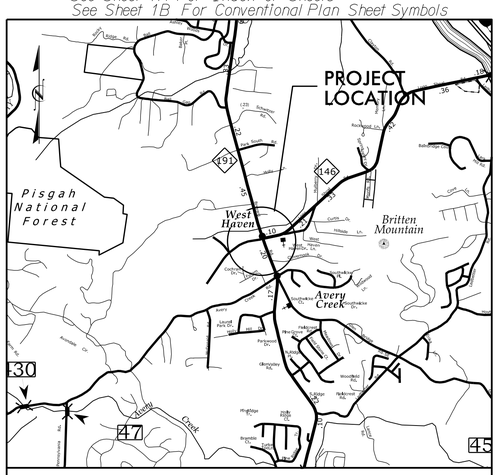
09/08/49

TIP PROJECT: SM-5713B

CONTRACT: DM00233

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



VICINITY MAP N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

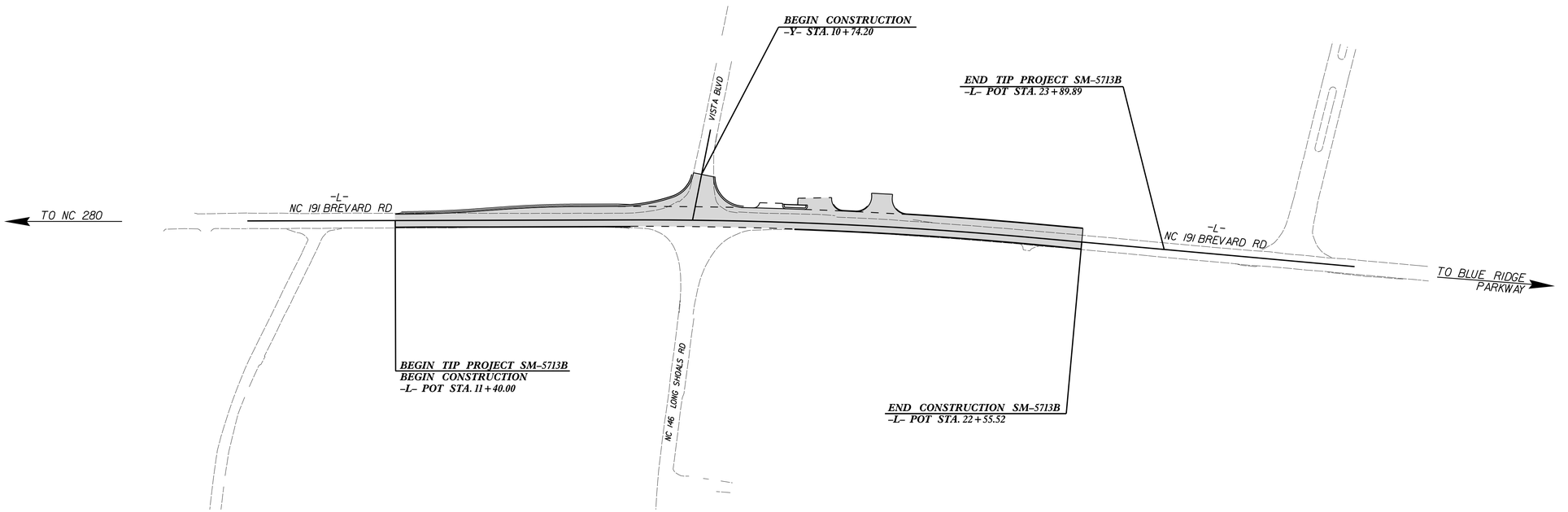
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SM-5713B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
47662.1.1	N/A	P.E.
47662.2.1	N/A	ROW.
47662.3.1	N/A	CONST.

LOCATION: NC 191 (BREVARD RD) /NC 146 (LONG SHOALS RD) INTERSECTION IMPROVEMENTS

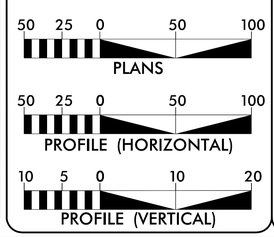
TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT EXTENSION

NAD 83



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



PROJECT LENGTH

LENGTH OF ROADWAY PROJECT SM-5713B	=	0.237 MI.
LENGTH OF STRUCTURE PROJECT SM-5713B	=	0.000 MI
TOTAL LENGTH OF PROJECT SM-5713B	=	0.237 MI

Stantec

PREPARED IN THE OFFICE OF:
STANTEC CONSULTING
801 Jones Franklin Road |Suite 300| Raleigh, NC 27606
Tel. (919) 851-6866 | Fax. (919) 851-7024 | www.stantec.com
License No. F-0672

FOR THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:

LETTING DATE:

TROY S WILSON, PLS
NCDOT DIVISION 13

MICHAEL D. LINDGREN, PE
PROJECT ENGINEER

JEANIE TYSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 020870 ENGINEER MARC T SHOWN

DocuSigned by: Marc T. Shown
SIGNATURE: 4B024AEC0A0B4C2 P.E. 2/15/2018

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 025513 ENGINEER MICHAEL D. LINDGREN

DocuSigned by: Mike Lindgren
SIGNATURE: 24E473B3A471492 P.E. 2/15/2018

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

2/15/2018
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PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 025513 ENGINEER MICHAEL D LINDSEY

DocuSigned by: Mike Lindsey A4E47383A471492...

2/15/2018

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
1C-1 TO 1C-2	SURVEY CONTROL SHEET
2A-1	PAVEMENT SCHEDULE, TYPICAL SECTIONS, AND WEDGING DETAILS
3A	SUMMARY OF EARTHWORK, PAVEMENT BREAK-UP AND REMOVAL, CABLE GUIDERAIL, AND ROW PARCEL INDEX
4	PLAN SHEET
TMP-1	TRAFFIC MAINTENANCE PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
UO-1 THRU UO-2	UTILITIES BY OTHERS PLANS
X-1 THRU X-12	CROSS-SECTIONS
C-1 THRU C-4 (SN)	CULVERT PLANS

GENERAL NOTES

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

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

SHOULDER CONSTRUCTION:

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

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.

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 CONTRACT.

ROADWAY STANDARD DRAWINGS

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	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
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
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
846.02	Drop Inlet Installation in Expressway Gutter
848.04	Street Turnout
862.02	Guardrail Installation

2/14/2018
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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	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:

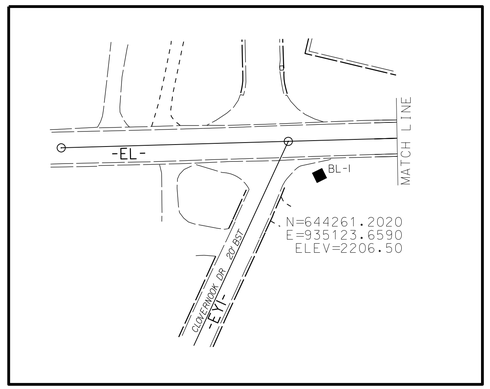
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. (UST)
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)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

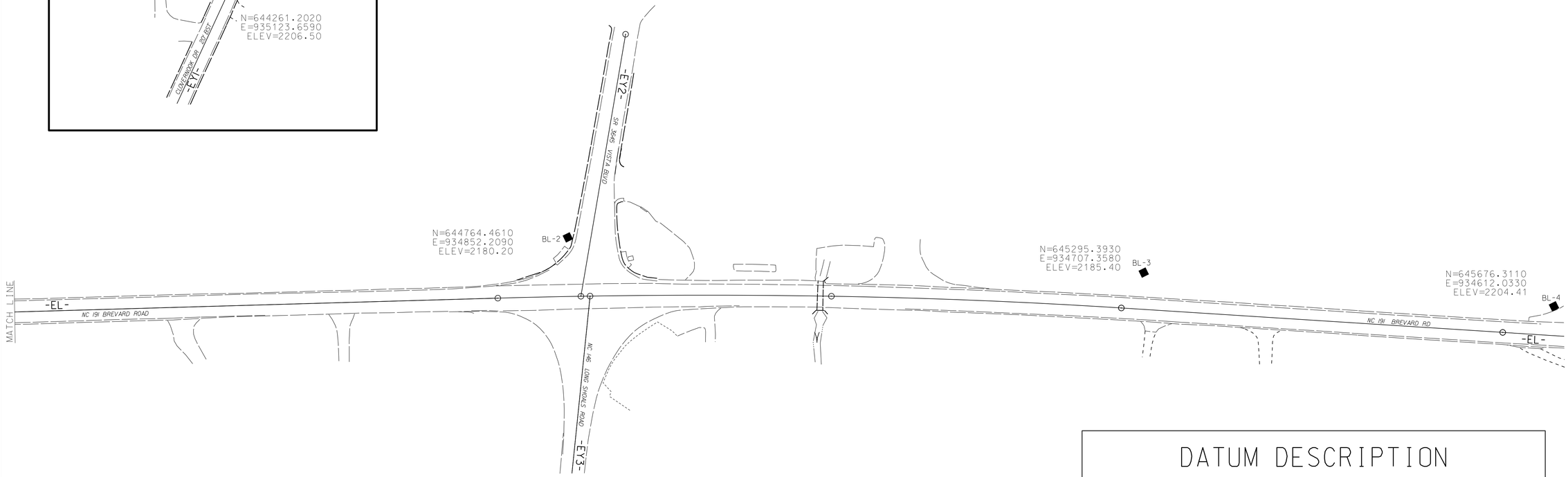
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	1C-1
Location and Surveys	

SURVEY CONTROL SHEET SM-5713B

NAD 83 NC GRID NA 2011





DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U-3403AB-7"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 638109.7740(ft) EASTING: 935828.3340(ft)
ELEVATION: 2086.06(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99978372
THE N.C. LAMBERT GRID BEARING AND
LOCALIZED HORIZONTAL GROUND DISTANCE FROM
"U-3403AB-7" TO -L- STATION 10+00 IS
N6°38'33.26"W 6,142.18'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTES:

- *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL AND VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
  PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).

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:
W5713L_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

NOTE: DRAWING NOT TO SCALE

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PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	1C-2
Location and Surveys	

SURVEY CONTROL SHEET SM-5713B

BASELINE CONTROL

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	8" SPIKE	644261.2020	935123.6590	2206.50	10+45.26	23.11 RT
2	8" SPIKE	644764.4610	934852.2090	2180.20	16+10.96	55.82 LT
3	8" SPIKE	645295.3930	934707.3580	2185.40	21+57.49	34.28 LT
4	8" SPIKE	645676.3110	934612.0330	2204.41	25+50.02	26.68 LT

EXISTING ALIGNMENTS

EL

TYPE	STATION	NORTH	EAST
POT	10+00.00	644093.9592	935161.2134
PC	16+67.77	644719.8867	934928.5659
PT	19+86.00	645020.5959	934824.5127
PC	19+86.00	645020.5959	934824.5127
PT	22+62.77	645286.0391	934746.2042
PC	26+27.32	645638.0160	934651.3083
PT	29+66.41	645965.0398	934561.6514
POT	29+69.64	645968.1546	934560.7832

EY1

TYPE	STATION	NORTH	EAST
POT	10+00.00	644234.4756	935108.9856
POT	12+40.53	644209.0777	935348.1664

EY2

TYPE	STATION	NORTH	EAST
POT	10+00.00	644754.4003	934651.1655
POT	12+53.37	644794.3409	934901.3712

EY3

TYPE	STATION	NORTH	EAST
POT	10+00.00	644802.5886	934898.4173
POT	14+05.99	644893.3408	935294.1323

NOTES:

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  PROJECT CONTROL ESTABLISHED USING GNSS (GLOBAL NAVIGATION SATELLITE SYSTEM).

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:
W5713L_LS_CONTROL.TXT

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DATUM DESCRIPTION

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ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	2A-1

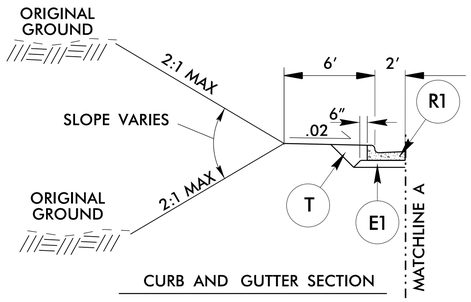
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 025513 ENGINEER MICHAEL D UNDERWOOD

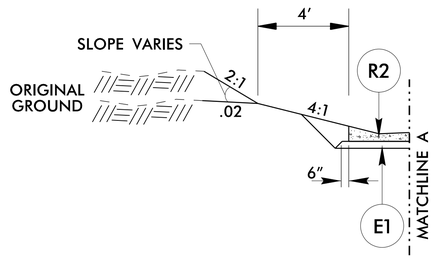
DocuSigned by: Mike Underwood
A6E473B5A471492... 2/15/2018

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
R1	2'-6" CONCRETE CURB AND GUTTER
R2	EXPRESSWAY GUTTER
R3	8"x12" CHANNELIZATION CURB
T	EARTH MATERIAL
U	EXISTING PAVEMENT
Z	INCIDENTAL MILLING

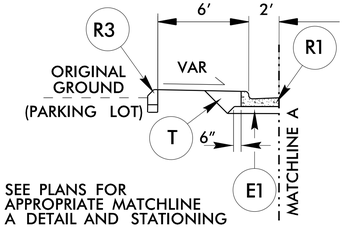
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.
SEE PLANS FOR VARIABLE PAVED SHOULDER WIDTHS.



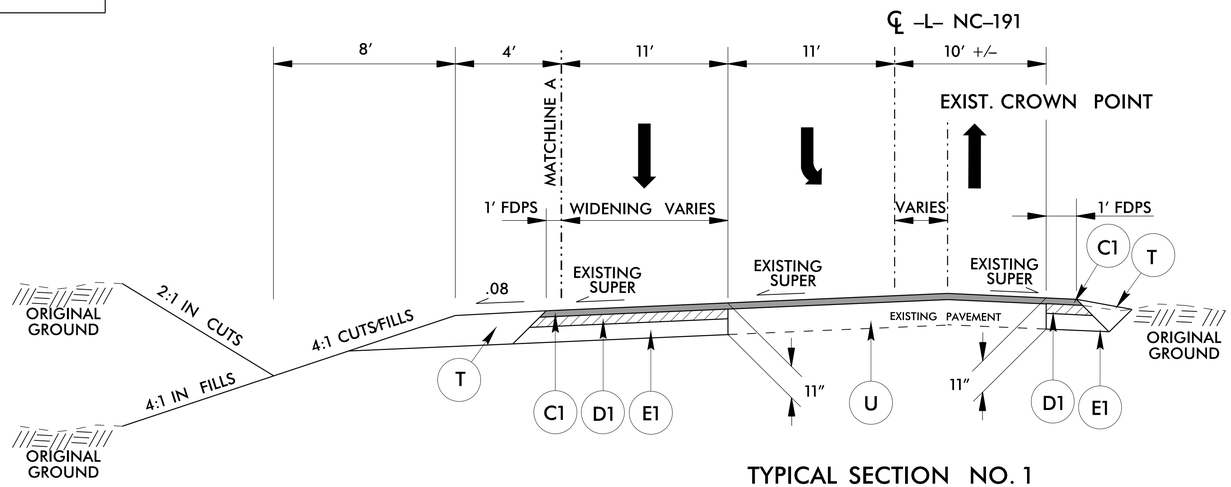
CURB AND GUTTER SECTION



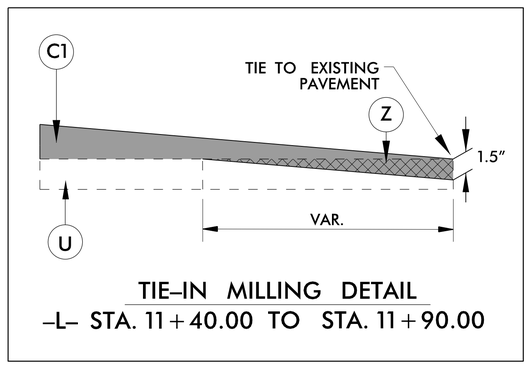
EXPRESSWAY GUTTER SECTIONS



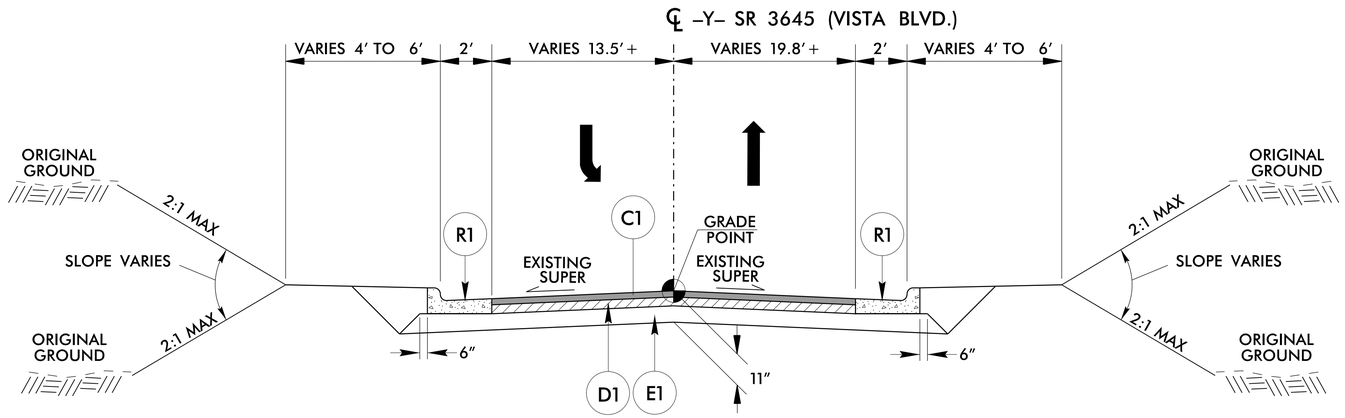
CHANNELIZATION SECTION (WITH C&G)



TYPICAL SECTION NO. 1
–L– STA. 11+40.00 TO STA. 22+55.52



TIE–IN MILLING DETAIL
–L– STA. 11+40.00 TO STA. 11+90.00



TYPICAL SECTION NO. 2
–Y– STA. 10+74.20 TO 11+27.62

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PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	2B-1
R/W SHEET NO.	____

ROADWAY DESIGN ENGINEER

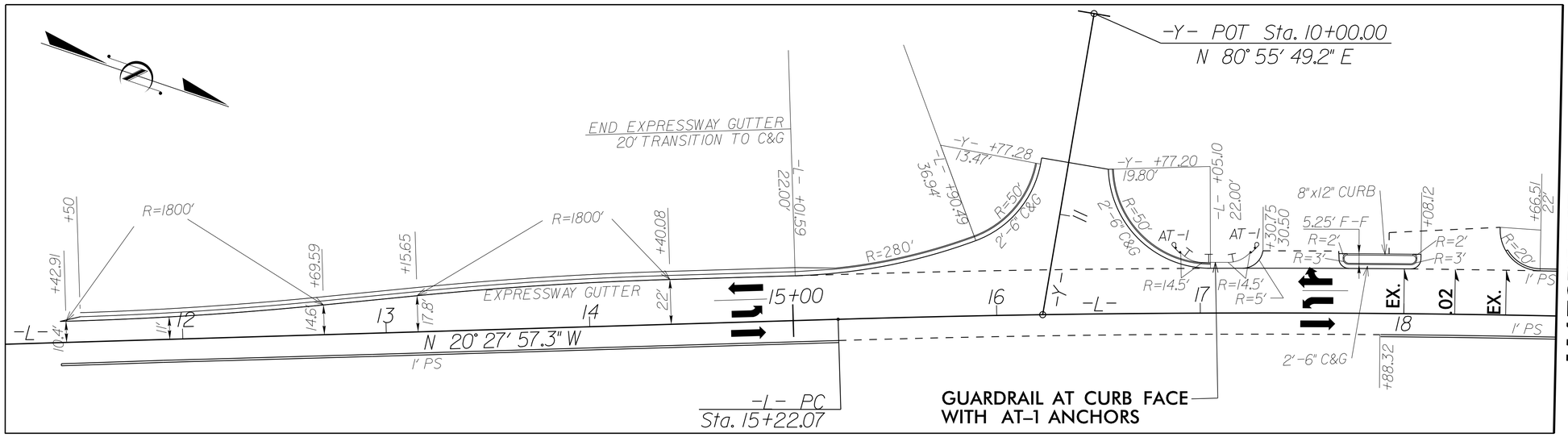
NORTH CAROLINA PROFESSIONAL SEAL 025513 ENGINEER MICHAEL D. LINDGREN

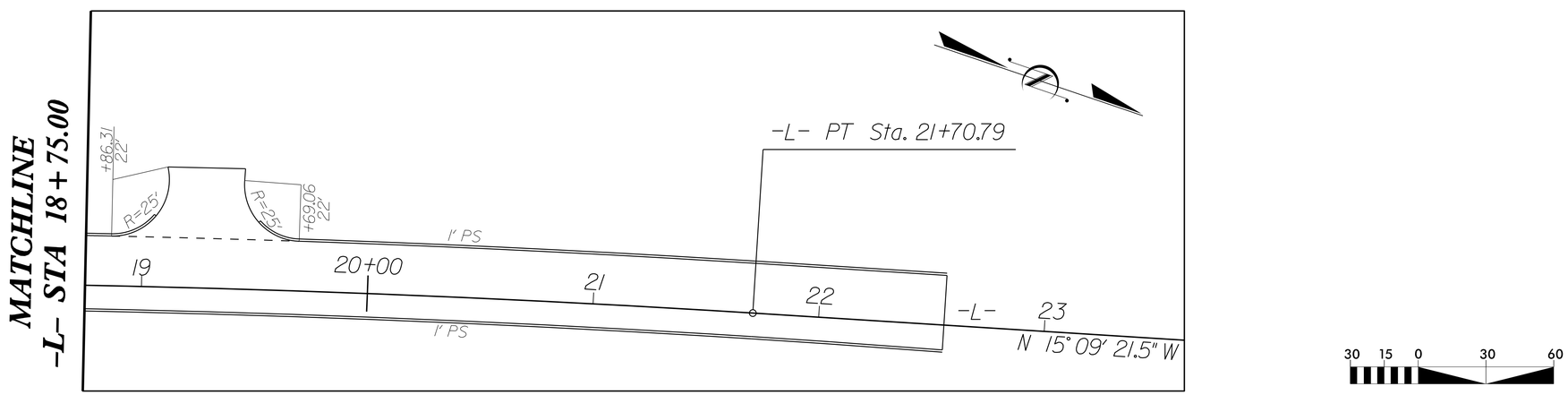
DocuSigned by: Mike Lindgren A4E473B3A471492...

2/15/2018

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INTERSECTION DETAIL





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COMPUTED BY: ZM
CHECKED BY: HN

PROJECT NO.	SHEET NO.
SM-5713B	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

Station	Station	Uncl. Excav.	Embank. +%	Borrow	Waste
-L- 11+50	22+50	1,069	48	0	1018
-Y- 10+74.20	11+27.62	63	0	0	63
SUBTOTALS:		1,132	48		1,080
TOTAL:		1,132	48	0	1,080
PROJECT TOTALS:		1,132	48	0	1,080
GRAND TOTALS:		1,132	48		1,080
SAY:		1,200			

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	Station	Station	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
Y	10+74.2	11+27.62	LT,RT,CL	268			
		TOTAL:		268			
		SAY:		270			

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

COMPUTED BY: *HN*
CHECKED BY:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO.
SM-5713B

GUARDRAIL SUMMARY

"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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS									IMPACT ATTENUATOR TYPE 350		REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	AT-1	XI	GRAU 350	M-350	XIII	CAT-1	VI MOD	BIC		G	NG			
L	16+86.55	17+28.49	LEFT	12.5	25		17+08		2.8	C&G	NA	NA	NA	NA	2													
			TOTAL:	12.5	25									TOTAL:	2													

COMPUTED BY: MARC SHOWN DATE:

CHECKED BY: MARC SHOWN DATE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
SM-5713B	3D-1

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.

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

STATION	LOCATION (LT, RT, OR CL)*	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	DRAINAGE PIPE (RCP, CSP, CAAP, HDPE, or PVC) SIZE 12"	15"	18"	24"	30"	36"	42"	48"	DO NOT USE RCP	DO NOT USE CSP	DO NOT USE CAAP	DO NOT USE HDPE
								THICKNESS OR GAUGE											
-L- 12+00		101		2182.0															
		101	102		2178.2	2178.0					12								
15+15		102		2181.2								12							
		102	103		2178.0	2177.8													
15+16		103		2181.4															
17+05		104		2175.6															
		104	105		2171.4	2170.5					92								
18+00		105		2174.8															
		105	106		2170.5	2170.0					44								
18+45		106		2174.7															
18+73		107		2174.3															
		108	107		2173.9	2171.3			76										
		109		2175.9															
17+05		109	104		2171.5	2171.4													
		107	out						16										
18+45		106	out		2170.0	2169.8					4								
PROJECT TOTALS									92		152								

STATION	C.S. PIPE SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE .064	.064	.064	.064	.079	.079	.109	.109
-L- 12+00																
15+15					12											
15+16																
17+05																
18+00																
18+45																
18+73																
17+05																
18+45																
PROJECT TOTALS					12											

STATION	R.C. PIPE CLASS III SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE
-L- 12+00									
15+15									
15+16									
17+05									
18+00									
18+45									
18+73									
17+05									
18+45									
PROJECT TOTALS									

STATION	R.C. PIPE CLASS IV SIZE 12"	15"	18"	24"	30"	36"	42"	48"	THICKNESS OR GAUGE
-L- 12+00									
15+15									
				8					
15+16									
17+05									
18+00									
18+45									
18+73									
17+05									
18+45									
PROJECT TOTALS									

STATION	ENDWALLS STD. 838.01 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	C.S.P.	** " R.C. PIPE (CLASS V)	**** RC PIPE CULVERTS, CONTRACTOR DESIGN	***** RC PIPE CULVERTS, CONTRACTOR DESIGN	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE
-L- 12+00							
15+15							
15+16							
17+05							
18+00							
18+45							
18+73							
17+05							
18+45							
PROJECT TOTALS							

STATION	QUANTITIES FOR DRAINAGE STRUCTURES "TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.3 X COL. "B") PER EACH (0' THRU 5.0')	LIN. FT. A 5.0' THRU 10.0'	LIN. FT. B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	CONCRETE TRANSITIONAL SECTION DROP INLET	CATCH BASIN
-L- 12+00	1								
15+15	1			1			1		
15+16	1								
17+05	1			1			1		
18+00	1			1	1				
18+45	1								
18+73	1								
17+05									
18+45									
PROJECT TOTALS	7			3	1		2		

STATION	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.19 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.20	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	T.B.J.B. W/MH STD. 840.34	T.B.J.B. W/SLAB LID STD. 840.34	T.B.D.I. STD. 840.35	MH FRAME W/COVER 840.54
-L- 12+00														
15+15														
			1											
15+16												1		
17+05														
18+00														
18+45		1											1	
18+73	1	1								1	1	1	1	1
17+05											1			1
18+45														
PROJECT TOTALS	1	2	1							1	1	1	1	1

STATION	DRAINAGE PIPE ELBOWS NO. & SIZE	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	CONC. COLLARS CL. "B" C.Y. STD. 840.72	PIPE REMOVAL LIN. FT.	REMARKS
-L- 12+00					
				10	REMOVE 24" CMP
15+15	1 @ 24"				
15+16					
17+05					
18+00					
18+45					
18+73				25	REMOVE 12" CMP
				50	REMOVE 12" CMP
17+05					
18+45					
PROJECT TOTALS	1 @ 24"			85	

ABBREVIATIONS

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

8/17/99

NOTE:
SEE SHEET 2B-1 FOR INTERSECTION DETAIL

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 025513 ENGINEER MICHAEL D LINDGREN
DocuSigned by: Mike Lindgren A4E47383AA471492... 2/15/2018

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 020870 ENGINEER MARK T SHOMO
DocuSigned by: Mark Shomo 4B024AEC0A0B4C2... 2/15/2018

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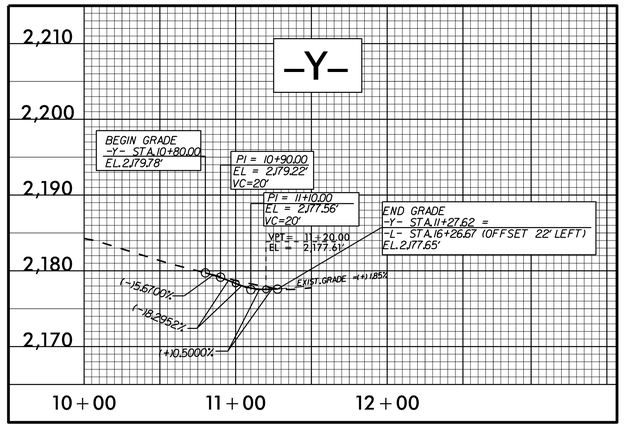

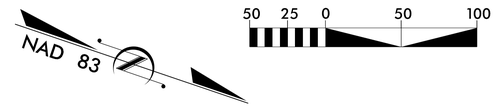

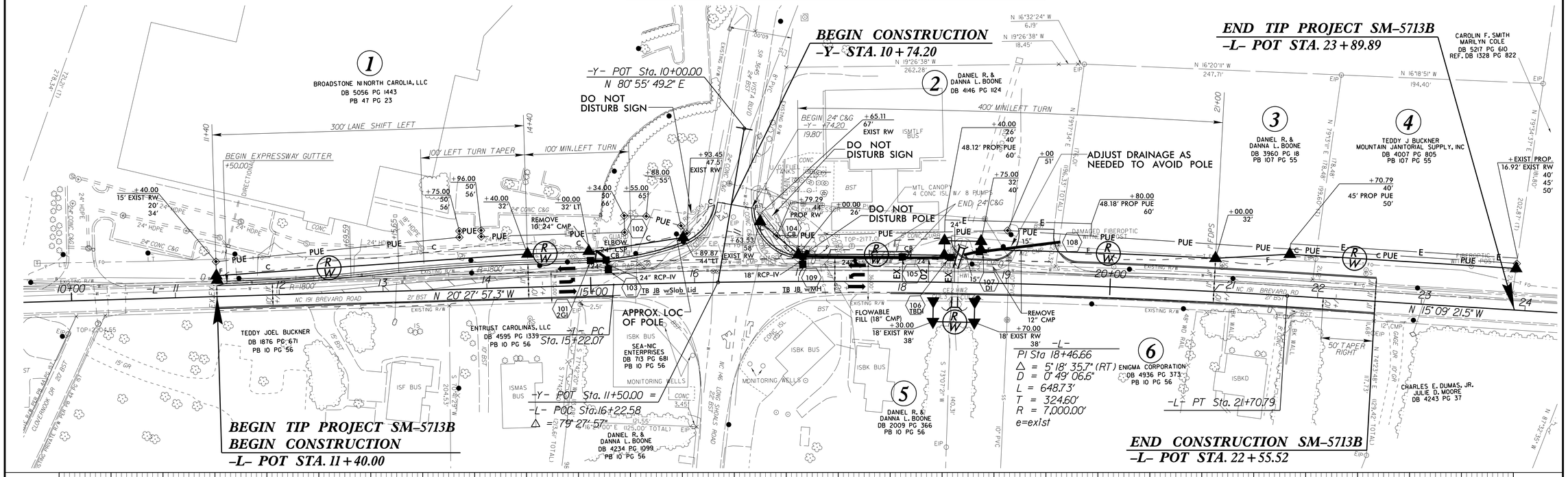

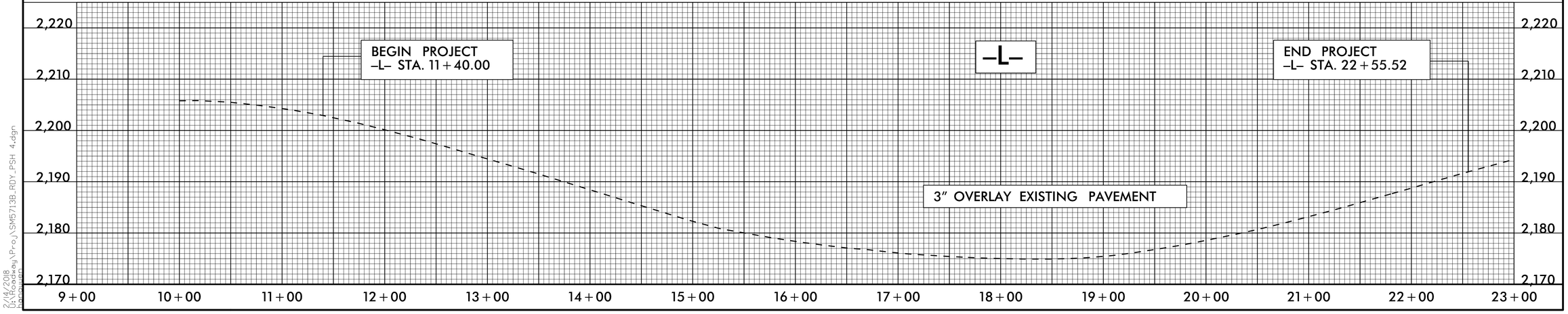

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Proposed

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

BUNCOMBE COUNTY

DIVISION 13

NC 191 (BREVARD RD) / NC 146 (LONG SHOALS RD) INTERSECTION IMPROVEMENTS

ROADWAY STANDARD DRAWINGS

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
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW BOARDS
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
1150.01	FLAGGING DEVICES
1180.01	SKINNY - DRUM
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO LANE AND MULTILANE ROADWAYS
1261.01	GUARDRAIL AND BARRIER DELINEATORS - INSTALLATION SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATORS - TYPES AND MOUNTING
1262.01	GUARDRAIL END DELINEATION
1264.01	OBJECT MARKERS - TYPES
1264.02	OBJECT MARKERS - INSTALLATION

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

N.C.D.O.T. DIVISION 13
CONTACT: COLE HOOD, P.E. – DIVISION PROJECT DEVELOPEMENT ENGINEER

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

GENERAL NOTES

LANE AND SHOULDER CLOSURE REQUIREMENTS

A) REMOVE LANE CLOSURE DEVICES FROM THE LANE WHEN WORK IS NOT BEING PERFORMED BEHIND THE LANE CLOSURE OR WHEN A LANE CLOSURE IS NO LONGER NEEDED OR AS DIRECTED BY THE ENGINEER.

B) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN 15 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN SHOULDER USING ROADWAY STANDARD DRAWING NO. 1101.04 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL OR A LANE CLOSURE IS INSTALLED.

C) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO AN UNDIVIDED FACILITY AND WITHIN 5 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING ON THE SHOULDER ADJACENT TO A DIVIDED FACILITY AND WITHIN 10 FT OF AN OPEN TRAVEL LANE, CLOSE THE NEAREST OPEN TRAVEL LANE USING ROADWAY STANDARD DRAWING NO. 1101.02 UNLESS THE WORK AREA IS PROTECTED BY BARRIER OR GUARDRAIL.

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE TRANSPORTATION MANAGEMENT PLANS, ROADWAY STANDARD DRAWINGS, OR AS DIRECTED BY THE ENGINEER. CONDUCT THE WORK SO THAT ALL PERSONNEL AND/OR EQUIPMENT REMAIN WITHIN THE CLOSED TRAVEL LANE.

E) DO NOT WORK SIMULTANEOUSLY WITHIN 15 FT ON BOTH SIDES OF AN OPEN TRAVELWAY, RAMP, OR LOOP WITHIN THE SAME LOCATION UNLESS PROTECTED WITH GUARDRAIL OR BARRIER.

PAVEMENT EDGE DROP OFF REQUIREMENTS

F) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPEN TRAVEL LANE THAT HAS A DROP-OFF AS FOLLOWS:

BACKFILL DROP-OFFS THAT EXCEED 2 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS OF 45 MPH OR GREATER.

BACKFILL DROP-OFFS THAT EXCEED 3 INCHES ON ROADWAYS WITH POSTED SPEED LIMITS LESS THAN 45 MPH.

BACKFILL WITH SUITABLE COMPACTED MATERIAL, AS APPROVED BY THE ENGINEER, AT NO EXPENSE TO THE DEPARTMENT.

G) DO NOT EXCEED A DIFFERENCE OF 2 INCHES IN ELEVATION BETWEEN OPEN LANES OF TRAFFIC FOR NOMINAL LIFTS OF 1.5 INCHES. INSTALL ADVANCE WARNING "UNEVEN LANES" SIGNS (W8-11) 500 FT IN ADVANCE AND A MINIMUM OF ONCE EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

H) NOTIFY THE ENGINEER TWENTY ONE (21) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

MISCELLANEOUS

I) MAINTAIN VEHICULAR ACCESS TO ALL DRIVEWAYS DURING THE LIFE OF THE CONTRACT, UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER. USE INCIDENTAL STONE WHEN NECESSARY.

Stantec
Stantec Consulting Services Inc.
801 Jones Franklin Road, Suite 300
Raleigh, NC 27606
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Fax. 919.851.7024
www.stantec.com
License No. F-0672

DocuSigned by: J.W. Woolard, Jr. SEAL 19862 BBC02F49D...
NORTH CAROLINA PROFESSIONAL ENGINEER J.W. WOOLARD JR.
2/12/2018

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SHEET NO.
TMP-1

TIP PROJECT: SM-5713B

2/12/2018
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
BUNCOMBE COUNTY
LOCATION: NC 191 (BREVARD ROAD) AT NC 146 (LONG SHOALS ROAD)

TIP NO.	SHEET NO.
SM-5713B	PMP-1

APPROVED: _____

DATE: _____

SEAL

DocuSigned by: J.W. Woolard Jr. BBC02F49E...

NORTH CAROLINA PROFESSIONAL SEAL 19862 ENGINEER J.W. WOOLARD JR.

2/12/2018

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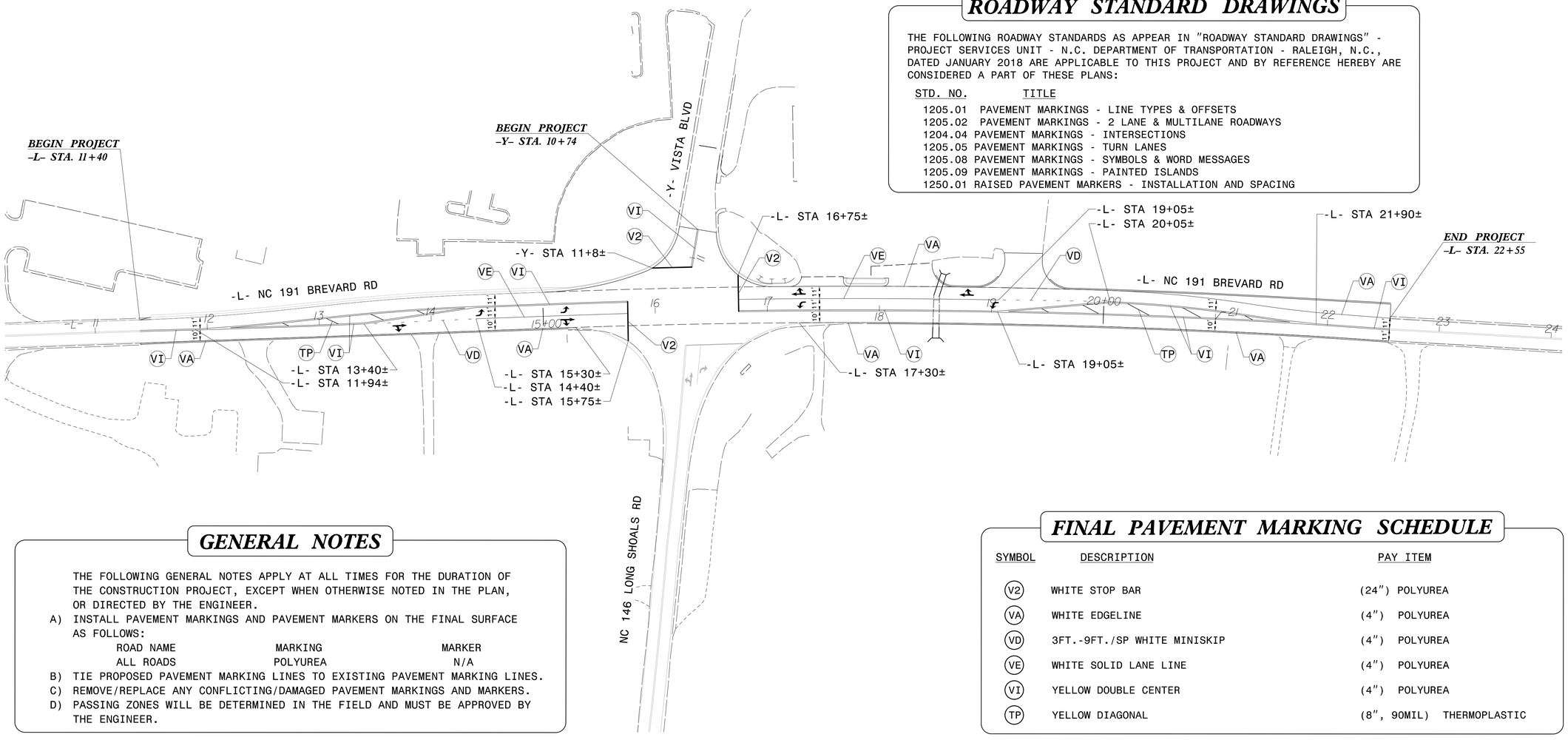

ROADWAY STANDARD DRAWINGS

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 & OFFSETS
1205.02	PAVEMENT MARKINGS - 2 LANE & MULTILANE ROADWAYS
1204.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS & WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION AND SPACING

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
ALL ROADS	POLYUREA	N/A

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.

FINAL PAVEMENT MARKING SCHEDULE

SYMBOL	DESCRIPTION	PAY ITEM
V2	WHITE STOP BAR	(24") POLYUREA
VA	WHITE EDGELINE	(4") POLYUREA
VD	3FT.-9FT./SP WHITE MINISKIP	(4") POLYUREA
VE	WHITE SOLID LANE LINE	(4") POLYUREA
VI	YELLOW DOUBLE CENTER	(4") POLYUREA
TP	YELLOW DIAGONAL	(8", 90MIL) THERMOPLASTIC

PLAN REVIEWED BY: N.C.D.O.T. DIVISION 13 CONTACT

COLE HOOD P.E. — DIVISION PROJECT DEVELOPMENT ENGINEER

DIVISION OF HIGHWAYS · STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION · SIGNING AND DELINEATION UNIT

PLAN PREPARED BY:

JAY WOOLARD, P.E. — SENIOR TRANSPORTATION ENGINEER

ANDREW N. GOOD — TRANSPORTATION DESIGNER

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INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING PLAN TITLE, SCHEDULE SHEET, AND PAVEMENT MARKING DETAIL

T.I.P.: SM-5713B

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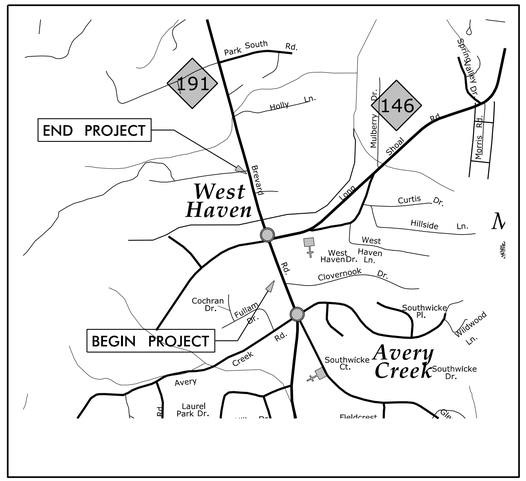
TIP PROJECT: SM-5713B

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	SM-5713B	EC-1	

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



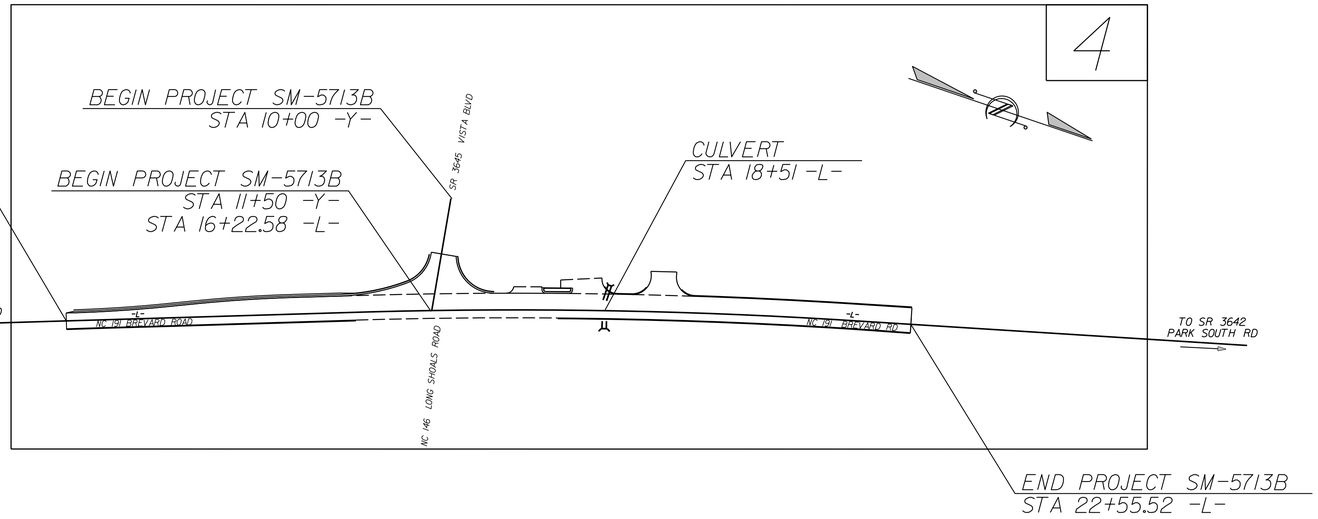
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

BUNCOMBE COUNTY

LOCATION: NC 191 (BREVARD RD) /NC 146 (LONG SHOALS RD) INTERSECTION IMPROVEMENTS

TYPE OF WORK: RESURFACING, PAVEMENT WIDENING, DRAINAGE, CULVERT EXTENSION, SIGNAL



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.03	Temporary Silt Ditch	TSD
1630.05	Temporary Diversion	TD
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	EW CFW
	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	

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

GRAPHIC SCALE

50′ 25′ 0 50′ 100′

PLANS

THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 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.

905 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606
TEL (919) 859-2243
ENG FIRM LICENSE NO. C-890

Designed by:

WILLIAM T. PERRY, EI #3899

NAME *LEVEL III CERTIFICATION NO.*

Reviewed In the Office of:

ROADSIDE ENVIRONMENTAL UNIT

Roadside Environmental Field Operations For Division 13 & 14
693 Mountain Rd.
Hendersonville, NC 28791

2018 STANDARD SPECIFICATIONS

Reviewed by:

REID WHITEHEAD, P.E., CPESC

Roadway Standard Drawings

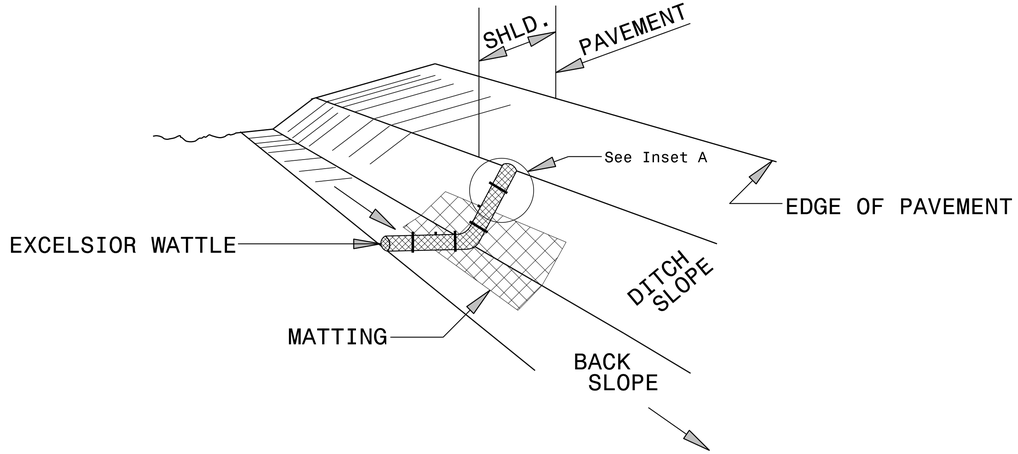
The following roadway english standards as appear in "Roadway Standard Drawings"– Roadway Design Unit – N. C. Department of Transportation – Raleigh, N. C., dated January 2012 and the latest revison thereto are applicable to this project and by reference hereby are considered a part of these plans.

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		

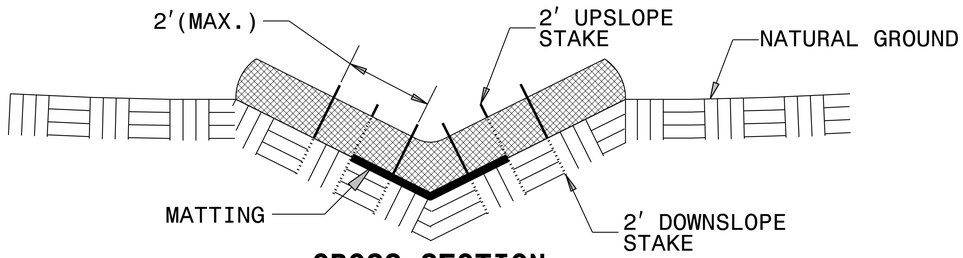
2/13/2018
SM5713B_EC_dsn_psh_01.dgn
sperry

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

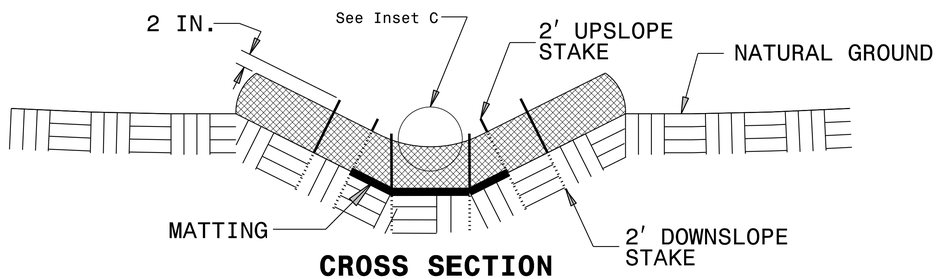
WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH

NOTES:

USE MINIMUM 12 IN. DIAMETER EXCELSIOR 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.

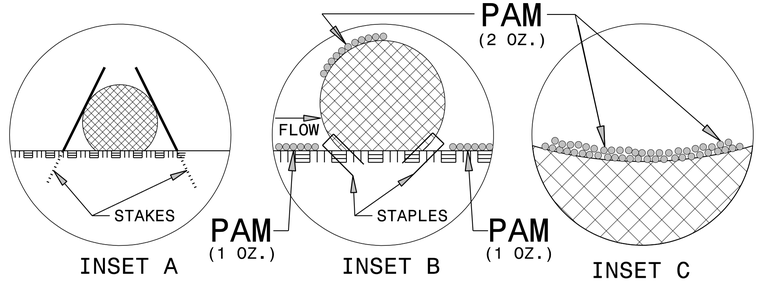
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

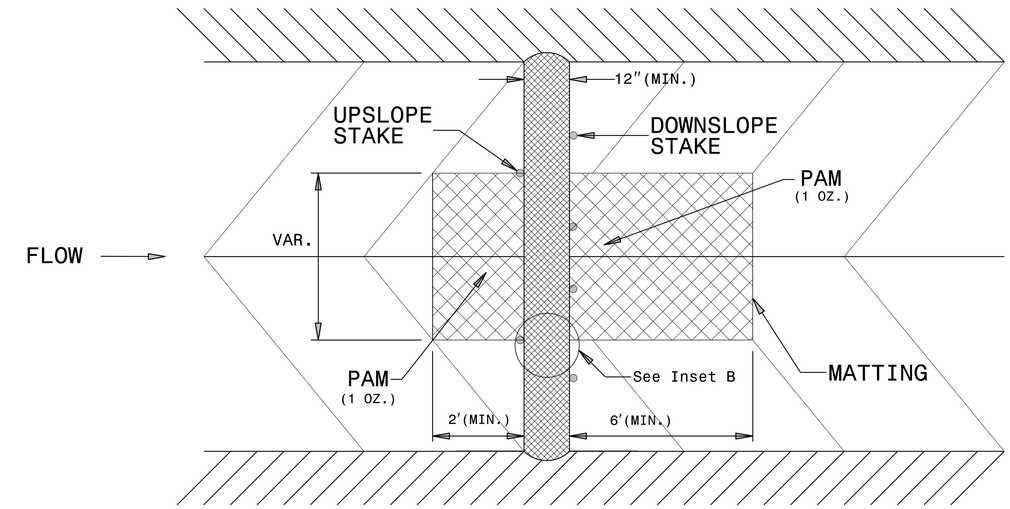
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

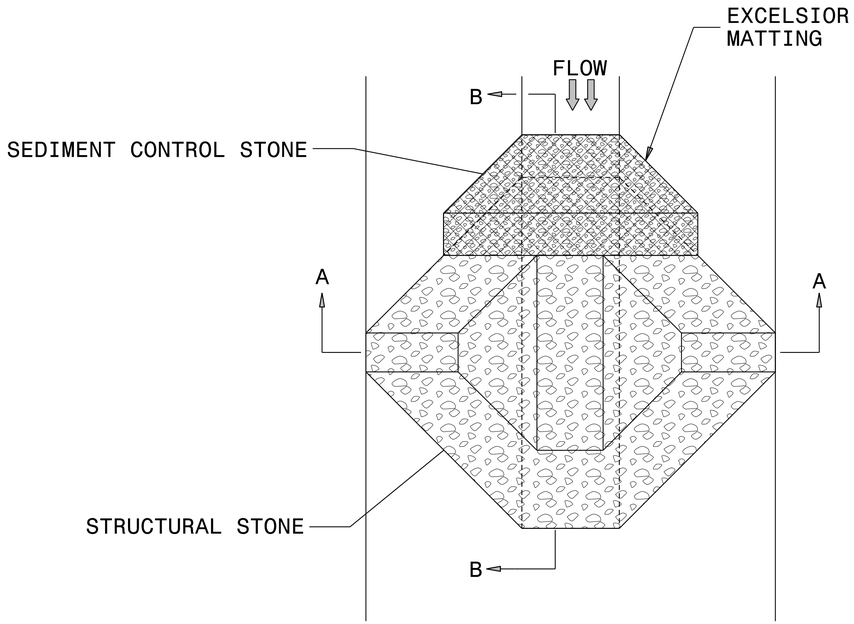




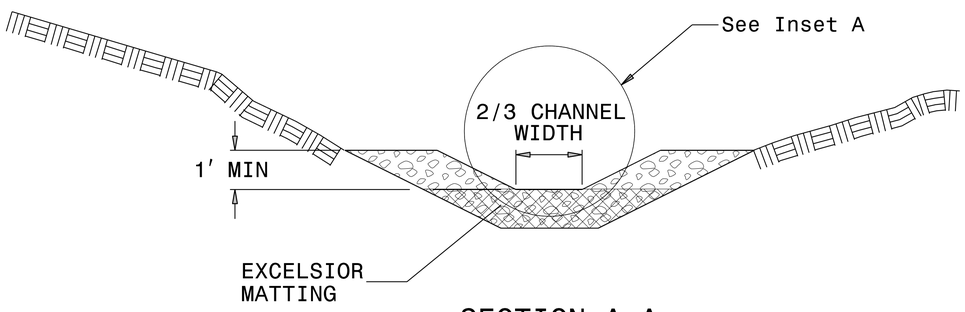
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TEMPORARY ROCK SILT CHECK TYPE 'A' WITH EXCELSIOR MATTING AND POLYACRYLAMIDE (PAM)



PLAN



SECTION A-A

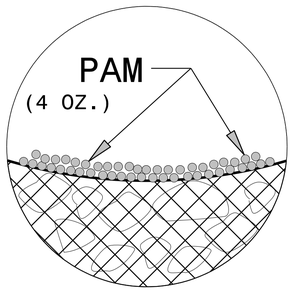
NOTES:

INSTALL TEMPORARY ROCK SILT CHECK TYPE A IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1633.01.

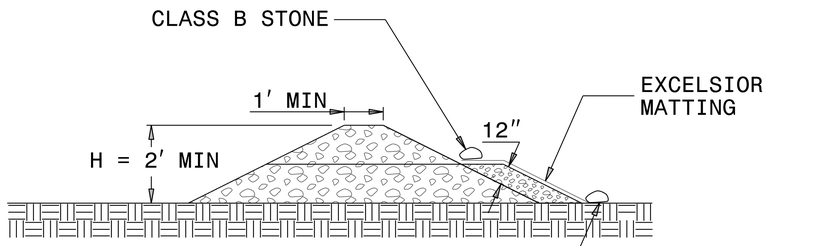
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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 ROCK SILT CHECK.

INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



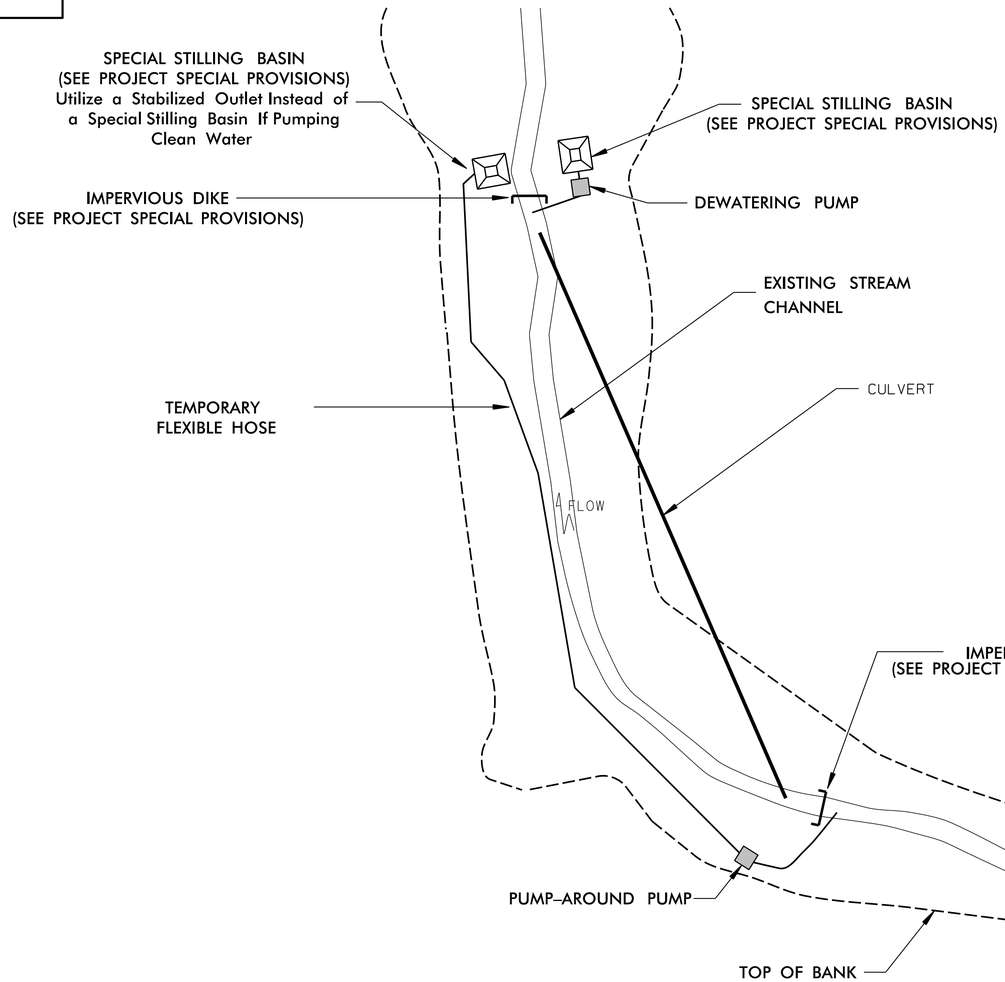
SECTION B-B

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

EXAMPLE OF PUMP–AROUND OPERATION

NOTES:
1) All excavation shall be performed in only dry or isolated areas of the work zone.
2) Impervious dikes are to be used to isolate work from stream flow when necessary.
3) Maintenance of stream flow operations shall be incidental to the work. This includes polyethylene sheeting, diversion pipes, pumps and hoses.
4) Pumps and hoses shall be of sufficient size to dewater the work area.



SEQUENCE OF CONSTRUCTION FOR TYPICAL WORK AREA

1. INSTALL SPECIAL STILLING BASIN(S).
2. INSTALL UPSTREAM PUMP AND TEMPORARY FLEXIBLE HOSE.
3. PLACE UPSTREAM IMPERVIOUS DIKE AND BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4. PLACE DOWNSTREAM IMPERVIOUS DIKE AND PUMPING APPARATUS. DEWATER ENTRAPPED AREA. AREA TO BE DEWATERED SHALL BE EQUAL TO ONE DAY'S WORK.
5. INSTALL CULVERT(S) IN ACCORDANCE WITH THE PLANS.
6. EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES. REMOVE IMPERVIOUS DIKES, PUMPS, AND TEMPORARY FLEXIBLE HOSE. (DOWNSTREAM IMPERVIOUS DIKES FIRST).
7. REMOVE SPECIAL STILLING BASIN(S) AND BACKFILL. STABILIZE DISTURBED AREA WITH SEED AND MULCH.

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

SOIL STABILIZATION SUMMARY SHEET

PERMANENT SOIL REINFORCEMNT MAT

CONST SHEET NO.	LINE	FROM STATION	TO STATION	SIDE	ESTIMATE (SY)
4	-L-	21+75	22+50	LT	105
				SUBTOTAL	105
	ADDITIONAL	PSRM TO	BE INSTALLED		--
				TOTAL	105
				SAY	115

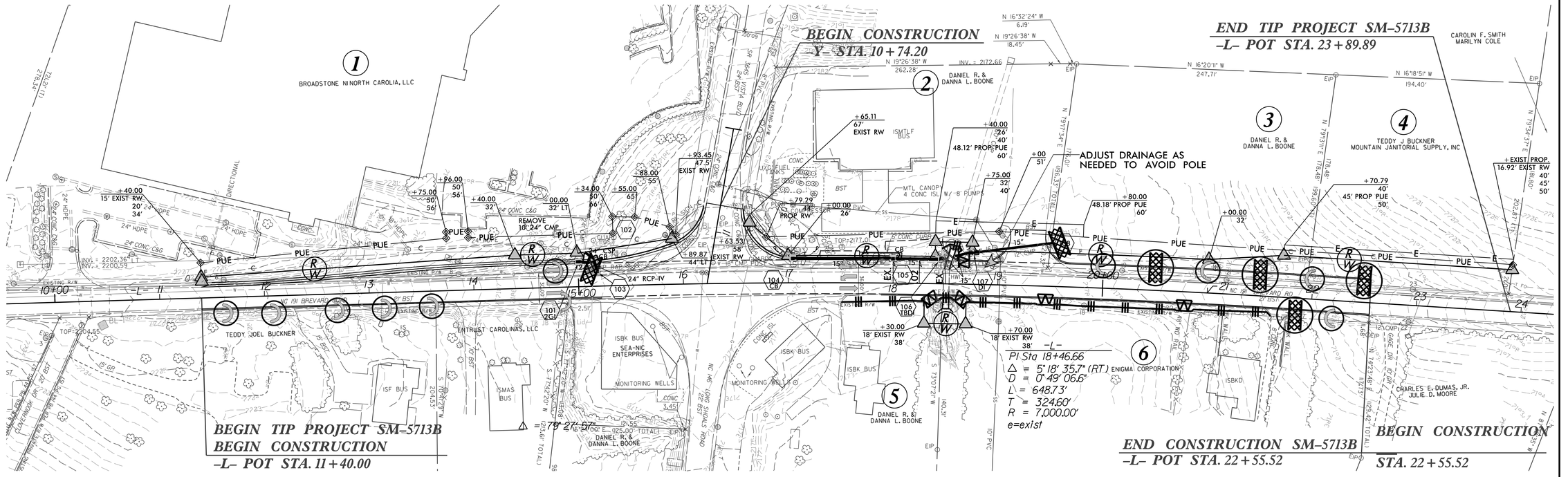
SOIL STABILIZATION TIMEFRAMES

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.

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-04/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

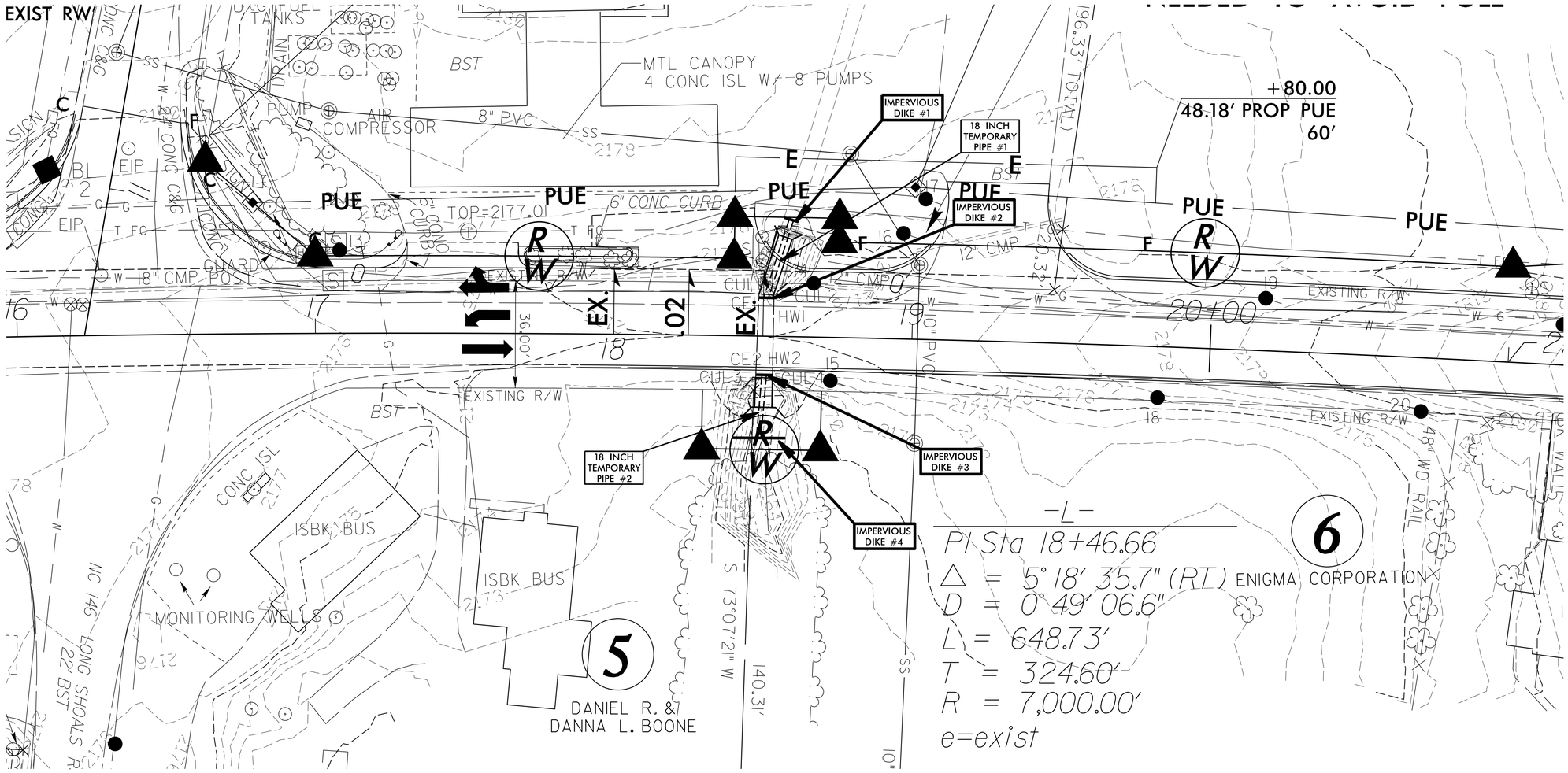
CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



6′X4′ CONCRETE BOX CULVERT EXTENTION CONSTRUCTION SEQUENCE STA. 18 + 50 –L– ON CLAYTON CREEK

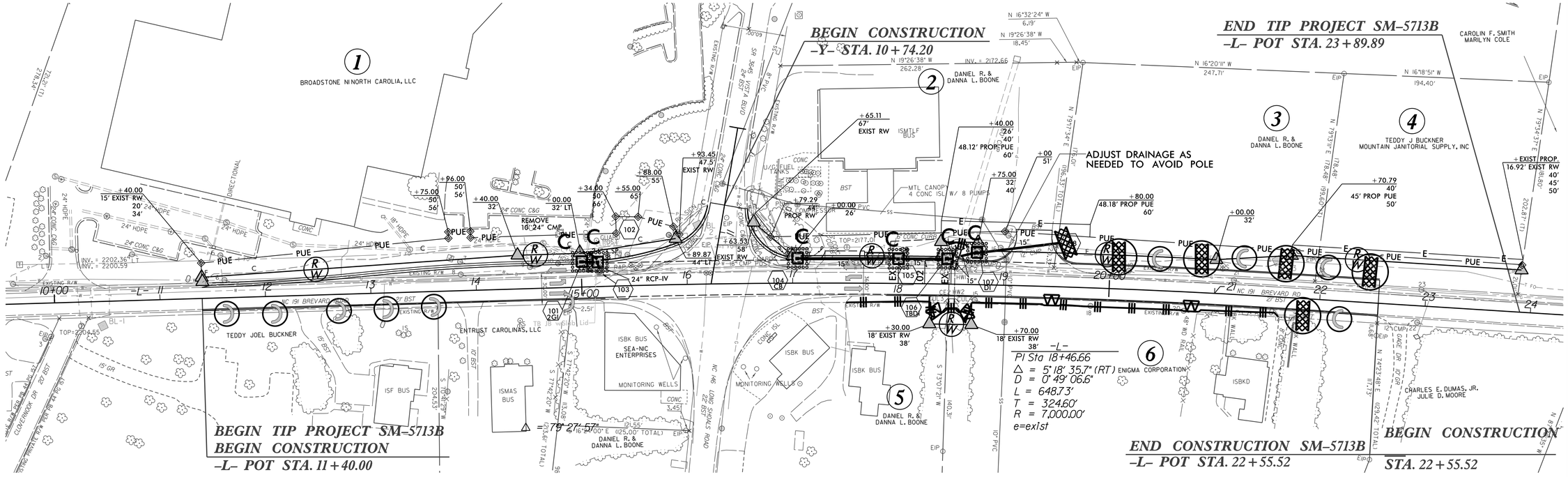
PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-04A/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

1.) INSTALL SPECIAL STILLING BASIN(S).
2.) INSTALL IMPERVIOUS DIKES #1, #2, #3, AND #4 AND 18 INCH TEMPORARY PIPES #1 AND #2 OR INSTALL PUMP–AROUND OPERATION (SEE DETAIL–02B).
3.) BEGIN DIVERTING FLOW THROUGH 18 INCH TEMPORARY PIPES #1 AND #2 OR BEGIN PUMPING OPERATIONS FOR STREAM DIVERSION.
4.) DEWATER CONSTRUCTION AREA UTILIZING SPECIAL STILLING BASIN(S).
5.) INSTALL 6′ X 4′ CONCRETE BOX CULVERT SINGLE BARREL EXTENSIONS, IN ACCORDANCE WITH THE PLANS.
6.) EXCAVATE ANY ACCUMULATED SILT AND DEWATER BEFORE REMOVAL OF IMPERVIOUS DIKES.
7.) REMOVE SPECIAL STILLING BASIN(S), IMPERVIOUS DIKES #1, #2, #3, AND #4, AND 18 INCH TEMPORARY PIPES #1 AND #2 OR EQUIPMENT USED FOR PUMP–AROUND OPERATION.



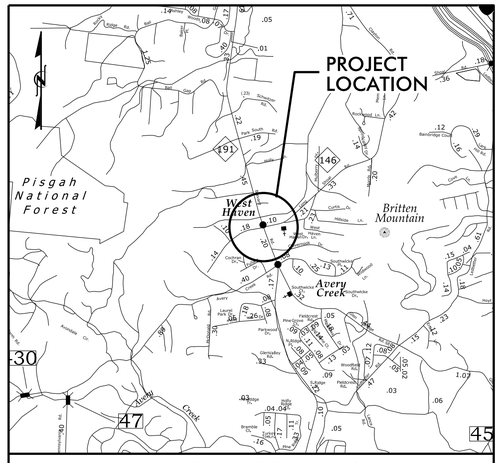
PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	EC-05/CONST.04
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

FINAL GRADING
EROSION CONTROL FOR
CONSTRUCTION SHEET 04



05/08/50

TIP PROJECT: SM–5713B



VICINITY MAP N.T.S.

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITIES BY OTHERS PLANS
BUNCOMBE COUNTY

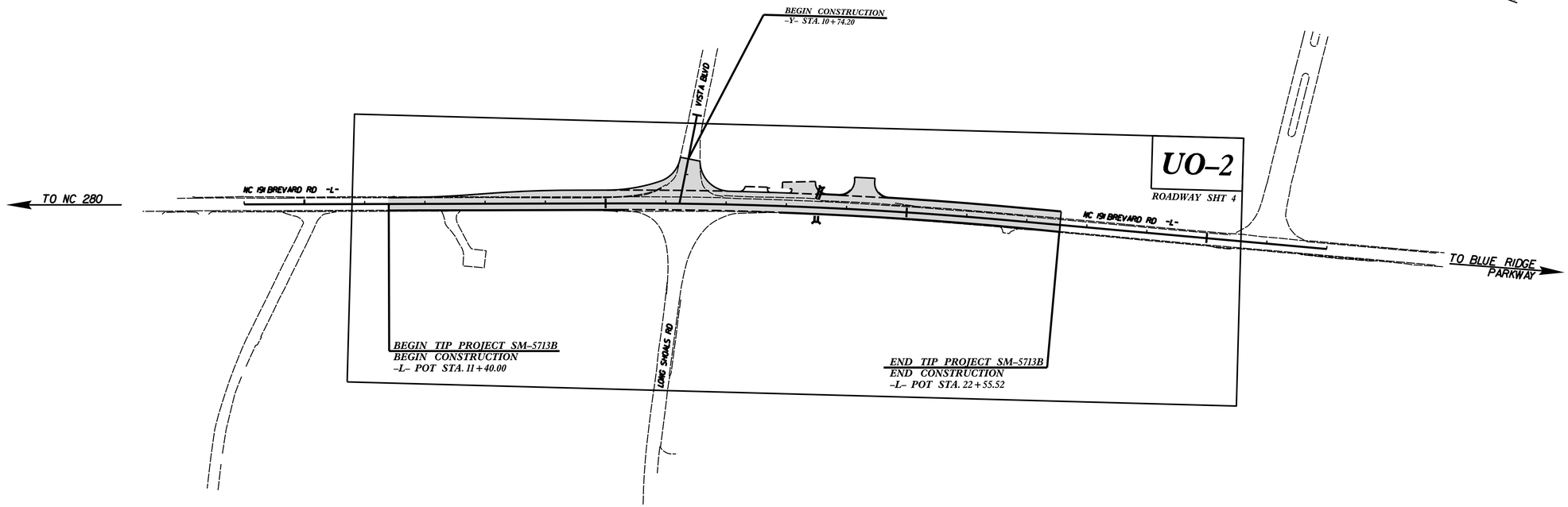
T.I.P. NO.	SHEET NO.
SM–5713B	UO–1

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET IS DONE BY OTHERS.
NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

LOCATION: NC 191 (BREVARD RD) /NC 146 (LONG SHOALS RD) INTERSECTION IMPROVEMENTS

TYPE OF WORK: POWER, TELEPHONE AND CABLE TELEVISION RELOCATION

NAD 83



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

INDEX OF SHEETS

UTILITY OWNERS WITH CONFLICTS

(A) POWER DISTRIBUTION – DUKE ENERGY
(B) COMMUNICATIONS – AT&T TRANSMISSION
(C) COMMUNICATIONS – AT&T DISTRIBUTION
(D) COMMUNICATIONS – CHARTER
(E) GAS DISTRIBUTION – PUBLIC SERVICE OF NC

PREPARED IN THE OFFICE OF:

Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
919-463-5488

Brandy Creech	*UTILITY PROJECT MANAGER*
Brandy Creech	*PROJECT UTILITY COORDINATOR*
Christiane Newsome	*PROJECT UTILITY TECHNICIAN*

DIVISION OF HIGHWAYS
HIGHWAY DIVISION 13
55 ORANGE STREET
ASHEVILLE, NC 28801
PHONE (828) 251-6171
FAX (828) 251-6394

Cole Hood, P.E.	*NCDOT PROJECT MANAGER*
Randy McKinney P.E.	*RESIDENT ENGINEER*
Keith Radcliff	*DIVISION UTILITY COORDINATOR*

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

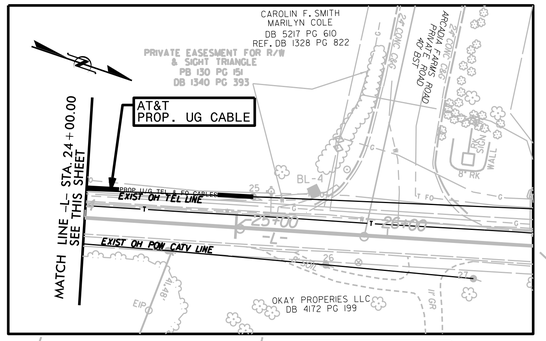
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
SM-5713B	U0-2
THIS SHEET CORRESPONDS TO RDY-4	

UTILITIES BY OTHERS

NOTE:
ALL UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS. NO PAYMENT WILL BE MADE TO THE CONTRACTOR FOR UTILITY WORK SHOWN ON THIS SHEET.

50 25 0 50 100



AT&T PROP. UG CABLE

AT&T TRANSMISSION PROTECT EXISTING BURIED CABLE IN PLACE

AT&T ABANDONED

PSNC 2" STEEL REMAIN ADJUST AS NECESSARY

PSNC PROP. 6" STEEL GAS

PSNC 6" STEEL ABANDONED

AT&T PROP. UG CABLE

AT&T TRANSMISSION PROP. UG CABLE

AT&T TRANSMISSION ABANDONED

AT&T ABANDONED

BEGIN CONSTRUCTION
-Y- STA. 10+74.20

ADJUST DRAINAGE AS NEEDED TO AVOID POLE

BEGIN TIP PROJECT SM-5713B
BEGIN CONSTRUCTION
-L- POT STA. 11+40.00

PSNC 6" STEEL REMAIN ADJUST AS NECESSARY

PSNC 4" PLASTIC REMAIN ADJUST AS NECESSARY

END TIP PROJECT SM-5713B
END CONSTRUCTION
-L- POT STA. 22+55.52

MATCH LINE -L- STA. 24+00.00 SEE THIS SHEET

Michael Baker INTERNATIONAL
Michael Baker Engineering, Inc.
8000 Regency Parkway, Suite 600
Cary, NC 27518
919-463-5488

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

8/23/99

PROJ. REFERENCE NO.	SHEET NO.
SM-5713B	X-A

SM–5713B
CROSS SECTION INDEX

ROADWAY	STATION	TO	STATION	SHEET NO.
CROSS SECTION INDEX				X–A
CROSS SECTION SUMMARY				X–1
–L–	11 + 00.00		22 + 75.00	X–2 THRU X–12
–Y–	10 + 70.00		11 + 05.00	X–13

2/22/2018
U:\Roadway\CorridorModeling\SM5713B_Rdy_cross_section_index.dgn
cmozingo

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".

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
SM-5713B	X-1

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
11+50.00	0	0
11+75.00	6	1
12+00.00	7	0
12+25.00	10	0
12+50.00	16	0
12+75.00	26	0
13+00.00	38	0
13+25.00	54	0
13+50.00	67	0
13+75.00	78	0
14+00.00	85	0
14+25.00	83	0
14+50.00	78	0
14+75.00	70	0
15+00.00	45	0
15+25.00	33	0
15+50.00	41	0
15+75.00	41	0
15+90.00	21	0
16+00.00	6	0
16+25.00	1	0
16+50.00	1	0
16+75.00	4	0
17+00.00	11	0
17+25.00	17	0
17+50.00	15	0
17+75.00	16	0
18+00.00	15	0
18+25.00	19	0
18+50.00	28	5
18+75.00	19	6
19+00.00	6	1
19+25.00	7	0
19+50.00	6	0
19+75.00	4	2
20+00.00	3	4
20+25.00	3	3
20+50.00	3	2
20+75.00	3	4
21+00.00	3	5
21+25.00	3	4
21+50.00	3	3
21+75.00	7	2
22+00.00	16	0
22+25.00	24	0
22+50.00	27	0

Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+80.00	0	0
10+90.00	13	0
11+05.00	50	0

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-2

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

2210
2205
2200
2195

2:1
4:1 EXIST. SUPER
0.016

2200.18
12+00.00

4:1 EXIST. SUPER
0.023

2201.44
11+75.00

4:1 EXIST. SUPER
0.027

2202.53
11+50.00

2203.50
11+25.00

2204.32
11+00.00

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

2/16/2018
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Hanguyen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	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

2205
2200
2195
2190

2:1
4:1
EXIST. SUPER
0.030

2194.51
13+00.00

2205
2200
2195
2190

2:1
4:1
EXIST. SUPER
0.019

2195.98
12+75.00

2210
2205
2200
2195
2190

2:1
4:1
EXIST. SUPER
0.019

2197.45
12+50.00

2210
2205
2200
2195
2190

2:1
4:1
EXIST. SUPER
0.019

2198.86
12+25.00

—℄—

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

2/16/2018
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Hanguen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-4

2:1
4:1
EXIST. SUPER
0.017
2186.93
14+25.00

2:1
4:1
EXIST. SUPER
0.015
2188.47
14+00.00

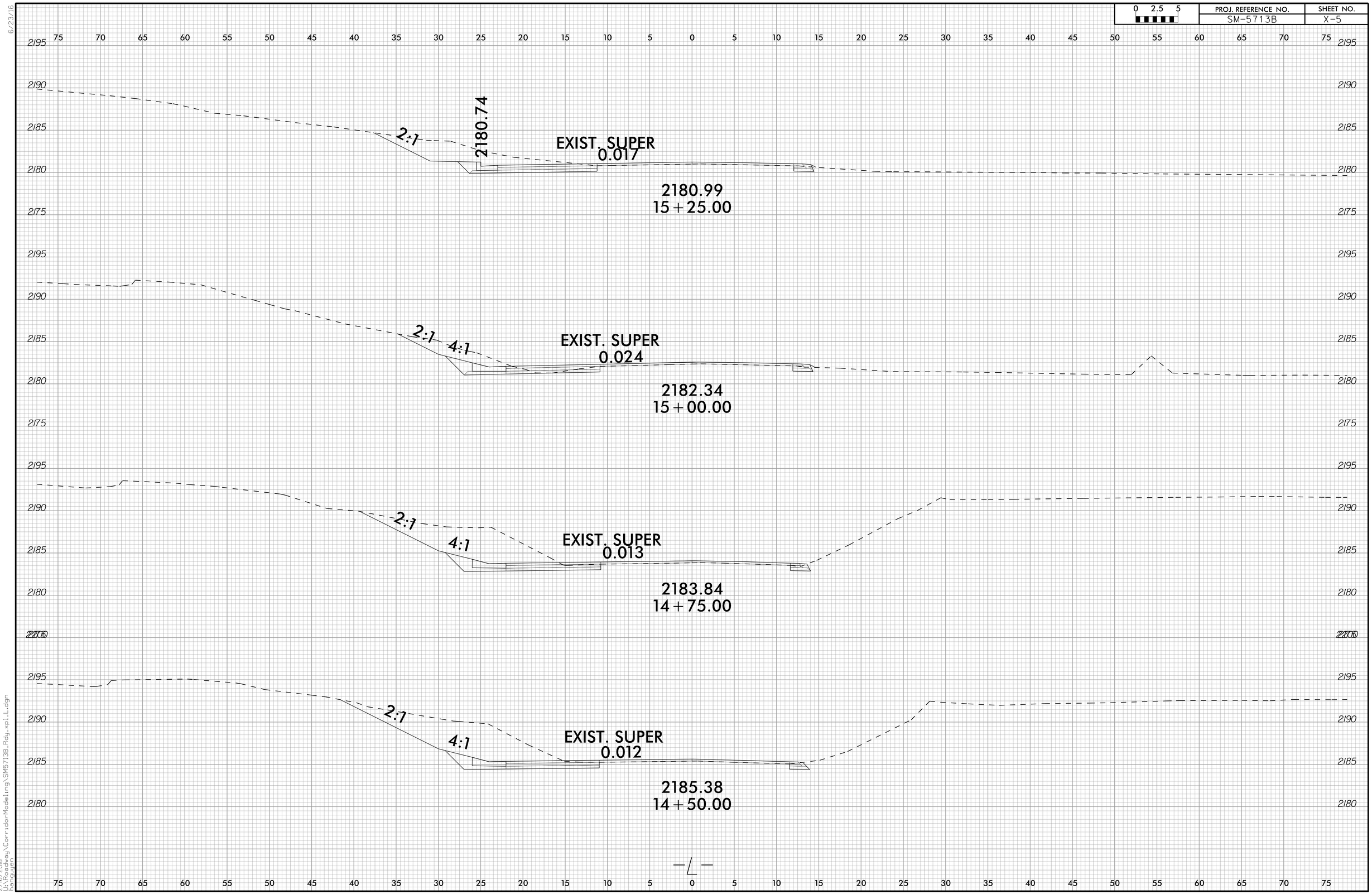
2:1
4:1
EXIST. SUPER
0.014
2190.02
13+75.00

2:1
4:1
EXIST. SUPER
0.015
2191.56
13+50.00

2:1
4:1
EXIST. SUPER
0.028
2193.05
13+25.00

2/16/2018
I:\Projects\Highway\Corridor Modeling\SM5713B_Rdy_xpl_L.dgn
Hamburger

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-5



6/23/16

2/16/2018
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Hanguen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-6

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

2190
2185
2180
2175
2170
2195

2178.93
VISTA BLVD.
PROP. EOT
2:1
EXIST. SUPER
2178.73
15+90.00

2178.81
VISTA BLVD.
PROP. EOT
2:1
EXIST. SUPER
OF THROUGH LANE
2179.19
15+75.00

2179.25
VISTA BLVD.
PROP. EOT
2:1
EXIST. SUPER
OF THROUGH LANE
2180.07
15+50.00

—℄—

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hanguen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-7

VISTA BLVD.
PROP. EOT

EXIST. SUPER
OF THROUGH LANE

2176.70
16+75.00

VISTA BLVD.
PROP. EOT

EXIST. SUPER
OF THROUGH LANE

2177.13
16+50.00

VISTA BLVD.
PROP. EOT

EXIST. SUPER
OF THROUGH LANE

2177.75
16+25.00

VISTA BLVD.
PROP. EOT

EXIST. SUPER
OF THROUGH LANE

2178.42
16+00.00

—℄—

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Hanguen

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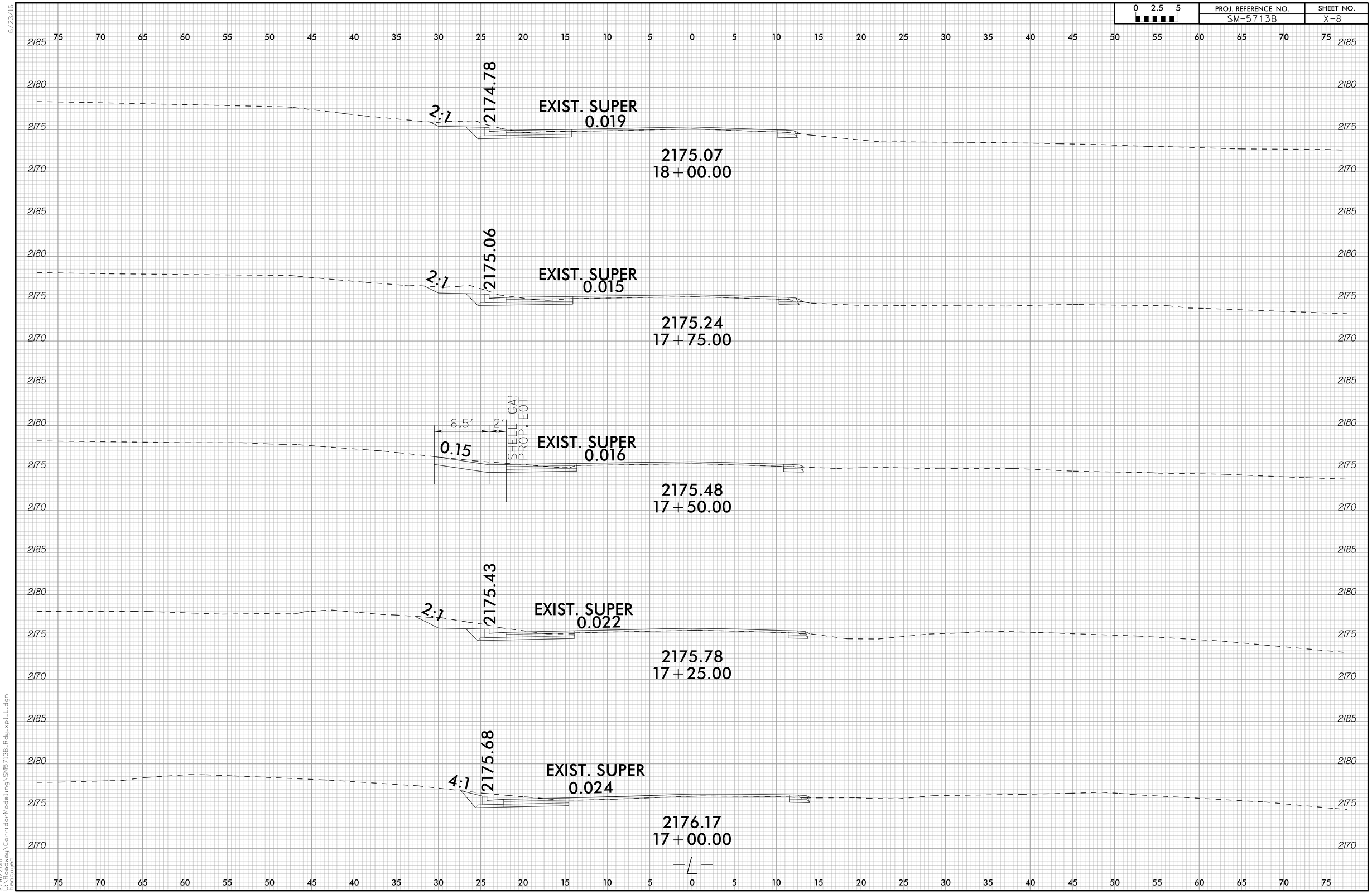

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2185 2180 2175 2170 2165

SHELL GAS DRIVE

EXIST. SUPER
0.013

2175.48

19+00.00

EXIST. SUPER
0.014

4:1

2175.15

18+75.00

EXIST. SUPER
0.022

2:1 4:1

2172.52

2174.99

estimate of existing culvert
(DASH)

SEE CULVERT PLANS FOR DETAILS

PROPOSED CULVERT TURNS AT ANGLE

PROPOSED CULVERT

18+50.00

2180 2175 2170 2165 2190 2185 2180 2175 2170 2165

11' 5' 2'

SHELL GAS DRIVE
PROP. EOT

.15

R=25'

.06 .02 .02

EL.=2176.59

EL.=2174.94

EL.=2174.68

2174.99

18+25.00

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

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-10

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

2185
2180
2175
2170

EXIST. SUPER
0.021
4:1
2178.62
20+00.00

EXIST. SUPER
0.022
4:1
2177.65
19+75.00

SHELL GAS DRIVE

EXIST. SUPER
0.027
2176.84
19+50.00

SHELL GAS DRIVE

EXIST. SUPER
0.018
2176.08
19+25.00

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-11

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2190
2185
2180
2190
2185
2180
2190

EXIST. SUPER
0.031

4:1

2184.58
21+25.00

2185
2180
2190
2185
2180
2190

EXIST. SUPER
0.031

4:1

2183.25
21+00.00

2185
2180
2185
2180
2175
2185
2180
2175
2170

EXIST. SUPER
0.018

4:1

2181.95
20+75.00

2185
2180
2175
2185
2180
2175
2170

EXIST. SUPER
0.015

4:1

2180.74
20+50.00

2185
2180
2175
2185
2180
2175
2170

EXIST. SUPER
0.016

4:1

2179.65
20+25.00

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

2/16/2018
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hanguen

6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-12

2193.06
22+75.00

EXIST. SUPER
0.024

2:1 4:1

2189.16

2191.68
22+50.00

EXIST. SUPER
0.028

2:1 4:1

2187.62

2190.26
22+25.00

EXIST. SUPER
0.027

2:1 4:1

2186.20

2188.81
22+00.00

EXIST. SUPER
0.026

2:1 4:1

2184.80

2187.39
21+75.00

EXIST. SUPER
0.027

4:1

2185.97
21+50.00

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6/23/16

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	SM-5713B	X-13

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

2185
2180
2175
2170

2177.26

2178.54
11+05.00

2178.25
6' BERM
SIGN

2178.70
6' BERM
SIGN

2179.27
10+90.00

2179.25
6' BERM
SIGN

2179.40
6' BERM
SIGN

2179.78
10+80.00

2179.82
4.5' BERM
SIGN

2180.30
10+70.00

—Y—

2/16/2018
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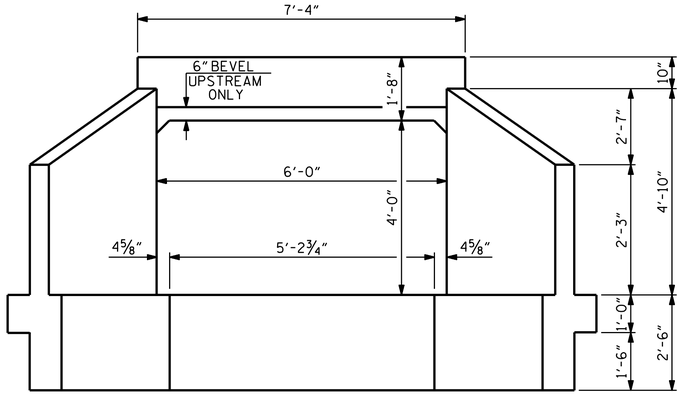
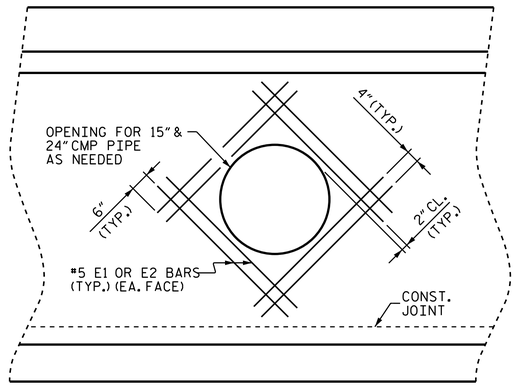
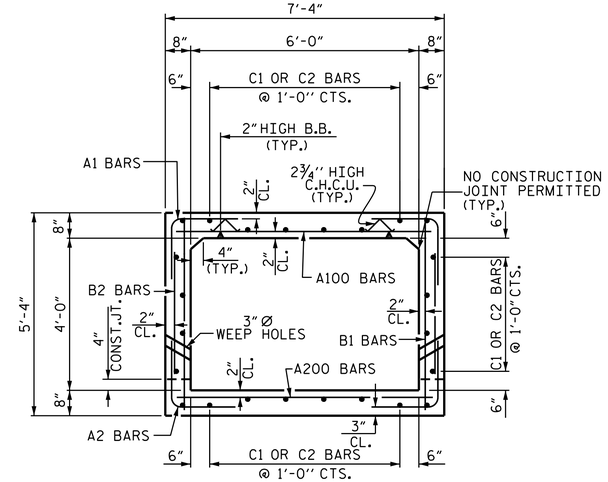


OUTLET END ELEVATION



15" & 24" Ø CMP OPENING DETAIL

THE 15" & 24" DIA. 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.



RIGHT ANGLE SECTION OF BARREL

THERE ARE 24 "C" BARS IN SECTION OF BARREL

NOTES:

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

DESIGN FILL: ---------- 2.0 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 CULVERT EXTENSIONS 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.

DOWELS SHALL BE USED TO CONNECT THE CULVERT EXTENSION TO THE EXISTING CULVERT AS SHOWN. FOR NOTE REGARDING SETTING OF DOWELS, SEE SHEET SN.

NO FIELD TESTING REQUIRED. FOR ADHESIVELY ANCHORED DOWELS, SEE STANDARD SPECIFICATIONS.

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.

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

NO PRECAST REINFORCED BOX CULVERT OPTION WILL BE ALLOWED.

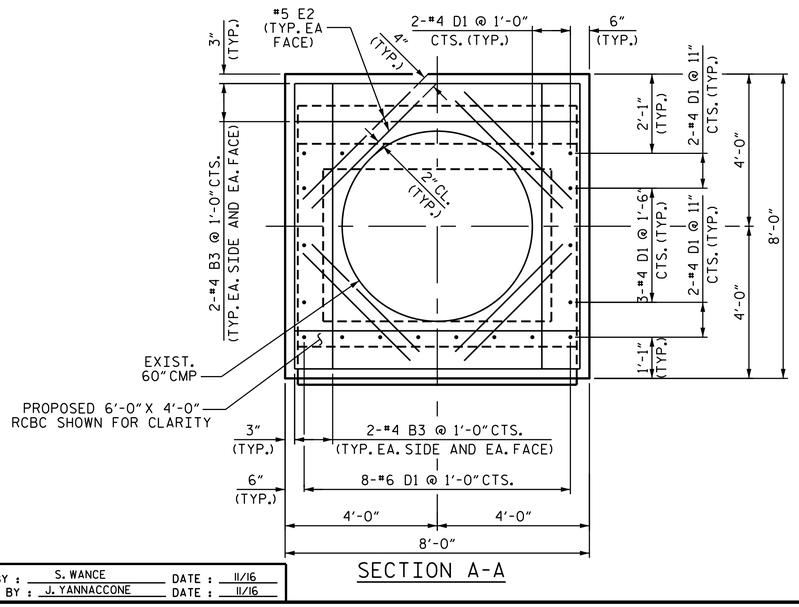
FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.

FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.

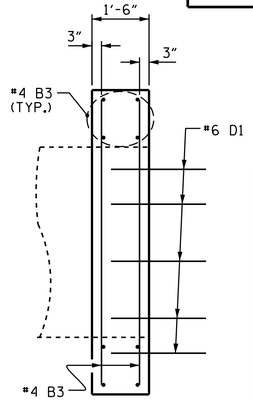
FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE REINFORCED CONCRETE BOX CULVERT SHALL BE PLACED ON THE STANDARD 1.0 FOOT BLANKET OF FOUNDATION CONDITIONING MATERIAL.



SECTION A-A



END VIEW

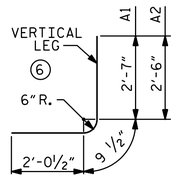
TOTAL CULVERT QUANTITIES

CLASS A CONCRETE		
LEFT EXTENSION	15.8	C.Y.
RIGHT EXTENSION	10.4	C.Y.
TOTAL	26.2	C.Y.
REINFORCING STEEL		
LEFT EXTENSION	1,827	LBS.
RIGHT EXTENSION	638	LBS.
TOTAL	2,465	LBS.
CULVERT EXCAVATION	LUMP SUM	
FOUNDATION CONDITIONING MATERIAL		
LEFT EXTENSION	18	TONS
RIGHT EXTENSION	8	TONS
TOTAL	26	TONS

REINFORCING STEEL BAR SCHEDULE

LEFT EXTENSIONS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	31	#4	6	5'-5"	112
A2	31	#4	6	5'-4"	110
A100	52	#4	STR	6'-11"	240
A200	58	#4	STR	6'-11"	268
B1	22	#4	STR	4'-10"	71
B2	31	#4	STR	3'-0"	62
B3	16	#4	STR	7'-6"	80
C1	24	#4	STR	21'-8"*	347
D1	40	#6	STR	2'-6"	150
E1	32	#5	STR	3'-8"	122
E2	32	#5	STR	4'-7"	153
S3	6	#8	STR	7'-0"	112
REINFORCING STEEL TOTAL FOR LEFT EXTENSION					1,827 LBS.



BAR TYPE

DIMENSIONS ARE OUT TO OUT

RIGHT EXTENSIONS

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
A1	14	#4	6	5'-5"	51
A2	14	#4	6	5'-4"	50
A100	24	#4	STR	6'-11"	111
A200	26	#4	STR	6'-11"	120
B1	10	#4	STR	4'-10"	32
B2	14	#4	STR	3'-0"	28
C2	24	#4	STR	9'-8" *	155
D1	22	#6	STR	2'-6"	82
G1	2	#4	STR	7'-0"	9
REINFORCING STEEL TOTAL FOR RIGHT EXTENSION					638 LBS.

* FIELD CUT 8" FROM "C" BARS IN FLOOR SLAB IF EXISTING CULVERT HAS CURTAIN WALLS.

LEFT EXTENSION QUANTITIES

CLASS A CONCRETE		
BARREL @ 0.564 CY/FT	12.4	C.Y.
EDGE BEAMS	0.5	C.Y.
PIPE COLLAR	2.9	C.Y.
TOTAL	15.8	C.Y.
REINFORCING STEEL	1,827	LBS.
CULVERT EXCAVATION	LUMP SUM	
FOUNDATION CONDITIONING MATERIAL	18	TONS

RIGHT EXTENSION QUANTITIES

CLASS A CONCRETE		
BARREL @ 0.564 CY/FT	5.6	C.Y.
END CURTAIN WALL	0.3	C.Y.
HEADWALL	0.3	C.Y.
WINGS	4.2	C.Y.
TOTAL	10.4	C.Y.
REINFORCING STEEL	638	LBS.
CULVERT EXCAVATION	LUMP SUM	
FOUNDATION CONDITIONING MATERIAL	8	TONS

PROJECT NO. SM-5713B

BUNCOMBE COUNTY

STATION: BOONE'S CORNER

SHEET 1 OF 2

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee B04B5A4F2FAD484...

2/20/2018

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL EXTENSIONS SINGLE 6 FT. X 4 FT. CONCRETE BOX CULVERT 90° SKEW

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

DRAWN BY : S. WANCE DATE : 11/16
CHECKED BY : J. YANNACCONE DATE : 11/16

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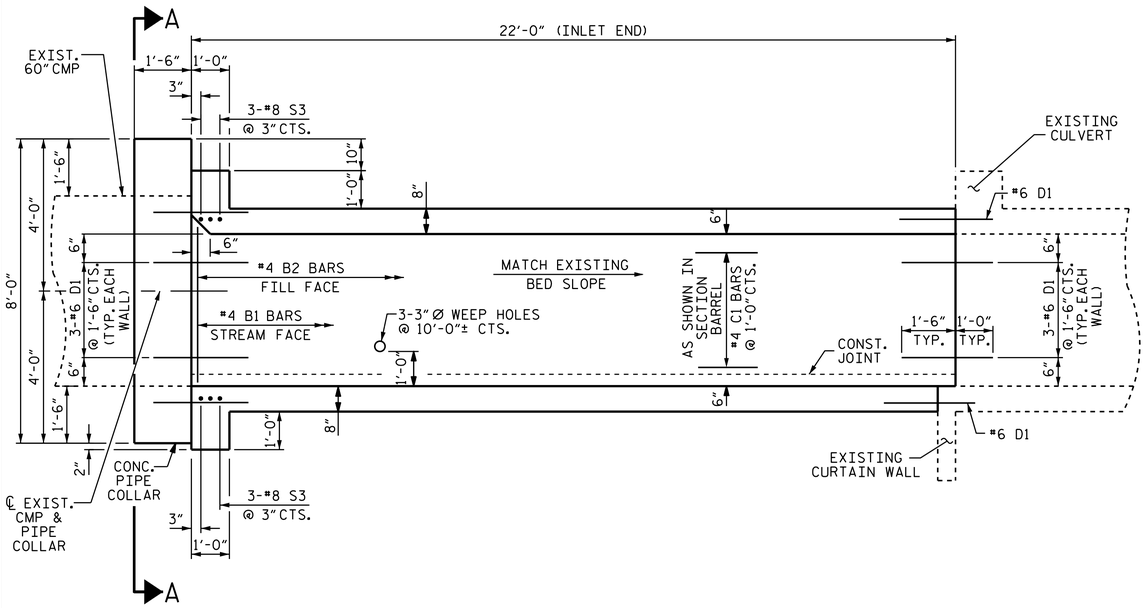
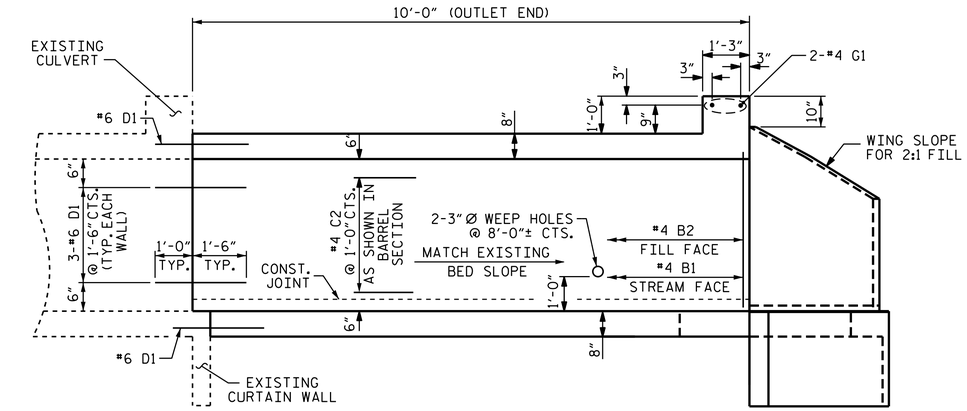
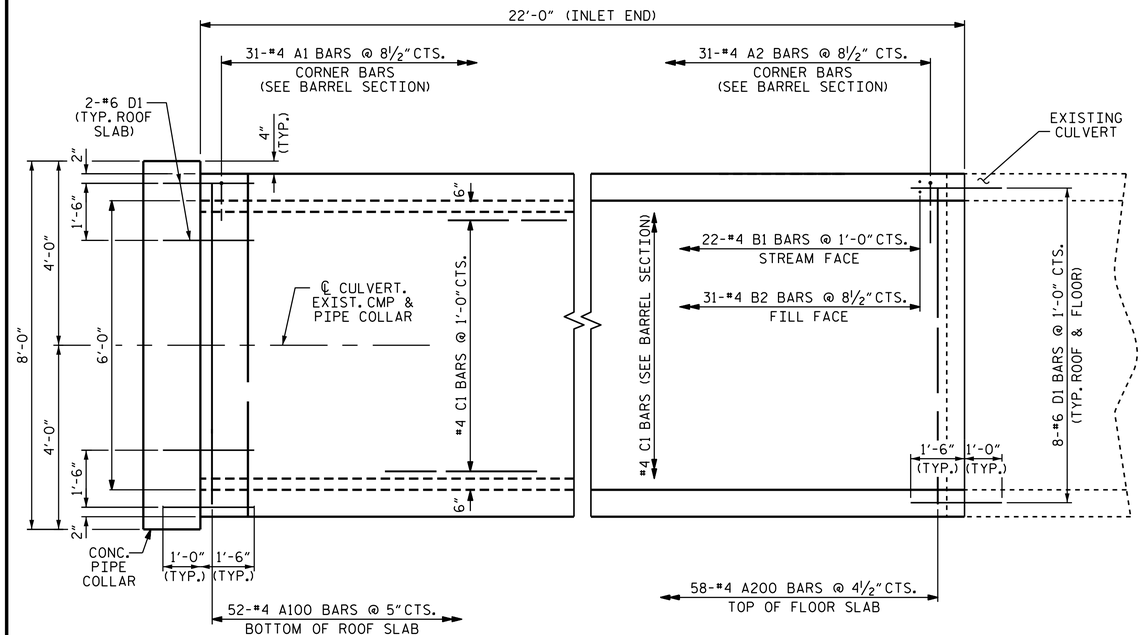


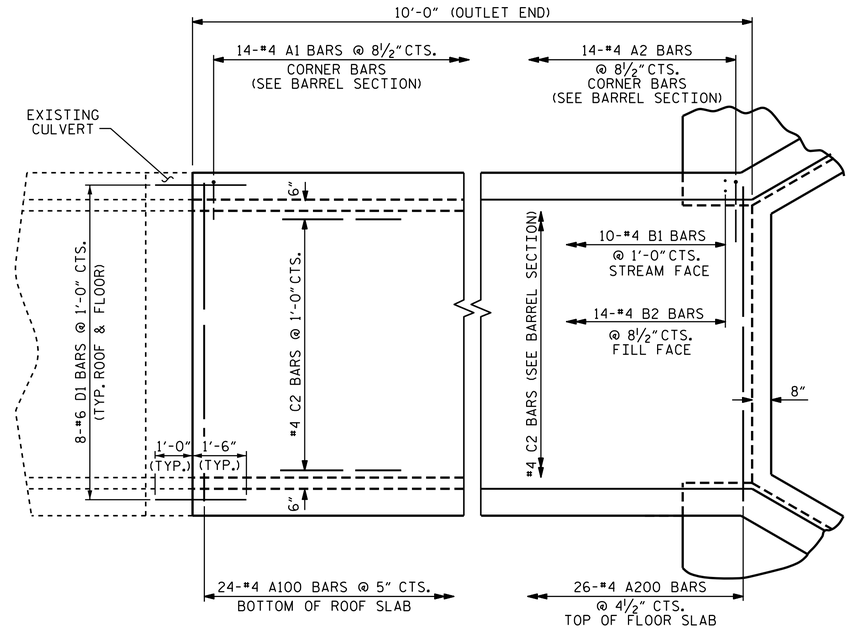
LEFT CULVERT EXTENSION SECTION NORMAL TO ROADWAY



RIGHT CULVERT EXTENSION SECTION NORMAL TO ROADWAY



LEFT CULVERT EXTENSION PLAN VIEW



RIGHT CULVERT EXTENSION PLAN VIEW

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by: Amber Lee
B04B5AA72FAD484...
2/20/2018

PROJECT NO. SM-5713B

BUNCOMBE COUNTY

STATION: BOONE'S CULVERT

SHEET 2 OF 2

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

BARREL EXTENSIONS SINGLE 6 FT. X 4 FT. CONCRETE BOX CULVERT 90° SKEW

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

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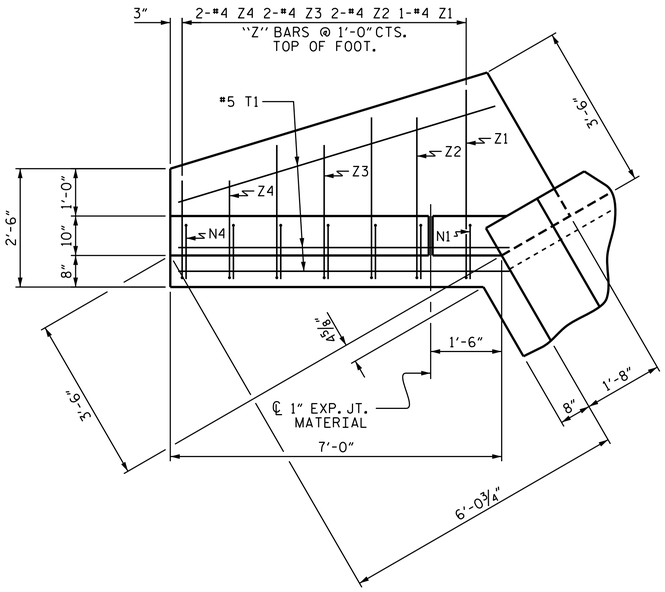
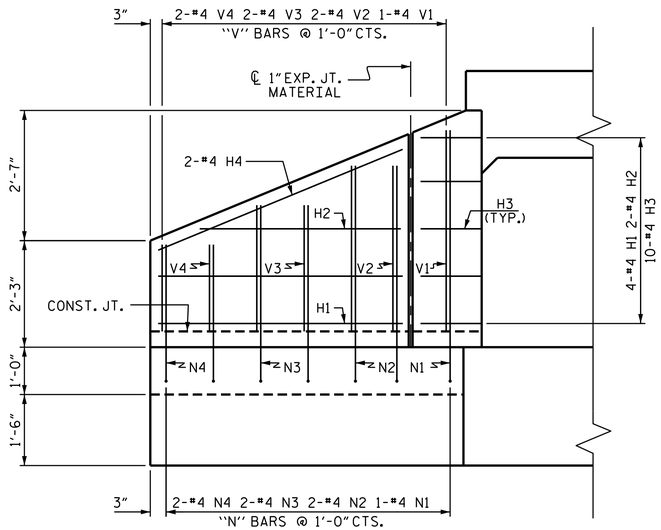
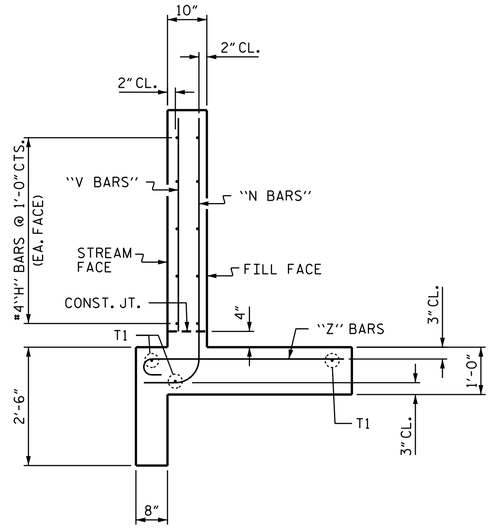
CHECKED BY : J. YANNACCONE DATE : 11/16



PLAN



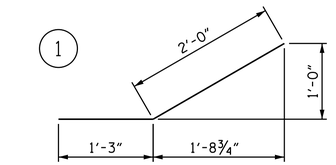
ELEVATION

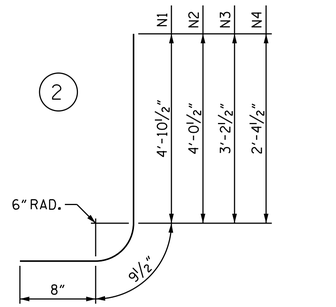


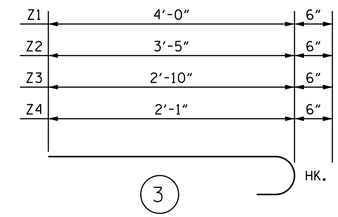
TYPICAL WING SECTION

BAR TYPES

ALL BAR DIMENSIONS ARE OUT TO OUT.







BILL OF MATERIAL

BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
H1	8	#4	STR	5'-2"	28
H2	4	#4	STR	4'-3"	11
H3	20	#4	1	3'-3"	43
H4	4	#4	STR	5'-7"	15
N1	2	#4	2	6'-4"	8
N2	4	#4	2	5'-6"	15
N3	4	#4	2	4'-8"	12
N4	4	#4	2	3'-10"	10
T1	6	#5	STR	7'-0"	44
V1	2	#4	STR	4'-3"	6
V2	4	#4	STR	3'-6"	9
V3	4	#4	STR	2'-8"	7
V4	4	#4	STR	1'-10"	5
Z1	2	#4	3	4'-6"	6
Z2	4	#4	3	3'-11"	10
Z3	4	#4	3	3'-4"	9
Z4	4	#4	3	2'-7"	7

REINFORCING STEEL
FOR 2 WINGS 245 LBS

CLASS A CONCRETE

2 WINGS	4.2 CY
1 HEADWALL	0.3 CY
1 END CURTAIN WALL	0.3 CY
2 EDGE BEAMS	0.5 CY
PIPE COLLAR FOR 60" CMP	2.9 CY
TOTAL CLASS A CONCRETE	8.2 CY

PROJECT NO. SM-5713B
BUNCOMBE COUNTY
STATION: BOONE'S CORNER

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD WINGS FOR CONCRETE BOX CULVERT

H = 4'-0" SLOPE = 2:1
90° SKEW

NORTH CAROLINA PROFESSIONAL SEAL 031021 ENGINEER AMBER M. LEE

DocuSigned by:
B048F8A4F2F4D484...
2/20/2018

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2			4		

SHEET NO. C-3
TOTAL SHEETS 4

DRAWN BY : S. WANCE DATE : 11/16
CHECKED BY : J. YANNACCONE DATE : 11/16

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 ¾" WITH THE FOLLOWING EXCEPTIONS: TOP CORNERS OF CURBS MAY BE ROUNDED TO 1½" RADIUS WHICH IS BUILT INTO CURB FORMS; CORNERS OF TRANSVERSE FLOOR EXPANSION JOINTS SHALL BE ROUNDED WITH A ¼" 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 ¼" 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 ⅞" Ø SHEAR STUDS FOR THE ¾" Ø STUDS SPECIFIED ON THE PLANS. THIS SUBSTITUTION SHALL BE MADE AT THE RATE OF 3 - ⅞" Ø STUDS FOR 4 - ¾" Ø STUDS, AND STUD SPACING CHANGES SHALL BE MADE AS NECESSARY TO PROVIDE THE SAME EQUIVALENT NUMBER OF ⅞" Ø STUDS ALONG THE BEAM AS SHOWN FOR ¾" Ø STUDS BASED ON THE RATIO OF 3 - ⅞" Ø STUDS FOR 4 - ¾" 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

SHEET NO. C-4
TOTAL SHEETS 4

STD. NO. SN

REV. 6-16-95 EEM (/) RGW
REV. 8-16-99 RWW (/) LES
REV. 5-7-03 RWW (/) JTE
REV. 5-1-06 TLA (/) GM
REV. 10-1-11 MAA (/) GM
REV. 12-17 MAA (/) THC

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