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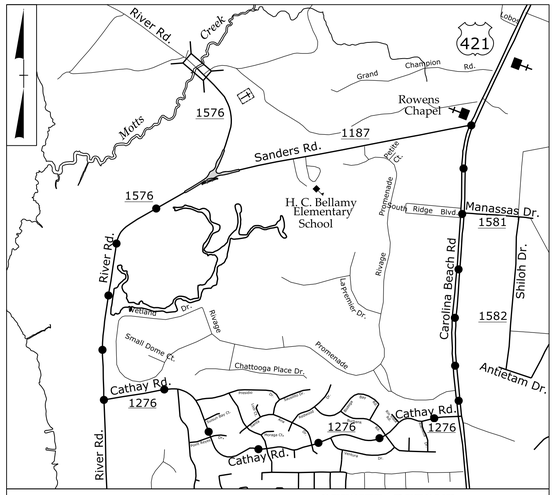
09/08/99

TIP PROJECT: W-5203J

CONTRACT: DC0126

See Sheet 1-A For Index of Sheets



VICINITY MAP — **OFFSITE DETOUR** — **N.T.S.**

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

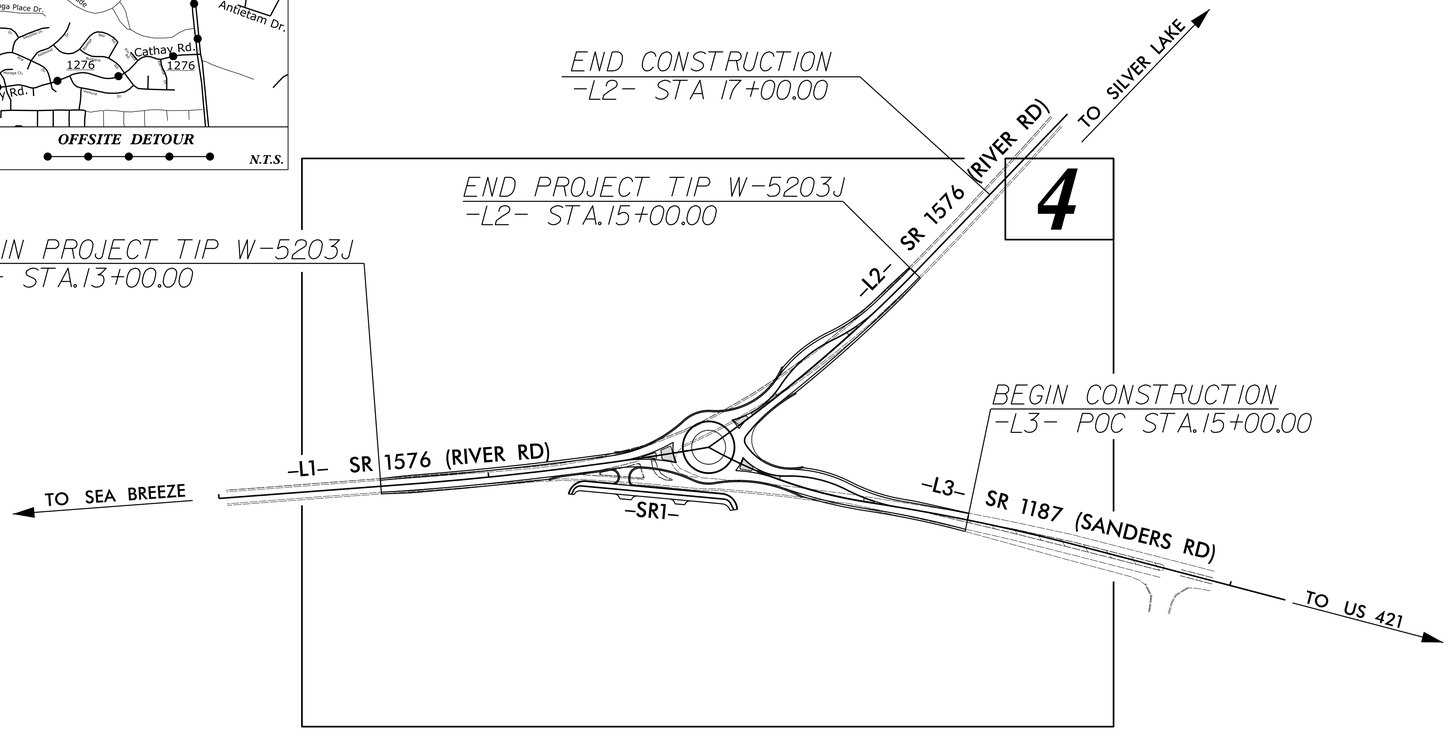
NEW HANOVER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5203J	1	64

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
45333.1.10	HSIP-1100(32)	PE, R/W, CONST.

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD.) AND SR 1576 (RIVER RD.)

TYPE OF WORK: GRADING, DRAINAGE & PAVING



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 7800
ADT 2035 = 15600
DHV = 10 %
D = 60 %
T = 6 % *
V = 35 MPH
* TTST = DUAL
FUNC CLASS =
RURAL MINOR ARTERIAL
SUB REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT W5203J = 0.210 MI.

TOTAL LENGTH OF TIP PROJECT W5203J = 0.210 MI.

Prepared in the Office of:
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 22, 2014

LETTING DATE:
MARCH 17, 2016

W. CRAIG PARKER, PE
PROJECT ENGINEER

BRIAN BLACKWELL, E.I.
PROJECT DESIGNER

DAVID B. LEONARD, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 15764 JAMES A. BYRD

DocuSigned by: James A. Byrd 12/14/2015 *P.E.*
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 25474 CRAIG PARKER

DocuSigned by: W. Craig Parker 12/14/2015 *P.E.*
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

14-DEC-2015 07:51
\\rdw00\projects\49353 Division 3 Environmental Outsourcing\Task Order 40 - River Road Roundabout\Roadway\Proj\W5203J_rdy_tsh.dgn
$$$$USERNAME$$$$

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Raleigh, North Carolina 27609
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PROJECT REFERENCE NO.	SHEET NO.
W-5203J	1A

ROADWAY DESIGN ENGINEER

12/11/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GENERAL NOTES, LIST OF STANDARD DRAWINGS AND INDEX OF SHEETS

INDEX OF SHEETS

2012 ROADWAY ENGLISH STANDARD DRAWINGS — EFF. 01-17-2012, REV. 10-30-2012

THE FOLLOWING ROADWAY STANDARDS AS APPEAR IN "ROADWAY STANDARD DRAWINGS" HIGHWAY DESIGN BRANCH - N. C. DEPARTMENT OF TRANSPORTATION - RALEIGH, N. C., DATED JANUARY, 2012 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
225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENT
DIVISION 3 - PIPE CULVERTS	
300.01	METHOD OF PIPE INSTALLATION
310.03	CROSS PIPE END SECTION - PRECAST CONCRETE SECTION FOR 18" TO 30" PIPE
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 6 - ASPHALT BASES AND PAVEMENTS	
654.01	PAVEMENT REPAIRS
DIVISION 8 - INCIDENTALS	
815.02	SUBSURFACE DRAIN
840.00	CONCRETE BASE PAD FOR DRAINAGE STRUCTURES
840.01	BRICK CATCH BASIN - 12" THRU 54" PIPE
840.02	CONCRETE CATCH BASIN - 12" THRU 54" PIPE
840.03	FRAME, GRATES AND HOOD - FOR USE ON STANDARD CATCH BASIN
840.18	CONCRETE GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.19	CONCRETE GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.22	FRAMES AND WIDE SLOT SAG GRATES
840.27	BRICK GRATED DROP INLET TYPE 'B' - 12" THRU 36" PIPE
840.28	BRICK GRATED DROP INLET TYPE 'D' - 12" THRU 36" PIPE
840.36	TRAFFIC BEARING GRATED DROP INLET - FOR STEEL (840.37) DOUBLE FRAME AND GRATES
840.37	STEEL GRATE AND FRAME
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
852.01	CONCRETE ISLANDS
852.04	METHOD FOR PLACEMENT OF DROP INLETS IN GRASSED MEDIAN - USING 1'-6" CURB AND GUTTER
876.02	GUIDE FOR RIP RAP AT PIPE OUTLETS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 10-31-2014

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. 560.01

SIDE ROADS:

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

SUBSURFACE DRAINS:

SUBSURFACE DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.02 AT LOCATIONS DIRECTED BY THE ENGINEER.

SUBSURFACE PLANS:

SUBSURFACE PLANS ARE AVAILABLE ON THIS PROJECT.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
- POWER - DUKE ENERGY-PROGRESS - CONTACT SHEILA TALTON AT (919) 481-6126.
- PHONE - AT&T - CONTACT RICK MANRIQUEZ AT (910) 392-8853.
- CABLE TV - TIME WARNER - CONTACT ROBERT JOHN AT (910) 772-5757.
- WATER & SEWER - CFPUA - CONTACT FRANK STYERS AT (910) 332-6670.

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

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	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
- 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
- Potential Contamination Area: Soil
- Known Contamination Area: Water
- Potential Contamination Area: Water
- 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:

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

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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.

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	1C-1
Location and Surveys	

SURVEY CONTROL SHEET W-5203-J

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L3	11+15.00	-48.41	137881.8253	2328436.2645
L3	12+00.00	-70.00	137912.2325	2328512.4790
L3	13+50.00	-50.00	137927.1982	2328655.2262

L1

TYPE	STATION	NORTH	EAST
POT	10+00.00	137358.5438	2327548.5444
PC	13+46.71	137530.9329	2327849.3560
PT	19+10.30	137833.7017	2328324.4772

L2

TYPE	STATION	NORTH	EAST
PC	10+00.00	137833.7017	2328324.4772
PT	15+23.42	138311.2929	2328536.6431
POT	19+06.92	138675.1929	2328657.6907

L3

TYPE	STATION	NORTH	EAST
PC	10+00.00	137833.7017	2328324.4772
PRC	13+14.22	137868.9975	2328634.9819
PT	17+17.68	137965.3963	2329026.5706
POT	21+05.96	138038.1775	2329407.9668

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L1	18+10.00	-70.00	137834.4413	2328202.6458
L1	18+10.00	-90.00	137850.9750	2328191.3925
L1	18+50.00	-77.97	137863.3551	2328230.7231
L1	18+50.00	-90.00	137873.2524	2328223.8898

NOTE: DRAWING NOT TO SCALE

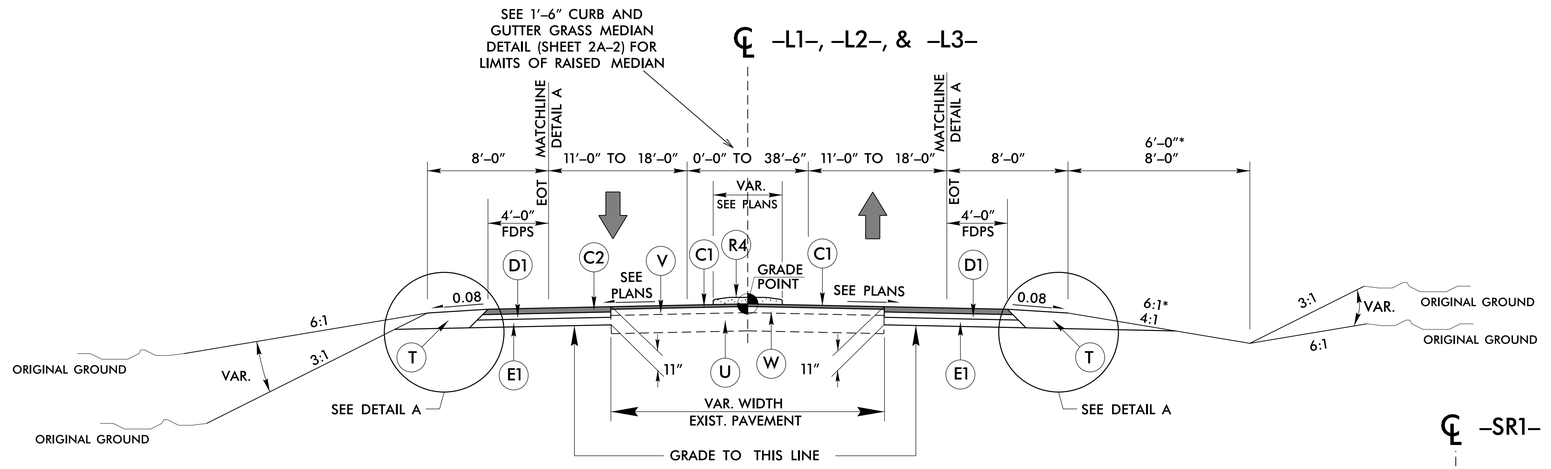
8/17/99

REVISIONS

PAVEMENT SCHEDULE

A1	10″ CONCRETE PAD	R1	PROPOSED 2′-6″ CONCRETE CURB & GUTTER
C1	PROP. APPROX. 1 ½″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	PROPOSED 1′-6″ CONCRETE CURB & GUTTER
C2	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	9″ X 18″ CONCRETE CURB
C3	PROP. APPROX. 2″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.	R4	5″ MONOLITHIC CONCRETE ISLAND (SURFACE MOUNTED)
C4	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1 1/2″ IN DEPTH NOR GREATER THAN 2″ IN DEPTH.	T	EARTH MATERIAL.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
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 1/2″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	V	MILLING EXISTING PAVEMENT - 1 ½″ DEPTH
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	W	WEDGING EXISTING PAVEMENT - SEE WEDGING DETAIL, THIS SHEET
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.		

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

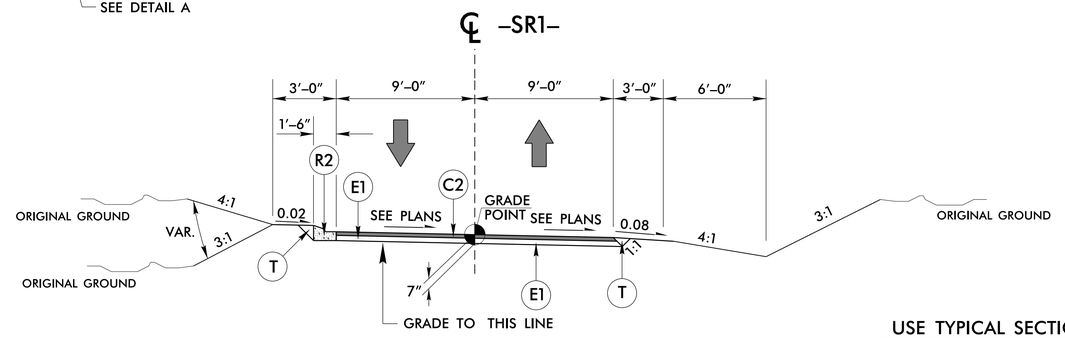


USE TYPICAL SECTION NO. 1

*–L1– Sta. 13+00.00 to Sta. 16+10.00
–L1– Sta. 16+10.00 to Sta. 18+44.30
–L2– Sta. 10+66.00 to Sta. 15+00.00
–L3– Sta. 10+66.02 to Sta. 15+00.00

TYPICAL SECTION NO. 1

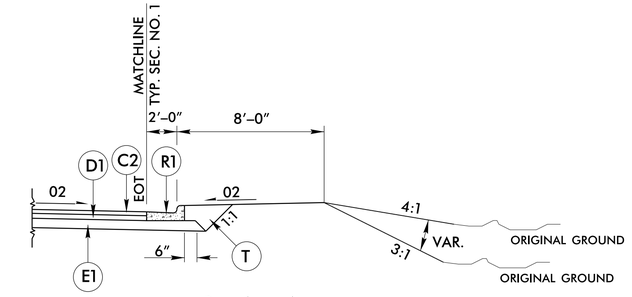
NOTE: SEE INTERSECTION DETAIL 2B–1 FOR MONOLITHIC ISLAND PLACEMENT



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

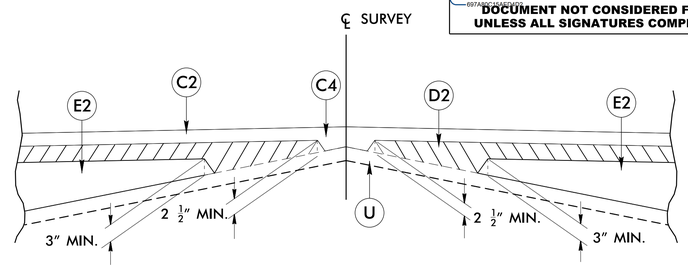
–SR1– Sta. 10+00.00 to Sta. 13+19.17



DETAIL A

USE DETAIL A IN CONJUNCTION WITH TYPICAL SECTION NO. 1

–L1– Sta. 16+10.00 RT to –L1– Sta. 17+24.51 RT.
–L1– Sta. 17+79.20 RT to –L3– Sta. 11+93.73 RT.
–L1– Sta. 17+37.06 LT to –L2– Sta. 12+00.11 LT.
–L2– Sta. 11+00+/– RT to –L2– Sta. 11+89.26 RT.
–L3– Sta. 10+98+/– LT to –L3– Sta. 11+79.48 LT.



Detail Showing Method of Wedging

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	2A-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

DocuSigned by: W. Craig Parker 12/9/2015

PAVEMENT DESIGN ENGINEER

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

DocuSigned by: W. Craig Parker 12/9/2015
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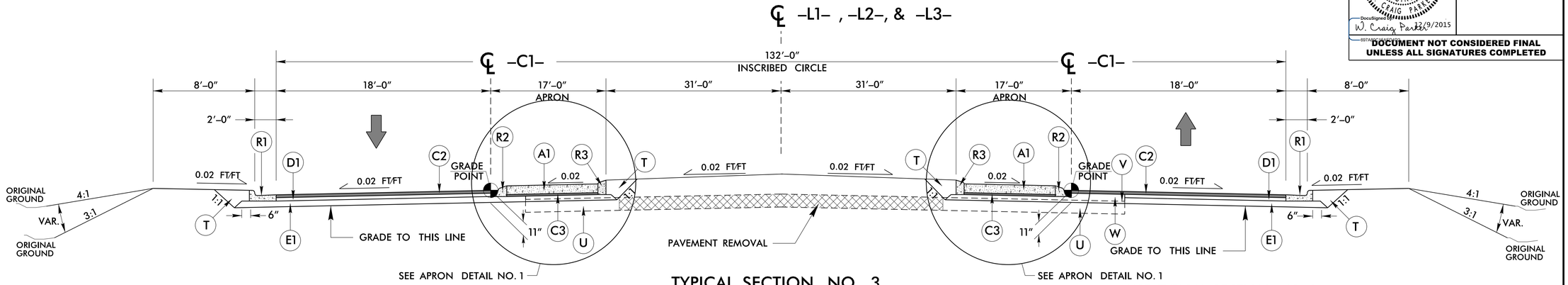
PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION NO. 3

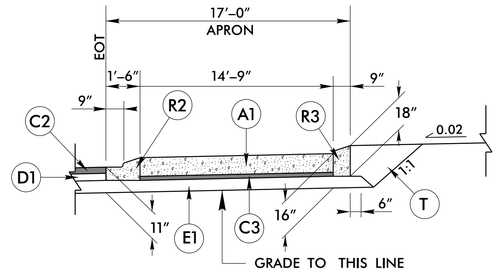
USE TYPICAL SECTION NO. 3

–L1– Sta. 18+44.30 to Sta. 19+10.30
–L2– Sta. 10+00.00 to Sta. 10+66.00
–L3– Sta. 10+00.00 to Sta. 10+66.02

PAVEMENT SCHEDULE

A1	10″ CONCRETE PAD
C2	3″ S9.5B
C3	2″ S9.5B
D1	4″ I19.0B
E1	4″ B25.0B
R1	2′-6″ C&G
R2	1′-6″ C&G
R3	9″x18″ CONC. CURB
R4	5″ MONO. ISLAND
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1 ½″ MILLING
W	WEDGING

SEE SHEET 2A-1 FOR FULL PAVEMENT SCHEDULE & WEDGING DETAIL.

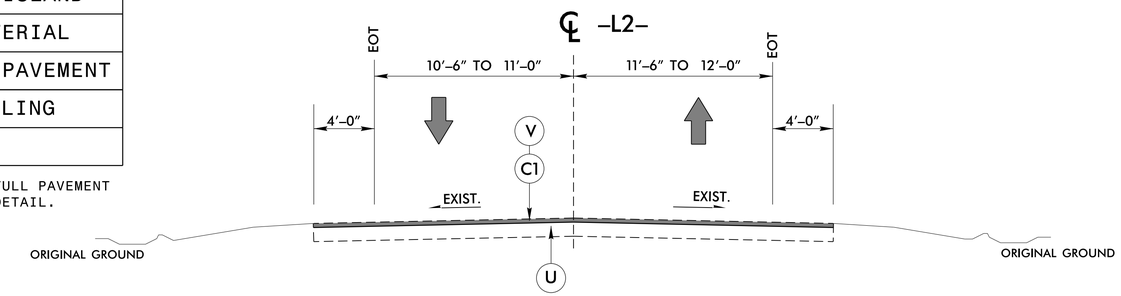


APRON DETAIL NO. 1

USE APRON DETAIL IN CONJUNCTION WITH TYPICAL SECTION NO. 3

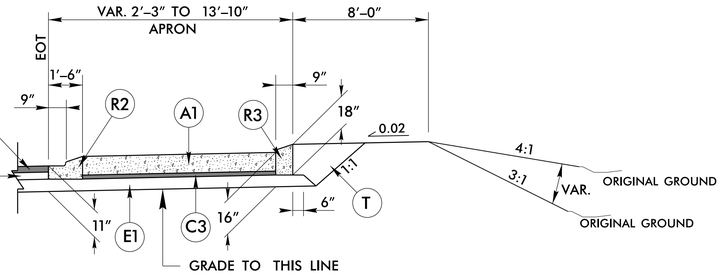
–C1– Sta. 10+00.00 to Sta. 13+01.59

NOTE: 1. PLACE 18″ LONG #8 BARS AT 12″ CENTERS BEGINNING 6″ FROM LONGITUDINAL JOINT.
2. PLACE 14″ LONG #4 "J" BARS AT 36″ CENTERS AT ALL LONGITUDINAL SLAB/CURB JOINTS.



TYPICAL SECTION NO. 4

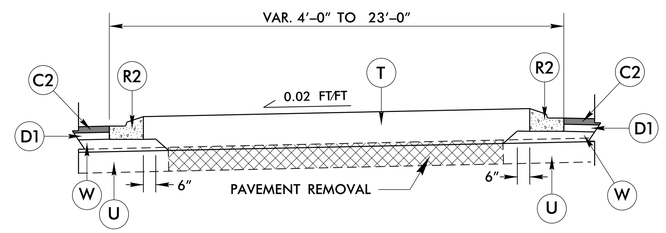
MILLING AND RESURFACE EXISTING PAVEMENT PER TRAFFIC CONTROL PLANS
–L2– STA 15+00.00 TO STA 17+00.00



APRON DETAIL NO. 2

(SEE PLANS FOR LOCATION)

–L2– STA. 10+66.00 TO STA. 11+00+/– RT
–L3– STA. 10+66.02 TO STA. 10+98+/– LT



1′–6″ CURB AND GUTTER WITH GRASS MEDIAN DETAIL

(SEE PLANS FOR LOCATION)

–L2– STA. 11+24.87 TO STA. 13+53.37
–L3– STA. 11+21.43 TO STA. 13+24.21

5/14/99

DETAIL SHEET INTERSECTION OF –L1–, –L2– AND –L3–

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

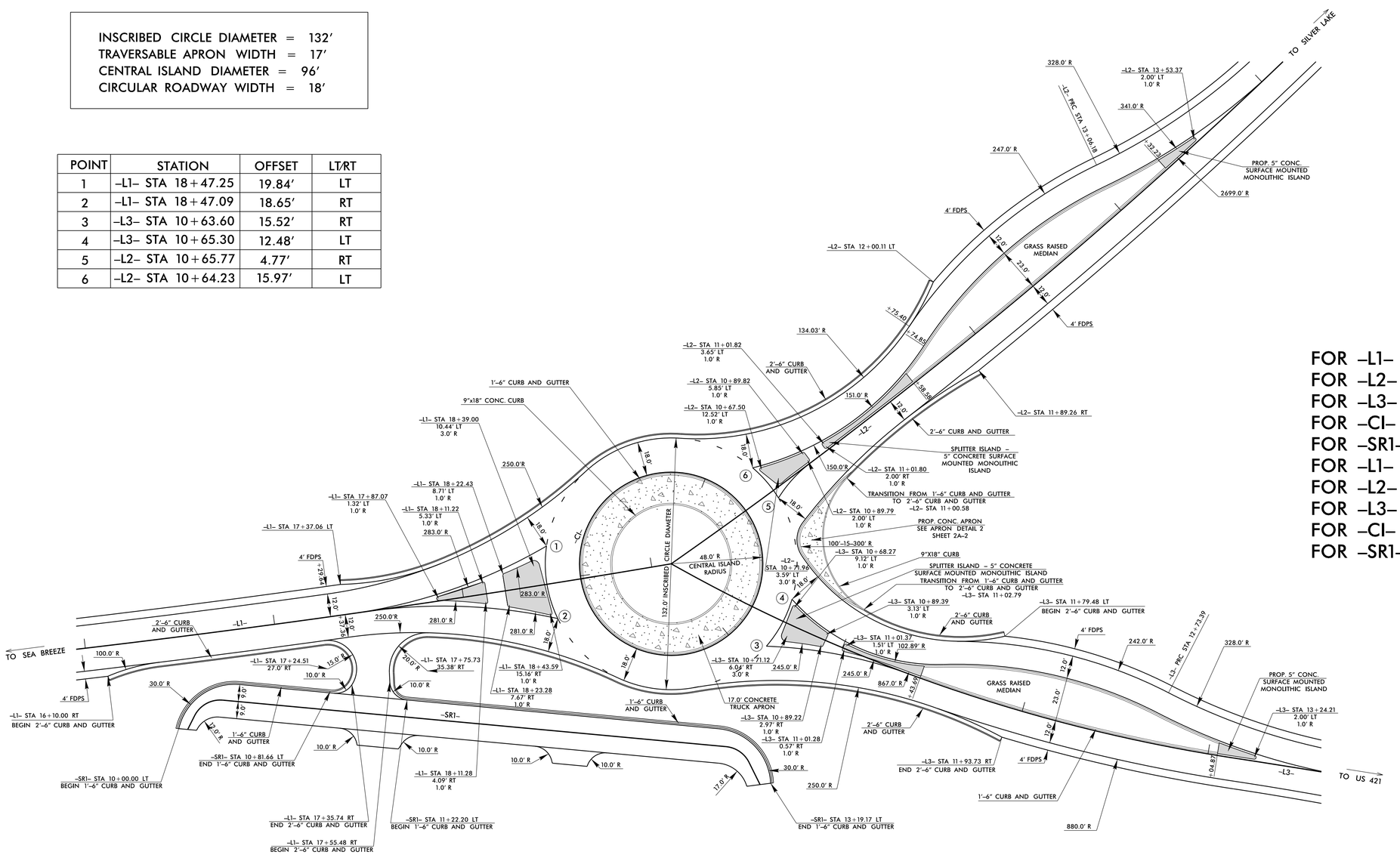
DocuSigned by: W. Craig Parker 12/9/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

30 15 0 30 60

INSCRIBED CIRCLE DIAMETER = 132′
TRAVERSABLE APRON WIDTH = 17′
CENTRAL ISLAND DIAMETER = 96′
CIRCULAR ROADWAY WIDTH = 18′

POINT	STATION	OFFSET	LT/RT
1	–L1– STA 18+47.25	19.84′	LT
2	–L1– STA 18+47.09	18.65′	RT
3	–L3– STA 10+63.60	15.52′	RT
4	–L3– STA 10+65.30	12.48′	LT
5	–L2– STA 10+65.77	4.77′	RT
6	–L2– STA 10+64.23	15.97′	LT



FOR –L1– ALIGNMENT, SEE SHEET 4
FOR –L2– ALIGNMENT, SEE SHEET 4
FOR –L3– ALIGNMENT, SEE SHEET 4
FOR –CI– ALIGNMENT, SEE SHEET 4
FOR –SR1– ALIGNMENT, SEE SHEET 4
FOR –L1– PROFILE, SEE SHEET 5
FOR –L2– PROFILE, SEE SHEET 5
FOR –L3– PROFILE, SEE SHEET 6
FOR –CI– PROFILE, SEE SHEET 6
FOR –SR1– PROFILE, SEE SHEET 6

LEGEND

5″ MONOLITHIC CONCRETE ISLAND

10″ CONCRETE PAD

COMPUTED BY: MONICA J. DUVAL DATE: 10/19/15
CHECKED BY: W. CRAIG PARKER, PE DATE: 12/9/15

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W–5203J	3B–1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF QUANTITIES

ROW AREA DATA SUMMARY

PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL ACREAGE	AREA TAKEN	AREA REMAINING RT.	AREA REMAINING LT.	CONST. EASE.	PERM. DRAIN. EASE.	TEMP. DRAIN. EASE.
1	AFTEW PROPERTIES, LLC.	–				1113.7 SF	4892.3 SF	

SUMMARY OF EARTHWORK
IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCAVATION	EMBANK. +%	BORROW	WASTE
–L1– STA. 13+00.00	–L1– STA 18+44.30	951	357		594
–L2– STA. 10+66.00	–L2– STA. 15+00.00	221	544	278	
–L3– STA. 10+66.02	–L3– STA. 15+00.00	2,337	40		2,297
–C1– STA 10+00.00	–C1– STA 13+01.59	491	1,455	964	
DETOUR					
–L1– STA. 13+00.00	–L1– STA 18+44.30	255	39		216
–L2– STA. 10+66.00	–L2– STA. 15+00.00	89	44		45
PROJECT SUBTOTAL		4,344	2,479	1,287	3,152
WASTE TO REPLACE BORROW				–1,287	–1,287
PROJECT TOTAL		4,344		0	1,865
GRAND TOTALS:		4,344			1,865
SAY:		4,500			1,865
SHOULDER BORROW		325			
CONTINGENCY UNDERCUT		500			

Earthwork quantities are calculated by HNTB. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

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

PAVEMENT REMOVAL SUMMARY
IN SQUARE YARDS

LOCATION	REMOVAL OF ASPHALT PAVEMENT	BREAKING OF ASPHALT PAVEMENT
–L1– STA 15+88 TO –L3– STA 13+50.00	1,601	
DETOUR		
–L1– STA. 13+00.00 TO –L1– STA 18+61.00	270	
–L2– STA. 10+66.00 TO –L2– STA. 17+00.00	460	
GRAND TOTAL	2,331	
SAY	2,350	

12/06/07

09-DEC-2015 11:21
\\Projects\49353 Division 3 Environmental Outsourcing\Task Order 40 - River Road Roundabout\Roadway\Proj\W5203J_rdy_sum.dgn
$$$$USERNAME$$$$

RALD051

COMPUTED BY:	ATH	DATE:	10/16/15
CHECKED BY:	BRC	DATE:	10/19/15

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
W-5203J	3D-1

**Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".**

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48		15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	
L1 16+00	28	RT	0401		17.0																
			0401	OUT		15.0	14.3			56											
L1 17+81	18	RT	0403		17.2																
			0403	0404		14.2	13.8			36											
L1 18+17	28	RT	0404		16.8																
			0404	0408		13.0	12.6	0.5		72											
SR1 11+90	15	RT	0405		16.2																
			0405	0404		14.3	13.8			60											
SR1 13+10	13	RT	0406		15.5																
			0406	0407		13.6	13.4	0.3		52											
L3 10+66	37	RT	0407		17.2																
			0407	0417		13.4	13.3	0.3		52											
C1 10+61	20	RT	0417		17.6																
			0417	0404		13.3	13.0	0.3		80											
L1 18+44	41	LT	0408		16.0																
			0408	OUT		8.7	8.6	0.3				32									
C1 12+27	20	RT	0409		16.8																
			0409	0408		9.1	8.7			68											
SR1 10+90	15	RT	0410		16.8																
			0410	0403		14.9	14.2			72											
L3 12+00	57	LT	0411		18.4																
			0411	0412		15.6	14.0			128											
L3 10+66	32	LT	0412		16.8																
			0412	0415		14.0	13.8			68											
L2 11+87	18	RT	0413		13.5																
			0413	0414		10.5	9.8			52											
L2 11+98	36	LT	0414		12.8																
			0414	0416		9.8	9.6	0.3		76											
L3 11+10	20	RT	0415		18.2																
			0415	0407		15.2	14.2			48											
L2 11+20	21	LT	0416		12.9																
			0416	0409		9.4	9.1	0.3		96											
SHEET TOTALS										1016		32									
PROJECT TOTALS										1016		32									

FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	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 STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37
0401					1																1				1												
0401	OUT																																				
0403					1			1		1																											
0403	0404																																				
0404					1			1	1																												
0404	0408																																				
0405					1																1				1												
0405	0404																																				
0406					1																1				1												
0406	0407																																				
0407					1			1	1																												
0407	0417																																				
0417					1			1			1																										
0417	0404																																				
0408					1	2.3		1	1																												
0408	OUT																																				
0409					1	2.7		1	1																												
0409	0408																																				
0410					1																1				1												
0410	0403																																				
0411					1															1					1												
0411	0412																																				
0412					1																															1	1
0412	0415																																				
0413					1			1		1																											
0413	0414																																				
0414					1			1			1																										
0414	0416																																				
0415					1			1			1																										
0415	0407																																				
0416					1			1			1																										
0416	0409																																				
SHEET TOTALS					16	5.0		10	4	2	4									1	4				5											1	1
PROJECT TOTALS					16	5.0		10	4	2	4									1	4				5											1	1

FROM	TO		M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54		##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK	##" x ##" x ##" PERF. C.S.P. TEE RISER ##" THICK		15" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION	##" PIPE END SECTION		CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.		##" DRAINAGE PIPE ELBOW	##" DRAINAGE PIPE ELBOW	##" DRAINAGE PIPE ELBOW	##" R.C. ELBOW			MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN		FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0401																																			
0401	OUT								1																										
0403																																			
0403	0404																																		
0404																																			
0404	0408																																		
0405																																			
0405	0404																																		
0406																																			
0406	0407																																		
0407																																			
0407	0417																																		
0417																																			
0417	0404																																		
0408																																			
0408	OUT																																		24" RCP-III
0409																																			
0409	0408																																		
0410																																			
0410	0403																																		
0411																																			
0411	0412																																		
0412																																			CONSTRUCT USING STD. 852.04
0412	0415																																		
0413																																			
0413	0414																																		
0414																																			
0414	0416																																		
0415																																			
0415	0407																																		
0416																																			
0416	0409																																		
SHEET TOTALS									1																										
PROJECT TOTALS									1																										

ABBREVIATIONS

C.A.A.	CORRUGATED ALUMINIUM ALLOY
C.B.	CATCH BASIN
C.S.	CORRUGATED STEEL
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
H.D.P.E.	HIGH DENSITY POLYETHYLENE
J.B.	JUNCTION BOX
M.H.	MANHOLE
N.S.	NARROW SLOT
P.V.C.	POLYVINYL CHLORIDE
R.C.	REINFORCED CONCRETE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX
W.S.	WIDE SLOT

COMPUTED BY: MONICA J. DUVAL DATE: 10/19/15 CHECKED BY: W. CRAIG PARKER, PE DATE: 10/20/2015	(4-21-15)	PROJECT NO. W-5203J	SHEET NO. 3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF SUBSURFACE DRAINAGE

LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY					1,500
				TOTAL LF:	1,500

*UD = Underdrain
*BD = Blind Drain
*SD = Subsurface Drain

SUMMARY OF BRIDGE WAITING PERIODS

Bridge Description	End Bent/ Bent No.	MONTHS

SUMMARY OF SETTLEMENT GAUGES

Gauge No.	LINE	Approx. Station	Approx. Offset
		TOTAL GAUGES (EACH):	

SUMMARY OF ROCK PLATING

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	Rock Plating Detail No. 1/2/3/4	Riprap Class* 1/2/B	SY
							TOTAL SY:	0

*Use Class 1, 2 or B riprap if riprap class is not shown for rock plating location.

SUMMARY OF EMBANKMENT WAITING PERIODS

LINE	Station	Station	MONTHS

SUMMARY OF SURCHARGES AND SURCHARGE WAITING PERIODS

LINE	Station	Station	Surcharge Height FT	MONTHS

SUMMARY OF REINFORCED SOIL SLOPES (RSS)

LINE	Beginning Slope	Approx. Station	Ending Slope	Approx. Station	Location LT/RT	SY
					TOTAL SY:	0

SUMMARY OF GEOTEXTILE FOR PAVEMENT STABILIZATION

LINE	Station	Station	SY
CONTINGENCY			
		TOTAL SY:	0

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type ASU/AST	Aggregate Thickness INCHES	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Soil Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY							500		
			TOTAL CY/TONS/SY:		0	0	500*	0	0

ASU = Aggregate Subgrade, AST = Aggregate Stabilization
*Total square yards of Geotextile for Soil Stabilization is only the estimated quantity for ASU/AST and may only represent a portion of the geotextile quantity shown in the Item Sheets of the Proposal.

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER
DocuSigned by: W. Craig Parker 12/9/2015

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
DocuSigned by: James A. Byrd 12/10/2015

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

-L1-
PI Sta 16+28.71
△ = 5° 22' 55.1" (LT)
D = 0° 57' 17.7"
L = 563.60'
T = 282.01'
R = 6,000.00'
DS = 50MPH

-L2-
PI Sta 12+62.53
△ = 11° 06' 26.1" (LT)
D = 2° 07' 19.4"
L = 523.42'
T = 262.53'
R = 2,700.00'
DS = 25MPH

-C1-
PI Sta 10+00.00
△ = 359° 59' 55.7" (LT)
D = 119° 21' 58.3"
L = 301.59'
T = 0.00'
R = 48.00'
DS < 15MPH

-L3-
PI Sta 11+58.85
△ = 20° 44' 28.2" (LT)
D = 6° 36' 03.2"
L = 314.22'
T = 158.85'
R = 868.00'
DS < 15MPH

PI Sta 15+16.14
△ = 6° 03' 06.9" (RT)
D = 1° 29' 59.9"
L = 403.47'
T = 201.92'
R = 3,819.77'
DS = 35MPH

END CONSTRUCTION
END MILLING AND RESURFACING
-L2- STA 17+00.00

-L2- PT Sta. 15+23.42

END PROJECT TIP W-5203J
BEGIN MILLING AND RESURFACING
-L2- STA. 15+00.00

-L2- I N 18° 23' 57.0" E

BM 1 ELEVATION = 10.08'
N 138175 E 2328428
-BL- STATION 19+68 13.5' LT.
RR SPIKE IN BASE OF 15" PINE

NAD 83/NA 2011

1 AFTEW PROPERTIES, LLC.
DB 1619 PG 1202
DB 5508 PG 358

1 AFTEW PROPERTIES, LLC.
DB 3497 PG 245
MB 53 PG 269-271

-L2- STA 10+48.00 =
-C1- STA 11+72.61

-L1- PC Sta. 13+46.71

BEGIN PROJECT TIP W-5203J
-L1- STA.13+00.00

ISABELLA HOLDING COMPANY, LLC.
DB 5700 PG 2553
MB 53 PG 118

N 60°11'02" E
990.54

S 35°17'17" E
1600.00'

-L1- 12+00

-L1- STA 18+62.30 =
-C1- STA 10+00.00

-BL- (GPS2) PINC 15+58.23
-BY- (GPS2) PINC 5+00.00

-L1- PT Sta. 19+10.30
-L2- PC Sta. 10+00.00
-L3- PC Sta. 10+00.00

-L3- STA 11+19.57 =
-C1- STA 11+19.57

-L3- PRC Sta. 13+14.22

END CONSTRUCTION
-L3- POC STA.15+00.00

-L3- PT Sta. 17+17.68

N 60° 11' 01.8" E

BEAU RIVAGE GOLF & RESORT, LLC.
DB 4997 PG 2939
MB 38 PG 55-59

AQUA NORTH CAROLINA, INC.
DB 4215 PG 379
DB 4215 PG 384
DB 2576 PG 454
MB 38 PG 180
MB 48 PG 287

EARLY T. BROADWAY, ET AL
DB 1514 PG 1346
MB 48 PG 287

JEFFREY C. LANPHEAR
DB 1457 PG 1377
MB 48 PG 287

BOBBY J. HARRIS
DB 1816 PG 205
MB 48 PG 287

JOHN E. SHEEHAN
DB 3447 PG 180
MB 48 PG 287

SCOTT L. BURGE, ET UX
DB 5074 PG 1862
MB 48 PG 287

LAURIE L. PITTMAN
DB 1399 PG 1615
MB 48 PG 287

GAIL R. BINNI
DB 5352 PG 312
MB 48 PG 287

KEELEY M. KOLLMAN, ET AL
DB 5719 PG 2228
MB 48 PG 287

VARIABLE WIDTH BASE DITCH SEE DETAIL B
S = 0.3%
DDE = 15 CY

STANDARD 'V' DITCH SEE DETAIL A
EST. 2 TONS
EST. 7 SY GEO.
S = 0.3%
DDE = 5 CY

CLASS 'B' RIP-RAP
EST. 5 TONS
EST. 14 SY GEO.

5" MONOLITHIC ISLAND SURFACE MOUNTED

5" MONOLITHIC ISLAND

17' MOUNTABLE CONCRETE APRON SEE APRON DETAIL NO.1 ON SHEET 2A-2

SEE APRON DETAIL NO.2 ON SHEET 2A-2

TRANSITION 1'-6" CURB TO 2'-6" C&G

1'-6" CURB WITH GRASS MEDIAN

2'-6" CURB AND GUTTER

TENNIS COURT

LANDSCAPED AREA

POOL HOUSE

BLOW OFF VALVE

REPEATER BOX

CPES

2GI-B

2GI-D

CB-E

CB-F

CB-G

15" RCP-IV

18" RCP-III

24" RCP-III

SRI

4' SPLIT RAIL

10' UNKNOWN

20' INC.

72" WD (PRIVACY)

SANDERS ROAD SR 1182 20' BST

RIVER ROAD SR 1100 28' BST

8" PVC

IN CONDUIT

TBDI

S 29°48'53" E
82.34'

S 55°19'25" E
114.29'

S 17°55'01" E
161.34'

N 56°11'01" E
151.02'

S 22°09'32" E
84.38'

S 35°39'57" E
203.65'

S 25°32'36" E
200.86'

S 25°32'40" E
197.67'

S 25°32'20" E
180.47'

S 25°32'20" E
185.17'

S 25°27'48" E
164.70'

S 25°28'41" E
164.28'

S 25°35'13" E
121.18'

S 25°28'10" E
0.61'

S 25°32'40" E
263.60'

S 27°37'17" E
85.89'

N 64°32'59" E
59.93'

N 64°32'59" E
81.34'

N 64°32'59" E
80.59'

N 64°32'59" E
80.03'

N 64°32'59" E
117.28'

N 64°32'59" E
100.82'

N 64°32'59" E
120.05'

N 64°31'39" E
263.60'

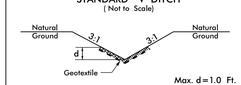
S 25°30'53" E
30.02'

INSCRIBED CIRCLE DIAMETER = 132'
TRAVERSABLE APRON WIDTH = 17'
CENTRAL ISLAND DIAMETER = 96'
CIRCULAR ROADWAY WIDTH = 18'

DATUM DESCRIPTION

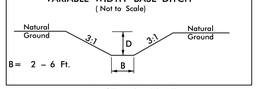
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 137787.3630(ft) EASTING: 2328295.0240(ft)
ELEVATION: 17.52(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000069266
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS2" TO -EL- STATION 5+00.00 IS
S 60° 07' 28.40" W DISTANCE 860.88"
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DETAIL A
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= Class 'B' Rip-Rap
-L1- STA. 16+00 LT

DETAIL B
VARIABLE WIDTH BASE DITCH
(Not to Scale)



-L1- STA. 18+28 LT

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	5

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER
DocuSigned by: W. Craig Parker 12/9/2015

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A. BYRD
DocuSigned by: James A. Byrd 12/10/2015

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5/28/99

–L1–

BEGIN GRADE
–L1– STA 13+00.00
EL. 20.39'

PI = 13+50.00
EL = 20.40'
VC = 96'
K = 145
DS = 55MPH

(+)0.0239%
(–)0.6375%

PI = 17+50.00
EL = 17.85'
VC = 100'
K = 634
DS >> 80MPH

END GRADE
–L1– STA 18+44.30
EL. 17.10'

(–)0.6375%
(–)0.7953%

15" RCP–IV
15" RCP–IV

NOTE: FOR –L1– PLAN SEE SHEET 4

30 20 10 0 –10

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00

BM 1 ELEVATION = 10.08'
N 138175 E 2328428
–BL– STATION 19+68 13.5' LT.
RR SPIKE IN BASE OF 15" PINE

–L2–

BEGIN GRADE
–L2– STA 10+66.00
EL. 16.73'

PI = 13+00.00
EL = 11.60'
VC = 200'
K = 110
DS = 50MPH

PI = 14+50.00
EL = 11.05'
VC = 100'
K = 283
DS = 70MPH

END GRADE
–L2– STA 15+00.00
EL. 10.69'

(–)2.1923%
(–)2.1923%
(–)0.3667%
(–)0.3667%
(–)0.7200%

15" RCP–IV
15" RCP–IV

NOTE: FOR –L2– PLAN SEE SHEETS 4

30 20 10 0 –10

10+00 11+00 12+00 13+00 14+00 15+00

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PROJECT REFERENCE NO.	SHEET NO.
W-5203J	6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 25474 ENGINEER W. CRAIG PARKER

DocuSigned by: W. Craig Parker 12/9/2019

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 15764 ENGINEER JAMES A BYRD

DocuSigned by: James A. Byrd 12/10/2019

697AB...

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–L3–

BEGIN GRADE
–L3– STA 10+66.02
EL.17.6'

PI = 13+00.00
EL = 24.50'
VC = 300'
K = 133
DS = 55MPH

END GRADE
–L3– STA 15+00.00
EL.25.88

(+)2.9449%

(+)0.6900%

(+)2.9449%

NOTE: FOR –L1– PLAN SEE SHEET 4

–SR1–

BEGIN GRADE
–SR1– STA 10+00.00
EL.19.98'

PI = 10+50.00
EL = 18.66'
VC = 100'
K = 49
DS = 35MPH

END GRADE
–SR1– STA 13+15.00
EL.17.10'

(–)2.6442%

(–)0.5872%

17.10

NOTE: FOR –L2– PLAN SEE SHEETS 4

–C1–

BEGIN GRADE
–C1– STA 10+00.00
EL.17.46'

PI = 10+71.00
EL = 18.88'
VC = 130'
K = 34
DS = 35MPH

PI = 12+31.00
EL = 16.05'
VC = 130'
K = 34
DS = 25MPH

END GRADE
–C1– STA 13+01.59
EL.17.46'

(+)2.0000%

(–)1.7699%

(–)1.7699%

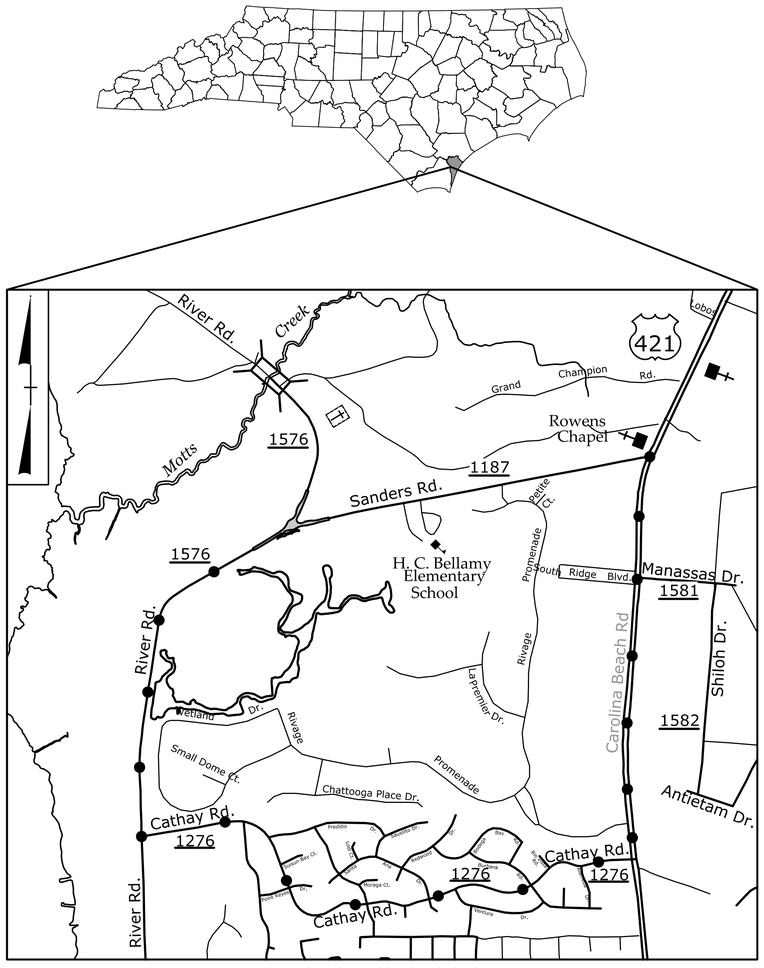
(+)2.0000%

NOTE: FOR –L2– PLAN SEE SHEETS 4

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

NEW HANOVER COUNTY



LOCATION: INTERSECTION OF SR 1187 (SANDERS RD.) AND SR 1576 (RIVER RD.)

INDEX OF SHEETS

SHEET NO.	TITLE
TMP-1	TITLE SHEET AND INDEX OF SHEETS
TMP-1A	LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, LEGEND, AND TEMPORARY PAVEMENT MARKING
TMP-2	GENERAL NOTES
TMP-2A	DETOUR DETAIL
TMP-2B	SIGN DESIGNS
TMP-3	PHASING & LOCAL NOTES
TMP-4	PHASE I DETAIL
TMP-5	PHASE I CUT SECTIONS
TMP-6	PHASE II DETAIL
TMP-7	PHASE II CUT SECTIONS
TMP-8	PHASE III DETAIL
TMP-9	PHASE III CUT SECTIONS

SHEET NO.
TMP–1

W–5203J

TIP PROJECT:

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

R. B. EARLY, PE — *TRAFFIC CONTROL PROJECT ENGINEER*

R. B. EARLY, PE — *TRAFFIC CONTROL PROJECT DESIGN ENGINEER*

J. A. PHILLIPS — *TRAFFIC CONTROL DESIGN ENGINEER*

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Rhonda B. Early
DATE: 12/11/2019

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

KATHERINE HITE, P.E. *DIVISION TRAFFIC ENGINEER*

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

REVISIONS

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CONCUR:
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VERIFY:

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8/17/99

REVISIONS

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 JANAUARY 2012 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
1101.03	TEMPORARY ROAD 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
1130.01	DRUM
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 MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

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PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-1A

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL
- ONGOING CONSTRUCTION
- WEDGE / WIDEN (USING LANE CLOSURES)
- TEMPORARY PAVEMENT

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TUBULAR MARKER
- TEMPORARY CRASH CUSHION
- FLASHING ARROW PANEL (TYPE C)
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED IMPACT ATTENUATOR (TMIA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY (TEMP)

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKERS

- CRYSTAL/CRYSTAL
- CRYSTAL/RED
- YELLOW/YELLOW

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

TEMPORARY PAVEMENT MARKING

SYMBOL	DESCRIPTION	PAY ITEM
	PAVEMENT MARKING LINES	
		PAINT (4")
P8	2 FT - 6 FT SP WHITE MINISKIP	
PA	WHITE EDGE LINE	
PB	YELLOW EDGE LINE	
PI	YELLOW DOUBLE CENTER LINE	
		PAINT (8")
PN	WHITE GORE LINE	
		PAINT (12")
P10	3 FT - 3 FT SP WHITE MINISKIP	

NOTE: FOR EACH PAINT PAVEMENT MARKING ITEM, REFER TO GENERAL NOTE (V) FOR NUMBER OF APPLICATIONS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

ROADWAY STANDARD DRAWINGS & LEGENDS

8/17/99

REVISIONS

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-2

GENERAL NOTES

CHANGES MAY BE REQUIRED WHEN PHYSICAL DIMENSIONS 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.

TIME RESTRICTIONS

A) DO NOT CLOSE OR NARROW TRAVEL LANES AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS
RIVER RD (SR 1576)	MONDAY THRU FRIDAY WHILE SCHOOL IS NOT IN SESSION JUNE 10, 2016 TO AUGUST 28, 2016 7:00 AM - 9:00 AM & 4:00 PM - 6:00 PM
RIVER RD (SR 1576) SANDERS RD (SR 1187)	MONDAY THRU FRIDAY DURING TRADITIONAL SCHOOL YEAR 7:00 AM - 9:00 AM & 2:00 PM - 6:00 PM

B) DO NOT CLOSE OR NARROW TRAVEL LANES DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME
RIVER RD (SR 1576) SANDERS RD (SR 1187)

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 7:00 A.M. DECEMBER 31ST TO 6:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN UNTIL 6:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 7:00 A.M. THURSDAY AND 6:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY TO 6:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 7:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 7:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 6:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 7:00 A.M. FRIDAY TO 6:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 A.M. TUESDAY TO 6:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 6:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

C) DO NOT STOP TRAFFIC AS FOLLOWS:

ROAD NAME	DAY AND TIME RESTRICTIONS	DURATION AND OPERATION
RIVER RD (SR 1576) SANDERS RD (SR 1187)	MONDAY-FRIDAY 7:00 AM - 9:00 AM & 2:00 PM - 6:00 PM	15 MINUTE INCREMENTS FOR TRAFFIC SHIFTS

D) DO NOT CONDUCT ANY HAULING OPERATIONS AGAINST THE FLOW OF TRAFFIC OF AN OPEN TRAVELWAY UNLESS THE HAULING OPERATION IS PROTECTED BY BARRIER OR GUARDRAIL OR AS DIRECTED BY THE ENGINEER.

LANE CLOSURE REQUIREMENTS

E) 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.

F) 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.

G) 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.

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

I) 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

J) BACKFILL AT A 6:1 SLOPE UP TO THE EDGE AND ELEVATION OF EXISTING PAVEMENT IN AREAS ADJACENT TO AN OPENED TRAVEL LANE THAT HAS AN EDGE OF PAVEMENT 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.

K) 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) 350' IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

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

SIGNING

M) INSTALL ADVANCE WORK ZONE WARNING SIGNS WHEN WORK IS WITHIN 40 FT FROM THE EDGE OF TRAVEL LANE AND NO MORE THAN THREE (3) DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.

N) PROVIDE SIGNING AND DEVICES REQUIRED TO CLOSE THE ROAD ACCORDING TO THE ROADWAY STANDARD DRAWINGS AND TRAFFIC CONTROL PLANS.

   PROVIDE SIGNING REQUIRED FOR THE OFF-SITE DETOUR ROUTE AS SHOWN IN THE TRAFFIC CONTROL PLANS.

O) COVER OR REMOVE ALL SIGNS AND DEVICES REQUIRED TO CLOSE THE ROAD WHEN ROAD CLOSURE IS NOT IN OPERATION.

   COVER OR REMOVE ALL SIGNS REQUIRED FOR THE OFF-SITE DETOUR WHEN THE DETOUR IS NOT IN OPERATION.

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

Q) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 350' IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

R) WHEN LANE CLOSURES ARE NOT IN EFFECT SPACE CHANNELIZING DEVICES IN WORK AREAS NO GREATER IN FEET THAN TWICE THE POSTED SPEED LIMIT (MPH), EXCEPT 10 FT ON-CENTER IN RADII, AND 3 FT OFF THE EDGE OF AN OPENED TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES), AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

T) PLACE ADDITIONAL SETS OF THREE CHANNELIZING DEVICES (DRUMS) PERPENDICULAR TO THE EDGE OF THE TRAVELWAY ON 500 FT CENTERS WHEN UNOPENED LANES ARE CLOSED TO TRAFFIC.

PAVEMENT MARKINGS AND MARKERS

U) INSTALL TEMPORARY PAVEMENT MARKINGS AND TEMPORARY PAVEMENT MARKERS ON INTERIM LAYERS OF PAVEMENT AS FOLLOWS:

ROAD NAME	MARKING	MARKER
ALL ROADS	PAINT	NONE

V) PLACE ONE APPLICATION OF PAINT FOR TEMPORARY TRAFFIC PATTERNS. PLACE A SECOND APPLICATION OF PAINT SIX (6) MONTHS AFTER THE INITIAL APPLICATION AND EVERY SIX MONTHS AS DIRECTED BY THE ENGINEER.

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

X) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

Y) TRACE THE PROPOSED MONOLITHIC ISLAND LOCATIONS WITH PROPER COLOR PAVEMENT MARKINGS PRIOR TO INSTALLATION. PLACE DRUMS TO DELINEATE ANY PROPOSED MONOLITHIC ISLANDS BEFORE INSTALLATION.

MISCELLANEOUS

Z) IN THE EVENT A TIE-IN CANNOT BE MADE IN ONE DAYS TIME, BRING THE TIE-IN AREA TO AN APPROPRIATE ROADWAY ELEVATION, AS DETERMINED BY THE ENGINEER. PLACE BLACK ON ORANGE "LOOSE GRAVEL" SIGNS (W8-7) AND BLACK ON ORANGE "PAVEMENT ENDS" SIGNS (W8-3) 350 FT AND 700 FT RESPECTIVELY IN ADVANCE OF THE UNEVEN AREAS. USE DRUMS TO DELINEATE THE EDGE OF ROADWAY ALONG UNPAVED AREAS.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

GENERAL NOTES

QA/QC STAGE:
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CONCUR:
REVISE:
VERIFY:

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-2A

8/17/99

REVISIONS

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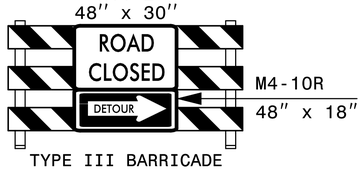
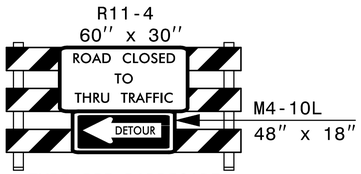


TYPE III BARRICADE

Ⓑ

TYPE III BARRICADE

Ⓒ



TYPE III BARRICADE

Ⓓ

MESSAGE NO. 1	MESSAGE NO. 2
SANDERS ROAD CLOSED	DETOUR NEXT RIGHT

CHANGEABLE MESSAGE SIGN

Ⓔ

MESSAGE NO. 1	MESSAGE NO. 2
TO RIVER ROAD	DETOUR NEXT LEFT

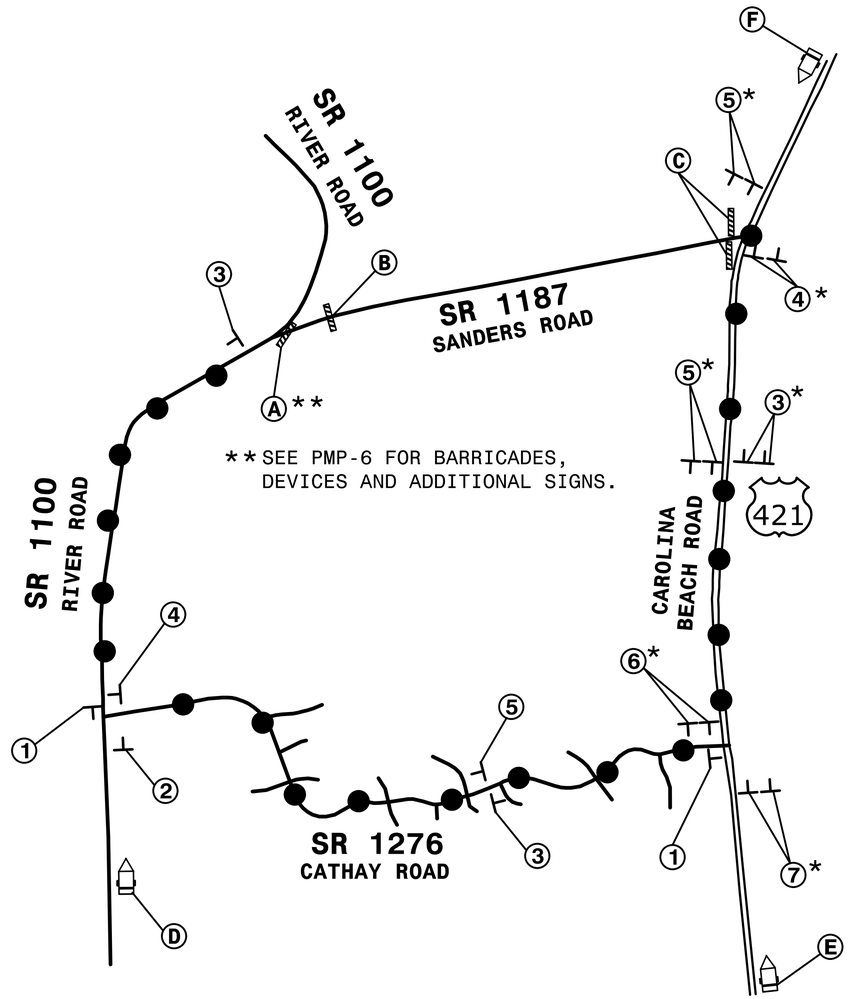
CHANGEABLE MESSAGE SIGN

Ⓕ

MESSAGE NO. 1	MESSAGE NO. 2
TO RIVER ROAD	FOLLOW DETOUR ROUTE

CHANGEABLE MESSAGE SIGN

SUPPLEMENT DETOUR DETAIL WITH SIGNS AND DEVICES AS SHOWN ON RSD 1101.03 (SHEET 1 OF 9).



** SEE PMP-6 FOR BARRICADES, DEVICES AND ADDITIONAL SIGNS.

* PLACE SIGNS ON LEFT AND RIGHT SIDE ALONG DIVIDED MULTILANE ROADS.

① SANDERS RD SP-1

DETOUR M4-8 24″ X 12″

M6-1 L 21″ X 15″

② SANDERS RD SP-1

DETOUR M4-8 24″ X 12″

M6-1 21″ X 15″

③ SANDERS RD SP-1

DETOUR M4-8 24″ X 12″

M6-3 21″ X 15″

④ END DETOUR M4-8 A 24″ X 18″

⑤ RIVER RD SP-2

DETOUR M4-8 24″ X 12″

M6-3 21″ X 15″

⑥ RIVER RD SP-2

DETOUR M4-8 24″ X 12″

M6-1 21″ X 15″

⑦ RIVER RD SP-2

DETOUR M4-8 24″ X 12″

M6-1 L 21″ X 15″

REFER TO SHEET TMP-2B FOR SIGN DESIGN.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

DETOUR DETAIL

QA/QC STAGE:

REVIEW:
CONCUR:
REVISE:
VERIFY:

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8/17/99

REVISIONS

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343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-2B

SIGN NUMBER: SP-1
TYPE: D
QUANTITY: 7
SIGN WIDTH: 4′-6″
HEIGHT: 1′-0″
TOTAL AREA: 4.5 Sq.Ft.
BORDER TYPE: RECESSED
RECESS: 0.38″
WIDTH: 0.38″
RADII: 1.5″
NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

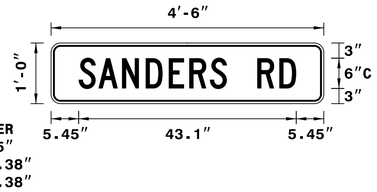
SYMBOL	X	Y	WID	HT

MAT'L: 0.125″ ALUMINUM

NOTES:

1. Legend and border should be direct applied, black, non-reflective sheeting.
2. Background shall be Grade B, fluorescent orange, retroreflective sheeting.
3. To be mounted with Detour signing.

DESIGN BY: TRT
PROJECT ID: W-5203J
CHECKED BY: ADK
DIV: 03
DATE: Feburary 2014



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	S	A	N	D	E	R	S		R	D																Series/Size Text Length C 2000
5.5	3.9	4.7	4.7	4.6	4.1	4.1	3.4	6	4.4	3.4	5.5															43.1

SIGN NUMBER: SP-2
TYPE: D
QUANTITY: 9
SIGN WIDTH: 3′-6″
HEIGHT: 1′-0″
TOTAL AREA: 3.5 Sq.Ft.
BORDER TYPE: FLUSH
RECESS: 0.38″
WIDTH: 0.38″
RADII: 1.5″
NO. Z BARS:
LENGTH:

BACKG COLOR: Fluorescent Orange
COPY COLOR: Black

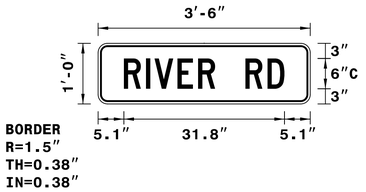
SYMBOL	X	Y	WID	HT

MAT'L: 0.125″ ALUMINUM

NOTES:

1. Legend and border should be direct applied, black, non-reflective sheeting.
2. Background shall be Grade B, fluorescent orange, retroreflective sheeting.
3. To be mounted with Detour signing.

DESIGN BY: TRT
PROJECT ID: W-5203J
CHECKED BY: ADK
DIV: 03
DATE: March 2014



Spacing Factor is 1 unless specified otherwise

LETTER POSITIONS

Letter spacings are to start of next letter

	R	I	V	E	R		R	D																		Series/Size Text Length C 2000
5.1	4.4	1.7	4.6	4.1	3.4	6	4.4	3.4	5.1																	31.8

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APPROVED: Docusigned by: Andrew D. Klinksiek
E3D78FB4596E44B...
DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK

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

TRANSPORTATION MANAGEMENT PLAN

SIGN DESIGNS

8/17/99

REVISIONS

PHASING

NOTES:

REPLACE MARKINGS AND RETURN TRAFFIC TO THE CURRENT TRAFFIC PATTERN AT THE END OF EACH WORK PERIOD UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

MAINTAIN VEHICULAR ACCESS TO ALL RESIDENCES AND BUSINESSES DURING THE LIFE OF THE CONTRACT UNLESS OTHERWISE NOTED IN THE PHASING OR DIRECTED BY THE ENGINEER.

COMPLETE ANY PROPOSED WIDENING IN SUCH A MANNER THAT PONDING OF WATER WILL NOT OCCUR IN THE TRAVEL LANE. THIS MAY REQUIRE WEDGING &/OR MILLING AND A COMBINATION OF INSTALLATION OF PROPOSED PIPES, TEMPORARY PIPES, STEEL PLATES, AND TEMPORARY MEDIAN AND OUTSIDE DITCHES.

PAVE PROPOSED CONSTRUCTION, UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE, IN ALL PHASES UNTIL STATED TO INSTALL FINAL LAYER IN THE PHASING.

THE TERM "RSD" DENOTES ROADWAY STANDARD DRAWING.

PHASE I

*** REFER TO SHEET TMP-4 FOR DETAIL ***

STEP 1: USING RSD 1101.02 (SHEETS 1 OF 15), CONSTRUCT PROPOSED WIDENING ALONG LEFT SIDE AND WEDGE EXISTING AS NEEDED UP TO BUT NOT INCLUDING FINAL LAYER OF SURFACE COURSE FROM -L1- STA 13+00+/- TO -L2- STA 15+00+/-. (LN-2)

USING RSD 1101.02 (SHEETS 1 OF 15), MILL EXISTING PAVEMENT TO ALLOW FOR FINAL LAYER OF SURFACE COURSE (PLACED IN PHASE III) FROM -L1- STA 13+00+/- TO STA 13+90+/- AND -L2- FROM STA 14+80+/- TO STA 17+00+/-.

USING RSD 1101.02 (SHEETS 1 OF 15), CONSTRUCT TEMPORARY PAVEMENT MATCHING EDGE, ELEVATION AND SLOPE OF PROPOSED WIDENING IN THE FOLLOWING LOCATIONS:
* -L1- FROM STA 14+96+/- TO STA 18+61+/- (LEFT) (LN-2)
* -L2- FROM STA 10+38+/- TO STA 12+03+/- (LEFT) (LN-2)
* -L2- FROM STA 13+13+/- TO STA 17+00+/- (LEFT)

STEP 2: INSTALL AND COVER DETOUR SIGNING AS SHOWN ON SHEET TMP-2A. (LN-4)

STEP 3: PLACE PAVEMENT MARKING AND SIGNS ON -L1- AND -L2- AS SHOWN ON SHEET TMP-6 AND SHIFT TRAFFIC TO NEW PATTERN. USE DRUMS TO KEEP UNOPENED LANES CLOSED TO TRAFFIC. (LN-2, LN-3, LN-4)

PHASE II

*** REFER TO SHEET TMP-6 FOR DETAIL ***

COMPLETE THE REQUIREMENTS OF PHASE II, STEPS 1 THRU 3 IN 30 CONSECUTIVE CALENDAR DAYS BETWEEN JUNE 10, 2016 AND AUG 28, 2016. (SEE INTERMEDIATE CONTRACT TIME AND LIQUIDATED DAMAGES.)

STEP 1: UNCOVER DETOUR SIGNS PLACED IN PHASE I, STEP 2 AND CLOSE -L3- TO TRAFFIC. USE DRUMS AND BARRICADES AS NEEDED TO MAINTAIN ACCESS TO ALL DRIVEWAYS. (LN-4)

STEP 2: AWAY FROM TRAFFIC, CONSTRUCT AS MUCH AS POSSIBLE OF THE FOLLOWING:
* -L3- FROM -L1- TO STA 15+00+/- (MAINTAIN ACCESS TO DRIVES) (LN-1)
* ROUNDABOUT (EAST SIDE)
* -SRV1- (MAINTAIN ACCESS TO DRIVES) (LN-1)
* -L2- FROM -L3- TO STA 12+50+/-

USING RSD 1101.02 (SHEETS 1 OF 15), CONSTRUCT -L1- & -L2- RIGHT SIDE WIDENING INCLUDING -L2- 12+50+/- TO 15+00+/- (RT).

STEP 3: PLACE PAVEMENT MARKING ON -L1-, -L2- AND -L3- AS SHOWN ON SHEET TMP-8, REMOVE ANY CONFLICTING PAVEMENT MARKING & SYMBOLS, SHIFT TRAFFIC AND OPEN -L3- TO TRAFFIC. REMOVE DETOUR SIGNS. USE DRUMS TO CHANNELIZE TRAFFIC AROUND ROUNDABOUT. (LN-3, LN-5)

PHASE III

*** REFER TO SHEET TMP-8 FOR DETAIL ***

STEP 1: USING RSD 1101.02 (SHEET 1 OF 15) AND DRUMS TO NARROW LANES AS NEEDED, REMOVE TEMPORARY PAVEMENT PLACED IN PHASE I, STEP 1.

STEP 2: USING RSD 1101.02 (SHEET 1 OF 15) AND DRUMS TO NARROW LANES AS NEEDED, CONSTRUCT PROPOSED CURB AND GUTTER ALONG LEFT SIDE OF -L1- AND -L2-.

STEP 3: USING RSD 1101.02 (SHEET 1 OF 15) AND DRUMS TO NARROW LANES AS NEEDED, BEGIN CONSTRUCTION OF THE FOLLOWING:
* -L1- ISLANDS
* -L2- ISLAND
* REMAINING ROUNDABOUT ISLAND AND APRON

COMPLETE ISLAND WORK BEGUN IN PHASE III, STEP 1.

STEP 4: PLACE FINAL LAYER OF ASPHALT, TEMPORARY PAVEMENT MARKING IN FINAL PATTERN AS SHOWN IN FINAL PAVEMENT MARKING PLANS.

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PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-3

LOCAL NOTES

LN-1 SPECIAL ATTENTION MAY BE NECESSARY TO PROVIDE TEMPORARY DRIVEWAY ACCESS TO PROPERTIES IN THIS AREA.

LN-2 USE TEMPORARY STEEL PLATES TO COVER DRAINAGE STRUCTURES DURING PHASE II.

LN-3 USE CMS BOARDS WITH MESSAGE "NEW TRAFFIC PATTERN" (OR AS DIRECTED BY ENGINEER) TO WARN MOTORIST OF NEW PATTERNS FOR A PERIOD OF 30 DAYS.

LN-4 USE CMS BOARDS TO WARN MOTORIST OF ROAD CLOSURE TWO (2) WEEKS IN ADVANCE OF CLOSURE. RELOCATE CMS BOARDS AS SHOWN ON DETOUR DETAIL TMP-2A OR AS DIRECTED BY THE ENGINEER.

LN-5 PLACE SIGNS ACCORDING TO SIGNING PLANS PRIOR TO SHIFTING TRAFFIC TO ROUNDABOUT PATTERN SHOWN IN PHASE III. USE TEMPORARY SIGNS (AS SHOWN ON TMP-8) FOR SIGNS THAT ARE LOCATED IN THE AREA OF CONSTRUCTION.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/14/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASING & LOCAL NOTES

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PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-4

8/17/99

REVISIONS

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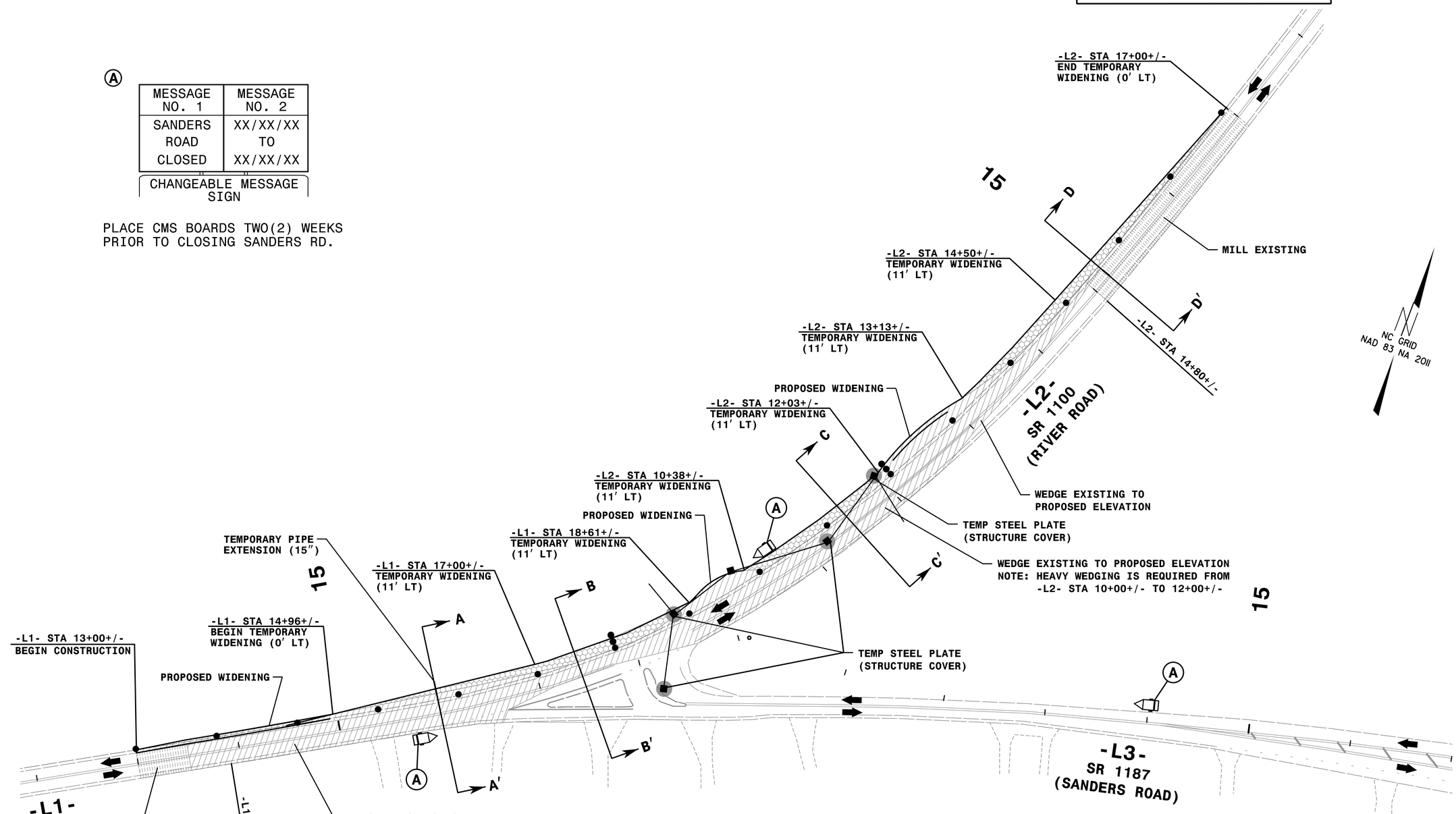
MESSAGE NO. 1	MESSAGE NO. 2
SANDERS ROAD CLOSED	XX/XX/XX TO XX/XX/XX

CHANGEABLE MESSAGE SIGN

PLACE CMS BOARDS TWO(2) WEEKS PRIOR TO CLOSING SANDERS RD.



REFER TO SHEET TMP-5 FOR CUT SECTIONS.

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APPROVED
Digitally signed by: Rhonda B. Early
F34CAF5AC6BF48A...
DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASE I DETAIL

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REVISIONS

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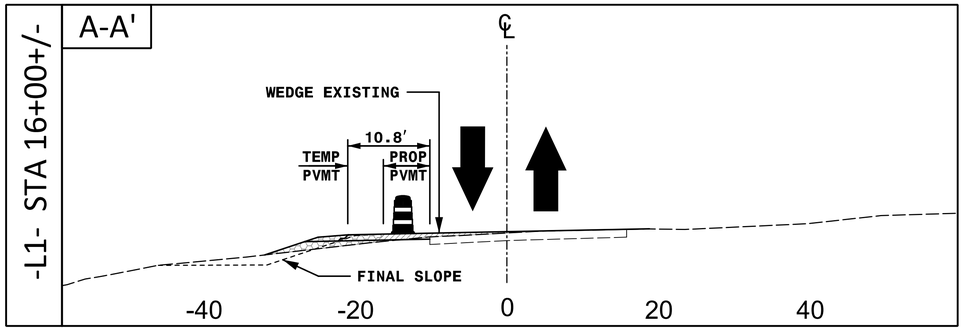
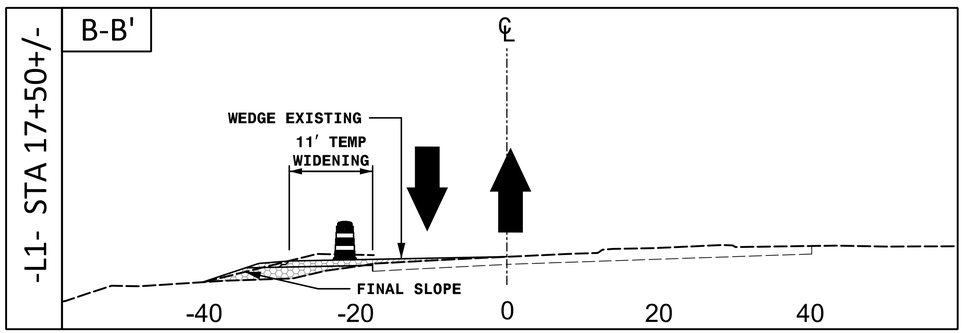
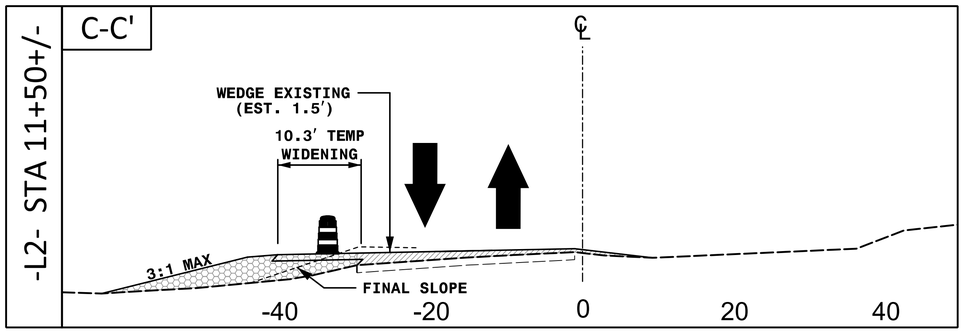
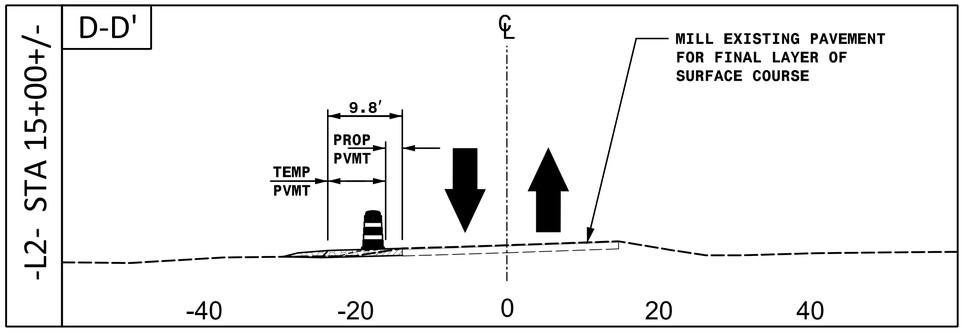
NC License No: C-1554

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-5









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APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASE I CUT SECTIONS

8/17/99

REVISIONS

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SEE SHEET TMP-2A FOR DETOUR DETAIL

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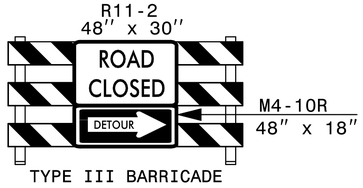

TYPE III BARRICADE

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TYPE III BARRICADE

*PROVIDE ACCESS TO PROPERTIES AT ALL TIMES.

PROVIDE ACCESS TO PROPERTIES AT ALL TIMES.

REFER TO SHEET TMP-7 FOR CUT SECTIONS.

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PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-6

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APPROVED
Signed by:
Rhonda B. Early
F34CAF5AC6BF48A...

DATE:
12/11/2015

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

TRANSPORTATION MANAGEMENT PLAN

PHASE II DETAIL

8/17/99

REVISIONS

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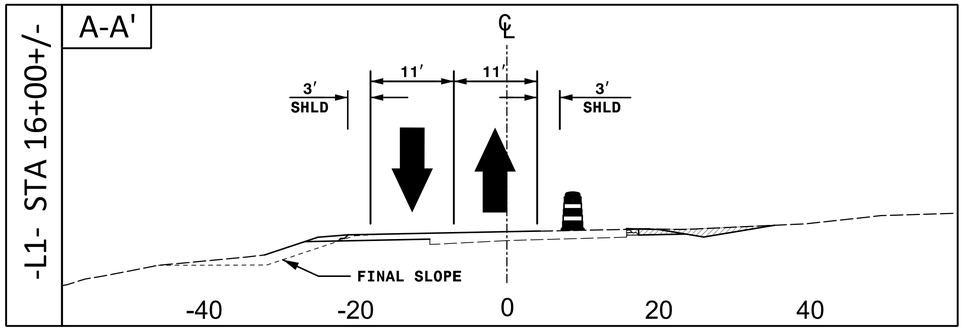
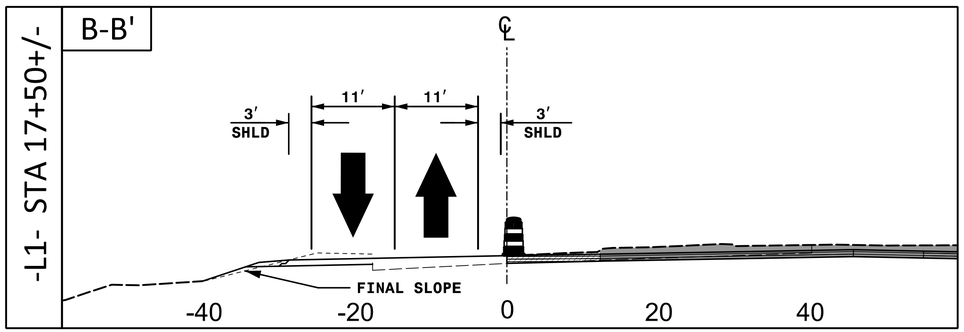
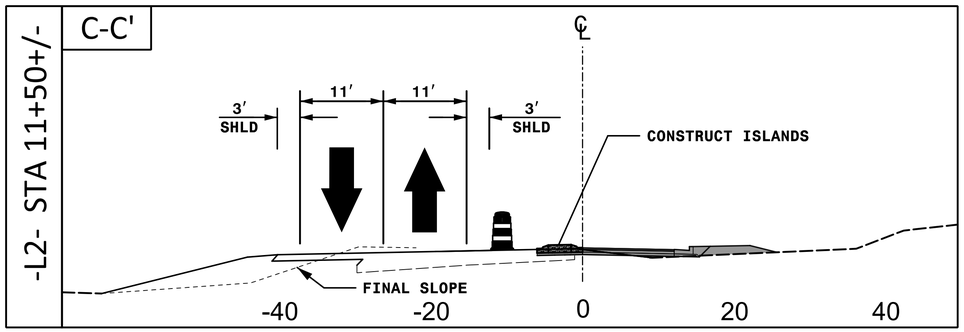
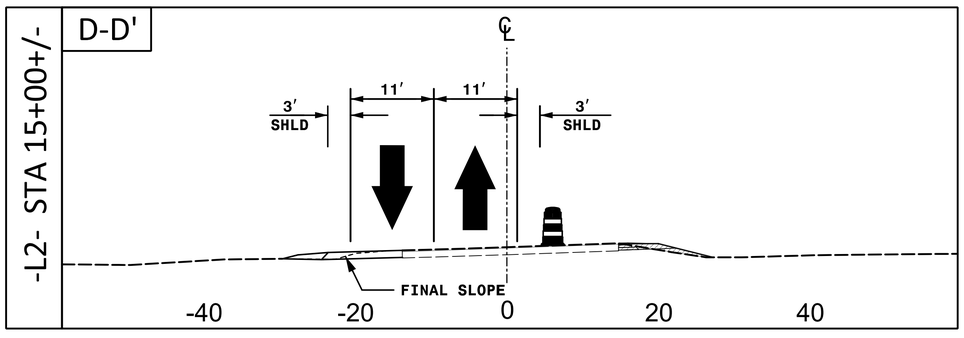
PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-7









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APPROVED: Digitally signed by: Rhonda B. Early
F34CAF5AC6BF48A...
DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASE II CUT SECTIONS

8/17/99

REVISIONS

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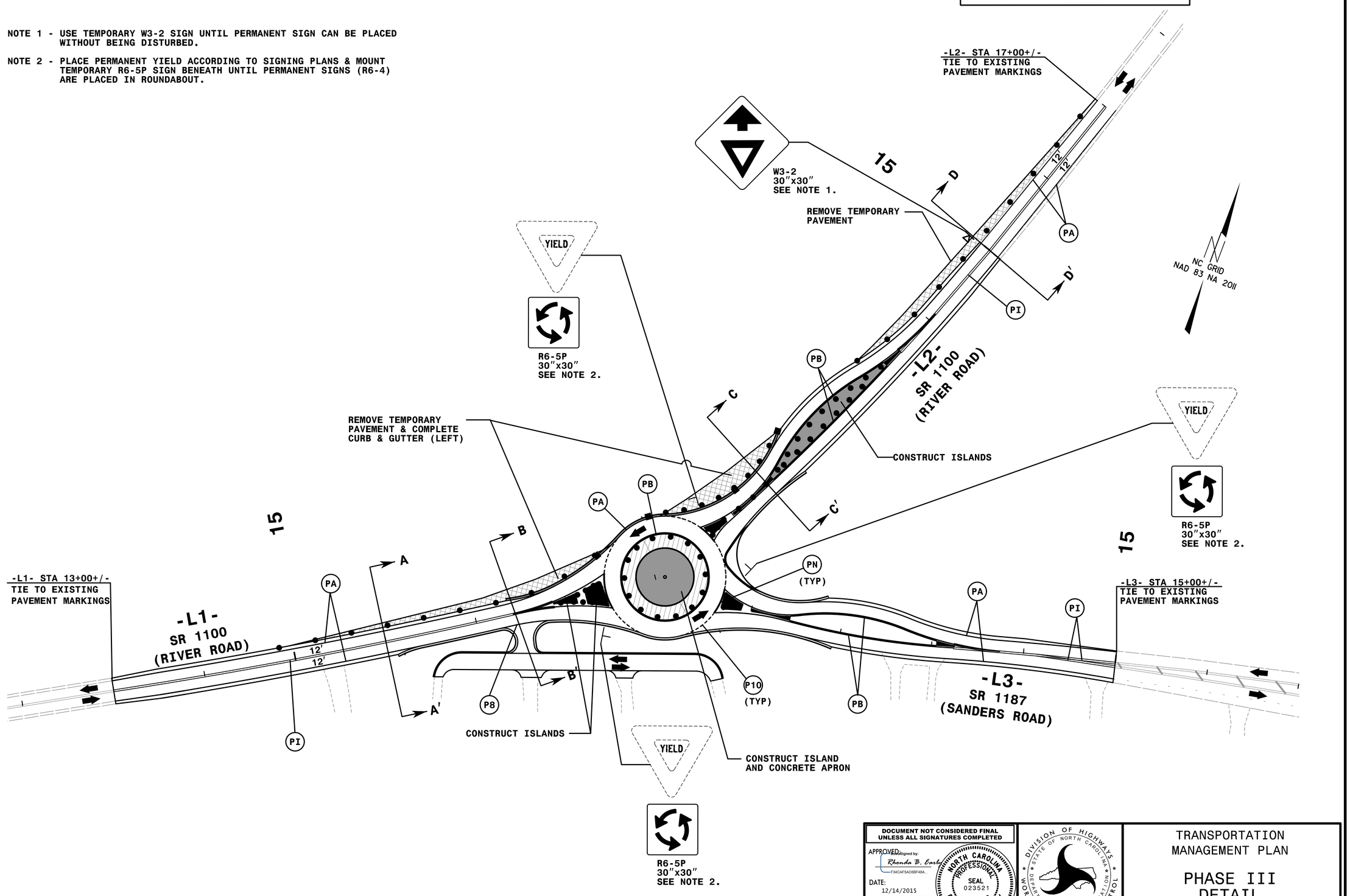
		W-5203J	TMP-8

NOTE 1 - USE TEMPORARY W3-2 SIGN UNTIL PERMANENT SIGN CAN BE PLACED WITHOUT BEING DISTURBED.

NOTE 2 - PLACE PERMANENT YIELD ACCORDING TO SIGNING PLANS & MOUNT TEMPORARY R6-5P SIGN BENEATH UNTIL PERMANENT SIGNS (R6-4) ARE PLACED IN ROUNDABOUT.



REFER TO SHEET TMP-9 FOR CUT SECTIONS.

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APPROVED: Signed by: Rhonda B. Early F34CAF5AC0BF48A...

DATE: 12/14/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASE III DETAIL

QA/QC STAGE:

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REVISIONS

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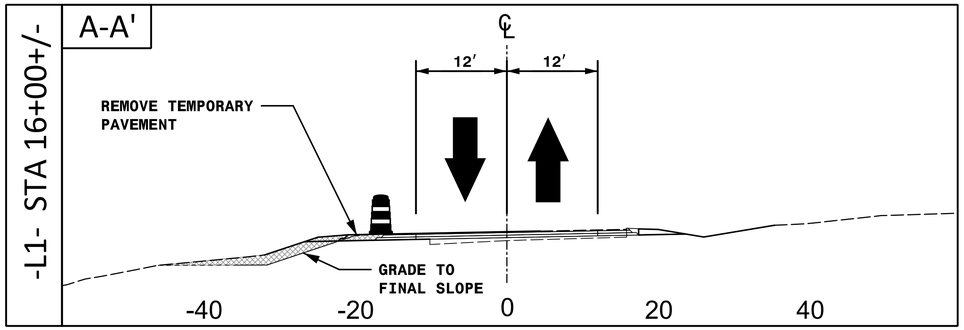
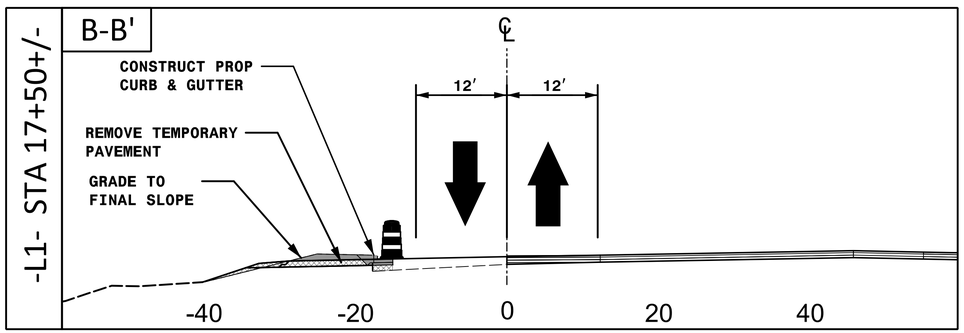
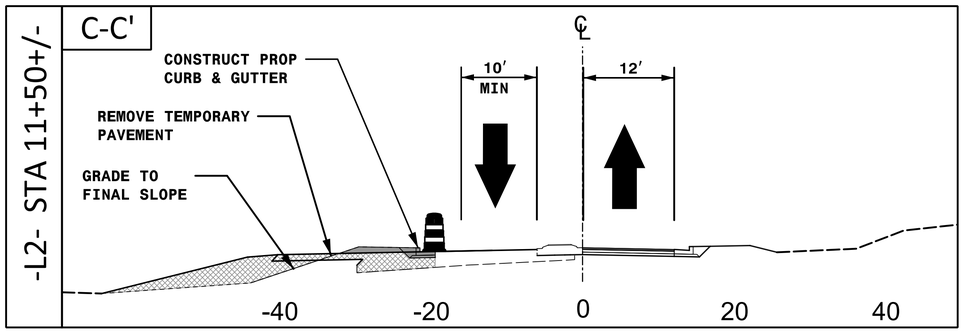
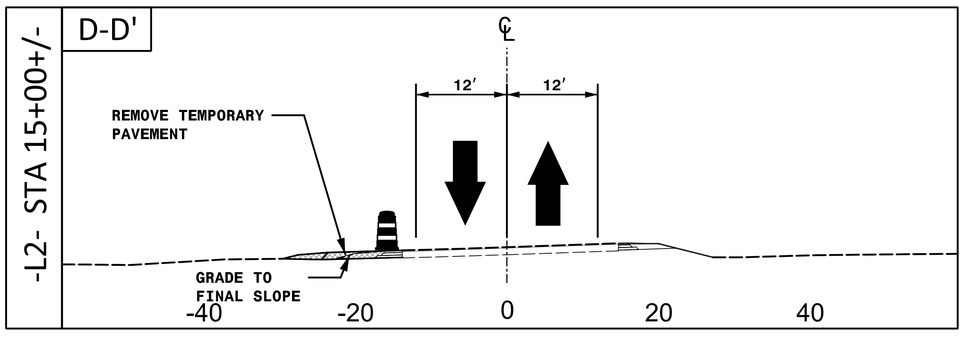
PROJ. REFERENCE NO.	SHEET NO.
W-5203J	TMP-9









DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: Docusigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

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

TRANSPORTATION MANAGEMENT PLAN

PHASE III CUT SECTIONS

T.I.P.: W-5203J

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAVEMENT MARKING PLAN
NEW HANOVER COUNTY

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD) AND SR 1576 (RIVER RD)

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	PMP-1

APPROVED: DocuSigned by: Rhonda B. Early F34CAF5AC6BF48A... 12/11/2015

DATE:

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2012 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
1250.01	RAISED PAVEMENT MARKERS - INSTALLATION SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY

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	THERMOPLASTIC	RAISED

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.

E) STOP BAR LOCATION AT NON-SIGNALIZED INTERSECTIONS MAY BE ADJUSTED AS DIRECTED BY THE ENGINEER.

F) USE HEATED-IN-PLACE THERMOPLASTIC OR EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS. IF HEATED-IN-PLACE IS USED, IT SHALL BE PAID FOR USING THE EXTRUDED THERMOPLASTIC PAY ITEM.

INDEX

PLAN PREPARED BY: N.C.D.O.T. SIGNING AND DELINEATION UNIT

Katie Hite, PE DIVISION TRAFFIC ENGINEER

PLAN PREPARED BY: HNTB NORTH CAROLINA, P.C.

R. B. Early, PE PROJECT ENGINEER

J. Phillips PROJECT DESIGNER

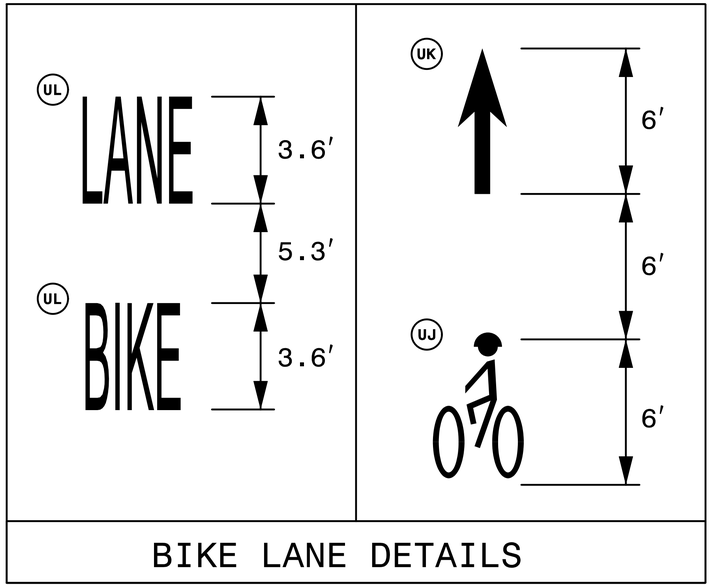
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
C-1554

4:52:28 PM
\\PMP_W-5203J_pmp_pmp01.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	PMP-1A

FINAL PAVEMENT MARKING SCHEDULE

MATERIAL	SYMBOL	DESCRIPTION
THERMOPLASTIC (4″, 90 MIL)		
	TA	WHITE EDGELINE
	TB	YELLOW EDGELINE
THERMOPLASTIC (4″, 120 MIL)		
	T8	2 FT - 6 FT/ SP WHITE MINISKIP
	TI	YELLOW DOUBLE CENTER
THERMOPLASTIC (8″, 120 MIL)		
	TN	WHITE GORELINE
THERMOPLASTIC (12″, 120 MIL)		
	T10	3 FT - 3 FT/ SP WHITE MINISKIP
THERMOPLASTIC CHARACTERS (120 MIL)		
	UL	BICYCLE CHARACTERS
THERMOPLASTIC SYMBOLS (90 MIL)		
	UJ	BICYCLE SYMBOL
	UK	BICYCLE STRAIGHT ARROW
	UN	24″ YIELD LINE TRIANGLE



BIKE LANE DETAILS

LEGEND

GENERAL

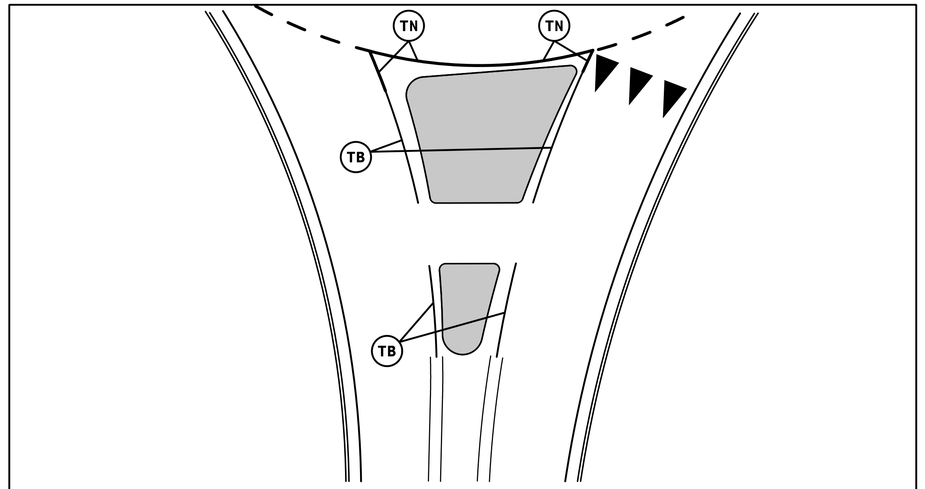
DIRECTION OF TRAFFIC FLOW

NORTH ARROW

PROPOSED PVMT. ---------- EXIST. PVMT.

PAVEMENT MARKINGS

PAVEMENT MARKING SYMBOLS



CROSSWALK DETAIL

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Rhonda B. Early F34CAF5AC6BF48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARLY SEAL

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

PAVEMENT MARKING PLAN

FINAL PAVEMENT MARKING PLANS

8/17/99

REVISIONS

QA/QC STAGE:

REVIEW:

CONCUR:

REVISE:

VERIFY:

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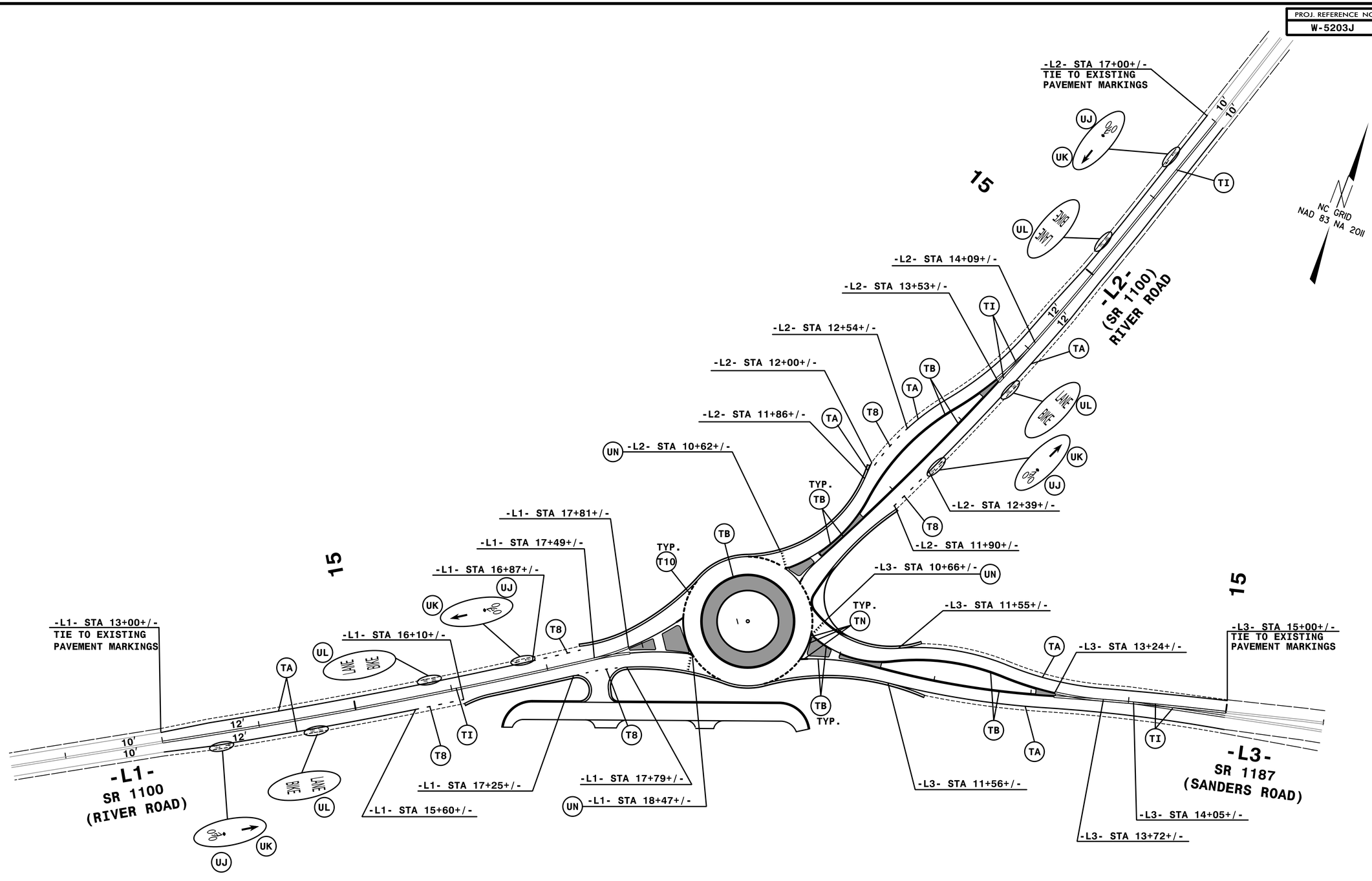
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	PMP-02

8/17/99

REVISIONS



REFER TO SHEET PMP-1A FOR BIKE SYMBOL DETAILS.

MAINTAIN MINIMUM 4' PAVED SHOULDER FOR BIKE LANE.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

APPROVED: DocuSigned by: Rhonda B. Earl F34CAF5AC68F48A...

DATE: 12/11/2015

NORTH CAROLINA PROFESSIONAL SEAL 023521 ENGINEER RHONDA B. EARL SEAL

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

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

PAVEMENT MARKING PLAN

FINAL PAVEMENT MARKING PLANS

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$$$$USERNAME$$$$

QA/QC STAGE:
REVIEW:
CONCUR:
REVISE:
VERIFY:

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W-5203J	EC-1	6

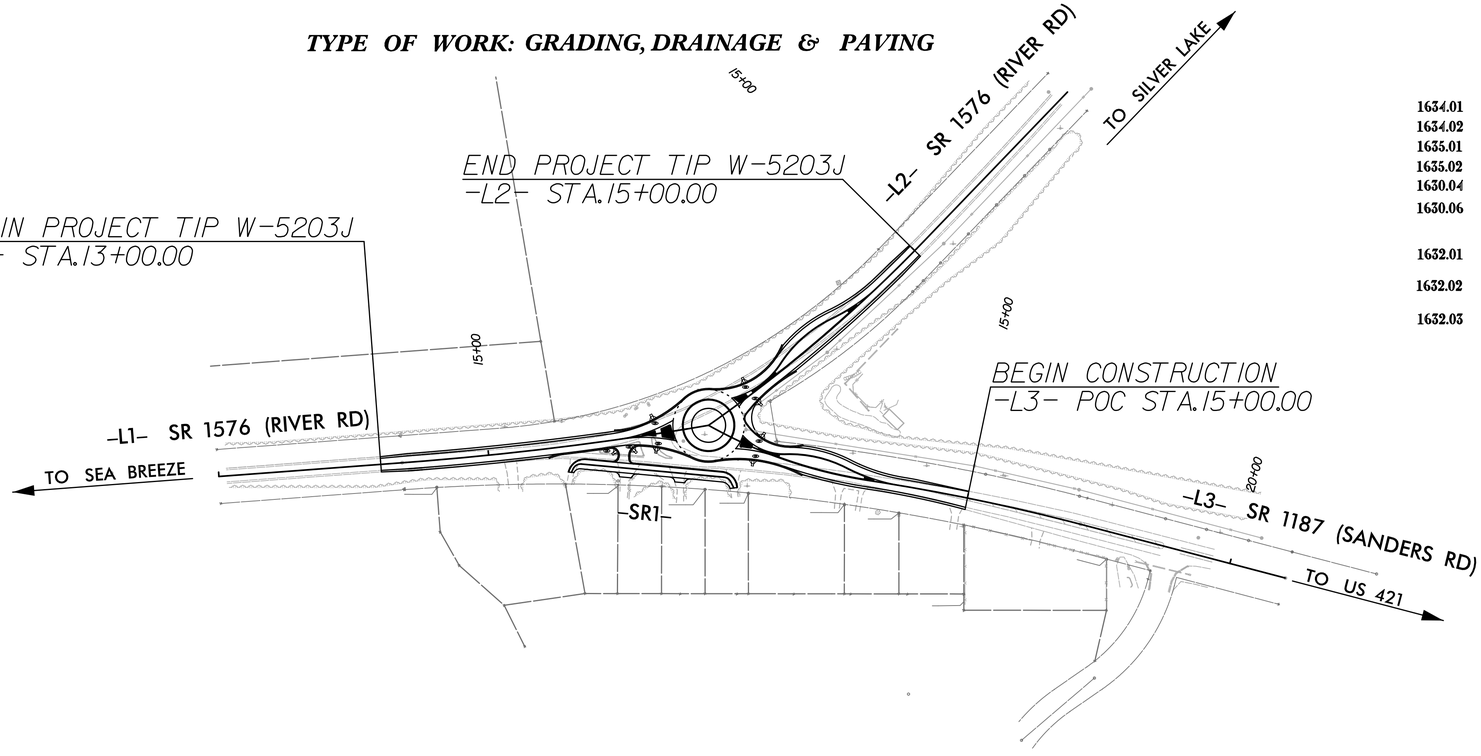
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD.) AND SR 1576 (RIVER RD.) IN WILMINGTON, NC

TYPE OF WORK: GRADING, DRAINAGE & PAVING



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	
	Silt Basin Type B	
1633.01	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	
	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	

TIP PROJECT: W-5203J

GRAPHIC SCALE

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

ROADSIDE ENVIRONMENTAL UNIT
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

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

Prepared In the Office of:

HNTB NORTH CAROLINA, P.C.
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Raleigh, North Carolina 27609
NC License No: C-1554

2012 STANDARD SPECIFICATIONS

ALLEN T. HODGES, E.I
EROSION CONTROL
LEVEL III
CERTIFICATION #3633

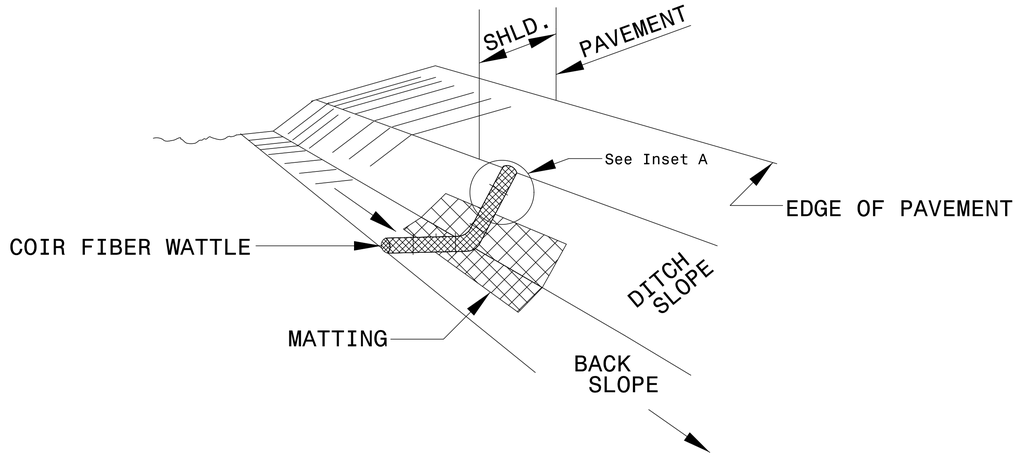
Roadway Standard Drawings

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 projeet and by reference hereby are considered a part of these plans.

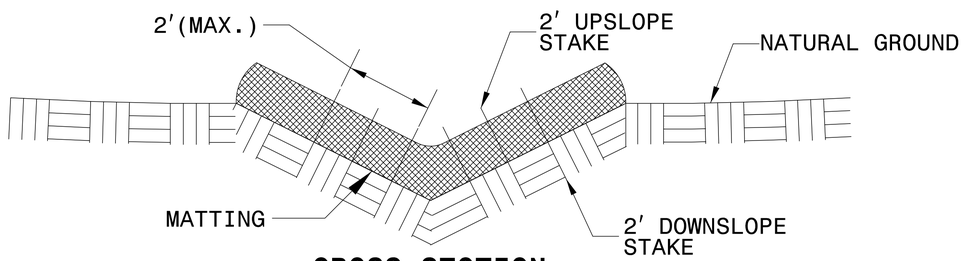
1604.01	Railroad Erosion Control Detail	1632.01	Rock Inlet Sediment Trap Type A
1605.01	Temporary Silt Fence	1632.02	Rock Inlet Sediment Trap Type B
1606.01	Special Sediment Control Fence	1632.03	Rock Inlet Sediment Trap Type C
1607.01	Gravel Construction Entrance	1633.01	Temporary Rock Silt Check Type 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		

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	EC-2

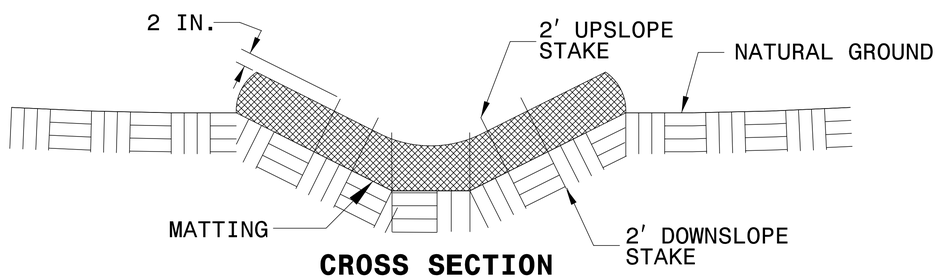
COIR FIBER WATTLE DETAIL



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.

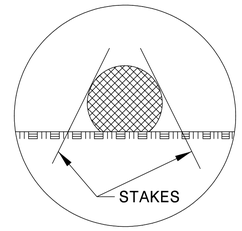
ONLY INSTALL WATTLE(S) TO A HEIGHT IN DITCH SO FLOW WILL NOT WASH AROUND WATTLE AND SCOUR DITCH SLOPES AND AS DIRECTED.

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

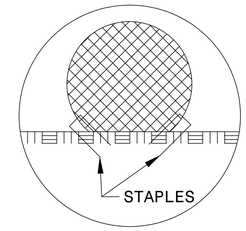
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

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

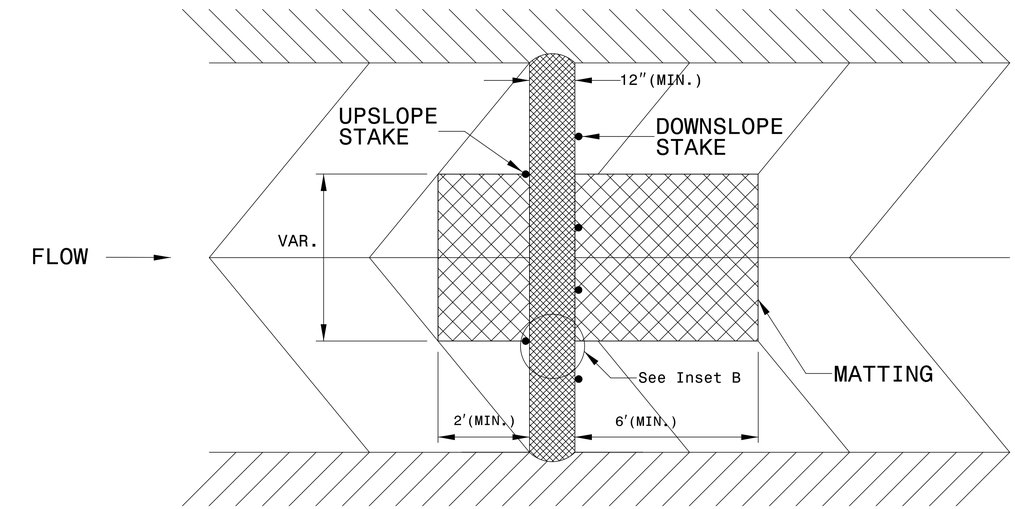
INSTALL MATTING IN ACCORDANCE WITH SECTION 1631 OF THE STANDARD SPECIFICATIONS.



INSET A



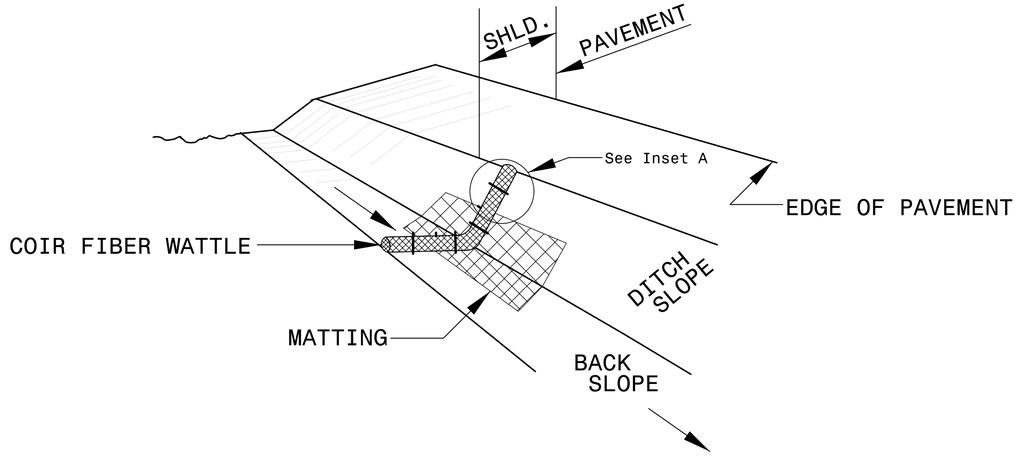
INSET B



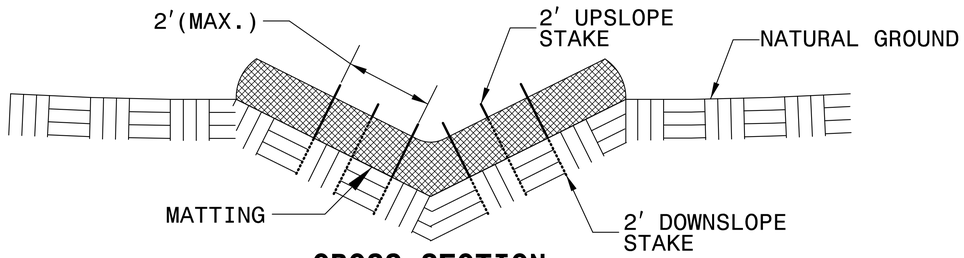
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	EC-3

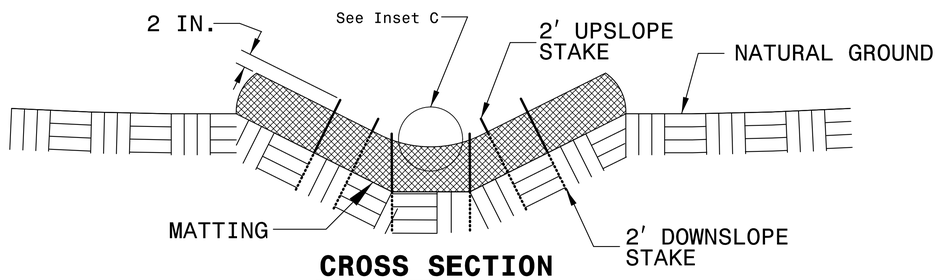
COIR FIBER WATTLE WITH POLYACRYLAMIDE (PAM) DETAIL



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.

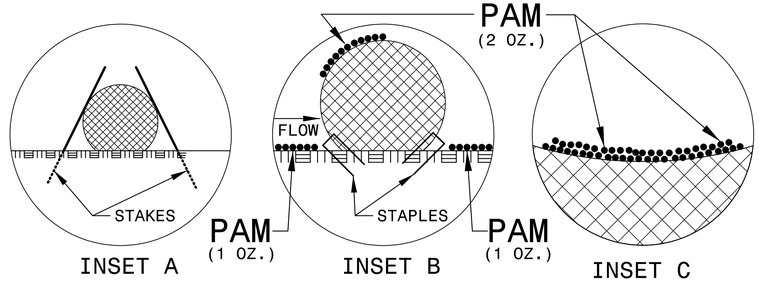
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12″ IN LENGTH.

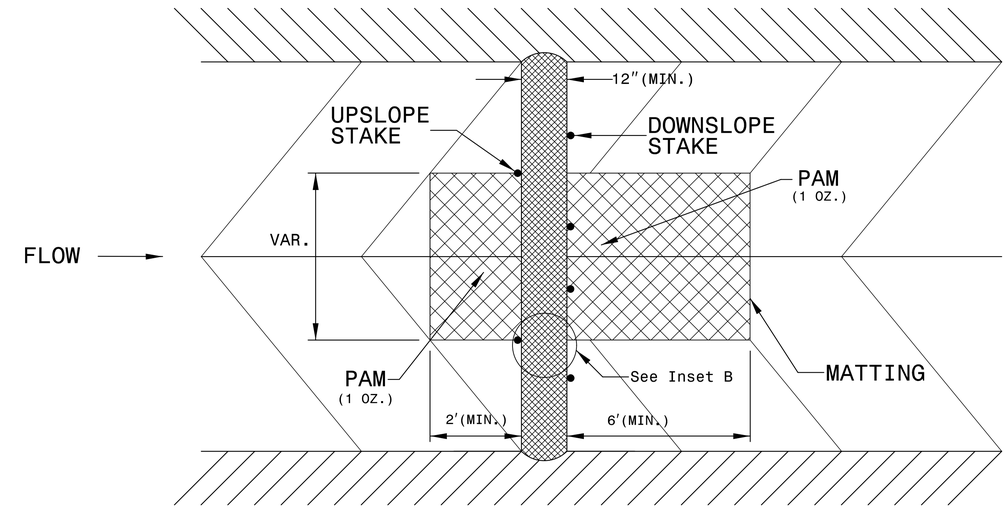
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

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.

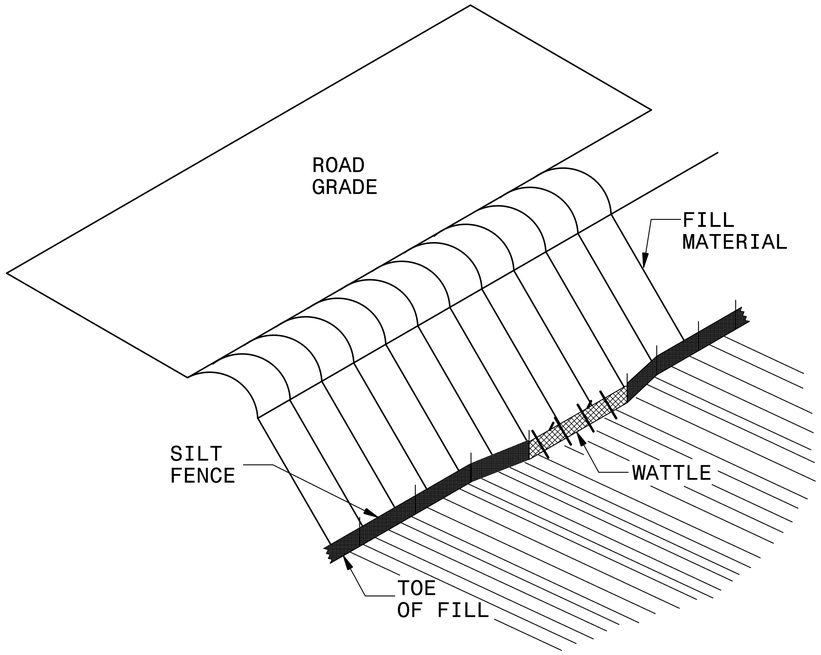




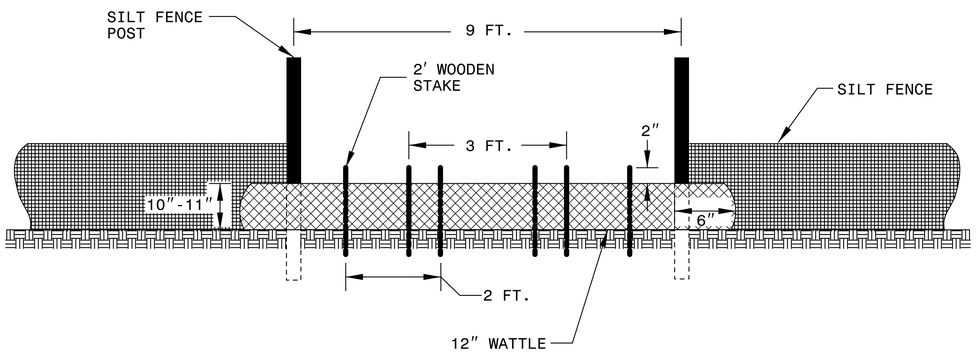
TOP VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	EC-4
R/W SHEET NO.	

SILT FENCE COIR FIBER WATTLE BREAK DETAIL



ISOMETRIC VIEW



VIEW FROM SLOPE

NOTES:

USE MINIMUM 12 IN. DIAMETER COIR FIBER (COCONUT FIBER) WATTLE AND LENGTH OF 10 FT.

EXCAVATE A 1 TO 2 INCH TRENCH FOR WATTLE TO BE PLACED.

DO NOT PLACE WATTLE ON TOE OF SLOPE.

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

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

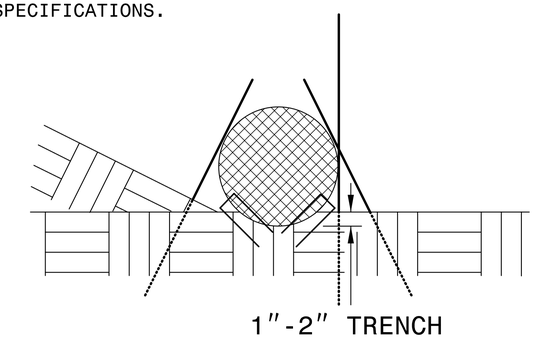
PROVIDE STAPLES MADE OF 0.125 IN. DIAMETER STEEL WIRE FORMED INTO A U SHAPE NOT LESS THAN 12" IN LENGTH.

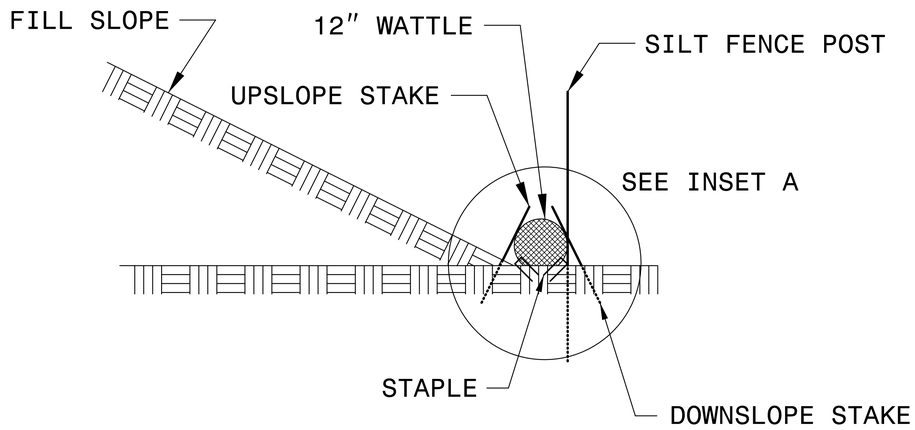
INSTALL STAPLES APPROXIMATELY EVERY 1 LINEAR FOOT ON BOTH SIDES OF WATTLE AND AT EACH END TO SECURE IT TO THE SOIL.

WATTLE INSTALLATION CAN BE ON OUTSIDE OF THE SILT FENCE AS DIRECTED.

INSTALL TEMPORARY SILT FENCE IN ACCORDANCE WITH SECTION 1605 OF THE STANDARD SPECIFICATIONS.

INSET A





SIDE VIEW

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	EC-5

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.

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PROJECT REFERENCE NO.	SHEET NO.
W-5203J	EC-6
R/W SHEET NO.	

ALLEN T. HODGES, E.I.
EROSION CONTROL
LEVEL III
CERTIFICATION #3633

8/17/99

REVISIONS

-L1-
PI Sta 16+28.71
Δ = 5° 22' 55.1" (LT)
D = 0° 57' 17.7"
L = 563.60'
T = 282.01'
R = 6,000.00'
DS = 50MPH

-L2-
PI Sta 12+62.53
Δ = 11° 06' 26.1" (LT)
D = 2° 07' 19.4"
L = 523.42'
T = 262.53'
R = 2,700.00'
DS = 25MPH

-C1-
PI Sta 10+00.00
Δ = 359° 59' 55.7" (LT)
D = 119° 21' 58.3"
L = 301.59'
T = 0.00'
R = 48.00'
DS < 15MPH

-L3-
PI Sta 11+58.85
Δ = 20° 44' 28.2" (LT)
D = 6° 36' 03.2"
L = 314.22'
T = 158.85'
R = 868.00'
DS < 15MPH

PI Sta 15+16.14
Δ = 6° 03' 06.9" (RT)
D = 1° 29' 59.9"
L = 403.47'
T = 201.92'
R = 3,819.77'
DS = 35MPH

-L2- PT Sta. 15+23.42

END PROJECT TIP W-5203J
-L2- STA.15+00.00

-L2- N 18° 23' 57.0" E

BM 1 ELEVATION = 10.08'
N 138175 E 2328428
-BL- STATION 19+68 13.5' LT.
RR SPIKE IN BASE OF 15" PINE

NAD 83/NA 2011

-L1- PC Sta. 13+46.71

BEGIN PROJECT TIP W-5203J
-L1- STA.13+00.00

-L2- STA 10+48.00 =
-C1- STA 11+72.61

-L3- PRC Sta. 13+14.22

END CONSTRUCTION
-L3- POC STA.15+00.00

-L1- STA 18+62.30 =
-C1- STA 10+00.00

-L3- STA 11+19.57 =
-C1- STA 11+19.57

-L1- PT Sta. 19+10.30
-L2- PC Sta. 10+00.00
-L3- PC Sta. 10+00.00

-L3- PT Sta. 17+17.68

1 AFTEW PROPERTIES, LLC.
DB 1619 PG 1202
DB 5508 PG 358

1 AFTEW PROPERTIES, LLC.
DB 3487 PG 245
MB 53 PG 269-271

ISABELLA HOLDING COMPANY, LLC.
DB 5700 PG 2553
MB 53 PG 118

VARIABLE WIDTH BASE DITCH SEE DETAIL B S = 0.3%

CLASS 'B' RIP-RAP EST. 5 TONS EST. 14 SY. GEO.

STANDARD 'V' DITCH SEE DETAIL A EST. 2 TONS EST. 7 SY. GEO. S = 0.3%

BLOW OFF VALVE

REPEATER BOX

TENNIS COURT

LANDSCAPED AREA

POOL

BOOSTER

EXISTING R/W

RIVER ROAD SR 1100 28' BST

8" PVC

10" UNKNOWN

IN CONDUIT

4" SPLIT RAIL

2GI-B

2GI-E

15" RCP-IV

12"00

WOODS

TBR

PDE

72" WD (PRIVACY)

SANDER

BEAU RIVAGE GOLF & RESORT, LLC.
DB 4997 PG 2939
MB 38 PG 55-59

AQUA NORTH CAROLINA, INC.
DB 4215 PG 379
DB 4215 PG 384
DB 2576 PG 454
MB 38 PG 180
MB 48 PG 287

EARLY T. BROADWAY, ET AL
DB 1514 PG 1346
MB 48 PG 287

JEFFREY C. LANPHEAR
DB 1457 PG 1377
MB 48 PG 287

BOBBY J. HARRIS
DB 1816 PG 205
MB 48 PG 287

JOHN E. SHEEHAN
DB 3447 PG 180
MB 48 PG 287

SCOTT L. BURGE, ET UX
DB 5074 PG 1862
MB 48 PG 287

LAURIE L. PITTMAN
DB 1399 PG 1615
MB 48 PG 287

GAIL R. BINNI
DB 5352 PG 312
MB 48 PG 287

5 KEELEY M. KOLLMAN, ET AL
DB 5719 PG 2228
MB 48 PG 287

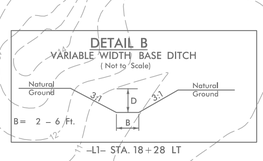
DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS2"
WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
NORTHING: 137787.3630(ft) EASTING: 2328295.0240(ft)
ELEVATION: 17.52(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.000069266
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS2" TO "EL-" STATION 5+00.00 IS
S 60° 07' 28.40" W DISTANCE 860.88"
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

DETAIL A
STANDARD 'V' DITCH
(Not to Scale)

Max. d=1.0 Ft.
Type of Liner= Class 'B' Rip-Rap
-L1- STA. 16+00 LT.

DETAIL B
VARIABLE WIDTH BASE DITCH
(Not to Scale)



B= 2 - 6 Ft.
-L1- STA. 18+28 LT

3:46:58 PM
3/16/2023
$$$$USERNAME$$$$
ec_psh04.dgn

T.I.P.: W-5203J

CONTRACT: DC00126

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

TIP NO.	SHEET NO.
W-5203J	SIGN-1

APPROVED: DocuSigned by: Andrew D Klinksiek E3D78FB4596E44B...

DATE: 12/11/2015

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK

SIGNING PLAN

NEW HANOVER COUNTY

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD) AND SR 1576 (RIVER RD)

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 2012 ARE APPLICABLE TO THIS PROJECT AND BY REFERENCE HEREBY ARE CONSIDERED A PART OF THESE PLANS:

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS

SUMMARY OF QUANTITIES

ITEM NO.		ITEM DESCRIPTION	QUANTITY	UNIT
DESC. NO.	SECT. NO.			
4072000000	903	SUPPORTS, 3 LB STEEL U-CHANNEL	260	L.F.
4102000000	904	SIGN ERECTION, TYPE E	23	EA.
4155000000	907	DISPOSAL OF SIGN SYSTEM, U-CHANNEL	10	EA.

GENERAL NOTES

. SIGNS FURNISHED BY STATE.

. IF REMOVAL OR RELOCATION OF SIGNS ON PRIVATE STREET (NON-STATE MAINTAINED) IS REQUIRED DUE TO CONSTRUCTION, THE CONTRACTOR SHALL INFORM THE ENGINEER. THE WORK WILL BE COMPLETED BY OTHERS.

. SIGNING PLANS DO NOT INCLUDE TEMPORARY CONSTRUCTION SIGNING, SEE TRAFFIC CONTROL PLANS. SEE PAVEMENT MARKING PLAN FOR PAVEMENT MARKING DESIGN.

. WHEN NOT STATIONED OR DIMENSIONED ON PLANS, ALL 'E' AND 'F' SIGNS SHALL BE FIELD LOCATED BY THE ENGINEER.

. WHEN EXISTING SIGNS ARE REMOVED AND INSTALLED ON NEW SUPPORTS, THE RE-ERECTION SHALL IMMEDIATELY FOLLOW THE REMOVAL.

. THE BACKGROUND FOR TYPE 'E' SIGNS SHALL BE GRADE C REFLECTIVE SHEETING UNLESS OTHERWISE NOTED.

PAY ITEM NOTES

1 SIGN ERECTION, TYPE D, E, AND F
2 DISPOSAL OF SIGN SYSTEM, U-CHANNEL

PLAN PREPARED BY :

HNTB

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

C.A. JOHNSON, III, PE — SIGNING PROJECT ENGINEER
A.D. KLINKSIEK, PE, PTOE — SIGNING DESIGN ENGINEER
T.R. TERRELL — SIGNING DESIGN TECHNICIAN

INDEX

TIP NO.	SHEET NO.
W-5203J	SIGN-2

APPROVED: DocuSigned by: Andrew D Klinksick E3D78FB4596E44B...

DATE: 12/11/2015

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSICK

(401) QUANTITY REQ'D 3

30" X 30"
W2-6

ONE "U" POST PER SIGN

(402) QUANTITY REQ'D 3

30" X 30"
W3-2

ONE "U" POST PER SIGN

(403) QUANTITY REQ'D 1

30" X 30"
W1-2(L)

ONE "U" POST PER SIGN

(404) QUANTITY REQ'D 1

18" X 18"
W13-1P

MOUNTED BELOW SIGN 403
IN 1 INSTALLATION

(405) QUANTITY REQ'D 3

36" X 36" X 36"
R1-2

ONE "U" POST PER SIGN

(406) QUANTITY REQ'D 3

30" X 24"
R6-4

ONE "U" POST PER SIGN

(407) QUANTITY REQ'D 1

24" X 30"
R2-1

ONE "U" POST PER SIGN

(408) QUANTITY REQ'D 2

24" X 30"
R4-7(R)

ONE "U" POST PER SIGN

(409) QUANTITY REQ'D 2

18" X 18"
OM1-3

MOUNTED BELOW SIGN 408
IN 2 INSTALLATIONS

(410) QUANTITY REQ'D 4

24" X 18"
R3-17

ONE "U" POST PER SIGN

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

TYPE 'E' SIGNS

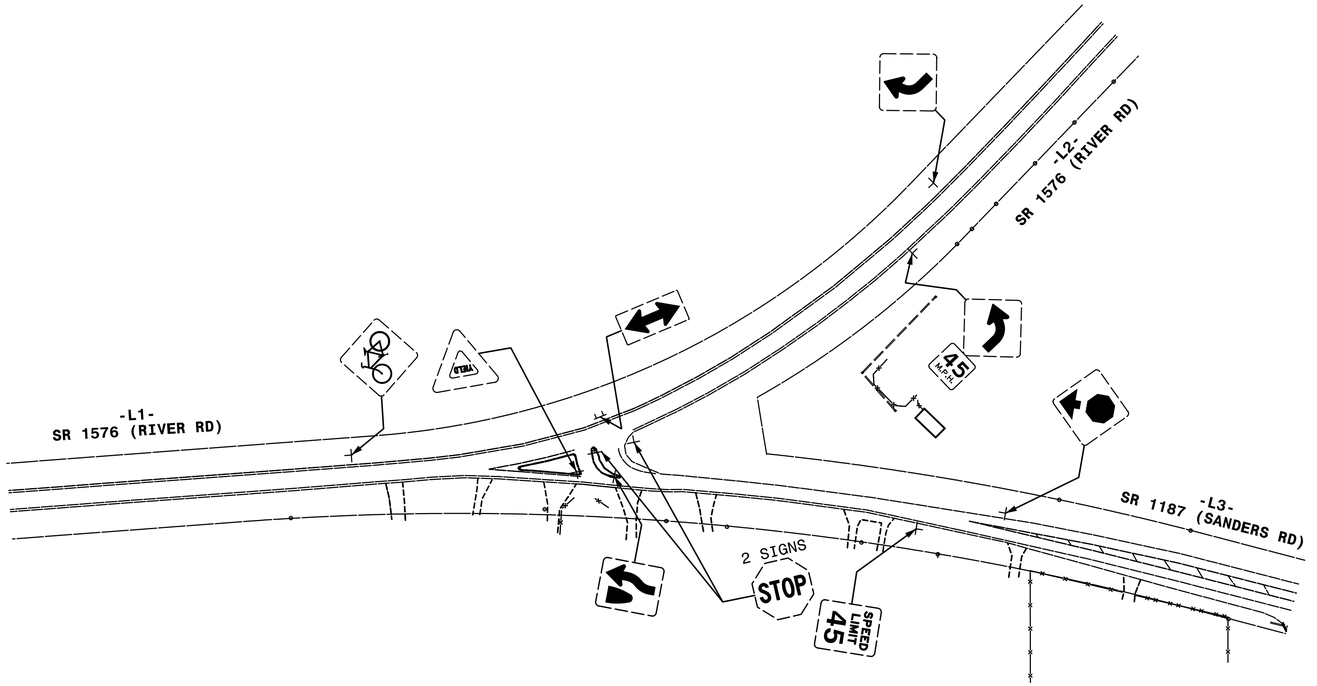
TIP NO.	SHEET NO.
W-5203J	SIGN-3

APPROVED: DocuSigned by: Andrew D Klinksiek E3D78FB4596E44B...

DATE: 12/11/2015

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK



NOTES:
ALL EXISTING SIGNS SEE PAY ITEM NOTE 2 UNLESS OTHERWISE NOTED.

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

EXISTING SIGNS
RIVER ROAD ROUNDABOUT
NEW HANOVER COUNTY

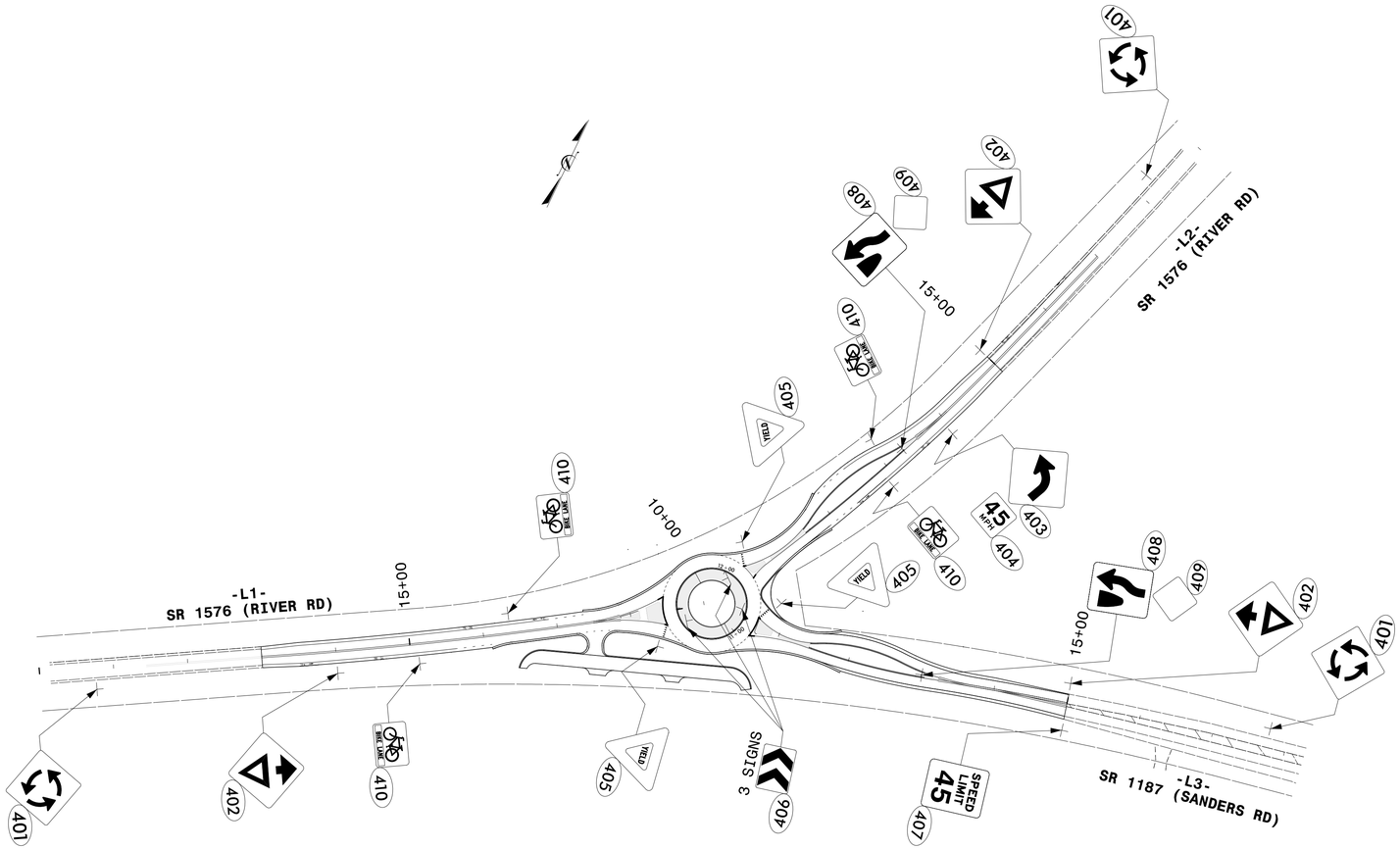
TIP NO.	SHEET NO.
W-5203J	SIGN-4

APPROVED: DocuSigned by: Andrew D Klinksiek E3D78FB4596E44B...

DATE: 12/11/2015

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 40311 ENGINEER ANDREW D. KLINKSIEK



HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

PROPOSED SIGNS
RIVER ROAD ROUNDABOUT
NEW HANOVER COUNTY

09/25/99

TIP PROJECT: W5203J

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

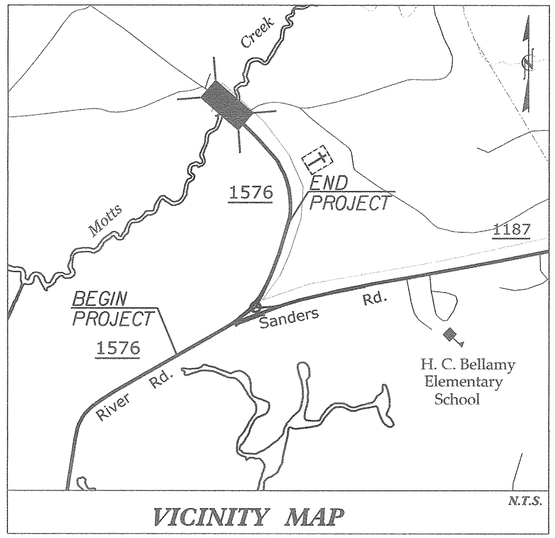
UTILITY CONSTRUCTION PLANS
NEW HANOVER COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	W5203J	UC-01	8

UTILITY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042767 ENGINEER KEVIN C. ZIMER

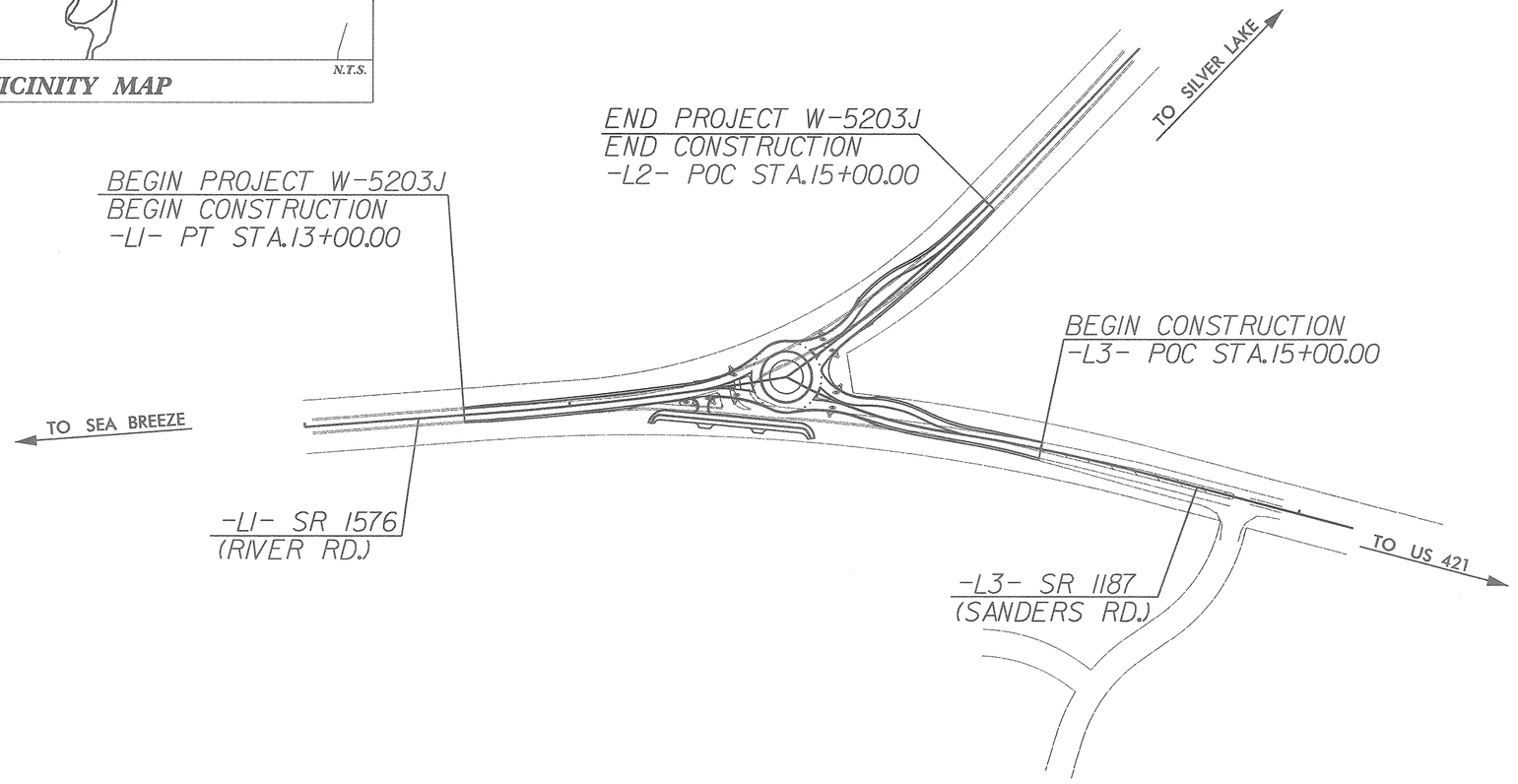
2014-NOV-18



VICINITY MAP

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD.) AND SR 1576 (RIVER RD.)

TYPE OF WORK: RELOCATION OF GRAVITY AND FORCE MAIN SEWER LINES



HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

DATE: NOVEMBER 10, 2014

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

PROJECT LENGTH

LENGTH ROADWAY OF TIP PROJECT W5203J =	0.210 MI.
TOTAL LENGTH OF TIP PROJECT W5203J =	0.210 MI.

INDEX OF SHEETS

UTILITY OWNERS ON PROJECT

SEWER - CAPE FEAR PUBLIC UTILITY AUTHORITY

UTILITY DESIGN BY:

MA Engineering CONSULTANTS, INC.
598 East Chatham Street, Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax. 919.297.0221

NCDOT PROJECT ENGINEER:
SCOTT COOKE, P.E.

PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION BRIDGE PROGRAM

PROJECT REFERENCE NO.	SHEET NO.
W5203J	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 — REH
- 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 — PRPZ
- DCV Backflow Preventer — PBFP
- Relocate RPZ Backflow Preventer — RRPZ
- 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) — PROP O/H POW LINES
- 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 — P
- *Underground Telephone Cable — T
- *Underground Telephone Conduit — TC
- *Underground Fiber Optics Telephone Cable — T FO
- *Underground TV Cable — TV
- *Underground Fiber Optics TV Cable — TV FO
- *Underground Gas Pipeline — G
- Aboveground Gas Pipeline — A/G Gas
- *Underground Water Line — W
- Aboveground Water Line — A/G Water
- *Underground Gravity Sanitary Sewer Line — SS
- Aboveground Gravity Sanitary Sewer Line — A/G Sanitary Sewer
- *Underground SS Forced Main Line — FSS
- Underground Unknown Utility Line — ?UTL
- SUE Test Hole
- Water Meter
- Water Valve
- Fire Hydrant
- Sanitary Sewer Cleanout

*For Existing Utilities

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

REV: 2/1/2012

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-3

UTILITY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 038001 ENGINEER KEVIN C. ZOBS

2014-NOV-18

MA Engineering CONSULTANTS, INC. 598 E. Chatham Street, Suite 137 Cary, N. C. 27511

HNTB HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554

DATE: NOVEMBER 10, 2014

UTILITY CONSTRUCTION

GENERAL NOTES:

1. THE PROPOSED UTILITY CONSTRUCTION SHALL MEET THE APPLICABLE REQUIREMENTS OF NC DEPARTMENT OF TRANSPORTATION'S "STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES" DATED JANUARY 2012.

2. THE EXISTING UTILITIES BELONG TO

CAPE FEAR PUBLIC UTILITY AUTHORITY
CONTACT: KENT HARREL
PHONE: 910-332-6674

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 AND UTILITY OWNER. 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.

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. THE UTILITY OWNER SHALL BE INCLUDED IN THE SUBMITTAL REVIEW AND ALLOWED 10 CALENDAR DAYS TO REVIEW THE SUBMITTALS FOR APPROVAL. MATERIALS SUPPLIED ON THE PROJECT THAT ARE NOT SPECIFICALLY IDENTIFIED ON THE PLANS OR IN NCDOT STANDARDS SHALL MEET THE STANDARD SPECIFICATIONS OF THE UTILITY OWNER.

10. CONTRACTOR SHALL NOTIFY NC ONE-CALL AT 1-800-632-4949 PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY SUCH THAT ALL EXISTING UTILITIES CAN BE MARKED. FURTHERMORE, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO CONTACT ANY UTILITY OWNERS THAT ARE NOT MEMBERS OF NC ONE-CALL AND HAVE FACILITIES RESIDING WITHIN THE PROJECT LIMITS.

PROJECT SPECIFIC NOTES:

1. ALL PROPOSED FORCE MAIN SEWER LINE SHALL BE PVC C-900 DR-18.

2. ALL FIELD BENDS OF PVC FORCE MAIN SEWER PIPE SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDED PRACTICES, AS DIRECTED BY THE RESIDENT ENGINEER.

3. ALL PROPOSED GRAVITY SEWER LINE SHALL BE PVC C-900 DR-18.

4. ALL FITTINGS SHALL BE DUCTILE IRON PRESSURE CLASS 350 AND LINED WITH A CERAMIC EPOXY COATING.

5. THE EXISTING 10" FORCE MAIN SEWER LINE SHALL BE ADEQUATELY RESTRAINED ON THE PORTION TO REMAIN IN SERVICE. THE CONTRACTOR SHALL EXCAVATE THE EXISTING SEWER LINE AND INSTALL THE BELL RESTRAINT CLAMPS AT EVERY BELL JOINT FOR THE DISTANCE NOTED IN THE TABLE ON SHEET UC-3B.

6. ALL FITTINGS (BENDS, TEES, CROSSES, REDUCERS, PLUGS, ETC.) SHALL BE ADEQUATELY RESTRAINED BY THE USE OF RESTRAINING GLANDS AND/OR CAST IN PLACE CONCRETE THRUST RESTRAINTS AS DETAILED ON THESE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

7. EXISTING BURIED SEWER LINE THAT IS TO BE TAKEN OUT OF SERVICE SHALL EITHER BE REMOVED OR ABANDONED IN PLACE IN ACCORDANCE WITH NCDOT SPECIFICATIONS AS DIRECTED BY THE RESIDENT ENGINEER.

PROJECT QUANTITIES:

Job Name: W5203J Date: 5/23/2014

Item Number	Description	Quantity	
5691400000-E	10" FORCE MAIN SEWER	486	LF
5691500000-E	12" SANITARY GRAVITY SEWER	65	LF
5775000000-E	4' DIA UTILITY MANHOLE	1	EA
5776000000-E	5' DIA UTILITY MANHOLE	1	EA
5781000000-E	UTILITY MANHOLE WALL, 4' DIA	3.2	LF
5782000000-E	UTILITY MANHOLE WALL, 5' DIA	4.6	LF
5801000000-E	ABANDON 8" UTILITY PIPE	73	LF
5802000000-E	ABANDON 10" UTILITY PIPE	439	LF
5804000000-E	ABANDON 12" UTILITY PIPE	50	LF
5828000000-N	REMOVE UTILITY MANHOLE	2	EA
5835900000-E	20" ENCASEMENT PIPE	70	LF

PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-3A

UTILITY DESIGN ENGINEER

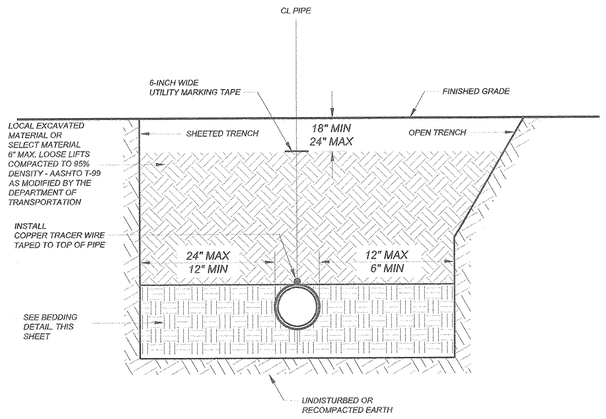
NORTH CAROLINA PROFESSIONAL SEAL 022969 ENGINEER KEVIN C. ZIGLER

2014-NOV-18

MA Engineering CONSULTANTS, INC.
598 E. Chatham Street, Suite 137 Cary, N. C. 27511

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

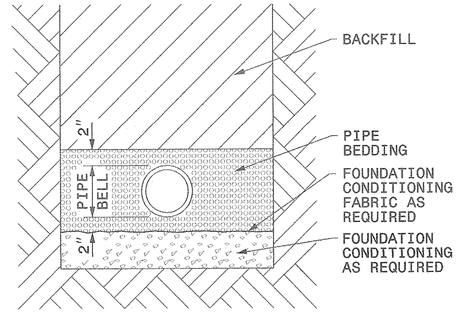
DATE: NOVEMBER 10, 2014



NOTES:
1. ALL SHORING & TRENCHING SHALL COMPLY WITH OSHA SAFETY STANDARDS FOR THE CONSTRUCTION INDUSTRY.
2. BELL HOLES NOT SHOWN.
3. ALL BACKFILL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH.

GENERAL TRENCH DETAIL
NTS

PIPE BEDDING DETAIL

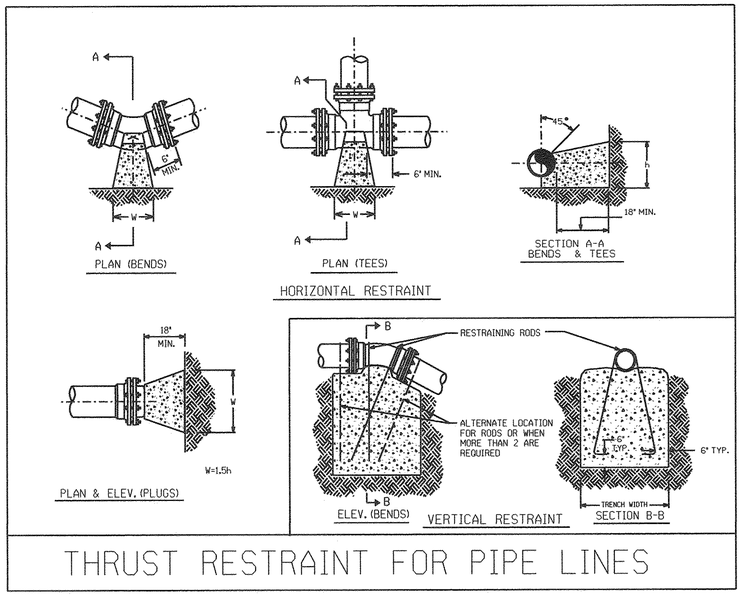


PLACE FOUNDATION CONDITIONING MATERIAL BELOW BEDDING IF REQUIRED, AS DIRECTED BY ENGINEER. PIPE BEDDED IN SELECT MATERIAL, CLASS II (TYPE 1) OR CLASS III. TRENCH BACKFILLED IN LOOSE 6" LAYERS COMPACTED TO TOP OF TRENCH USING LOCAL EXCAVATED MATERIAL IF APPROVED BY THE ENGINEER, OR SELECT MATERIAL. ALL MATERIAL SHALL BE FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. COMPACTION SHALL BE TO APPROXIMATELY 95% DENSITY IN ACCORDANCE WITH AASHTO T-99 AS MODIFIED BY THE DEPARTMENT OF TRANSPORTATION.

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		

5/28/99



THRUST RESTRAINT FOR PIPE LINES

BASED ON TEST PRESSURE OF 200 P.S.I.

HORIZONTAL RESTRAINT
(ALL AREAS GIVEN ARE IN SQUARE FEET)

PIPE SIZE	DEGREE OF BEND	LBS. STATIC THRUST *	ALLOWABLE SOIL BEARING (PSF) 1000	2000	3000	4000	5000	6000	7000	8000
4"	11 1/4°	616	1	1	1	1	1	1	1	1
	22 1/2°	1,226	2	1	1	1	1	1	1	1
	45°	2,405	2	1	1	1	1	1	1	1
	90°	4,444	4	2	1	1	1	1	1	1
	TEE/PLUG	3,143	3	2	1	1	1	1	1	1
6"	11 1/4°	1,385	2	1	1	1	1	1	1	1
	22 1/2°	2,788	3	2	1	1	1	1	1	1
	45°	5,409	5	3	2	2	1	1	1	1
	90°	9,999	10	5	3	3	2	2	2	1
	TEE/PLUG	7,068	7	4	3	2	2	1	1	1
8"	11 1/4°	2,464	3	1	1	1	1	1	1	1
	22 1/2°	4,904	5	3	2	1	1	1	1	1
	45°	9,819	10	5	3	2	2	2	2	1
	90°	17,773	18	9	6	4	4	3	3	2
	TEE/PLUG	12,568	13	6	4	3	3	2	2	2
10"	11 1/4°	3,846	4	2	2	1	1	1	1	1
	22 1/2°	7,661	8	4	3	2	2	2	1	1
	45°	15,028	15	8	5	4	3	3	2	2
	90°	27,768	28	14	9	7	6	5	4	3
	TEE/PLUG	19,635	20	10	7	5	4	3	3	2
12"	11 1/4°	5,543	6	3	2	2	1	1	1	1
	22 1/2°	11,032	11	6	4	3	3	2	2	2
	45°	21,641	22	11	7	5	4	4	3	3
	90°	39,987	40	20	13	10	8	7	6	5
	TEE/PLUG	28,274	28	14	9	7	6	5	4	4
14"	11 1/4°	7,544	8	4	3	2	2	2	1	1
	22 1/2°	15,016	15	8	5	4	3	3	2	2
	45°	29,455	29	15	10	7	6	5	4	4
	90°	54,426	54	27	18	14	11	9	8	7
	TEE/PLUG	38,485	38	19	13	10	8	6	5	5
16"	11 1/4°	9,854	10	5	3	3	2	2	2	1
	22 1/2°	19,882	20	10	7	5	4	3	3	2
	45°	38,471	38	17	13	10	8	6	5	5
	90°	71,085	71	36	24	18	14	12	10	9
	TEE/PLUG	50,265	50	25	17	13	10	8	7	6

* INCLUDES 1.25 SAFETY FACTOR

VERTICAL RESTRAINT
(ALL VOLUMES GIVEN ARE IN CUBIC YARDS)**

PIPE SIZE	RESTRAINING RODS NO.REQ'D	RESTRAINING RODS DIA.	DEGREE OF BEND 11 1/4°	22 1/2°	45°
4"	2	1/2"	0.25	0.50	0.75
6"	2	1/2"	0.50	1.0	1.75
8"	2	5/8"	0.75	1.50	3.0
10"	2	3/4"	1.25	2.25	4.50
12"	2	7/8"	1.75	3.25	6.50
14"	4	5/8"	2.25	4.50	8.75
16"	4	3/4"	3.0	6.0	11.50

**INCLUDES 1.50 SAFETY FACTOR

GENERAL NOTES:
1. CONCRETE SHALL BE CLASS "B".
2. CONCRETE SHALL NOT CONTACT BOLTS ENDS OF MECHANICAL JOINT FITTINGS.
3. CONSULT WITH ENGINEER FOR CONCRETE REQUIREMENTS ON MAINS LARGER THAN 16 INCHES. (FOR VERTICAL & HORIZONTAL BENDS)
4. ALLOWABLE SOIL BEARING SHALL BE DETERMINED BY THE ENGINEER.

REVISIONS NO.	DATE	DESCRIPTION

SHEET 2 OF 2

THRUST RESTRAINT FOR PRESSURIZED MAINS

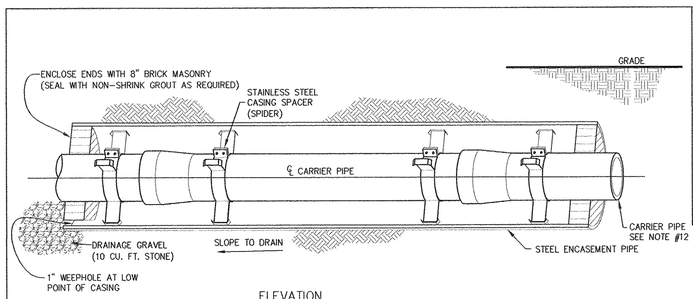
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
RALEIGH, N.C.

PVC PIPE RESTRAINED JOINT DESIGN TABLE

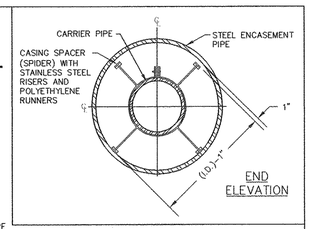
FITTING	REQUIRED RESTRAINED LENGTH (FT) OF PVC PIPE BY DEPTH OF COVER 3 FT	4 FT	5 FT	6 FT	7 FT	8 FT	9 FT	10 FT
HORIZONTAL BENDS								
10 INCH DIA - 11.25 DEG	4	3	3	3	2	2	2	2
10 INCH DIA - 22.5 DEG	7	6	6	5	5	4	4	4
10 INCH DIA - 45 DEG	15	13	11	10	9	8	7	7
10 INCH DIA - 90 DEG	35	30	26	23	21	19	17	16
VERTICAL DOWN BENDS	**3 FT**	**4 FT**	**5 FT**	**6 FT**	**7 FT**	**8 FT**	**9 FT**	**10 FT**
10 INCH DIA - 11.25 DEG	13	11	9	8	7	7	6	5
10 INCH DIA - 22.5 DEG	26	21	18	16	14	13	11	11
10 INCH DIA - 45 DEG	53	44	37	32	29	26	23	21
VERTICAL UP BENDS	**3 FT**	**4 FT**	**5 FT**	**6 FT**	**7 FT**	**8 FT**	**9 FT**	**10 FT**
10 INCH DIA - 11.25 DEG	4	3	3	3	2	2	2	2
10 INCH DIA - 22.5 DEG	7	6	6	5	5	4	4	4
10 INCH DIA - 45 DEG	15	13	11	10	9	8	7	7
DEAD ENDS / VALVES	**3 FT**	**4 FT**	**5 FT**	**6 FT**	**7 FT**	**8 FT**	**9 FT**	**10 FT**
10 INCH DIA	100	85	74	66	59	54	50	46
REDUCERS	**3 FT**	**4 FT**	**5 FT**	**6 FT**	**7 FT**	**8 FT**	**9 FT**	**10 FT**
10 INCH X 8 INCH	34	29	25	22	20	18	17	16
TEES	**3 FT**	**4 FT**	**5 FT**	**6 FT**	**7 FT**	**8 FT**	**9 FT**	**10 FT**
10" RUN X 10" BRANCH : RL = 1 FT	93	79	68	60	53	48	43	40
10" RUN X 10" BRANCH : RL = 5 FT	68	54	43	35	29	24	19	15

ASSUMPTIONS
LAYING CONDITION = TYPE 4
SOIL DESIGNATION = GC = COHESIVE-GRANULAR
DESIGN PRESSURE = 200 PSI (TEST PRESSURE)
SAFETY FACTOR = 1.5

NOTES
1. RL = RUN LENGTH BETWEEN FIRST JOINTS OF PIPE ALONG THE RUN LINE OF TEE.
2. RESTRAINED LENGTH IS MEASURED AS FOLLOWS:
   A. HORIZONTAL/VERTICAL BENDS: ALONG EACH SIDE OF BEND.
   B. HORIZONTAL/VERTICAL BENDS - OFFSET: ALONG THE OUTER SIDE OF EACH BEND. ALL PIPE BETWEEN THE TWO BENDS SHALL BE RESTRAINED JOINT.
   C. DEAD ENDS: ALONG PIPE FROM THE PLUG.
   D. VALVES: ALONG THE PIPE IN EACH DIRECTION FROM THE VALVE .
   E. REDUCERS: ALONG THE LARGER PIPE.
   F. TEES: ALONG THE BRANCH PIPE FROM THE TEE .
3. WHEN IT IS NOT POSSIBLE TO INSTALL THE RESTRAINED LENGTHS AS NOTED BY THIS TABLE, CONTRACTOR SHALL INSTALL THE APPROPRIATE CONCRETE THRUST RESTRAINTS AS PER THE DETAILS HEREIN.



ELEVATION



END ELEVATION

NOTES:

1. CASING SPACERS "SPIDERS" SHALL BE USED FOR SUPPORT OF THE CARRIER PIPE WITHIN THE STEEL ENCASEMENT PIPE. SPIDERS SHALL BE CENTERED AND RESTRAINED. SPIDERS SHALL HAVE A STAINLESS STEEL SHEE AND STAINLESS STEEL RISERS WITH POLYETHYLENE RUNNERS. MANUFACTURED BY CASCADE WATERWORKS MFG. COMPANY, OR APPROVED EQUAL.
2. A MINIMUM SPACING OF 2 SPIDERS PER JOINT OF CARRIER PIPE SHALL BE REQUIRED IN ORDER TO PREVENT SAGGING OF CARRIER PIPE. REFER TO THE MANUFACTURER'S RECOMMENDATIONS FOR SPACING AND SIZE OF SPACERS BASED ON THE SIZE AND TYPE OF THE CARRIER PIPE.
3. THE SPIDERS SHALL BE SPACED EVENLY ALONG THE CARRIER PIPE SUCH THAT EACH SPIDER SUPPORTS THE SAME UNIT WEIGHT OF THE CARRIER MAIN.
4. REFER TO PLAN SHEETS AND PROFILE SHEETS FOR LENGTH AND DIAMETER OF PROPOSED STEEL ENCASEMENT PIPES FOR EACH CROSSING.
5. STEEL ENCASEMENT PIPES SHALL EXTEND AS A MINIMUM: TO 3 FEET BEHIND BACK OF CURB LINES; TO 5 FEET BEYOND THE TOE OF SLOPE IN FILL SECTIONS, AND; FROM DITCH LINE TO DITCH LINE IN CUT SECTIONS.
6. THE TOP OF ENCASEMENT PIPE SHALL PROVIDE THE FOLLOWING MINIMUM BURY DEPTHS: 3 FEET BELOW THE TRAVEL SURFACE OF ROADWAYS, AND; 2 FEET BELOW PAVED OR UNPAVED DITCH ELEVATIONS; UNLESS OTHERWISE NOTED ON THE PLANS.
7. THE INSIDE DIAMETER OF THE ENCASEMENT PIPE SHALL BE AT LEAST 2 INCHES GREATER THAN THE LARGEST OUTSIDE DIAMETER OF THE CARRIER PIPE JOINTS OR COUPLINGS FOR CARRIER PIPE LESS THAN 6 INCHES IN DIAMETER; AND AT LEAST 4 INCHES GREATER FOR CARRIER PIPE 6 INCHES AND LARGER IN DIAMETER.
8. ALL JOINTS BETWEEN THE SECTIONS OF ENCASEMENT PIPE SHALL BE FULLY WELDED AROUND THE COMPLETE CIRCUMFERENCE OF THE PIPE.
9. FOR EXISTING UTILITY PIPE INSTALLATIONS, THE STEEL ENCASEMENT PIPE SHALL BE A SPLIT STEEL ENCASEMENT PIPE MADE UP OF TWO (2) SEMI-CIRCULAR SECTIONS JOINED BY A CONTINUOUS WELD FROM ONE END TO THE OTHER WITHOUT ANY TRACEABLE VOIDS. JOINTS BETWEEN HORIZONTAL SECTIONS OF ENCASEMENT PIPE SHALL BE FULLY WELDED AROUND THE COMPLETE CIRCUMFERENCE OF THE PIPE.
10. STEEL ENCASEMENT PIPES SHALL BE EITHER SMOOTH WALL OR SPIRAL WELDED AND HAVE A SPECIFIED MINIMUM YIELD STRENGTH OF AT LEAST 35,000 PSI.
11. UNCOATED AND UNPROTECTED STEEL ENCASEMENT PIPE SHALL HAVE A MINIMUM WALL THICKNESS AS NOTED BELOW FOR THE FOLLOWING OUTSIDE DIAMETER OF PIPES:
    0.188 INCHES FOR 12" AND SMALLER
    0.250 INCHES FOR 14"
    0.250 INCHES FOR 16"
    0.250 INCHES FOR 18"
    0.250 INCHES FOR 20"
    0.250 INCHES FOR 24"
    0.312 INCHES FOR 26"
    0.312 INCHES FOR 28"
    0.312 INCHES FOR 30"
    0.375 INCHES FOR 36"
    0.500 INCHES FOR 42"
    0.500 INCHES FOR 48"

STEEL ENCASEMENT PIPE UNDER ROADS

PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-3B

UTILITY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17661 ENGINEER KEVIN C. ZUDE

2014-NOV-18

MA Engineering CONSULTANTS, INC.
598 E. Chatham Street, Suite 137
Cary, N. C. 27511

HNTB
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

DATE: NOVEMBER 10, 2014

PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-3C

UTILITY DESIGN ENGINEER

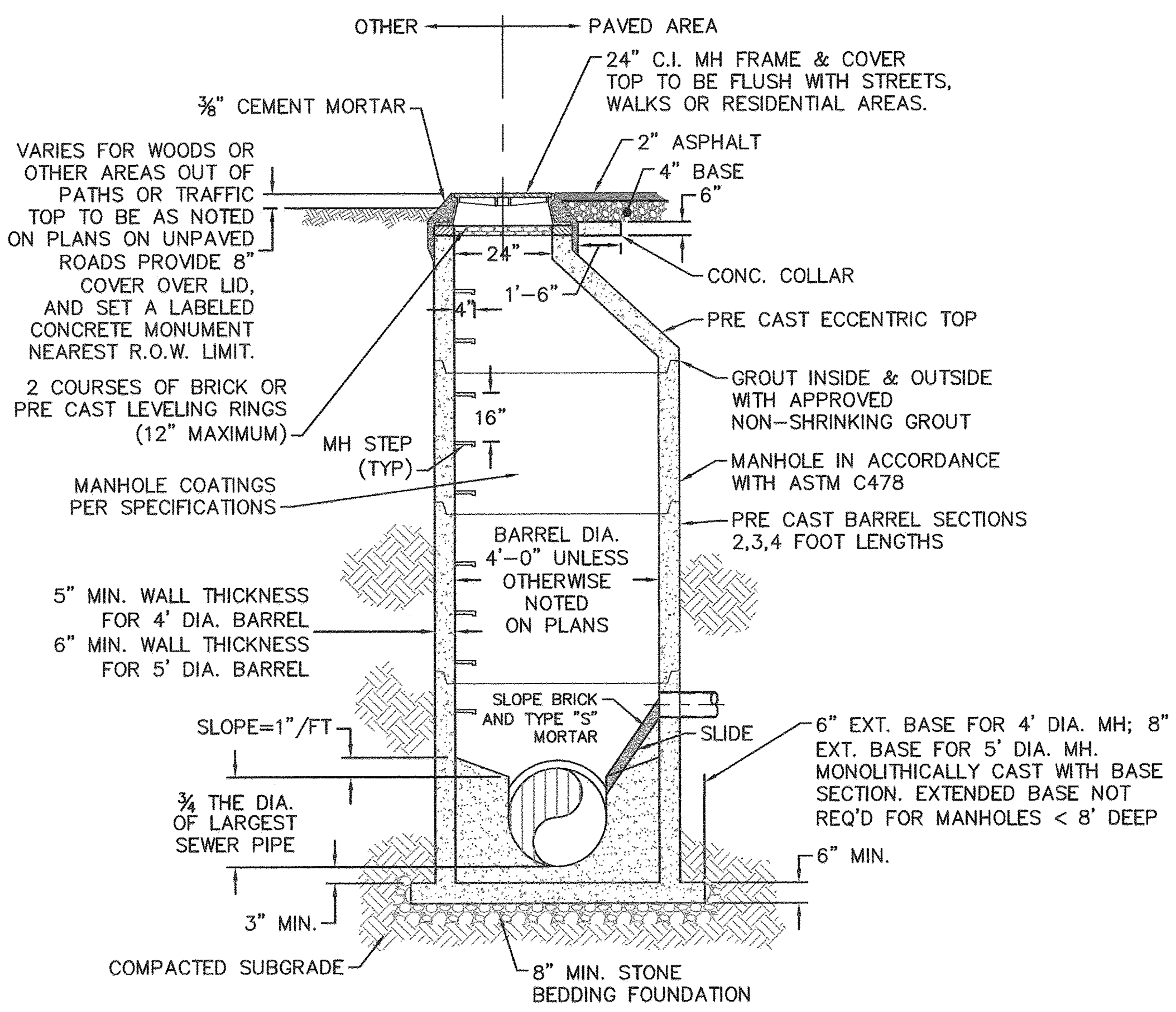
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 027061 KEVIN C. ZDEB

2014-NOV-18

MA Engineering CONSULTANTS, INC. 598 E. Chatham Street, Suite 137 Cary, N. C. 27511

HNTB — HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554

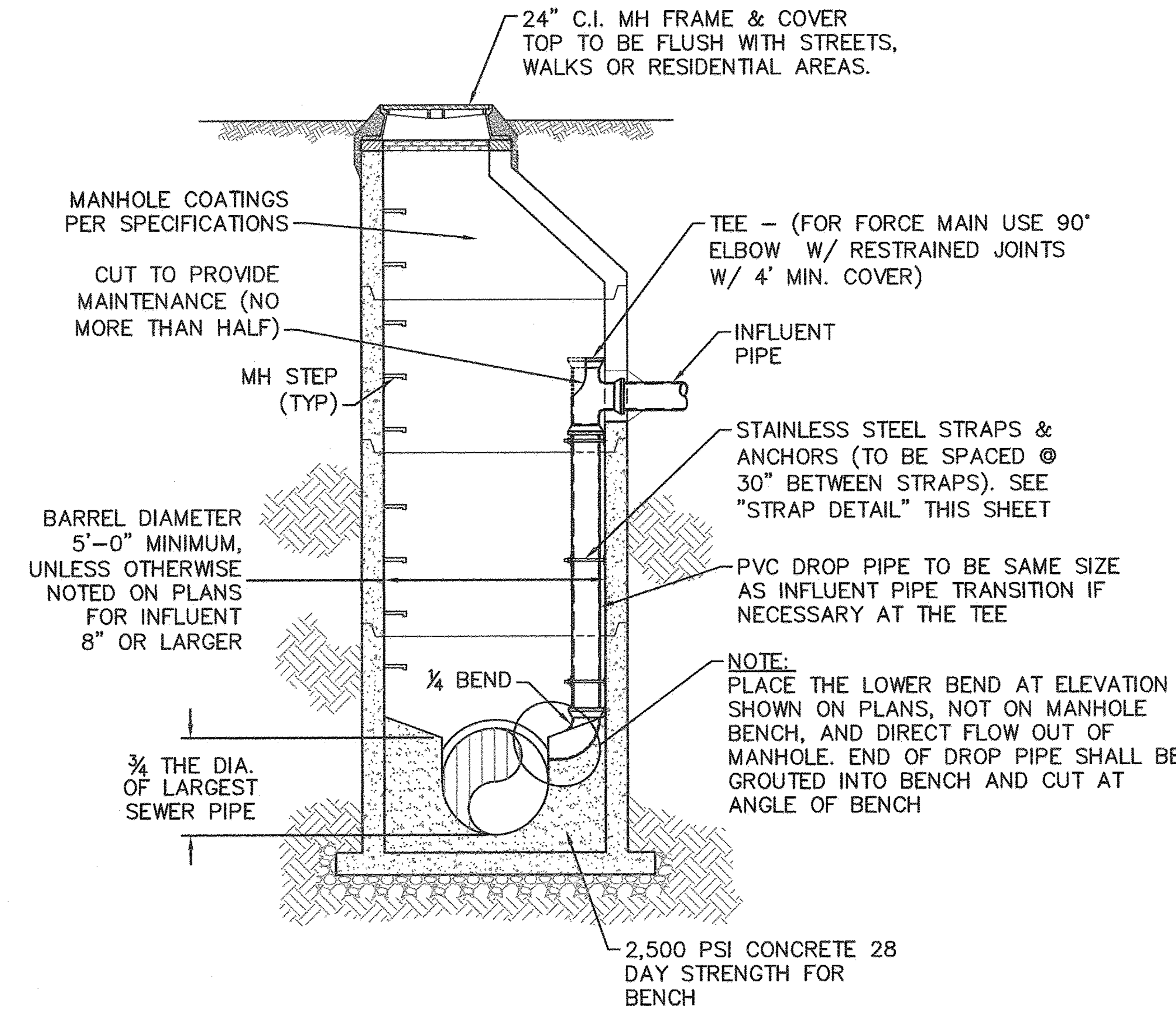
DATE: NOVEMBER 10, 2014



PRECAST CONCRETE OFFSET MANHOLE TYPICAL

(LESS THAN 30" DROP)

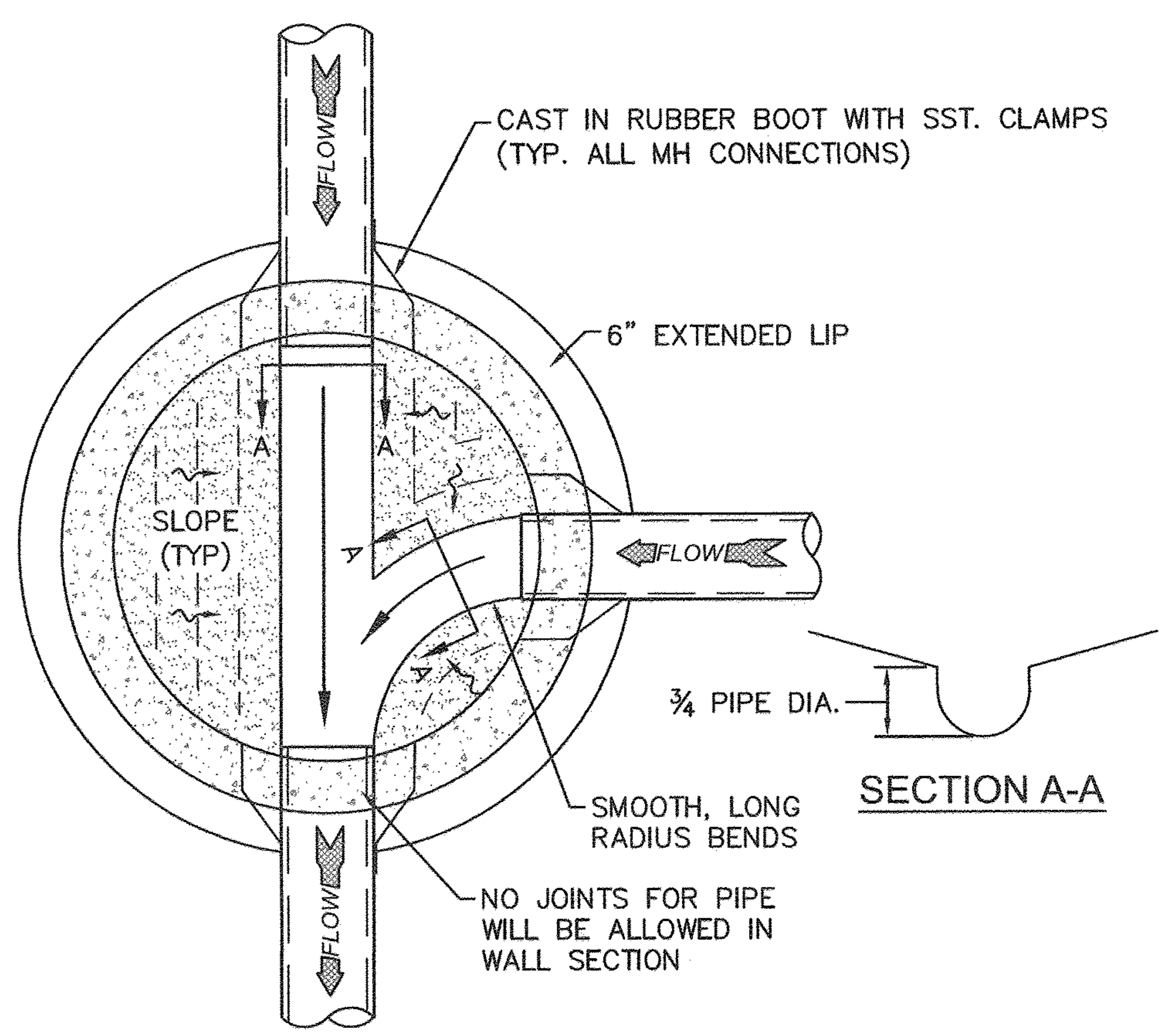
NOT TO SCALE



DROP MANHOLE

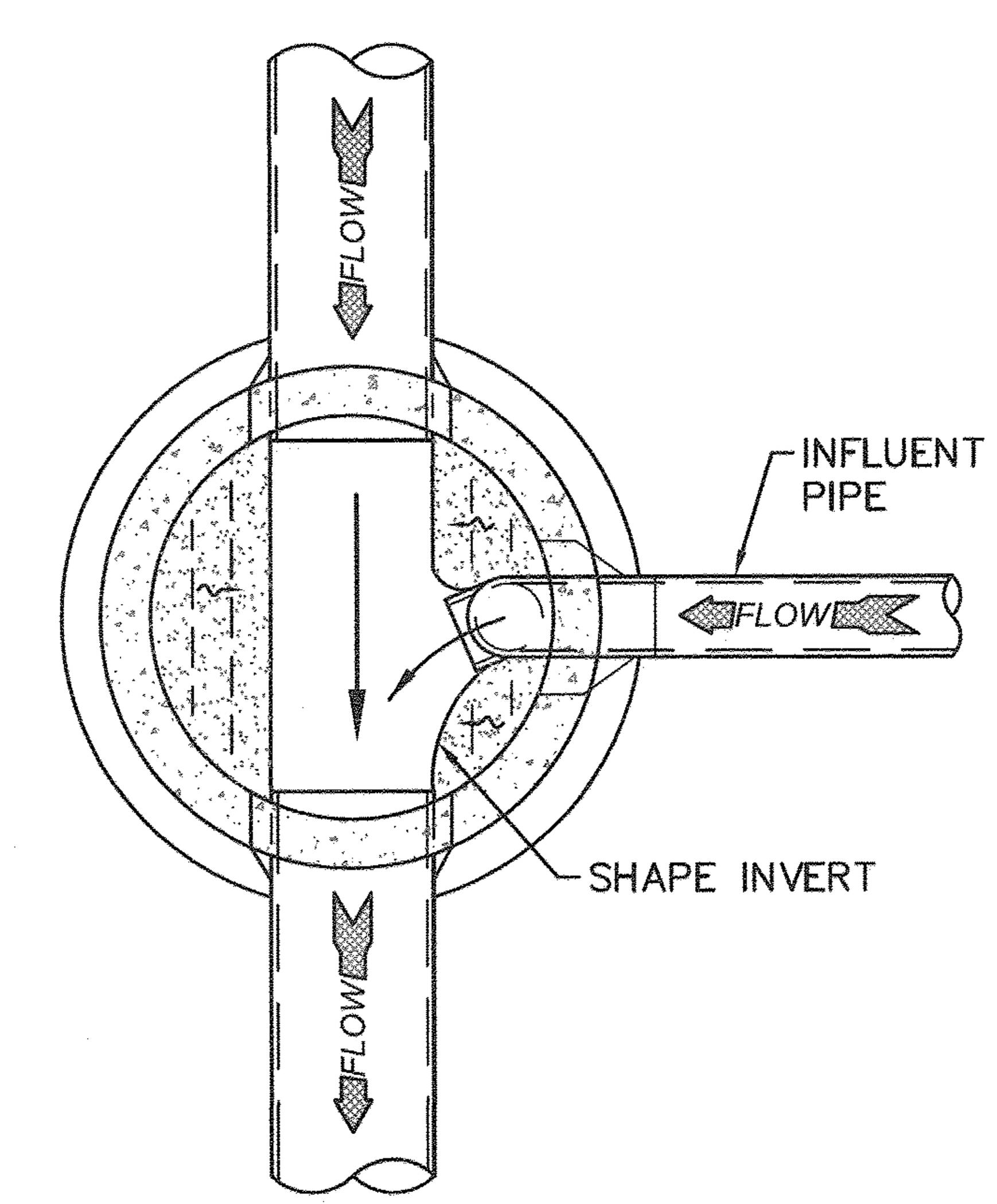
(MORE THAN 30" DROP)

NOT TO SCALE



MANHOLE FLOOR PLAN

NOT TO SCALE



DROP MANHOLE FLOOR PLAN

NOT TO SCALE

GENERAL NOTES:

1. SEWER GUARDS REQUIRED AT ALL MANHOLES. STAINLESS STEEL SEWER GUARDS REQUIRED AT MANHOLES LOCATED IN TRAFFIC AREAS.

2. ALL STAINLESS STEEL FASTENERS SHALL BE 316.

PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-04

UTILITY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 027681 ENGINEER KEVIN C. JONES

2014-NOV-18

MA Engineering CONSULTANTS, INC. 598 E. Chatham Street, Suite 137 Cary, N. C. 27511

HNTB NORTH CAROLINA, P.C. 343 E. Six Forks Road, Suite 200 Raleigh, North Carolina 27609 NC License No: C-1554

DATE: NOVEMBER 10, 2014

UTILITY OWNERS ON THIS PROJECT:

1. CFPUA
   UTILITY:10" FORCE MAIN
   8"/12" GRAVITY SEWER
   CONTACT: KENT HARRELL
   PHONE: 910-332-6674

-L2- PT Sta. 15+23.42

END PROJECT W-5203J
END CONSTRUCTION
-L2- POC STA.15+00.00

EX. SMH-A

EX. SMH-B

PROP. SMH-1
SL-1 STA 0+00.00
L2 STA 11+13.50 RT 22.3'

PREFORMED SCOUR HOLE SEE SHEET 28

PROP. 1 EA 4' DIA UTILITY MANHOLE
PROP. 3.2 LF UTILITY MANHOLE WALL, 4' DIA

ABANDON 73 LF 8" UTILITY PIPE
ABANDON 50 LF 12" UTILITY PIPE
REMOVE 2 EA UTILITY MANHOLE

ABANDON 439 LF 10" UTILITY PIPE

PROP. 65 LF 12" SANITARY GRAVITY SEWER
PROP. 1 EA 5' DIA UTILITY MANHOLE
PROP. 4.6 LF UTILITY MANHOLE WALL, 5' DIA

-L1- PC Sta. 13+46.71

BEGIN PROJECT W-5203J
BEGIN CONSTRUCTION
-L1- PT STA.13+00.00

-L3- PRC Sta. 13+14.22

PROP. SMH-2
SL-1 STA 0+65.00
L3 STA 11+11.54 LT 35.9'

BEGIN CONSTRUCTION
-L3- POC STA.15+00.00

EX. SMH-C

PROP. 45° HORIZ. BEND
FSS-1 0+00.00
L1 STA 16+20.90 RT 47.1'

PROP. 45° BEND
ROTATED AS NEEDED
FSS-1 STA 0+20.96
L1 STA 16+33.69 RT 63.6'

END ENCASEMENT PIPE
FSS-1 STA 4+75.88
L STA 11+14.40 LT 26.6'

-L1- PT Sta. 19+10.30
-L2- PC Sta. 10+00.00
-L3- PC Sta. 10+00.00

PROP. 70 LF 20" ENCASEMENT PIPE

PROP. 486 LF 10" FORCE MAIN SEWER

BEGIN ENCASEMENT PIPE
FSS-1 STA 4+05.88
L STA 11+33.35 RT 40.8'

PROP. 45° BEND
ROTATED AS NEEDED
FSS-1 STA 3+67.75
L3 STA 11+19.39 RT 74.5'

PROP. 45° BEND
ROTATED AS NEEDED
FSS-1 STA 4+00.88
L3 STA 11+34.59 RT 45.6'

-L3- PT Sta. 17+17.68

NOTES:

1. PROPOSED GRAVITY SANITARY SEWER PIPE SHALL BE PVC C-900 DR-18.
2. PROPOSED FORCE MAIN SEWER PIPE SHALL BE PVC C-900 DR-18.
3. REFER TO SHEET UC-3 FOR PROJECT NOTES.

SCALE:
1" = 50' PLAN

5/28/99

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

DATE: NOVEMBER 10, 2014

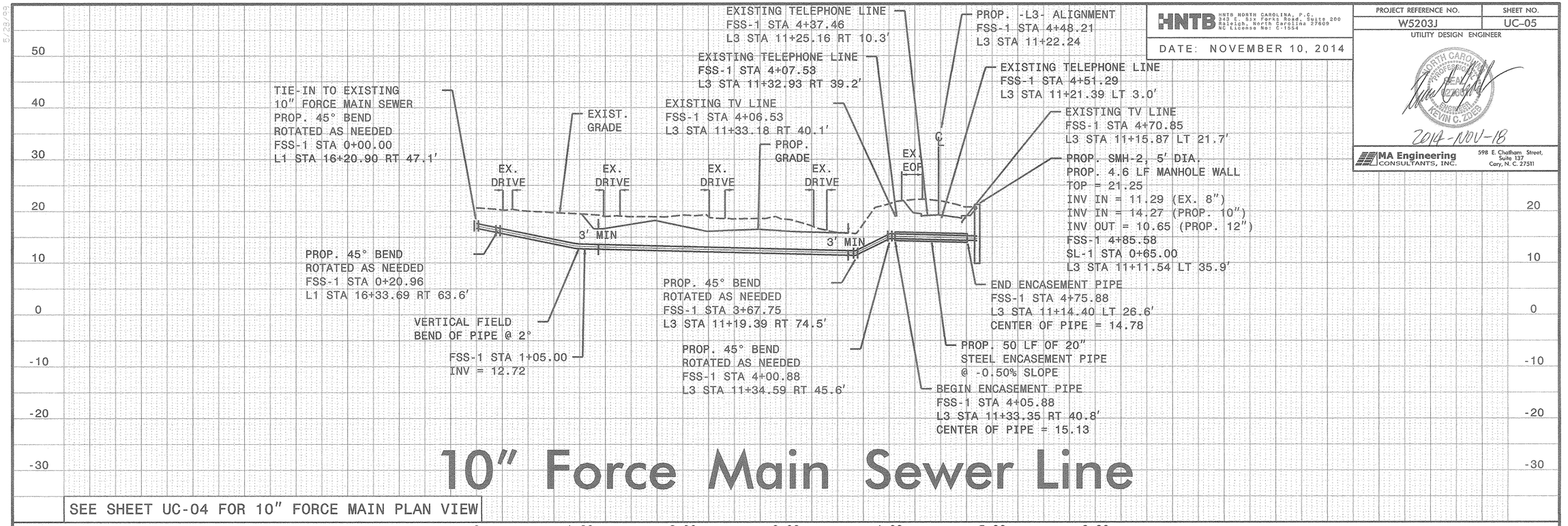
PROJECT REFERENCE NO.	SHEET NO.
W5203J	UC-05

UTILITY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 037661 KEVIN C. ZOELLER

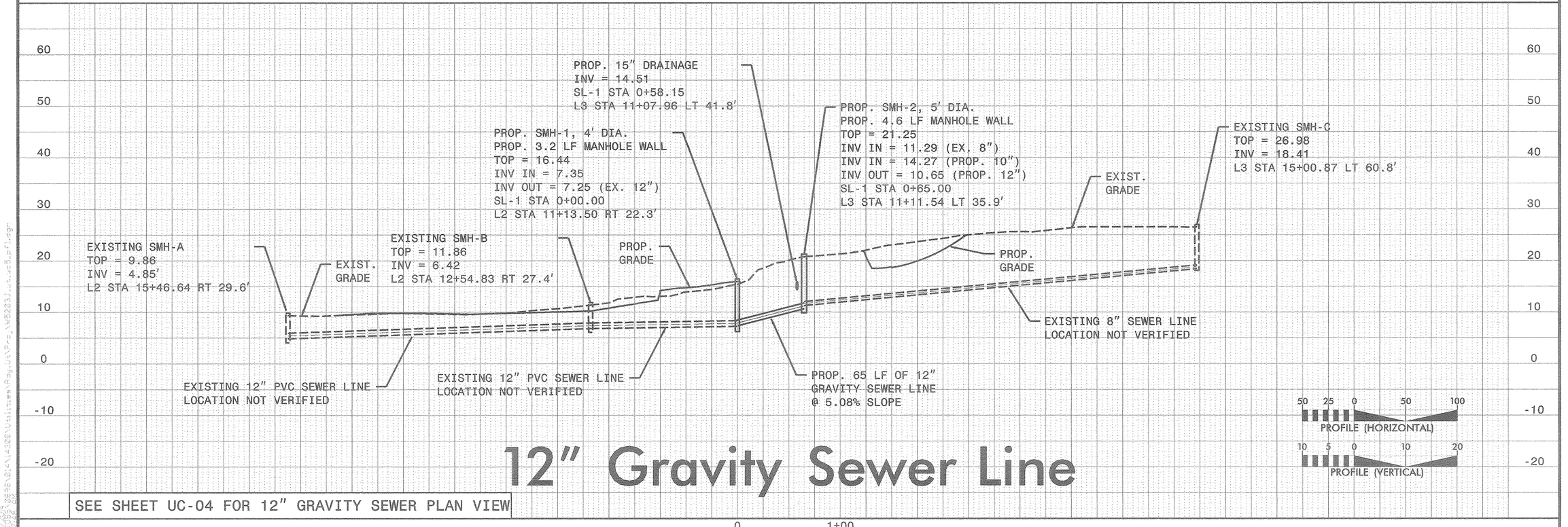
2014-NOV-18

MA Engineering CONSULTANTS, INC.
598 E. Chatham Street, Suite 137
Cary, N. C. 27511



10" Force Main Sewer Line

SEE SHEET UC-04 FOR 10" FORCE MAIN PLAN VIEW

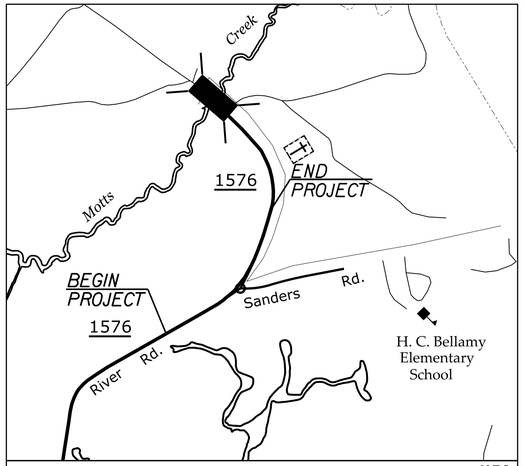


12" Gravity Sewer Line

SEE SHEET UC-04 FOR 12" GRAVITY SEWER PLAN VIEW

01/08/98

TIP PROJECT: W-5203J



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

T.I.P. NO.	SHEET NO.
W-5203J	UO-1

HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

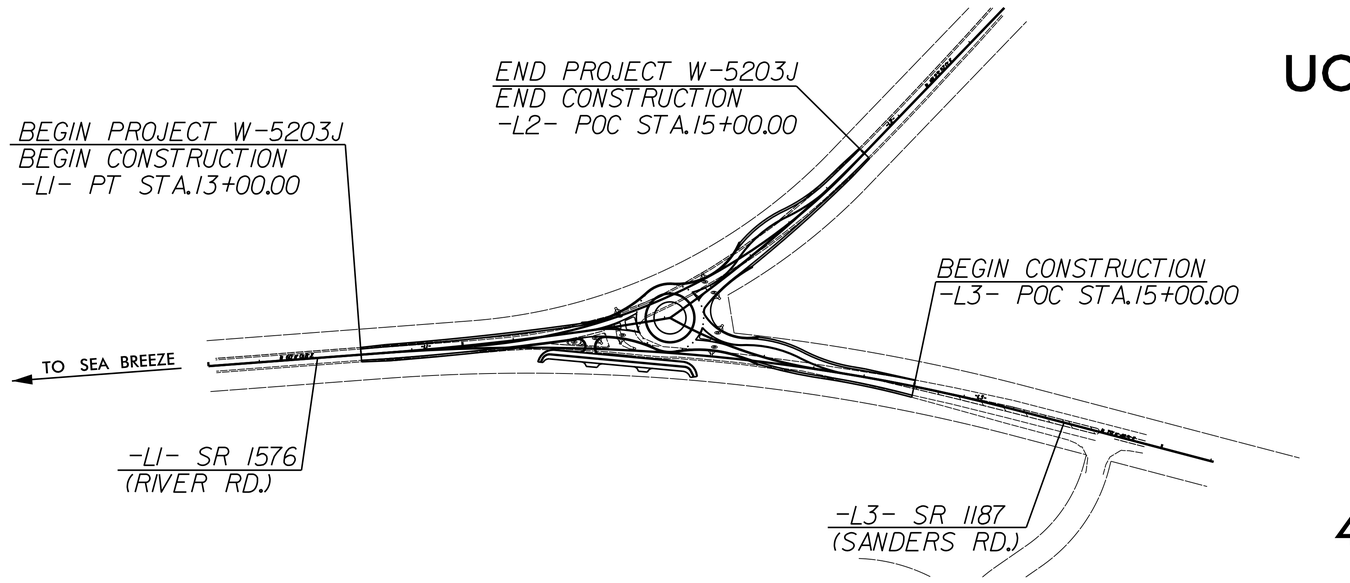
DATE: MAY 11, 2015

UTILITIES BY OTHERS PLANS
NEW HANOVER COUNTY

LOCATION: INTERSECTION OF SR 1187 (SANDERS RD.) AND SR 1576 (RIVER RD.)

TYPE OF WORK: UTILITY BY OTHERS RELOCATION

UO-2



4

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

SHEET NO.	*DESCRIPTION*
UO-1	*TITLE SHEET*
UO-2	*PLAN SHEET*

UTILITY OWNERS ON PROJECT

(1) POWER – DUKE ENERGY

(2) PHONE – AT&T

(3) CATV – TIME WARNER

UTILITY DESIGN BY:
M A Engineering Consultants, Inc.
NC License: F-0160
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NCDOT PROJECT ENGINEER:
DAVID LEONARD, P.E.

PREPARED FOR:
NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION BRIDGE PROGRAM

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

5/14/99

HNTB

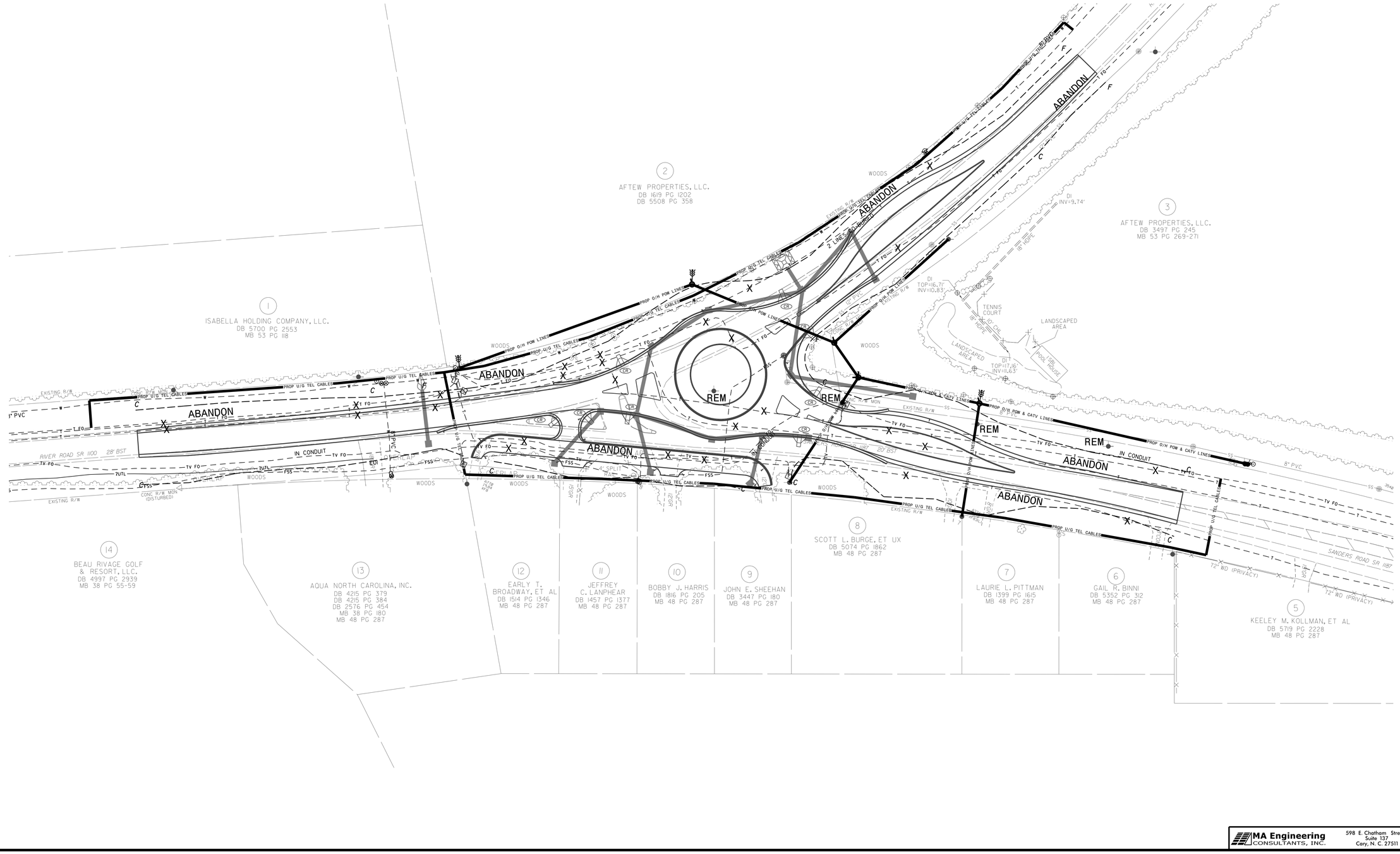
HNTB NORTH CAROLINA, P.C.
343 E. Six Forks Road, Suite 200
Raleigh, North Carolina 27609
NC License No: C-1554

DATE: MAY 11, 2015

PROJECT REFERENCE NO.	SHEET NO.
W-5203J	UO-2

UTILITIES BY OTHERS

NOTE:
ALL PROPOSED UTILITY WORK SHOWN ON THIS SHEET WILL BE DONE BY OTHERS



MA Engineering CONSULTANTS, INC.
598 E. Chatham, Street, Suite 137
Cary, N. C. 27511

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+00.00	0	0
13+50.00	79	6
14+00.00	79	6
14+50.00	63	4
15+00.00	42	6
15+50.00	39	11
16+00.00	48	13
16+50.00	44	27
17+00.00	68	35
17+50.00	181	47
18+00.00	258	73
18+44.30	305	89

Station C1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
12+50.00	0	221
12+75.00	0	151
13+00.00	6	86

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

Station L2	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+66.00	0	0
11+00.00	40	84
12+00.00	65	179
12+50.00	38	88
13+00.00	37	66
13+50.00	41	29
14+00.00	36	9
14+50.00	30	7
15+00.00	23	8

Station L3	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+66.02	0	0
11+00.00	366	6
11+50.00	385	0
12+00.00	438	0
12+50.00	463	0
13+00.00	308	0
13+50.00	178	2
14+00.00	78	8
14+50.00	53	11
15+00.00	68	5

Station C1	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+00.00	0	0
10+25.00	28	71
10+50.00	75	59
10+75.00	114	53
11+00.00	105	52
11+25.00	81	56
11+50.00	59	64
11+75.00	22	78
12+00.00	0	97
12+25.00	0	171

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	W–5203J	X–1

W–5203J
CROSS SECTION INDEX

LOCATION	STATION TO STATION	SHEET NO.
–L1–	STA. 13 + 00.00 TO STA. 18 + 44.30	X–2 THRU X–6
–L2–	STA. 10 + 66.00 T0 STA. 15 + 00.00	X–7 THRU X–9
–L3–	STA. 10 + 66.02 TO STA 15 + 00.00	X–10 THRU X–12
–C1–	STA. 10 + 00.00 TO STA. 13 + 01.59	X–13 THRU X–15

℄ –L1–

S.S. 20.23

3:1 4:1

17.71

0.019 0.013

20.17

6:1 3:1

18.75

S.S. 23.67

13+50.00

S.S. 20.32

3:1 4:1

17.86

0.014 0.012

20.33

6:1 6:1

18.91

S.S. 21.67

13+00.00

20.43

12+50.00

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."

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-3

0 5

℄ –L1–

S.S. 17.99
0.020
4:1
0.020
0.020
6:1
18.28
4:1
S.S. 21.57

19.09

15+00.00

S.S. 18.99
3:1
4:1
17.12
0.020
0.020
6:1
18.44
3.133:1
S.S. 21.52

19.47

14+50.00

S.S. 19.96
3:1
4:1
17.44
0.020
0.020
6:1
18.60
VAR
S.S. 21.85

19.83

14+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

30 25 20 15 10

8/23/99

09-DEC-2015 11:33
\\roads\Projects\49353 Division 3 Environmental Outsourcing\Task Order 40 - River Road Roundabout\Roadway\CorridorModeling\W5203J_rdy_xpl.L1.dgn
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-4

0 5

℄ –L1–

S.S. 16.44 3:1 0.020 0.020 VAR. S.S.19.05 0.020 0.030

18.25

16+50.00

S.S. 14.24 3:1 .003 14.28 0.020 0.020 6:1 6:1 17.97 S.S. 19.52

18.50

16+00.00

S.S. 16.84 4:1 0.020 0.020 6:1 6:1 18.13 S.S. 20.01

18.78

15+50.00

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-5

0 5

℄ –L1–

–SR1–

S.S. 12.49

4:1

0.020

0.020

VAR.

VAR.

0.02

0.02

3:1

3:1

16.56

S.S. 19.11

17.39

18+00.00

–SR1–

S.S. 14.35

4:1

0.020

0.005

0.018

0.02

0.02

3:1

3:1

16.70

17.69

17+50.00

–SR1–

S.S. 15.79

3:1

0.020

0.020

VAR.

S.S.18.89

0.02

0.023

0.023

3:1

3:1

17.32

S.S. 19.65

17.98

17+00.00

8/23/99

09-DEC-2015 11:33
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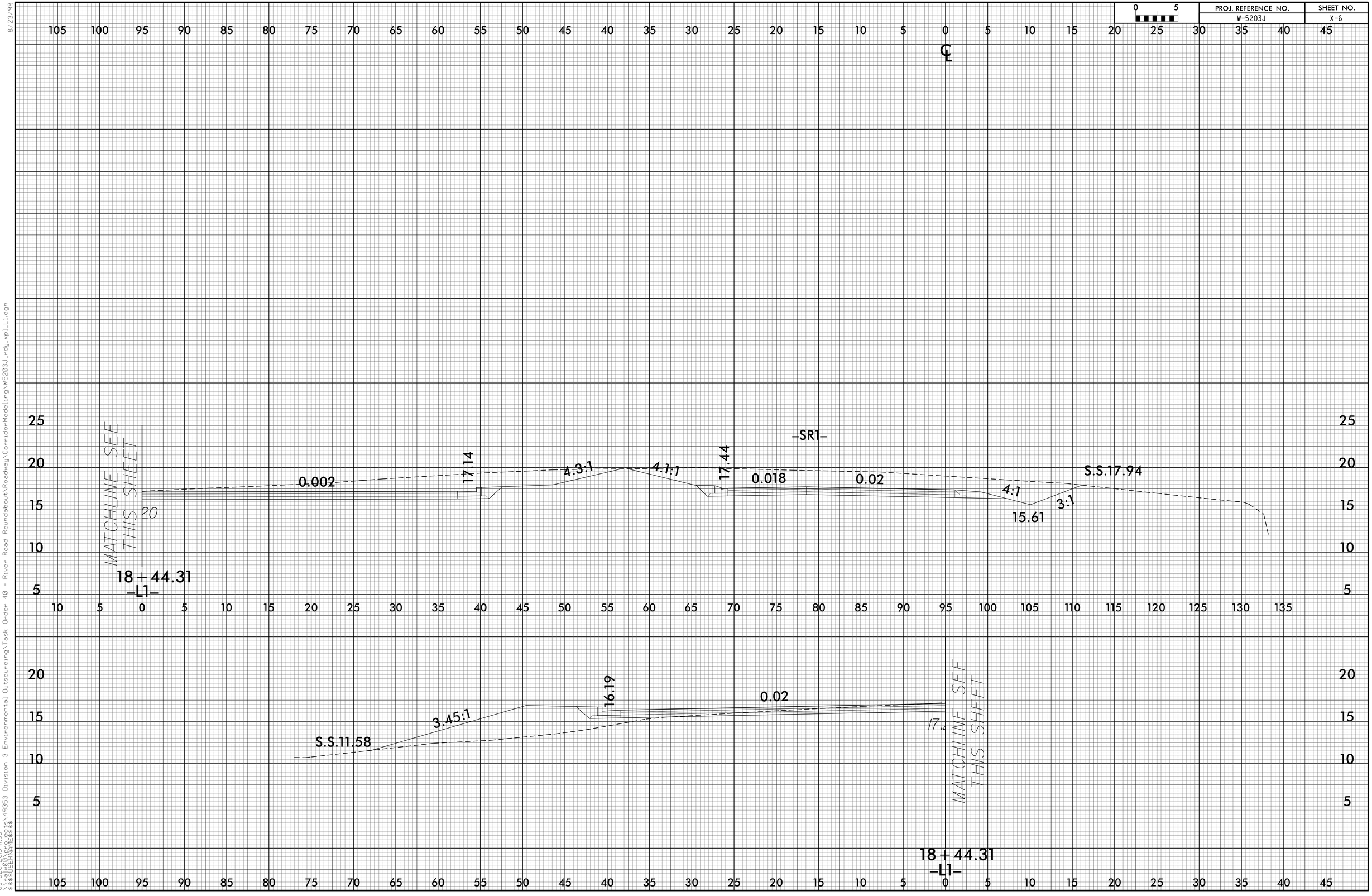
0 5	PROJ. REFERENCE NO.	SHEET NO.
	W-5203J	X-6



0 10	PROJ. REFERENCE NO.	SHEET NO.
	W-5203J	X-7

S.S.9.39 3:1 0.020 0.020 4:1 3:1 S.S. 13.43 11.15

13.45

12+00.00

S.S. 10.23 3:1 0.020 0.020 4:1 S.S. 14.28

14.18

11+50.00

S.S. 10.96 3:1 0.020 0.020 4:1 S.S. 15.91

15.16

11+00.00

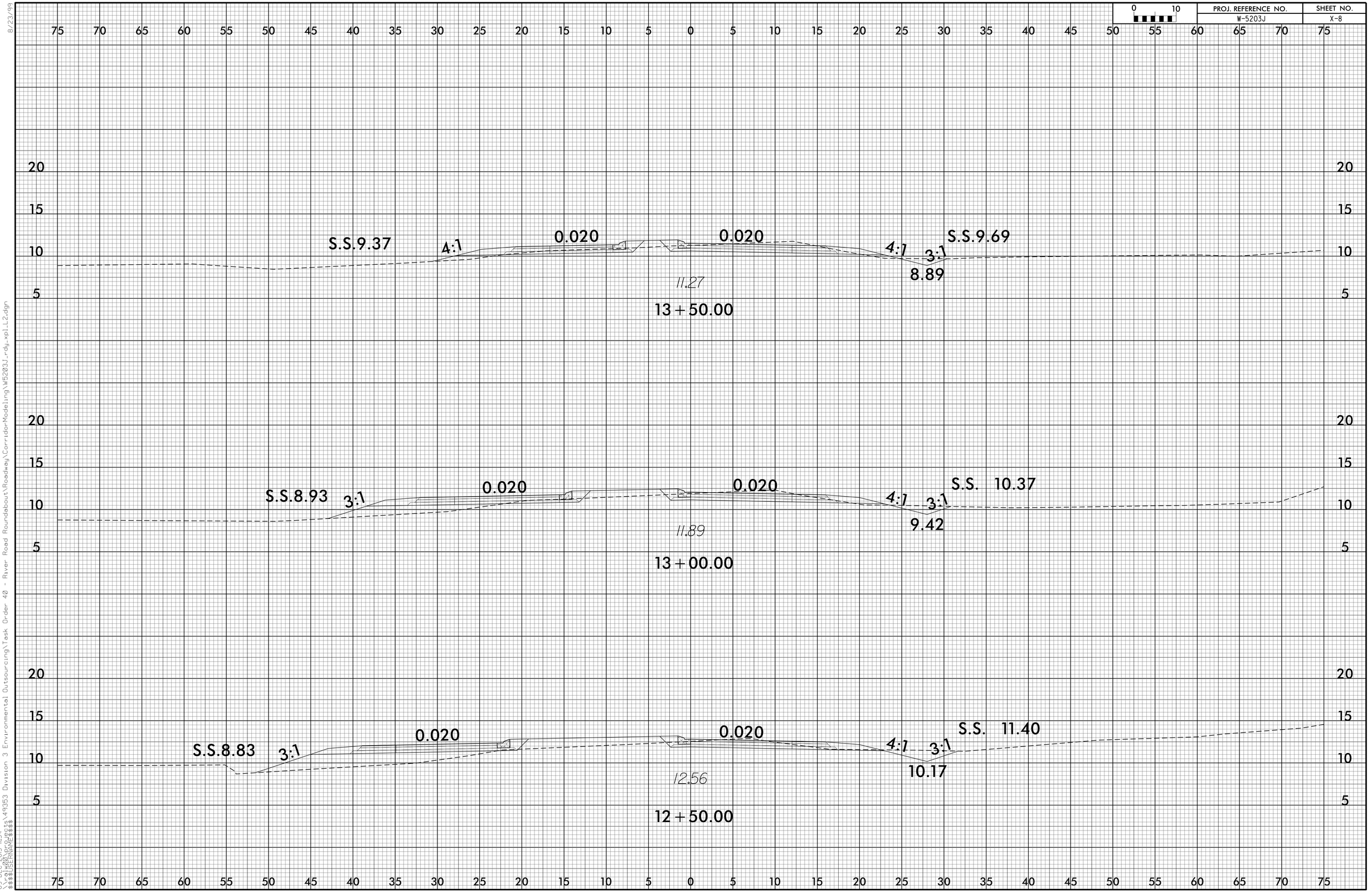
3:1 0.014 0.004 0.02 4:1

15.79

10+66.00

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-8

0 10



8/23/99

09-DEC-2015 11:34
\\rolla00\Projects\49363 Division 3 Environmental Outsourcing\Task Order 40 - River Road Roundabout\Roadway\CorridorModeling\W5203J_rdy_xpl_L2.dgn
$$$$USERNAME$$$$

0 10	PROJ. REFERENCE NO.	SHEET NO.
	W-5203J	X-9

S.S.9.24 4:1 0.032 0.035 4:1 S.S.9.35

10.68

15+00.00

S.S.9.39 4:1 0.020 0.020 4:1 S.S.9.64

10.91

14+50.00

S.S.9.82 4:1 0.020 0.005 4:1 3:1 S.S.9.72

8.89

11.07

14+00.00

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-10

0 10

12 + 00.00

S.S. 23.23

3:1

7.44:1

18.38

0.020

0.020

23.12

0.08

S.S. 18.28

4:1

0.020

0.020

4:1

22.57

11 + 50.00

S.S. 20.23

4:1

0.020

0.020

0.020

0.020

4:1

21.45

S.S. 21.59

11 + 00.00

4:1

0.02

17.07

0.018

20.18

0.003

17.46

4:1

10 + 66.02

0 10	PROJ. REFERENCE NO.	SHEET NO.
	W-5203J	X-11

S.S. 25.69

3:1 4:1

22.12

0.005 0.020 0.08

24.39

S.S. 23.05

13+50.00

S.S. 25.21

3:1 4:1

20.83

0.020 0.020 0.08

23.88

S.S. 20.79

13+00.00

S.S. 24.38

3:1 4:1

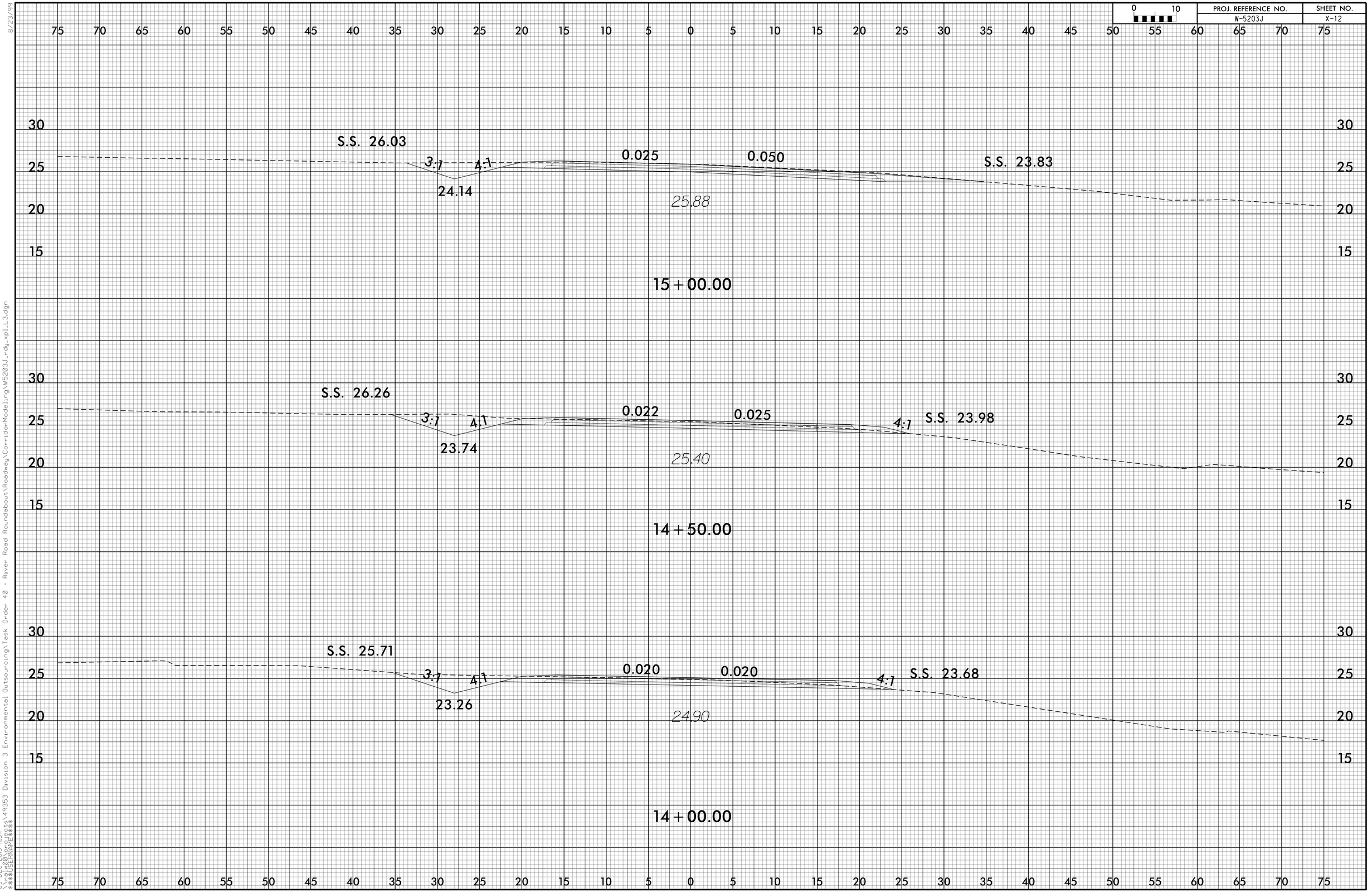
19.60

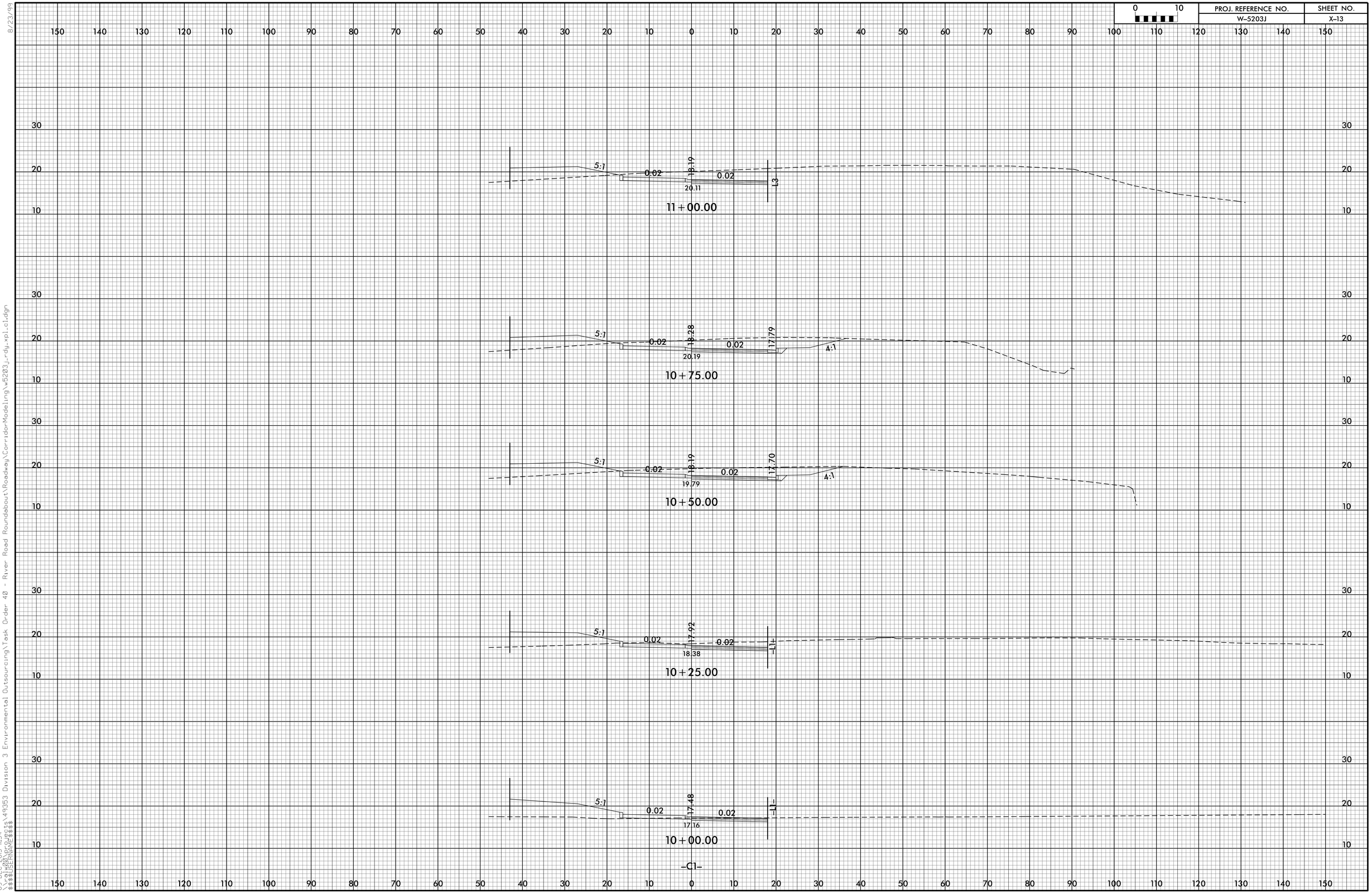
0.020 0.020 0.08

23.45

S.S. 20.37

12+50.00





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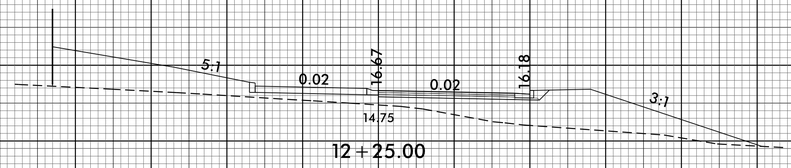
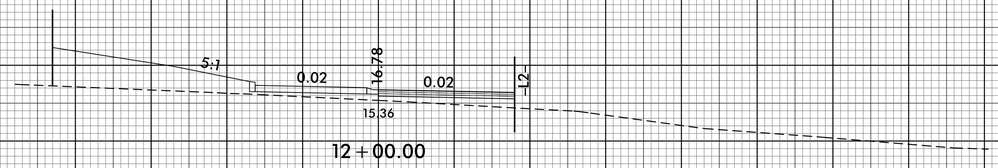
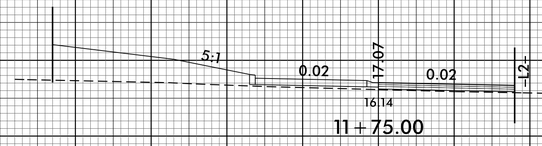
	W-5203J	X-14



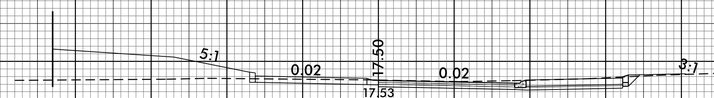
12+25.00



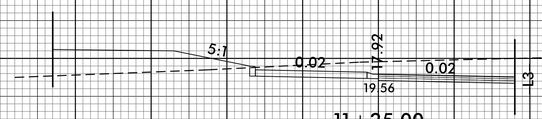
12+00.00



11+75.00



11+50.00



11+25.00

–C1–

PROJ. REFERENCE NO.	SHEET NO.
W-5203J	X-15

0 10

13+00.00

5:1 0.02 17.44 0.02 17.09 -L1-

12+75.00

5:1 0.02 17.01 0.02 15.89 -L1-

12+50.00

-C1-

5:1 0.02 16.75 0.02 16.25 3:1 15.03