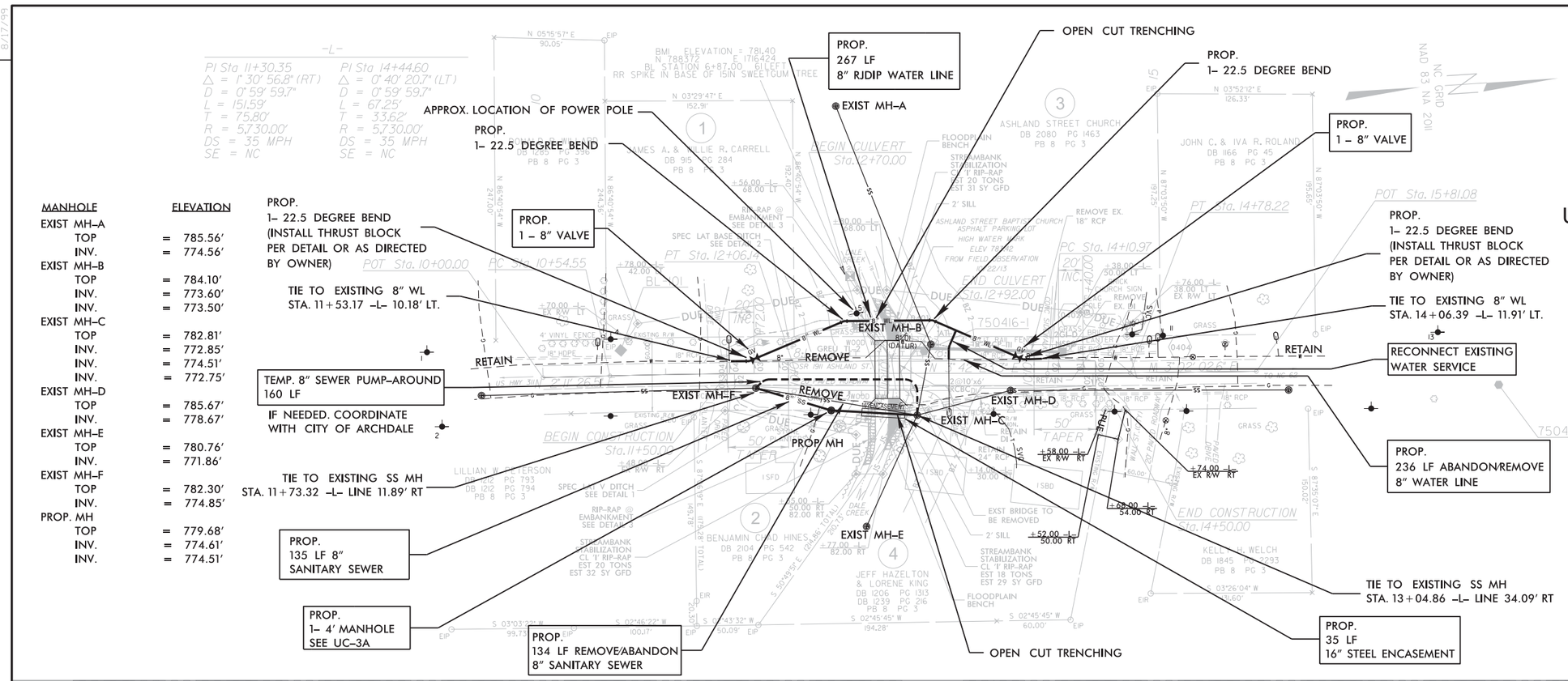
NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY NEAL PARROTT
UTILITY PLANS ONLY

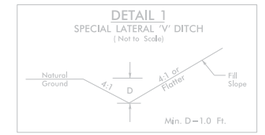
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION

MANHOLE	ELEVATION
EXIST MH–A	
TOP	= 785.56′
INV.	= 774.56′
EXIST MH–B	
TOP	= 784.10′
INV.	= 773.60′
INV.	= 773.50′
EXIST MH–C	
TOP	= 782.81′
INV.	= 772.85′
INV.	= 774.51′
INV.	= 772.75′
EXIST MH–D	
TOP	= 785.67′
INV.	= 778.67′
EXIST MH–E	
TOP	= 780.76′
INV.	= 771.86′
EXIST MH–F	
TOP	= 782.30′
INV.	= 774.85′
PROP. MH	
TOP	= 779.68′
INV.	= 774.61′
INV.	= 774.51′

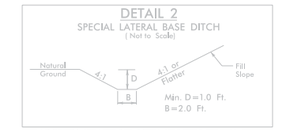


DETAIL 1
SPECIAL LATERAL "V" DITCH
(Not to Scale)



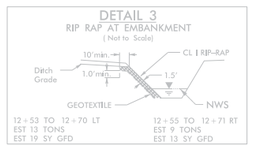
FROM STA. 11+58 TO STA. 12+65 –L– RT

DETAIL 2
SPECIAL LATERAL BASE DITCH
(Not to Scale)



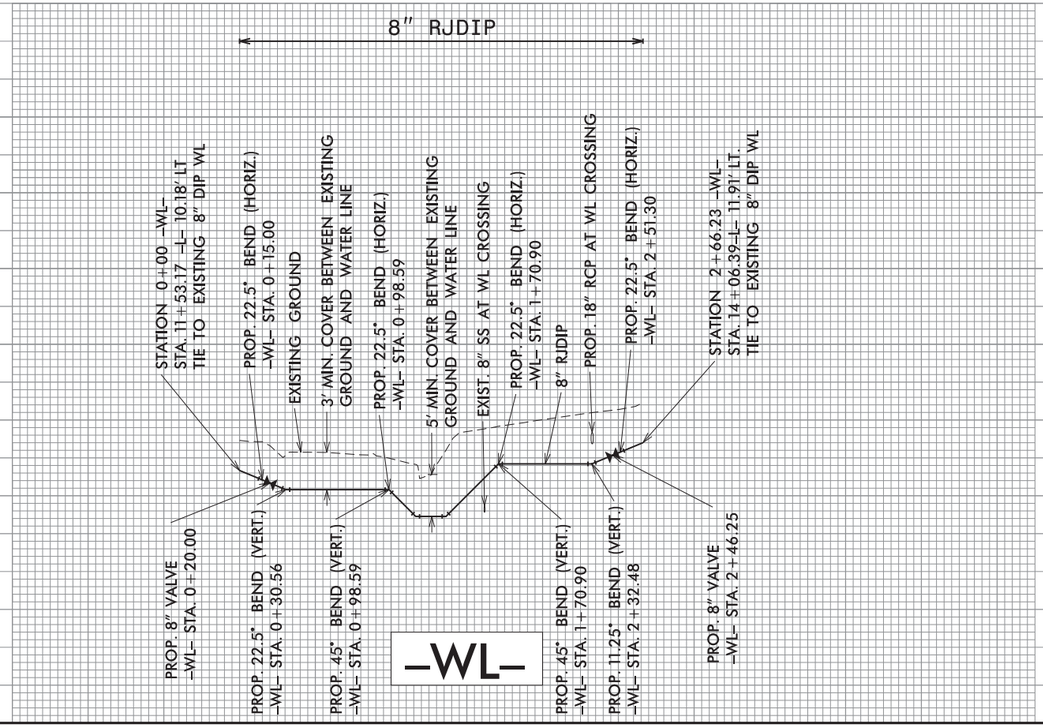
FROM STA. 11+50 TO STA.12+65 –L– LT

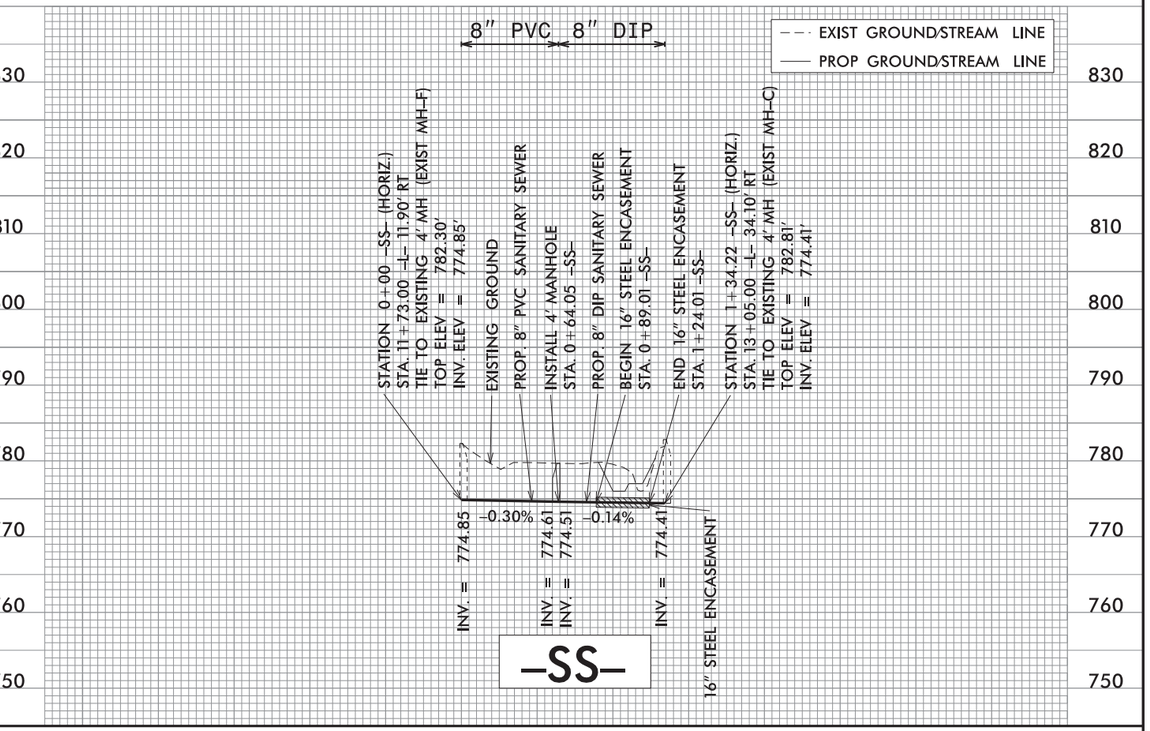
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



12+53 TO 12+70 LT
EST 13 TONS
EST 19 SY GFD
12+55 TO 12+71 RT
EST 9 TONS
EST 13 SY GFD

FROM STA. 12+53 TO STA. 12+70 –L– LT
FROM STA. 12+55 TO STA. 12+71 –L– RT





5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	UC-3
DESIGNED BY: SWM	5/29/2018
DRAWN BY: SWM	
CHECKED BY: BWJ	
APPROVED BY: TNP	
REVISED:	

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NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY PARROTT

Tracy W. Parrott

PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY CONSTRUCTION

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF THE NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2018.

2. THE EXISTING UTILITIES BELONG TO CITY OF ARCHDALE PUBLIC WORKS DEPARTMENT.

3. ALL WATER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, PUBLIC WATER SUPPLY SECTION. ALL SEWER LINES TO BE INSTALLED WITHIN COMPLIANCE OF THE RULES AND REGULATIONS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF WATER RESOURCES, WATER QUALITY SECTION. PERFORM ALL WORK IN ACCORDANCE WITH THE APPLICABLE PLUMBING CODES.

4. THE UTILITY OWNER OWNS THE EXISTING UTILITY FACILITIES AND WILL OWN THE NEW UTILITY FACILITIES AFTER ACCEPTANCE BY THE DEPARTMENT. THE DEPARTMENT OWNS THE CONSTRUCTION CONTRACT AND HAS ADMINISTRATIVE AUTHORITY. COMMUNICATIONS AND DECISIONS BETWEEN THE CONTRACTOR AND UTILITY OWNER ARE NOT BINDING UPON THE DEPARTMENT OR THIS CONTRACT UNLESS AUTHORIZED BY THE ENGINEER. AGREEMENTS BETWEEN THE UTILITY OWNER AND CONTRACTOR FOR THE WORK THAT IS NOT PART OF THIS CONTRACT OR IS SECONDARY TO THIS CONTRACT ARE ALLOWED, BUT ARE NOT BINDING UPON THE DEPARTMENT.

5. PROVIDE ACCESS FOR THE DEPARTMENT PERSONNEL AND THE OWNER'S REPRESENTATIVES TO ALL PHASES OF CONSTRUCTION. NOTIFY DEPARTMENT PERSONNEL AND THE UTILITY OWNER TWO WEEKS PRIOR TO COMMENCEMENT OF ANY WORK AND ONE WEEK PRIOR TO SERVICE INTERRUPTION. KEEP UTILITY OWNERS' REPRESENTATIVES INFORMED OF WORK PROGRESS AND PROVIDE OPPROTUNITY FOR INSPECTION OF CONSTRUCTION AND TESTING.

6. THE PLANS DEPICT THE BEST AVAILABLE INFORMATION FOR THE LOCATION, SIZE, AND TYPE OF MATERIAL FOR ALL EXISTING UTILITIES. MAKE INVESTIGATIONS FOR DETERMINING THE EXACT LOCATION, SIZE, AND TYPE MATERIAL OF THE EXISTING FACILITIES AS NECESSARY FOR THE CONSTRUCTION OF THE PROPOSED UTILITIES AND FOR AVOIDING DAMAGE TO EXISTING FACILITIES. REPAIR ANY DAMAGE INCURRED TO EXISTING FACILITIES TO THE ORIGINAL OR BETTER CONDITION AT NO ADDITONAL COST TO THE DEPARTMENT.

7. MAKE FINAL CONNECTIONS OF THE NEW WORK TO THE EXISTING SYSTEM WHERE INDICATED ON THE PLANS, AS REQUIRED TO FIT THE ACTUAL CONDITIONS, OR AS DIRECTED.

8. MAKE CONNECTIONS BETWEEN EXISTING AND PROPOSED UTILITIES AT TIMES MOST CONVENIENT TO THE PUBLIC, WITHOUT ENDANGERING THE UTILITY SERVICE, AND IN ACCORDANCE WITH THE UTILITY OWNER'S REQUIREMENTS. MAKE CONNECTIONS ON WEEKENDS, AT NIGHT, AND ON HOLIDAYS IF NECESSARY. COORDINATE WITH THE CITY OF ARCHDALE ON NEED OF TEMPORARY SEWER PUMP-AROUND.

9. ALL UTILITY MATERIALS SHALL BE APPROVED PRIOR TO DELIVERY TO THE PROJECT. SEE 1500-7, " SUBMITTALS AND RECORDS" IN SECTION 1500 OF THE STANDARD SPECIFICATIONS.

PROJECT SPECIFIC NOTES:

WATER MAIN:

1. PROPOSED WATER LINE FROM -L- STATION 11+53.17 TO -L-STATION 14+06.39 SHALL BE RJDIP (RESTRAINED JOINT DUCTILE IRON PIPE) IN ACCORDANCE WITH SECTION 1034 OF THE 2018 STANDARD SPECIFICATIONS.

3. TEST AND STERILIZE NEW MAIN IN ACCORDANCE WITH 2018 STANDARD SPECIFICATION SECTION 1510, APPLICABLE SPECIAL PROVISIONS, AND ALL NCDENR DVISION OF WATER RESOURCES- PUBLIC WATER SUPPLY SECTION REQUIREMENTS.

4. USE APPROPRIATE FITTINGS TO TRANSITION AND CONNECT PIPE MATERIAL AND TO TIE TO EXISTING WATER LINE.

5. COORDINATE WITH CITY REPRESENTATIVES FOR WATER MAIN SHUTDOWN AND INTERRUPTION OF SERVICE. PROVIDE SUFFICIENT NOTICE TO CITY FOR PUBLIC NOTIFICATON OF SERVICE INTERRUPTION.

SEWER MAIN:

1. PROPOSED SANITARY SEWER MAIN FROM -L- LINE STATION 11+73.32 TO -L- LINE STATION 12+34.79 SHALL BE PVC (POLYVINYL CHLORIDE). PROPOSED SANITARY SEWER MAIN FROM -L- LINE STATION 12+34.79 TO -L- LINE STATION 13+04.86 SHALL BE DIP (DUCTILE IRON PIPE).

2. TEST NEW SEWER MAIN IN ACCORDANCE WITH 2018 STANDARD SPECIFICATION SECTION 1520.

3. COORDINATE WITH CITY REPRESENTATIVES AND PROVIDE SUFFICIENT NOTICE TO CITY FOR PUBLIC NOTIFICATION OF SERVICE INTERRUPTIONS.

LIST OF STANDARD DRAWINGS

840.52	PRECAST MANHOLE 4', 5' AND 6' DIAMETER
840.54	MANHOLE FRAME AND COVER

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	UC-3A

DESIGNED BY: SWM
DRAWN BY: SWM
CHECKED BY: BWJ
APPROVED BY: TNP
REVISED:

7/5/2017

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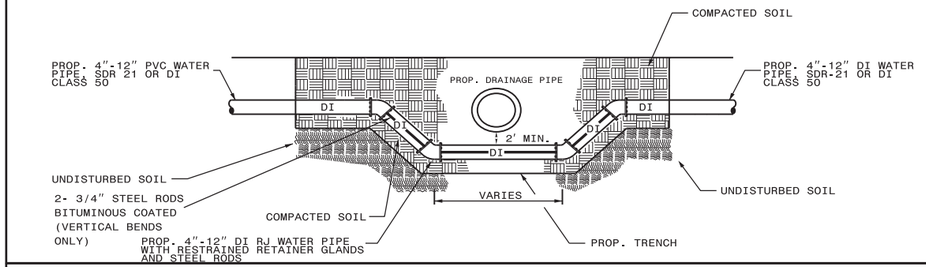
NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY N. PARROTT
Documents Signed by: Tracy N. Parrott
SIGNATURE DATE
PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

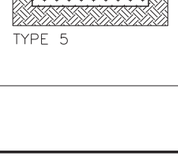
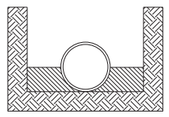
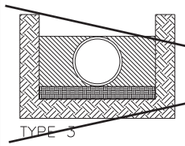
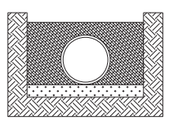
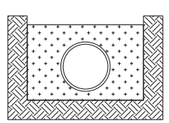
UTILITY CONSTRUCTION



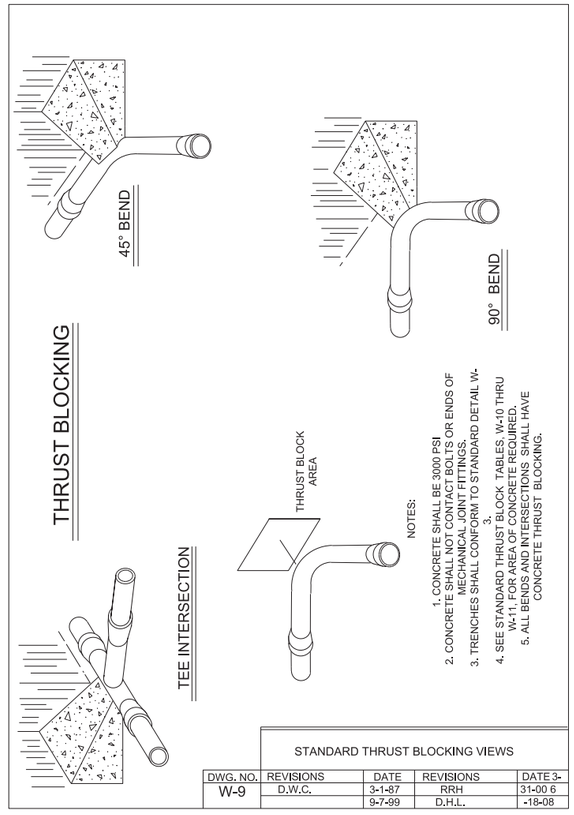
WATER PIPE CROSSING STORM DRAIN

MAXIMUM TRENCH WIDTH AT TOP OF PIPE

NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)	NOMINAL PIPE SIZE (INCHES)	TRENCH WIDTH (INCHES)
4	28	20	44
6	30	24	48
8	32	30	54
10	34	36	60
12	36	42	66
14	38	48	72
16	40	54	78
18	42		

LAYING CONDITIONS	DESCRIPTION	PROJECT USE
 TYPE 1	FLAT BOTTOM UNDISTURBED EARTH TRENCH, LOOSE BACKFILL	NOT USED.
 TYPE 2	FLAT BOTTOMED UNDISTURBED EARTH TRENCH. BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE.	NOT USED.
 TYPE 3	PIPE BEDDED IN 4" MINIMUM JOB EXCAVATED MATERIAL. BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.	ALL DUCTILE WATER AND SEWER LINE.
 TYPE 4	PIPE BEDDED IN SAND, GRANULAR MATERIAL OR GRADED GRAVEL TO THE DEPTH OF 1/8 PIPE DIAMETER, 4" MIN. JOB EXCAVATED MATERIAL COMPACTED TO 4" ABOVE TOP OF PIPE. (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)	ALL PVC WATER LINE AND PVC FORCE MAIN.
 TYPE 5	PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL 4" MIN. UNDER PIPE. COMPACTED GRANULAR OR SAND MATERIAL TO 4"ABOVE TOP OF PIPE. (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)	ALL PVC GRAVITY SEWER LINE.

TYPICAL LAYING CONDITIONS (14)
NO SCALE



STANDARD THRUST BLOCKING VIEWS

DWG. NO.	REVISIONS	DATE	REVISIONS	DATE 3-
W-9	D.W.C.	3-1-87	RRH	31-00 6
		9-7-99	D.H.L.	-18-08

REACTION BEARING AREAS FOR HORIZONTAL WATER PIPE BENDS
BASED ON TEST PRESSURE OF 200 P.S.I.
ALL AREAS GIVEN IN SQUARE FEET.

SIZE AND DEGREE OF BEND	STATIC THRUST IN POUNDS	MODERATELY DRY CLAY 4000 LBS/FT²	SOFT CLAY 2000 LBS/FT²	1600 LBS/FT² GRAVEL / COARSE SAND	8000 LBS/FT² DRY CLAY - ALWAYS DRY	SAND, COMPACT FIRM 8000 LBS/FT²	SAND -CLEAN DRY 4000 LBS/FT²	SOIL 1000 LBS/FT² QUICKSAND - VERY POOR	ROCK - POOR 10,000 LBS/FT²
6"									
11 1/4°	1,108	1	1	1	1	1	1	2	1
22 1/2°	2,207	1	2	2	1	1	1	3	1
45°	4,328	2	3	3	1	1	2	5	1
90°	7,996	2	4	5	1	1	2	8	1
PLUG	5,655	2	3	4	1	1	2	6	1
8"									
11 1/4°	1,970	1	1	2	1	1	1	2	1
22 1/2°	3,922	1	2	3	1	1	1	4	1
45°	7,694	2	4	5	1	1	2	8	1
90°	14,215	4	8	9	2	2	4	15	2
PLUG	10,053	3	5	6	2	2	3	10	1
12"									
11 1/4°	4,433	2	3	3	1	1	2	5	1
22 1/2°	8,826	3	5	6	2	2	3	9	1
45°	17,312	5	9	11	3	3	5	18	2
90°	31,983	8	16	19	4	4	8	32	4
PLUG	22,619	6	12	14	3	3	6	23	3
16"									
11 1/4°	7,881	2	4	5	1	1	2	8	1
22 1/2°	15,691	4	8	10	2	2	4	16	2
45°	30,779	8	16	19	4	4	8	31	4
90°	56,861	15	29	35	8	8	15	57	6
PLUG	40,213	10	21	25	5	5	10	41	5

REACTION BEARING AREAS ARE IN SQUARE FEET MEASURED IN A VERTICAL PLANE IN THE TRENCH SIDE AT AN ANGLE OF 90° TO THE THRUST VECTOR.

USE 6" - 90 BEND VALUE FOR HYDRANTS FOR ADDITIONAL SAFETY FACTOR.

THRUST BLOCKING DESIGN QUANTITY TABLE

DWG. NO.	REVISIONS	DATE 6	REVISIONS	DATE
W-10	D.W.C.	-23-99		

05-JUL-2017 11:39
416_Ut_UC3A_dtl.dgn
spencer.marlitt

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
17BP.8.R.76	UC-3B

DESIGNED BY: SWM
DRAWN BY: SWM
CHECKED BY: BWJ
APPROVED BY: TNP
REVISED:

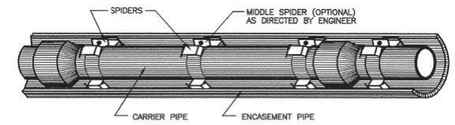
6/30/2017

SUMMIT
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

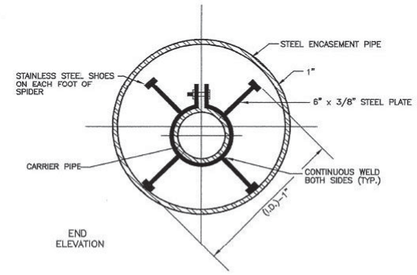
NORTH CAROLINA PROFESSIONAL SEAL 23100 ENGINEER TRACY NEAL PARROTT
Document # Not Released
By the License Board
PLANS ONLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

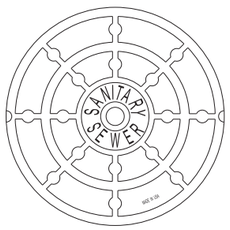
UTILITY CONSTRUCTION



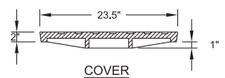
NOTES:
1–NORMAL SPACING FOR SPIDERS IS 3 PER 18 FOOT LENGTH OF PIPE, ONE SUPPORT AT EACH END AND A SUPPORT AT 9 FOOT CENTER.
2–ENTIRE SPIDER ASSEMBLY TO BE BITUMINOUS COATED AFTER FABRICATION
3–FIELD MODIFY AS REQUIRED TO PROVIDE DESIGN SLOPE IN CARRIER PIPE.

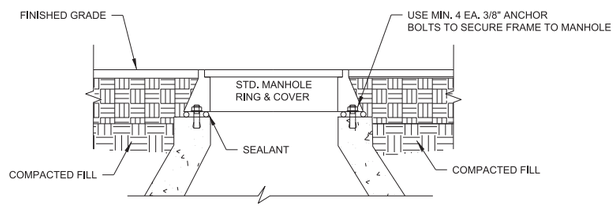


PIPE ENCASEMENT DETAIL FOR WATER AND SEWER MAINS



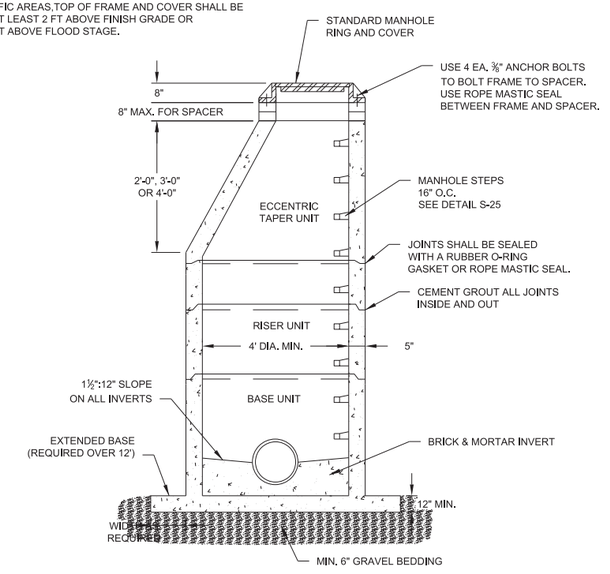
FRAME & COVER





TYPICAL STANDARD MANHOLE
SANITARY SEWER
FRAME & COVER DETAIL
NO SCALE
S 21

NOTE:
IN NON-TRAFFIC AREAS,TOP OF FRAME AND COVER SHALL BE INSTALLED AT LEAST 2 FT ABOVE FINISH GRADE OR AT LEAST 1 FT ABOVE FLOOD STAGE.



TYPICAL STANDARD PRECAST CONCRETE MANHOLE DETAIL
NO SCALE
S 24

NOTES:
1. SEE DETAIL S-28 FOR TYPICAL INVERT.

8/23/99

Prepared in the Office of:
SUMMIT Design and Engineering Services
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	X-1

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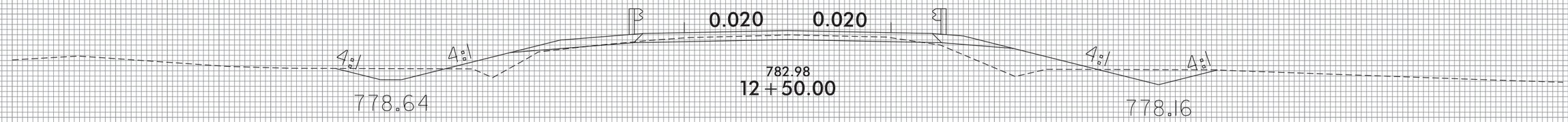
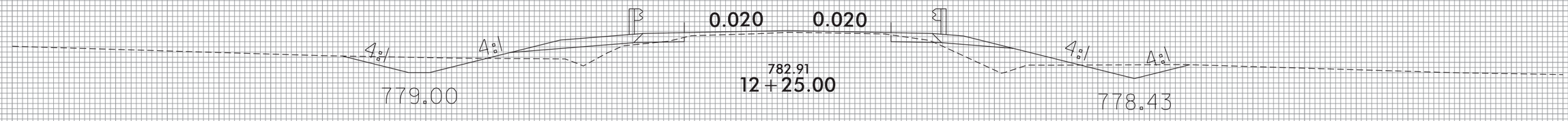
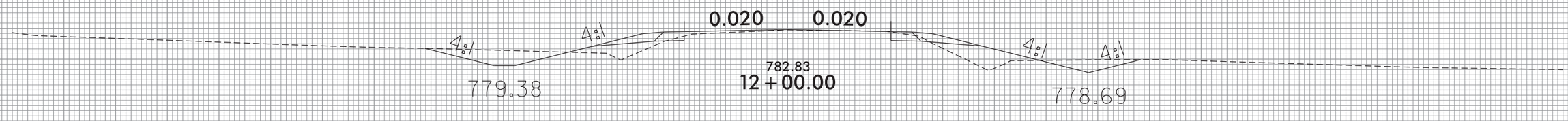
785 780 775







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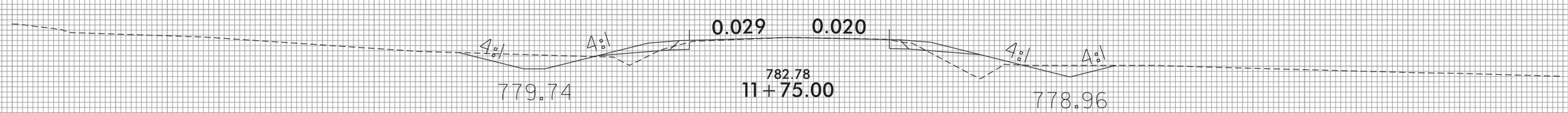
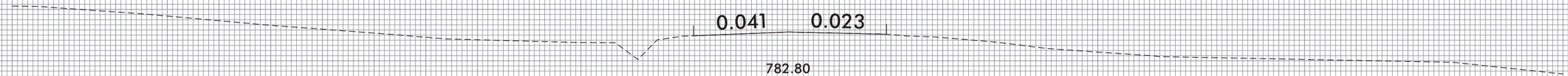


785 780 775



BEGIN CONSTRUCTION –L– STA. 11+50.00
11+50.00

770

785 780 775

782.85
11+25.00

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

–L–

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

31-JUL-2017 15:32
416/Rdwy/01.dgn
spencer.merritt

8/23/99

Prepared in the Office of: SUMMIT Survey and Engineering Services
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	X-2

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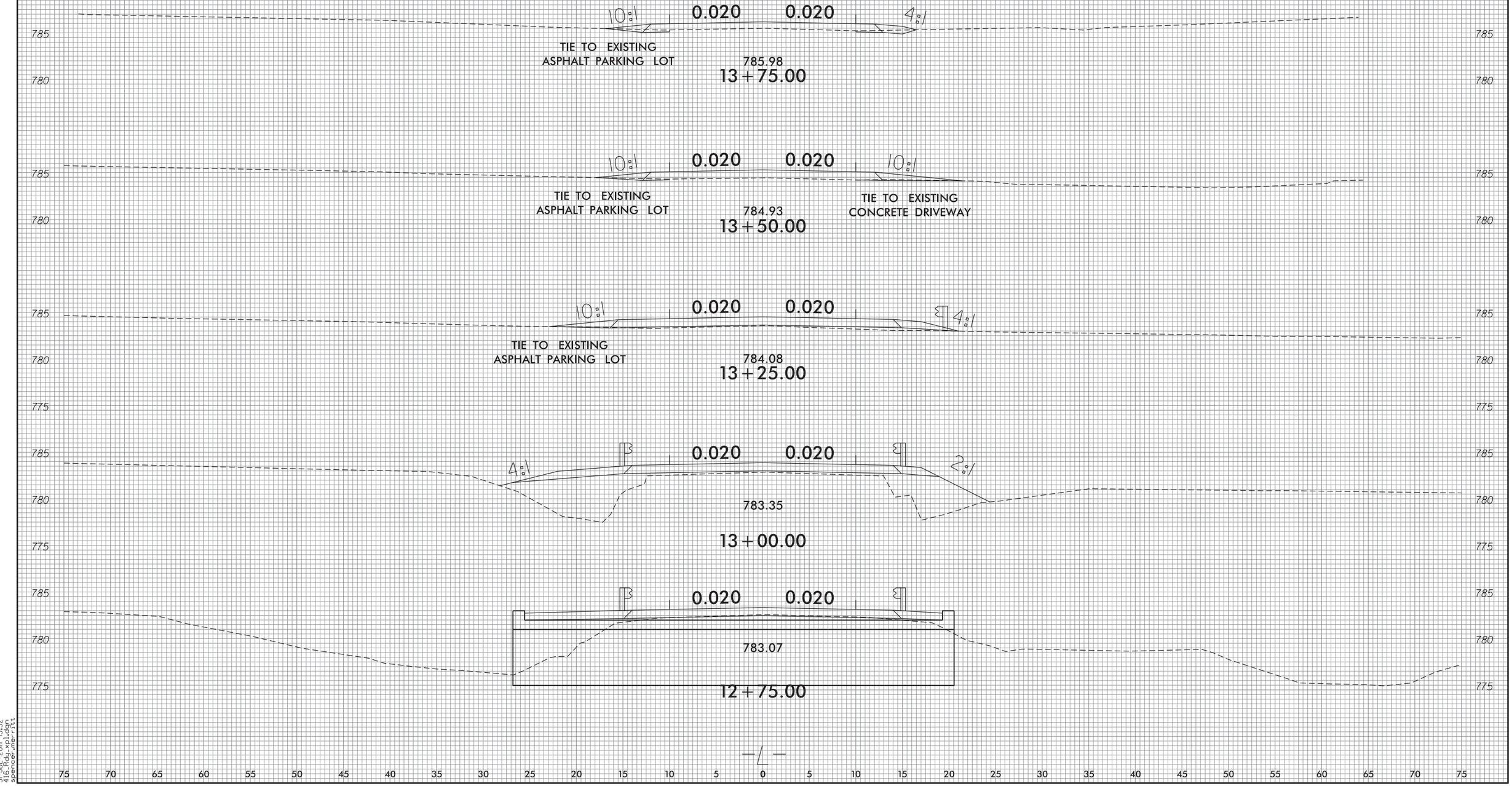


8/23/99

Prepared in the Office of:
SUMMIT Surveying and Engineering Services
NC FIRM LICENSE No: P-0339
504 Meadowlands Drive
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (Fax)

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
17BP.8.R.76	X-3

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

790
785

791.29
14+75.00

END CONSTRUCTION –L– STA. 14+50.00

795
790
785

0.005 0.021

789.99
14+50.00

790
785
780

0.018 0.020

788.61
14+25.00

790
785
780

10:1 0.020 0.020 4:1

TIE TO EXISTING
ASPHALT PARKING LOT

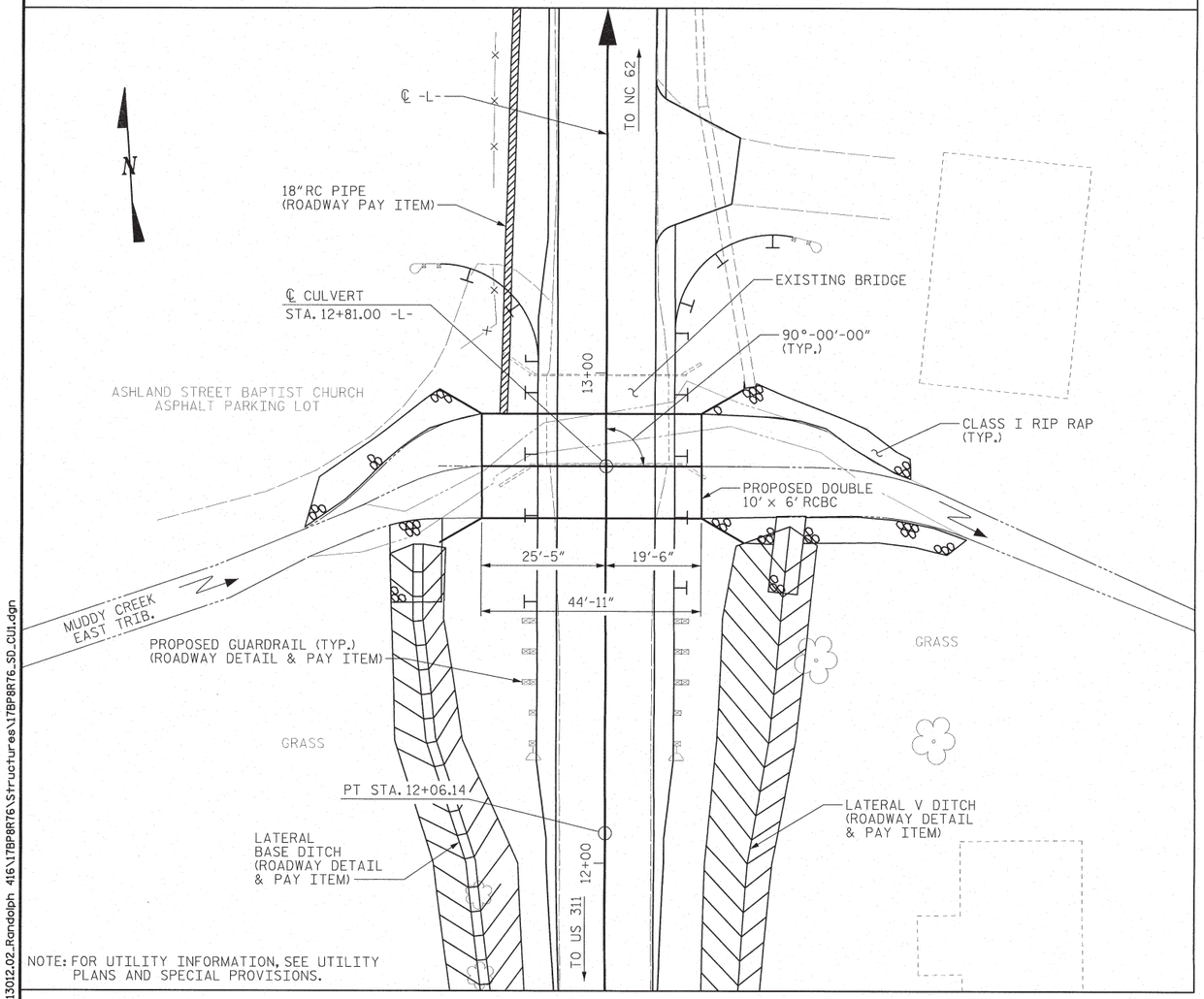
787.28
14+00.00

–L–

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

31-JUL-2017 15:32
416/Roadway/plan
spencer.merritt

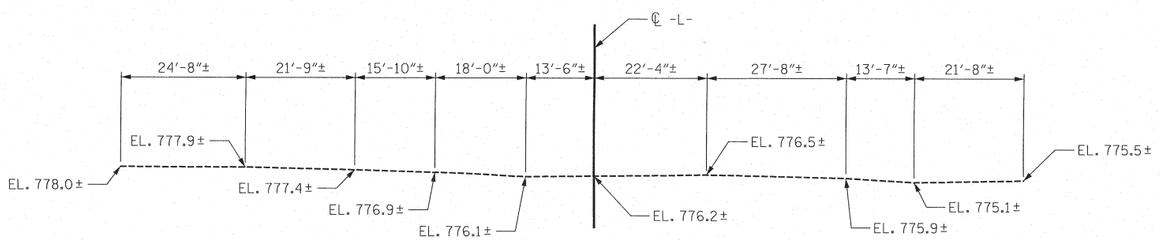
BM #1: RR SPIKE IN BASE OF 15" SWEET GUM TREE, 61' LT OF STA. 6+87.00 -BL-, EL. 781.40



NOTE: FOR UTILITY INFORMATION, SEE UTILITY PLANS AND SPECIAL PROVISIONS.

LOCATION SKETCH

GRADE POINT ELEVATION @ 12+81.00 -L- = 783.95
BED ELEVATION @ 12+81.00 -L- = 775.41
ROADWAY SLOPES = 2:1



PROFILE ALONG ℄ CULVERT

NOTES

ASSUMED LIVE LOAD ----------HL-93 OR ALTERNATE LOADING.

DESIGN FILL----------0.99 FT.

FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.

3"Ø WEEP HOLES INDICATED TO BE IN ACCORDANCE WITH THE SPECIFICATIONS.

CONCRETE IN CULVERTS TO BE POURED IN THE FOLLOWING ORDER:

1. WING FOOTINGS AND FLOOR SLAB INCLUDING 4" OF ALL VERTICAL WALLS.
2. THE REMAINING PORTIONS OF THE WALLS AND WINGS FULL HEIGHT FOLLOWED BY ROOF SLAB AND HEADWALLS.

THE RESIDENT ENGINEER SHALL CHECK THE LENGTH OF CULVERT BEFORE STAKING IT OUT TO MAKE CERTAIN THAT IT WILL PROPERLY TAKE CARE OF THE FILL.

DIMENSIONS FOR WING LAYOUT AS WELL AS ADDITIONAL REINFORCING STEEL EMBEDDED IN BARREL ARE SHOWN ON WING SHEET.

AT THE CONTRACTOR'S OPTION, HE MAY SPLICE THE VERTICAL REINFORCING STEEL IN THE INTERIOR FACE OF EXTERIOR WALL ABOVE LOWER WALL CONSTRUCTION JOINT. THE SPLICE LENGTH SHALL BE AS PROVIDED IN THE SPLICE LENGTH CHART SHOWN ON THE PLANS. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES SHALL BE PAID FOR BY THE CONTRACTOR.

STEEL IN THE BOTTOM SLAB MAY BE SPLICED AT THE PERMITTED CONSTRUCTION JOINT AT THE CONTRACTOR'S OPTION. EXTRA WEIGHT OF STEEL DUE TO THE SPLICES WILL BE PAID FOR BY THE CONTRACTOR.

AT THE CONTRACTOR'S OPTION HE MAY SUBMIT, TO THE ENGINEER FOR APPROVAL, DESIGN AND DETAIL DRAWINGS FOR A PRECAST REINFORCED CONCRETE BOX CULVERT IN LIEU OF THE CAST-IN-PLACE CULVERT SHOWN ON THE PLANS. THE DESIGN SHALL PROVIDE THE SAME SIZE AND NUMBER OF BARRELS AS USED ON THE CAST-IN-PLACE DESIGN. FOR OPTIONAL PRECAST REINFORCED CONCRETE BOX CULVERT, SEE SPECIAL PROVISIONS.

THE EXISTING STRUCTURE CONSISTING OF 1 SPAN (1 @ 18'-5") WITH ASPHALT WEARING SURFACE ON TIMBER DECK AND TIMBER JOISTS AND A CLEAR ROADWAY WIDTH OF 25'-2" ON TIMBER CAPS AND PILES WITH CONCRETE SILLS LOCATED AT THE SITE OF THE PROPOSED STRUCTURE SHALL BE REMOVED.

REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED SO AS TO NOT ALLOW DEBRIS TO FALL INTO THE WATER. THE CONTRACTOR SHALL REMOVE THE BRIDGE AND SUBMIT PLANS FOR DEMOLITION IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.

THE SUBSTRUCTURE OF THE EXISTING BRIDGE INDICATED ON THE PLANS IS FROM THE BEST INFORMATION AVAILABLE. SINCE THIS INFORMATION IS SHOWN FOR THE CONVENIENCE OF THE CONTRACTOR, THE CONTRACTOR SHALL HAVE NO CLAIM WHATSOEVER AGAINST THE DEPARTMENT OF TRANSPORTATION FOR ANY DELAYS OR ADDITIONAL COST INCURRED BASED ON THE DIFFERENCES BETWEEN THE EXISTING BRIDGE SUBSTRUCTURE SHOWN ON THE PLANS AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

THE 18"Ø PIPE THROUGH THE SIDEWALL OF THE CULVERT SHALL BE LOCATED BY THE ENGINEER. THE REINFORCING STEEL SHALL BE FIELD BENT AS NECESSARY TO CLEAR PIPE.

FOR CULVERT DIVERSION DETAILS AND PAY ITEM, SEE EROSION CONTROL PLANS.

A 3 FOOT STRIP OF FILTER FABRIC SHALL BE ATTACHED TO THE FILL FACE OF THE WING COVERING THE ENTIRE LENGTH OF THE EXPANSION JOINT.

EXCAVATE 1 FT. BELOW CULVERT AND FOOTINGS AND REPLACE WITH FOUNDATION CONDITIONING MATERIAL IN ACCORDANCE WITH SECTION 414 OF THE STANDARD SPECIFICATIONS.

SCOUR PROTECTIONS ARE REQUIRED AT BOTH INLET AND OUTLET OF THE CULVERT. DO NOT PLACE RIP RAP ABOVE THE STREAM BED.

THE SCOUR CRITICAL ELEVATIONS ARE THE AS-BUILT BOTTOM OF BOX CULVERT ELEVATIONS. SCOUR CRITICAL ELEVATIONS ARE USED TO MONITOR POSSIBLE SCOUR PROBLEMS DURING THE LIFE OF THE STRUCTURE.

FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

NATIVE MATERIAL SHALL BE USED TO BACKFILL THE CULVERT BETWEEN THE SILLS. THE ENTIRE COST OF THE WORK REQUIRED TO PLACE THE NATIVE BACKFILL MATERIAL SHALL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE BID FOR CULVERT EXCAVATION.

HYDROGRAPHIC DATA

DESIGN DISCHARGE	= 691 CFS
FREQUENCY OF DESIGN FLOOD	= 10 YRS.
DESIGN HIGH WATER ELEVATION	= 783.1 FT.
DRAINAGE AREA	= 0.84 SQ. MI.
BASE DISCHARGE (Q100)	= 1270 CFS
BASE HIGH WATER ELEVATION	= 784.04 FT.

OVERTOPPING FLOOD DATA

OVERTOPPING DISCHARGE	= 691 CFS
FREQUENCY OF OVERTOPPING FLOOD	= 10 YRS.
OVERTOPPING FLOOD ELEVATION	= 782.8 FT.

-L- PROFILE DATA

PVI STA. 13+00.00 -L-
PVI EL. = 782.35
VC = 300.00
g1 = -0.3000%
g2 = +5.0933%

TOTAL STRUCTURE QUANTITIES

CLASS A CONCRETE			
BARREL @ 2.082 CY/FT	93.5	C.Y.	
SILLS	1.5	C.Y.	
WING ETC.	18.6	C.Y.	
TOTAL	113.6	C.Y.	
REINFORCING STEEL			
BARREL	18,412	LBS.	
WINGS ETC.	959	LBS.	
TOTAL	19,371	LBS.	
CULVERT EXCAVATION	LUMP SUM		
FOUNDATION CONDITIONING MATERIAL	70 TONS		
REMOVAL OF EXISTING STRUCTURE	LUMP SUM		

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.8.R.76
RANDOLPH COUNTY
STATION: 12+81.00 -L-

SHEET 1 OF 6 REPLACES BRIDGE NO. 416

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD DOUBLE 10 FT. X 6 FT. CONCRETE BOX CULVERT

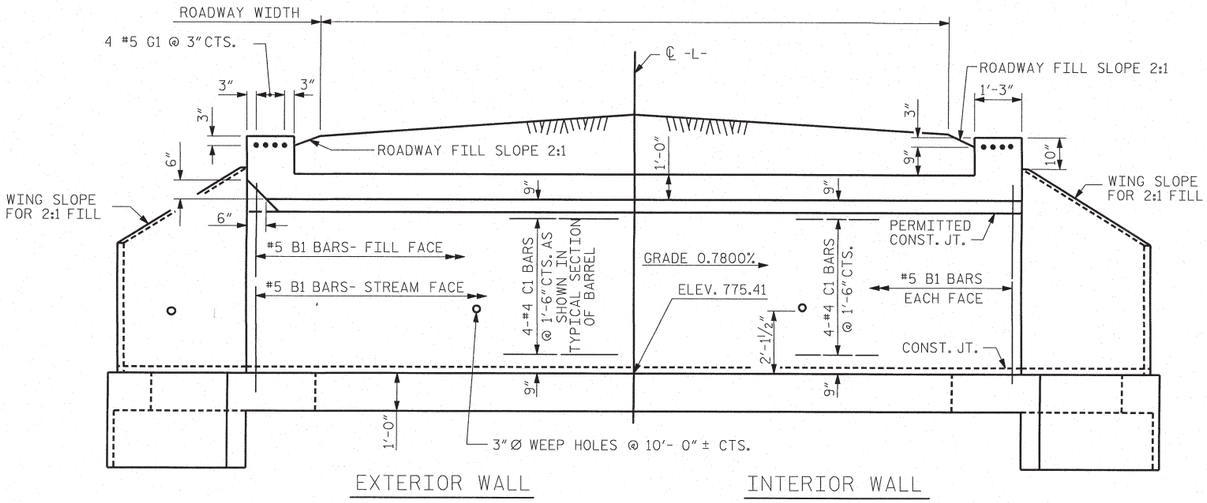
NORTH CAROLINA PROFESSIONAL SEAL 027459 ENGINEER PAUL A. de PAOLI
11.20.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

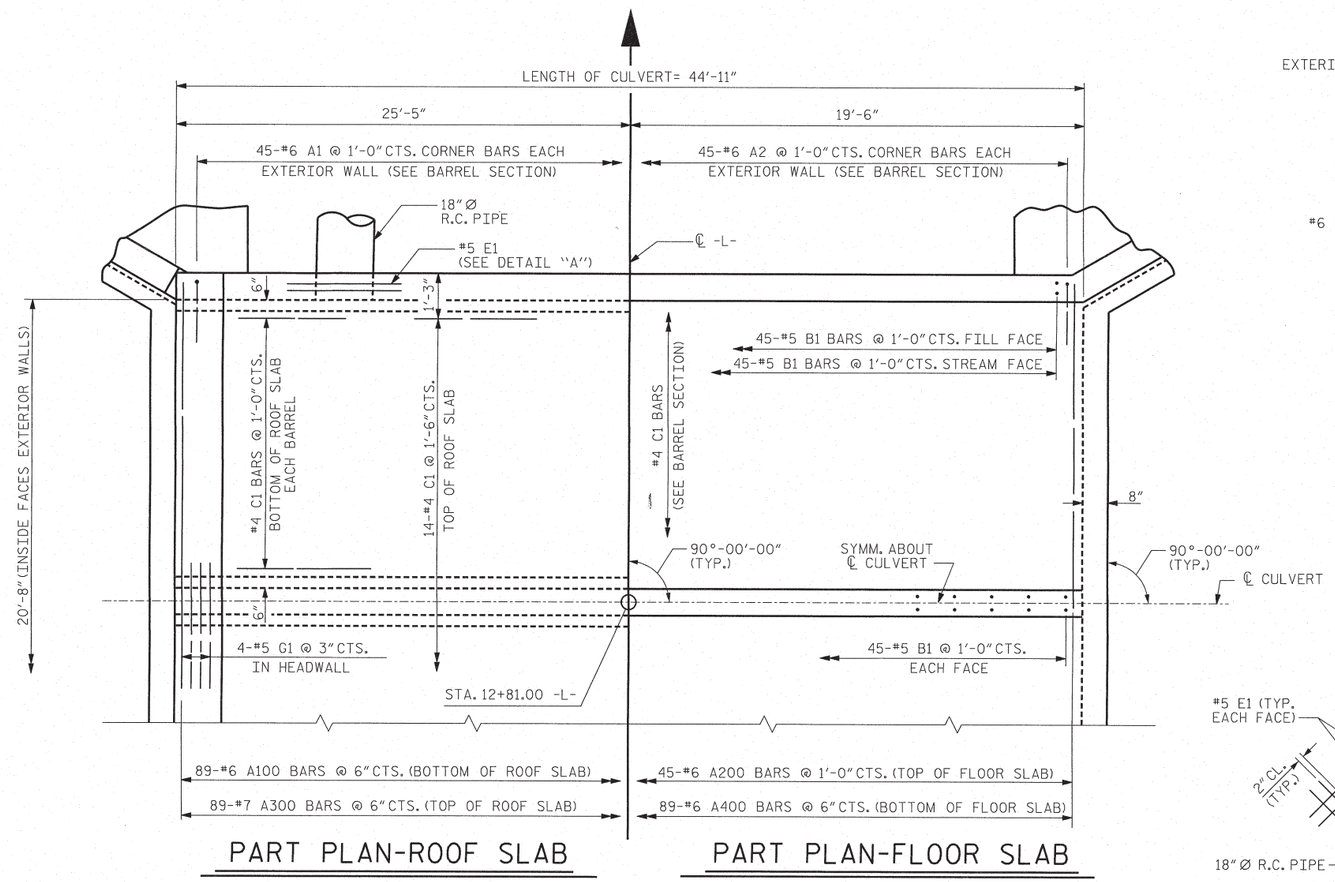
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-1
1			3			TOTAL SHEETS
2			4			6

ASSEMBLED BY : J.S. ISRAELNAIM	DATE : 10/14	SPECIAL
CHECKED BY : P.A. de PAOLI	DATE : 10/14	
DESIGN ENGINEER OF RECORD : P.A. de PAOLI	DATE : 11/14	
DRAWN BY : R.W. WRIGHT	DATE : JULY, 1990	STANDARD
CHECKED BY : D.A. GLADDEN	DATE : JULY, 1990	

11/20/2014
11:55:48 AM
User: blanning
Filename: P:\NC Bridges\MI3012 - Div 08 Bridge Replacements_Summit\MI3012.02_Randolph 416\17BP8R76\Structures\17BP8R76_SD_CUI.dgn

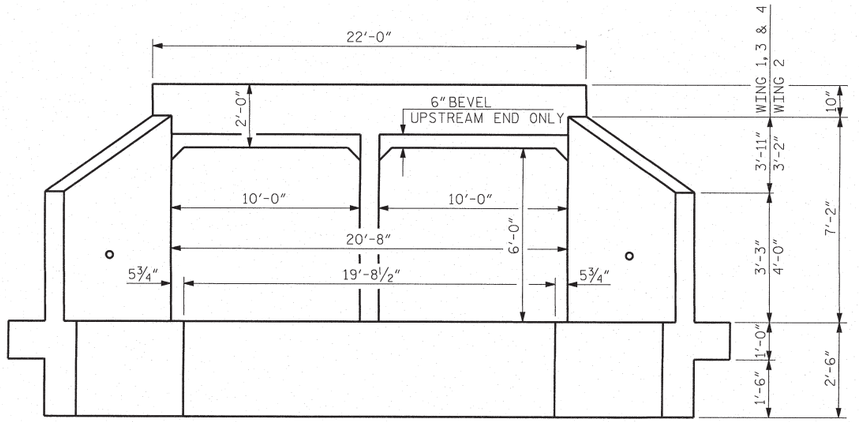


CULVERT SECTION NORMAL TO ROADWAY

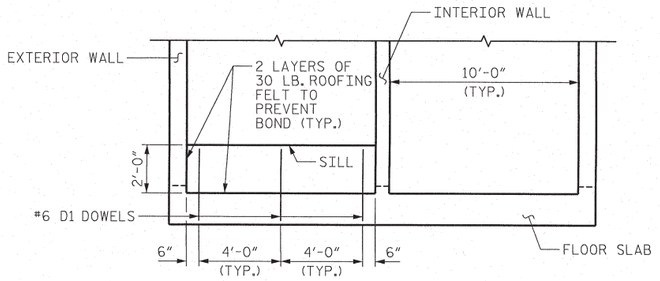


PART PLAN-ROOF SLAB

PART PLAN-FLOOR SLAB



END ELEVATION



ELEVATION

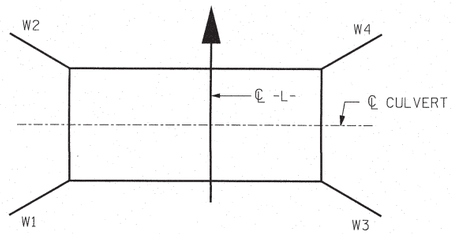
NOTE: SILLS AT INLET AND OUTLET ENDS.

SECTION THROUGH SILL

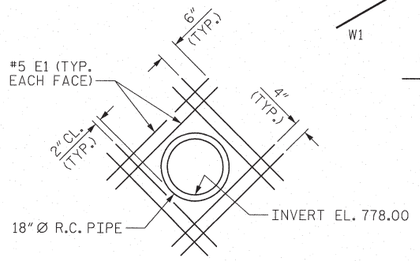
*DOWELS MAY BE PUSHED INTO GREEN CONCRETE AFTER SLAB HAS BEEN FLOAT FINISHED.

CULVERT SILL DETAILS

(LOOKING DOWNSTREAM)



WINGWALL KEY



DETAIL "A"

I HEREBY CERTIFY THESE PLANS ARE THE AS-BUILT PLANS

PROJECT NO. 17BP.8.R.76

RANDOLPH COUNTY

STATION: 12+81.00 -L-

SHEET 2 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL STANDARD DOUBLE 10 FT. X 6 FT. CONCRETE BOX CULVERT 90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 021799 ENGINEER PAUL A. de PAOLI 11.20.14

ASSEMBLED BY : J.S. ISRAELNAIM	DATE : 10/14	SPECIAL	
CHECKED BY : P.A. de PAOLI	DATE : 10/14		
DESIGN ENGINEER OF RECORD : P.A. de PAOLI	DATE : 11/14		
DRAWN BY : RALPH D. UNDERWOOD	DATE : MAY 1971	STANDARD	
CHECKED BY : JOEL A. JOHNSON	DATE : JULY 1971		

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-2
1			3			TOTAL SHEETS
2			4			6

STD. NO. CB12

11/20/2014
12:52:23 PM
User: blanning
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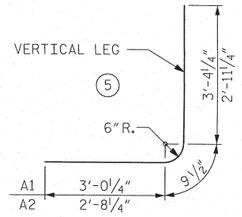
BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



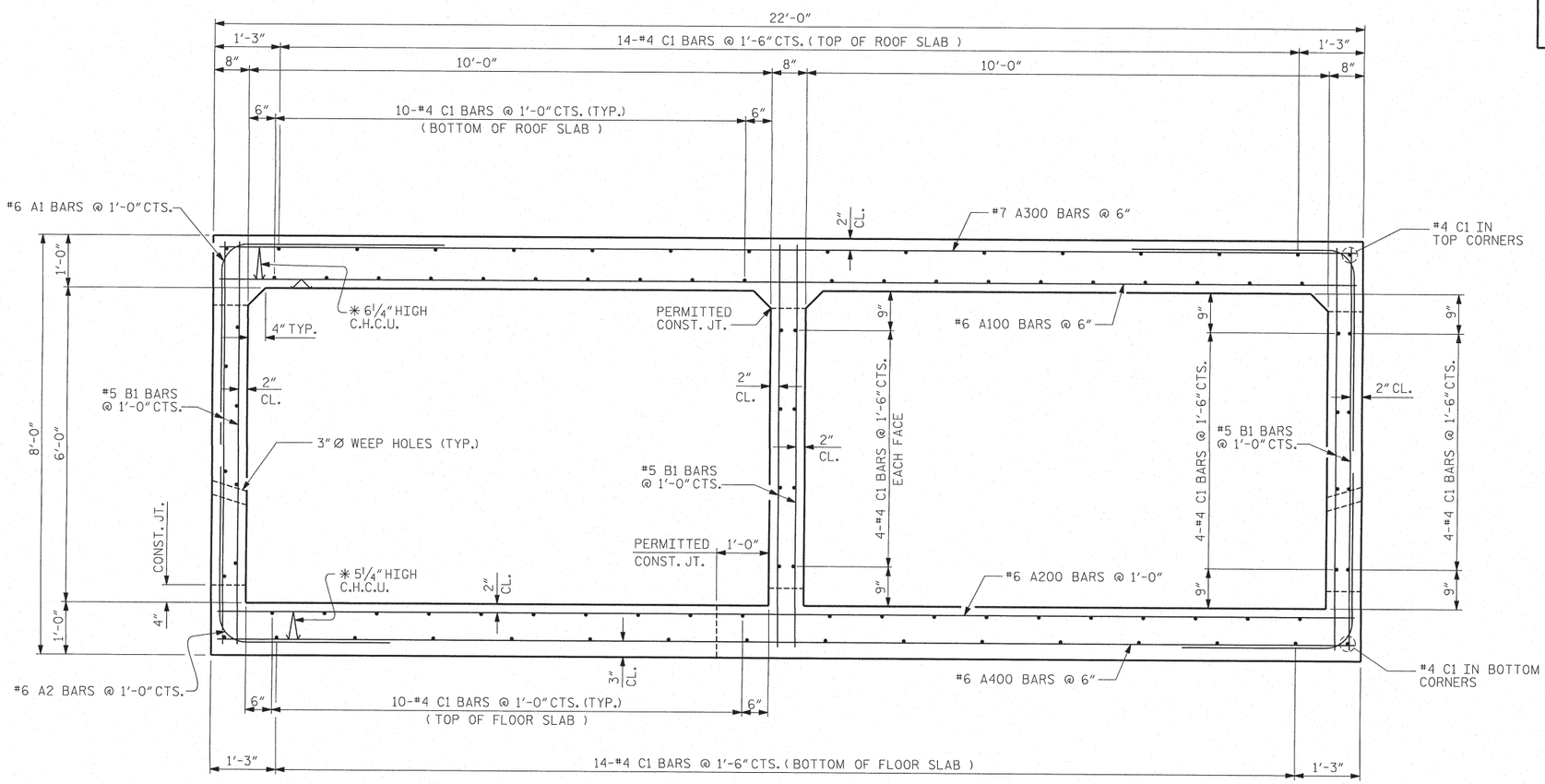
BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	90	6	5	7'-2"	969
A2	90	6	5	6'-5"	867
A100	89	6	STR	21'-8"	2,896
A200	45	6	STR	21'-8"	1,464
A300	89	7	STR	21'-8"	3,942
A400	89	6	STR	21'-8"	2,896
B1	270	5	STR	7'-7"	2,136
C1	192	4	STR	23'-2"	2,971
D1	6	6	STR	2'-7"	23
E1	16	5	STR	4'-0"	67
G1	8	5	STR	21'-8"	181

REINFORCING STEEL 18,412 LBS

SPLICE LENGTH CHART

BAR	SIZE	SPLICE LENGTH
A300	#7	3'-9"
A400	#6	2'-9"
C1	#4	1'-9"



RIGHT ANGLE SECTION OF BARREL

THERE ARE 96 "C" BARS IN SECTION OF BARREL.
* ALL CONTINUOUS HIGH CHAIR UPPERS (C.H.C.U.) @ 3'-0" CTS.

PROJECT NO. 17BP.8.R.76
RANDOLPH COUNTY
STATION: 12+81.00 -L-

SHEET 3 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TYPICAL SECTION DOUBLE 10 FT. X 6 FT. CONCRETE BOX CULVERT

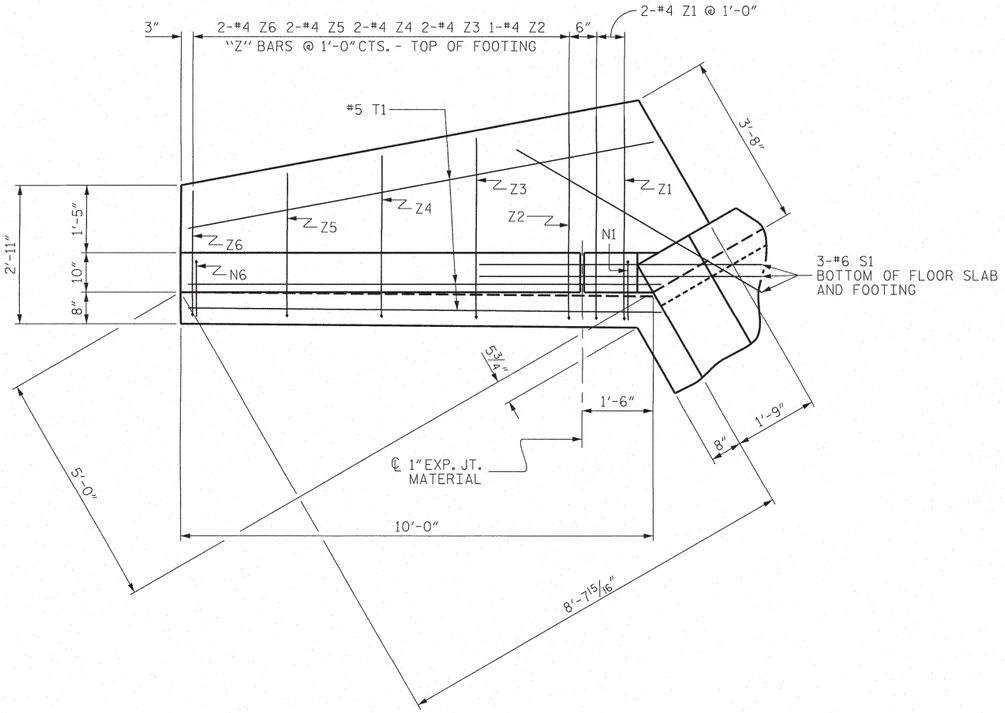
NORTH CAROLINA PROFESSIONAL SEAL 027199 ENGINEER P.A. de PAOLI 11.20.14

DRAWN BY : J.S. ISRAELNAIM DATE : 10/14
CHECKED BY : P.A. de PAOLI DATE : 10/14
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE : 11/14

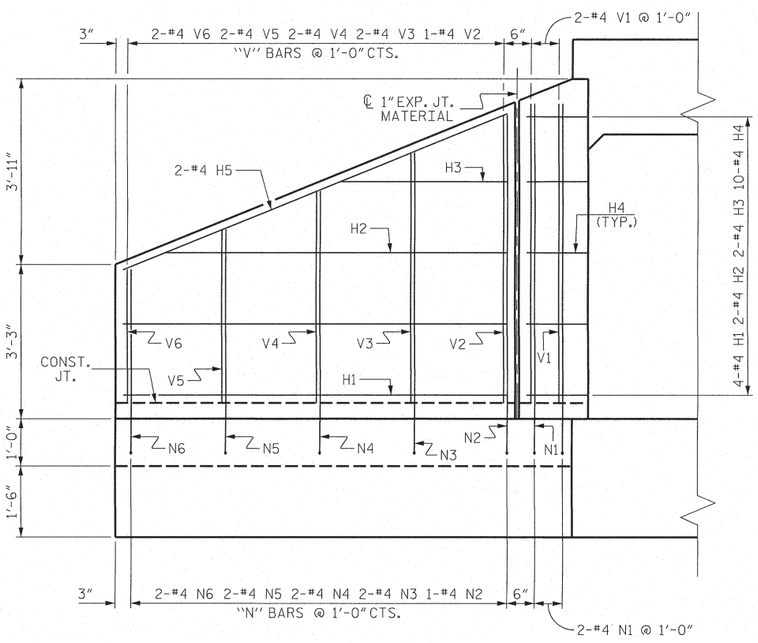
MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

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

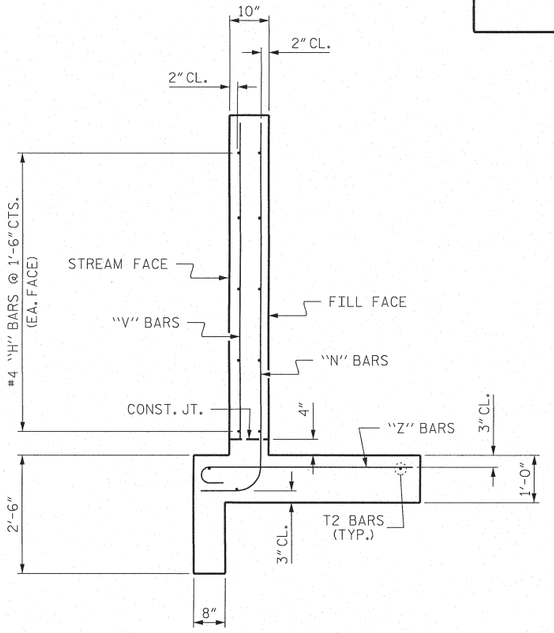
SHEET NO. C-3
TOTAL SHEETS 6



PLAN



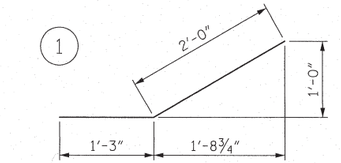
ELEVATION

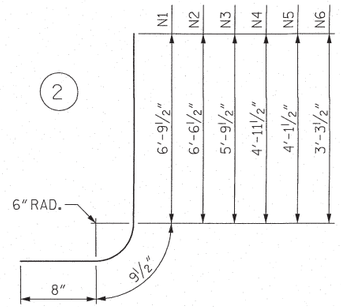


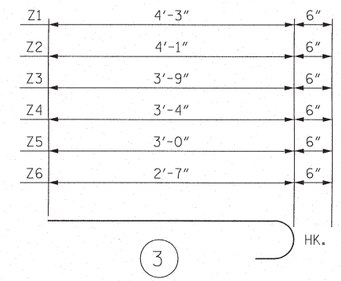
TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.







BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	12	#4	STR	8'-1"	65
H2	6	#4	STR	7'-2"	29
H3	6	#4	STR	3'-5"	14
H4	30	#4	1	3'-3"	65
H5	6	#4	STR	8'-8"	35
N1	6	#4	2	8'-3"	33
N2	3	#4	2	8'-0"	16
N3	6	#4	2	7'-3"	29
N4	6	#4	2	6'-5"	26
N5	6	#4	2	5'-7"	22
N6	6	#4	2	4'-9"	19
S1	9	#6	STR	6'-0"	81
T1	9	#5	STR	10'-0"	94
V1	6	#4	STR	6'-3"	25
V2	3	#4	STR	6'-0"	12
V3	6	#4	STR	5'-3"	21
V4	6	#4	STR	4'-5"	18
V5	6	#4	STR	3'-7"	14
V6	6	#4	STR	2'-9"	11
Z1	6	#4	3	4'-9"	19
Z2	3	#4	3	4'-7"	9
Z3	6	#4	3	4'-3"	17
Z4	6	#4	3	3'-10"	15
Z5	6	#4	3	3'-6"	14
Z6	6	#4	3	3'-1"	12

REINFORCING STEEL
FOR 3 WINGS 715 LBS

CLASS A CONCRETE
3 WINGS 10.5 CY
2 HEADWALL 2.0 CY
END CURTAIN WALLS 2.4 CY
TOTAL 14.9 CY

PROJECT NO. 17BP.8.R.76
RANDOLPH COUNTY
STATION: 12+81.00 -L-
SHEET 4 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WINGS 1, 3 & 4 FOR CONCRETE BOX CULVERT

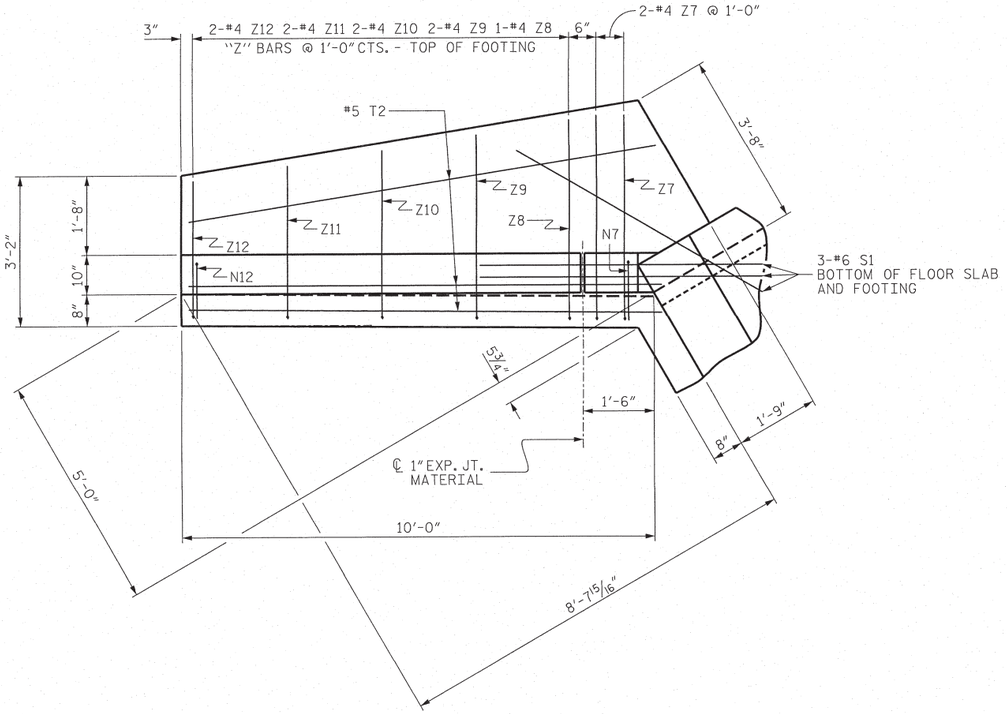
H = 6'-0" SLOPE = 2:1
90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER PAUL A. de PAOLI
11.20.14

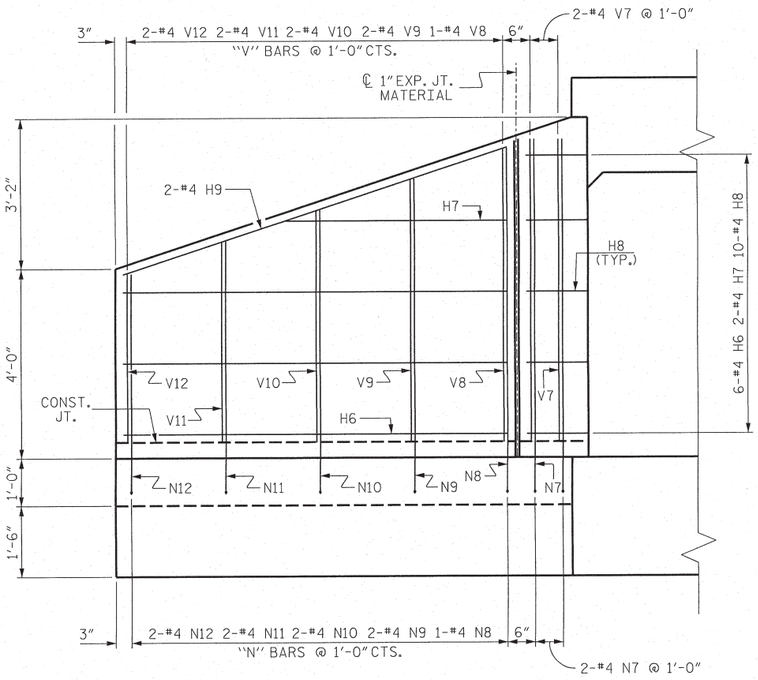
DRAWN BY : J.S. ISRAELNAIM DATE : 10/14
CHECKED BY : P.A. de PAOLI DATE : 10/14
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE : 11/14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

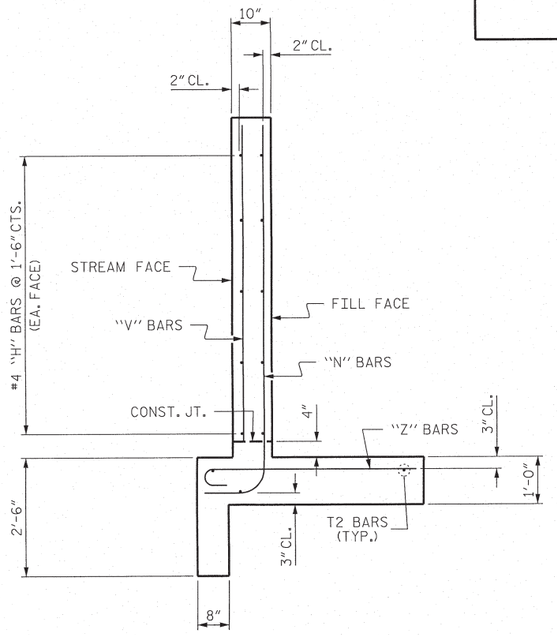
REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-4
1			3			TOTAL SHEETS
2			4			6



PLAN



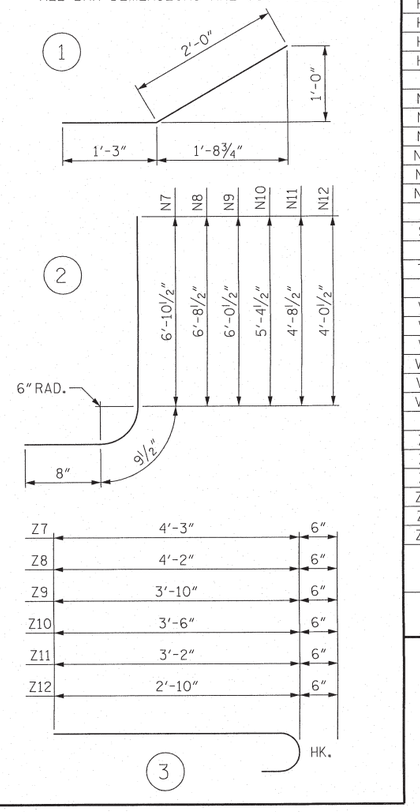
ELEVATION



TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.



BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H6	6	#4	STR	8'-1"	32
H7	2	#4	STR	4'-7"	6
H8	10	#4	1	3'-3"	22
H9	2	#4	STR	8'-6"	11
N7	2	#4	2	8'-4"	11
N8	1	#4	2	8'-2"	5
N9	2	#4	2	7'-6"	10
N10	2	#4	2	6'-10"	9
N11	2	#4	2	6'-2"	8
N12	2	#4	2	5'-6"	7
S1	3	#6	STR	6'-0"	27
T2	3	#5	STR	10'-0"	31
V7	2	#4	STR	6'-4"	8
V8	1	#4	STR	6'-2"	4
V9	2	#4	STR	5'-6"	7
V10	2	#4	STR	4'-10"	6
V11	2	#4	STR	4'-2"	6
V12	2	#4	STR	3'-6"	5
Z7	2	#4	3	4'-9"	6
Z8	1	#4	3	4'-8"	3
Z9	2	#4	3	4'-4"	6
Z10	2	#4	3	4'-0"	5
Z11	2	#4	3	3'-8"	5
Z12	2	#4	3	3'-4"	4

REINFORCING STEEL FOR 1 WING 244 LBS

CLASS A CONCRETE 1 WING 3.7 CY

PROJECT NO. 17BP.8.R.76

RANDOLPH COUNTY

STATION: 12+81.00 -L-

SHEET 5 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

WING 2 FOR CONCRETE BOX CULVERT

H = 6'-0" SLOPE = 2:1

90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 027799 ENGINEER P.A. de PAOLI 11.20.14

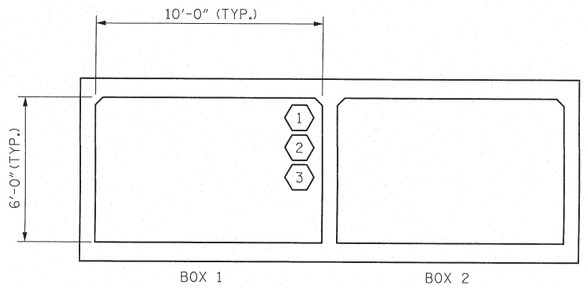
DRAWN BY : J.S. ISRAELNAIM DATE : 10/14
CHECKED BY : P.A. de PAOLI DATE : 10/14
DESIGN ENGINEER OF RECORD : P.A. de PAOLI DATE : 11/14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-5
1			3			TOTAL SHEETS
2			4			6

LOAD AND RESISTANCE FACTOR RATING (LRFR) SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS

LEVEL		VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING (#)	MINIMUM RATING FACTORS (RF)	TONS = W x RF	STRENGTH I LIMIT STATE									COMMENT NUMBER
							LIVE-LOAD FACTORS (γ_{LL})	MOMENT				SHEAR				
								RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	RATING FACTOR	BOX NO.	ELEMENT TYPE	DISTANCE FROM LEFT END OF ELEMENT (ft)	
DESIGN LOAD RATING		HL-93 (INVENTORY)	N/A	(1)	1.32	--	1.75	1.55	1	EXTERIOR WALL	6.00	1.32	1	TOP SLAB	10.00	
		HL-93 (OPERATING)	N/A		1.71	--	1.35	2.01	1	EXTERIOR WALL	6.00	1.71	1	TOP SLAB	10.00	
		HS-20 (INVENTORY)	36.000	(2)	1.32	47.52	1.75	1.55	1	EXTERIOR WALL	6.00	1.32	1	TOP SLAB	10.00	
		HS-20 (OPERATING)	36.000		1.71	61.56	1.35	2.01	1	EXTERIOR WALL	6.00	1.71	1	TOP SLAB	10.00	
LEGAL LOAD RATING	SINGLE VEHICLE (SV)	SNSH	13.500		2.71	36.59	1.40	2.71	1	EXTERIOR WALL	6.00	2.84	1	TOP SLAB	10.00	
		SNGARBS2	20.000		2.55	51.00	1.40	2.56	1	EXTERIOR WALL	6.00	2.55	1	TOP SLAB	10.00	
		SNAGRIS2	22.000		2.72	59.84	1.40	2.72	1	EXTERIOR WALL	6.00	2.72	1	TOP SLAB	10.00	
		SNCOTTS3	27.250	(3)	1.28	34.88	1.40	1.55	1	EXTERIOR WALL	6.00	1.28	1	TOP SLAB	10.00	
		SNAGGRS4	34.925		1.70	59.37	1.40	1.99	1	EXTERIOR WALL	6.00	1.70	1	TOP SLAB	10.00	
		SNS5A	35.550		1.55	55.10	1.40	1.83	1	EXTERIOR WALL	6.00	1.55	1	TOP SLAB	10.00	
		SNS6A	39.950		1.46	58.33	1.40	1.83	1	EXTERIOR WALL	6.00	1.46	1	TOP SLAB	10.00	
		SNS7B	42.000		1.46	61.32	1.40	1.83	1	EXTERIOR WALL	6.00	1.46	1	TOP SLAB	10.00	
	TRUCK TRACTOR SEMI-TRAILER (TTST)	TNAGRIT3	33.000		2.31	76.23	1.40	2.72	1	EXTERIOR WALL	6.00	2.31	1	TOP SLAB	10.00	
		TNT4A	33.075		1.53	50.60	1.40	1.83	1	EXTERIOR WALL	6.00	1.53	1	TOP SLAB	10.00	
		TNT6A	41.600		1.50	62.40	1.40	1.83	1	EXTERIOR WALL	6.00	1.50	1	TOP SLAB	10.00	
		TNT7A	42.000		1.51	63.42	1.40	1.83	1	EXTERIOR WALL	6.00	1.51	1	TOP SLAB	10.00	
		TNT7B	42.000		1.51	63.42	1.40	1.83	1	EXTERIOR WALL	6.00	1.51	1	TOP SLAB	10.00	
		TNAGRIT4	43.000		1.44	61.92	1.40	1.83	1	EXTERIOR WALL	6.00	1.44	1	TOP SLAB	10.00	
		TNAGT5A	45.000		1.45	65.25	1.40	1.83	1	EXTERIOR WALL	6.00	1.45	1	TOP SLAB	10.00	
		TNAGT5B	45.000		1.41	63.45	1.40	1.84	1	EXTERIOR WALL	6.00	1.41	1	TOP SLAB	10.00	



LRFR SUMMARY
(LOOKING DOWNSTREAM)

LOAD FACTORS:

DESIGN LOAD RATING FACTORS

LOAD TYPE	MAX FACTOR	MIN FACTOR
DC	1.25	0.90
DW	1.50	0.65
EV	1.30	0.90
EH	1.35	0.90
ES	1.35	0.90
LS	1.75	--
WA	1.00	--

NOTE:

RATING FACTORS ARE BASED ON THE STRENGTH I LIMIT STATE.

COMMENTS:

1. VERTICAL ELEMENTS ARE REFERENCED STARTING AT THE BOTTOM.

(#) CONTROLLING LOAD RATING

(1) DESIGN LOAD RATING (HL-93)

(2) DESIGN LOAD RATING (HS-20)

(3) LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

PROJECT NO. 17BP.8.R.76

RANDOLPH COUNTY

STATION: 12+81.00 -L-

SHEET 6 OF 6

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD

LRFR SUMMARY FOR REINFORCED CONCRETE BOX CULVERTS
(NON-INTERSTATE TRAFFIC)

NORTH CAROLINA PROFESSIONAL SEAL 027239 ENGINEER PAUL A. de PAOLI 11.20.14

MI ENGINEERING
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606
(919) 851-6606
FIRM PE NUMBER : P-0671

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	C-6
1			3			TOTAL SHEETS
2			4			6

ASSEMBLED BY: J.S. ISRAELNAIM	DATE: 10/14	
CHECKED BY : P.A. de PAOLI	DATE: 10/14	
DESIGN ENGINEER OF RECORD: P.A. de PAOLI	DATE: 11/14	
DRAWN BY : WMC 7/11	REV. 10/1/11 MAA/GM	
CHECKED BY : GM 7/11		

11/20/2014
11:55:58 AM
User: blanning
Filename: P:\NC Bridges\WI3012 - Div 08 Bridge Replacements_Summit\WI3012.02_Randolph 416\17BP8R76\Structures\17BP8R76_SD_CU6.dgn

STANDARD NOTES

DESIGN DATA:

SPECIFICATIONS	A.A.S.H.T.O. (CURRENT)
LIVE LOAD	SEE PLANS
IMPACT ALLOWANCE	SEE A.A.S.H.T.O.
STRESS IN EXTREME FIBER OF	
STRUCTURAL STEEL - AASHTO M270 GRADE 36	20,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50W	27,000 LBS. PER SQ. IN.
- AASHTO M270 GRADE 50	27,000 LBS. PER SQ. IN.
REINFORCING STEEL IN TENSION	
GRADE 60	24,000 LBS. PER SQ. IN.
CONCRETE IN COMPRESSION	1,200 LBS. PER SQ. IN.
CONCRETE IN SHEAR	SEE A.A.S.H.T.O.
STRUCTURAL TIMBER - TREATED OR	
UNTREATED - EXTREME FIBER STRESS	1,800 LBS. PER SQ. IN.
COMPRESSION PERPENDICULAR TO GRAIN OF TIMBER	375 LBS. PER SQ. IN.
EQUIVALENT FLUID PRESSURE OF EARTH	30 LBS. PER CU. FT. (MINIMUM)

MATERIAL AND WORKMANSHIP:

EXCEPT AS MAY OTHERWISE BE SPECIFIED ON PLANS OR IN THE SPECIAL PROVISIONS, ALL MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2018 "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" OF THE N. C. DEPARTMENT OF TRANSPORTATION.

STEEL SHEET PILING FOR PERMANENT OR TEMPORARY APPLICATIONS SHALL BE HOT ROLLED.

CONCRETE:

UNLESS OTHERWISE REQUIRED ON PLANS, CLASS A CONCRETE SHALL BE USED FOR ALL PORTIONS OF ALL STRUCTURES WITH THE EXCEPTION THAT: CLASS AA CONCRETE SHALL BE USED IN BRIDGE SUPERSTRUCTURES, ABUTMENT BACKWALLS, AND APPROACH SLABS; AND CLASS B CONCRETE SHALL BE USED FOR SLOPE PROTECTION AND RIP RAP.

CONCRETE CHAMFERS:

UNLESS OTHERWISE NOTED ON THE PLANS, ALL EXPOSED CORNERS ON STRUCTURES SHALL BE CHAMFERED 3/4" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1-1/2" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A 1/4" FINISHING TOOL UNLESS OTHERWISE REQUIRED ON PLANS; AND CORNERS OF EXPANSION JOINTS IN THE ROADWAY FACES AND TOPS OF CURBS AND SIDEWALKS SHALL BE ROUNDED TO A 1/4" RADIUS WITH A FINISHING STONE OR TOOL UNLESS OTHERWISE REQUIRED ON PLANS.

DOWELS:

DOWELS WHEN INDICATED ON PLANS AS FOR CULVERT EXTENSIONS, SHALL BE EMBEDDED AT LEAST 12" INTO THE OLD CONCRETE AND GROUTED INTO PLACE WITH 1:2 CEMENT MORTAR.

ALLOWANCE FOR DEAD LOAD DEFLECTION, SETTLEMENT, ETC. IN CASTING SUPERSTRUCTURES:

BRIDGES SHALL BE BUILT ON THE GRADE OR VERTICAL CURVE SHOWN ON PLANS. SLABS, CURBS AND PARAPETS SHALL CONFORM TO THE GRADE OR CURVE.

ALL DIMENSIONS WHICH ARE GIVEN IN SECTION AND ARE AFFECTED BY DEAD LOAD DEFLECTIONS ARE DIMENSIONS AT CENTER LINE OF BEARING UNLESS OTHERWISE NOTED ON PLANS. IN SETTING FORMS FOR STEEL BEAM BRIDGES AND PRESTRESSED CONCRETE GIRDER BRIDGES, ADJUSTMENTS SHALL BE MADE DUE TO THE DEAD LOAD DEFLECTIONS FOR THE ELEVATIONS SHOWN. WHERE BLOCKS ARE SHOWN OVER BEAMS FOR BUILDING UP TO THE SLAB, THE VERTICAL DIMENSIONS OF THE BLOCKS SHALL BE ADJUSTED BETWEEN BEARINGS TO COMPENSATE FOR DEAD LOAD DEFLECTIONS, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER. WHERE BOTTOM OF SLAB IS IN LINE WITH BOTTOM OF TOP FLANGES, DEPTH OF SLAB BETWEEN BEARINGS SHALL BE ADJUSTED TO COMPENSATE FOR DEAD LOAD DEFLECTION, VERTICAL CURVE ORDINATE, AND ACTUAL BEAM CAMBER.

IN SETTING FALSEWORK AND FORMS FOR REINFORCED CONCRETE SPANS, AN ALLOWANCE SHALL BE MADE FOR DEAD LOAD DEFLECTIONS, SETTLEMENT OF FALSEWORK, AND PERMANENT CAMBER WHICH SHALL BE PROVIDED FOR IN ADDITION TO THE ELEVATIONS SHOWN. AFTER REMOVAL OF THE FALSEWORK, THE FINISHED STRUCTURES SHALL CONFORM TO THE PROFILE AND ELEVATIONS SHOWN ON THE PLANS AND CONSTRUCTION ELEVATIONS FURNISHED BY THE ENGINEER.

DETAILED DRAWINGS FOR FALSEWORK OR FORMS FOR BRIDGE SUPERSTRUCTURE AND ANY STRUCTURE OR PARTS OF A STRUCTURE AS NOTED ON THE PLANS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BEFORE CONSTRUCTION OF THE FALSEWORK OR FORMS IS STARTED.

REINFORCING STEEL:

ALL REINFORCING STEEL SHALL BE DEFORMED. DIMENSIONS RELATIVE TO PLACEMENT OF REINFORCING ARE TO CENTERS OF BARS UNLESS OTHERWISE INDICATED IN THE PLANS. DIMENSIONS ON BAR DETAILS ARE TO CENTERS OF BARS OR ARE OUT TO OUT AS INDICATED ON PLANS.

WIRE BAR SUPPORTS SHALL BE PROVIDED FOR REINFORCING STEEL WHERE INDICATED ON THE PLANS. WHEN BAR SUPPORT PIECES ARE PLACED IN CONTINUOUS LINES, THEY SHALL BE SO PLACED THAT THE ENDS OF THE SUPPORTING WIRES SHALL BE LAPPED TO LOCK LEGS ON ADJOINING PIECES.

STRUCTURAL STEEL:

AT THE CONTRACTOR'S OPTION, HE MAY SUBSTITUTE 7/8" Ø SHEAR STUDS FOR THE 3/4" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF 7/8" Ø STUDS ALONG THE BEAM AS SHOWN FOR 3/4" Ø STUDS BASED ON THE RATIO OF 3 - 7/8" Ø STUDS FOR 4 - 3/4" Ø STUDS. STUDS OF THE LENGTH SPECIFIED ON THE PLANS MUST BE PROVIDED. THE MAXIMUM SPACING SHALL BE 2'-0".

EXCEPT AT THE INTERIOR SUPPORTS OF CONTINUOUS BEAMS WHERE THE COVER PLATE IS IN CONTACT WITH BEARING PLATE, THE CONTRACTOR MAY, AT HIS OPTION, SUBSTITUTE FOR THE COVER PLATES DESIGNATED ON THE PLANS COVER PLATES OF THE EQUIVALENT AREA PROVIDED THESE PLATES ARE AT LEAST 5/16" IN THICKNESS AND DO NOT EXCEED A WIDTH EQUAL TO THE FLANGE WIDTH LESS 2" OR A THICKNESS EQUAL TO 2 TIMES THE FLANGE THICKNESS. THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT ANSI/AASHTO/AWS "BRIDGE WELDING CODE". ELECTROSLAG WELDING WILL NOT BE PERMITTED.

WITH THE SOLE EXCEPTION OF EDGES AT SURFACES WHICH BEAR ON OTHER SURFACES, ALL SHARP EDGES AND ENDS OF SHAPES AND PLATES SHALL BE SLIGHTLY ROUNDED BY SUITABLE MEANS TO A RADIUS OF APPROXIMATELY 1/16 INCH OR EQUIVALENT FLAT SURFACE AT A SUITABLE ANGLE PRIOR TO PAINTING, GALVANIZING, OR METALLIZING.

HANDRAILS AND POSTS:

METAL STANDARDS AND FACES OF THE CONCRETE END POSTS FOR THE METAL RAIL SHALL BE SET NORMAL TO THE GRADE OF THE CURB, UNLESS OTHERWISE SHOWN ON PLANS. THE METAL RAIL AND TOPS OF CONCRETE POSTS USED WITH THE ALUMINUM RAIL SHALL BE BUILT PARALLEL TO THE GRADE OF THE CURB.

METAL HANDRAILS SHALL BE IN ACCORDANCE WITH THE PLANS. RAILS SHALL BE AS MANUFACTURED FOR BRIDGE RAILING. CASTINGS SHALL BE OF A UNIFORM APPEARANCE. FINS AND OTHER DEFORMATIONS RESULTING FROM CASTING OR OTHERWISE SHALL BE REMOVED IN A MANNER SO THAT A UNIFORM COLORING OF THE COMPLETED CASTING SHALL BE OBTAINED. CASTINGS WITH DISCOLORATIONS OR OF NON-UNIFORM COLORING WILL NOT BE ACCEPTED. CERTIFIED MILL REPORTS ARE REQUIRED FOR METAL RAILS AND POSTS.

SPECIAL NOTES:

GENERALLY, IN CASE OF DISCREPANCY, THIS STANDARD SHEET OF NOTES SHALL GOVERN OVER THE SPECIFICATIONS, BUT THE REMAINDER OF THE PLANS SHALL GOVERN OVER NOTES HEREON, AND SPECIAL PROVISIONS SHALL GOVERN OVER ALL. SEE SPECIFICATIONS ARTICLE 105-4.

ENGLISH

JANUARY, 1990

STD. NO. SN

REV. 6-16-95 EEM Ø RGW REV. 5-7-03 RWW Ø JTE REV. 10-1-11 MAA Ø GM
REV. 8-16-99 RWW Ø LES REV. 5-1-06 TLA Ø GM