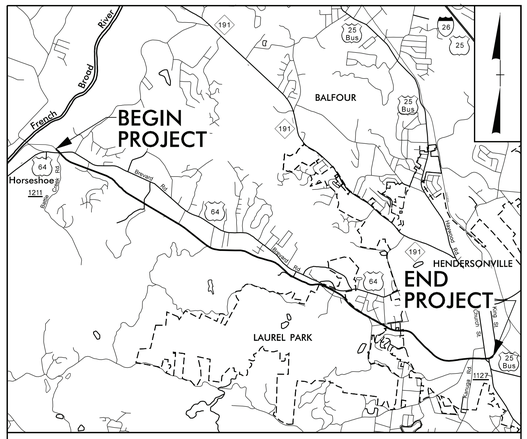
PROJECT: ECUSTA TRAIL

HENDERSON COUNTY
ENGINEERING DEPARTMENT

HENDERSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BL-0007	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
49462.1.0	1413020	P.E.
49462.3.4	1413020	CONST.

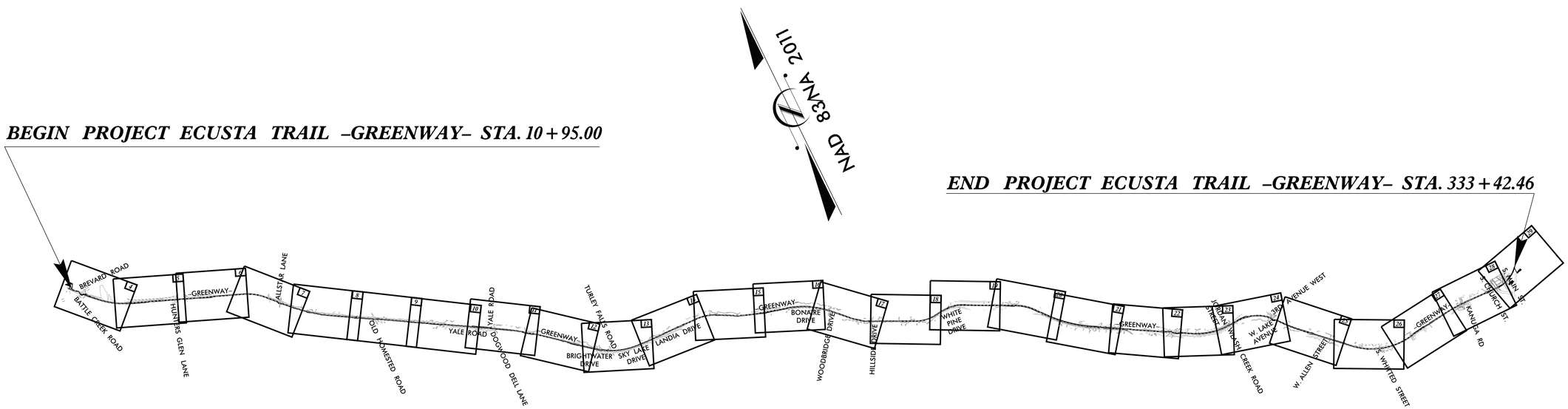


VICINITY MAP (N.T.S.)

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

LOCATION: US 64 NEAR HORSE SHOE TO SOUTH MAIN STREET IN HENDERSONVILLE

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES



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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 5 10
PROFILE (VERTICAL)

PROJECT LENGTH

ECUSTA TRAIL GREENWAY LENGTH = 6.055 MI.
ECUSTA TRAIL BRIDGE 11 LENGTH = 0.011 MI.
ECUSTA TRAIL BRIDGE 12 LENGTH = 0.013 MI.
ECUSTA TRAIL BRIDGE 13 LENGTH = 0.005 MI.
ECUSTA TRAIL BRIDGE 14 LENGTH = 0.004 MI.
ECUSTA TRAIL BRIDGE 15 LENGTH = 0.010 MI.
ECUSTA TRAIL BRIDGE 16 LENGTH = 0.009 MI.
TOTAL LENGTH OF ECUSTA TRAIL PROJECT = 6.107 MI.

JMT
Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

2018 STANDARD SPECIFICATIONS

LETTING DATE:
MAY 1, 2023

JOEL SETZER, PE
PROJECT ENGINEER

ALEX FITZPATRICK
PROJECT DESIGN ENGINEER

HENDERSON COUNTY CONTACT:
MARCUS JONES, PE

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER
SIGNATURE: P.E.

ENGINEERING DEPARTMENT
HENDERSON COUNTY

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	1A
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

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INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	TYPICAL SECTIONS
2B-1	RETAINING WALL PROFILE
2C-1	ROCK PLATING DETAIL
3B-1 THRU 3B-2	SUMMARIES OF PEDESTRIAN HANDRAIL, 5' CONCRETE SIDEWALK, FENCE RESET, REMOVE AND STOCKPILE FENCE, REMOVE AND STOCKPILE RAILROAD SIGNAL ARM, EARTHWORK SUMMARY, AND GUARDRAIL SUMMARY
3D-1 THRU 3D-4	DRAINAGE SUMMARY SHEETS
4 THRU 29	PLAN SHEETS
30 THRU 42	PROFILE SHEETS
L0.1 THRU L0.7	LANDSCAPE ARCHITECTURE DETAILS
TMP-1 THRU TMP-12	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-22	PAVEMENT MARKING AND SIGNING PLANS
EC-1 THRU EC-32	EROSION CONTROL PLANS
SIG 1.0 THRU SIG. M8	SIGNAL PLANS
X-0	CROSS SECTION SHEET INDEX
X-1 THRU X-164	CROSS SECTIONS
S-1 THRU S-10	STRUCTURE PLANS
W-0.0 THRU W-3.0	RETAINING WALL PLANS

GENERAL NOTES: 2018 SPECIFICATIONS
EFFECTIVE: 01-16-18

GRADE LINE:
GRADING

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED OR FUTURE 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.

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 PLANS:

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

END BENTS:

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

CURB RAMPS:

CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS.
CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January 17, 2018 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
225.02	Guide for Grading Subgrade - Secondary and Local
225.06	Method of Grading Sight Distance at Intersections
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation - Method 'A'
DIVISION 4 - MAJOR STRUCTURES	
422.11	Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 8 - INCIDENTALS	
815.03	Pipe Underdrain and Blind Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.04	Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05	Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14	Concrete Drop Inlet 12" thru 30" Pip
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.29	Frame and Narrow Slot Flat Grates
840.33	Angled Vane Grates and Frames
840.72	Pipe Collars
876.02	Guide for Rip Rap at Pipe Outlets

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

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

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Computed Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY & PROJECT CONTROL:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

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

WATER:

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

TV:

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

GAS:

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

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

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

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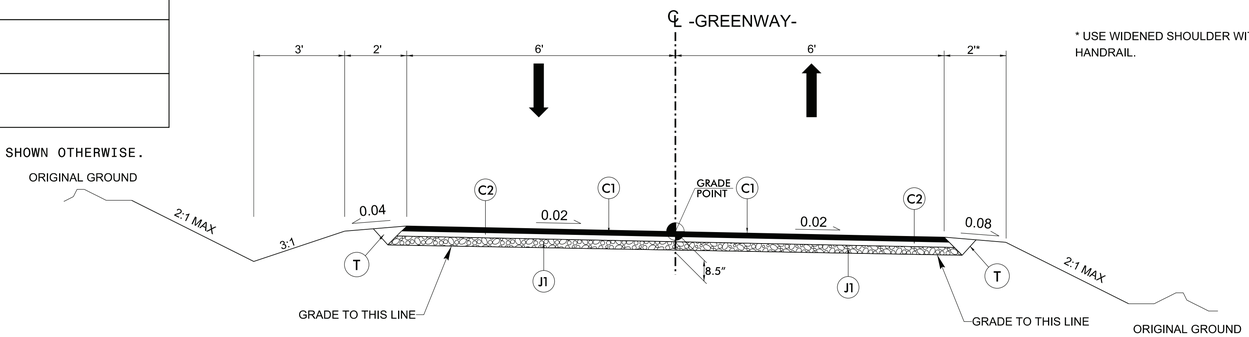
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	2A-1
PAVEMENT DESIGN ENGINEER	ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
A1	8" PORTLAND CEMENT CONCRETE PAVEMENT
C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
J1	PROPOSED 6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL
U	EXISTING ROADWAY

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



TYPICAL SECTION NO. 1

* USE WIDENED SHOULDER WITH PEDESTRIAN HANDRAIL.

TYPICAL SECTION NO. 1

-GREENWAY- STA. 10+95.00 TO
-GREENWAY- STA. 14+04.42 (BEGIN BRIDGE 11)

-GREENWAY- STA. 14+64.92 (END BRIDGE 11) TO
-GREENWAY- STA. 72+90.99 (BEGIN BRIDGE 12)

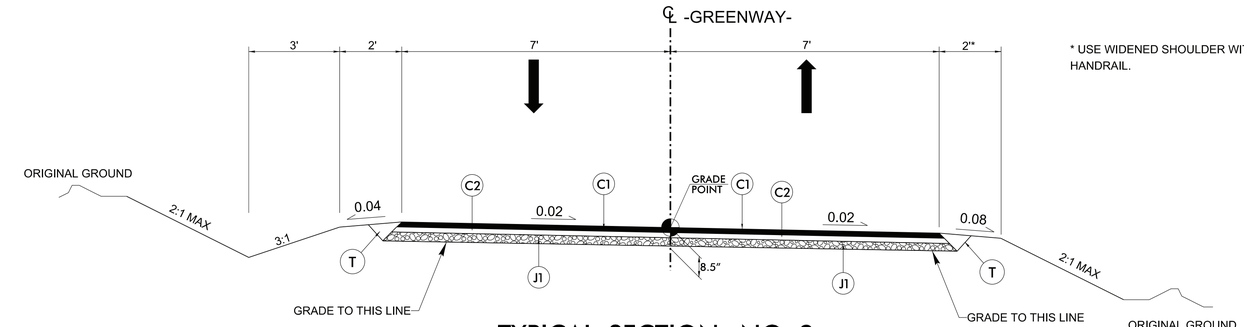
-GREENWAY- STA. 73+58.99 (END BRIDGE 12) TO
-GREENWAY- STA. 126+49.80 (BEGIN BRIDGE 13)

-GREENWAY- STA. 126+77.80 (END BRIDGE 13) TO
-GREENWAY- STA. 203+32.45

-GREENWAY- STA. 126+77.80 (END BRIDGE 13) TO
-GREENWAY- STA. 203+32.45

-GREENWAY- STA. 242+00.00 TO
-GREENWAY- STA. 250+23.29 (BEGIN BRIDGE 14)

-GREENWAY- STA. 250+46.29 (END BRIDGE 14) TO
-GREENWAY- STA. 252+92.98



TYPICAL SECTION NO. 2

* USE WIDENED SHOULDER WITH PEDESTRIAN HANDRAIL.

TYPICAL SECTION NO. 2

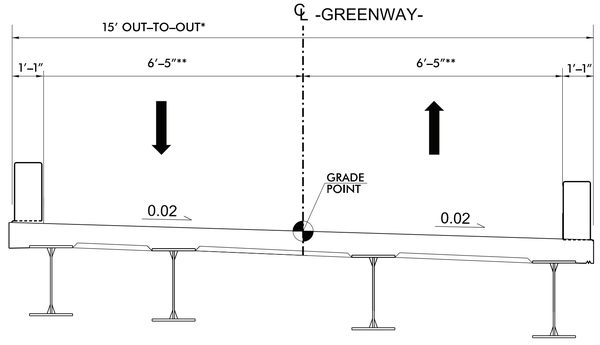
-GREENWAY- STA. 203+32.45 TO
-GREENWAY- STA. 242+00.00

-GREENWAY- STA.252+92.98 TO
-GREENWAY- STA. 283+74.78 (BEGIN BRIDGE 15)

-GREENWAY- STA. 284+28.78 (END BRIDGE 15) TO
-GREENWAY- STA. 325+11.16 (BEGIN BRIDGE 16)

-GREENWAY- STA. 325+59.16 (END BRIDGE 16) TO
-GREENWAY- STA. 329+25.00

*USE 17' FOR BRIDGES 14-16
**USE 7'-5" FOR BRIDGES 14-16



NOTE: SEE STRUCTURES PLANS FOR BRIDGE TEMPLATES AND DESIGN

TYPICAL SECTION NO. 3

TYPICAL SECTION NO. 3

BRIDGE 11 -GREENWAY- STA. 14+04.42 TO -GREENWAY- STA. 14+64.92
BRIDGE 12 -GREENWAY- STA. 72+90.99 TO -GREENWAY- STA. 73+58.99
BRIDGE 13 -GREENWAY- STA. 126+49.80 TO -GREENWAY- STA. 126+77.80
BRIDGE 14 -GREENWAY- STA. 250+23.29 TO -GREENWAY- STA. 250+46.29
BRIDGE 15 -GREENWAY- STA. 283+74.78 TO -GREENWAY- STA. 284+28.78
BRIDGE 16 -GREENWAY- STA. 325+11.16 TO -GREENWAY- STA. 325+59.16

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	2A-2
PAVEMENT DESIGN ENGINEER	ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

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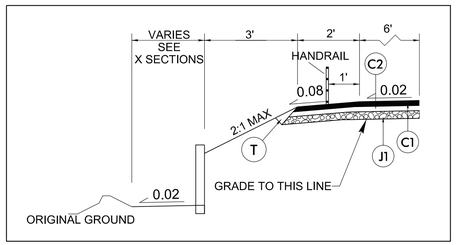
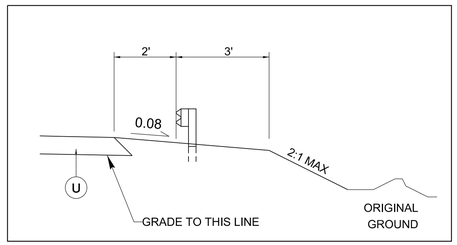
PAVEMENT SCHEDULE	
A1	8" PORTLAND CEMENT CONCRETE PAVEMENT
C1	PROP. APPROX. 1" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD.
C2	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
J1	PROPOSED 6" AGGREGATE BASE COURSE.
T	EARTH MATERIAL
U	EXISTING ROADWAY

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



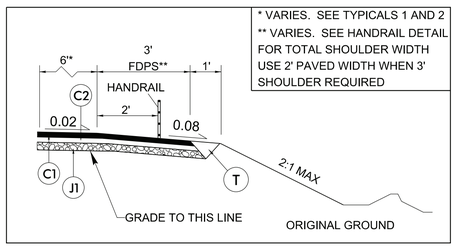
RETAINING WALL DETAIL

-GREENWAY- 98+22.00 LT. TO
-GREENWAY- 102+35.00 LT.



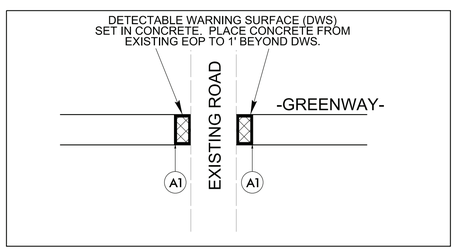
ADD SHOULDER FOR GUARDRAIL

-GREENWAY- 224+14 +/- TO -GREENWAY- 228+42 +/- RT
-GREENWAY- 307+10 +/- TO -GREENWAY- 308+80 +/- RT



WIDENED SHOULDER FOR HANDRAIL

SEE DETAIL ON SHEET 3B-1
FOR HANDRAIL LOCATIONS



DETECTABLE WARNING SURFACE PLACEMENT AT ROAD CROSSINGS

SEE DETAIL ON SHEET L0.6

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	2B-1

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

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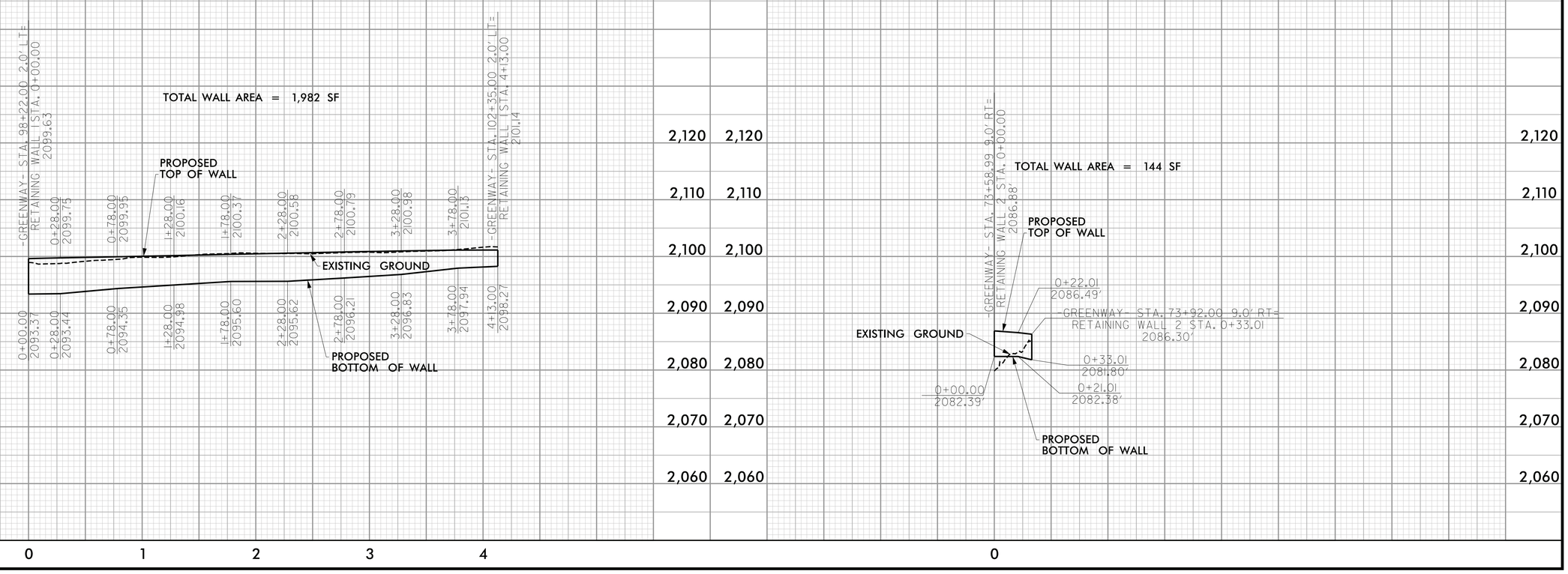
RETAINING WALL



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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	2C-1
PAVEMENT DESIGN ENGINEER	ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 20646 ENGINEER MATTHEW D. FOSTER

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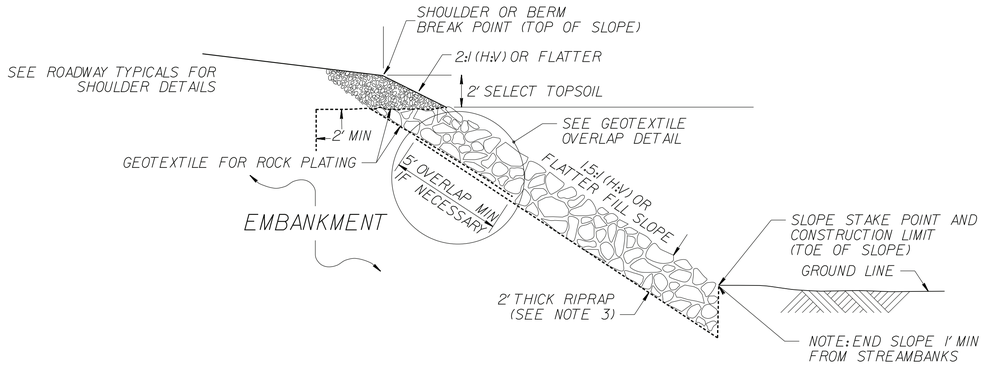
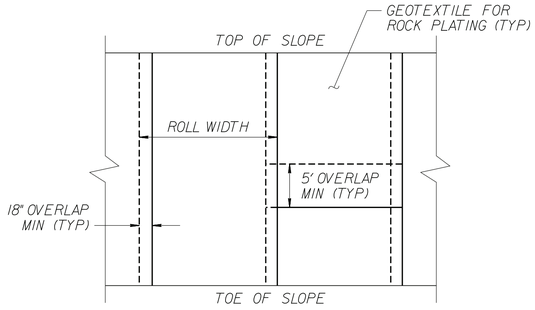


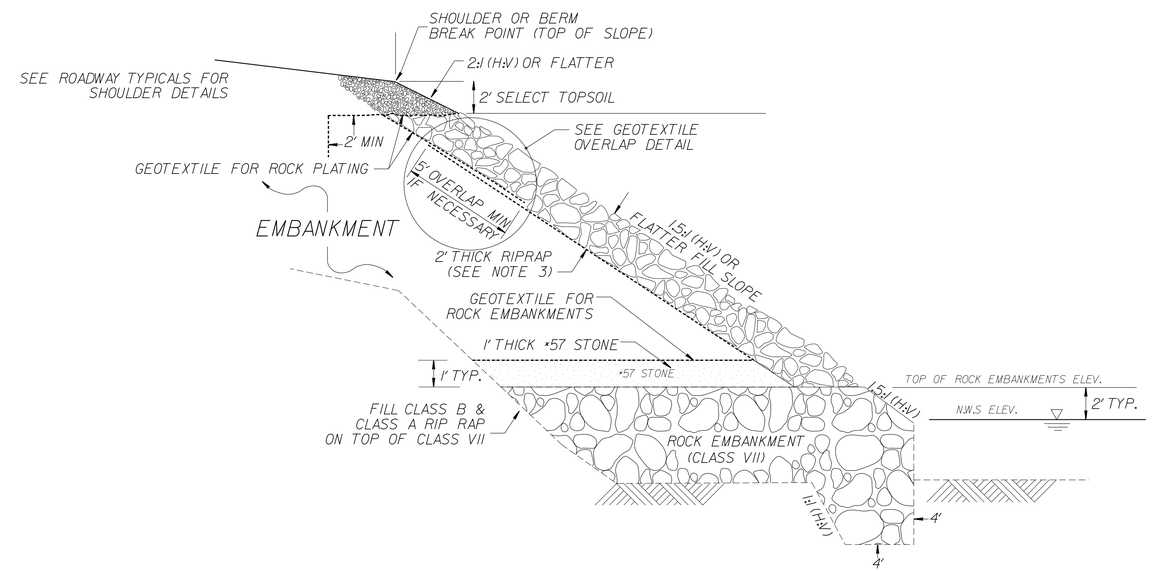


GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)

ROCK PLATING DETAIL NO. 1 – TYPICAL SECTION

FROM STA. 19+40 TO STA. 21+40
FROM STA. 41+30 TO STA. 41+70
FROM STA. 54+10 TO STA. 55+00
FROM STA. 56+12 TO STA. 56+61
FROM STA. 72+75 TO STA. 72+91
FROM STA. 74+25 TO STA. 76+20
FROM STA. 77+50 TO STA. 79+00
FROM STA. 124+25 TO STA. 125+00
FROM STA. 136+25 TO STA. 140+40
FROM STA. 143+60 TO STA. 145+60
FROM STA. 179+00 TO STA. 181+75
FROM STA. 189+00 TO STA. 189+50
FROM STA. 201+90 TO STA. 202+45
FROM STA. 250+00 TO STA. 250+23.29
FROM STA. 284+28 TO STA. 284+78
FROM STA. 309+80 TO STA. 310+95
FROM STA. 324+80 TO STA. 325+03
FROM STA. 325+45 TO STA. 326+00



ROCK PLATING & ROCK EMBANKMENT DETAIL NO. 2 – TYPICAL SECTION

FROM STA. 156+90.80 TO STA. 157+39.45

NOTES:

1. SEE ROADWAY PLANS AND SUMMARY SHEETS FOR ROCK PLATING LOCATIONS.
2. FOR ROCK PLATING, SEE SECTION 275 OF THE STANDARD SPECIFICATIONS.
3. USE CLASS 2 RIPRAP UNLESS REQUIRED OTHERWISE IN THE ROADWAY SUMMARY SHEETS.

6/2/99
4/28/2023 1:37:09 PM
...\Revised 275d01 Rock Plating for Special Detail.dgn
USerjamfitzpatrick

6/21/00

COMPUTED BY: KTB DATE: 4/20/2023
CHECKED BY: _____ DATE: _____

HENDERSON COUNTY
ENGINEERING DEPARTMENT

Prepared In the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	3B-1

PEDESTRIAN HANDRAIL SUMMARY

LINE	STATION	STATION	LOCATION LT/RT/CL	FT	TOTAL SHOULDER WIDTH
-GREENWAY-	13+54.42	14+04.42	LT	50'	4'
-GREENWAY-	13+54.42	14+04.42	RT	50'	4'
-GREENWAY-	14+64.92	15+14.92	LT	50'	4'
-GREENWAY-	14+64.92	15+14.92	RT	50'	4'
-GREENWAY-	41+25.00	42+25.00	LT	100'	4'
-GREENWAY-	69+00.00	72+90.99	LT	390.99'	4'
-GREENWAY-	72+40.99	72+90.99	RT	50'	4'
-GREENWAY-	73+58.99	74+08.99	RT	50'	4'
-GREENWAY-	73+58.99	75+00.00	LT	141.01'	3'
-GREENWAY-	77+78.81	79+00.00	LT	121.19'	4'
-GREENWAY-	85+00.00	85+75.00	LT	75'	4'
-GREENWAY-	87+00.00	92+75.00	LT	575'	4'
-GREENWAY-	109+50.00	111+75.00	LT	225'	4'
-GREENWAY-	120+25.00	121+75.00	LT	150'	4'
-GREENWAY-	124+25.00	126+49.80	LT	224.80'	4'
-GREENWAY-	125+99.80	126+49.80	RT	50'	4'
-GREENWAY-	126+77.80	127+27.80	LT	50'	4'
-GREENWAY-	126+77.80	127+27.80	RT	50'	4'
-GREENWAY-	136+25.00	136+75.00	RT	50'	3'
-GREENWAY-	138+50.00	141+00.00	LT	250'	4'
-GREENWAY-	143+60.00	145+60.00	LT	200'	3'
-GREENWAY-	152+00.00	153+20.00	LT	120'	4'
-GREENWAY-	158+65.00	160+00.00	LT	135'	3'
-GREENWAY-	161+75.00	168+25.00	LT	650'	4'
-GREENWAY-	162+75.00	163+25.00	RT	135'	4'
-GREENWAY-	171+00.00	173+00.00	LT	200'	4'
-GREENWAY-	179+00.00	181+75.00	LT	275'	4'
-GREENWAY-	183+00.00	184+35.00	LT	135'	4'
-GREENWAY-	185+50.00	186+35.00	LT	85'	4'
-GREENWAY-	199+25.00	199+75.00	LT	50'	4'
-GREENWAY-	249+73.29	250+23.29	LT	50'	4'
-GREENWAY-	249+73.29	250+23.29	RT	50'	3'
-GREENWAY-	250+46.29	250+96.29	LT	50'	4'
-GREENWAY-	250+46.29	250+96.29	RT	50'	4'
-GREENWAY-	269+10.00	270+10.00	RT	100'	4'
-GREENWAY-	282+00.00	283+74.78	RT	174.78'	4'
-GREENWAY-	283+24.78	283+74.78	LT	50'	3'
-GREENWAY-	284+28.78	284+78.78	RT	50'	4'
-GREENWAY-	284+28.78	284+78.78	LT	50'	3'
-GREENWAY-	324+61.16	325+11.16	LT	50'	3'
-GREENWAY-	324+61.16	325+11.16	RT	50'	3'
-GREENWAY-	325+59.16	326+09.16	LT	50'	3'
-GREENWAY-	325+59.16	326+09.16	RT	50'	3'
			TOTAL	5,477.77	
			SAY	5,480'	

5' CONCRETE SIDEWALK

IN SQUARE YARDS			
LINE	LOCATION	LENGTH (FT)	CONCRETE (SY)
-GREENWAY-	265+22.00 RT	19.50'	10.84
-GREENWAY-	274+90.00 LT.	31.75'	17.64
-GREENWAY-	288+22.50 RT.	32.25'	17.92
-GREENWAY-	299+32.00 LT.	5.5'	3.06
-GREENWAY-	299+32.00 RT.	5.5'	3.06
-GREENWAY-	327+77.50 LT.	44.25	24.58
-GREENWAY-	329+20.00 LT.	45.25	25.14
	TOTAL		102.24
	SAY		105

RESET EXISTING FENCE

IN LINEAR FEET		
LINE	LOCATION	TOTAL LENGTH
-GREENWAY-	87+20 +/- RT. TO 90+40 +/- RT	387.56'
	TOTAL	387.56'
	SAY	390.00'

REMOVE AND STOCKPILE EXISTING FENCE

IN LINEAR FEET		
LINE	LOCATION	TOTAL LENGTH
-GREENWAY-	128+86 +/- LT TO 136+20 +/- LT	733.59'
-GREENWAY-	167+33 +/- LT TO 172+70.52 +/- LT	537.47'
	TOTAL	1,271.06'
	SAY	1,275.00'

REMOVE AND STOCKPILE RAILROAD SIGNAL ARM

IN EACH		
LINE	LOCATION	QUANTITY
-GREENWAY-	252+65.00	1
-GREENWAY-	319+30.00	2
-GREENWAY-	327+40.00	2
-GREENWAY-	329+50.00	2
	TOTAL	7

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User:ktaylor

COMPUTED BY: KTB DATE: 4/20/2023
CHECKED BY: DATE:

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

HENDERSON COUNTY
ENGINEERING DEPARTMENT

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	3B-2

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE 350						REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	GREU TL-2	AT-1							NO.	PERMITTED G	PERMITTED NG				
-GREENWAY-	224+14.03	228+42.14	RT	425'					2'	5'					2														
-GREENWAY-	228+72.68	234+46.48	RT	575'					2'	5'					2														
-GREENWAY-	234+80.51	236+96.60	RT	212.50'					2'	5'					2														
-GREENWAY-	237+83.03	242+88.51	RT	506.25'					2'	5'					1	1													
-GREENWAY-	307+10.17	308+79.36	RT	175'					2'	5'						2													
			SUBTOTAL	1,893.75																									
			LESS DEDUCTIONS FOR ANCHORS																										
			GREU TL 2 7 @ 25'=	-175																									
			AT-1 3 @ 6.25'=	-18.75																									
			PROJECT TOTALS:	1700											7	3													

SUMMARY OF EARTHWORK

STATION	STATION	UNCL. EXCAV.	EMBANK. +%	BORROW	WASTE
GW 10+00.00	GW 14+04.42	62	98	36	
GW 14+64.92	GW 72+90.99	3366	1584		1782
GW 73+58.99	GW 126+49.80	3634	1028		2606
GW 126+77.80	GW 250+23.29	5042	5268	226	
GW 250+46.29	GW 283+74.78	1458	676		782
GW 284+28.78	GW 325+11.16	1551	716		837
GW 325+59.16	GW 329+50.00	101	92		9
TOTALS:		15214	9516	262	6016
BORROW IN LIEU OF WASTE				-262	-262
PROJECT TOTALS:		15214	9516		5754
GRAND TOTALS:		15214			5754
SAY:		15250			

CONTINGENCY ITEMS:
UNDERCUT EXCAVATION 60 CY
CLASS IV SUBGRADE STABILIZATION 150 TONS
INCIDENTAL STONE BASE 200 TONS

6/16/99

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P40V-21H1-23

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
Ecusta Trail	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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 | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (HDPE) SIZE 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | R. C. PIPE CLASS IV SIZE 12 | 18 | 24 | 30 | 36 | 42 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 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) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B 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 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | 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 |
|---|---|---

P40V-21H1-23

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
Ecusta Trail	3D-2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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 | OFFSET | | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (HDPE) SIZE 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | R. C. PIPE CLASS IV SIZE 12 | 18 | 24 | 30 | 36 | 42 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 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) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B 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 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | 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 |
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P40V-21H1-23

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
Ecusta Trail	3D-3

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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 | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | Drainage Pipe (HDPE) SIZE 30 | 36 | 42 | 48 | R. C. PIPE CLASS III SIZE 12 | 15 | 18 | 24 | 30 | 36 | R. C. PIPE CLASS IV SIZE 12 | 18 | 24 | 30 | 36 | 42 | R. C. PIPE CLASS V SIZE 12 | 15 | 18 | 24 | 30 | 36 | 42 | 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) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B 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 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | 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 |
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P40V-21H1-23

COMPUTED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

PROJECT NO.	SHEET NO.
Ecusta Trail	3D-4

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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 54 INCHES & OVER)

| LINE & STATION | OFFSET | STRUCTURE NUMBER FROM | STRUCTURE NUMBER TO | TOP ELEVATION FT. | INVERT ELEVATION FT. | INVERT ELEVATION FT. | MINIMUM REQUIRED SLOPE % | R. C. PIPE CLASS III SIZE 54 | 60 | 66 | 72 | 78 | 84 | R. C. PIPE CLASS IV SIZE 54 | 60 | 66 | 72 | 78 | 84 | R. C. PIPE CLASS V SIZE 54 | 60 | 66 | 72 | 78 | 84 | 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)) A: 0' THRU 5' EACH | A: 5' THRU 10' LIN. FT. | A: 10' AND ABOVE LIN. FT. | B | 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 | TEMP STEEL PLATE COVER MASONRY DRAINAGE | SPRING BOX STD. 840.41 | M.H. STD. 840.51, STD. 840.52, OR STD. 840.53 | M.H. FRAME AND COVER STD. 840.54 | 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. | 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 |
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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 11+83.58
△ = 11° 13' 58.1" (LT)
D = 45° 50' 11.8"
L = 24.51'
T = 12.29'
R = 125.00'

PI Sta 12+35.00
△ = 31° 10' 30.7" (RT)
D = 163° 42' 08.0"
L = 19.04'
T = 9.76'
R = 35.00'

PI Sta 12+52.88
△ = 16° 19' 03.5" (RT)
D = 95° 29' 34.7"
L = 17.09'
T = 8.60'
R = 60.00'

PI Sta 13+11.12
△ = 19° 57' 41.1" (LT)
D = 114° 35' 29.6"
L = 17.42'
T = 8.80'
R = 50.00'

PI Sta 13+38.32
△ = 55° 54' 42.5" (LT)
D = 163° 42' 08.0"
L = 34.15'
T = 18.58'
R = 35.00'

PI Sta 13+91.09
△ = 35° 43' 42.5" (RT)
D = 163° 42' 08.0"
L = 21.83'
T = 11.28'
R = 35.00'

PI Sta 14+04.43
△ = 4° 19' 35.6" (RT)
D = 77° 25' 36.2"
L = 5.59'
T = 2.80'
R = 74.00'

PI Sta 16+52.96
△ = 1° 03' 59.1" (LT)
D = 1° 08' 45.3"
L = 93.06'
T = 46.53'
R = 5,000.00'

PI Sta 20+38.22
△ = 23° 46' 09.9" (LT)
D = 3° 57' 05.2"
L = 601.54'
T = 305.16'
R = 1,450.00'

NAD 83/2011

SEE SHEET 30 FOR
-GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	4
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

10 15 20

MATCH LINE -GREENWAY- STA. 23+00.00 SEE SHEET 5

POT Sta.11+45.04
PCSta.11+71.29
PTSta.11+95.80
PCSta.12+25.24
PCCSta.12+44.28
PTSta.12+61.37
PCSta.13+02.32
PCCSta.13+19.74
PTSta.13+53.90
PCSta.13+79.81
PCCSta.14+01.64
PTSta.14+07.22
PCSta.16+06.43
PTSta.16+99.49
PCSta.17+33.06

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

75' Claimed Railroad ROW
As Per Railroad Val Map 49-2

BEGIN CONSTRUCTION
-GREENWAY- 10+95.00

BEGIN PROJECT
ECUSTA TRAIL
-GREENWAY- 10+25.00

CL I RIP RAP
EST 10 TONS
EST 23 SYCF

REMOVE

S 43° 58' 41.0" E
S 55° 12' 39.1" E
S 43° 04.9" E
S 83° 35' 28.5" E
S 43° 32' 10.4" E
S 44° 36' 09.5" E

-GREENWAY-

END BRIDGE 11
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 14+64.92
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 15+14.92
SEE DETAIL SHEET L0.5

TRASH RECEPTACLES
SEE DETAIL SHEET L0.7

BIKE PARKING
SEE DETAIL SHEET L0.7

STATION WITH SEATING
SEE DETAIL SHEET L0.2

BENCH
SEE DETAIL SHEET L0.4

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

INTERPRETIVE SIGN
SEE DETAIL SHEET L0.4

BEGIN BRIDGE 11
END PEDESTRIAN RAIL
-GREENWAY- STA. 14+04.42
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 13+54.42
SEE DETAIL SHEET L0.5

NOTE:
PROPOSED CROSSING TO BE SIGNALIZED

BATTLE CREEK ROAD

MAINTAINED RIGHT R/W

EXISTING RIGHT R/W

45.00

Hilliard
D.B. 1903, Pg. 459
Plat: 9549-18-7445
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Holloway
D.B. 1441, Pg. 448
Plat: 9549-08-9291
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Seadeo Asheville LLC
D.B. 3638, Pg. 481
Plat: 9549-06-3767
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Briggs
D.B. 501, Pg. 449
Plat: 9549-06-3812
Within 1/2 Mile of A
Farmland Preservation District

Collins
D.B. 1490, Pg. 376
Plat: 9549-08-6291
Upper French Broad, WS-IV
Within 1/2 Mile of A
Farmland Preservation District

Collins
D.B. 1490, Pg. 376
Plat: 9549-08-6291
Upper French Broad, WS-IV
Within 1/2 Mile of A
Farmland Preservation District

Pearson
D.B. 3849, Pg. 73
Plat: 9549-17-1857
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

DETAIL DITCH 2
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 14+70 RT TO STA. 18+50 RT

5/9/2023 11:51:19 AM
...\Ecusta Trail_rdy_psh04.dgn
User:jtrotter

8/17/99

REVISIONS

5/4/2023 4:09:36 PM
...\Cust\ rail_rdy_psh05.dgn
User:rmartin

SEE SHEET 30 FOR
–GREENWAY– PROFILE

JMT
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JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318–F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL–0007	05
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–GREENWAY– CURVE DATA

PI Sta 24+25.87	PI Sta 24+45.16	PI Sta 28+09.26	PI Sta 28+21.03	PI Sta 28+30.70
△ = 14° 56' 08.1" (RT)	△ = 14° 56' 08.1" (LT)	△ = 14° 56' 08.1" (LT)	△ = 3° 22' 46.9" (RT)	△ = 11° 33' 21.2" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 19.29'	L = 19.29'	L = 19.29'	L = 4.37'	L = 14.92'
T = 9.70'	T = 9.70'	T = 9.70'	T = 2.18'	T = 7.49'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

8/23/2011 DAN

MATCH LINE –GREENWAY– STA. 23+00.00 SEE SHEET 4

MATCH LINE –GREENWAY– STA. 35+00.00 SEE SHEET 6

PT Sta 23+34.60
PC Sta 24+16.17
PRC Sta 24+35.46
PT Sta 24+54.75
PC Sta 27+99.56
PRC Sta 28+18.85
PRC Sta 28+23.22
PT Sta 28+38.14

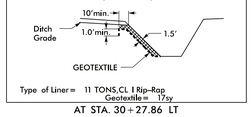
25 30 35

AAD Water Service Inc.
D.B. 1547, Pg. 331
Pin: 9649-18-3211
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Wise
D.B. 984, Pg. 373
Pin: 9649-25-0917
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Ayers
D.B. 3390, Pg. 508
Pin: 9649-25-0917
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 11 TONS CL I Rip-Rap
Geotextile = 17sy
AT STA. 30+27.86 LT

CL I RIP RAP
EST 11 TONS
EST 22 SYGF

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

TOE PROTECTION
SEE DETAIL 1

RIP RAP AT EMBANKMENT
SEE DETAIL 3

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

S 68° 22' 19.3" E

Elip 24+38.87 RT
PRC = V

-GREENWAY-

0501 REMOVE

0502

+46.79 16' TYP.

+39.71 16' TYP.

DOG WASTE STATION
SEE DETAIL SHEET L0.6

HUNTERS GLEN LANE

Steinbaugh
D.B. 1084, Pg. 17
Plat Cab. A, Slide 228
Pin: 9649-15-3674
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Weidemann
D.B. 1412, Pg. 439
Plat Cab. A, Slide 228
Pin: 9649-15-4317
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

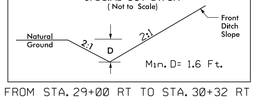
Layton
D.B. 934, Pg. 375
Plat Cab. A, Slide 228
Pin: 9649-15-9281
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

3
Ayers
D.B. 1573, Pg. 350
Plat Cab. A, Slide 228
Pin: 9649-17-8884
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

2
Roth
D.B. 1608, Pg. 169
Plat Cab. A, Slide 228
Pin: 9649-25-4518
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

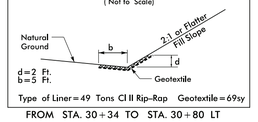
1
Dixon & Halstead
D.B. 9282, Pg. 551
Plat Cab. A, Slide 228
Pin: 9649-25-2551
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

DETAIL DITCH 5A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 29+00 RT TO STA. 30+32 RT

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 49 Tons Cl II Rip-Rap Geotextile = 69sy
FROM STA. 30+34 TO STA. 30+80 LT

ROCK PLATING. SEE DETAIL 2C–1

PAVED SHOULDER

TOE PROTECTION RIP RAP

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 35+76.95
△ = 11° 33' 21.2" (RT)
D = 77° 25' 36.2"
L = 14.92'
T = 7.49'
R = 74.00'

PI Sta 35+91.87
△ = 11° 33' 21.2" (LT)
D = 77° 25' 36.2"
L = 14.92'
T = 7.49'
R = 74.00'

PI Sta 41+59.55
△ = 6° 24' 22.4" (LT)
D = 77° 25' 36.2"
L = 8.27'
T = 4.14'
R = 74.00'

PI Sta 42+14.78
△ = 6° 24' 22.4" (RT)
D = 77° 25' 36.2"
L = 8.27'
T = 4.14'
R = 74.00'

SEE SHEETS 30 AND 31 FOR -GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	06
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 35+00.00 SEE SHEET 5

MATCH LINE -GREENWAY- STA. 48+00.00 SEE SHEET 7

PCSta.35+69.46
PRCSta.35+84.38
PTSta.35+99.31
POTSta.36+39.91
PCSta.41+55.41
PTSta.41+63.68
PCSta.42+10.64
PTSta.42+18.91

McCraw
D.B. 3808, Pg. 547
Plat 9549-75-9580
Upper French Broad, WS-IV
A Portion is within 1/2 Mile of a Farmland Preservation District

EHSVFD
D.B. 1396, Pg. 416
Plat 9549-57-8898
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Beigis
D.B. 1458,Pg. 195
Plat Slide 8775
Plat 9549-37-5391
Upper French Broad, WS-IV
A Portion is within 1/2 Mile of a Farmland Preservation District

NOTE:
1.5:1 BACKSLOPES USED FROM STA. 41+40 TO STA. 41+60

TOE PROTECTION
SEE DETAIL 1

TOE PROTECTION
SEE DETAIL 1

RIP RAP AT EMBANKMENT
SEE DETAIL 3

ROCK PLATING
SEE DETAIL 2C-1

END PEDESTRIAN RAIL
-GREENWAY- STA. 42+25.00
SEE DETAIL SHEET L0.5

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

RETAIN
RETAIN
RIP RAP
RIP RAP
S 68° 22' 19.3" E
S 68° 22' 19.3" E
S 74° 46' 41.8" E
0601
-GREENWAY-

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 41+25.00
SEE DETAIL SHEET L0.5

BENCH
SEE DETAIL SHEET L0.4

48" WD

Schinley
D.B. 3408, Pg. 1
Plat 9549-37-4467
Plat Cab. A, Slide 227A

Waters
D.B. 1460, Pg. 493
Plat 9549-57-6536
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

SC
Brown
D.B. 1584, Pg. 092
Plat 9549-57-9215
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Patton & Brooks
D.B. 3188, Pg. 559
Plat 9549-57-5931
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Hays
D.B. 1366, Pg. 457
Plat Cab. A, Slide 244A
Plat 9549-57-8416
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

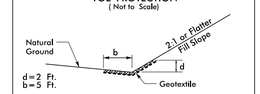
SL
Green & Cantrell
D.B. 3084, Pg. 509
Plat 9549-37-1491
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

SG
Davidson
D.B. 3800, Pg. 522
Plat 9549-37-3029
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV

DeGee
D.B. 1529, Pg. 591
Plat 9549-37-4974
Plat Cab. A, Slide 244A
Upper French Broad, WS-IV

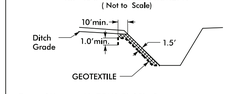
ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner=174 Tons CLII Rip-Rap Geotextile=246sy
FROM STA. 36+00 TO STA. 36+50 LT
FROM STA. 38+86 TO STA. 39+50 LT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 13 TONS,CL I Rip-Rap
Geotextile= 30sy
AT STA. 41+35.15 LT

5/4/2023 4:21:17 PM
...\Cust_rail_rdy_psh06.dgn
User:mfitzpatrick

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 50+85.27
△ = 24° 10' 47.5" (RT)
D = 5° 27' 24.3"
L = 443.12'
T = 224.91'
R = 1,050.00'

PI Sta 53+96.71
△ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 54+08.89
△ = 9° 25' 48.0" (LT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 56+03.62
△ = 24° 52' 49.2" (RT)
D = 77° 25' 36.2"
L = 32.13'
T = 16.32'
R = 74.00'

PI Sta 56+42.01
△ = 33° 55' 51.2" (LT)
D = 77° 25' 36.2"
L = 43.82'
T = 22.58'
R = 74.00'

PI Sta 57+19.29
△ = 9° 03' 02.1" (RT)
D = 77° 25' 36.2"
L = 11.69'
T = 5.86'
R = 74.00'

PI Sta 60+08.84
△ = 0° 33' 48.2" (LT)
D = 2° 00' 22.2"
L = 28.08'
T = 14.04'
R = 2,856.00'

PI Sta 60+33.80
△ = 16° 47' 40.8" (LT)
D = 77° 25' 36.2"
L = 21.69'
T = 10.92'
R = 74.00'

PI Sta 60+54.94
△ = 15° 57' 24.0" (RT)
D = 77° 25' 36.2"
L = 20.61'
T = 10.37'
R = 74.00'

SEE SHEET 31 FOR -GREENWAY- PROFILE

NAD 83/2011

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

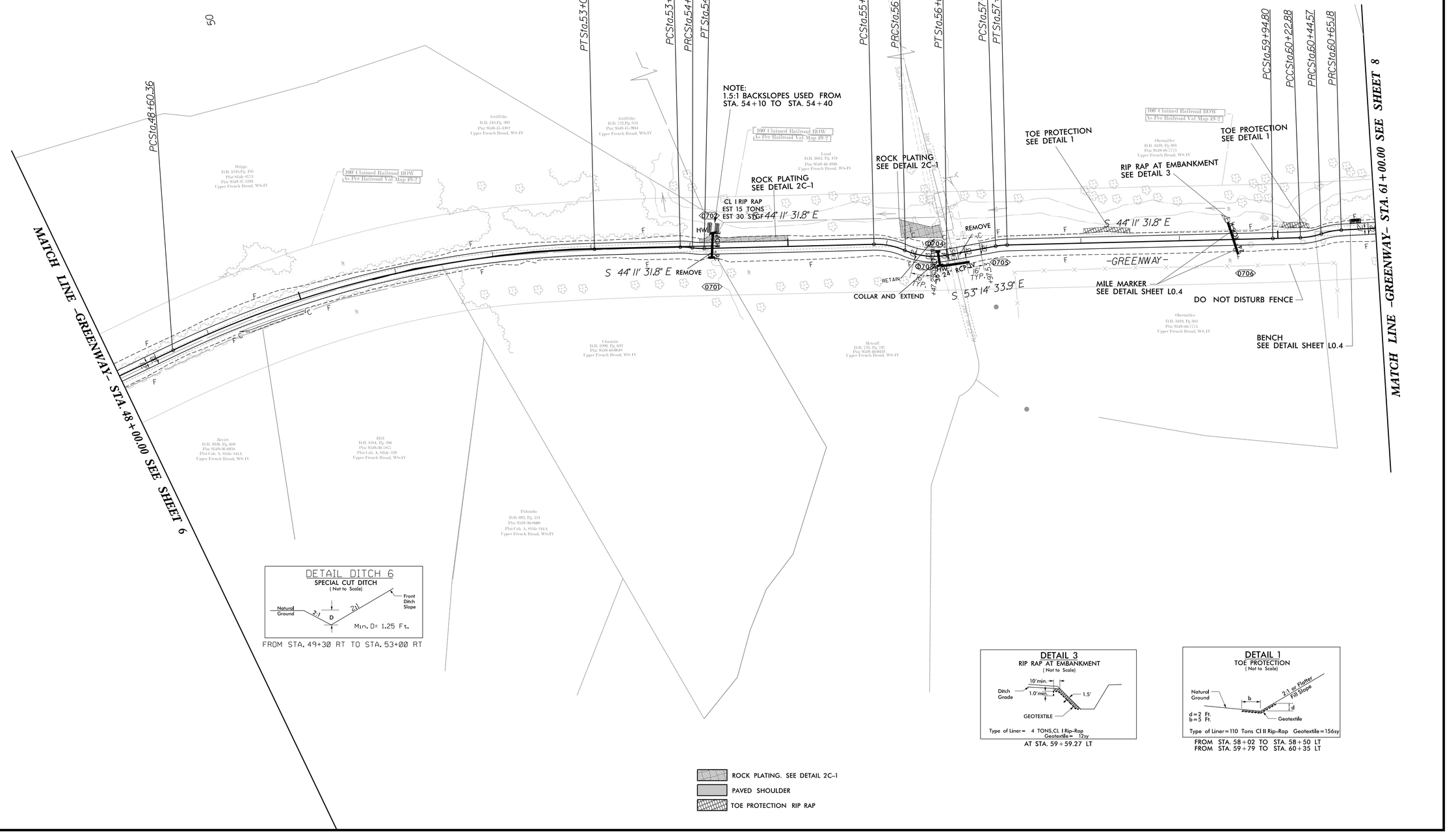
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	07
RW SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DETAIL DITCH 6
SPECIAL CUT DITCH
(Not to Scale)

FROM STA. 49+30 RT TO STA. 53+00 RT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner = 4 TONS,CL I Rip-Rap
Geotextile = 12sy
AT STA. 59+59.27 LT

DETAIL 1
TOE PROTECTION
(Not to Scale)

Type of Liner = 110 Tons Cl II Rip-Rap Geotextile = 156sy
FROM STA. 58+02 TO STA. 58+50 LT
FROM STA. 59+79 TO STA. 60+35 LT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

5/4/2023 4:15:14 PM
...\Cust\Trail_rdy_psh07.dgn
User:mattmarlow

8/17/99

REVISIONS

SEE SHEETS 31 AND 32 FOR –GREENWAY– PROFILE

–GREENWAY– CURVE DATA

PI Sta 62+98.37	PI Sta 65+37.82	PI Sta 65+52.76	PI Sta 66+55.92
△ = 9° 21' 18.7" (LT)	△ = 11° 15' 42.2" (RT)	△ = 11° 51' 27.5" (LT)	△ = 3° 50' 09.1" (LT)
D = 2° 00' 37.4"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 2° 00' 29.8"
L = 465.35'	L = 14.55'	L = 15.31'	L = 191.00'
T = 233.19'	T = 7.30'	T = 7.68'	T = 95.54'
R = 2,850.00'	R = 74.00'	R = 74.00'	R = 2,853.00'
PI Sta 69+13.14	**PI Sta 69+23.69**	**PI Sta 71+93.52**	**PI Sta 72+04.07**
△ = 8° 09' 51.5" (RT)	△ = 8° 09' 51.5" (LT)	△ = 8° 09' 51.5" (LT)	△ = 8° 09' 51.5" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 10.54'	L = 10.54'	L = 10.54'	L = 10.54'
T = 5.28'	T = 5.28'	T = 5.28'	T = 5.28'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

JMT

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318–F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL–0007	08
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE –GREENWAY– STA. 61+00.00 SEE SHEET 7

MATCH LINE –GREENWAY– STA. 73+00.00 SEE SHEET 9

65 70

PRCSta65+30.53 PRCSta65+45.07 PCCSta65+60.39

PTSta67+51.39

PCSta69+07.86 PRCSta69+18.40 PTSta69+28.95

PCSta71+88.24 PRCSta71+98.79 PTSta72+09.33

Thompson D.B. 3756, Pg. 596 Plat 9549-56-1561 Upper French Broad, WS-IV

Thompson D.B. 3756, Pg. 596 Plat 9549-56-1561 Upper French Broad, WS-IV

John Michael Enterprises Inc D.B. 4324, Pg. 487 Plat Slide 9680 Plat 9549-56-1300 Upper French Broad, WS-IV

Kilpatrick D.B. 508, Pg. 53 Plat 9549-56-8195 Upper French Broad, WS-IV

Abel D.B. 1434, Pg. 704 Plat 9549-56-1098 Upper French Broad, WS-IV

15 Harris D.B. 3400, Pg. 477 Plat 9549-56-3003 Upper French Broad, WS-IV

16 Harris D.B. 3400, Pg. 477 Plat 9549-55-9516 Upper French Broad, WS-IV

17 Dale D.B. 700, Pg. 985 Plat 9549-55-5930 Upper French Broad, WS-IV

18 Hunt D.B. 985, Pg. 159 Plat 9549-55-6925

Norton D.B. 1598, Pg. 322 Plat Slide 9301 Plat 9549-44-9430 Upper French Broad, WS-IV

Lindsey D.B. 3369, Pg. 244 Plat 9549-45-4513 Upper French Broad, WS-IV

Davidson D.B. 1958,Pg. 131 Plat Slide 5969 Plat 9549-55-9785 Upper French Broad, WS-IV

Davidson D.B. 1958,Pg. 131 Plat Slide 5969 Plat 9549-55-9785 Upper French Broad, WS-IV

CL I RIP RAP EST. 15 TONS EST. 30 SYGF

TOE PROTECTION SEE DETAIL 1

INV=2074.3 〈080〉 HW

INV=2075.82' BURIAL DEPTH=7.2' 〈081〉 HW

REMOVE

–GREENWAY–

S 59° 22' 49.8" E

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

TOE PROTECTION SEE DETAIL 1

NOTE: 1.5:1 BACKSLOPES USED FROM STA. 72+75 TO STA. 72+91

ROCK PLATING SEE DETAIL 2C–1

BEGIN PEDESTRIAN RAIL –GREENWAY– STA. 69+00.00 SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL –GREENWAY– STA. 72+40.99 SEE DETAIL SHEET L0.5

DO NOT DISTURB FENCE

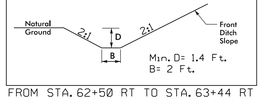
INTERPRETIVE SIGN SEE DETAIL SHEET L0.4

BEGIN BRIDGE 12 END PEDESTRIAN RAIL –GREENWAY– STA. 72+90.99 SEE DETAIL SHEET L0.5

PAVED SHOULDER

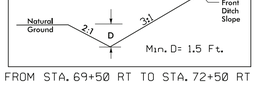
TOE PROTECTION RIP RAP

DETAIL DITCH 9
SPECIAL CUT BASE DITCH
(Not to Scale)



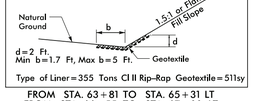
FROM STA. 62+50 RT TO STA. 63+44 RT

DETAIL DITCH 10
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 69+50 RT TO STA. 72+50 RT

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner=355 Tons Cl II Rip-Rap Geotextile=511sy

FROM STA. 63+81 TO STA. 65+31 LT
FROM STA. 66+55 TO STA. 67+00 LT
FROM STA. 69+74 TO STA. 71+19 LT

ROCK PLATING. SEE DETAIL 2C–1

PAVED SHOULDER

TOE PROTECTION RIP RAP

4/27/2023 4:14:13 PM
...\Custa Trail_rdy_psh08.dgn
...\Design\trans.tcl

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 74+08.31
△ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 74+20.49
△ = 9° 25' 48.0" (LT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 76+06.28
△ = 9° 25' 48.0" (LT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 76+18.46
△ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 76+83.15
△ = 5° 32' 28.1" (RT)
D = 77° 25' 36.2"
L = 7.16'
T = 3.58'
R = 74.00'

PI Sta 77+15.91
△ = 14° 10' 57.2" (LT)
D = 77° 25' 36.2"
L = 18.32'
T = 9.21'
R = 74.00'

PI Sta 77+57.61
△ = 8° 38' 05.4" (RT)
D = 77° 25' 36.2"
L = 11.15'
T = 5.59'
R = 74.00'

PI Sta 84+29.36
△ = 12° 29' 07.2" (RT)
D = 77° 25' 36.2"
L = 16.13'
T = 8.09'
R = 74.00'

PI Sta 84+45.49
△ = 12° 29' 07.2" (LT)
D = 77° 25' 36.2"
L = 16.13'
T = 8.09'
R = 74.00'

SEE SHEET 32 FOR
-GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	09
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER VON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 73+00.00 SEE SHEET 8

MATCH LINE -GREENWAY- STA. 86+00.00 SEE SHEET 10

75 80 85

PCSta.74+02.21
PRCSta.74+14.39
PTSta.74+26.57
PCSta.76+00.18
PRCSta.76+12.36
PTSta.76+24.54
PCSta.76+79.57
PTSta.76+86.73
PCSta.77+06.70
PTSta.77+25.02
PCSta.77+52.02
PTSta.77+63.17
PCSta.84+21.27
PRCSta.84+37.39
PTSta.84+53.52

Pin 9549-44-8430 Norton D.B. 1598, Pg. 327 Plat Slide 9301 Pin: 9549-44-8430 Upper French Broad, WS-IV

Carwile D.B. 1670, Pg. 150 Pin: 9549-65-6665 Upper French Broad, WS-IV

NOTE:
1.5:1 BACKSLOPES USED FROM STA. 74+25 TO STA. 75+25

ROCK PLATING
SEE DETAIL 2C-1

68' Claimed Railroad ROW As Per Railroad Val Map 49-2

RIP RAP AT EMBANKMENT
SEE DETAIL 3

NOTE:
1.5:1 BACKSLOPES USED FROM STA. 77+50 TO STA. 79+00

ROCK PLATING
SEE DETAIL 2C-1

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

END PEDESTRIAN RAIL
-GREENWAY- STA. 79+00.00
SEE DETAIL SHEET L0.5

TOE PROTECTION
SEE DETAIL 1

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

-GREENWAY-

16' TYP. 15.00

S 59° 22' 49.8" E

S 59° 22' 49.8" E

S 59° 23' 13.6" E

END PEDESTRIAN RAIL
-GREENWAY- STA. 75+00.00
SEE DETAIL SHEET L0.5

16' TYP. +/-17.54

REMOVE

TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7

DO NOT DISTURB FENCE

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 85+00.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 85+75.00
SEE DETAIL SHEET L0.5

BENCH
SEE DETAIL SHEET L0.4

END PEDESTRIAN RAIL
-GREENWAY- STA. 74+08.99
SEE DETAIL SHEET L0.5

CHANNEL CHANGE
SEE DETAIL 2

CHANNEL CHANGE
SEE DETAIL 4

END RETAINING WALL 2 RT
-GREENWAY- 73+92.00

END BRIDGE 12
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 73+58.99
SEE DETAIL SHEET L0.5
BEGIN RETAINING WALL 2 RT

090

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 77+78.91
SEE DETAIL SHEET L0.5

OLD HOWARD GAP ROAD

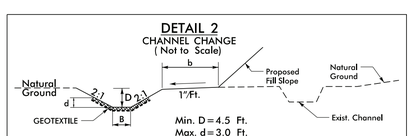
Norton D.B. 1598, Pg. 327 Plat Slide 9301 Pin: 9549-54-8430 Upper French Broad, WS-IV

Smith D.B. 1515, Pg. 598 Pin: 9549-64-3847 Upper French Broad, WS-IV

Smith D.B. 1515, Pg. 598 Pin: 9549-64-3847 Upper French Broad, WS-IV

Corn D.B. 3551, Pg. 21 Pin: 9549-64-0651 Upper French Broad, WS-IV

DETAIL 2
CHANNEL CHANGE
(Not to Scale)

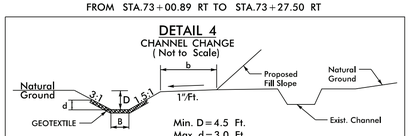


Min. D = 4.5 Ft.
Max. d = 3.0 Ft.
B = 5 Ft.
b = 5 Ft.

Type of Liner = 137 Tons Cl II Riprap Geotextile = 167sy DDE = 310cy

FROM STA.73+00.89 RT TO STA.73+27.50 RT

DETAIL 4
CHANNEL CHANGE
(Not to Scale)

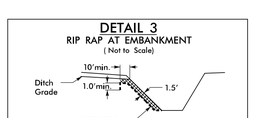


Min. D = 4.5 Ft.
Max. d = 3.0 Ft.
B = 3 Ft.
b = 1 Ft.

Type of Liner = 112 Tons Cl II Riprap Geotextile = 136sy DDE = 220cy

FROM STA.73+27.50 RT TO STA.73+82.28 RT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 13 TONS,CL I Rip-Rap
Geotextile = 30sy

AT STA. 77+94.70LT

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 43 Tons Cl II Rip-Rap Geotextile = 71sy

FROM STA. 81+61 TO STA. 82+25 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

5/19/2023 11:9:17 AM
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User:shart

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 89+32.49	PI Sta 89+47.41	PI Sta 91+91.39	PI Sta 92+13.41
Δ = 11° 33' 21.2" (RT)	Δ = 11° 33' 21.2" (LT)	Δ = 17° 02' 37.6" (LT)	Δ = 17° 02' 37.6" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 14.92'	L = 14.92'	L = 22.01'	L = 22.01'
T = 7.49'	T = 7.49'	T = 11.09'	T = 11.09'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

SEE SHEETS 32 AND 33 FOR -GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

MATCH LINE -GREENWAY- STA. 86+00.00 SEE SHEET 9

MATCH LINE -GREENWAY- STA. 99+00.00 SEE SHEET 11

PCSta 89+25.00
PRCSta 89+39.92
PTSta 89+54.85
PCSta 91+80.31
PRCSta 92+02.32
PTSta 92+24.33
PCSta 97+63.10
PRCSta 97+87.61
PTSta 98+12.12

90
95

Pernie
D.B. 3384, Pg. 367
Plat Slide 6575
Pin: 9649-75-1299
Upper French Broad, WS-IV

Lemmons
D.B. 3369, Pg. 581
Plat Slide 9985
Pin: 9649-74-4888
Upper French Broad, WS-IV

NE
Mabebie
D.B. 883,Pg. 551
Pin: 9649-84-0601
Upper French Broad, WS-IV

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

TOE PROTECTION SEE DETAIL 1

TOE PROTECTION SEE DETAIL 1

CL I RIP RAP EST 20 TONS EST 39 SYGF

END PEDESTRIAN RAIL -GREENWAY- STA. 92+75.00 SEE DETAIL SHEET L0.5

1002 F REMOVE

HW

24" HDPE

1001

S 59° 23' 13.6" E

-GREENWAY-

BEGIN RETAINING WALL -GREENWAY- STA. 98+22

CL I RIP RAP EST 15 TONS EST 30 SYGF

REMOVE

1003 HW

S 59° 23' 13.6" E

YALE ROAD

RESET FENCE TO EXISTING R/W LINE

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 87+00.00 SEE DETAIL SHEET L0.5

USE 1' SHOULDER FROM 92+80.00 TO 96+40.00

Merrill
D.B. 598, Pg. 246
Pin: 9649-14-0622
Upper French Broad, WS-IV

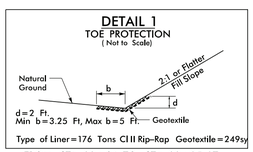
Yost
D.B. 3148, Pg. 97
Plat Slide 10857
Pin: 9649-23-0930
Upper French Broad, WS-IV

Simone
D.B. 1402, Pg. 491
Pin: 9649-14-1463
Upper French Broad, WS-IV

Pruitt
D.B. 557, Pg. 197
Pin: 9649-14-6572
Upper French Broad, WS-IV

Pruitt
D.B. 191, Pg. 13
Pin: 9649-74-4539
Upper French Broad, WS-IV

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner=176 Tons CLII Rip-Rap Geotextile=249sy

FROM STA. 88+64 TO STA. 89+25 LT
FROM STA. 89+58 TO STA. 90+26 LT
FROM STA. 92+05 TO STA. 92+42 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

4/27/2023 2:00:14 PM
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User:mattmarx

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 106+88.19
△ = 5° 24' 40.7" (RT)
D = 1° 04' 51.8"
L = 500.56'
T = 250.47'
R = 5,300.00'

PI Sta 109+48.12
△ = 15° 08' 58.9" (RT)
D = 77° 25' 36.2"
L = 19.57'
T = 9.84'
R = 74.00'

PI Sta 109+67.01
△ = 14° 07' 14.2" (LT)
D = 77° 25' 36.2"
L = 18.24'
T = 9.17'
R = 74.00'

PI Sta 102+46.19
△ = 8° 06' 34.6" (LT)
D = 38° 11' 49.9"
L = 21.23'
T = 10.63'
R = 150.00'

PI Sta 102+67.42
△ = 8° 06' 34.6" (RT)
D = 38° 11' 49.9"
L = 21.23'
T = 10.63'
R = 150.00'

PI Sta 106+88.45
△ = 5° 24' 40.7" (RT)
D = 1° 04' 51.8"
L = 500.56'
T = 250.47'
R = 5,300.00'

SEE SHEET 33 FOR
-GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	11
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 99+00.00 SEE SHEET 10

MATCH LINE -GREENWAY- STA. 111+00.00 SEE SHEET 12

100 105 110

PCS Sta.102+35.55
PRCS Sta.102+56.78
PT Sta.102+78.01
PC Sta. 104+37.98
PCC Sta. 109+38.54
PRC Sta. 109+58.11
PT Sta. 109+76.35

TOE PROTECTION
SEE DETAIL 1

END RETAINING WALL
-GREENWAY- STA. 102+35.00

CL B RIP RAP
EST 5 TONS
EST 14 SYGF

CL I RIP RAP
EST 11 TONS
EST 28 SYGF

REMOVE HW

16' TYP.

+36.83

1103

HW

S 59° 23' 13.6" E

-GREENWAY-

CF

S 59° 23' 13.6" E

DOG WASTE STATION
SEE DETAIL SHEET L0.7

1101

REMOVE HW

1102

16' TYP.

+52.79

BENCH
SEE DETAIL SHEET L0.4

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 109+50.00
SEE DETAIL SHEET L0.5

RETAIN

24" RCP CL III

1104

HW

S 52° 56' 48.1" E

1105

COLLAR AND ENCASE

YALE ROAD

Blackwell
D.B. 814, Pg. 451
Pin: 9648-84-8196
Upper French Broad, WS-IV

100' Claimed Railroad ROW
(As Per Railroad Val. Map DB-2)

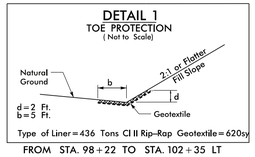
Childs
D.B. 989, Pg. 161
Pin: 9648-93-6990
Upper French Broad, WS-IV

Flecker
D.B. 1331, Pg. 590
Pin: 9648-74-6989
Upper French Broad, WS-IV

N/F
Schaeffer
D.B. 695, Pg. 47
Pin: 9648-85-0986
Upper French Broad, WS-IV

N/F
Schaeffer
D.B. 738, Pg. 849
Pin: 9648-85-7951
Upper French Broad, WS-IV

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 436 Tons Cl II Rip-Rap Geotextile = 620sy

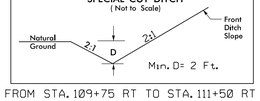
FROM STA. 98+22 TO STA. 102+35 LT

DETAIL DITCH 14
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 103+50 RT TO STA. 107+00 RT

DETAIL DITCH 16
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 109+75 RT TO STA. 111+50 RT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

5/5/2023 4:05:55 PM
...\Cust\rail_rdy_pshll.dgn
User:pshll
Psnl:rail

PRELIMINARY
NOT FOR CONSTRUCTION

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 109+48.38
△ = 15° 08' 58.9" (RT)
D = 77° 25' 36.2"
L = 19.57'
T = 9.84'
R = 74.00'

PI Sta 109+67.28
△ = 14° 07' 14.2" (LT)
D = 77° 25' 36.2"
L = 18.24'
T = 9.17'
R = 74.00'

PI Sta 111+31.56
△ = 14° 42' 09.0" (LT)
D = 77° 25' 36.2"
L = 18.99'
T = 9.55'
R = 74.00'

PI Sta 111+50.71
△ = 14° 56' 11.3" (RT)
D = 77° 25' 36.2"
L = 19.29'
T = 9.70'
R = 74.00'

PI Sta 112+80.92
△ = 2° 25' 42.1" (RT)
D = 11° 27' 33.0"
L = 21.19'
T = 10.60'
R = 500.00'

PI Sta 119+53.90
△ = 11° 33' 21.2" (RT)
D = 38° 11' 49.9"
L = 30.25'
T = 15.18'
R = 150.00'

PI Sta 119+92.55
△ = 11° 33' 21.2" (LT)
D = 77° 25' 36.2"
L = 14.92'
T = 7.49'
R = 74.00'

SEE SHEETS 33 AND 34 FOR -GREENWAY- PROFILE

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 111+00.00 SEE SHEET 11

MATCH LINE -GREENWAY- STA. 124+00.00 SEE SHEET 13

115

120

PC Sta. 111+22.02
PRC Sta. 111+41.00
PT Sta. 111+60.30
PC Sta. 112+70.32
PT Sta. 112+91.51
PC Sta. 119+38.72
PT Sta. 119+68.97
PRC Sta. 119+84.77
PT Sta. 119+99.70
PC Sta. 121+33.55
PRC Sta. 121+48.48
PT Sta. 121+63.40

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 236
Pin: 9649-93-1931
Upper French Broad, WS-IV

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 236
Pin: 9649-95-2365
Upper French Broad, WS-IV

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 236
Pin: 9649-95-2365
Upper French Broad, WS-IV

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 236
Pin: 9649-95-2365
Upper French Broad, WS-IV

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

S 52° 42' 45.8" E
S 50° 17' 03.8" E
S 50° 17' 03.8" E
S 50° 17' 03.8" E
S 50° 17' 03.8" E

-GREENWAY-

CL I RIP RAP
EST 15 TONS
EST 30 SYGF

REMOVE

HW

1202

1201

TOE PROTECTION
SEE DETAIL 1

BENCH
SEE DETAIL SHEET L0.4

MILEAGE MARKER
SEE DETAIL SHEET L0.4

BENCH
SEE DETAIL SHEET L0.4

END PEDESTRIAN RAIL
-GREENWAY- STA. 111+75.00
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 120+25.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 121+75.00
SEE DETAIL SHEET L0.5

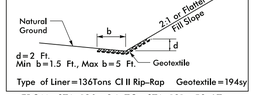
PT Sta.120+00.41 BACK =
PT Sta.120+00.00 AHEAD

Childs
D.B. 909, Pg. 461
Pin: 9649-93-9990
Upper French Broad, WS-IV

Childs
D.B. 909, Pg. 461
Pin: 9649-93-9990
Upper French Broad, WS-IV

Childs
D.B. 909, Pg. 461
Pin: 9649-93-9990
Upper French Broad, WS-IV

DETAIL 1
TOE PROTECTION
(Not to Scale)



d = 2 Ft.
Min b = 1.5 Ft., Max b = 5 Ft. — Geotextile

Type of Liner = 136Tons Cl II Rip-Rap Geotextile = 194sy

FROM STA. 120+24 TO STA. 121+53 LT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

4/27/2023 1:59:38 PM
...\Custa Trail_rdy_psh12.dgn
User:mattmiranda

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 125+90.78
△ = 9° 13' 04.3" (LT)
D = 9° 32' 57.5"
L = 96.53'
T = 48.37'
R = 600.00'

PI Sta 128+28.27
△ = 6° 31' 19.1" (LT)
D = 19° 05' 54.9"
L = 34.15'
T = 17.09'
R = 300.00'

PI Sta 129+04.09
△ = 4° 00' 30.4" (RT)
D = 11° 27' 33.0"
L = 34.98'
T = 17.50'
R = 500.00'

PI Sta 129+51.09
△ = 6° 45' 26.1" (LT)
D = 11° 27' 33.0"
L = 58.97'
T = 29.52'
R = 500.00'

PI Sta 132+17.15
△ = 17° 58' 09.4" (LT)
D = 3° 49' 43.6"
L = 469.32'
T = 236.60'
R = 1,496.45'

PI Sta 136+54.32
△ = 1° 32' 16.7" (LT)
D = 5° 43' 46.5"
L = 26.84'
T = 13.42'
R = 1,000.00'

SEE SHEET 34 FOR
-GREENWAY- PROFILE

JMT

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

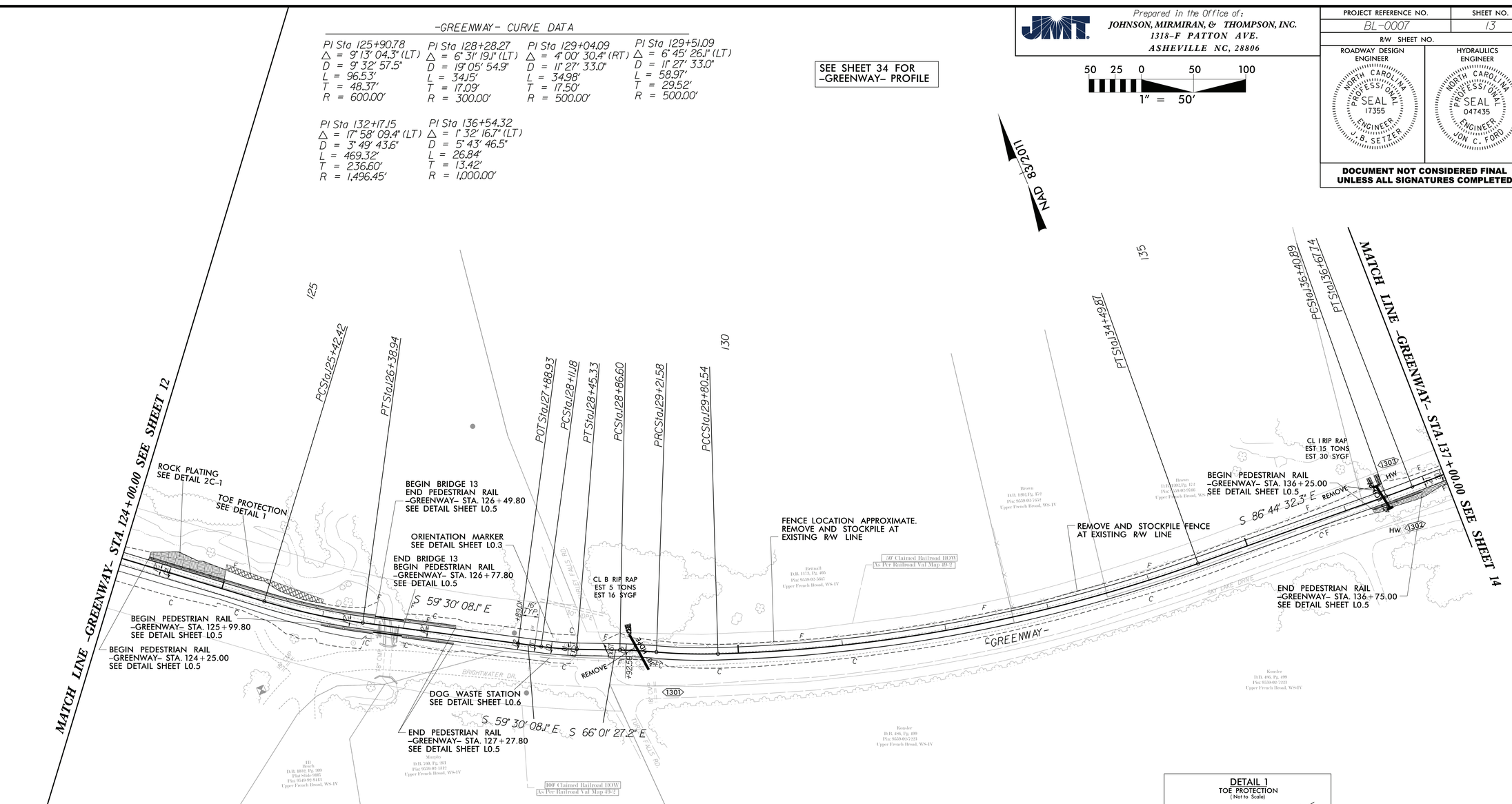
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER L. B. SETZER

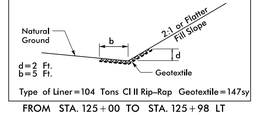
HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

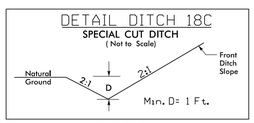


DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner=104 Tons CI II Rip-Rap Geotextile=147sy
FROM STA. 125+00 TO STA. 125+98 LT

DETAIL DITCH 18C
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 125+00 RT TO STA. 126+44 RT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

4/27/2023 4:25:13 PM
...\Cousta Trail\rdy_psh13.dgn
User:pmitchell

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 138+67.06
△ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 138+79.24
△ = 9° 25' 48.0" (LT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 140+46.35
△ = 16° 42' 02.0" (LT)
D = 77° 25' 36.2"
L = 21.57'
T = 10.86'
R = 74.00'

PI Sta 140+67.99
△ = 16° 48' 46.7" (RT)
D = 77° 25' 36.2"
L = 21.71'
T = 10.94'
R = 74.00'

PI Sta 143+53.80
△ = 10° 59' 37.3" (LT)
D = 38° 11' 49.9"
L = 28.78'
T = 14.44'
R = 150.00'

PI Sta 143+81.67
△ = 20° 42' 57.8" (RT)
D = 77° 25' 36.2"
L = 26.76'
T = 13.53'
R = 74.00'

PI Sta 144+42.47
△ = 15° 41' 44.1" (LT)
D = 31° 49' 51.6"
L = 49.31'
T = 24.81'
R = 180.00'

PI Sta 145+34.20
△ = 15° 44' 33.9" (RT)
D = 38° 11' 49.9"
L = 41.21'
T = 20.74'
R = 150.00'

PI Sta 145+61.00
△ = 9° 46' 10.3" (LT)
D = 77° 25' 36.2"
L = 12.62'
T = 6.32'
R = 74.00'

SEE SHEETS 34 AND 35 FOR -GREENWAY- PROFILE

Prepared In the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	14
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER K.B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER VON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

MATCH LINE -GREENWAY- STA. 137+00.00 SEE SHEET 13

MATCH LINE -GREENWAY- STA. 149+00.00 SEE SHEET 15

PCSta138+60.96
PRCSta138+73.14
PTSta138+85.32
PCSta140+35.49
PRCSta140+57.06
PTSta140+78.77
PCSta143+39.36
PRCSta143+68.14
PTSta143+94.90
PCSta144+17.66
PTSta144+66.97
PCSta145+13.46
PRCSta145+54.68
PTSta145+67.29
PCSta148+36.54

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 138+50.00 SEE DETAIL SHEET L0.5

TOE PROTECTION SEE DETAIL 1

TOE PROTECTION SEE DETAIL 1

END PEDESTRIAN RAIL -GREENWAY- STA. 141+00.00 SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 143+60.00 SEE DETAIL SHEET L0.5

NOTE:
1.5:1 BACKSLOPES USED FROM STA. 143+60 TO STA. 145+60

ROCK PLATING SEE DETAIL 2C-1

CL B RIP RAP EST 10 TONS EST 28 SYGF

END PEDESTRIAN RAIL -GREENWAY- STA. 145+60.00 SEE DETAIL SHEET L0.5

50' Unimed Railroad ROW As Per Railroad Val Map 06-2

S 88° 16' 49.0" E

S 88° 10' 04.4" E

S 78° 26' 43.9" E

N 83° 51' 32.0" E

-GREENWAY-

LANDIA DRIVE

PT Sta.146+00.67 BACK=
PT Sta.146+00.00 AHEAD

ROCK PLATING SEE DETAIL 2C-1

USE 1' SHOULDER FROM 136+75.00 TO 140+40.00

Yoh
D.B. 1388, Pg. 537
Plat 9559-12-1987
Upper French Broad, WS-IV

Rinderhold
D.B. 1398, Pg. 193
Plat Cab. C, Slide 383
Plat 9559-13-3365
Upper French Broad, WS-IV

Cloer
D.B. 1388, Pg.271
Plat Cab. C, Slide 383
Plat 9559-13-3364
Upper French Broad, WS-IV

Callahan
D.B. 1389, Pg. 51
Plat Cab. C, Slide 383
Plat 9559-13-3167
Upper French Broad, WS-IV

Kee
D.B. 3486, Pg. 655
Plat Cab. C, Slide 383
Plat 9559-13-9339
Upper French Broad, WS-IV

WXZ-SG Aquisition LLC
D.B. 1373, Pg. 197
Plat Slide 6354
Plat 9559B-1738
Upper French Broad, WS-IV

WXZ-SG Aquisition LLC
D.B. 1373, Pg. 197
Plat Slide 6354
Plat 9559B-1738
Upper French Broad, WS-IV

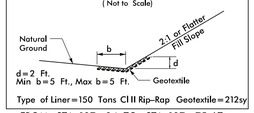
Anders
D.B. 981, Pg. 31
Plat 9559-13-1531
Upper French Broad, WS-IV

Grove
D.B. 1273, Pg. 997
Plat 9559-13-1759
Upper French Broad, WS-IV

Peterson
D.B. 1839, Pg. 393
Plat Cab. C, Slide 1345
Plat 9559-13-4366

Justice
D.B. 1642, Pg. 654
Plat 9559-13-6529
Upper French Broad, WS-IV

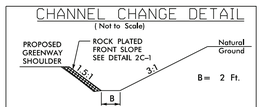
DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 150 Tons CI II Rip-Rap Geotextile = 212sy

FROM STA. 137+24 TO STA. 137+75 LT
FROM STA. 138+85 TO STA. 139+75 LT

CHANNEL CHANGE DETAIL
(Not to Scale)



RETAIN EXISTING NATURAL STREAMBED MATERIAL REUSE IN THE ESTABLISHMENT OF NEW CHANNEL BOTTOM

FROM STA. 138+75 RT TO STA. 140+40 RT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

5/15/2023 11:07:50 AM
...\Ecusta Trail_rdy.psh14.dgn
User:ant | Zone:15

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 150+29.95 △ = 23° 00' 54.7" (RT) D = 6° 01' 52.1" L = 381.61' T = 193.41' R = 950.00'	PI Sta 152+24.81 △ = 10° 17' 10.2" (RT) D = 77° 25' 36.2" L = 13.29' T = 6.66' R = 74.00'	PI Sta 152+37.01 △ = 8° 37' 04.8" (LT) D = 77° 25' 36.2" L = 11.13' T = 5.58' R = 74.00'	PI Sta 152+75.07 △ = 2° 21' 43.9" (RT) D = 3° 38' 01.3" L = 65.01' T = 32.51' R = 1,576.79'	PI Sta 153+13.84 △ = 9° 40' 31.2" (LT) D = 77° 25' 36.2" L = 12.50' T = 6.26' R = 74.00'	PI Sta 153+26.00 △ = 9° 09' 44.0" (RT) D = 77° 25' 36.2" L = 11.83' T = 5.93' R = 74.00'
PI Sta 156+01.25 △ = 1° 18' 31.7" (LT) D = 2° 17' 30.6" L = 57.11' T = 28.56' R = 2,500.00'	PI Sta 156+41.39 △ = 17° 47' 39.7" (RT) D = 77° 25' 36.2" L = 22.98' T = 11.58' R = 74.00'	PI Sta 156+65.25 △ = 19° 07' 21.8" (LT) D = 77° 25' 36.2" L = 24.70' T = 12.46' R = 74.00'	PI Sta 157+14.43 △ = 1° 41' 16.8" (LT) D = 2° 17' 05.9" L = 73.87' T = 36.94' R = 2,507.50'	PI Sta 157+63.82 △ = 19° 07' 21.8" (LT) D = 77° 25' 36.2" L = 24.70' T = 12.46' R = 74.00'	PI Sta 157+87.64 △ = 17° 47' 39.7" (RT) D = 77° 25' 36.2" L = 22.98' T = 11.58' R = 74.00'
PI Sta 159+52.15 △ = 7° 00' 33.0" (LT) D = 2° 17' 30.6" L = 305.83' T = 153.11' R = 2,500.00'	PI Sta 161+13.28 △ = 12° 57' 55.2" (RT) D = 77° 25' 36.2" L = 16.75' T = 8.41' R = 74.00'	PI Sta 161+30.54 △ = 13° 44' 53.9" (LT) D = 77° 25' 36.2" L = 17.76' T = 8.92' R = 74.00'			

SEE SHEET 35 FOR -GREENWAY- PROFILE

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1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER L. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER VON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

150

155

160

PCCSta152+18.15
PRCSta152+31.44
PRCSta152+42.57
PRCSta153+07.57
PRCSta153+20.07
PTSta153+31.90
PCSta155+72.70
PRCSta156+29.81
PRCSta156+52.79
PCCSta156+77.49
PCCSta157+51.36
PRCSta157+76.06
PRCSta157+99.04
PRCSta161+04.87
PRCSta161+21.62
PTSta161+39.37

MATCH LINE -GREENWAY- STA. 149+00.00 SEE SHEET 14

MATCH LINE -GREENWAY- STA. 162+00.00 SEE SHEET 16

55' Claimed Railroad ROW As Per Railroad Val Map 48-2 & Blue Ridge Southern Railroad

WXZ-SG Aquisition LLC D.B. 1853, Pg. 197 Plat Slide 6034 Pin: 9630-93-7728 Upper French Broad, WS-IV

Valles D.B.3031, Pg. 836 Pin: 9639-30-9951

Fish D.B.1853, Pg. 459 Pin: 9639-30-1139 Upper French Broad, WS-IV

McCarty D.B. 1595, Pg. 365 Pin: 9639-20-9141 Upper French Broad, WS-IV

McCarty D.B. 1548, Pg. 548 Pin: 9639-30-4883 Upper French Broad, WS-IV

TOE PROTECTION SEE DETAIL 1

END PEDESTRIAN RAIL -GREENWAY- STA. 153+20.00 SEE DETAIL SHEET L0.5

ROCK PLATING SEE DETAIL 2C-1

S 61° 38' 07.6" E

-GREENWAY-

RETAIN

HW 1501

BENCH SEE DETAIL SHEET L0.4

ORIENTATION MARKER SEE DETAIL SHEET L0.3

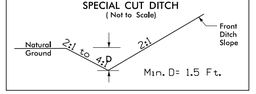
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 152+00.00 SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 158+65.00 SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 160+00.00 SEE DETAIL SHEET L0.5

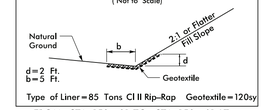
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 161+75.00 SEE DETAIL SHEET L0.5

DETAIL DITCH 21
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 152+50 RT TO STA. 153+40 RT

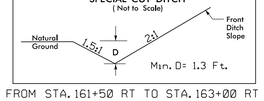
DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 85 Tons Cl II Rip-Rap Geotextile = 120sy

FROM STA. 152+21 TO STA. 153+01 LT

DETAIL DITCH 22
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 161+50 RT TO STA. 163+00 RT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

4/27/2023 3:35:28 PM
...\Cousta Trail rdy_psh15.dgn
Users\mtaylor

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 162+37.06	PI Sta 162+49.24	PI Sta 167+41.12	PI Sta 167+62.26	PI Sta 172+95.98
△ = 9° 25' 48.0" (RT)	△ = 9° 25' 48.0" (LT)	△ = 16° 22' 13.6" (LT)	△ = 16° 22' 13.6" (RT)	△ = 30° 00' 48.3" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 3° 00' 56.0"
L = 12.18'	L = 12.18'	L = 21.14'	L = 21.14'	L = 995.28'
T = 6.10'	T = 6.10'	T = 10.64'	T = 10.64'	T = 509.34'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'	R = 1,900.00'

SEE SHEETS 35 AND 36 FOR -GREENWAY- PROFILE

Prepared in the Office of:
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1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	16
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

165

170

POT Sta 167+30.47
PCS Sta 167+80.22
PRC Sta 168+00.77
PCC Sta 168+22.72

PCS Sta 162+30.95
PRC Sta 162+43.13
PT Sta 162+55.31

MATCH LINE -GREENWAY- STA. 162+00.00 SEE SHEET 15

MATCH LINE -GREENWAY- STA. 175+00.00 SEE SHEET 17

Garza
D.B. 3065, Pg. 330
Plat 9539-35-6832
Upper French Broad, WS-IV

?
Pereira
D.B. 3182, Pg. 655
Plat Slide 11677
Plat 9539-31-9994
Upper French Broad, WS-IV

S
Pereira
D.B. 3182, Pg. 655
Plat Slide 11677
Plat 9539-31-9971
Upper French Broad, WS-IV

Bright- Ward
D.B. 3338, Pg. 193
Plat Slide 11788
Plat 9539-42-8658
Upper French Broad, WS-IV

Alvarez & Barrera
D.B. 3332, Pg. 490
Plat 9539-41-5145
Upper French Broad, WS-IV

N/F
Dowling
D.B. 106, Pg. 372
Plat 9539-41-6892
Upper French Broad, WS-IV

N/F
Dowling
D.B. 106, Pg. 372
Plat 9539-41-6892
Upper French Broad, WS-IV

100' Claimed Railroad ROW
As Per Railroad Val Map 18-1

100' Claimed Railroad ROW
As Per Railroad Val Map 18-1

100' Claimed Railroad ROW
As Per Railroad Val Map 18-1

75' Claimed Railroad ROW
As Per Railroad Val Map 18-1
& Blue Ridge Southern Railroad

CL 1 RIP RAP
EST 10 TONS
EST 23 SYGF

S 74° 34' 11.5" E

CL B RIP RAP
EST 5 TONS
EST 16 SYGF

BENCH
SEE DETAIL SHEET L0.4

REMOVE AND STOCKPILE EXISTING FENCE

END PEDESTRIAN RAIL -GREENWAY- STA. 168+25.00
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 171+00.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL -GREENWAY- STA. 173+00.00
SEE DETAIL SHEET L0.5

REMOVE & REPLACE

1602 HW F

30" HDPE

1603

MILE MARKER
SEE DETAIL SHEET L0.4

HW 1601

END PEDESTRIAN RAIL -GREENWAY- STA. 163+25.00
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 162+75.00
SEE DETAIL SHEET L0.5

-GREENWAY-

BONAIRE DRIVE

RETAIN

Tract 4
McClung
D.B. 3417, Pg. 99
Plat Slide 11617
Plat 9539-31-7883
Upper French Broad, WS-IV

Tract Two
Goodrich
D.B. 983, Pg. 458
Plat Cab. A, Slide 122
Plat 9539-31-5135
Upper French Broad, WS-IV

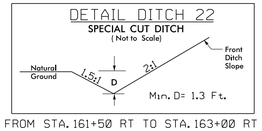
Tract Three
Newman
D.B. 1853, Pg. 346
Plat Cab. A, Slide 122
Plat 9539-31-8545
Upper French Broad, WS-IV

Allen
D.B. 1645, Pg. 59
Plat Slide 11788
Plat 9539-41-1428
Upper French Broad, WS-IV

Barnwell
D.B. 3105, Pg. 706
Plat 9539-41-7414
Upper French Broad, WS-IV

Barnwell
D.B. 3117, Pg. 3
Plat Slide 12111
Plat 9539-41-3336
Upper French Broad, WS-IV
(ROW Widened to 30' On This Parcel
As Per Plat Slide 12111)

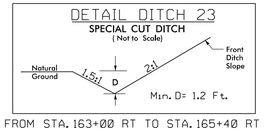
DETAIL DITCH 22
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.3 Ft.

FROM STA. 161+50 RT TO STA. 163+00 RT

DETAIL DITCH 23
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.2 Ft.

FROM STA. 163+00 RT TO STA. 165+40 RT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

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...\Cousta Trail_rdy.pshi6.rsk

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 182+92.54
△ = 10° 57' 56.1" (LT)
D = 4° 05' 33.2"
L = 267.94'
T = 134.38'
R = 1,400.00'

PI Sta 184+34.82
△ = 13° 26' 35.3" (RT)
D = 77° 25' 36.2"
L = 17.36'
T = 8.72'
R = 74.00'

PI Sta 184+53.16
△ = 14° 55' 30.0" (LT)
D = 77° 25' 36.2"
L = 19.28'
T = 9.69'
R = 74.00'

PI Sta 185+00.95
△ = 3° 07' 01.9" (LT)
D = 4° 04' 46.0"
L = 76.41'
T = 38.22'
R = 1,404.50'

PI Sta 185+48.84
△ = 14° 55' 30.0" (LT)
D = 77° 25' 36.2"
L = 19.28'
T = 9.69'
R = 74.00'

PI Sta 185+67.15
△ = 13° 26' 35.3" (RT)
D = 77° 25' 36.2"
L = 17.36'
T = 8.72'
R = 74.00'

PI Sta 186+06.32
△ = 2° 29' 56.2" (LT)
D = 4° 05' 33.2"
L = 61.06'
T = 30.54'
R = 1,400.00'

SEE SHEET 36 FOR -GREENWAY- PROFILE

NAD 83/2011

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50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	17
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 175+00.00 SEE SHEET 16

MATCH LINE -GREENWAY- STA. 188+00.00 SEE SHEET 18

175 180 185

PT Sta 177+81.87
PCS Sta 181+58.11
PRCS Sta 184+26.05
PRCS Sta 184+43.41
PCCS Sta 184+62.69
POCS Sta 185+39.10
PRCS Sta 185+58.38
PRCS Sta 185+75.74
PT Sta 186+36.80

Allen
D.B. 1559, Pg. 155
Plat 9559-41-7292
Upper French Broad, WS-IV

Allen
D.B. 865, Pg. 32
Plat 9559-41-8456
Upper French Broad, WS-IV

Hansen
D.B. 931, Pg. 225
Plat 9559-31-9292
Upper French Broad, WS-IV

Quinn
D.B. 1851, Pg. 343
Plat 9559-36-3969
Upper French Broad, WS-IV

Ford
D.B. 1455, Pg. 40
Plat 9559-50-5659
Upper French Broad, WS-IV

Wilson
D.B. 398, Pg. 369
Plat 9559-50-5974
Upper French Broad, WS-IV

Hall
D.B. 1195, Pg. 596
Plat 9559-50-6990
Upper French Broad, WS-IV

Tract B
Begin
D.B. 980, Pg. 19
Plat Slide 1966
Plat 9559-50-5561
Upper French Broad, WS-IV

100' Claimed Railroad ROW
As Per Railroad Val Map 49-1

TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7

CL I RIP RAP
EST 11 TONS
EST 22 SYGF

CL B RIP RAP
EST 5 TONS
EST 16 SYGF

DO NOT DISTURB FENCE

ROCK PLATING
SEE DETAIL 2C-1

BEGIN PEDESTRIAN RAIL
AND 1.5:1 SIDE SLOPES
-GREENWAY- STA. 179+00.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 184+35.00
SEE DETAIL SHEET L0.5

CL I RIP RAP
EST 15 TONS
EST 30 SYGF

1705

REMOVE HW

EXTEND 36" RCP III

36" RCP III

END PEDESTRIAN RAIL
AND 1.5:1 SIDE SLOPES
-GREENWAY- STA. 181+75.00
SEE DETAIL SHEET L0.5

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

16' TYP.
+93.57

16' TYP.
+93.47

16' TYP.
+96.32

16' TYP.
+96.63

REMOVE

REMOVE 36" RCP III

EXTEND 36" RCP III

Ellip. 32" x 49" RCP-V

HW

1701

1702

1703

1704

S 44°33'23"E

-GREENWAY-

BONARE DRIVE

WOODBRIDGE DRIVE

HILLSIDE DRIVE

RETAIN

NOTE:
REGRADE A PORTION OF WOODBRIDGE DRIVE FOR SUPERELEVATION CONSTRUCTION

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 183+00.00
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 185+50.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 186+35.00
SEE DETAIL SHEET L0.5

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

Into Railroad ROW

Bucio Andrade
D.B. 1685, Pg. 122
Plat 9559-41-8492
Upper French Broad, WS-IV

Manufactured House
Extends ELF Into
Railroad ROW

Torres
D.B. 3038, Pg. 192
Plat Slide 11856
Plat 9559-41-9863
Upper French Broad, WS-IV

Hulbert
D.B. 1559, Pg. 456
Plat 9559-50-3498
Upper French Broad, WS-IV

Henderson County
D.B. 754, Pg. 561
Plat 9559-50-9789
Upper French Broad, WS-IV

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

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User:ashleigh.rice

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ASHEVILLE NC, 28806

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

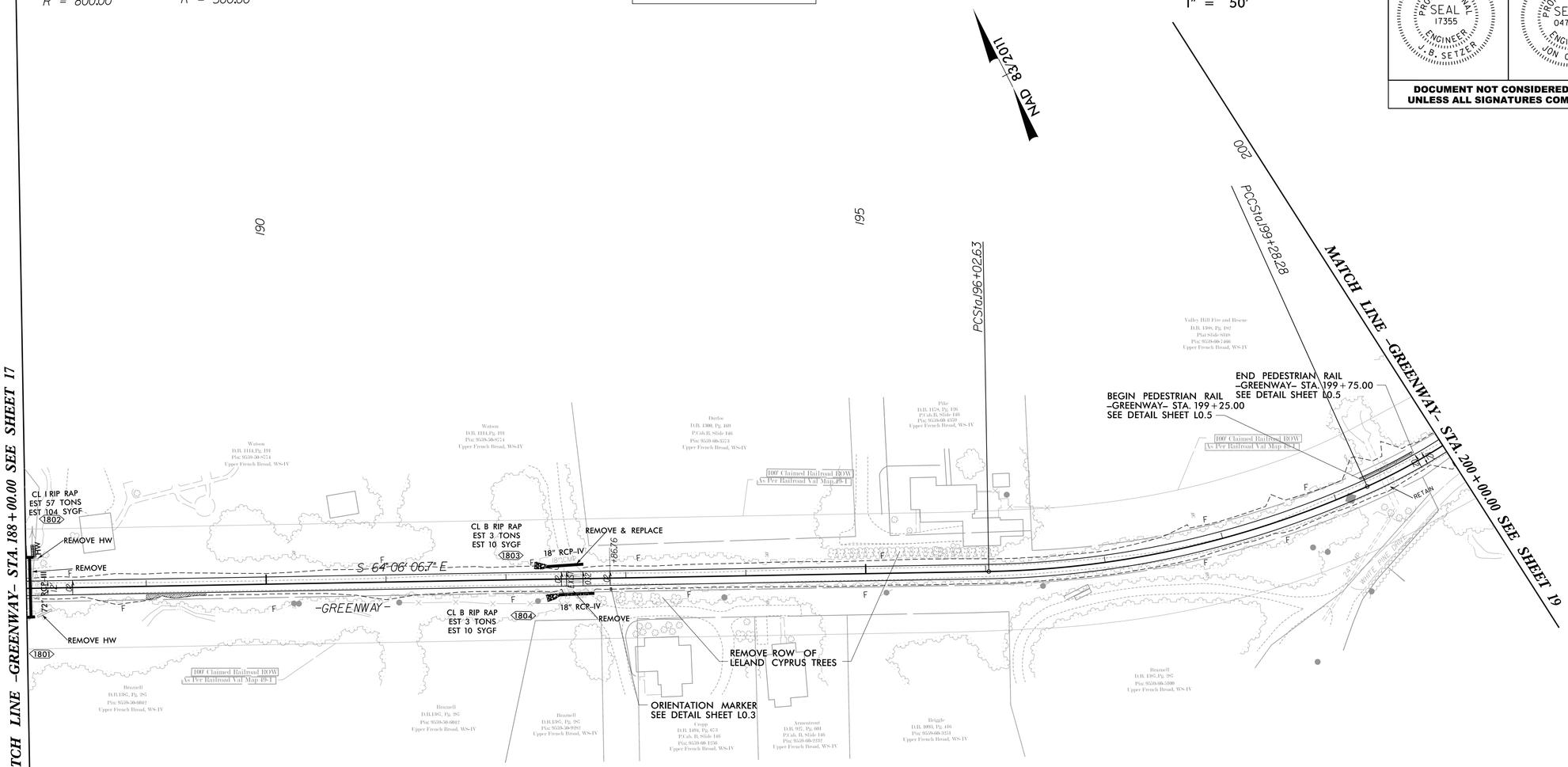
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-GREENWAY- CURVE DATA

PI Sta 198+37.29	PI Sta 199+69.24
△ = 32° 41' 22.9" (LT)	△ = 9° 22' 00.4" (LT)
D = 7° 09' 43.1"	D = 11° 27' 33.0"
L = 456.43'	L = 81.74'
T = 234.62'	T = 40.96'
R = 800.00'	R = 500.00'

SEE SHEETS 36 AND 37 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'



ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

REVISIONS

8/17/99

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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 201+16.48
△ = 13° 21' 04.3" (LT)
D = 77° 25' 36.2"
L = 17.24'
T = 8.66'
R = 74.00'

PI Sta 201+33.73
△ = 13° 21' 04.3" (RT)
D = 77° 25' 36.2"
L = 17.24'
T = 8.66'
R = 74.00'

PI Sta 202+50.45
△ = 12° 16' 35.3" (LT)
D = 77° 25' 36.2"
L = 15.86'
T = 7.96'
R = 74.00'

PI Sta 202+33.57
△ = 13° 53' 06.7" (RT)
D = 77° 25' 36.2"
L = 17.93'
T = 9.01'
R = 74.00'

PI Sta 213+43.48
△ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

PI Sta 204+70.39
△ = 31° 34' 25.1" (RT)
D = 7° 38' 22.0"
L = 413.30'
T = 212.04'
R = 750.00'

PI Sta 213+31.30
△ = 9° 25' 48.0" (LT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

SEE SHEET 37 FOR
-GREENWAY- PROFILE

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETTER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50 25 0 50 100
1" = 50'

NAD 83/2011

2\0

205

200

PCSta202+24.51
PRCSta202+42.44
PRCSta202+58.30
PTSta206+71.60
PCSta208+72.17
PCSta208+84.35
PTSta208+96.53
PCSta213+25.20
PCSta213+37.38
PTSta213+49.56

Jones
D.B. 1173, Pg. 630
Pin: 9528-58-1061
Upper French Broad, WS-IV

Shaws Creek Farm HOA
D.B. 1349, Pg. 439
Plat Slide 9726
Pin: 9528-78-2252
Upper French Broad, WS-IV

Trust Two
Green Property Management LLC
D.B. 1963, Pg. 351
Pin: 9528-98-1626

Corbin
D.B. 798, Pg. 317
Pin: 9528-59-9556

Building Extends 22.8' Into Railroad ROW

100' Claimed Railroad ROW
As Per Railroad Val Map 48-I

CL B RIP RAP
EST 5 TONS
EST 14 SYGF

CL B RIP RAP
EST 3 TONS
EST 10 SYGF

RETAIN

REMOVE & REPLACE

18" RCP-IV

1905

1906

1904

1903

1902

1901

CL B RIP RAP
EST 3 TONS
EST 10 SYGF

S 63° 36' 33.0" E

-GREENWAY-

60' Claimed Railroad ROW
As Per Railroad Val Map 48-I

Shaws Creek Farm HOA
D.B. 1349, Pg. 439
Plat Slide 9726
Pin: 9528-78-2252
Upper French Broad, WS-IV

BENCH
SEE DETAIL SHEET L0.4

TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7

Cain
D.B. 3092, Pg. 639
Pin: 9528-28-9900

Hidlog
D.B. 1108, Pg. 65
Pin: 9528-28-9823

Building Extends 22.7' Into Railroad ROW

Scott & Beers
D.B. 1865, Pg. 357
Plat Slide 5638
Pin: 9528-28-8414
Upper French Broad, WS-IV

WHITE PINE DRIVE

End Conc.

16" RCP-III

DI

16' TYP.

50' TAPER

2OTCB

REMOVE & REPLACE TYP.

60' Claimed Railroad ROW
As Per Railroad Val Map 48-I

Self
D.B. 1647, Pg. 495
Plat Slide 5096
Pin: 9528-78-3939
Upper French Broad, WS-IV

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

CL B RIP RAP
EST 2 TONS
EST 7 SYGF

USE 1.5:1 FILL SLOPES FROM
201+90.00 TO 202+45.00

PT Sta.200+10.02

Miranda
D.B. 1085, Pg. 51
Pin: 9528-38-0855
Upper French Broad, WS-IV

PT Sta.201+99.47 BACK=
PT Sta.202+00.00 AHEAD

S 63° 36' 33.0" E

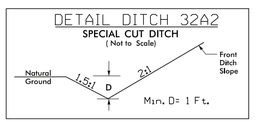
USE 1' SHOULDER FROM
200+00.00 TO 201+00.00

Pharr
D.B. 1966, Pg. 418
Pin: 9529-68-9843
Upper French Broad, WS-IV

MATCH LINE -GREENWAY- STA. 200+00.00 SEE SHEET 18

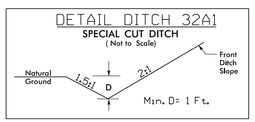
MATCH LINE -GREENWAY- STA. 214+00.00 SEE SHEET 20

DETAIL DITCH 32A2
SPECIAL CUT DITCH
(Not to Scale)



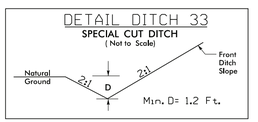
FROM STA. 204+90 LT TO STA. 208+50 LT

DETAIL DITCH 32A1
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 208+50 LT TO STA. 210+00 LT

DETAIL DITCH 33
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 212+00 LT TO STA. 214+92 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

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User: matt.rick

8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 220+45.94	PI Sta 223+72.70	PI Sta 224+08.09
△ = 25° 37' 22.1" (RT)	△ = 8° 06' 34.6" (LT)	△ = 8° 06' 34.6" (RT)
D = 6° 01' 52.1"	D = 22° 55' 05.9"	D = 22° 55' 05.9"
L = 424.84'	L = 35.38'	L = 35.38'
T = 216.03'	T = 17.72'	T = 17.72'
R = 950.00'	R = 250.00'	R = 250.00'

SEE SHEETS 37 AND 38 FOR -GREENWAY- PROFILE

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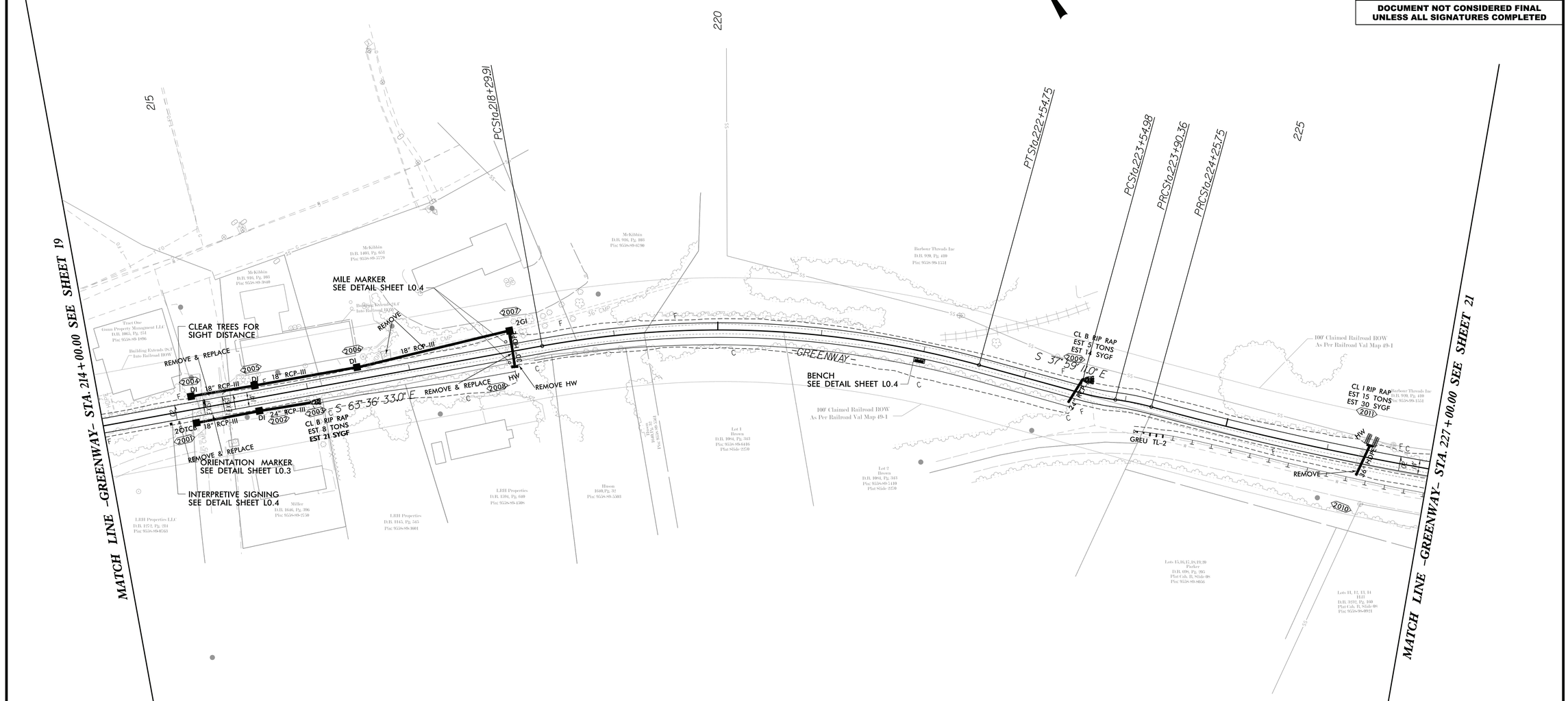
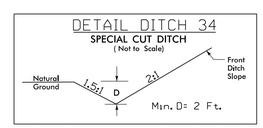
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

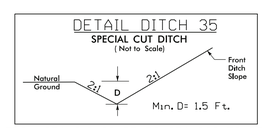
50 25 0 50 100
1" = 50'

NAD 83/2011





FROM STA. 216+00 RT TO STA. 218+00 RT



FROM STA. 218+20 RT TO STA. 223+50 RT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 229+92.15
△ = 22° 08' 24.2" (LT)
D = 1° 58' 44.9"
L = 1,118.68'
T = 566.40'
R = 2,895.00'

PI Sta 236+35.29
△ = 8° 06' 34.6" (RT)
D = 22° 55' 05.9"
L = 35.38'
T = 17.72'
R = 250.00'

PI Sta 236+70.68
△ = 8° 06' 34.6" (LT)
D = 22° 55' 05.9"
L = 35.38'
T = 17.72'
R = 250.00'

PI Sta 238+82.61
△ = 0° 06' 10.8" (LT)
D = 0° 08' 35.7"
L = 71.91'
T = 35.96'
R = 40,000.00'

SEE SHEET 38 FOR -GREENWAY- PROFILE

NAD 83/2011

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50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	21
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER T. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER VON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 227+00.00 SEE SHEET 20

MATCH LINE -GREENWAY- STA. 240+00.00 SEE SHEET 22

230 235 240

PT Sta 235+44.43
PC Sta 236+17.57
PRC Sta 236+52.95
PT Sta 236+88.34
PC Sta 238+46.65
PT Sta 239+18.57

100' Claimed Railroad ROW As Per Railroad Val Map 49-1

Agudas Israel Congregation D.B. 1023, Pg. 486 Plat 9558-98-9678

Agudas Israel Congregation D.B. 1048, Pg. 728 Plat 9558-98-6096

Gordon & Hyatt-Finch D.B. 1107, Pg. 291 Plat 9569-98-3351

Graham D.B. 1005, Pg. 849 Plat 9568-98-1402

Trust One Gilliam D.B. 1196, Pg. 655 Plat Cab. B, Slide 98 Plat 9558-98-7216

Lots 7,8,9 Dunn D.B. 1190, Pg. 465 Plat Cab. D, Slide-330A Plat 9558-98-5630

Kennedy D.B. 1241, Pg. 564 Plat 9558-98-3636

Lots 4,5, 6 Massey D.B. 1421, Pg. 60 Plat Cab. D, Slide-330A Plat 9558-98-5487

Brown D.B. 1153, Pg. 485 Plat 9558-98-7349

Jacobus D.B. 1030, Pg. 13 Plat 9558-98-8414

Dempsey D.B. 1186, Pg. 221 Plat 9558-98-9352

Warner D.B. 1883, Pg. 665 Plat Slide 16882 Plat 9569-98-1145

RHODODENDRON DRIVE

WHITE PINE DRIVE

CRYSTAL SPRING DRIVE

CL I RIP RAP
EST 22 TONS
EST 44 SYGF

-GREENWAY-

GREU TL-2

2101 18" RCP-IV

2110 CL B RIP RAP EST 3 TONS EST 10 SYGF

TYPE 4A CURB RAMP

REMOVE

2102 2103 27"x42" RCP-IV

RETAIN

2104

ORIENTATION MARKER SEE DETAIL SHEET L0.3

2105 Ellip. 22"x34" RCP-IV

CL B RIP RAP EST 5 TONS GREU TL-2 EST 14 SYGF

TYPE 4A CURB RAMP

RETAIN

S 60° 07' 35.2" E

PT Sta. 236+98.54 = PT Sta. 237+00.00

REMOVE CONCRETE RR SIGNAL STRUCTURE BASE

2109 20"CB

REMOVE HW

CL B RIP RAP EST 3 TONS EST 10 SYGF

16' TYP. +29.93

+0.67

2107 Ellip. 14"x23" RCP-V

REMOVE

2106 Ellip. 22"x34" RCP-V

GREU TL-2

CL B RIP RAP EST 8 TONS EST 21 SYGF

REMOVE HW

2108

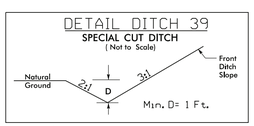
RETAIN

REMOVE CONCRETE RR SIGNAL STRUCTURE BASE AND GUARDRAIL

NOTE:
INSTALL CROSSWALK ON WHITE PINE DR. AT RHODODENDRON DR. FOR TRAIL ACCESS

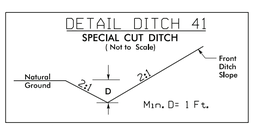
NOTE:
INSTALL CROSSWALK ON WHITE PINE DR. AT CRYSTAL SPRING DR. FOR GREENWAY ACCESS

DETAIL DITCH 39
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 226+75 LT TO STA. 229+15 LT

DETAIL DITCH 41
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 237+70 LT TO STA. 239+50 LT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 243+50.28	PI Sta 244+08.91	PI Sta 249+93.33	PI Sta 251+01.84	PI Sta 252+09.86
△ = 4° 23' 57.2" (RT)	△ = 4° 20' 46.9" (LT)	△ = 1° 38' 23.4" (LT)	△ = 5° 58' 16.0" (LT)	△ = 28° 01' 44.6" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 8° 11' 06.4"	D = 77° 25' 36.2"	D = 32° 44' 25.6"
L = 5.68'	L = 5.61'	L = 20.03'	L = 7.71'	L = 85.61'
T = 2.84'	T = 2.81'	T = 10.02'	T = 3.86'	T = 43.68'
R = 74.00'	R = 74.00'	R = 700.00'	R = 74.00'	R = 175.00'

SEE SHEETS 38 AND 39 FOR -GREENWAY- PROFILE

NAD 83/2011

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	22
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCH LINE -GREENWAY- STA. 240+00.00 SEE SHEET 21

MATCH LINE -GREENWAY- STA. 253+00.00 SEE SHEET 23

240 245 250

PC Sta. 243+47.44
PT Sta. 243+53.12
PC Sta. 244+06.10
PT Sta. 244+11.71
PC Sta. 249+83.32
PT Sta. 250+03.35
PC Sta. 250+97.98
PT Sta. 251+05.69
PC Sta. 251+66.18
PT Sta. 252+41.74
PC Sta. 252+87.54

100' Claimed Railroad ROW As Per Railroad Val Map 49-1

REMOVE EXISTING CROSSING

TOE PROTECTION SEE DETAIL 1

NOTE: 1.5:1 BACKSLOPES USED FROM STA. 250+05 TO STA. 250+23.29

END BRIDGE 14
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 250+46.29
SEE DETAIL SHEET L0.5

PROPOSED WING WALL SEE STRUCTURES PLANS

NOTE: PROPOSED CROSSING TO BE SIGNALIZED

REMOVE AND STOCKPILE RR SIGNAL STRUCTURE

REMOVE & REPLACE 220' 20TCB

S 60° 13' 46.0" E
S 55° 49' 48.8" E
S 60° 10' 35.7" E
S 61° 48' 59.1" E
S 61° 47' 15.1" E
S 42° 54' 12.9" E

-GREENWAY-

BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 249+73.29
SEE DETAIL SHEET L0.5

BEGIN BRIDGE 14
END PEDESTRIAN RAIL -GREENWAY- STA. 250+23.29
SEE DETAIL SHEET L0.5

REMOVE CONCRETE RR SIGNAL STRUCTURE BASE

END PEDESTRIAN RAIL -GREENWAY- STA. 250+96.29
SEE DETAIL SHEET L0.5

TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7

50' TAPER 1 1 AT-1

+00.00

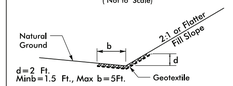
Bridge #14

FOOT BRIDGE

Finch D.B. 1482, Pg. 395 Pin: 9568-08-2574
Hyatt & Finch D.B. 1405, Pg. 991 Pin: 9568-08-3355
Eibl D.B. 1295, Pg. 556 Pin: 9568-08-4358 No Description Found
Bethel D.B. 1366, Pg. 537 Pin: 9568-08-3598
Zeeber D.B. 592, Pg. 419 Pin: 9568-08-4775
Coppin D.B. 1309, Pg. 592 Pin: 9568-08-8074
Kelso D.B. 3591, Pg. 338 Pin: 9568-46-9997
Lee D.B. 3038, Pg. 81 Pl.cab. B, Slide 182 Pin: 9568-08-2101
Lots 5&7 & 8 Rodriguez D.B. 3317, Pg. 115 Pl.cab. B, Slide 182 Pin: 9568-08-3055
First Congregational Church D.B. 411, Pg. 346 Pin: 9568-46-3957
First Congregational Church D.B. 378, Pg. 467 Pin: 9568-46-7823
First Congregational Church D.B. 335, Pg. 53 Pin: 9568-46-9514

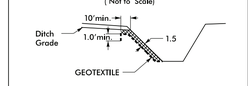
ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = 110 Tons CI II Rip-Rap Geotextile = 156sy
FROM STA. 246+96 TO STA. 248+00 LT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 13 TONS, CL I Rip-Rap
Geotextile = 30sy
AT STA. 252+00.97RT

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User:ajtrotter

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	23
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

-GREENWAY- CURVE DATA

PI Sta 253+53.22
△ = 29° 26' 18.3" (LT)
D = 22° 55' 05.9"
L = 128.45'
T = 65.68'
R = 250.00'

PI Sta 254+32.83
△ = 16° 39' 34.7" (RT)
D = 49° 49' 20.7"
L = 33.44'
T = 16.84'
R = 115.00'

PI Sta 259+31.80
△ = 19° 28' 43.0" (LT)
D = 3° 57' 05.2"
L = 492.95'
T = 248.88'
R = 1,450.00'

PI Sta 261+81.67
△ = 8° 57' 45.7" (RT)
D = 77° 25' 36.2"
L = 11.58'
T = 5.80'
R = 74.00'

PI Sta 261+93.87
△ = 9° 55' 17.2" (LT)
D = 77° 25' 36.2"
L = 12.81'
T = 6.42'
R = 74.00'

PI Sta 263+08.34
△ = 8° 30' 49.4" (LT)
D = 3° 56' 45.6"
L = 215.76'
T = 108.08'
R = 1,452.00'

SEE SHEET 39 FOR -GREENWAY- PROFILE

NAD 83/2011

MATCH LINE -GREENWAY- STA. 253+00.00 SEE SHEET 22

MATCH LINE -GREENWAY- STA. 264+00.00 SEE SHEET 24

255

260

PT Sta. 254+49.43

PC Sta. 256+82.92

PRC Sta. 254+15.99

PRC Sta. 261+75.87

PRC Sta. 261+87.45

PCC Sta. 262+00.26

S 60° 13' 46.0" E

DO NOT DISTURB FENCE

-GREENWAY-

PT Sta. 255+96.91 =
PT Sta. 256+00.00

1.75:1 DITCH BACKSLOPE USED
FROM 259+65.00 TO 260+80.00

REMOVE

18" RCP-III

INV=254.50'

INV=253.86'

CL B RIP RAP
EST 1 TONS
EST 5 SYGF

BENCH
SEE DETAIL SHEET L0.4

STATION WITH SEATING
SEE DETAIL SHEET L0.2

2202 2301 2302 2303

Drake
D.B. 548, Pg. 843
Plat 9686-17-5148

Gill Properties of Henderson County, LLC
D.B. 1893, Pg. 716
Plat 9686-17-9414

100' Claimed Railroad ROW
As Per Railroad Val Map 49-1

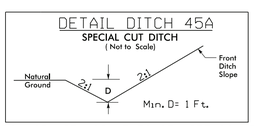
Gambill
D.B. 1895, Pg. 695
Plat 9686-17-7479

Town of Laurel Park
96CVS, Pg. 259
Plat 9686-17-3560
No Description Found

English
D.B. 1496, Pg. 557
Plat 9686-17-6460

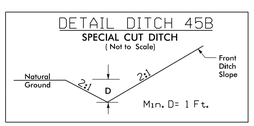
Cloisters of Hendersonville HOA
D.B. 1398, Pg. 633
Plat Slide 5736
Plat 9686-17-9123

DETAIL DITCH 45A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 254+00 LT TO STA. 257+00 LT

DETAIL DITCH 45B
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 257+00 LT TO STA. 262+00 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

50 25 0 50 100
1" = 50'

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User:mattmarlowe

REVISIONS

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50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEETS 39 AND 40 FOR -GREENWAY- PROFILE

NAD 83/2011

MATCH LINE -GREENWAY- STA. 264+00.00 SEE SHEET 23

PCC Sta. 264+16.02
PRC Sta. 264+28.83
PRC Sta. 264+40.41
PT Sta. 264+84.44
PC Sta. 267+44.93
PCC Sta. 274+21.17
PT Sta. 274+57.94
PC Sta. 274+88.73
PRC Sta. 275+61.27
PT Sta. 276+07.32

MILE MARKER
SEE DETAIL SHEET L0.4

CL B RIP RAP
EST 8 TONS
EST 21 SYGF

-GREENWAY FW

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 269+10.00
SEE DETAIL SHEET L0.5

END PEDESTRIAN RAIL
-GREENWAY- STA. 270+10.00
CL I RIP RAP
EST 26 TONS SEE DETAIL SHEET L0.5
EST 50 SYGF

BENCH
SEE DETAIL SHEET L0.4

ORIENTATION MARKER
SEE DETAIL SHEET L0.3

INSTALL 5' CONCRETE SIDEWALK

INSTALL 5' CONCRETE SIDEWALK

ORIENTATION MARKER
SEE DETAIL SHEET L0.4

REMOVE AND REPLACE

RETAIN

N 88° 07' 14.4" E

S 35° 52' 42.7" E

18" RCP-III
24" RCP-III
30" RCP-III

REMOVE 16" RCP

REMOVE & REPLACE 16" RCP

REMOVE & REPLACE 18" RCP

REMOVE & REPLACE 24" RCP

REMOVE & REPLACE 30" RCP

W. LAKE AVE.

3RD AVE WEST

WALSH CREEK RD.

100' Claimed Railroad ROW A. Ver Railroad Val Map 49 S. 16

Moore & Knipp D.B. 1444, Pg. 334 P.Cab. B, Slide 183A Pin: 9569-75-9312

Rhoades D.B. 1369, Pg. 836 P.Cab. B, Slide 183A Pin: 9569-37-1194

Scott D.B. 1399, Pg. 298 Pin: 9569-37-7130

Irvine D.B. 1503, Pg. 63 PIN:9569-37-7152

Cagle D.B. 1093, Pg. 402 Pin: 9569-37-3006

Lots 1-4 Allen D.B. 981, Pg. 308 P. Cab. B,Slide 113A Pin: 9569-38-4994

Tract Two Jordan Street LLC D.B. 1458, Pg. 672 Plat Slide: 2852 Pin: 9569-37-6190

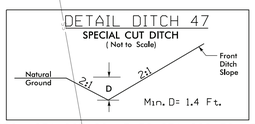
Tract One Jordan Street LLC D.B. 1529, Pg. 153 Plat Slide 2852 Pin: 9569-37-6190

Tract Two Jordan Street LLC D.B. 1458, Pg. 672 Plat Slide: 2852 Pin: 9569-37-6190

Dunscraggen HOA Inc D.B. 1053, Pg. 313 Pin: 9569-36-0695

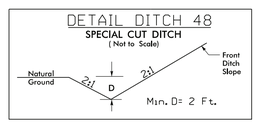
Dunscraggen HOA Inc D.B. 1053, Pg. 313 Pin: 9569-36-0695

DETAIL DITCH 47
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 267+00 LT TO STA. 269+50 LT

DETAIL DITCH 48
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 275+00 LT TO STA. 283+50 LT

MATCH LINE -GREENWAY- STA. 277+00.00 SEE SHEET 25

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

-GREENWAY- CURVE DATA

PI Sta 264+22.44	PI Sta 264+34.63	PI Sta 264+62.43	PI Sta 271+01.62	PI Sta 274+39.94	PI Sta 275+28.21	PI Sta 275+85.07
Δ = 9° 55' 17.2" (LT)	Δ = 8° 57' 45.7" (RT)	Δ = 1° 44' 24.3" (LT)	Δ = 45° 03' 10.2" (RT)	Δ = 28° 28' 12.7" (RT)	Δ = 56° 10' 18.3" (LT)	Δ = 35° 38' 58.3" (RT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 3° 57' 05.2"	D = 6° 39' 44.3"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 12.81'	L = 11.58'	L = 44.04'	L = 676.24'	L = 36.77'	L = 72.55'	L = 46.04'
T = 6.42'	T = 5.80'	T = 22.02'	T = 356.69'	T = 18.77'	T = 39.49'	T = 23.79'
R = 74.00'	R = 74.00'	R = 1,450.00'	R = 860.00'	R = 74.00'	R = 74.00'	R = 74.00'

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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta. 279+26.81
△ = 7° 54' 44.6" (LT)
D = 2° 12' 13.3"
L = 359.05'
T = 179.81'
R = 2,600.00'

SEE SHEET 40 FOR
-GREENWAY- PROFILE

NAD 83/2011

50 25 0 50 100
1" = 50'

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ASHEVILLE NC, 28806

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	25
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

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MATCH LINE -GREENWAY- STA. 277+00.00 SEE SHEET 24

PC Sta. 277+47.00

PT Sta. 281+06.05

280

285

290

MATCH LINE -GREENWAY- STA. 290+00.00 SEE SHEET 26

Lot 35-37 & Portions of 5,6,7,8
Van Deusen
D.B. 1549, Pg. 191
P. Cab. B,Slide 113A
Plat: 9568-36-6815

Lots 49, 50, 51, 52
Mann
D.B. 3131, Pg. 484
P. Cab. B,Slide 113A
Plat: 9568-36-7921

Lots 53-55
Kirke
D.B. 3305, Pg. 49
P. Cab. B,Slide 113A
Plat: 9568-36-7686

Lots 56-59
Turner
D.B. 1452, Pg. 172
P. Cab. B,Slide 113A
Plat: 9568-36-9692

Lots 60-62
Cs
D.B. 1896, Pg. 302
P. Cab. B,Slide 113A
Plat: 9568-36-8565

Lots 63-66
Sorell
D.B. 3300, Pg. 855
P. Cab. B,Slide 113A
Plat: 9568-36-9321

Lots 67-70
Pfeifer
D.B. 1808, Pg. 131
P. Cab. B, Slide 113A
Plat: 9568-46-0129

Hendersonville Housing Authority
P.Cab. C, Slide 53
Plat: 9568-46-3362

Cole
D.B. 966, Pg. 739
Plat: 9568-46-3085

TOP=2133.12'
INV=2125.82'

TOP=2137.20'
INV=2129.70'

TOP=2130.70'
INV=2128.40'

TOP=2131.58'
INV=2129.18'

NOTE:
1.5:1 BACKSLOPES USED FROM STA. 284+28 TO STA. 284+62

ROCK PLATING
SEE DETAIL 2C-1

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 283+24.78
SEE DETAIL SHEET L0.5

END PEDESTRIAN HANDRAIL
-GREENWAY- STA. 284+78.78
SEE DETAIL SHEET L0.5

S 46° 47' 27.3" E

-GREENWAY-

ORIENTATION MARKER
SEE DETAIL SHEET L0.4

DOG WASTE STATION
SEE DETAIL SHEET L0.6

BEGIN BRIDGE 15
END PEDESTRIAN RAIL
-GREENWAY- STA. 283+74.78
SEE DETAIL SHEET L0.5

END BRIDGE 15
BEGIN PEDESTRIAN HANDRAIL
-GREENWAY- STA. 284+28.78
SEE DETAIL SHEET L0.5

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 282+00.00
SEE DETAIL SHEET L0.5

NOTE: EXTEND SIDEWALK TO -GREENWAY-

DO NOT DISTURB FENCE

Parrish
D.B. 1598, Pg. 212
Plat: 9568-36-4657

Wilson
D.B. 804, Pg. 317
Plat: 9568-36-6505

Hudson & Tomizawa
D.B. 1345, Pg. 418
Plat: 9568-36-6466

Landrum
D.B. 1573, Pg. 393
Plat: 9568-36-7110

Hamilton Landing HOA Assoc.
D.B. 1394, Pg. 686
Plat: 9568-36-9133

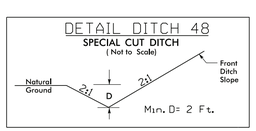
Hamilton Landing HOA Assoc.
D.B. 1394, Pg. 686
Plat: 9568-36-9133

W. ALLEN STREET

+42.73' 16' TYP.

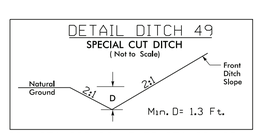
+22.54'

DETAIL DITCH 48
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 275+00 LT TO STA. 283+50 LT

DETAIL DITCH 49
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 289+00 LT TO STA. 291+90 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

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User:mattwrenn

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

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1318-F PATTON AVE.
ASHEVILLE NC, 28806

SEE SHEETS 40 AND 41 FOR -GREENWAY- PROFILE

-GREENWAY- CURVE DATA

PI Sta 296+05.50	PI Sta 299+65.83
△ = 23° 41' 43.5" (LT)	△ = 4° 07' 49.8" (LT)
D = 4° 00' 24.1"	D = 6° 01' 52.1"
L = 591.40'	L = 68.49'
T = 299.99'	T = 34.26'
R = 1,430.00'	R = 950.00'

50 25 0 50 100
1" = 50'

NAD 83/2011

MATCH LINE -GREENWAY- STA. 290+00.00 SEE SHEET 25

MATCH LINE -GREENWAY- STA. 303+00.00 SEE SHEET 27

290 295 300

PC Sta. 293+05.51

PT Sta. 298+96.91

PC Sta. 299+31.57

PCC Sta. 300+00.06

TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7

USE 1' SHOULDER FROM 299+60.00 TO 306+35.00

CL B RIP RAP
EST 2 TONS
EST 7 SYGF

REMOVE REMOVE & REPLACE REMOVE

24" RCP-III

CB 24" RCP-III

-GREENWAY-

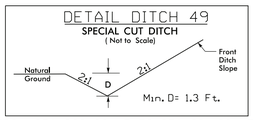
S 70° 29' 10.8" E

NOTE: EXTEND SIDEWALK FROM -GREENWAY- TO EXISTING R/W

ADD 3 LARGE BOULDERS SPACED AT 4' TO BLOCK DRIVEWAY ACCESS

BENCH
SEE DETAIL SHEET L0.4

DETAIL DITCH 49
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 289+00 LT TO STA. 291+90 LT

ROCK PLATING. SEE DETAIL 2C-1

PAVED SHOULDER

TOE PROTECTION RIP RAP

REVISIONS

8/17/99

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8/17/99

REVISIONS

-GREENWAY- CURVE DATA

PI Sta 303+19.12
△ = 25° 08' 03.8" (LT)
D = 4° 00' 11.5"
L = 627.86'
T = 319.06'
R = 1,431.25'

PI Sta 306+61.85
△ = 4° 51' 28.9" (LT)
D = 7° 09' 43.1"
L = 67.83'
T = 33.94'
R = 800.00'

PI Sta 307+00.14
△ = 6° 47' 59.4" (RT)
D = 77° 25' 36.2"
L = 8.78'
T = 4.40'
R = 74.00'

PI Sta 310+13.17
△ = 5° 08' 33.6" (RT)
D = 77° 25' 36.2"
L = 6.64'
T = 3.32'
R = 74.00'

PI Sta 310+90.39
△ = 5° 08' 33.6" (LT)
D = 77° 25' 36.2"
L = 6.64'
T = 3.32'
R = 74.00'

SEE SHEET 41 FOR -GREENWAY- PROFILE

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1318-F PATTON AVE.
ASHEVILLE NC, 28806

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

305

310

315

PRCSta.306+95.75
PTSta.307+04.53

PC Sta. 310+09.85
PT Sta. 310+16.49
PC Sta. 310+87.07
PT Sta. 310+93.71

PC Sta. 314+50.81

USE 1' SHOULDER FROM 299+60.00 TO 306+35.00

PCCSta.306+27.92

NOTE:
1.5:1 BACKSLOPES AND 1' SHOULDERS USED FROM STA. 309+80 TO STA. 310+95

ROCK PLATING SEE DETAIL 2C-1

CL B RIP RAP
EST 8 TONS
EST 21 SYCE PIPES

REMOVE FILL BETWEEN PIPES

ORIENTATION MARKER SEE DETAIL SHEET 40.4

N 82° 11' 26.3" E

N 87° 19' 59.9" E

24" RCP-III
2GI-D
Ellip. 24"38" RCP-IV
2OTCB
18" RCP-III
15" RCP-III
AT-1
RETAIN
16' TYP.
+00.00

-GREENWAY-

SPRING STREET

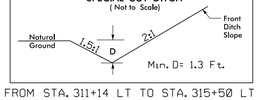
TOP=2108.03'
INV=2103.14'

DO NOT DISTURB FENCE

MATCH LINE -GREENWAY- STA. 303+00.00 SEE SHEET 26

MATCH LINE -GREENWAY- STA. 316+00.00 SEE SHEET 28

DETAIL DITCH 55
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 311+14 LT TO STA. 315+50 LT

ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

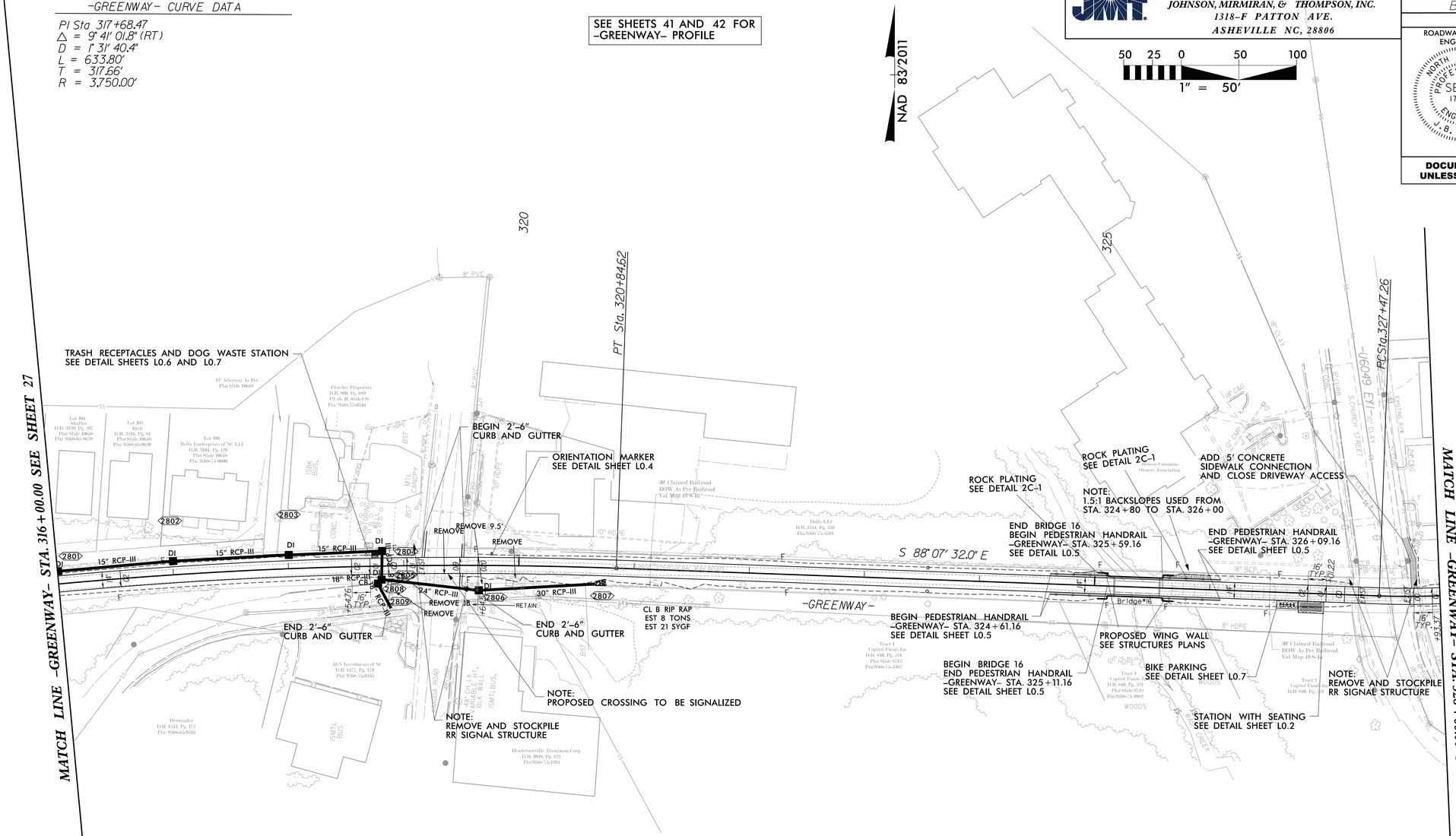
-GREENWAY- CURVE DATA

PI Sta 317+68.47
Δ = 9° 41' 01.8" (RT)
D = 1° 31' 40.4"
L = 633.80'
T = 317.66'
R = 3,750.00'

SEE SHEETS 41 AND 42 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011



ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

REVISIONS

8/17/99

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Prepared in the Office of:
JOHNSON, MIRMIRAN, & THOMPSON, INC.
1318-F PATTON AVE.
ASHEVILLE NC, 28806

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER	NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

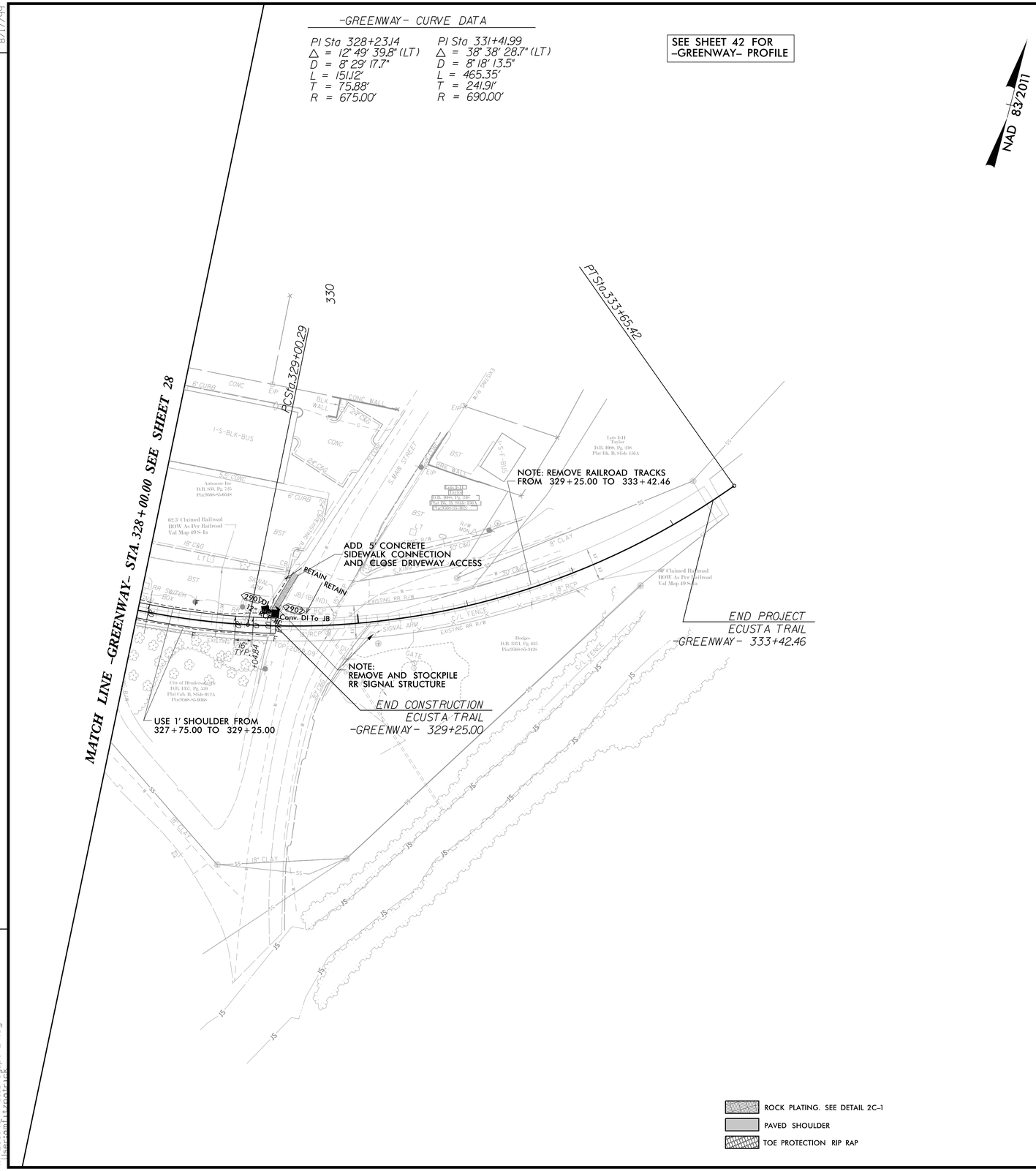
50 25 0 50 100
1" = 50'

-GREENWAY- CURVE DATA

PI Sta 328+23.14	PI Sta 331+41.99
△ = 12° 49' 39.8" (LT)	△ = 38° 38' 28.7" (LT)
D = 8° 29' 17.7"	D = 8° 18' 13.5"
L = 151.12'	L = 465.35'
T = 75.88'	T = 241.91'
R = 675.00'	R = 690.00'

SEE SHEET 42 FOR -GREENWAY- PROFILE

NAD 83/2011



ROCK PLATING. SEE DETAIL 2C-1
PAVED SHOULDER
TOE PROTECTION RIP RAP

REVISIONS

8/17/99

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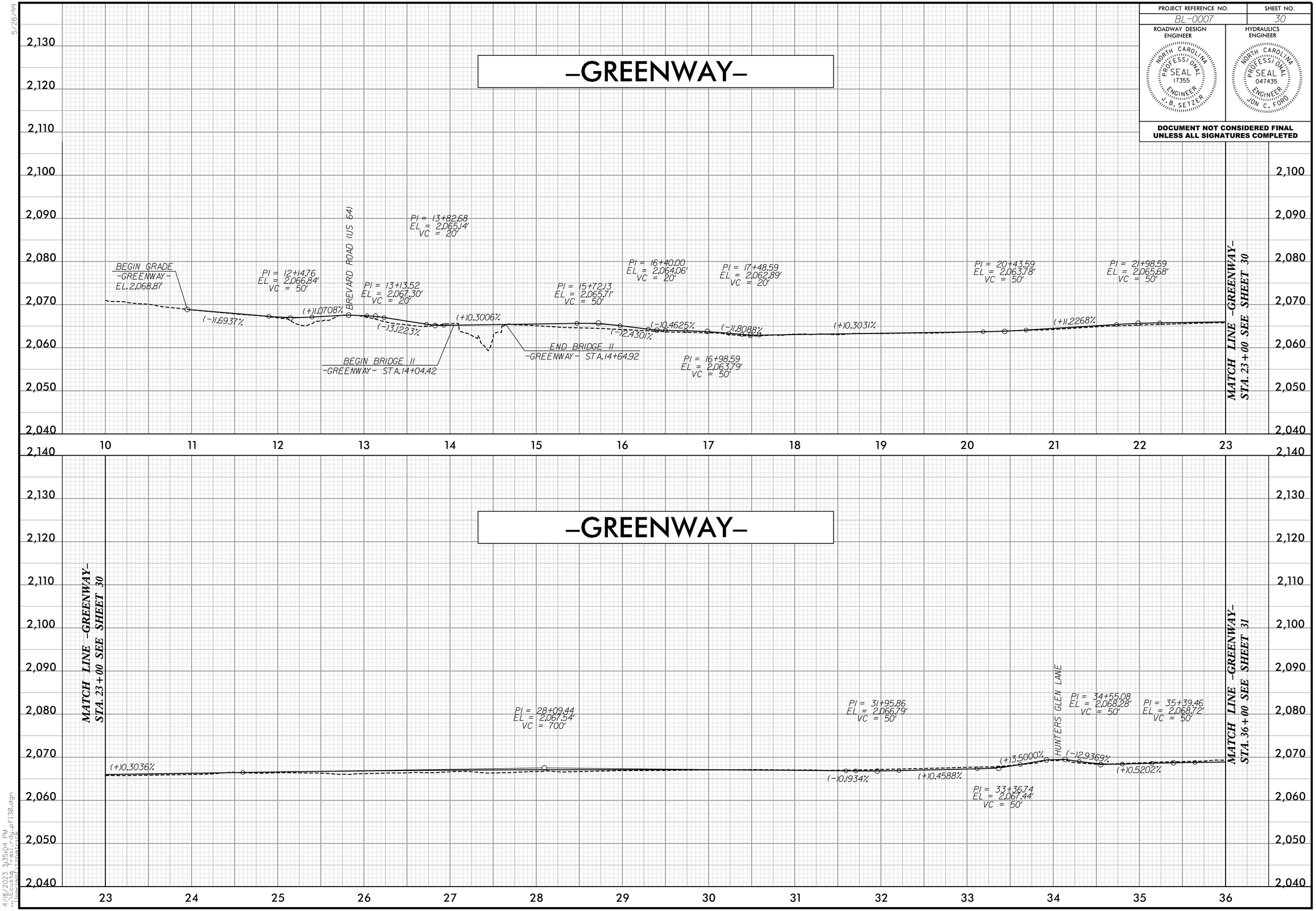
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	30

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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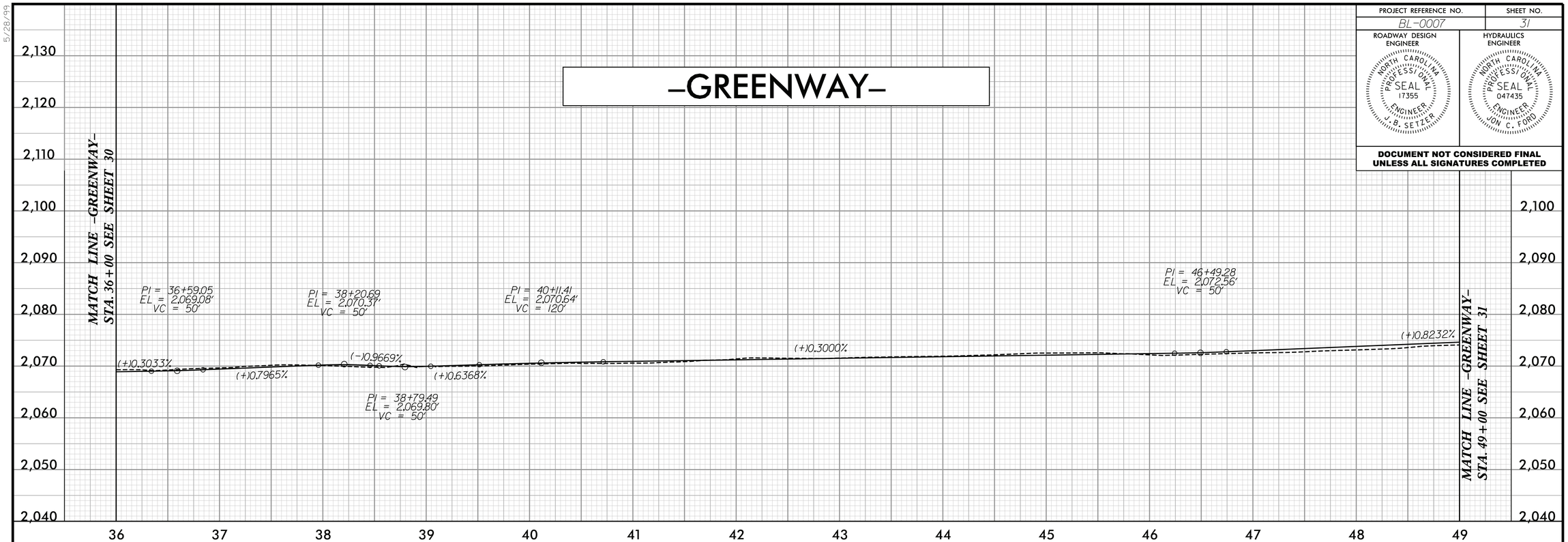
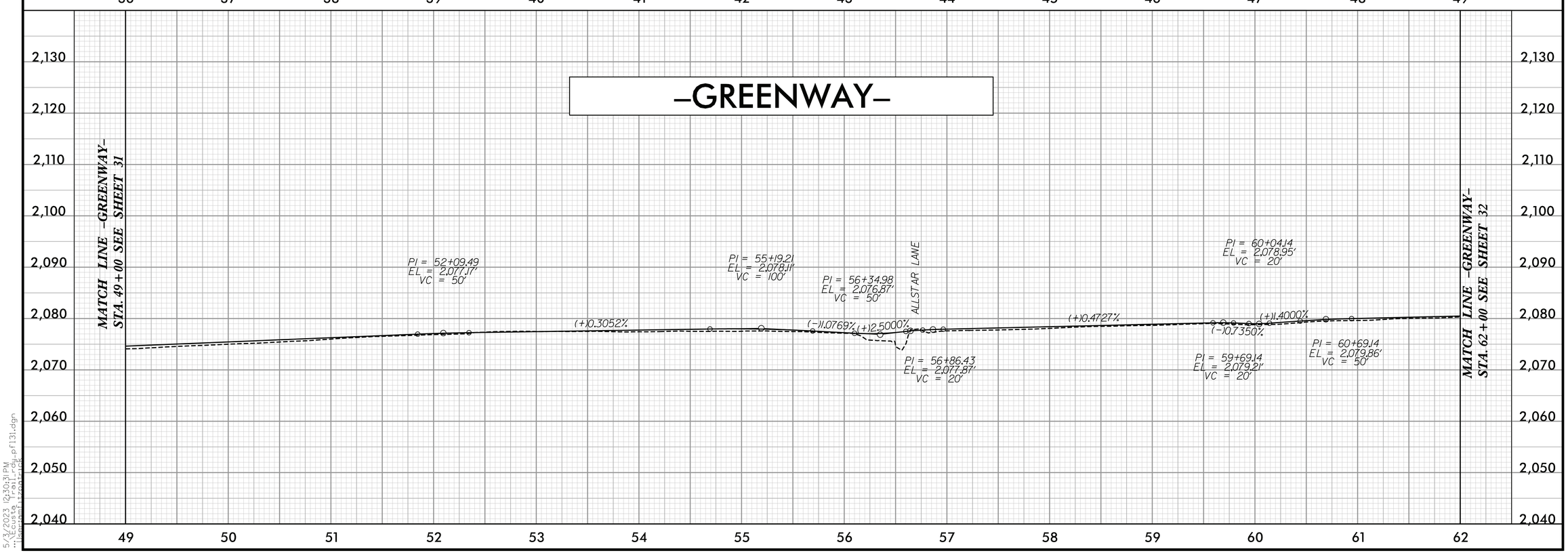
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	31

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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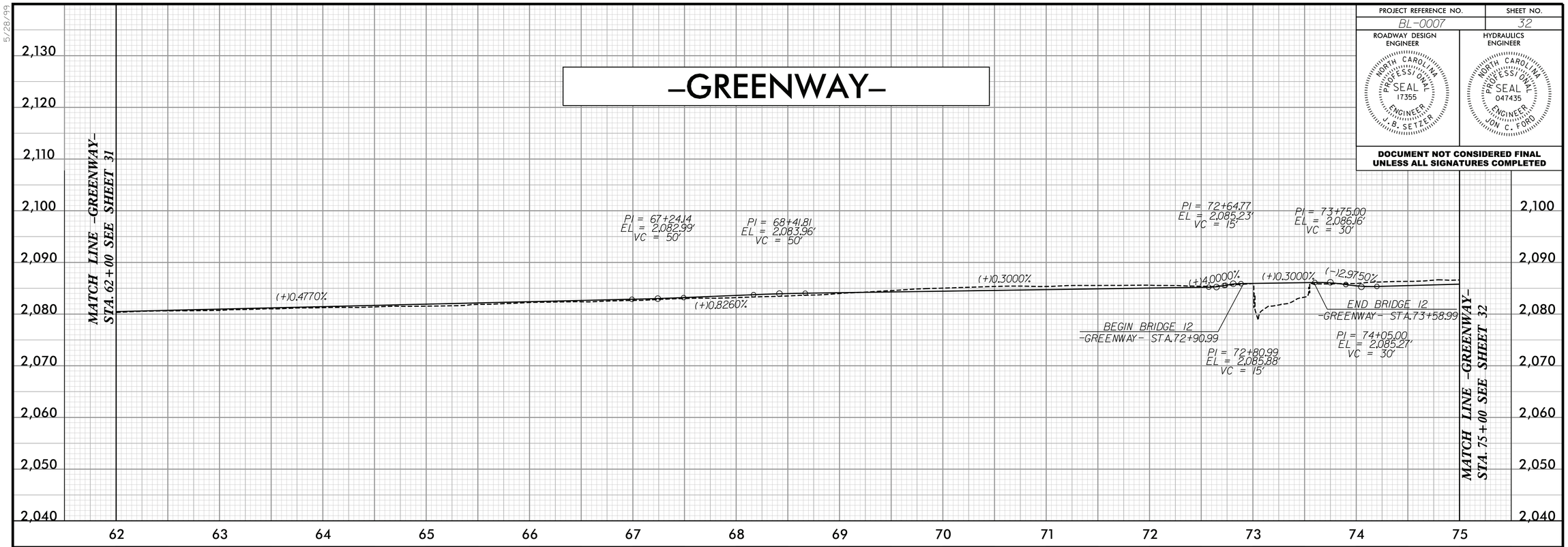
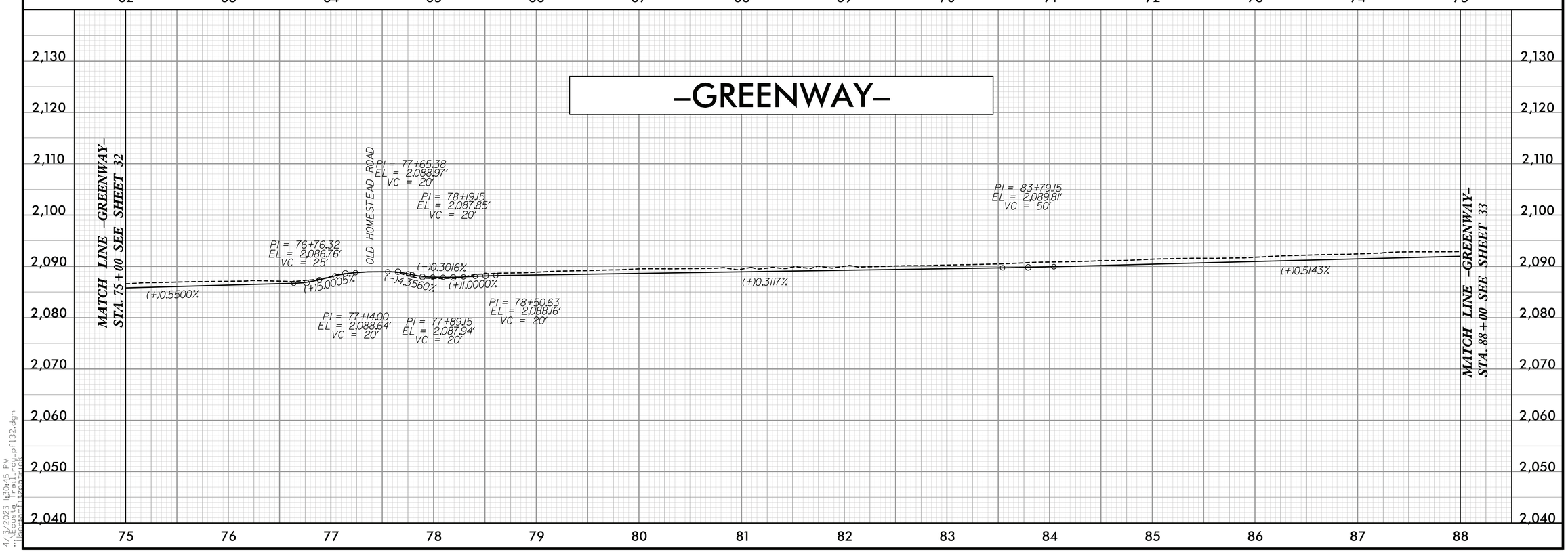
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	32

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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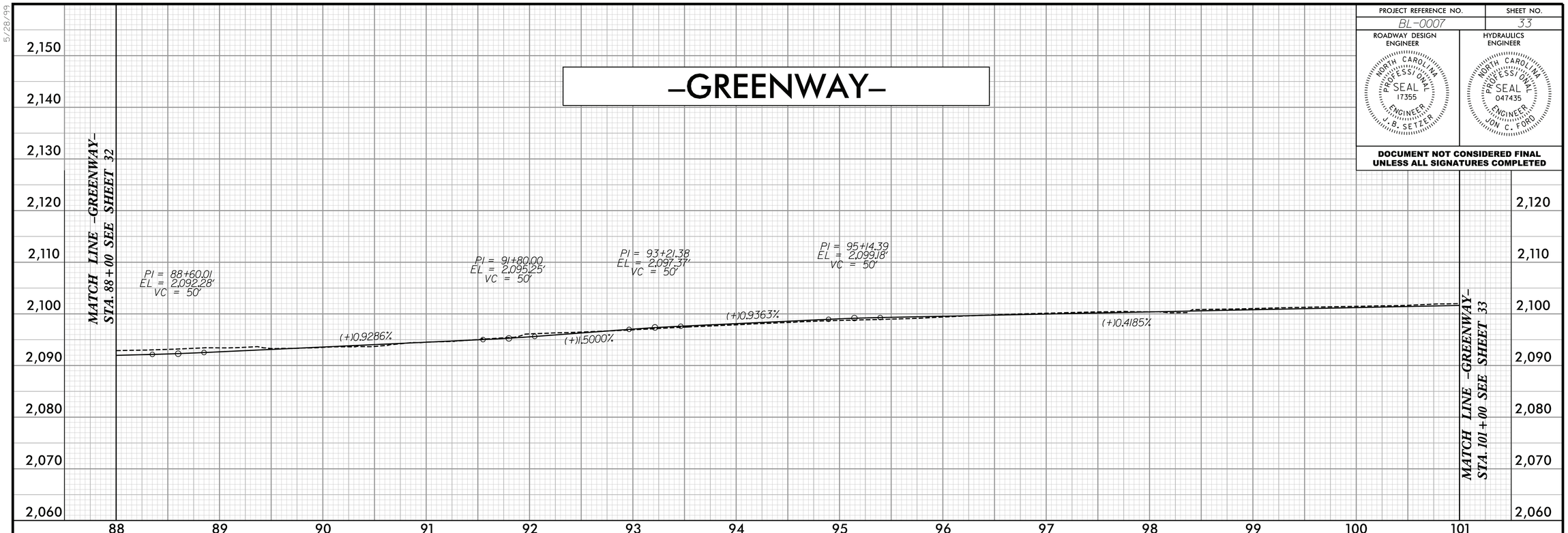
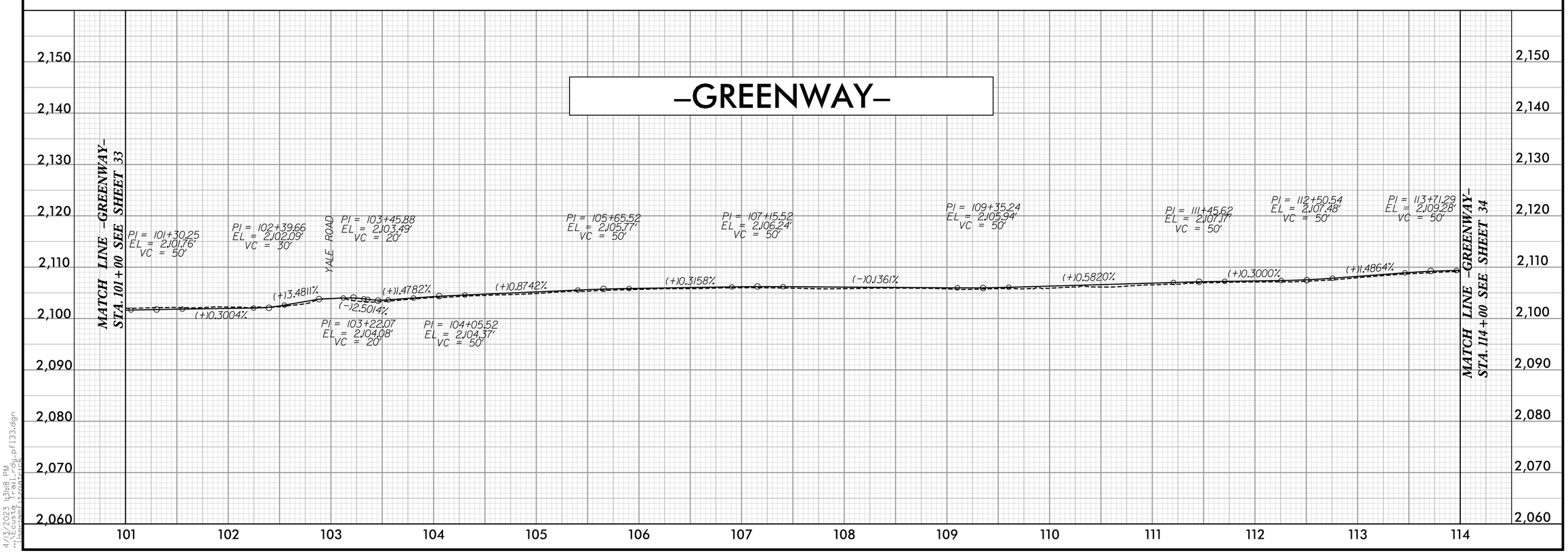
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	33

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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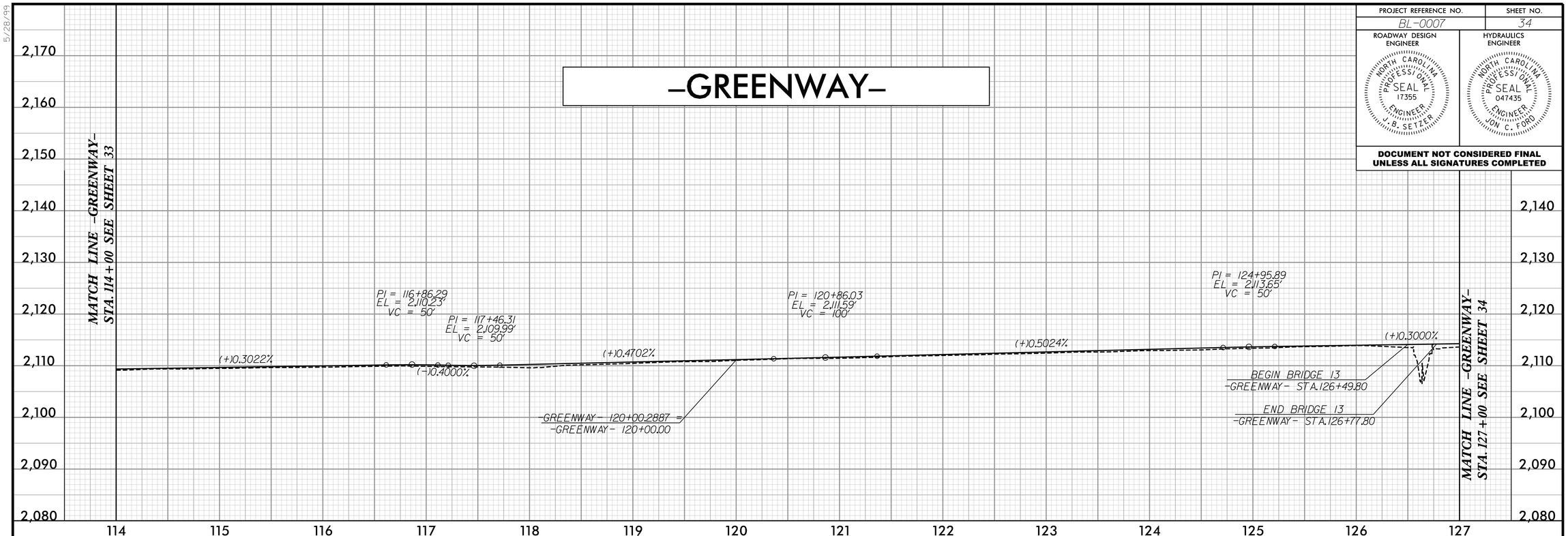
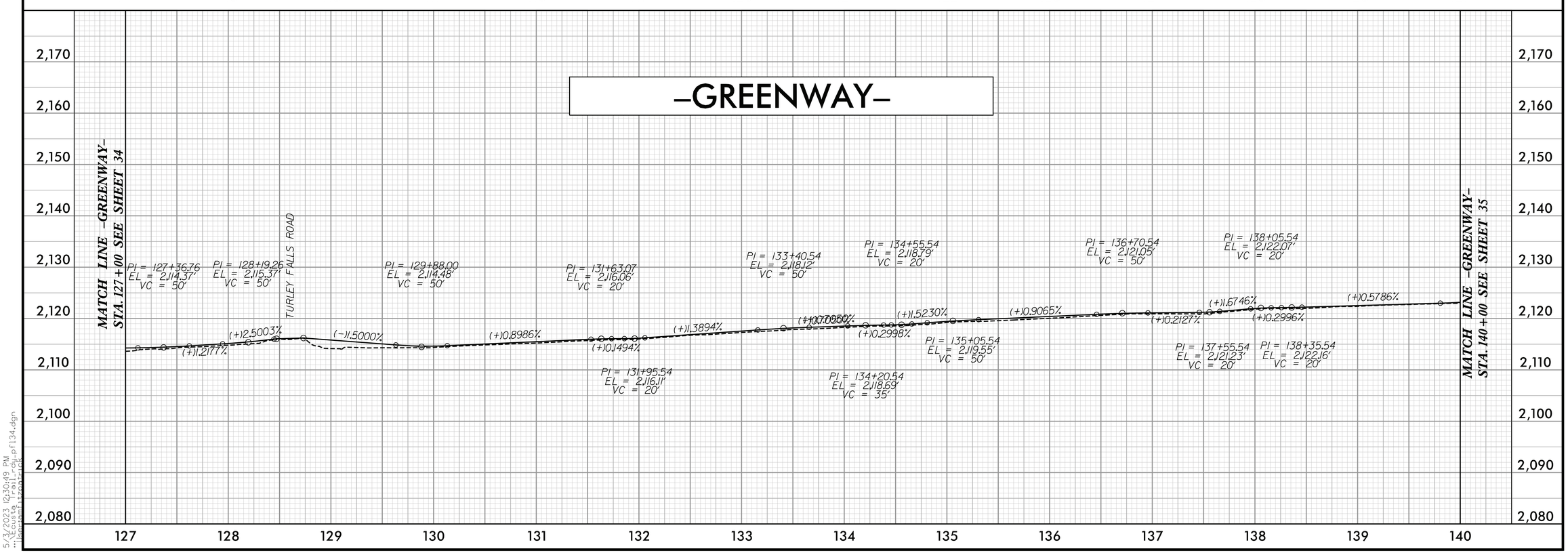
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	34

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





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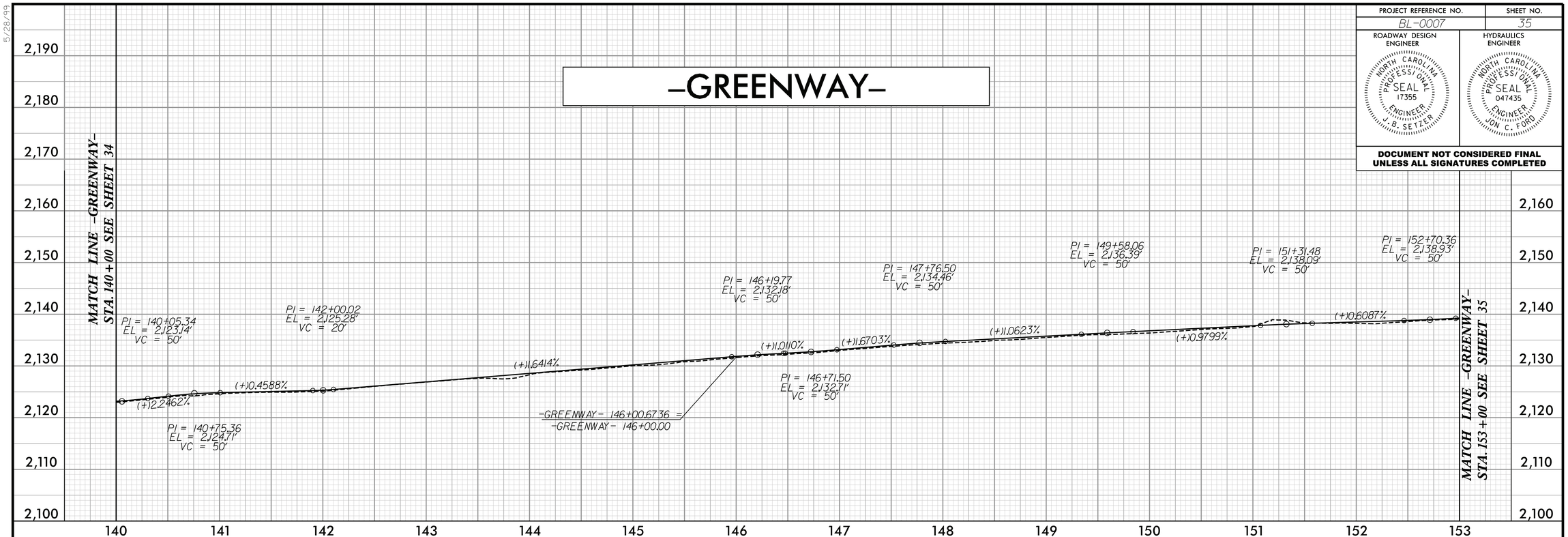
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	35

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	36

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–GREENWAY–

MATCH LINE –GREENWAY– STA. 166+00 SEE SHEET 35

PI = 166+50.36
EL = 2,155.81'
VC = 50'

(+)2.1613%

PI = 167+73.43
EL = 2,158.47'
VC = 50'

(+)0.7414%

PI = 170+19.95
EL = 2,160.30'
VC = 50'

(+)0.4065%

PI = 172+29.56
EL = 2,161.15'
VC = 50'

(+)1.4111%

PI = 174+09.56
EL = 2,163.69'
VC = 50'

(+)1.2751%

PI = 175+34.37
EL = 2,165.28'
VC = 20'

(+)12.0000%

BONAIRE DRIVE

PI = 176+79.56
EL = 2,166.85'
VC = 20'

(-)2.9983%

WOODBRIDGE DRIVE

(+)4.4858%

PI = 177+59.77
EL = 2,168.21'
VC = 50'

(+)0.5813%

(+)1.8408%

PI = 178+19.33
EL = 2,169.31'
VC = 50'

PI = 178+79.56
EL = 2,170.06'
VC = 50'

(+)1.2448%

MATCH LINE –GREENWAY– STA. 179+00 SEE SHEET 36

–GREENWAY–

MATCH LINE –GREENWAY– STA. 179+00 SEE SHEET 36

PI = 179+59.56
EL = 2,171.60'
VC = 50'

(+)1.9289%

(+)1.2238%

PI = 181+89.56
EL = 2,174.41'
VC = 50'

(+)1.8483%

PI = 182+59.56
EL = 2,175.71'
VC = 50'

(+)1.0520%

PI = 183+24.54
EL = 2,176.39'
VC = 50'

(+)1.6405%

HILLSIDE DRIVE

PI = 187+00.80
EL = 2,181.25'
VC = 50'

(-)2.0092%

(+)0.7205%

PI = 188+75.00
EL = 2,182.50'
VC = 50'

(+)1.8377%

PI = 189+69.04
EL = 2,184.23'
VC = 50'

(+)2.5696%

PI = 191+05.67
EL = 2,187.74'
VC = 50'

(+)1.5297%

PI = 191+85.67
EL = 2,188.97'
VC = 50'

MATCH LINE –GREENWAY– STA. 192+00 SEE SHEET 37

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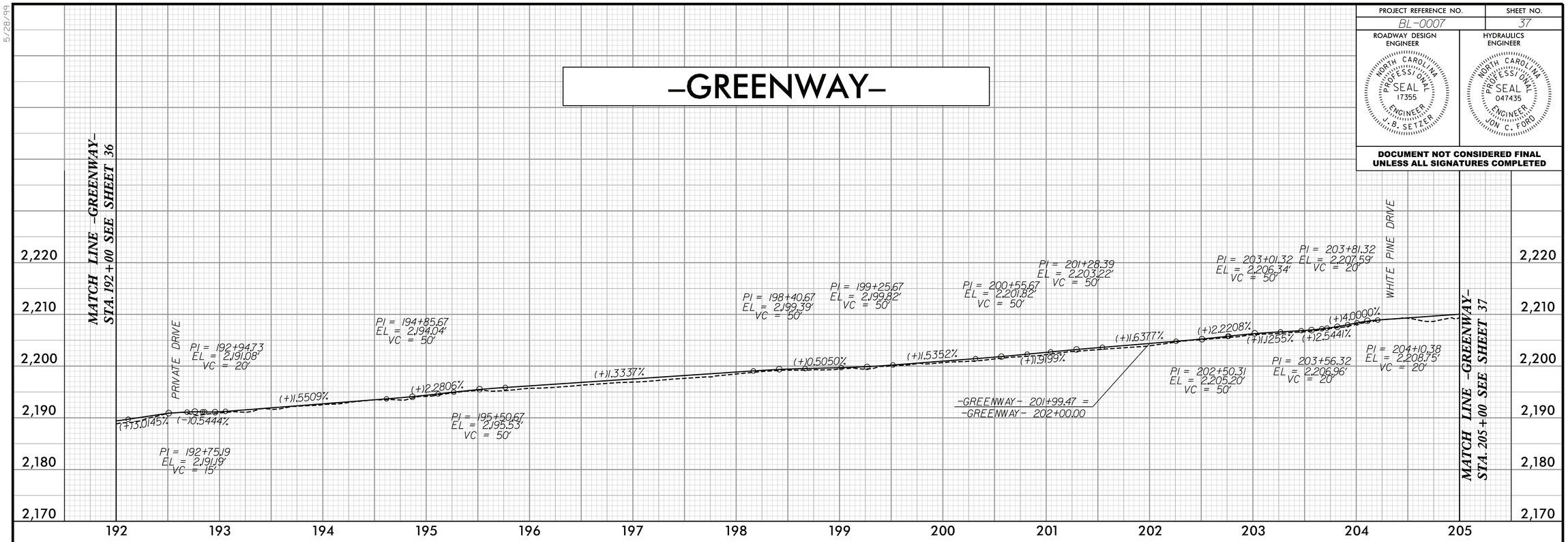
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	37

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	38

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–GREENWAY–

MATCH LINE –GREENWAY– STA. 218+00 SEE SHEET 37

PI = 218+66.72
EL = 2,208.32'
VC = 50'

PI = 219+61.54
EL = 2,207.32'
VC = 50'

(–)1.0609%

(–)1.5451%

PI = 225+36.53
EL = 2,198.43'
VC = 50'

PI = 226+71.00
EL = 2,196.50'
VC = 50'

(–)1.4400%

(–)1.8930%

PI = 229+89.68
EL = 2,190.46'
VC = 100'

MATCH LINE –GREENWAY– STA. 231+00 SEE SHEET 38

2,220 2,210 2,200 2,190 2,180 2,170

218 219 220 221 222 223 224 225 226 227 228 229 230 231

–GREENWAY–

MATCH LINE –GREENWAY– STA. 231+00 SEE SHEET 38

(–)0.7408%

PI = 233+72.66
EL = 2,187.63'
VC = 50'

(–)1.3431%

PI = 235+03.00
EL = 2,185.88'
VC = 50'

(–)2.1811%

PI = 236+89.73
EL = 2,181.80'
VC = 50'

(+)0.3966%

GLASGLOW LANE

–GREENWAY– 236+98.5403 =
–GREENWAY– 237+00.00

(–)3.2723%

PI = 237+91.96
EL = 2,180.33'
VC = 50'

(–)2.0000%

(–)1.7428%

PI = 238+56.54
EL = 2,179.04'
VC = 50'

PI = 239+26.54
EL = 2,177.82'
VC = 50'

(–)0.5523%

PI = 239+81.54
EL = 2,177.52'
VC = 50'

(–)2.0465%

(–)0.6822%

PI = 240+96.54
EL = 2,175.98'
VC = 50'

PI = 240+36.54
EL = 2,176.39'
VC = 50'

(–)2.1019%

PI = 242+23.00
EL = 2,173.32'
VC = 50'

(–)1.8284%

PI = 243+00.00
EL = 2,171.91'
VC = 50'

PI = 244+00.00
EL = 2,169.09'
VC = 50'

(–)2.8292%

MATCH LINE –GREENWAY– STA. 244+00 SEE SHEET 39

2,220 2,210 2,200 2,190 2,180 2,170 2,160 2,150

231 232 233 234 235 236 237 238 239 240 241 242 243 244

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	39

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER V. B. SETZER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–GREENWAY–

MATCH LINE –GREENWAY– STA. 244+00 SEE SHEET 38

PI = 249+19.51
EL = 2,159.39'
VC = 75'

(–)11.8655%

BEGIN BRIDGE 14
–GREENWAY– STA. 250+23.29

(–)10.3000%

END BRIDGE 14
–GREENWAY– STA. 250+46.29

PI = 251+54.45
EL = 2,158.69'
VC = 50'

(–)2.5042%

PI = 252+11.47
EL = 2,157.26'
VC = 50'

(+)12.4885%

PI = 253+28.23
EL = 2,156.93'
VC = 50'

(–)12.6763%

PI = 254+26.13
EL = 2,155.92'
VC = 50'

(–)11.0329%

(+)0.3000%

PI = 255+76.15
EL = 2,156.37'
VC = 225'

(–)0.3056%

–GREENWAY– 255+96.9059 =
–GREENWAY– 256+00.00

MATCH LINE –GREENWAY– STA. 257+00 SEE SHEET 39

–GREENWAY–

MATCH LINE –GREENWAY– STA. 257+00 SEE SHEET 39

PI = 257+46.13
EL = 2,155.86'
VC = 50'

(+)0.2123%

PI = 261+26.05
EL = 2,156.67'
VC = 400'

(–)1.9226%

PI = 265+17.24
EL = 2,149.15'
VC = 20'

(+)0.5000%

WALSH CREEK ROAD

(–)4.7000%

PI = 266+05.30
EL = 2,147.00'
VC = 50'

(–)11.6173%

PI = 268+11.68
EL = 2,143.66'
VC = 50'

(–)2.2817%

(–)10.8414%

PI = 268+91.68
EL = 2,142.34'
VC = 20'

(–)2.4046%

MATCH LINE –GREENWAY– STA. 270+00 SEE SHEET 40

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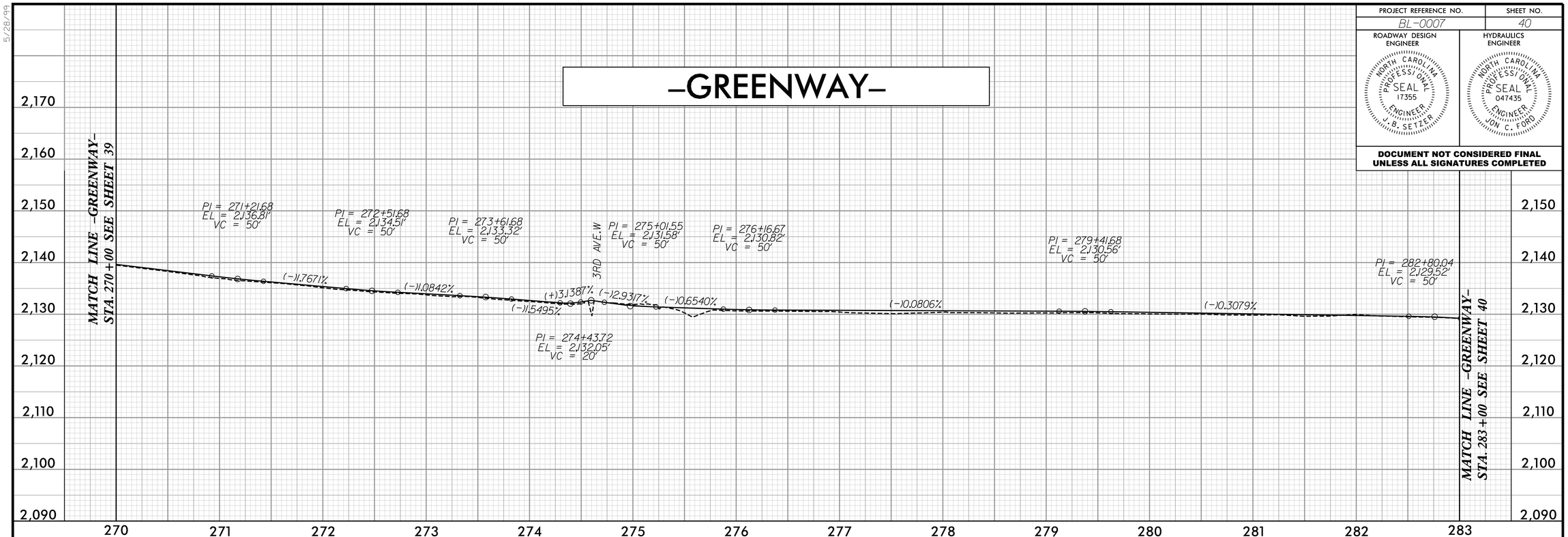
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	40

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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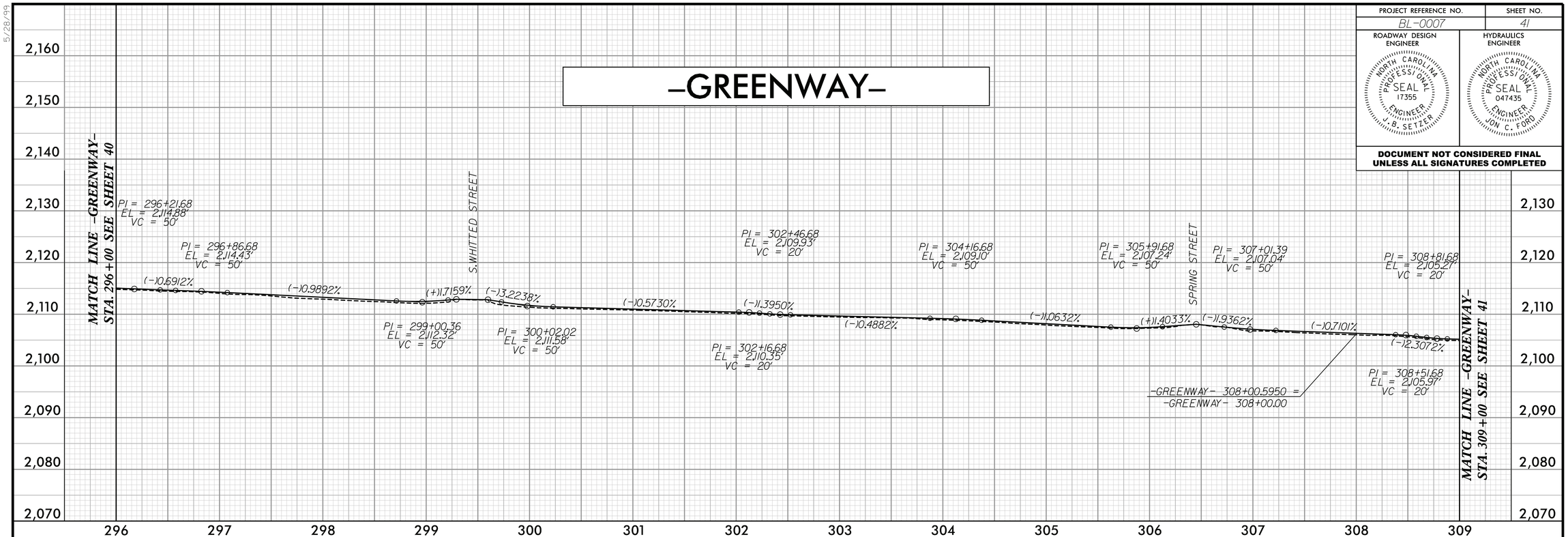
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	41

ROADWAY DESIGN ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

HYDRAULICS ENGINEER: NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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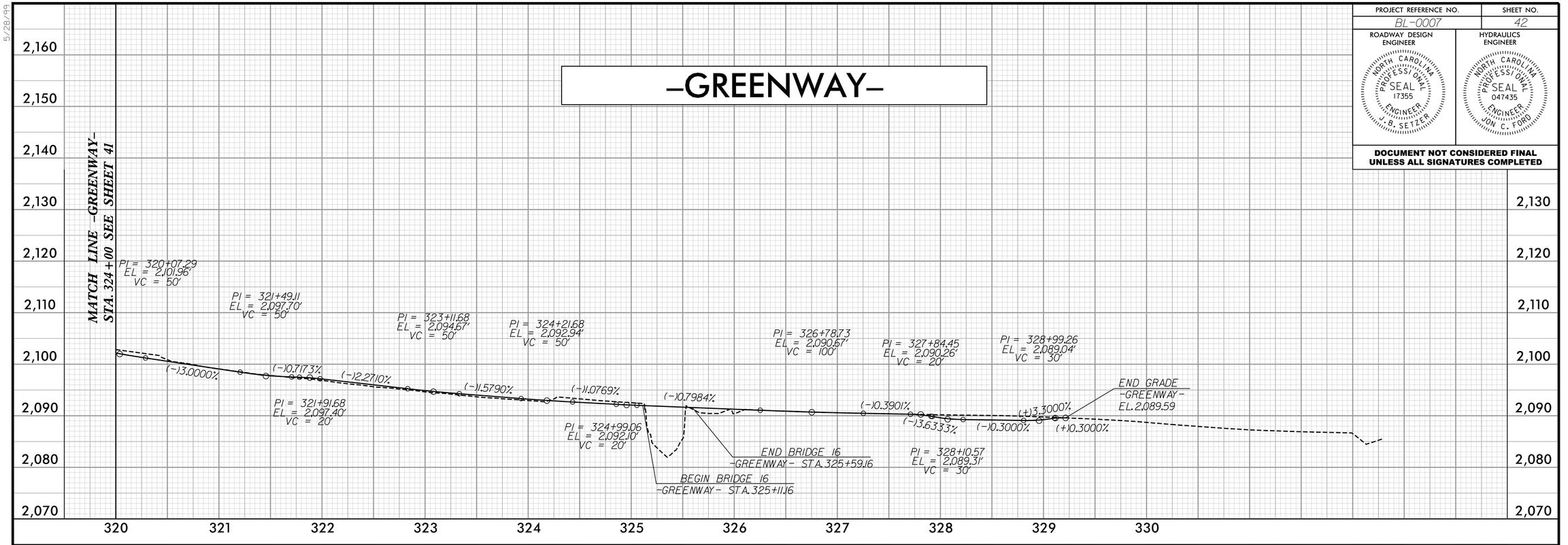
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	42

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J.B. SETZER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 047435 ENGINEER JON C. FORD

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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HENDERSON COUNTY
ENGINEERING DEPARTMENT

TRANSPORTATION MANAGEMENT PLAN

HENDERSON COUNTY



INDEX OF SHEETS

SHEET NUMBER	SHEET
TMP-1	TITLE SHEET, INDEX OF SHEETS, LIST OF APPLICABLE ROADWAY STANDARD DRAWINGS, AND LEGEND
TMP-1A	GENERAL NOTES AND MANAGEMENT STRATEGIES
TMP-1B	CONSTRUCTION PHASING
TMP-2	W 5TH AVE TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN
TMP-3	WILLOW ROAD DETOUR AT KANUGA ROAD
TMP-4 THRU TMP-11	TEMPORARY TRAFFIC MANAGEMENT DETAILS - PHASE 22A TO PHASE 22D
TMP-12	S CHURCH ST TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
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	FLAGGERS
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
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.09	PAVEMENT MARKINGS - PAINTED ISLANDS



PLANS PREPARED BY:

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NCDOT CONTACTS:

PROJECT ENGINEER

PROJECT DESIGN ENGINEER

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

LEGEND

GENERAL

- DIRECTION OF TRAFFIC FLOW
- DIRECTION OF PEDESTRIAN TRAFFIC FLOW
- EXIST. PVMT.
- NORTH ARROW
- PROPOSED PVMT.
- WORK AREA
- REMOVAL

TRAFFIC CONTROL DEVICES

- BARRICADE (TYPE III)
- CONE
- DRUM
- SKINNY DRUM
- TEMPORARY CRASH CUSHION
- FLASHING ARROW BOARD
- FLAGGER
- LAW ENFORCEMENT
- TRUCK MOUNTED ATTENUATOR (TMA)
- CHANGEABLE MESSAGE SIGN

TEMPORARY SIGNING

- PORTABLE SIGN
- STATIONARY SIGN
- STATIONARY OR PORTABLE SIGN

PAVEMENT MARKERS

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

SIGNALS

- EXISTING
- PROPOSED
- TEMPORARY

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKING SYMBOLS

- PAVEMENT MARKING SYMBOLS

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Est. 1989 TPD
TRAFFIC PLANNING AND DESIGN, INC.

APPROVED: _____

DATE: _____

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

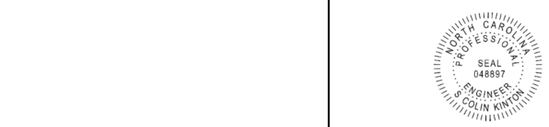
SHEET NO.
TMP-1

PROJECT: ECUSTA TRAIL

$$$$$$SYSTIME$$$$$
$$$$$$

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-1A

ROADWAY DESIGN ENGINEER



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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
ALL ROADS WITHIN PROJECT LIMITS	MONDAY THRU FRIDAY 7:00 A.M. TO 8:00 A.M. AND 5:00 P.M. TO 6:00 P.M.

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

ROAD NAME	HOLIDAY
ALL ROADS WITHIN PROJECT LIMITS	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 4:00 P.M. DECEMBER 31st TO 7:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 7:00 A.M. THE FOLLOWING TUESDAY. 3. FOR EASTER, BETWEEN THE HOURS OF 4:00 P.M. THURSDAY AND 7:00 A.M. MONDAY. 4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 4:00 P.M. FRIDAY TO 7:00 A.M. TUESDAY. 5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 4:00 P.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 A.M. THE DAY AFTER INDEPENDENCE DAY. IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 4:00 P.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 A.M. THE TUESDAY AFTER INDEPENDENCE DAY. 6. FOR LABOR DAY, BETWEEN THE HOURS OF 4:00 P.M. FRIDAY AND 7:00 A.M. TUESDAY. 7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 4:00 P.M. TUESDAY TO 7:00 A.M. MONDAY. 8. FOR CHRISTMAS, BETWEEN THE HOURS OF 4:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 7:00 A.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

C) 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.

D) 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.

E) 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.

F) 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 REMAIN WITHIN THE CLOSED TRAVEL LANE.

G) 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

H) 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.

I) 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) IN ADVANCE AND A MINIMUM OF EVERY HALF MILE THROUGHOUT THE UNEVEN AREA.

TRAFFIC PATTERN ALTERATIONS

J) NOTIFY THE ENGINEER THIRTY (30) CALENDAR DAYS PRIOR TO ANY TRAFFIC PATTERN ALTERATION.

SIGNING

K) 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.

L) 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.

M) 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.

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

O) INSTALL BLACK ON ORANGE "DIP" SIGNS (W8-2) AND/OR "BUMP" SIGNS (W8-1) 100 FT IN ADVANCE OF THE UNEVEN AREA, OR AS DIRECTED BY THE ENGINEER.

TRAFFIC CONTROL DEVICES

P) 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 OPEN TRAVELWAY. REFER TO STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES SECTIONS 1130 (DRUMS), 1135 (CONES) AND 1180 (SKINNY DRUMS) FOR ADDITIONAL REQUIREMENTS.

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

PAVEMENT MARKINGS AND MARKERS

R) PLACE ONE APPLICATION OF PAIN 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.

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

T) REMOVE/REPLACE ANY CONFLICTING/DAMAGED PAVEMENT MARKINGS AND MARKERS BY THE END OF EACH DAY'S OPERATION.

MANAGEMENT STRATEGIES

PHASE 1 THROUGH 21 - SHIFT TRAFFIC TO ONE SIDE OF THE ROAD USING LANE CLOSURES AND FLAGGERS AS NECESSARY TO CONSTRUCT THE TRAIL CROSSING. ONCE COMPLETE, SHIFT TRAFFIC TO THE OTHER SIDE OF THE ROAD USING LANE CLOSURES AND FLAGGERS AS NECESSARY TO CONSTRUCT THE REMAINDER OF THE TRAIL CROSSING.

PHASE 14 - AS NECESSARY, IMPLEMENT PEDESTRIAN DIVERSION WITH TEMPORARY PATH TO KEEP FROM OBSTRUCTING PEDESTRIAN TRAFFIC.

PHASE 22 - SHIFT NORTHBOUND KANUGA ROAD TRAFFIC INTO THE CENTER LEFT TURN LANE USING LANE CLOSURES AND SET UP TEMPORARY PEDESTRIAN ACCOMODATIONS TO CONSTRUCT THE EAST SIDE IMPROVEMENTS. ONCE COMPLETE, SHIFT SOUTHBOUND KANUGA ROAD TRAFFIC INTO THE CENTER LEFT TURN LANE USING LANE CLOSURES AND SET UP TEMPORARY PEDESTRIAN ACCOMODATIONS TO CONSTRUCT THE WEST SIDE IMPROVEMENTS. IMPLEMENT WILLOW ROAD DETOUR AS SPECIFIED.

PHASES 23 AND 24 - AS NECESSARY, IMPLEMENT PEDESTRIAN DIVERSION WITH TEMPORARY PATH TO KEEP FROM OBSTRUCTING PEDESTRIAN TRAFFIC.

PHASE LIST

PHASE	TRAIL CROSSING
1	US-64 (BREVARD RD)
2	HUNTERS GLEN LN
3	ALLSTAR LN
4	OLD HOMESTEAD RD
5	YALE RD
6	TURLEY FALLS RD
7	BONAIRE DR
8	WOODRIDGE DR
9	HILLSIDE LN
10	SHAWS CREEK LN
11	WHITE PINE DR
12	DANIEL DR
13	GLASGOW LN
14	W 5TH AVE
15	JORDAN ST
16	W 3RD AVE
17	W ALLEN ST
18	S WHITTED ST
19	SPRING ST
20	RHODODENDRON DR
21	CRYSTAL SPRINGS DR
22	KANUGA RD
23	S CHURCH ST
24	S MAIN ST & S KING ST

GENERAL NOTES & MANAGEMENT STRATEGIES

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PHASING NOTES

CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS FOR ALL PHASES WITHIN THE PROJECT LIMITS AND COORDINATE AS NECESSARY WITH PROPERTY OWNERS.
SOME PHASES MAY BE CONSTRUCTED CONCURRENTLY AT THE DISCRETION OF THE
1. RESIDENT ENGINEER.
FLAGGERS SHALL BE USED AS NECESSARY ON ALL MAJOR DRIVEWAYS AND SIDE STREETS.
2. UNLESS PEDESTRIAN DIVERSIONS OR DETOURS ARE SPECIFIED IN THE PLANS, ALL WORK ZONE LOCATIONS SHALL HAVE A DEDICATED PEDESTRIAN FLAGGER TO ASSIST
3. PEDESTRIANS THROUGH THE WORK ZONE.
4. REMOVE ALL TEMPORARY TRAFFIC LANE SHIFTS, TAPERS, AND CLOSURES AT THE END OF EACH WORK DAY UNLESS SPECIFIED OTHERWISE IN THE PLANS.

5.

PHASES 1 THRU 21

STEP 1

USING NCDOT RSD NO. 1101.03 SHEET 8 OF 9, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS FOR SHORT DURATION ROAD CLOSURES TO REMOVE EXISTING RAILS CROSSING THE ROADWAY. PATCH WITH TEMPORARY ASPHALT AS NECESSARY TO REOPEN TO TRAFFIC.

STEP 2

USING NCDOT RSD NO. 1101.02 SHEET 1 OF 14, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS TO SHIFT TRAFFIC TO ONE SIDE OF THE ROADWAY AND CONSTRUCT PROPOSED IMPROVEMENTS WITHIN THE WORK ZONE.

UTILIZE A DEDICATED PEDESTRIAN FLAGGER TO ASSIST PEDESTRIANS THROUGH THE WORK ZONE EXCEPT DURING PHASE 14 AT 5TH AVE WEST, WHICH WILL UTILIZE A TEMPORARY PEDESTRIAN DIVERSION.

RETURN FROM ONE LANE FLAGGER CONTROLLED TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 3

USING NCDOT RSD NO. 1101.02 SHEET 1 OF 14, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS TO SHIFT TRAFFIC TO THE OPPOSITE SIDE OF THE ROADWAY AND CONSTRUCT PROPOSED IMPROVEMENTS WITHIN THE WORK ZONE.

RETURN FROM ONE LANE FLAGGER CONTROLLED TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 4

USE NCDOT RSD NO. 1101.02 SHEET 2 OF 14, OR SHEET 11 OF 14, AS NEEDED TO CONSTRUCT FINAL PAVEMENT COURSE AND FINAL PAVEMENT MARKINGS.

PHASE 14

STEP 1

USING NCDOT RSD NO. 1101.03 SHEET 8 OF 9, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS FOR SHORT DURATION ROAD CLOSURES TO REMOVE EXISTING RAILS CROSSING W 5TH AVE. PATCH WITH TEMPORARY ASPHALT AS NECESSARY TO REOPEN TO TRAFFIC.

STEP 2

USING NCDOT RSD NO. 1101.02 SHEET 1 OF 14, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS TO SHIFT TRAFFIC TO THE NORTH SIDE OF W 5TH AVE AND CONSTRUCT PROPOSED IMPROVEMENTS WITHIN THE WORK ZONE.

BEFORE BEGINNING WORK, SET UP PHASE A OF THE W 5TH AVE TEMPORARY PEDESTRIAN TRAFFIC CONTROL ACCORDING TO TMP-2 IN THIS PLAN SET.

ONCE THE PEDESTRIAN CONNECTION TO THE TRAIL IS CONSTRUCTED, SWITCH OVER TO PHASE B OF THE W 5TH AVE TEMPORARY PEDESTRIAN TRAFFIC CONTROL ACCORDING TO TMP-2 IN THIS PLAN SET.

RETURN FROM ONE LANE FLAGGER CONTROLLED TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 3

USING NCDOT RSD NO. 1101.02 SHEET 1 OF 14, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS TO SHIFT TRAFFIC TO THE SOUTH SIDE OF W 5TH AVE AND CONSTRUCT PROPOSED IMPROVEMENTS WITHIN THE WORK ZONE.

RETURN FROM ONE LANE FLAGGER CONTROLLED TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 4

USE NCDOT RSD NO. 1101.02 SHEET 2 OF 14, OR SHEET 11 OF 14, AS NEEDED TO CONSTRUCT FINAL PAVEMENT COURSE AND FINAL PAVEMENT MARKINGS.

PHASE 22

STEP 1

USING NCDOT RSD NO. 1101.03 SHEET 8 OF 9, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS FOR SHORT DURATION ROAD CLOSURES TO REMOVE EXISTING RAILS CROSSING KANUGA RD. PATCH WITH TEMPORARY ASPHALT AS NECESSARY TO REOPEN TO TRAFFIC.

STEP 2 - PHASE 22A

USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND PHASE 22A (TMP-4 & TMP-5) OF THIS PLAN SET, PLACE TRAFFIC CONTROL DEVICES AND ANY NECESSARY FLAGGERS TO SHIFT SOUTHBOUND KANUGA RD TRAFFIC INTO THE CENTER LEFT TURN LANE. CONSTRUCT TEMPORARY PEDESTRIAN FACILITIES AT KANUGA RD AND WILLOW RD AS SHOWN ON TMP-4 OF THIS PLAN SET. CONCURRENTLY, INSTALL THE TEMPORARY MID-BLOCK PEDESTRIAN CROSSING AT TOMS HILL DR AS SHOWN ON TMP-5 OF THIS PLAN SET.

STEP 3 - PHASE 22A

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND PHASE 22A (TMP-4 & TMP-5) OF THIS PLAN SET, PLACE TRAFFIC CONTROL DEVICES AND ANY NECESSARY FLAGGERS TO CLOSE THE NORTHBOUND KANUGA RD LANE AND SHIFT NORTHBOUND KANUGA RD TRAFFIC INTO THE CENTER LEFT TURN LANE WHILE RESTRICTING ISRAEL ST TO OUTBOUND TRAFFIC ONLY. CONSTRUCT ALL PROPOSED IMPROVEMENTS ON THE SOUTHEAST CORNER OF KANUGA RD AND ISRAEL ST.

REOPEN CLOSED LANE AND RESTORE TRAFFIC TO NORMAL CONDITIONS AT THE END OF EACH DAY.

STEP 4 - PHASE 22B

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND PHASE 22B (TMP-6 & TMP-7) OF THIS PLAN SET, PLACE TRAFFIC CONTROL DEVICES AND ANY NECESSARY FLAGGERS TO CLOSE THE NORTHBOUND KANUGA RD LANE AND SHIFT NORTHBOUND KANUGA RD TRAFFIC INTO THE CENTER LEFT TURN LANE WHILE RESTRICTING ISRAEL ST TO OUTBOUND TRAFFIC ONLY. CONSTRUCT ALL PROPOSED IMPROVEMENTS ON THE NORTHEAST CORNER OF KANUGA RD AND ISRAEL ST.

REOPEN CLOSED LANE AND RESTORE TRAFFIC TO NORMAL CONDITIONS AT THE END OF EACH DAY.

STEP 5 - PHASE 22C

WITH EAST SIDE CONSTRUCTION COMPLETE, OPEN THE NEW EAST SIDE SIDEWALK AND REVISE THE TEMPORARY PEDESTRIAN FACILITIES AT KANUGA RD AND WILLOW RD AS SHOWN IN PHASE 22C (TMP-8).

STEP 6 - PHASE 22C

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND PHASE 22C (TMP-8 & TMP-9) OF THIS PLAN SET, PLACE TRAFFIC CONTROL DEVICES AND ANY NECESSARY FLAGGERS TO CLOSE THE SOUTHBOUND KANUGA RD LANE AND SHIFT SOUTHBOUND KANUGA RD TRAFFIC INTO THE CENTER LEFT TURN LANE. IMPLEMENT THE WILLOW RD DETOUR PLAN ACCORDING TO TMP-3 OF THIS PLAN SET. CONSTRUCT ALL PROPOSED IMPROVEMENTS ON THE NORTHWEST CORNER OF KANUGA RD AND WILLOW RD.

REOPEN CLOSED LANE AND RESTORE TRAFFIC TO NORMAL CONDITIONS AT THE END OF EACH DAY.

STEP 7 - PHASE 22D

USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND PHASE 22D (TMP-10 & TMP-11) OF THIS PLAN SET, PLACE TRAFFIC CONTROL DEVICES AND ANY NECESSARY FLAGGERS TO CLOSE THE SOUTHBOUND KANUGA RD LANE AND SHIFT SOUTHBOUND KANUGA RD TRAFFIC INTO THE CENTER LEFT TURN LANE. IMPLEMENT THE WILLOW RD DETOUR PLAN ACCORDING TO TMP-3 OF THIS PLAN SET. CONSTRUCT ALL PROPOSED IMPROVEMENTS ON THE SOUTHWEST CORNER OF KANUGA RD AND WILLOW RD.

REOPEN CLOSED LANE AND RESTORE TRAFFIC TO NORMAL CONDITIONS AT THE END OF EACH DAY.

STEP 8

USE NCDOT RSD NO. 1101.02 SHEET 2 OF 14, OR SHEET 11 OF 14, AS NEEDED TO CONSTRUCT FINAL PAVEMENT COURSE AND FINAL PAVEMENT MARKINGS.

PHASE 23

STEP 1

USING NCDOT RSD NO. 1101.03 SHEET 8 OF 9, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS FOR SHORT DURATION ROAD CLOSURES TO REMOVE EXISTING RAILS CROSSING S CHURCH ST. PATCH WITH TEMPORARY ASPHALT AS NECESSARY TO REOPEN TO TRAFFIC.

STEP 2

USING NCDOT RSD NO. 1101.02 SHEET 3 OF 14, PLACE TRAFFIC CONTROL DEVICES TO SHIFT TRAFFIC TO THE EAST SIDE OF THE ROADWAY AND CONSTRUCT PROPOSED PHASE A AND PHASE B IMPROVEMENTS WITHIN THE WESTERN WORK ZONE.

RETURN FROM ONE LANE TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

PHASE 23 (CONT'D)

STEP 3

USING NCDOT RSD NO. 1101.02 SHEET 3 OF 14, PLACE TRAFFIC CONTROL DEVICES TO SHIFT TRAFFIC TO THE WEST SIDE OF THE ROADWAY AND CONSTRUCT PROPOSED PHASE A AND PHASE B IMPROVEMENTS WITHIN THE EASTERN WORK ZONE.

RETURN FROM ONE LANE TO TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 4

USE NCDOT RSD NO. 1101.02 SHEET 12 OF 14 AS NEEDED TO CONSTRUCT FINAL PAVEMENT COURSE AND FINAL PAVEMENT MARKINGS.

PHASE 24

STEP 1

USING NCDOT RSD NO. 1101.03 SHEET 8 OF 9, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS FOR SHORT DURATION ROAD CLOSURES TO REMOVE EXISTING RAILS CROSSING S MAIN ST/S KING ST. PATCH WITH TEMPORARY ASPHALT AS NECESSARY TO REOPEN TO TRAFFIC.

STEP 2

USING NCDOT RSD NO. 1101.04 SHEET 1 OF 1, PLACE TRAFFIC CONTROL DEVICES AND SET UP FLAGGERS TO SHIFT SOUTHBOUND S MAIN ST TRAFFIC AROUND THE WORK ZONE AND CONSTRUCT PROPOSED IMPROVEMENTS WITHIN THE WORK ZONE.

UTILIZE A DEDICATED PEDESTRIAN FLAGGER TO ASSIST PEDESTRIANS THROUGH THE WORK ZONE.

RETURN TO NORMAL TWO LANE CONFIGURATION AT END OF EACH DAY BY SHIFTING DRUMS AS NECESSARY FOR INCOMPLETE WORK.

STEP 4

USE NCDOT RSD NO. 1101.02 SHEET 11 OF 14 AS NEEDED TO CONSTRUCT FINAL PAVEMENT COURSE AND FINAL PAVEMENT MARKINGS.

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-1B

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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TEMPORARY TRAFFIC MANAGEMENT PHASING NOTES

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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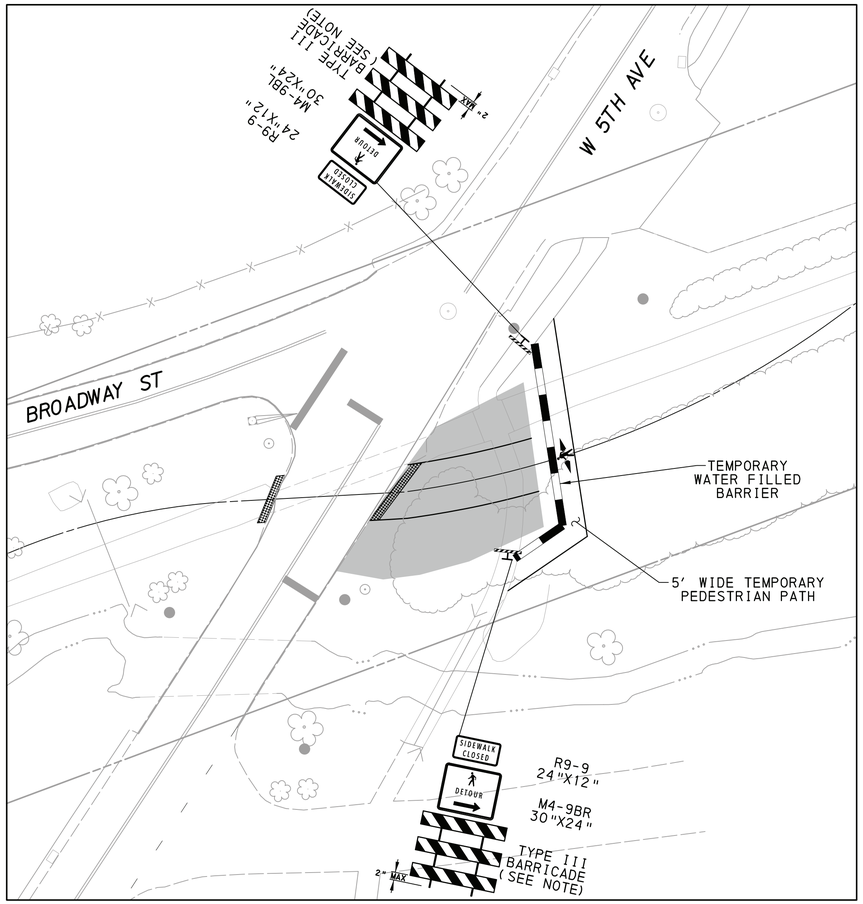
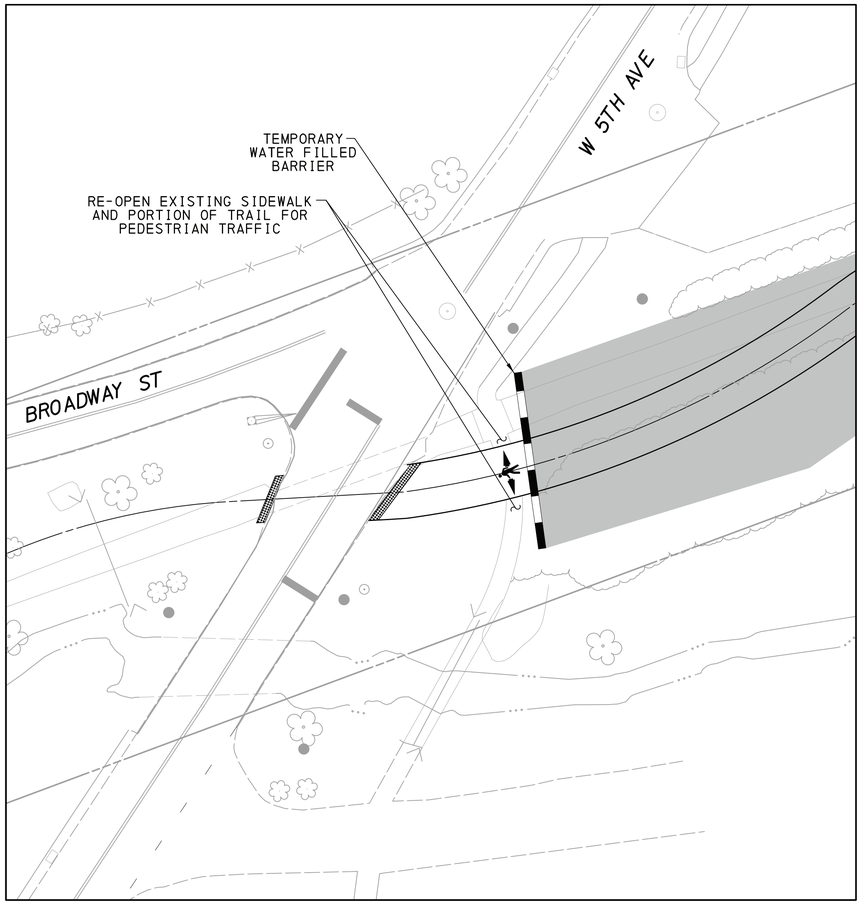


W 5TH AVENUE TEMPORARY PEDESTRIAN TRAFFIC CONTROL - PHASE A



W 5TH AVENUE TEMPORARY PEDESTRIAN TRAFFIC CONTROL - PHASE B

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE ADDITIONAL TRAFFIC MANAGEMENT PLANS FOR VEHICULAR TRAFFIC CONTROL DURING CONSTRUCTION.

W 5TH AVE TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN

5/14/99

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

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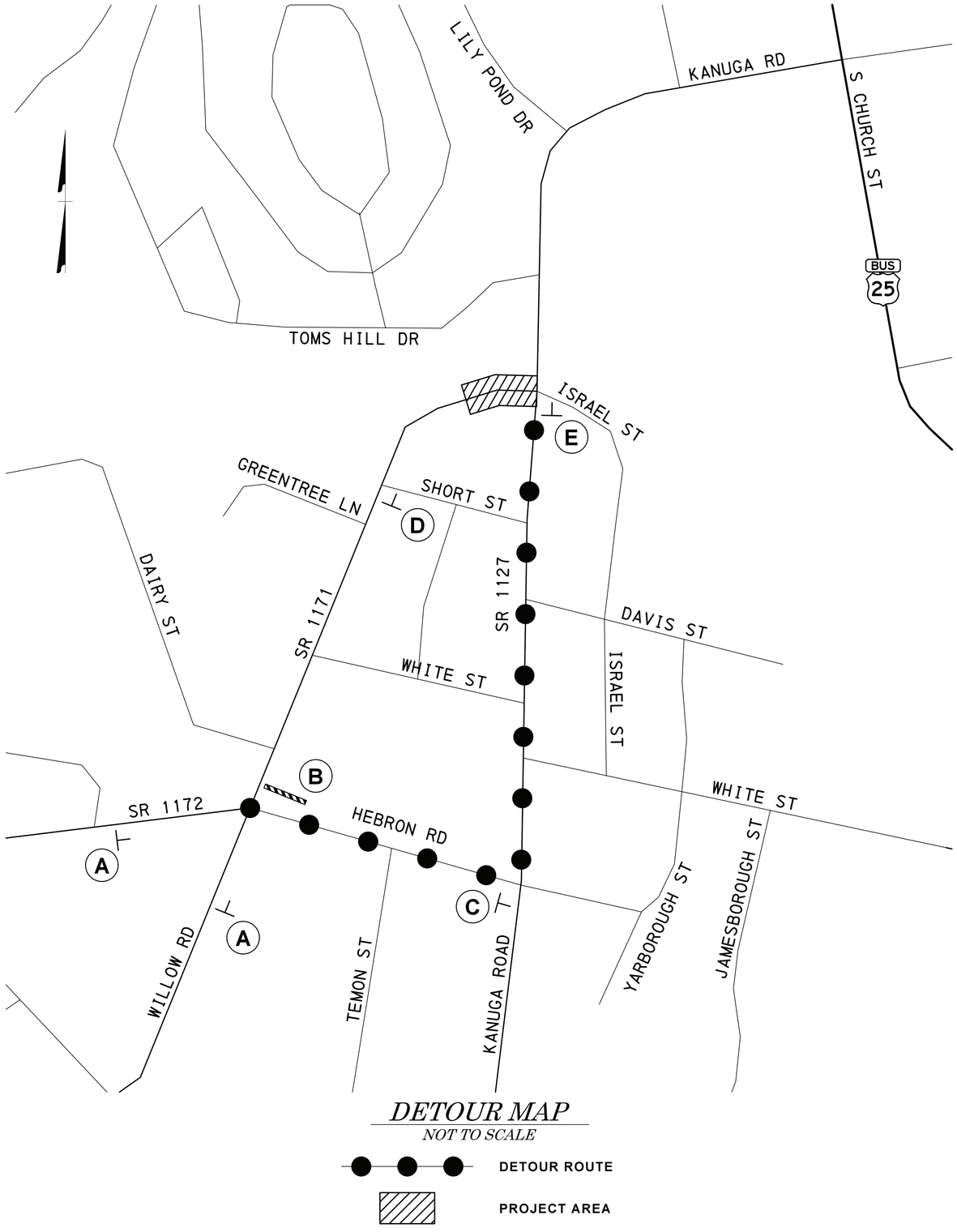

DETOUR MAP

NOT TO SCALE

DETOUR ROUTE

PROJECT AREA

A

DETOUR AHEAD

W20-2
36"x36"

B

ROAD CLOSED TO THRU TRAFFIC

R11-4
60"x30"

DETOUR

M4-10R
48"x18"

TYPE III BARRICADE

C

Willow Rd

DETOUR

SP-1
36"x18"

M4-9L
30"x24"

D

ROAD CLOSED AHEAD

W20-3
36"x36"

E

END DETOUR

M4-8A
24"x18"

NOTES:

1. IMPLEMENT DETOUR DURING WORKING HOURS. COVER DETOUR SIGNS AND REOPEN ALL TRAFFIC LANES DURING NON-WORKING HOURS.
2. ONLY IMPLEMENT DETOUR DURING PHASE 22C AND PHASE 22D.
3. WILLOW ROAD CLOSED IN NORTHBOUND DIRECTION ONLY. SOUTHBOUND TRAFFIC CAN STILL ACCESS WILLOW ROAD FROM KANUGA ROAD.

WILLOW ROAD DETOUR PLAN

5/14/99

pw:\\tpd-pw.bentley.com:TPDProjectwiseDocuments\Active\HENC\00005 - Equsta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-3 - Willow Road Detour Plan-1.dgn
5/16/2023 3:08:43 PM 1:20 gweather

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

SHORT ST

KANUGA RD

WILLOW RD

DAVIS ST

ISREAL ST
SEE NOTE

MATCH LINE SEE SHEET TMP-5

4' WIDE TEMPORARY PEDESTRIAN PATH

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

6' WIDE TEMPORARY PEDESTRIAN PATH

W11-2 30"X30"

W16-7P 24"X12"

R3-2 24"X24"

R3-2 24"X24"

R3-2 24"X24"

R3-2 24"X24"

R3-2 24"X24"

R3-1 24"X24"

R5-1 30"X30"
DO NOT ENTER

R9-11A 24"X12"
TYPE III BARRICADE (SEE NOTE)

R9-9 24"X12"
TYPE III BARRICADE (SEE NOTE)
SIDEWALK CLOSED

10'

10'

10'

12'

2" MAX

2" MAX

100' TAPER

1/2*L = 112.5' SHIFT TAPER

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. CONTRACTOR SHALL CONTACT BUSINESS OWNERS ALONG ISRAEL ST PRIOR TO THE START OF PHASE 22A TO MAKE THEM AWARE OF THE ONE-WAY CONVERSION DURING WORKING HOURS.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22A

pw:\\tpd-pw.bentley.com:TPDProjectWise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP Infoads SS2)\TCP\TMP-4 - Kanuga Phase 22A-1.dgn
5/16/2023 3:08:47 PM 1:20 cwachter
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

TOMS HILL RD

MATCH LINE SEE SHEET TMP-4

KANUGA RD

LILY POND DR

1/2*L = 112.5' SHIFT TAPER

100' TAPER

TEMPORARY DETECTABLE WARNING SURFACE

W11-2 30"X30"

W16-7P 24"X12"

10'

10'

12'

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

TEMPORARY DETECTABLE WARNING SURFACE

TEMPORARY WATER FILLED BARRIER PLACED BEHIND LANDING AREA TO PROVIDE REFUGE FROM STRIP MALL PARKING

CONTRACTOR SHALL PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE FOR SIGHT-IMPAIRED PEDESTRIANS AT THIS TEMPORARY CROSSING. MESSAGE DEVICE SHALL PROVIDE A COMPLETE PHYSICAL DESCRIPTION OF THE TEMPORARY PEDESTRIAN BY-PASS INCLUDING DURATION, LENGTH OF (AND/OR DISTANCE TO) THE BYPASS, ANY RESTRICTIONS OR HAZARDS, AND PROJECT INFORMATION. IT SHALL ALSO BE EQUIPPED WITH A LOCATOR TONE.

R9-11 24"X12"

SPECIAL XX"XX"

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22A

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5/16/2023 3:08:51 PM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

4' WIDE TEMPORARY PEDESTRIAN PATH

W11-2 30"X30"
W16-7P 24"X12"

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

WILLOW RD

R3-2 24"X24"

MATCH LINE SEE SHEET TMP-7

SHORT ST

R3-2 24"X24"

KANUGA RD

10'

10'

12'

10'

10'

6' WIDE TEMPORARY PEDESTRIAN PATH

R3-2 24"X24"

DAVIS ST

R3-2 24"X24"

100' TAPER

1/2*L = 112.5' SHIFT TAPER

W11-2 30"X30"
W16-7P 24"X12"

R3-1 24"X24"

2" MAX

TYPE III BARRICADE (SEE NOTE)

R9-11A 24"X12"

R5-1 30"X30"
DO NOT ENTER

ISREAL ST
SEE NOTE

R9-9 24"X12"

TYPE III BARRICADE (SEE NOTE)

ORDINANCE CLOSED

2" MAX

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. CONTRACTOR SHALL CONTACT BUSINESS OWNERS ALONG ISRAEL ST PRIOR TO THE START OF PHASE 22B TO MAKE THEM AWARE OF THE ONE-WAY CONVERSION DURING WORKING HOURS.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22B

5/14/99

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5/16/2023 3:08:54 PM 1:120 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

TOMS HILL RD

MATCH LINE SEE SHEET TMP-9

KANUGA RD

LILY POND DR

1/2*L = 112.5' SHIFT TAPER

100' TAPER

TEMPORARY DETECTABLE WARNING SURFACE

W11-2 30"X30"

W16-7P 24"X12"

10'

10'

12'

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

TEMPORARY DETECTABLE WARNING SURFACE

TEMPORARY WATER FILLED BARRIER PLACED BEHIND LANDING AREA TO PROVIDE REFUGE FROM STRIP MALL PARKING

R9-11 24"X12"

SPECIAL XX"XX"

CONTRACTOR SHALL PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE FOR SIGHT-IMPAIRED PEDESTRIANS AT THIS TEMPORARY CROSSING. MESSAGE DEVICE SHALL PROVIDE A COMPLETE PHYSICAL DESCRIPTION OF THE TEMPORARY PEDESTRIAN BY-PASS INCLUDING DURATION, LENGTH OF (AND/OR DISTANCE TO) THE BYPASS, ANY RESTRICTIONS OR HAZARDS, AND PROJECT INFORMATION. IT SHALL ALSO BE EQUIPPED WITH A LOCATOR TONE.

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22B

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5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

IMPLEMENT WILLOW ROAD OFFSITE DETOUR PLAN IN ACCORDANCE WITH SHEET TMP-3 OF THIS PLAN SET

WILLOW RD

SHORT ST

KANUGA RD

DAVIS ST

ISREAL ST

MATCH LINE SEE SHEET TMP-9

4' WIDE TEMPORARY PEDESTRIAN PATH

R5-1 30"X30" DO NOT ENTER

W11-2 30"X30"

W16-7P 24"X12"

R3-2 24"X24"

FINAL PAVEMENT MARKINGS

12'

10'

10'

100' TAPER

100' TAPER

R9-11A 24"X12"

TYPE III BARRICADE (SEE NOTE)

2" MAX.

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE TMP-3 FOR WILLOW ROAD DETOUR TO BE IMPLEMENTED DURING PHASE 22C CONSTRUCTION.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22C

5/14/99

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5/16/2023 3:09:01 PM cwachter
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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

CONTRACTOR SHALL PROVIDE AN APPROVED AUDIBLE MESSAGE DEVICE FOR SIGHT-IMPAIRED PEDESTRIANS AT THIS TEMPORARY CROSSING. MESSAGE DEVICE SHALL PROVIDE A COMPLETE PHYSICAL DESCRIPTION OF THE TEMPORARY PEDESTRIAN BY-PASS INCLUDING DURATION, LENGTH OF (AND/OR DISTANCE TO) THE BYPASS, ANY RESTRICTIONS OR HAZARDS, AND PROJECT INFORMATION. IT SHALL ALSO BE EQUIPPED WITH A LOCATOR TONE.

TOMS HILL RD

R9-9
24"X12"
TYPE III BARRICADE (SEE NOTE)
SIDEWALK CLOSED
2" MAX

W11-2
30"X30"

W16-7P
24"X12"

TEMPORARY DETECTABLE WARNING SURFACE

R9-11
24"X12"

SPECIAL
XX"XX"

1/2*L = 112.5' SHIFT TAPER

100' TAPER

MATCH LINE SEE SHEET TMP-8

KANUGA RD

10'
10'
12'

LILY POND DR

TEMPORARY PAVEMENT MARKINGS 24" WHITE PAINT

TEMPORARY DETECTABLE WARNING SURFACE

W16-7P
24"X12"

W11-2
30"X30"

TEMPORARY WATER FILLED BARRIER PLACED BEHIND LANDING AREA TO PROVIDE REFUGE FROM STRIP MALL PARKING

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE TMP-3 FOR WILLOW ROAD DETOUR TO BE IMPLEMENTED DURING PHASE 22C CONSTRUCTION.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22C

5/14/99

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-9 - Kanuga Phase 22C-2.dgn
5/16/2023 3:09:04 PM 1:20 cwachter

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048897 COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

IMPLEMENT WILLOW ROAD OFFSITE DETOUR PLAN IN ACCORDANCE WITH SHEET TMP-3 OF THIS PLAN SET

WILLOW RD

SHORT ST

KANUGA RD

DAVIS ST

ISREAL ST

MATCH LINE SEE SHEET TMP-11

R5-1
30"X30"
DO NOT ENTER

R3-2
24"X24"

W11-2
30"X30"

W16-7P
24"X12"

R9-11A
24"X12"

12'
10'
10'

FINAL PAVEMENT MARKINGS

100' TAPER
100' TAPER

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE TMP-3 FOR WILLOW ROAD DETOUR TO BE IMPLEMENTED DURING PHASE 22D CONSTRUCTION.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22D

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5/16/2023 3:09:07 PM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

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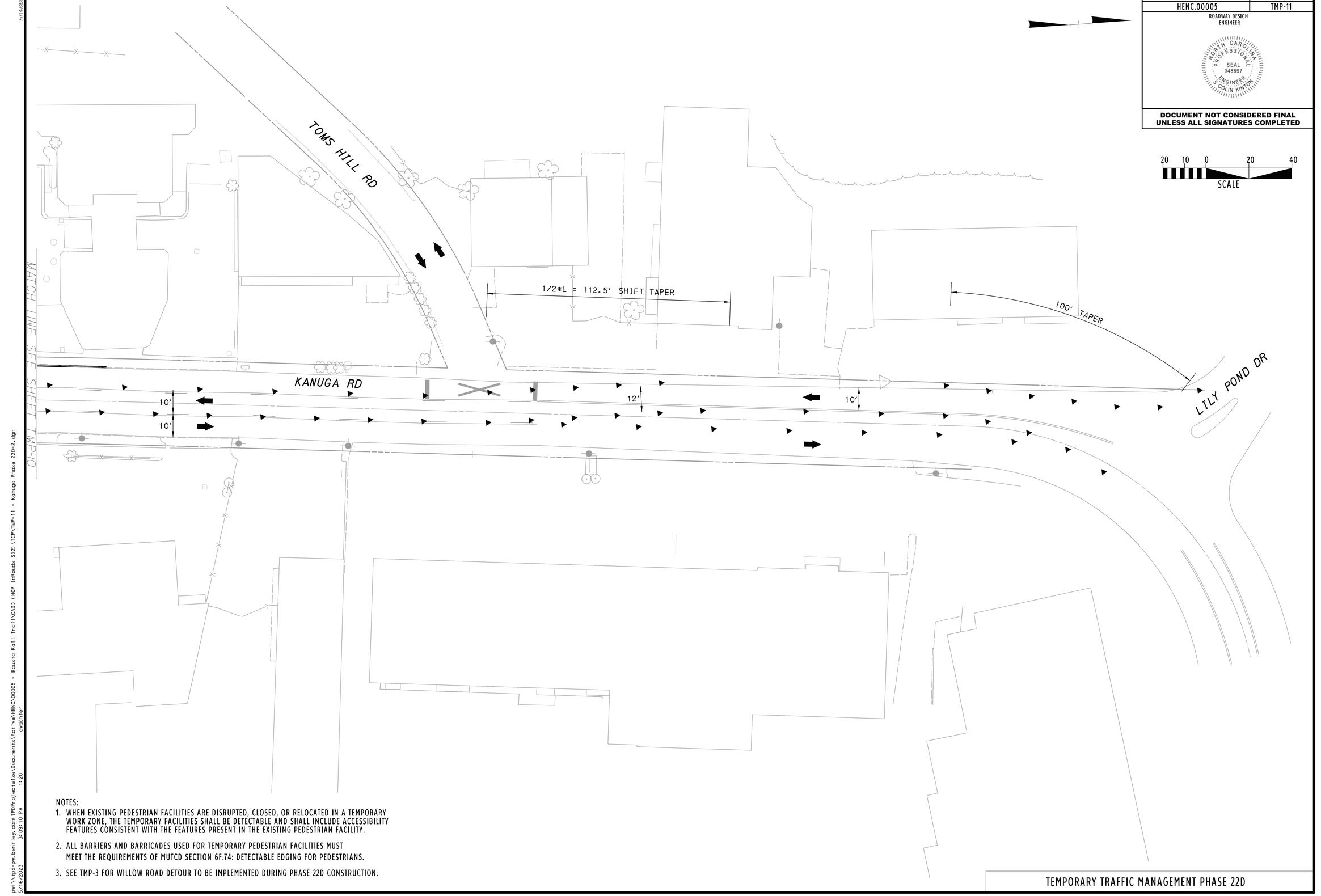

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE TMP-3 FOR WILLOW ROAD DETOUR TO BE IMPLEMENTED DURING PHASE 22D CONSTRUCTION.

TEMPORARY TRAFFIC MANAGEMENT PHASE 22D

5/14/99
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5/16/2023 3:09:10 PM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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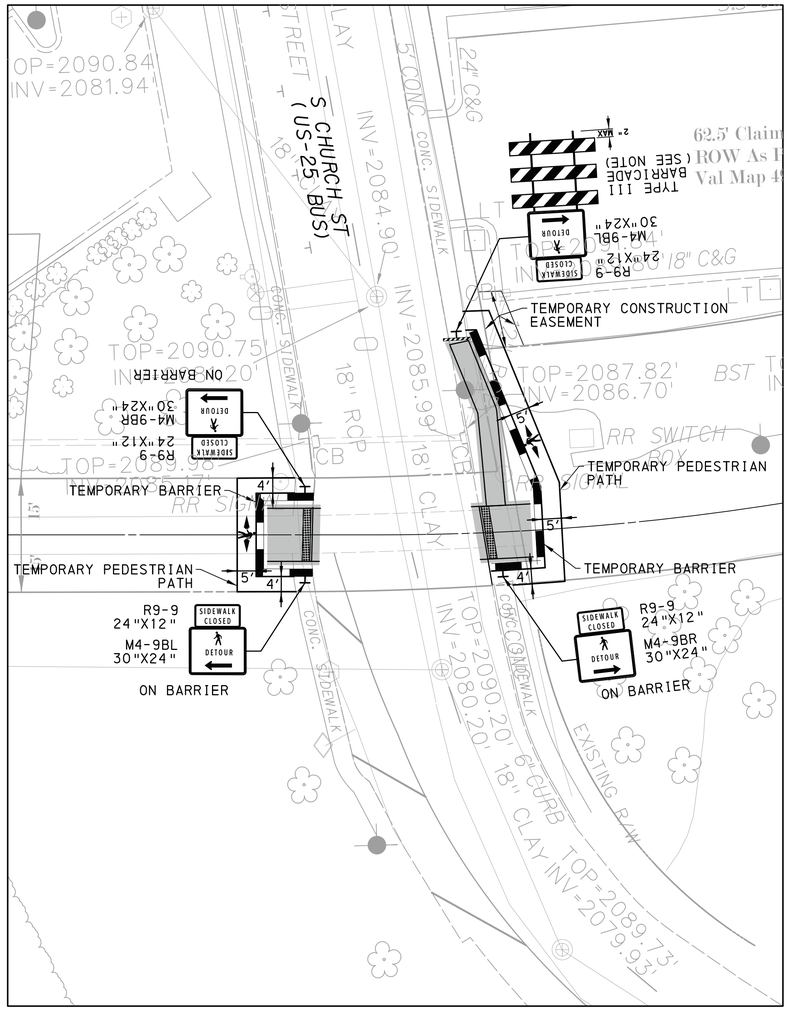
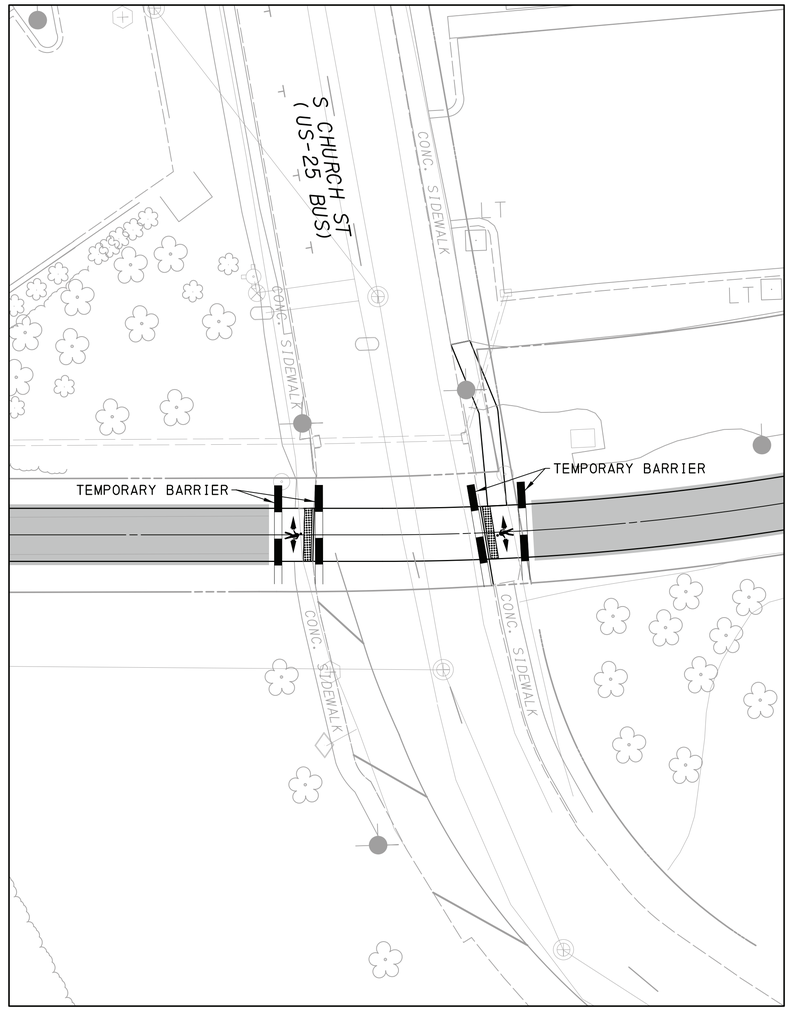
SCALE



S CHURCH STREET TEMPORARY PEDESTRIAN TRAFFIC CONTROL PHASE A



S CHURCH STREET TEMPORARY PEDESTRIAN TRAFFIC CONTROL PHASE B

NOTES:

1. WHEN EXISTING PEDESTRIAN FACILITIES ARE DISRUPTED, CLOSED, OR RELOCATED IN A TEMPORARY WORK ZONE, THE TEMPORARY FACILITIES SHALL BE DETECTABLE AND SHALL INCLUDE ACCESSIBILITY FEATURES CONSISTENT WITH THE FEATURES PRESENT IN THE EXISTING PEDESTRIAN FACILITY.
2. ALL BARRIERS AND BARRICADES USED FOR TEMPORARY PEDESTRIAN FACILITIES MUST MEET THE REQUIREMENTS OF MUTCD SECTION 6F.74: DETECTABLE EDGING FOR PEDESTRIANS.
3. SEE ADDITIONAL TRAFFIC MANAGEMENT PLANS FOR VEHICULAR TRAFFIC CONTROL DURING CONSTRUCTION.

S CHURCH ST TEMPORARY PEDESTRIAN TRAFFIC CONTROL PLAN

5/14/99

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PROJECT: ECUSTA TRAIL

HENDERSON COUNTY
ENGINEERING DEPARTMENT

PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-1

APPROVED: _____

DATE: _____

SEAL



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PAVEMENT MARKING AND SIGNING PLANS
HENDERSON COUNTY

LOCATION: *US 64 NEAR HORSE SHOE TO SOUTH MAIN STREET IN HENDERSONVILLE*

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
904.10	ORIENTATION OF GROUND MOUNTED SIGNS
904.50	MOUNTING OF TYPE 'D', 'E' AND 'F' SIGNS ON 'U' CHANNEL POSTS
1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - TWO-LANE AND MULTI-LANE ROADWAYS
1205.04	PAVEMENT MARKINGS - INTERSECTIONS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.07	PAVEMENT MARKINGS - PEDESTRIAN CROSSWALKS
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1743.02	PEDESTALS - NORMAL DUTY (TYPE II)
1743.04	PEDESTALS - FOUNDATIONS

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 ON THE FINAL SURFACE AS FOLLOWS:

ROAD NAME	MARKINGS	MARKERS
ALL ROADS	THERMOPLASTIC	NONE

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

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

D) UNLESS OTHERWISE SPECIFIED, HEATED-IN-PLACE THERMOPLASTIC MAY BE USED IN LIEU OF EXTRUDED THERMOPLASTIC FOR STOP BARS, SYMBOLS, CHARACTERS AND DIAGONALS.

E) SIGNS FURNISHED BY CONTRACTOR.

F) THE BACKGROUND FOR TYPE 'E' SIGNS SHALL BE TYPE C REFLECTIVE SHEETING.

G) SIGNING PLANS DO NOT INCLUDED TEMPORARY CONSTRUCTION SIGNING OR PAVEMENT MARKINGS.

FINAL PAVEMENT MARKINGS, SYMBOLS AND CHARACTERS

T4	WHITE 10'-30'/SP MINI-SKIP LINE (4", 90 MIL)	THERMOPLASTIC
T11	YELLOW SINGLE CENTERLINE (4", 90 MIL)	THERMOPLASTIC / HEATED-IN-PLACE
T13	YELLOW DOUBLE CENTERLINE (4", 90 MIL)	THERMOPLASTIC
T20	WHITE EDGELINE (6", 90 MIL)	THERMOPLASTIC
T22	10 FT. WHITE SKIP (6", 90 MIL)	THERMOPLASTIC
T41	WHITE DIAGONAL (8", 90 MIL)	THERMOPLASTIC
T51	WHITE DIAGONAL (12", 90 MIL)	THERMOPLASTIC
T61	WHITE STOPBAR/CROSSWALK LINE (24", 90 MIL)	THERMOPLASTIC / HEATED-IN-PLACE
T70	LEFT TURN ARROW (90 MIL)	THERMOPLASTIC
T71	RIGHT TURN ARROW (90 MIL)	THERMOPLASTIC
T74	COMBO. RIGHT/STRAIGHT ARROW (90 MIL)	THERMOPLASTIC
T100	ALPHANUMERIC CHARACTER (90 MIL)	THERMOPLASTIC / HEATED-IN-PLACE
T102	12" YIELD LINE TRIANGLE (90 MIL)	THERMOPLASTIC / HEATED-IN-PLACE
D1	WHITE SURFACE-MOUNTED FLEXIBLE DELINEATORS	N/A

NOTE: PAVEMENT MARKINGS INSTALLED WITHIN THE BIKE/PED PATH SHALL BE INSTALLED AS HEATED-IN-PLACE.

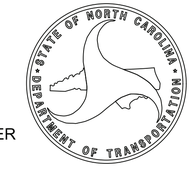
SHEET INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING AND SIGNING PLAN TITLE SHEET
PMP-1A	RRFB DETAIL SHEET
PMP-2	TYPE 'E' SIGNS
PMP-2A	SIGN FAB DETAILS
PMP-3 - PMP-24	PAVEMENT MARKING AND SIGNING PLAN SHEETS

PLANS REVIEWED BY N.C.D.O.T. SIGNING AND DELINEATION UNIT

_____ SIGNING & DELINEATION REGIONAL ENGINEER

_____ SIGNING & DELINEATION PROJECT DESIGN ENGINEER



PLANS PREPARED BY:

Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

$$$$$$$$SYSTIME$$$$$$$$
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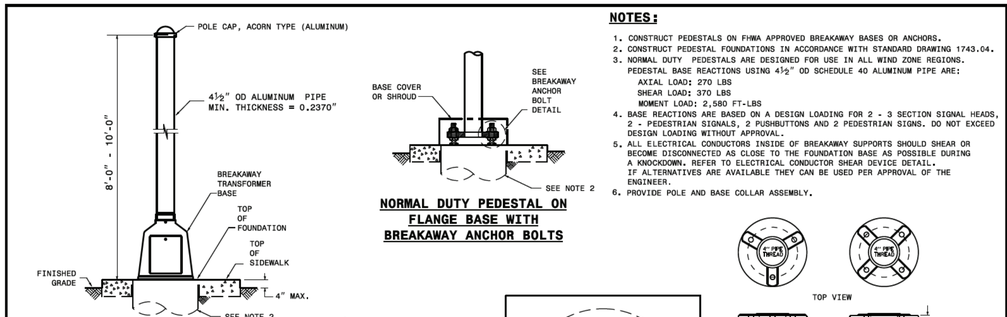


NOTES:

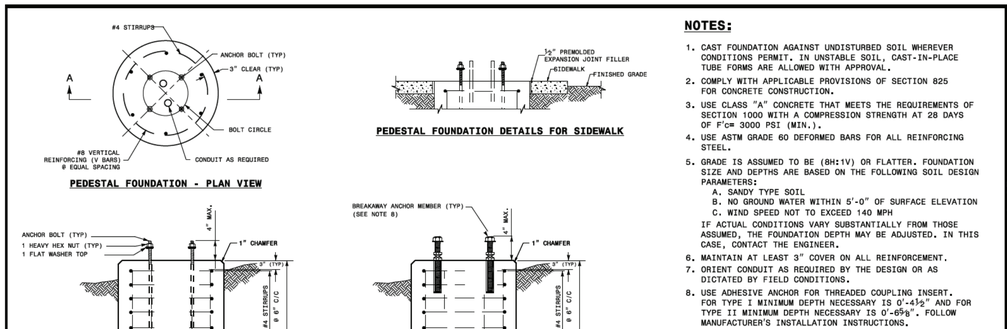
1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. NORMAL DUTY PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS.
   PEDESTAL BASE REACTIONS USING 4½" OD SCHEDULE 40 ALUMINUM PIPE ARE:
   AXIAL LOAD: 270 LBS
   SHEAR LOAD: 370 LBS
   MOMENT LOAD: 2,580 FT-LBS
4. BASE REACTIONS ARE BASED ON A DESIGN LOADING FOR 2 - 3 SECTION SIGNAL HEADS, 2 - PEDESTRIAN SIGNALS, 2 PUSHBUTTONS AND 2 PEDESTRIAN SIGNS. DO NOT EXCEED DESIGN LOADING WITHOUT APPROVAL.
5. ALL ELECTRICAL CONDUCTORS INSIDE OF BREAKAWAY SUPPORTS SHOULD SHEAR OR BECOME DISCONNECTED AS CLOSE TO THE FOUNDATION BASE AS POSSIBLE DURING A KNOCKDOWN. REFER TO ELECTRICAL CONDUCTOR SHEAR DEVICE DETAIL. IF ALTERNATIVES ARE AVAILABLE THEY CAN BE USED PER APPROVAL OF THE ENGINEER.
6. PROVIDE POLE AND BASE COLLAR ASSEMBLY.

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

1-18

ROADWAY STANDARD DRAWING FOR
PEDESTALS
NORMAL DUTY (TYPE II)

SHEET 1 OF 1
1743.02



NOTES:

1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF F'c= 3000 PSI (MIN.).
4. USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
5. GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
   A. SANDY TYPE SOIL
   B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
   C. WIND SPEED NOT TO EXCEED 140 MPH
   IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
6. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
7. ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
8. USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4⅜" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6⅝". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.

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

1-18

ROADWAY STANDARD DRAWING FOR
PEDESTALS
FOUNDATIONS

SHEET 1 OF 1
1743.04

PEDESTAL FOUNDATION TYPE AND SIZE

TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	½	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	¾	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE

TYPE	V-BAR				STIRRUP								TOTAL STEEL WEIGHT LBS
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	QUANTITY VERTICAL SPACING ON 6" CENTERS	QUANTITY VERTICAL SPACING ON 12" CENTERS	QUANTITY TOTAL	LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

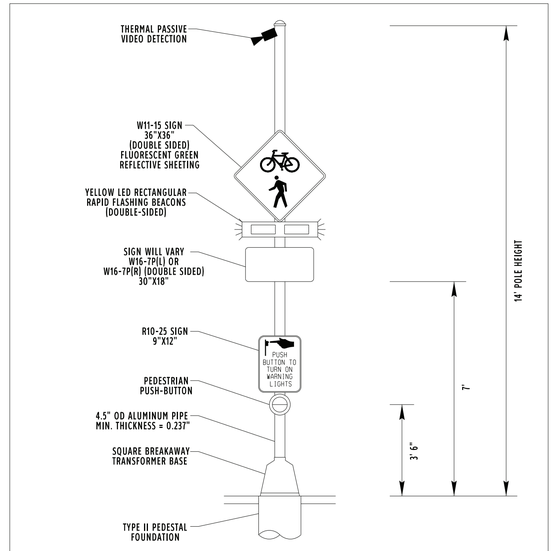
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\PMP-1A - RRFB Details.dgn
5/16/2023 2:42:38 PM 1:20 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



TYPE II PEDESTAL MOUNTED RECTANGULAR RAPID FLASHING BEACON DETAIL

NOT TO SCALE

NOTE:
RRFB CABINET SHALL BE INSTALLED ON ONE OF THE PEDESTAL POLES.

RECTANGULAR RAPID FLASHING BEACON (RRFB) OPERATION NOTES

1. RRFB SHALL CONFORM TO THE FEDERAL HIGHWAY ADMINISTRATION'S (FHWA) INTERIM APPROVAL OF RRFBS AT CROSSWALKS (IA-21).
2. RRFB SHALL DISPLAY TWO RAPIDLY FLASHED YELLOW INDICATIONS UPON ACTUATION.
3. EACH OF THE YELLOW INDICATIONS SHALL PROVIDE 75 FLASHING SEQUENCES PER MINUTE. THE RRFB SHALL OPERATE IN ACCORDANCE TO THE FLASHING SEQUENCE DETAILED IN FHWA INTERIM APPROVAL (IA-21) CONDITION 5B. THE FLASH RATE OF EACH INDIVIDUAL RRFB INDICATION, AS APPLIED OVER THE FULL FLASHING SEQUENCE, SHALL NOT BE BETWEEN 5 AND 30 FLASHERS PER SECOND TO AVOID FREQUENCIES THAT MAY CAUSE SEIZURES.
4. TO MINIMIZE EXCESSIVE GLARE DURING NIGHTTIME CONDITIONS, AN AUTOMATIC SIGNAL DIMMING DEVICE SHOULD BE USED TO REDUCE THE BRILLIANCE OF THE RRFB INDICATIONS.
5. LIGHT INTENSITY OF THE YELLOW LED INDICATIONS DURING DAYTIME CONDITIONS SHALL MEET THE SPECIFICATIONS OF THE SOCIETY OF AUTOMOTIVE ENGINEERS STANDARD J595 DATED JANUARY 2005 FOR PEAK LUMINOUS INTENSITY (CANDELAS) FOR CLASS 1.
6. RRFB SIGNALS SHALL BE DARK UNTIL ACTIVATED BY PUSHBUTTON OR VIDEO DETECTOR. PUSHBUTTON TO BE EQUIPPED WITH LATCHING CONFIRMATION LIGHT AND TONE AND LOCATE TONE. PUSHBUTTON OR VIEDO DETECTOR ACTIVATION: "CAUTION, WAIT FOR VEHICLES TO STOP BEFORE CROSSING."
7. UPON PEDESTRIAN/DETECTION CAMERA ACTIVATION, THE RRFB SHALL FLASH FOR A PERIOD OF 14 SECONDS. THE TIMER SHALL RESET UPON EACH NEW PUSHBUTTON/DETECTION CAMERA ACTIVATION.
8. EACH RRFB SIGNAL SHALL BE EQUIPPED WITH A PILOT LIGHT ON THE SIDE OF THE DEVICE THAT SHALL BE ILLUMINATED DURING THE FLASH PERIOD. THE PILOT LIGHTS SHALL BE ADJUSTED SO THEY ARE VISIBLE TO CROSSING PEDESTRIANS. COMPLY WITH MUTCD INTERIM APPROVAL IA-21 REGARDING THE PILOT LIGHT INTEGRATION.
9. RADIO COMMUNICATION SHALL BE PROVIDED WITH RRFB EQUIPMENT FOR COORDINATION OF ACTIVATION BETWEEN BOTH SIGN/FLASHER LOCATIONS.
10. ELECTRICAL SERVICE IS CONSIDERED INCIDENTAL OF RRFB EQUIPMENT AND IS THE CONTRACTOR'S RESPONSIBILITY.

DETAIL SHEET

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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401 QUANTITY REQ'D 18



18" X 18"
R1-1

ONE "U" POST PER SIGN

---

402 QUANTITY REQ'D 14

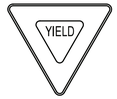


18" X 18"
W3-1

ONE "U" POST PER SIGN

---

403 QUANTITY REQ'D 24



18" X 18" X 18"
R1-2

ONE "U" POST PER SIGN

---

404 QUANTITY REQ'D 24



18" X 18"
W3-2

ONE "U" POST PER SIGN

---

405 QUANTITY REQ'D 21



36" X 36"
R1-5L

ONE "U" POST PER SIGN

---

406 QUANTITY REQ'D 127



30" X 30"
W11-15

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

ONE "U" POST PER SIGN

---

408 QUANTITY REQ'D 30



24" X 12"
W16-7PR

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 OR 415 .

---

409 QUANTITY REQ'D 38



24" X 12"
W16-7PL

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 OR 415 .

---

410 QUANTITY REQ'D 24



18" X 9"
R15-8

MOUNT WITH 403 .

---

411 QUANTITY REQ'D 56



24" X 8"
W16-8P

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 .

---

412 QUANTITY REQ'D 42



VAR" X 6"
D3-1

GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 401 OR 403 .

---

413 QUANTITY REQ'D 43



24" X 24"
R5-3

ONE "U" POST PER SIGN

---

414 QUANTITY REQ'D 56



24" X 12"
W16-9P

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 .

---

415 QUANTITY REQ'D 6



36" X 36"
W11-15

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

ONE "U" POST PER SIGN,
EXCEPT WHEN MOUNTED TO RRFB ASSEMBLY

---

416 QUANTITY REQ'D 7



36" X 36"
W3-3

ONE "U" POST PER SIGN

---

418 QUANTITY REQ'D 1



24" X 30"
R10-6AL

ONE "U" POST PER SIGN

---

419 QUANTITY REQ'D 2



24" X 12"
W16-6PL

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 .

---

420 QUANTITY REQ'D 4



24" X 12"
W16-6PR

FLUORESCENT YELLOW-GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 406 .

---

421 QUANTITY REQ'D 1



30" X 36"
R2-1

ONE "U" POST PER SIGN

---

422 QUANTITY REQ'D 2



18" X 18"
SPECIAL

YELLOW
RETROREFLECTIVE SHEETING

ONE "U" POST PER SIGN

---

423 QUANTITY REQ'D 1



24" X 12"
W16-9P

YELLOW
RETROREFLECTIVE SHEETING

MOUNT WITH 422 .

---

424 QUANTITY REQ'D 4



18" X 18"
OM4-3

RED
RETROREFLECTIVE SHEETING

MOUNT WITH TYPE III BARRICADE

---

425 QUANTITY REQ'D 1



30" X 30"
R5-6

ONE "U" POST PER SIGN

---

426 QUANTITY REQ'D 1



30" X 30"
R9-3

ONE "U" POST PER SIGN

---

427 QUANTITY REQ'D 1



36" X 36"
R1-5R

ONE "U" POST PER SIGN

---

428 QUANTITY REQ'D 5



30" X 30"
R1-1

ONE "U" POST PER SIGN

---

429 QUANTITY REQ'D 5



24" X 8"
D3-1

GREEN
RETROREFLECTIVE SHEETING

MOUNT WITH 428 .

---

430 QUANTITY REQ'D 4



18" X 18"
W3-3

ONE "U" POST PER SIGN

TYPE 'E' SIGNS

5/14/99

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP [nRoads SS2)\Plan\PMP-2 - Type E Signs.dgn
5/16/2023 2:42:44 PM 1:20
jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-2A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

(411)



W16-8P
1.5" Radius, 0.375" Border, 0.375" Indent
Background: Retroreflective fluorescent yellow-green
Border and Legend: Non-retroreflective black
"Ecusta Trail", ClearviewHwy-2-B;
Table of distances between letter and object lefts

	E	c	u	s	t	a	T	r	a	i	l	
2.4	2.5	2.9	3.0	2.6	2.2	5.0	2.9	2.1	3.2	1.8	1.0	2.4

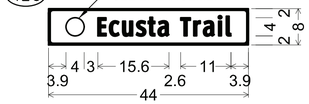
(429)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Ecusta Trail", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	E	c	u	s	t	a	T	r	a	i	l	
3.4	2.5	2.9	3.0	2.6	2.2	5.0	2.9	2.1	3.2	1.8	1.0	3.4

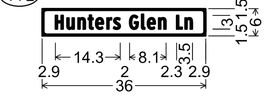
(429)



D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Ecusta Trail", ClearviewHwy-2-B;
Table of distances between letter and object lefts

	○	E	c	u	s	t	a	T	r	a	i	l	
3.9	7.0	2.5	2.9	3.0	2.6	2.2	5.0	2.9	2.1	3.2	1.8	1.0	3.9

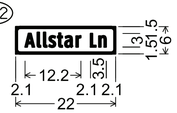
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Hunters Glen Ln", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	H	u	n	t	e	r	s	G	l	e	n	L	n	
2.9	2.6	2.4	2.3	1.6	2.5	1.4	3.5	2.7	1.3	2.4	4.0	1.8	1.7	2.9

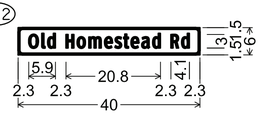
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Allstar Ln", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	A	l	l	s	t	a	r	L	n	
2.1	2.7	1.3	1.2	1.9	1.6	2.5	3.1	1.9	1.6	2.1

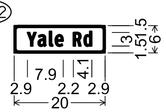
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Old Homestead Rd", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	O	l	d	H	o	m	e	s	t	e	a	d	R	d	
2.3	2.9	1.3	4.0	2.5	2.6	3.4	2.3	1.9	1.6	2.4	2.4	4.0	2.4	1.7	2.3

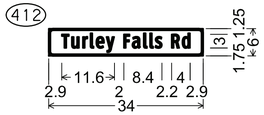
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Yale Rd", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	Y	a	l	e	R	d	
2.9	2.4	2.5	1.3	3.9	2.4	1.7	2.9

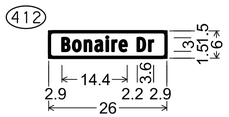
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Turley Falls Rd", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	T	u	r	l	e	y	F	a	l	l	s	R	d	
2.9	2.2	2.4	1.7	1.3	2.2	3.8	1.9	2.5	1.4	1.1	3.7	2.3	1.7	2.9

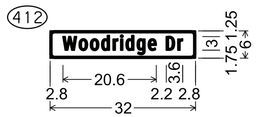
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Bonaire Dr", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	B	o	n	a	i	r	e	D	r	
2.9	2.4	2.5	2.4	2.4	1.3	1.6	4.0	2.5	1.1	2.9

(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Woodridge Dr", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	W	o	o	d	r	i	d	g	e	D	r	
2.8	3.6	2.5	2.5	2.5	1.6	1.2	2.5	2.4	4.0	2.5	1.1	2.8

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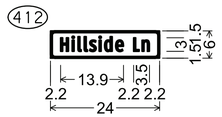
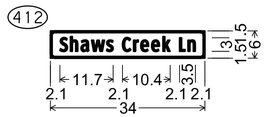


D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Hillside Ln", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	H	i	l	l	s	i	d	e	L	n	
2.2	2.5	1.3	1.4	1.2	2.0	1.3	2.4	4.0	1.8	1.7	2.2

(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Shaws Creek Ln", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	S	h	a	w	s	C	r	e	e	k	L	n	
2.1	2.3	2.3	2.4	3.2	3.6	2.4	1.6	2.4	2.4	3.7	1.9	1.6	2.1

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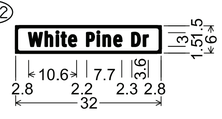

D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"White Pine Dr", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	W	h	i	t	e	P	i	n	e	D	r	
2.8	3.7	2.4	1.1	1.7	3.9	2.3	1.3	2.4	4.0	2.5	1.1	2.8

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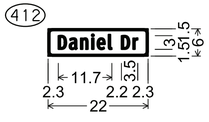
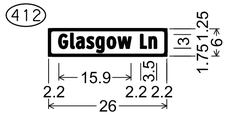


D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Daniel Dr", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	D	a	n	i	e	l	D	r	
2.3	2.4	2.5	2.4	1.2	2.5	2.9	2.5	1.0	2.3

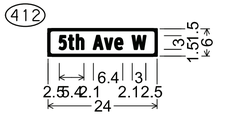
(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Glasgow Ln", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	G	l	a	s	g	o	w	L	n	
2.2	2.7	1.2	2.3	2.1	2.4	2.4	5.0	1.8	1.7	2.2

(412)



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"5th Ave W", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	5	t	h	A	v	e	W	
2.5	2.0	1.7	3.8	2.4	2.3	3.8	3.0	2.5

NOTE: SIGN DETAILS SHOWN ARE NOT TO SCALE

SIGN FAB DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HDP InRoads S2)\Plan\PMP-2A - Sign Fab Details 01.dgn
5/16/2023 3:04:52 PM 1:240 jstanton

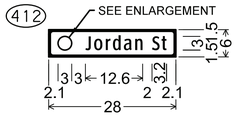
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-2A

ROADWAY DESIGN ENGINEER

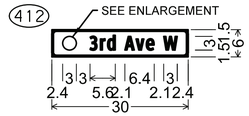
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



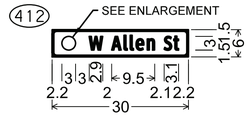
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Jordan St", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	J	o	r	d	a	n	S	t	
2.1	6.0	1.9	2.6	1.5	2.4	2.5	3.7	2.1	1.1	2.1



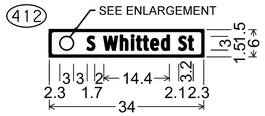
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"3rd Ave W", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	3	r	d	A	v	e	W	
2.4	6.0	2.3	1.6	3.8	2.4	2.3	3.8	3.0	2.4



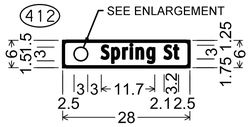
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"W Allen St", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	W	A	l	l	e	n	S	t		
2.2	6.0	4.9	2.7	1.4	1.3	2.4	3.8	2.1	1.0	2.2	



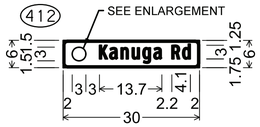
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"S Whitted St", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	S	W	h	i	t	t	e	d	S	t		
2.3	6.0	3.7	3.7	2.4	1.1	1.5	1.6	2.4	3.8	2.1	1.1	2.3	



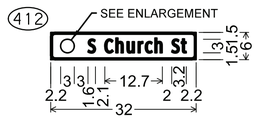
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Spring St", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	S	p	r	i	n	g	S	t	
2.5	6.0	2.3	2.4	1.6	1.4	2.3	3.8	2.1	1.1	2.5



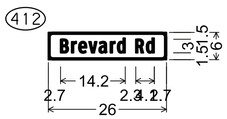
D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Kanuga Rd", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	○	K	a	n	u	g	a	R	d	
2.0	6.0	2.2	2.5	2.5	2.3	2.4	4.0	2.4	1.7	2.0



D3-1 (City of Hendersonville)
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"S Church St", ClearviewHwy-2-W;
Table of distances between letter and object lefts

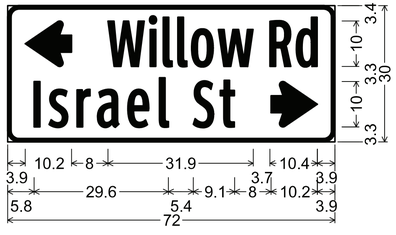
	○	S	C	h	u	r	c	h	S	t	
2.2	6.0	3.7	2.4	2.5	2.4	1.6	2.1	3.7	2.1	1.1	2.2



D3-1
1.0" Radius, 0.375" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Brevard Rd", ClearviewHwy-2-W;
Table of distances between letter and object lefts

	B	r	e	v	a	r	d	R	d	
2.7	2.4	1.6	2.2	2.3	2.5	1.5	4.0	2.4	1.7	2.7

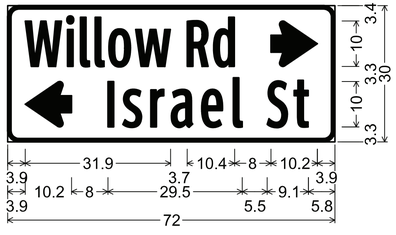
MAST ARM SIGNS



D3-1 MOD
2.5" Radius, 0.75" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
Standard Arrow Custom 10.2" X 10.0"
"Willow Rd", ClearviewHwy-1-W @ 60% spacing;
"Israel St", ClearviewHwy-1-W;
Standard Arrow Custom 10.2" X 10.0"
Table of distances between letter and object lefts

	⇦	W	i	l	l	o	w	R	d		
3.9	18.2	9.1	3.0	3.2	3.1	5.9	11.3	5.8	4.6	3.9	

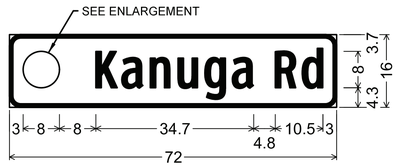
	l	s	r	a	e	l	S	t	⇨	
5.8	3.3	6.2	4.5	6.6	7.0	7.4	6.0	11.1	10.2	3.9



D3-1 MOD
2.5" Radius, 0.75" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Willow Rd", ClearviewHwy-1-W @ 60% spacing;
Standard Arrow Custom 10.2" X 10.0"
Standard Arrow Custom 10.2" X 10.0"
"Israel St", ClearviewHwy-1-W;
Table of distances between letter and object lefts

	W	i	l	l	o	w	R	d	⇨	
3.9	9.1	3.0	3.2	3.1	5.9	11.3	5.8	12.6	10.2	3.9

	⇦	l	s	r	a	e	l	S	t	
3.9	18.2	3.2	6.2	4.5	6.7	6.9	7.5	5.9	3.2	5.8

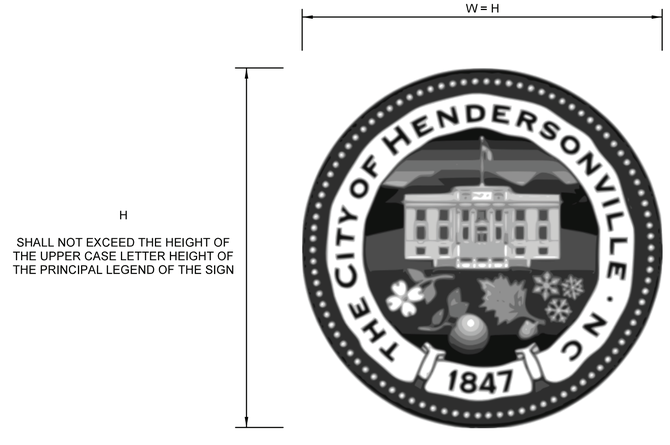


D3-1 MOD (City of Hendersonville)
2.5" Radius, 0.75" Border
Background: Retroreflective green
Border and Legend: Retroreflective white
"Kanuga Rd", ClearviewHwy-2-W @ 80% spacing;
Table of distances between letter and object lefts

	○	K	a	n	u	g	a	R	d	
3.0	16.0	5.7	6.3	6.1	5.9	6.0	9.5	5.9	4.6	3.0

NOTE: SEE SIGNALS PLANS FOR SIGN LOCATIONS AND MOUNTING POSITIONS.

NOTE: SIGN DETAILS SHOWN ARE NOT TO SCALE



SHALL NOT EXCEED THE HEIGHT OF THE UPPER CASE LETTER HEIGHT OF THE PRINCIPAL LEGEND OF THE SIGN

ENLARGEMENT
CITY OF HENDERSONVILLE SEAL

NOT TO SCALE

SIGN FAB DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwiseDocuments\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\PMP-2A - Sign Fab Details 02.dgn
5/17/2023 12:48:21 AM 1:240 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

RR CROSSING SIGN TO BE REMOVED
REMOVE EXISTING PAVEMENT MARKINGS
400' FROM TRAIL CROSSING (MOUNTED BACK-TO-BACK WITH EXISTING W3-3 "SIGNAL AHEAD" SIGN)
POLE MOUNT TO PEDESTRIAN SIGNAL
HALF SIZE
100'
300'
16'
50'
120'
200'
600' FROM TRAIL CROSSING
REMOVE EXISTING STOP BAR
BREVARD RD
BATTLE CREEK RD
Ecusta Trail
NO MOTOR VEHICLES
STOP HERE ON RED
AHEAD

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE
4. REMOVE AND DISPOSE OF EXISTING "STOP" SIGNS. REMOVE, STOCKPILE, AND RESET EXISTING "STREET NAME" SIGNS.

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
pw:\\tpd-pw.bentley.com:TPDProjectWise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP Inroads SS2)\PlanPlan01.dgn
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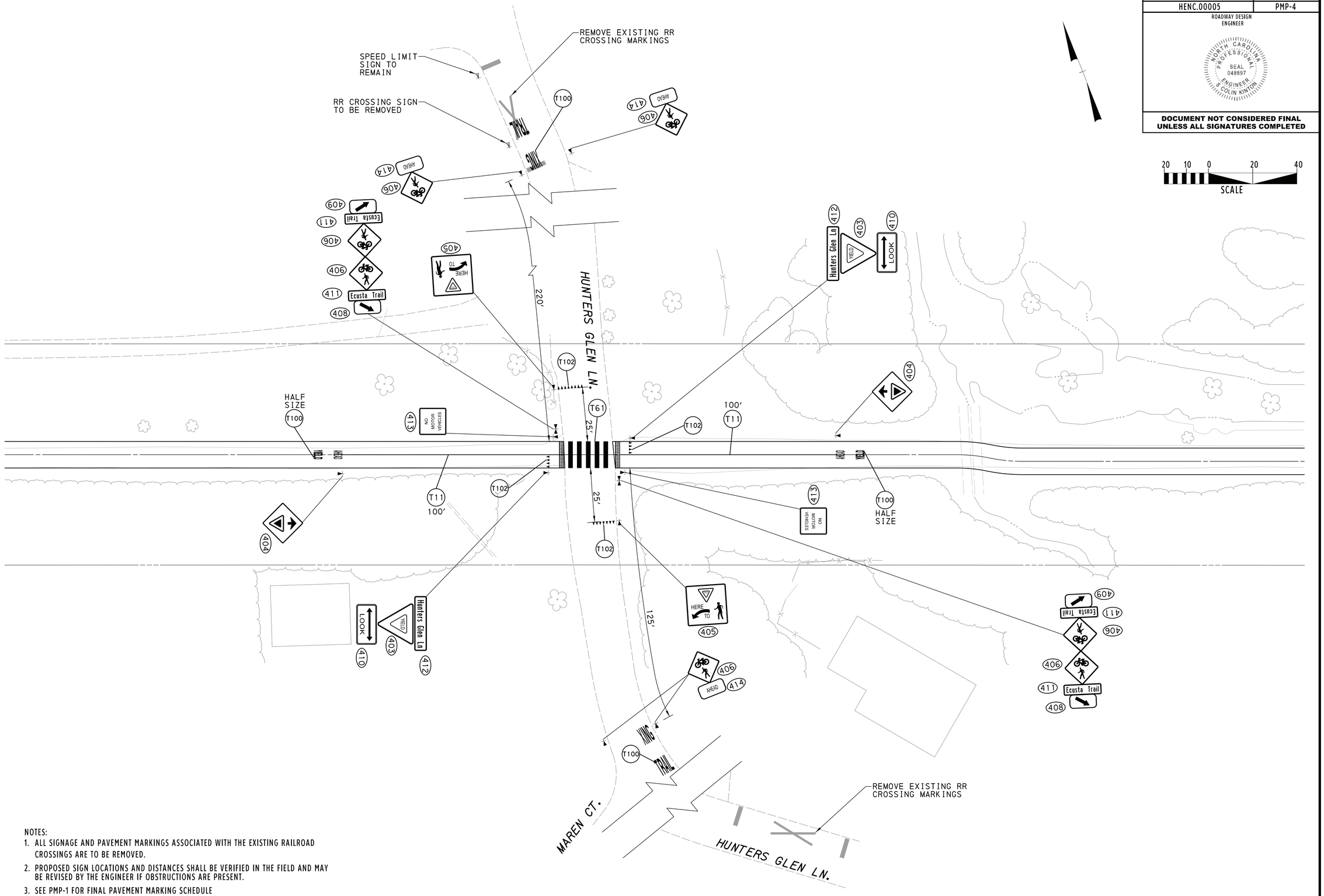
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
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5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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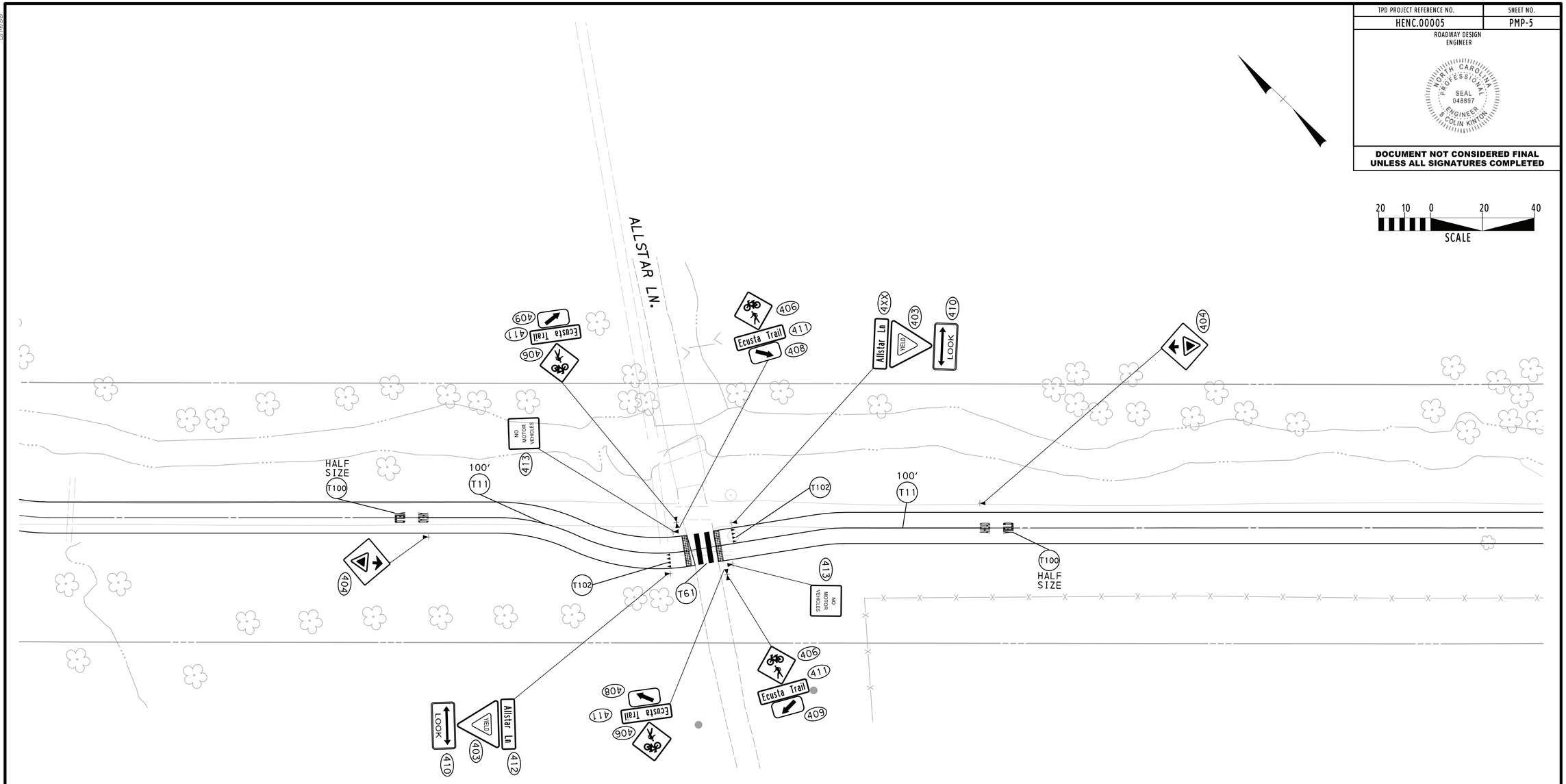
SCALE

ALLSTAR LN.



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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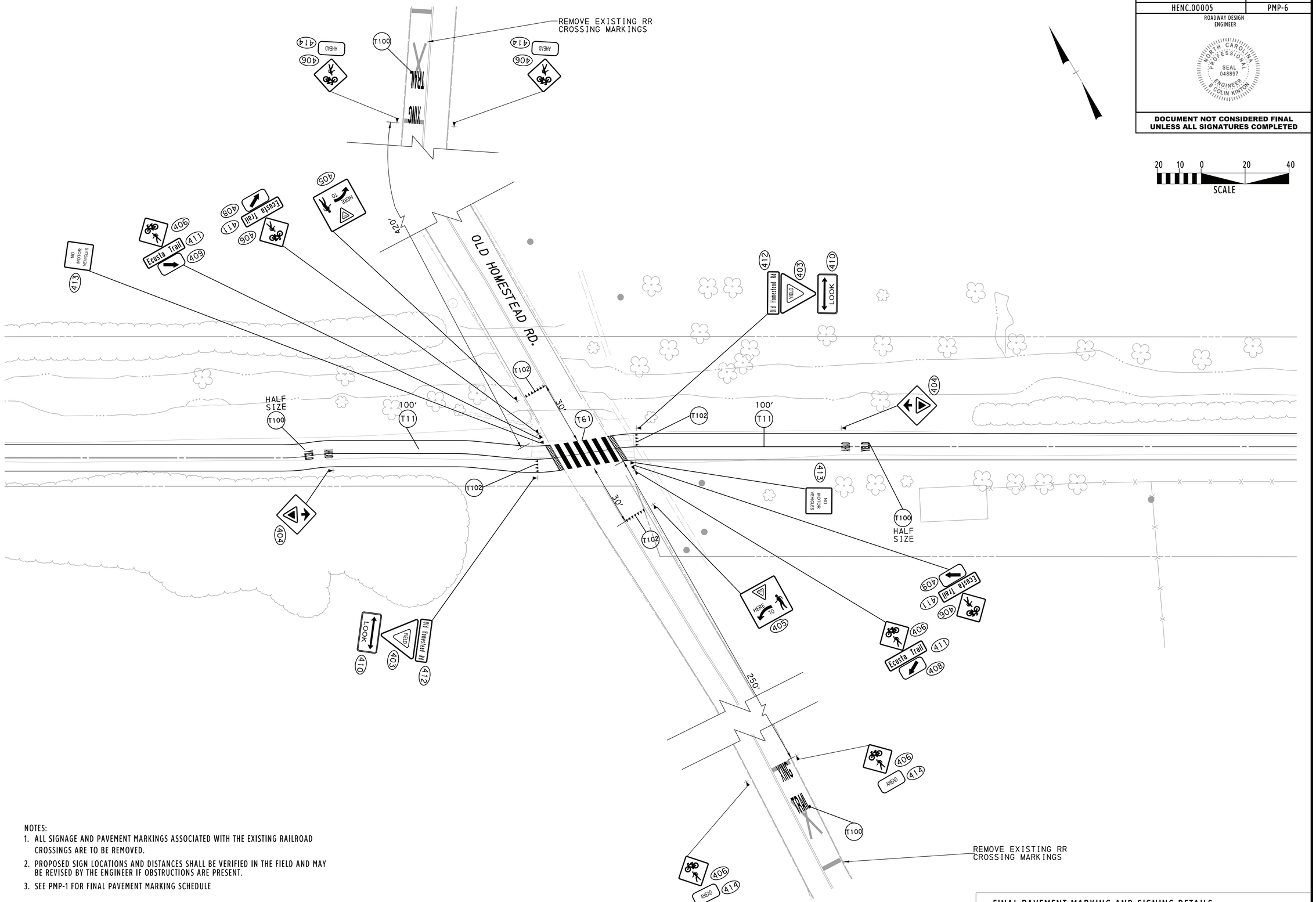
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
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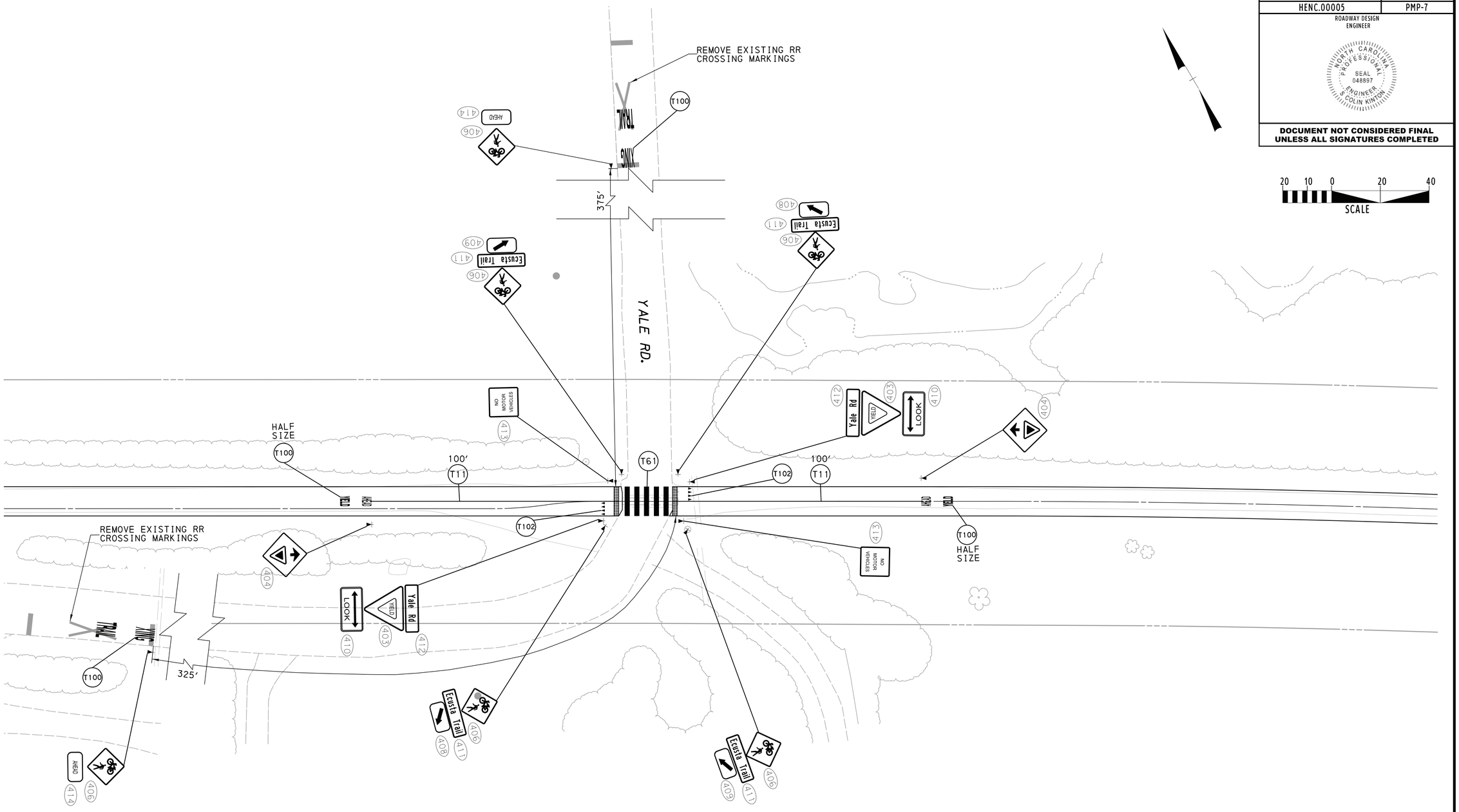
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



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SCALE

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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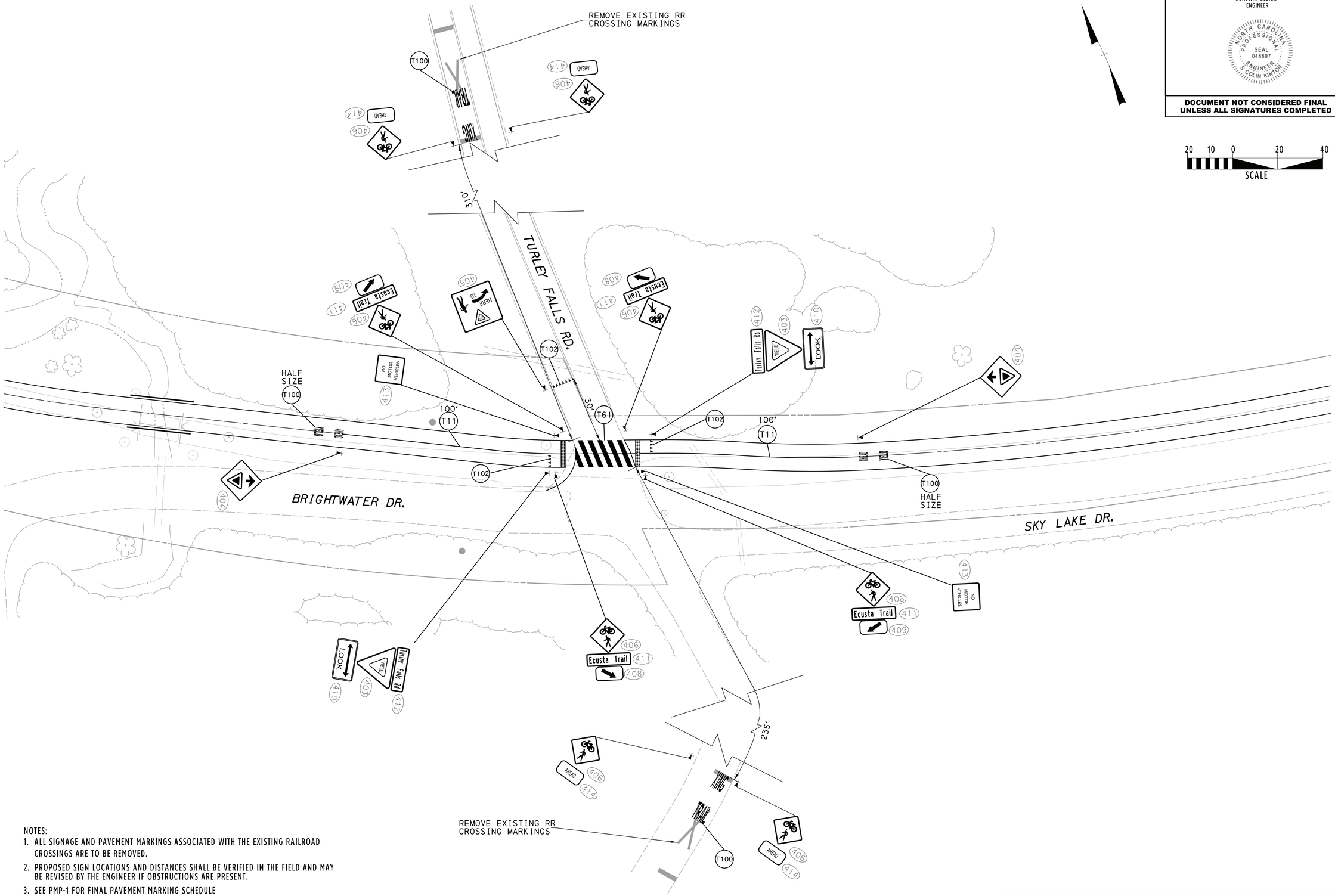
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-8

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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5/14/99

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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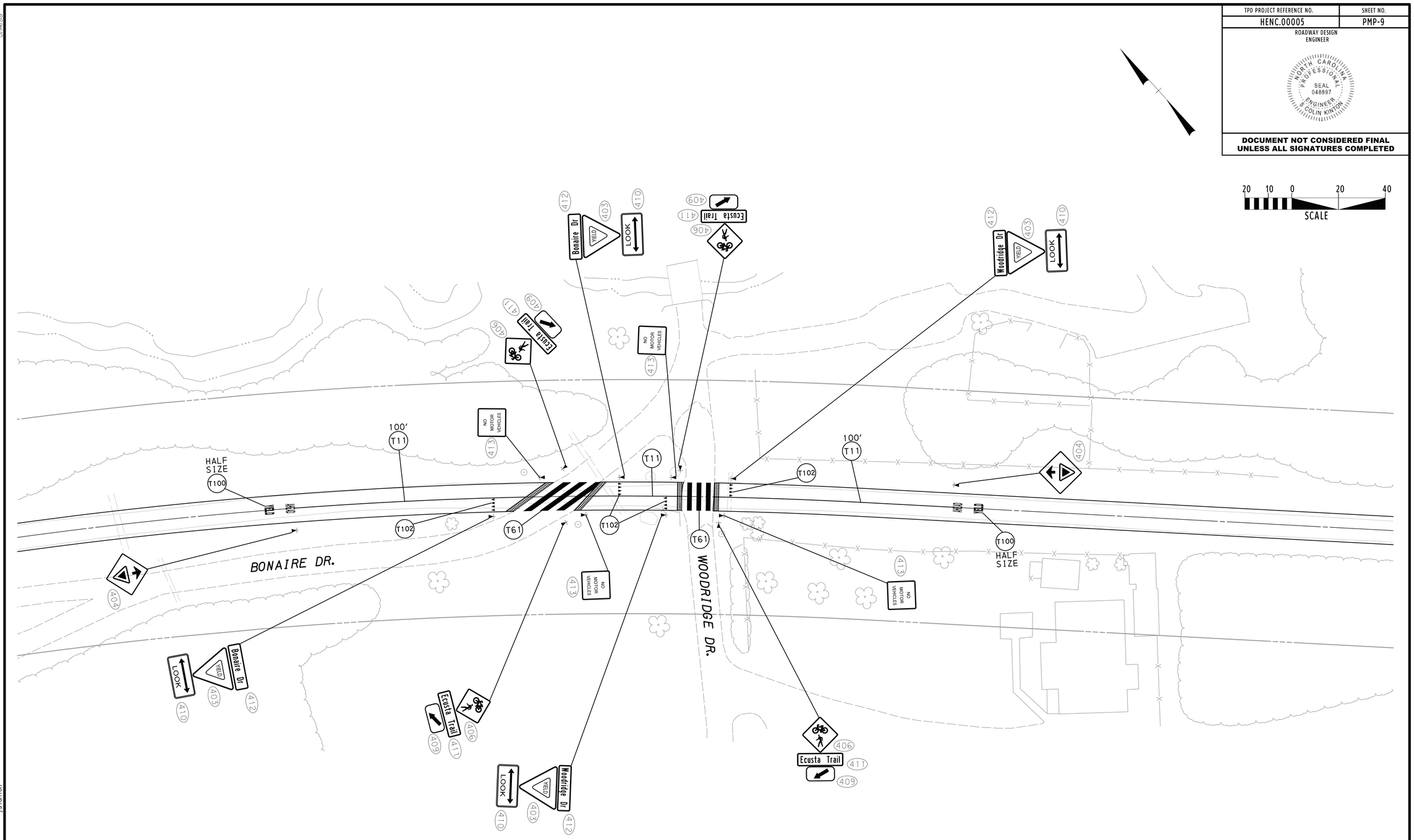
SCALE



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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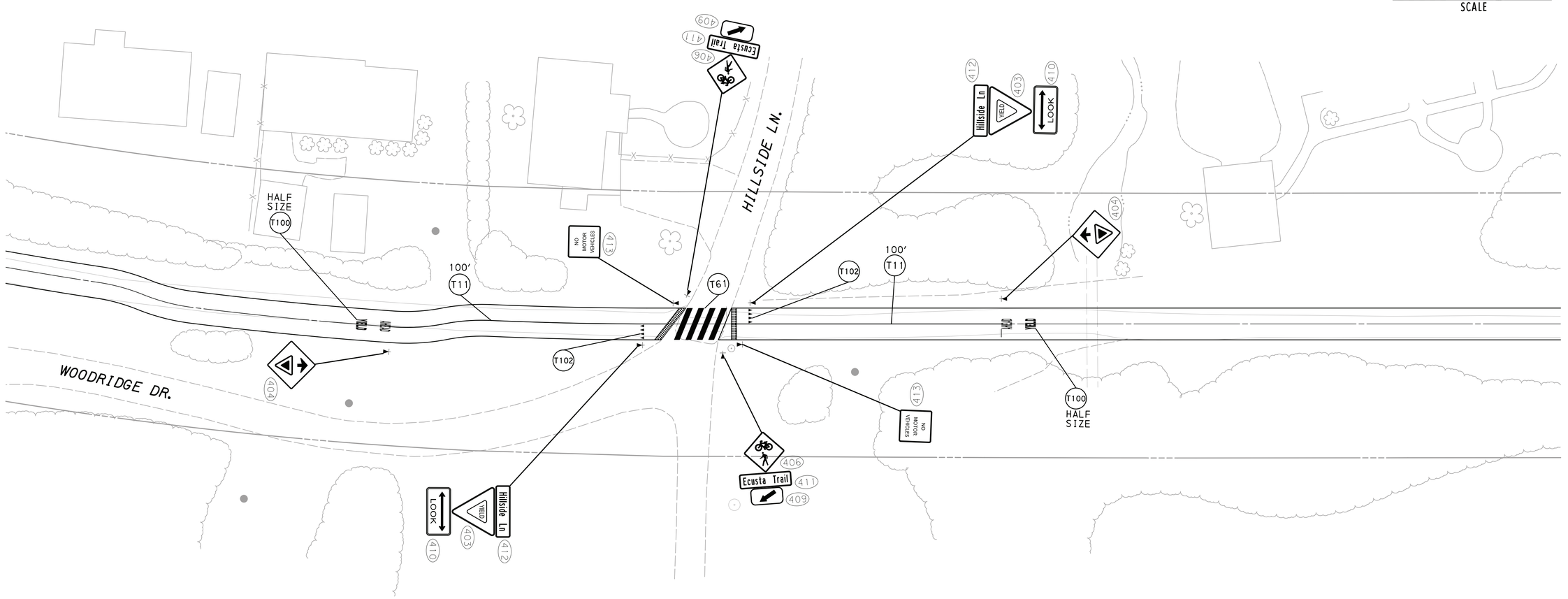

NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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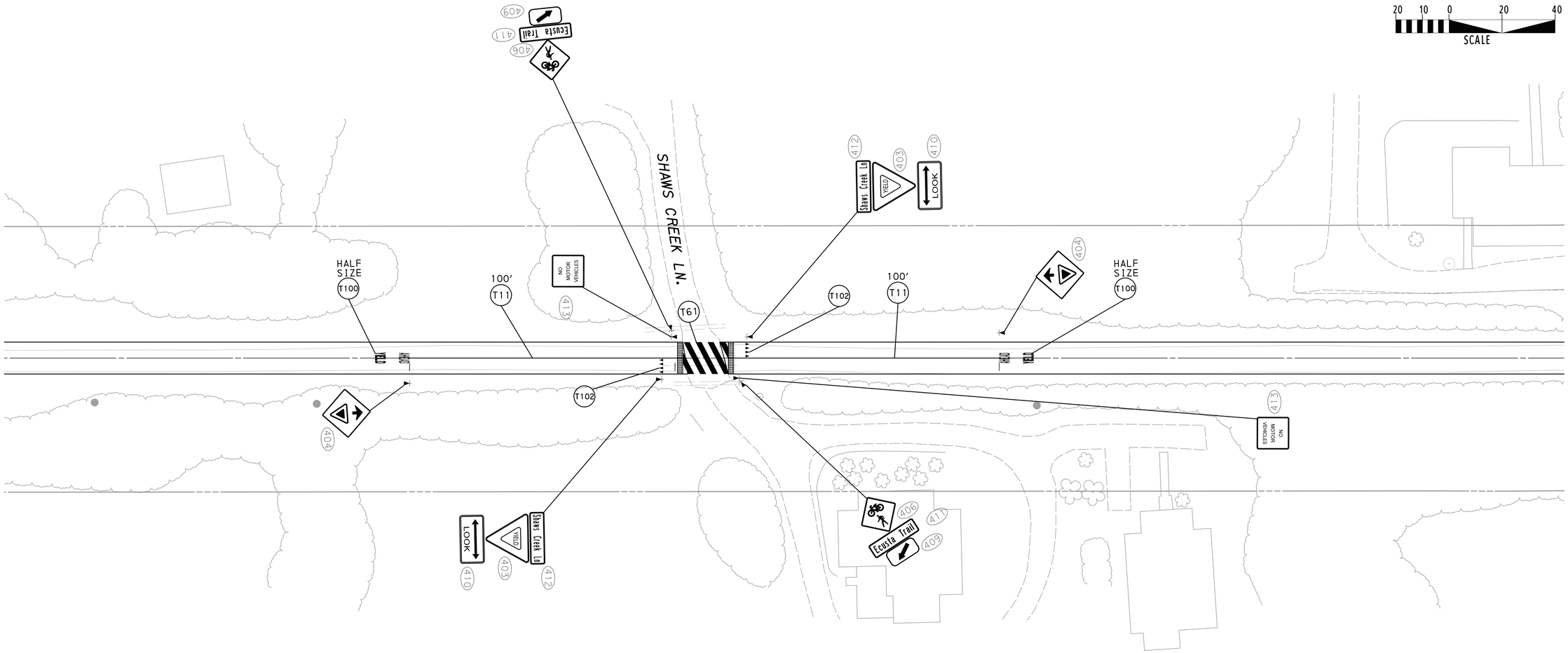

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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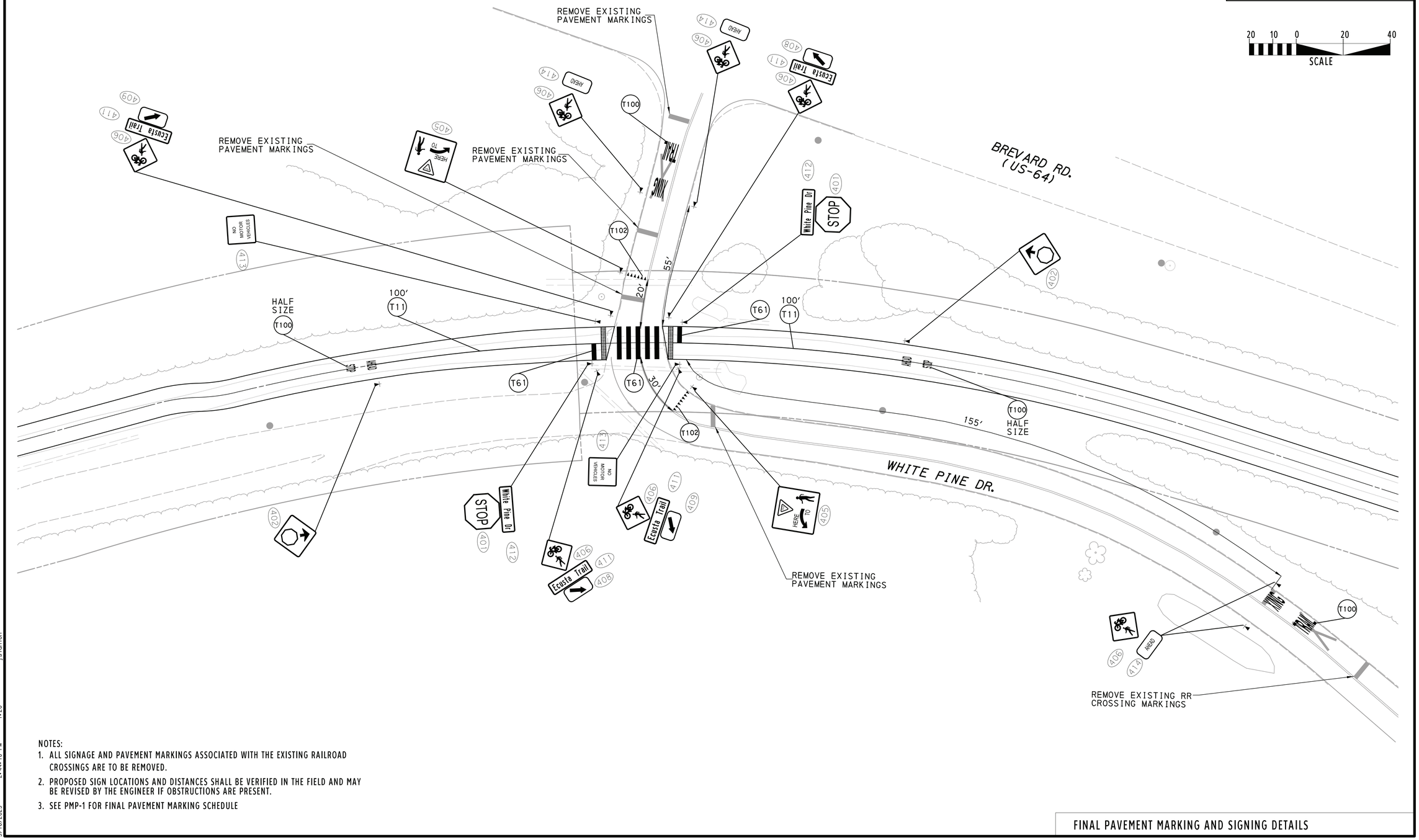
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-12

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE



NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP Roads SS2)\PlanSplan10.dgn
5/16/2023 2:44:18 PM 1:20 jstanton

5/14/99

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-13

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

REMOVE EXISTING RR CROSSING MARKINGS

BREVARD RD. (US-64)

Ecusta Trail

NO MOTOR VEHICLES

HERE TO

TRAIL XING

Daniel Dr

STOP

HALF SIZE

100′

22′

30′

150′

DANIEL DR.

REMOVE EXISTING RR CROSSING MARKINGS

REMOVE EXISTING RR CROSSING SIGNAGE AND REPLACE WITH TRAIL CROSSING SIGNAGE

AHEAD

NOTES:
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Planplan11.dgn
5/16/2023 2:44:24 PM 1:20 jstanton

5/14/99

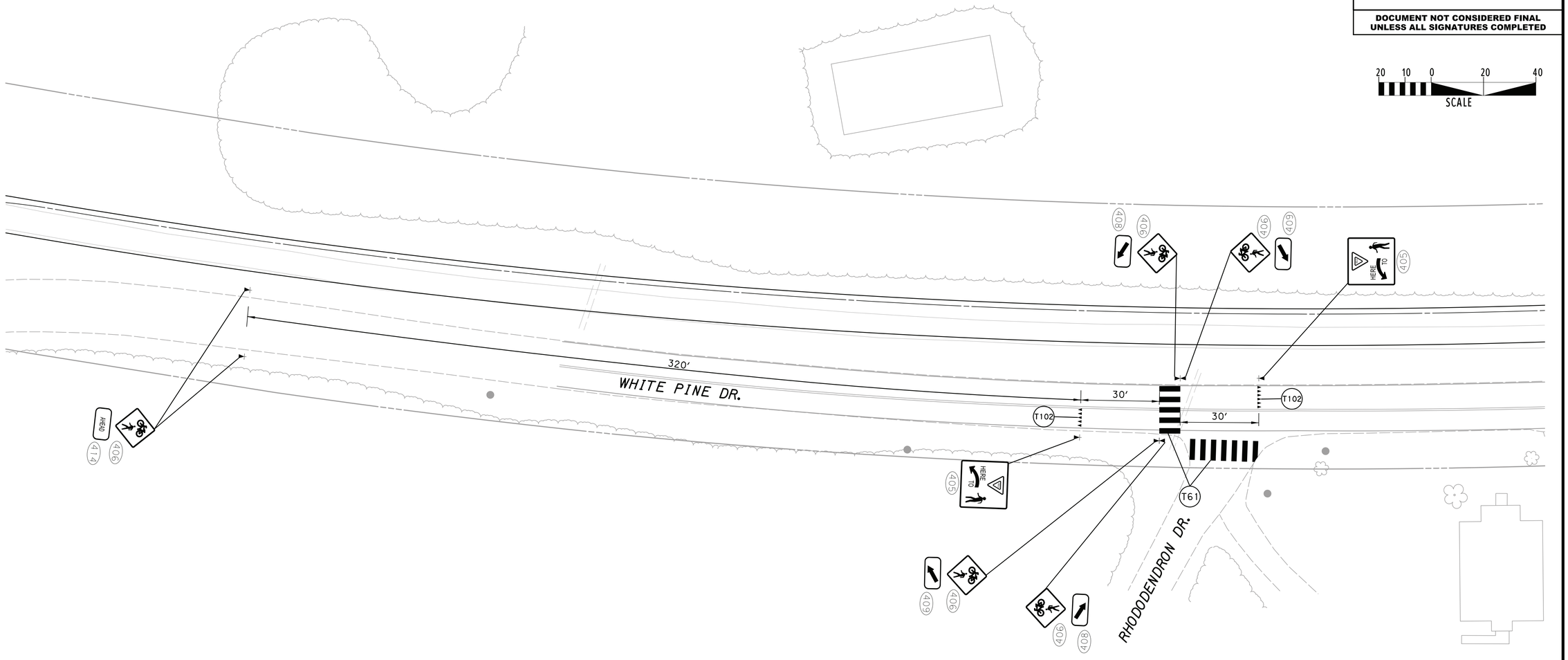
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-14

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE



NOTES:
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

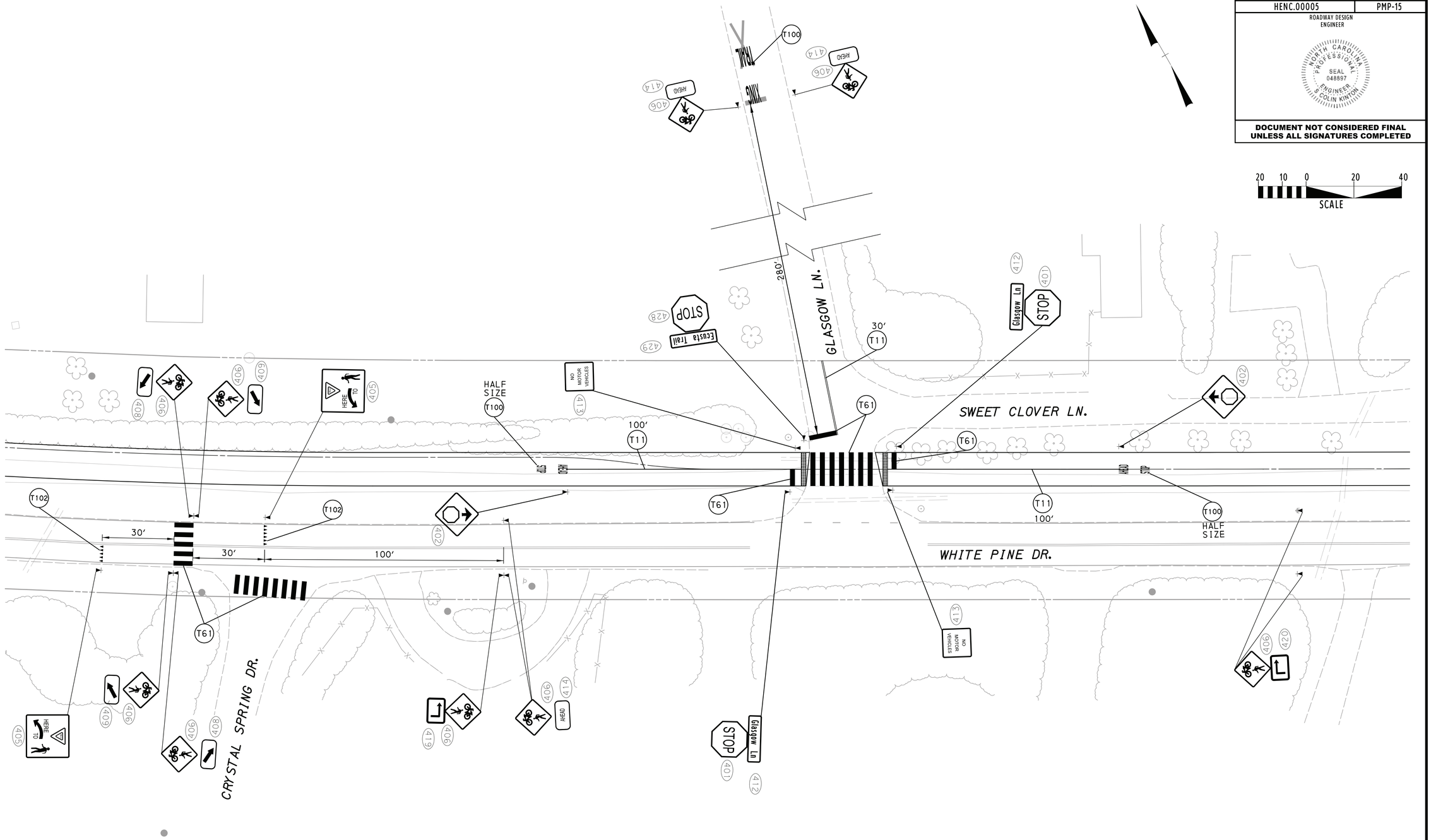
p:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD(HOP InRoads SS2)\Plan\plan11a.dgn
5/16/2023 21:44:32 PM 1:20 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-15

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

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2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan12.dgn
5/16/2023 2:44:41 PM 1:20 jstanton
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-16

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

REMOVE EXISTING RR CROSSING MARKINGS

REMOVE EXISTING PAVEMENT MARKINGS

EXISTING MAST ARM TO BE REMOVED

BROADWAY ST.

W 5TH AVE.

5th Ave W

HALF SIZE

REMOVE EXISTING PAVEMENT MARKINGS

REMOVE EXISTING RR CROSSING MARKINGS

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
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5/16/2023 3:16:13 PM 1:240 jstanton

5/14/99

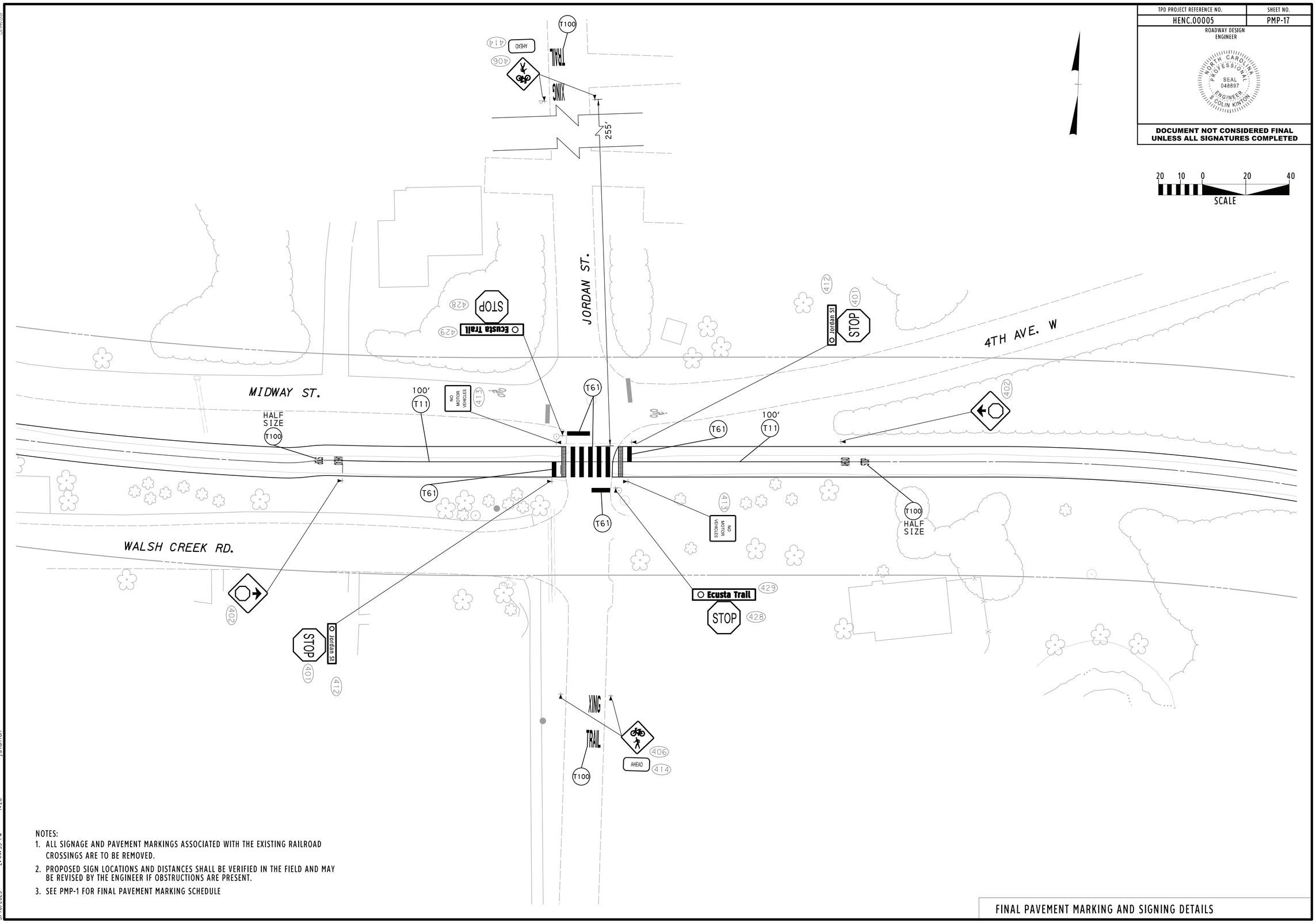
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-17

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE



NOTES:

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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

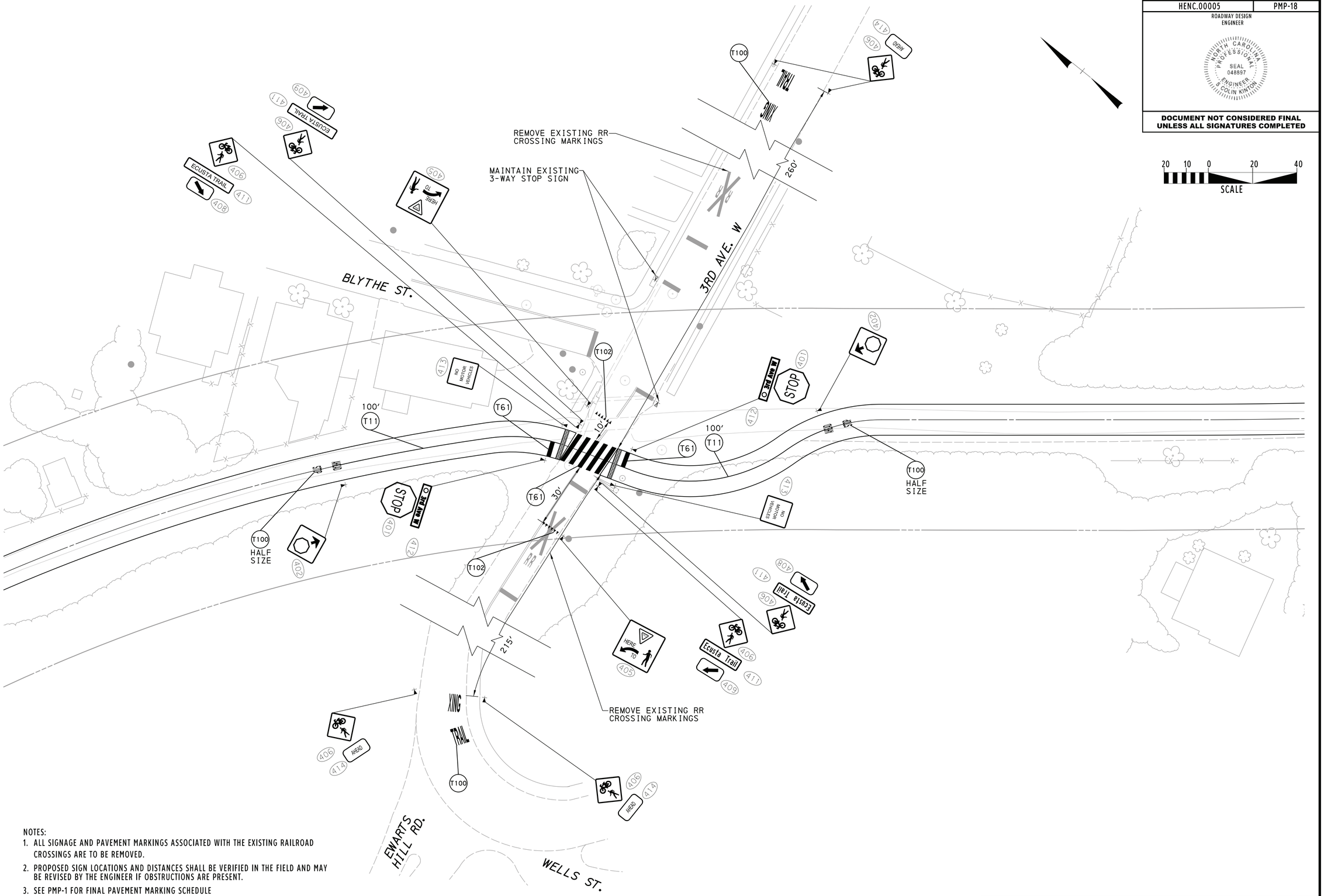
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan14.dgn
5/16/2023 2:44:55 PM 1:20 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-18

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

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2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

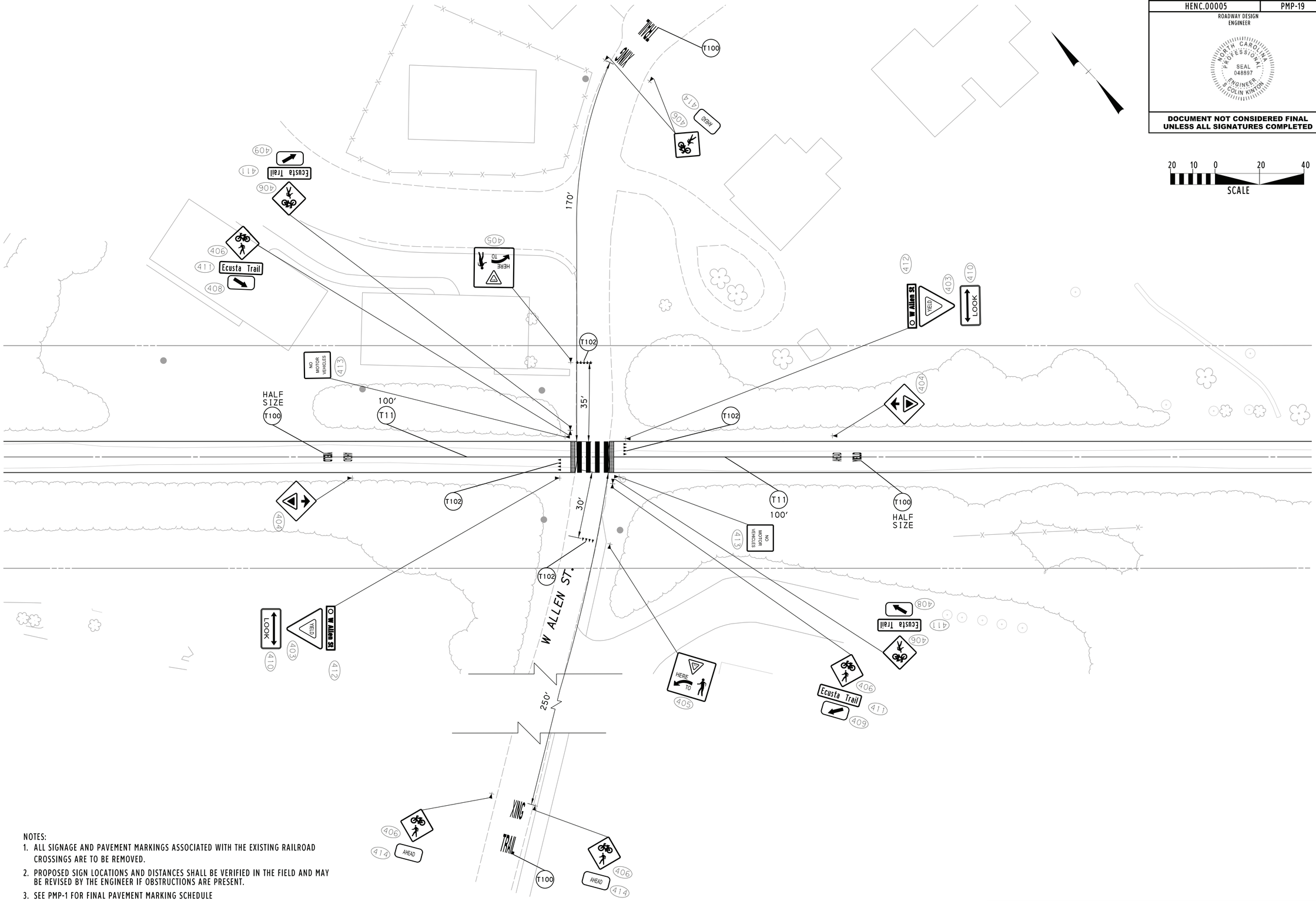
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan15.dgn
5/16/2023 2:45:06 PM 1:20 jstanton
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-19

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

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2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

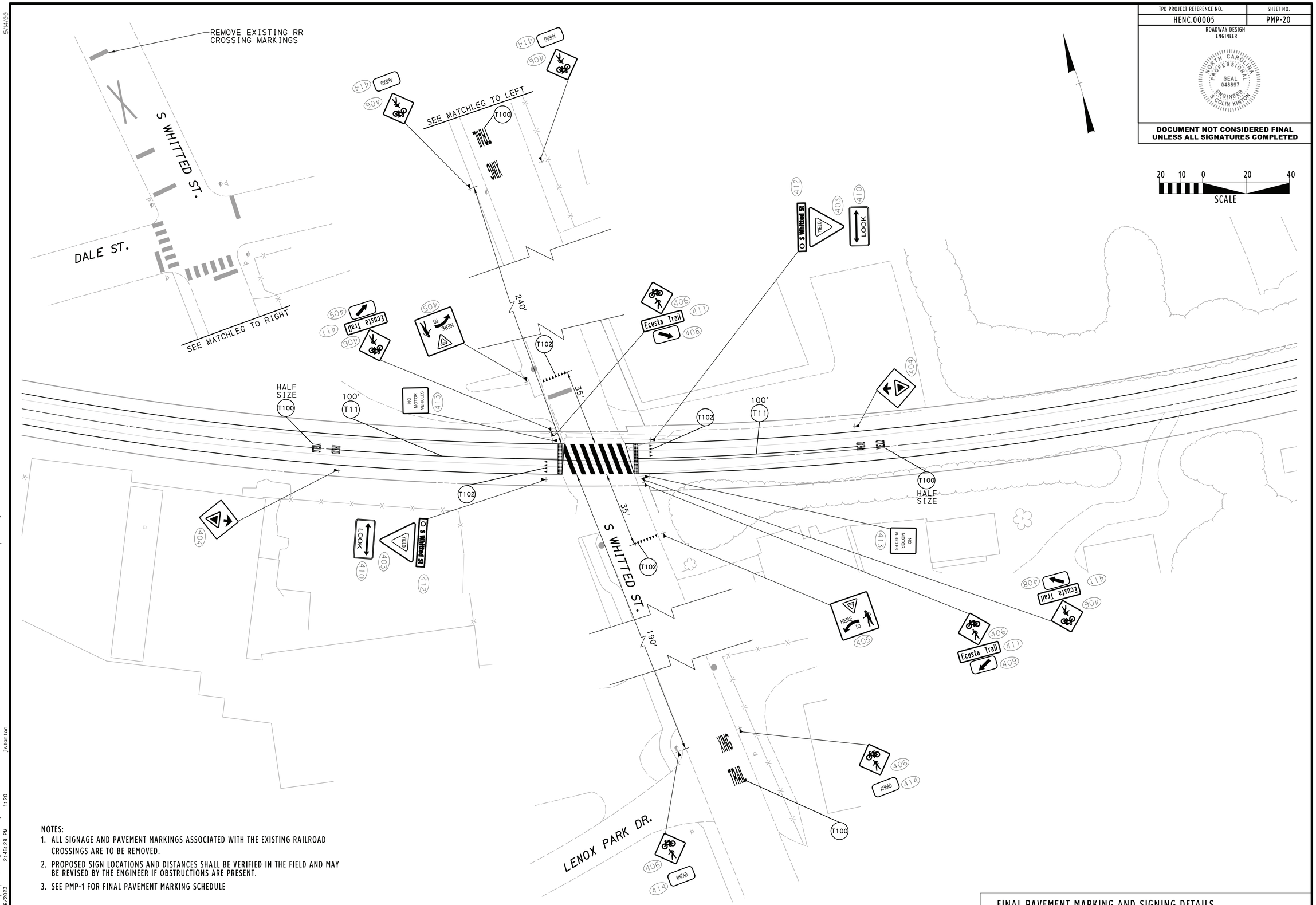
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan16.dgn
5/16/2023 2:45:15 PM 1:20 jstanton
5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-20

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



NOTES:

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2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan17.dgn
5/16/2023 2:45:28 PM 1:20 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-21

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

REMOVE EXISTING RR CROSSING SIGNAGE AND REPLACE WITH TRAIL CROSSING SIGNAGE

SPRING ST.

DAIRY ST.

215'

175'

100'

REMOVE EXISTING RR CROSSING MARKINGS

REMOVE EXISTING RR CROSSING SIGNAGE AND REPLACE WITH TRAIL CROSSING SIGNAGE

T100 HALF SIZE

NOTES:
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
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5/16/2023 2:45:47 PM 1:20 jstanton

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-22

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SCALE 20 10 0 20 40

SEE MATCHLEG TO LEFT

SEE MATCHLEG TO RIGHT

REMOVE EXISTING PAVEMENT MARKINGS

215' FROM STOP BAR

REMOVE EXISTING LANE MARKINGS

POLE MOUNT TO SIGNAL POLE

POLE MOUNT TO PEDESTRIAN SIGNAL

REMOVE EXISTING STOP BAR

REMOVE EXISTING STOP BAR

345' FROM STOP BAR

KANUGA RD

KANUGA RD

WILLOW RD

ISRAEL ST

Ecusta Trail

Kanuga Rd

NO MOTOR VEHICLES

HALF SIZE

38'

100'

300'

250'

175'

NOTES:

1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
2. PROPOSED SIGN LOCATIONS AND DISTANCES SHALL BE VERIFIED IN THE FIELD AND MAY BE REVISED BY THE ENGINEER IF OBSTRUCTIONS ARE PRESENT.
3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE
4. REMOVE AND DISPOSE OF EXISTING "STOP" AND "STREET NAME" SIGNS

FINAL PAVEMENT MARKING AND SIGNING DETAILS

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5/17/2023 11:06:32 AM 1:240 jstanton

5/14/99

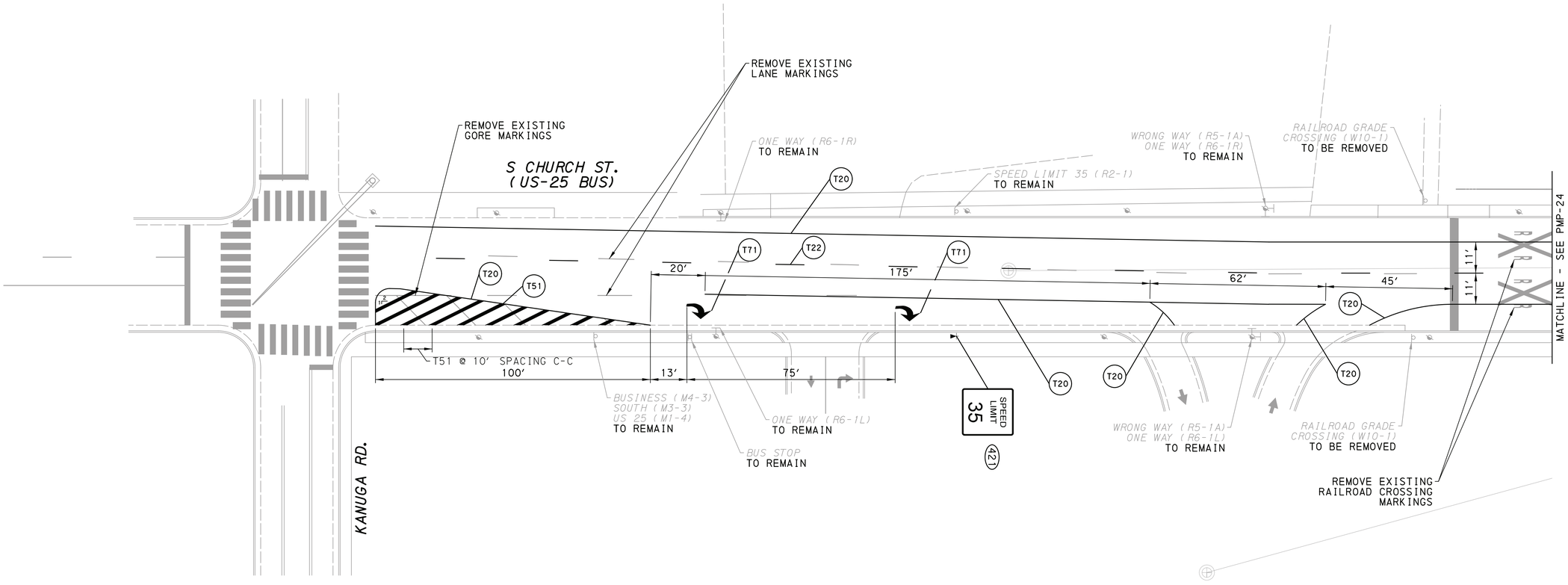
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-23

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE



NOTES:
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads S52)\Plan\plan21.dgn
5/16/2023 2:46:02 PM 1:20 jstanton

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-24

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40
SCALE

MATCHLINE - SEE PMP-23

REMOVE EXISTING RAILROAD CROSSING MARKINGS

REMOVE EXISTING PARKING MARKINGS

REMOVE EXISTING LANE MARKINGS

INSTALL FLEXIBLE DELINEATORS AT A FLARE RATE OF 8:1

S CHURCH ST. (US-25 BUS)

S MAIN ST.

S KING ST.

T51 @ 10' SPACING C-C

SEE RRFB DETAIL

HALF SIZE

REMOVE EXISTING LANE LINES

TIE INTO EXISTING PAV'T MARKINGS

TYPE III BARRICADE (SEE DETAIL)

TYPE III BARRICADE

2" MAX

6'

LEGEND: RED RETROREFLECTIVE SHEETING
BACKGROUND: WHITE RETROREFLECTIVE SHEETING

NOTES:
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

5/14/99
pw:\\tpd-pw.bentley.com:TPDProject-wise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan22.dgn
5/16/2023 2:46:03 PM 1:20 jstanton

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER M. B. SETZER 9/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-____

SEE SHEET 29 FOR -GREENWAY- PROFILE
SCALE 1"=50'

50 25 0 50 100
1" = 50'

NAD 83/2011

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

MATCH LINE -GREENWAY- STA. 23+00.00 SEE SHEET EC-2

BEGIN PROJECT ECUSTA TRAIL -GREENWAY- 10+95.00

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

GCE #01

DOUBLE ROW SILT FENCE UPSLOPE OF WATERWAY (TYP.)

MAINTAINED WOODY R/W

GREENWAY ROAD

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY
64.0 ACRES

DOUBLE ROW SILT FENCE (TYP.)

SPECIAL SEDIMENT CONTROL FENCE MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE (TYP.) SEE NOTE 5

TURBITITY CURTAIN L=42'

SPECIAL SEDIMENT CONTROL FENCE MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE (TYP.) SEE NOTE 5

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

DITCH 1B

DITCH 1C

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY
64.0 ACRES

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

DO NOT DISTURB WETLANDS

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE

DITCH MATTING NAG C25 OR APPROVED EQUAL (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

GCE #02

DITCH 1A

LIMITS OF DISTURBANCE = 34.5 ACRES

BATTLE CREEK ROAD

STEEP WOOD R/W

DETAIL DITCH 2
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 — Front Ditch Slope

Min. D= 1.3 Ft.

FROM STA. 14+70 RT TO STA. 18+50 RT

EROSION AND SEDIMENT CONTROL MEASURES

Bid No.	Description	Symbol
	Temporary Diversion	
	Temporary Silt Fence	
	Special Sediment Control Fence	
	Temporary Rock Silt Check Type-A	
	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
	Rock Pipe Inlet Sediment Trap Type-A	
	Rock Pipe Inlet Sediment Trap Type-B	
	Type A	
	Type B	
	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.
5. INSTALL & MAINTAIN PER MANUFACTURER'S RECOMMENDATIONS.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

4/14/2023 1:16:13 AM
...\Ecusta Trail\rdy_ec1.dgn
...\standards\...

8/17/99

REVISIONS

SEE SHEET 29 FOR
–GREENWAY– PROFILE

50 25 0 50 100
1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER M. B. SETZER 8/19/25

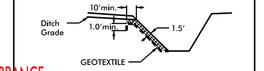
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON–2023–

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

NAD 83/2011

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 11 TONS,CL I Rip-Rap
Geotextile = 17sy
AT STA. 30+27.86 LT

LIMITS OF DISTURBANCE =
34.5 ACRES

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE (TYP.)

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE (TYP.)

PLACE SPECIAL SEDIMENT FENCE AT EDGE OF WATER

TOE PROTECTION RIP RAP (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY
64.0 ACRES

GCE #04

GCE #03

RETAIN

MATCH LINE –GREENWAY– STA 33+00.00 SEE SHEET EC-1

MATCH LINE –GREENWAY– STA 35+00.00 SEE SHEET EC-3

Y CURTAIN

AL SEDIMENT CONTROL FENCE
IZE IMPACT TO WETLANDS. PLACE
ROW OF SILT FENCE 3' FROM
SLOPE (TYP.)
5

CL I RIP RAP
EQUIT TONS
EQ22 SYGF

100' Claimed Railroad ROW
As Per Railroad Val Map 49-2

DITCH 04

DITCH 05

050

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

LIMITS OF DISTURBANCE =
34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY
64.0 ACRES

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

HUNTERS GLEN LANE

VOT
'S
IDS

EROSION AND SEDIMENT CONTROL MEASURES

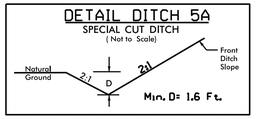
Std.#	Description	Symbol
1630.01	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1622.01	Temporary Rock Silt Check Type-'A'	
1622.02	Temporary Rock Silt Check Type-'B'	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.04	Rock Pipe Inlet Sediment Trap Type-'A'	
1630.05	Rock Pipe Inlet Sediment Trap Type-'B'	
1630.01	Type A	A
1630.03	Type B	B
1630.05	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

NPDES BOUNDARY LIMITS
LIMITS OF DISTURBANCE
TOE PROTECTION RIP RAP
ROCK PLATING (SEE SHT 3A-1)
DITCH MATTING
SLOPE MATTING
ROCK OUTLET PROTECTION
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
JUNCTION BOX w/ MANHOLE LID
CATCH BASIN

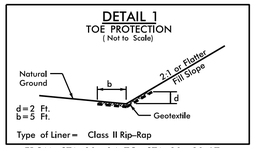
NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

DETAIL DITCH 5A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 29+00 RT TO STA. 30+32 RT

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = Class II Rip-Rap

FROM STA. 30+34 TO STA. 30+80 LT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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User:kwells

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17395 ENGINEER J. B. SETZER 08/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEETS 29 AND 30 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

TOE PROTECTION RIP RAP

35 40 45

MATCH LINE –GREENWAY– STA 48+00.00 SEE SHEET EC-4

MATCH LINE –GREENWAY– STA 43+00.00 SEE SHEET EC-2

PLACE SPECIAL SEDIMENT FENCE AT EDGE OF WATER

PLACE SPECIAL SEDIMENT FENCE AT EDGE OF WATER

TOE PROTECTION RIP RAP (TYP.)

SEE PLAN SHEET 2A-1 FOR ROCK PLATING DETAIL

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

100' Claimed Railroad ROW Per Railroad Val Map 49-2

CL B RIP RAP EST 5 TONS EST 16 SYGF

S 68°22'19.3" E

S 74°46'41.8" E

–GREENWAY–

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

DITCH 6A

DITCH 6B

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE

LIMITS OF DISTURBANCE = 34.5 ACRES

DETA
SPECIAL
(Not

Natural Ground

EROSION AND SEDIMENT CONTROL MEASURES

Ref. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1632.01	Temporary Rock Silt Check Type-A	
1632.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1638.01	Rock Pipe Inlet Sediment Trap Type-A	
1638.02	Rock Pipe Inlet Sediment Trap Type-B	
1639.01	Type A	
1639.02	Type B	
1639.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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jlewis

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER
10 Setzer 04/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

SEE SHEET 30 FOR -GREENWAY- PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS
8/17/99

MATCH LINE -GREENWAY- STA. 48+00.00 SEE SHEET EC-3

MATCH LINE -GREENWAY- STA. 61+00.00 SEE SHEET EC-5

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

SPECIAL SILT FENCE (TYP.)

SEE PLAN SHEET 2A-1 FOR ROCK PLATING DETAIL

DOUBLE SILT FENCE (TYP.)

TURBITITY CURTAIN L = 40'

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

GCE #06

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

TURBITITY CURTAIN L = 40'

TOE PROTECTION RIP RAP (TYP.)

100' Claimed Railroad ROW As Per Railroad Val Map 19-2

S 44° 11' 31.8" E

S 53° 14' 33.9" E

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

-GREENWAY-

DITCH 05

DITCH 06

DITCH 7

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

GCE #05

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

TOE PROTECTION RIP RAP

EROSION AND SEDIMENT CONTROL MEASURES

Symbols	Description
MM.MM	Temporary Diversion
MM.MM	Temporary Silt Fence
MM.MM	Special Sediment Control Fence
MM.MM	Temporary Rock Silt Check Type-A
MM.MM	Temporary Rock Silt Check Type-B
	Wattle/Coir Fiber Wattle
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)
MM.MM	Rock Pipe Inlet Sediment Trap Type-A
MM.MM	Rock Pipe Inlet Sediment Trap Type-B
MM.MM	Type A
MM.MM	Type B
MM.MM	Type C

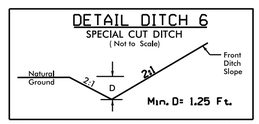
EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION. THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

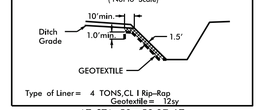
TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.

DETAIL DITCH 6
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 49+30 RT TO STA. 53+00 RT

DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 4 TONS,CL I Rip-Rap
Geotextile= 12sy
AT STA. 59+59.27 LT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER M. B. SETZER — 8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-____

SEE SHEETS 30 AND 31 FOR -GREENWAY- PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS 8/17/99

60 65 70

TURBITITY CURTAIN L=40'

TOE PROTECTION RIP RAP (TYP.)

SEE SHEET EC-4

STA. 61+00.00

DOUBLE ROW SILT FENCE (TYP.)

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

TOE PROTECTION RIP RAP (TYP.)

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

S 59° 22' 49.8" E

080

DITCH 09

DITCH 10

GREENWAY

SOIL STOCKPILE

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE

MINIMIZE IMPACT TO WETLANDS. PLACE DOUBLE ROW OF SILT FENCE 3' FROM TOE OF SLOPE

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

MATCH LINE -GREENWAY- STA. 63+81.00

MATCH LINE -GREENWAY- STA. 73+00.00

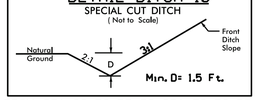
SEE SHEET EC-6

TURBIDIT CURTAIN

STABILIZE F TO DIVERT WATER TO CHANNEL.

LIMITS OF DISTURBANCE = 34.5 ACRES

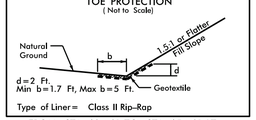
DETAIL DITCH 10
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 69+50 RT TO STA. 72+50 RT

TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner= Class II Rip-Rap

FROM STA. 63+81 TO STA. 65+31 LT
FROM STA. 66+55 TO STA. 67+00 LT
FROM STA. 69+74 TO STA. 71+19 LT

EROSION AND SEDIMENT CONTROL MEASURES

Ref. Number	Description	Symbol
1605.01	Temporary Diversion	
1605.02	Temporary Silt Fence	
1605.03	Special Sediment Control Fence	
1605.04	Temporary Rock Silt Check Type-A	
1605.05	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Type A	
1630.03	Type B	
1630.05	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

NPDES BOUNDARY LIMITS
LIMITS OF DISTURBANCE
TOE PROTECTION RIP RAP
ROCK PLATING (SEE SHT EC-31)
DITCH MATTING
SLOPE MATTING
ROCK OUTLET PROTECTION
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
JUNCTION BOX or MANHOLE I.D.
CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/17/99

REVISIONS

NOTE:
1. ACCESS TO BRIDGE #12 EAST ABUTMENT IS FROM GC #07.
2. ACCESS TO BRIDGE #12 WEST ABUTMENT IS FROM GC #06.
3. SEE PLAN SHT EC-31 FOR TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE

SEE SHEET 31 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER 4/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

75 80 85

MATCH LINE -GREENWAY- STA.73+00.00 SEE SHEET EC-5

MATCH LINE -GREENWAY- STA.86+00.00 SEE SHEET EC-7

TURBIDITY CURTAIN

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

68' Claimed Railroad ROW As Per Railroad Val Map 49-2

100' Claimed Railroad ROW As Per Railroad Val Map 49-2

OLD HOMESTEAD ROAD

GCE #08

LIMITS OF DISTURBANCE = 34.5 ACRES

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

TOE PROTECTION RIP RAP (TYP.)

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

-GREENWAY- +20.00 EX. R/W 60.00'

-GREENWAY- +70.00 EX. R/W 60.00'

GCE #07

STABILIZE PRIOR TO DIVERTING WATER TO NEW CHANNEL.

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

TOE PROTECTION RIP RAP

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1605.01	Temporary Diversion	
1606.01	Temporary Silt Fence	
1607.01	Special Sediment Control Fence	
1622.01	Temporary Rock Silt Check Type-A	
1622.01	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.01	Rock Pipe Inlet Sediment Trap Type-B	
1630.01	Type A	A
1630.01	Type B	B
1630.01	Type C	C

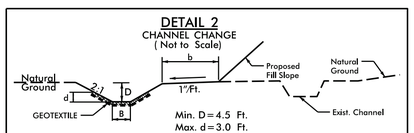
EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 38-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ RAISING LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION. THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.

DETAIL 2
CHANNEL CHANGE
(Not to Scale)

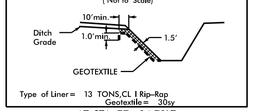


Min. D=4.5 Ft.
Max. d=3.0 Ft.
B=5 Ft.
b=Varies.

Type of Liner= Class II Riprap

FROM STA.73+00.89 RT TO STA.74+10.36 RT

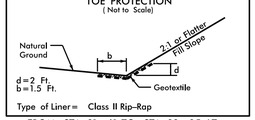
DETAIL 3
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 13 TONS,CL I Rip-Rap
Geotextile= 30sy

AT STA. 77+94.70LT

DETAIL 1
TOE PROTECTION
(Not to Scale)



d=2 Ft.
b=1.5 Ft.

Type of Liner= Class II Rip-Rap

FROM STA. 81+61 TO STA. 82+25 LT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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jeerskine

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETTZER 4/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

SEE SHEETS 31 AND 32 FOR -GREENWAY- PROFILE

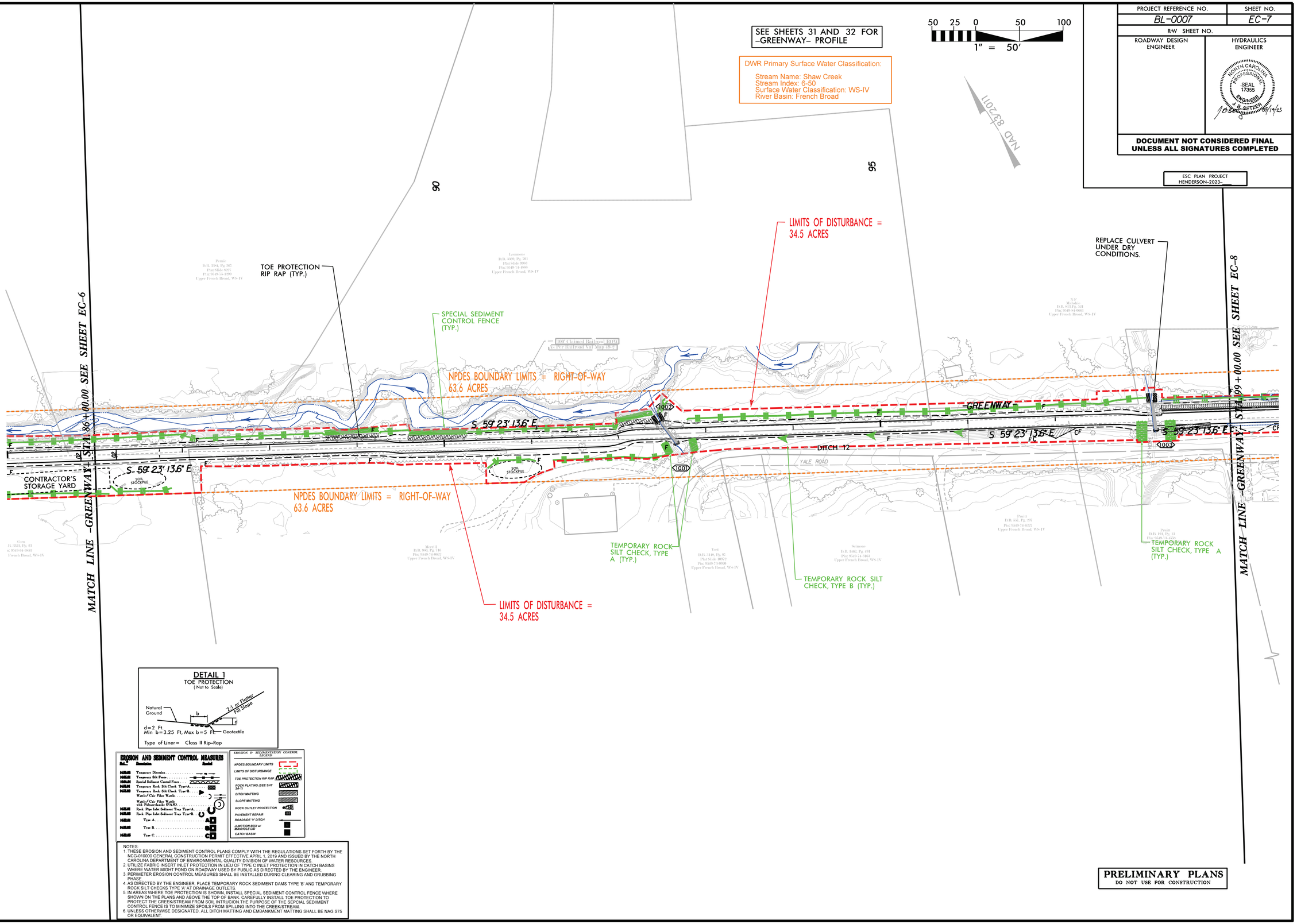
DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS 8/17/99



DETAIL 1
TOE PROTECTION
(Not to Scale)

Type of Liner = Class II Rip-Rap

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1630.01	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1628.01	Temporary Rock Silt Check Type-A	
1628.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.04	Type A	A
1630.03	Type B	B
1630.05	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

NPDES BOUNDARY LIMITS
LIMITS OF DISTURBANCE
TOE PROTECTION RIP RAP
ROCK PLATING (SEE SHT 2A-1)
DITCH MATTING
SLOPE MATTING
ROCK OUTLET PROTECTION
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
JUNCTION BOX w/ MANHOLE LID
CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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lkendrick

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER W. B. SETZER 10/19/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

50 25 0 50 100
1" = 50'

SEE SHEET 32 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

NAD 83/2011

100 105 110

MATCH LINE –GREENWAY– STA. 99+00.00 SEE SHEET EC-7

MATCH LINE –GREENWAY– STA. 111+00.00 SEE SHEET EC-9

CULVERT DRY IONS.

TOE PROTECTION RIP RAP (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

GCE #09

GCE #10

GCE #2

YALE ROAD

S 59°23'13.6" E

S 52°36'48.1" E

GREENWAY

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

DITCH 14

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

100' Clairmont Railroad ROW
N/F Norfolk Southern Railroad Co.

Blackwell D.B. 934, Pg. 671 Plat 9549-94-6096 Upper French Broad, WS-IV

Pruitt D.B. 191, Pg. 33 Plat 9549-94-6096 Upper French Broad, WS-IV

Flecker D.B. 1321, Pg. 580 Plat 9549-74-9999 Upper French Broad, WS-IV

N/F Schaeffer D.B. 736, Pg. 919 Plat 9549-85-2933 Upper French Broad, WS-IV

N/F Schaeffer D.B. 839, Pg. 47 Plat 9549-93-8066 Upper French Broad, WS-IV

Childs D.B. 909, Pg. 481 Plat 9549-95-9999 Upper French Broad, WS-IV

DETAIL DITCH 16
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 — Front Ditch Slope

Min. D= 2 Ft.

FROM STA. 109+75 RT TO STA. 111+50 RT

DETAIL DITCH 14
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 — Front Ditch Slope

Min. D= 2 Ft.

FROM STA. 103+50 RT TO STA. 107+00 RT

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1605.01	Temporary Diversion	
1606.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1630.01	Temporary Rock Silt Check Type-A	
1630.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1632.01	Rock Pipe Inlet Sediment Trap Type-A	A
1632.02	Rock Pipe Inlet Sediment Trap Type-B	C
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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tjeardwells

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER
8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEETS 32 AND 33 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

REVISIONS 8/17/99

115 120

MATCH LINE –GREENWAY– STA. 111+00.00 SEE SHEET EC-8

MATCH LINE –GREENWAY– STA. 124+00.00 SEE SHEET EC-10

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

TOE PROTECTION RIP RAP (TYP.)

TURBIDITY CURTAIN L = 92'

10' Claimed Railroad ROW As Per Railroad Val Map 40-5

S 52° 42' 45.8" E

S 50° 17' 03.8" E

REMOVE

GREENWAY –C–

DITCH 17A

DITCH 18A

DITCH 18B

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

TEMPORARY HIGH VISIBILTY CONSTRUCTION FENCE

TOE PROTECTION RIP RAP

DITCH 17

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 536
Pin: 9549-93-1931
Upper French Broad, WS-IV

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 678
Plat Cab. A, Slide 536
Pin: 9549-93-7365
Upper French Broad, WS-IV

Childs
D.B. 909, Pg. 461
Pin: 9549-93-0990
Upper French Broad, WS-IV

EROSION AND SEDIMENT CONTROL MEASURES

Ref. #	Description	Symbol
1630.05	Temporary Diversion	
1606.01	Temporary Silt Fence	
1606.04	Special Sediment Control Fence	
1630.01	Temporary Rock Silt Check Type'A'	
1630.03	Temporary Rock Silt Check Type'B'	
	Wattle/ Coir Fiber Wattle	
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type'A'	
1630.03	Rock Pipe Inlet Sediment Trap Type'B'	
1630.01	Type A	A
1630.03	Type B	B
1630.05	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANGOLE LID
- CATCH BASIN

NOTES:
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2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER MARK B. SETZER 10/19/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEET 33 FOR -GREENWAY- PROFILE

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

MATCH LINE -GREENWAY- STA.137+40.00 SEE SHEET EC-11

MATCH LINE -GREENWAY- STA.124+00.00 SEE SHEET EC-9

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

TOE PROTECTION RIP RAP (TYP.)

TURBIDITY CURTAIN L = 40'

TURBIDITY CURTAIN

GCE #12

GCE #11

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

S 50° 11' 03.8" E

S 59° 30' 08.1" E

S 66° 01' 27.2" E

S 86° 44' 32.3" E

DITCH 18

DITCH 19

SOIL STOCKPILE

100' Claimed Railroad ROW As Per Railroad Val Map 88-2

50' Claimed Railroad ROW As Per Railroad Val Map 88-2

BRIGHTWATER DR.

TURNER ALLS RD

Tract One: Brightwater Road Estate Investments, LLC D.B. 1301, Pg. 829 Plat Cab. L, Sld. 286 Pin: 9648-90-7383 Upper French Broad, WS-IV

Child D.B. 909, Pg. 161 Pin: 9648-87-9990 Upper French Broad, WS-IV

Brown D.B. 1390, Pg. 172 Pin: 9639-80-1697 Upper French Broad, WS-IV

Reinsell D.B. 1573, Pg. 485 Pin: 9639-80-3641 Upper French Broad, WS-IV

Rossiter D.B. 486, Pg. 499 Pin: 9639-87-7553 Upper French Broad, WS-IV

Rossiter D.B. 486, Pg. 498 Pin: 9639-87-9751 Upper French Broad, WS-IV

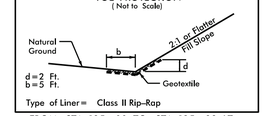
Murphy D.B. 560, Pg. 301 Pin: 9639-87-1187 Upper French Broad, WS-IV

HD Bolen D.B. 1885, Pg. 389 Plat Slide 9107 Pin: 9649-90-9413 Upper French Broad, WS-IV

Andres D.B. 985, Pg. 33 Pin: 9649-10-8357 Upper French Broad, WS-IV

TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



d = 2 Ft.
b = 5 Ft.
Type of Liner = Class II Rip-Rap
FROM STA. 125+00 TO STA. 125+98 LT

EROSION AND SEDIMENT CONTROL MEASURES

Ref. Standard		Symbol
1605.01	Temporary Diversion	
1605.02	Temporary Silt Fence	
1605.03	Special Sediment Control Fence	
1622.01	Temporary Rock Silt Check Type-A	
1622.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

NPDES BOUNDARY LIMITS
LIMITS OF DISTURBANCE
TOE PROTECTION RIP RAP
ROCK PLATING (SEE SHT 2A-1)
DITCH MATTING
SLOPE MATTING
ROCK OUTLET PROTECTION
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
JUNCTION BOX w/ BAMHOLE LID
CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER K. D. SETTLES 8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEETS 33 AND 34 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

REVISIONS

8/17/99

MATCH LINE –GREENWAY– STA. 137+00.00 SEE SHEET EC-10

MATCH LINE –GREENWAY– STA. 149+00.00 SEE SHEET EC-12

140

145

PLACE SPECIAL SEDIMENT FENCE AT EDGE OF WATER

TOE PROTECTION RIP RAP (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

DITCH 20

LANDIA DRIVE

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

LIMITS OF DISTURBANCE = 34.5 ACRES

1303

1302

1401

1402

NV=2+7.30

Anders
D.B. 969, Pg. 51
Plat 9559-11-1751
Upper French Broad, WS-IV

Green
D.B. 1074, Pg. 891
Plat 9659-11-3608
Upper French Broad, WS-IV

Pickelsimer
D.B. 1109, Pg. 1897
Plat Cab. C, Slide 1453
Plat 9559-12-1566

Upper French Broad, WS-IV

Tipton
D.B. 1268, Pg. 305
Plat 9559-12-3383
Upper French Broad, WS-IV

Spikeward
D.B. 1250, Pg. 190
Plat Cab. C, Slide 303
Plat 9559-12-3383
Upper French Broad, WS-IV

Hart
D.B. 1290, Pg. 271
Plat Cab. C, Slide 303
Plat 9559-12-3383
Upper French Broad, WS-IV

Callahan
D.B. 1309, Pg. 21
Plat Cab. C, Slide 303
Plat 9559-12-1167
Upper French Broad, WS-IV

Kerr
D.B. 1407, Pg. 675
Plat Cab. C, Slide 303
Plat 9559-12-0726
Upper French Broad, WS-IV

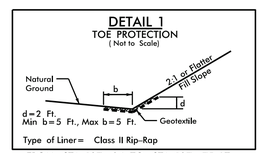
WXZ SG Aquisition LLC
D.B. 1374, Pg. 197
Plat Slide 9334
Plat 9559-01-7756
Upper French Broad, WS-IV

JT United Business R&W
D.B. 1, Pg. 1
Plat Cab. C, Slide 303
Plat 9559-12-1167
Upper French Broad, WS-IV

WXZ SG Aquisition LLC
D.B. 1374, Pg. 197
Plat Slide 9334
Plat 9559-01-7756
Upper French Broad, WS-IV

TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner= Class II Rip-Rap

FROM STA. 137+24 TO STA. 137+75 LT
FROM STA. 138+85 TO STA. 139+75 LT

EROSION AND SEDIMENT CONTROL MEASURES

Ref.#	Description	Symbol
N/A.01	Temporary Diversion	
N/A.02	Temporary Silt Fence	
N/A.04	Special Sediment Control Fence	
N/A.05	Temporary Rock Silt Check Type-A	
N/A.06	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
N/A.07	Rock Pipe Inlet Sediment Trap Type-A	
N/A.08	Rock Pipe Inlet Sediment Trap Type-B	
N/A.09	Type A	
N/A.10	Type B	
N/A.11	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SITTLER 8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

SEE SHEET 34 FOR –GREENWAY– PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS 8/17/99

MATCH LINE –GREENWAY– STA. 149+00.00 SEE SHEET EC-11

MATCH LINE –GREENWAY– STA. 162+00.00 SEE SHEET EC-13

150 155 160

LIMITS OF DISTURBANCE = 34.5 ACRES

DOUBLE ROW OF SILT FENCE (TYP.)

TOE PROTECTION RIP RAP (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

TURBIDITY CURTAIN L = 52'

ROCK PLATING & ROCK EMBANKMENT SEE PLAN, SHT 2A-1 FOR DETAIL

SLOPE MATTING NAG S-75 OR EQUIVALENT (TYP.)

DITCH 21

DITCH 22

SOIL STOCKPILE

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

REMOVE &

TEMPORARY SILT CHECK, TYPE A (TYP.)

75' Claimed Railroad ROW As Per Railroad Val Map BP-3 & Blue Ridge Southern Railroad

WXZ-SG Aquisition LLC D.B. 1873, Pg. 597 Plat Slide 8234 Pin: 9539-51-7256 Upper French Broad, WS-IV

Valles D.B.1913, Pg. 657 Pin: 9539-51-9236

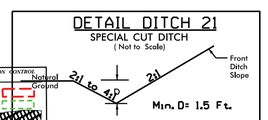
Dick D.B.1873, Pg. 450 Pin:9539-50-1199 Upper French Broad, WS-IV

McCarty D.B. 1727, Pg. 365 Pin: 9539-50-1001 Upper French Broad, WS-IV

McCarty D.B. 1555, Pg. 548 Pin: 9539-50-1001 Upper French Broad, WS-IV

WXZ-SG Aquisition LLC D.B. 1873, Pg. 597 Plat Slide 8234 Pin: 9539-51-7256 Upper French Broad, WS-IV

DETAIL DITCH 21
SPECIAL CUT DITCH
(Not to Scale)



STA. 152+50 RT TO STA. 153+40 RT

EROSION AND SEDIMENT CONTROL MEASURES

Pay Item	Description	Symbol
1630.05	Temporary Diversion	
1640.01	Temporary Silt Fence	
1640.02	Special Sediment Control Fence	
1632.01	Temporary Rock Silt Check Type-A	
1632.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1638.01	Rock Pipe Inlet Sediment Trap Type-A	
1638.02	Rock Pipe Inlet Sediment Trap Type-B	
1631.04	Type A	
1631.03	Type B	
1631.05	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

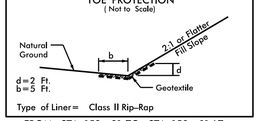
- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION. THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

TURBIDITY CURTAIN NOTES:
1. EXTEND TURBIDITY BARRIER TO THE ENTIRE DEPTH OF THE BODY OF WATER.
2. AN ANCHORING PLAN SHOULD BE DEVELOPED PRIOR TO DEPLOYING THE CURTAIN WITH DUE CONSIDERATION TO THE DESIRED SHAPE AND ANTICIPATED CURRENT, AND VARYING SURFACES.
3. SECURE THE TURBIDITY CURTAIN BETWEEN STAKES ON OPPOSING SHORELINES. PROVIDE DEAD WEIGHT ANCHOR IF NEEDED TO WEIGH DOWN ANCHORS.
4. ORIENT TURBIDITY CURTAN PARALLEL TO FLOW.

TOE PROTECTION RIP RAP

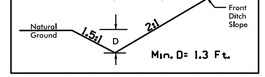
DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner= Class II Rip-Rap

FROM STA. 152+21 TO STA. 153+01 LT

DETAIL DITCH 22
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 161+50 RT TO STA. 163+00 RT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER 10/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-_

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEETS 34 AND 35 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

REVISIONS

8/17/99

MATCH LINE –GREENWAY– STA. 162+00.00 SEE SHEET EC-12

MATCH LINE –GREENWAY– STA. 175+00.00 SEE SHEET EC-14

165

170

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

SLOPE MATTING NAG S-75 OR EQUIVALENT (TYP.)

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

S 74° 34' 11.5" E

GREENWAY

DITCH 23

DITCH 23A

DITCH 23B

DITCH 24

DITCH 25

DITCH 26

BONAIRE DRIVE

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.) INSTALL IN EX. DITCH DURING C&G PHASE.

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

100' Claimed Railroad ROW As Per Railroad Val Map 18-1

75' Claimed Railroad ROW As Per Railroad Val Map 18-1 & Blue Ridge Southern Railroad

Gurza D.B. 3064, Pg. 339 Plat 9539-35-6881 Upper French Broad, WS-IV

Pereira D.B. 3341, Pg. 483 Plat Slide 11857 Pin: 9529-31-9991 Upper French Broad, WS-IV

Bright-Wood D.B. 3338, Pg. 131 Plat Slide 11795 Pin: 9529-42-3676 Upper French Broad, WS-IV

Alvarez & Barrera D.B. 3332, Pg. 490 Pin: 9529-41-5245 Upper French Broad, WS-IV

N/F Dowling D.B. 106, Pg. 372 Pin: 9529-41-6692 Upper French Broad, WS-IV

Tract Three Mc Clure D.B. 3475, Pg. 59 Plat Slide 11857 Pin: 9529-31-2983 Upper French Broad, WS-IV

Tract Two Goodrich D.B. 983, Pg. 458 Upper French Broad, WS-IV

Tract Three Sevens D.B. 3874, Pg. 456 Plat Cab. A, Sl. 122 Pin: 9529-20-9431 Upper French Broad, WS-IV

Allen D.B. 1843, Pg. 39 Plat Slide 11298 Pin: 9529-41-1478 Upper French Broad, WS-IV

Barnwell D.B. 3380, Pg. 286 Pin: 9529-41-7814 Upper French Broad, WS-IV

N/F Dowling D.B. 106, Pg. 372 Pin: 9529-41-6692 Upper French Broad, WS-IV

Dowling D.B. 4332, Pg. 655 Plat Slide 11811 Upper French Broad, WS-IV

Dowling D.B. 106, Pg. 372 Pin: 9529-41-6692 Upper French Broad, WS-IV

Dowling Plat Slide 11111 Pin: 9529-41-5550 Upper French Broad, WS-IV (100' Widened to 30' On This Parcel As Per Plat Slide 11111)

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1630.01	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1632.01	Temporary Rock Silt Check Type-A	
1632.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.04	Rock Pipe Inlet Sediment Trap Type-A	
1630.05	Rock Pipe Inlet Sediment Trap Type-B	
1630.01	Type A	
1630.02	Type B	
1630.03	Type C	

DETAIL DITCH 22
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 1.5d, D, 2d, Front Ditch Slope

Min. D= 1.3 Ft.

FROM STA. 161+50 RT TO STA. 163+00 RT

DETAIL DITCH 23
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground, 1.5d, D, 2d, Front Ditch Slope

Min. D= 1.2 Ft.

FROM STA. 163+00 RT TO STA. 165+40 RT

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- RIPRAP OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN

NOTES:
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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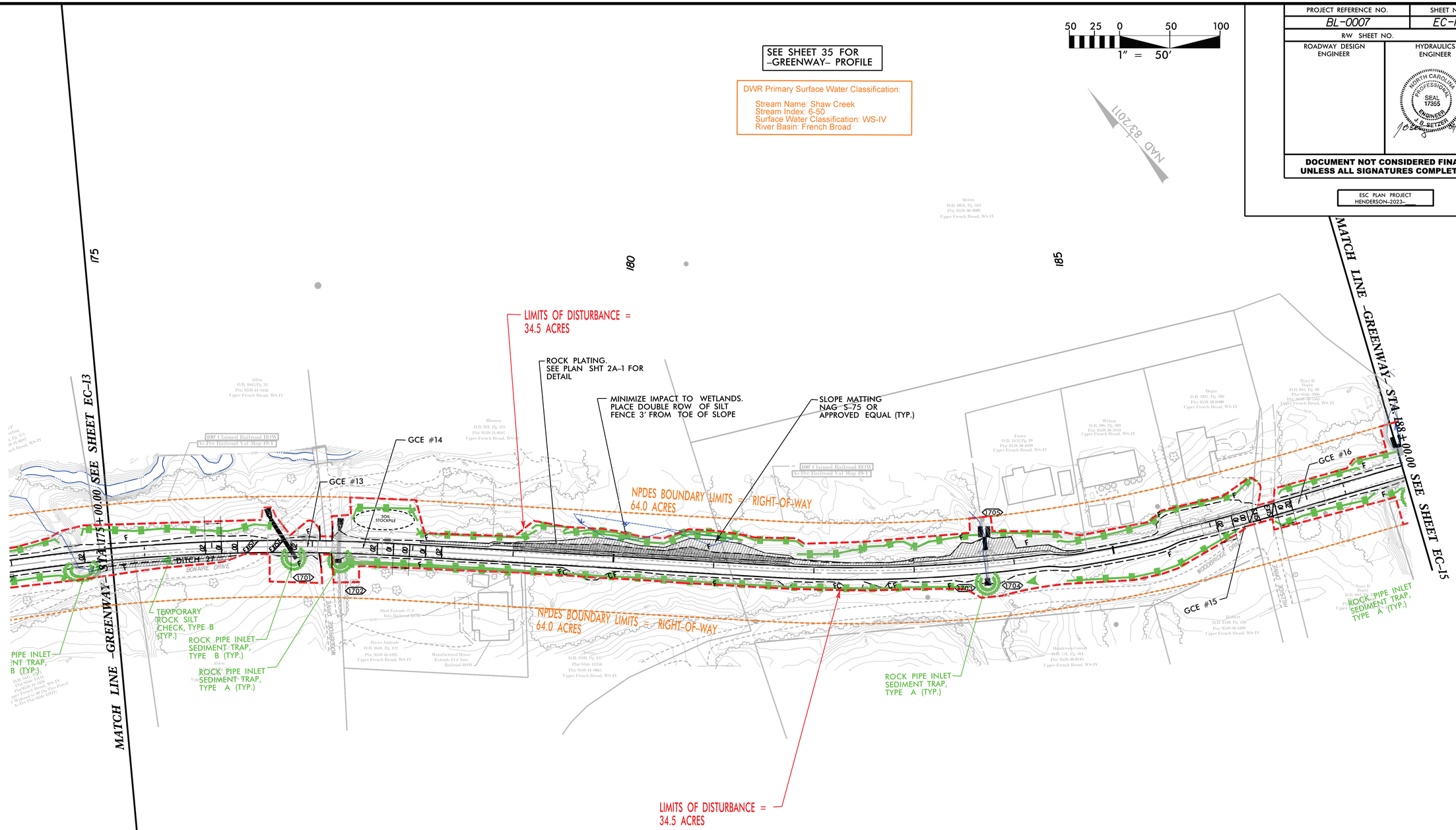
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER 8/19/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-



EROSION AND SEDIMENT CONTROL MEASURES

Sub-Item	Description	Symbol
1632.05	Temporary Diversion	
1632.01	Temporary Silt Fence	
1632.01	Special Sediment Control Fence	
1632.02	Temporary Rock Silt Check Type-A	
1632.02	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1632.01	Rock Pipe Inlet Sediment Trap Type-A	
1632.01	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.01	Type B	B
1632.01	Type C	C

NPDES BOUNDARY LIMITS	
LIMITS OF DISTURBANCE	
TOE PROTECTION RIP RAP	
ROCK PLATING (SEE SHT 2A-1)	
DITCH MATTING	
SLOPE MATTING	
ROCK OUTLET PROTECTION	
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	

NOTES:
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

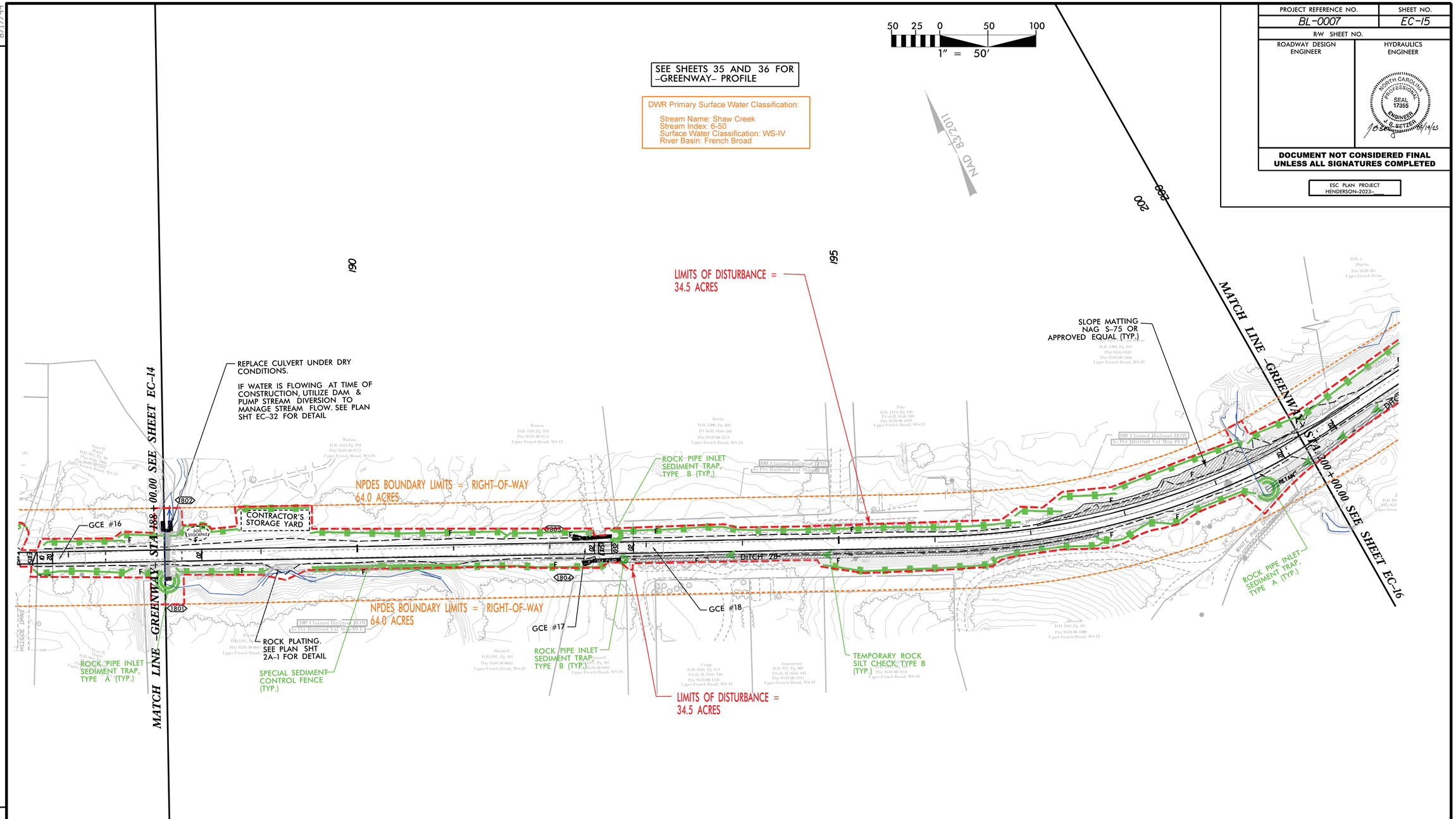
NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

REVISIONS

8/17/99



EROSION AND SEDIMENT CONTROL MEASURES		
Ref.	Description	Symbol
1630.05	Temporary Diversion	
1630.01	Temporary Silt Fence	
1630.01	Special Sediment Control Fence	
1630.01	Temporary Rock Silt Check Type-A	
1630.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.02	Rock Pipe Inlet Sediment Trap Type-B	
1630.01	Type A	
1630.02	Type B	
1630.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND	
NPDES BOUNDARY LIMITS	
LIMITS OF DISTURBANCE	
TOE PROTECTION RIP RAP	
ROCK PLATING (SEE SHT 2A-1)	
DITCH MATTING	
SLOPE MATTING	
ROCK OUTLET PROTECTION	
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
JUNCTION BOX w/ MANHOLE LID	

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
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6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. S. SETZER
8/19/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEET 36 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad

205

210

200

LIMITS OF DISTURBANCE = 34.5 ACRES

SLOPE MATTING NAG S-75 OR APPROVED EQUAL (TYP.)

GCE #20

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

100' Claimed Railroad ROW As Per Railroad Val Map-PG 1

GCE #19

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

S 63° 36' 33.0" E

DITCH 32A2

DITCH 32A1

DITCH 32B

DITCH 33

DITCH 31

DITCH 30

DITCH 29

18" RCP-IV

REMOVE & REPLACE

REMOVE & REPLACE

-GREENWAY-

WHITE PINE DRIVE

100' Claimed Railroad ROW As Per Railroad Val Map-PG 1

Shaws Creek Farm HOA D.B. 1319, Pg. 439 Plat Slide-9726 Pin: 9559-78-7218 Upper French Broad, WS-IV

Shaws Creek Park HOA D.B. 1319, Pg. 439 Plat Slide-9726 Pin: 9559-79-7557 Upper French Broad, WS-IV

Scott & Berra D.B. 1657, Pg. 375 Plat Slide-5638 Pin: 9559-59-9431 Upper French Broad, WS-IV

Gillespie D.B. 1835, Pg. 47 Pin: 9559-59-0055 Upper French Broad, WS-IV

Still D.B. 1647, Pg. 495 Plat Slide-3096 Pin: 9559-79-3939 Upper French Broad, WS-IV

Cain D.B. 3895, Pg. 839 Pin: 9559-79-9000

Bishop D.B. 1110, Pg. 65 Pin: 9559-79-9957

Corbin D.B. 296, Pg. 197 Pin: 9559-78-9856

Trust Two Gunn Property Management LLC D.B. 1965, Pg. 354 Pin: 9558-98-1838

Building Extends 22.8' Into Railroad ROW

Building Extends 22.8' Into Railroad ROW

Building Extends 22.8' Into Railroad ROW

Trust Two Gunn Property Management LLC D.B. 1965, Pg. 354 Pin: 9558-98-1966

Pfister D.B. 900, Pg. 685 PIN: 9559-60-9045 Upper French Broad, WS-IV

MATCH LINE -GREENWAY- STA. 200+00.00 SEE SHEET EC-15

MATCH LINE -GREENWAY- STA. 214+00.00 SEE SHEET EC-17

PIPE INLET SENT TRAP, A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

DETAIL DITCH 32A2
SPECIAL CUT DITCH
(Not to Scale)



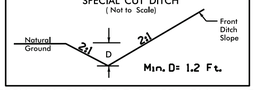
FROM STA. 204+90 LT TO STA. 208+50 LT

DETAIL DITCH 32A1
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 208+50 LT TO STA. 210+00 LT

DETAIL DITCH 33
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 212+00 LT TO STA. 214+92 LT

EROSION AND SEDIMENT CONTROL MEASURES

Bid No.	Description	Symbol
NBMS	Temporary Diversion	
NBMS	Temporary Silt Fence	
NBMS	Special Sediment Control Fence	
NBMS	Temporary Rock Silt Check Type-A	
NBMS	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
NBMS	Rock Pipe Inlet Sediment Trap Type-A	
NBMS	Rock Pipe Inlet Sediment Trap Type-B	
NBMS	Type A	
NBMS	Type B	
NBMS	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER 04/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

REVISIONS 8/17/99

SEE SHEETS 36 AND 37 FOR -GREENWAY- PROFILE

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

220 225

SEE SHEET EC-16

STA. 214+00.00 MATCH LINE -GREENWAY-

STA. 227+00.00 SEE SHEET EC-18

MATCH LINE -GREENWAY- STA. 227+00.00

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

ROCK INLT SEDIMENT TRAP, TYPE C (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

GCE #21

GCE #22

DITCH 36

DITCH 33

DITCH 34

DITCH 37

DITCH 35

DITCH 38

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

18" RCP III

DI-2007

DI-2006

DI-2011

DI-2010

GRED IL-2

100' Claimed Railroad ROW As Per Railroad Val Map 49-1

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

McKibbin D.B. 1403, Pg. 651 Plat: 9558-98-5729

McKibbin D.B. 916, Pg. 180 Plat: 9558-98-8190

McKibbin D.B. 916, Pg. 181 Plat: 9558-98-3940

Barbour Threads Inc D.B. 920, Pg. 488 Plat: 9558-99-1351

TroyOne Grim Property Management D.B. 1063, Pg. 357 Plat: 9558-98-1896

Building Exploits Inc Into Railroad D.B.

LHH Properties LLC D.B. 1372, Pg. 314 Plat: 9558-98-8765

Miller D.B. 1646, Pg. 796 Plat: 9558-99-2750

LHH Properties D.B. 1594, Pg. 649 Plat: 9558-98-4588

LHH Properties D.B. 1165, Pg. 545 Plat: 9558-98-3681

Hoom 1648 Pg. 32 Plat: 9558-99-5585

Tract 1 Brown D.B. 1884, Pg. 343 Plat: 9558-99-1410 Plat Slide: 2720

Lot 2 Brown D.B. 1884, Pg. 343 Plat: 9558-99-1410 Plat Slide: 2720

Parbour Threads Inc D.B. 938 Pg. 110 Plat: 9558-99-1351

Parker D.B. 698, Pg. 385 Plat Cab. H, Slide 46 Plat: 9558-88-8056

Lots 11, 12, 13, 14 Hill D.B. 1032, Pg. 160 Plat Cab. H, Slide 46 Plat: 9558-98-0921

Lots 15,16,17, 18, 19, 20 Parker D.B. 698, Pg. 385 Plat Cab. H, Slide 46 Plat: 9558-88-8056

EROSION AND SEDIMENT CONTROL MEASURES

Ref.	Symbol	Symbol
MEASURES	Temporary Diversion	
MEASURES	Temporary Silt Fence	
MEASURES	Special Sediment Control Fence	
MEASURES	Temporary Rock Silt Check Type-A	
MEASURES	Temporary Rock Silt Check Type-B	
MEASURES	Wattle/Coir Fiber Wattle	
MEASURES	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
MEASURES	Rock Pipe Inlet Sediment Trap Type-A	
MEASURES	Rock Pipe Inlet Sediment Trap Type-B	
MEASURES	Type A	
MEASURES	Type B	
MEASURES	Type C	

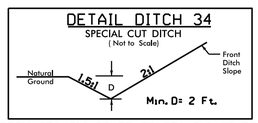
EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-C)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION.THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

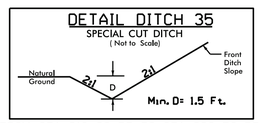
DETAIL DITCH 33
SPECIAL CUT DITCH

DETAIL DITCH 34
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 216+00 RT TO STA. 218+00 RT

DETAIL DITCH 35
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 218+20 RT TO STA. 223+50 RT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. S. SETZER 10/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-____

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEET 37 FOR –GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

REVISIONS
8/17/99

MATCH LINE –GREENWAY– STA. 227+00.00 SEE SHEET EC-17

MATCH LINE –GREENWAY– STA. 240+00.00 SEE SHEET EC-19

230 235 240 240

REPLACE CULVERT UNDER DRY CONDITIONS.

IF WATER IS FLOWING AT TIME OF CONSTRUCTION, UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-324 FOR DETAIL

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

DITCH 39 | DITCH 40 | DITCH 41

GREU TL-2

GCE #24

2101 2102 2103 2104 2105 2106 2107 2108 2109 2110 2111

RHODODENDRON DRIVE | ARBUTUS LANE | CRYSTAL SPRING DRIVE | GLASGOW LANE

100' Claimed Railroad ROW As Per Railroad Val Map 49-1

Agudas Israel Congregation D.B. 1033, Pg. 196 Plat 9558-98-8658

Agudas Israel Congregation D.B. 1033, Pg. 728 Plat: 9558-98-9286

Tract One Gilliam D.B. 1196, Pg. 636 Plat Cab. B, Slide 308A Plat: 9558-98-3552

Lots 7,8,9 Dunn D.B. 3090, Pg. 467 Plat Cab. B, Slide 308A Plat: 9558-98-3630

Lots 4,5, 6 Moore D.B. 1431, Pg. 60 Plat Cab. B, Slide 308A Plat: 9558-98-3492

Kennedy D.B. 1351, Pg. 564 Plat: 9558-98-3626

Brown D.B. 1854, Pg. 497 Plat: 9558-98-2389

Dempsey D.B. 1198, Pg. 255 Plat:9558-98-9255

Jacobs D.B. 3080, Pg. 18 Plat: 9559-98-9364

Warner D.B. 1883, Pg. 665 Plat Slide 10082 Plat:9568-98-1745

Gordon & Heath Finch D.B. 1495, Pg. 091 Plat: 9569-98-2574

Finch D.B. 1495, Pg. 091 Plat: 9569-98-2553

Barbour Rental Co. D.B. 958, Pg. 110 Plat: 9568-98-1107

Railroad ROW Val Val Map 49-1

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

EROSION AND SEDIMENT CONTROL MEASURES

Sub'l	Description	Symbol
MA&E	Temporary Diversion	
MA&E	Temporary Silt Fence	
MA&E	Special Sediment Control Fence	
MA&E	Temporary Rock Silt Check Type-A	
MA&E	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
MA&E	Rock Pipe Inlet Sediment Trap Type-A	
MA&E	Rock Pipe Inlet Sediment Trap Type-B	
MA&E	Type A	
MA&E	Type B	
MA&E	Type C	

DETAIL DITCH 39
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground | 2:1 | D | 3:1 | Front Ditch Slope

Min. D= 1 Ft.

FROM STA. 226+75 LT TO STA. 229+15 LT

DETAIL DITCH 41
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground | 2:1 | D | 2:1 | Front Ditch Slope

Min. D= 1 Ft.

FROM STA. 237+70 LT TO STA. 239+50 LT

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
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3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER R. S. SETZER

9/19/25

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON–2023–___

SEE SHEETS 37 AND 38 FOR –GREENWAY– PROFILE

50 25 0 50 100

1" = 50'

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

NAD 83/2011

MATCH LINE –GREENWAY– STA. 240+00.00 SEE SHEET EC-18

MATCH LINE –GREENWAY– STA. 253+00.00 SEE SHEET EC-20

240 245 250

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

TOE PROTECTION RIP RAP (TYP.)

TURBIDITY CURTAIN

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

CONSTRUCT DURING C&G PHASE; REMOVE WHEN CULVERT 2201 IS FINISHED.

TURBIDITY CURTAIN

GCE #25

GCE

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

100' Claimed Railroad ROW As Per Railroad Val Map 49-1

Finch D.B. 1487, Pg. 295 Pin: 9568-88-3554

Bethel D.B. 1396, Pg. 332 Pin: 9568-98-3290

Zecher D.B. 592, Pg. 219 Pin: 9568-98-5715

Fibi D.B. 1395, Pg. 536 Pin: 9568-98-4158 Monument Found

Coppin D.B. 1506, Pg. 581 Pin: 9568-88-8874

Kobes D.B. 3385, Pg. 238 Pin: 9568-87-9991

Hunt & Pitch D.B. 1497, Pg. 191 Pin: 9568-98-3551

First Congregational Church D.B. 445, Pg. 342 Pin: 9568-97-3957

First Congregational Church D.B. 359, Pg. 695 Pin: 9568-97-2683

First Congregational Church D.B. 335, Pg. 53 Pin: 9568-97-9714

Lee D.B. 3029, Pg. 51 P.Cab. H, Slide 192 Pin: 9568-98-1101

Lots 5,6,7 & 8 Rodriguez D.B. 3035, Pg. 113 P.Cab. H, Slide 193 Pin: 9568-98-3055

DITCH 42' DITCH 43' 50' TAPER

+00+43

Bridge #14

220' 10TC8

24" RCP INV=253.69'

24" RCP INV=254.25'

36" RCP INV=252.39

36" RCP INV=252.29

18" HDPE

APPROX. BEND

TOP=264.00' INV=260.44'

18" HDPE

INV=255.23

FOOT BRIDGE

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1630.01	Temporary Diversion	
1606.01	Temporary Silt Fence	
1606.02	Special Sediment Control Fence	
1631.01	Temporary Rock Silt Check Type 'A'	
1632.01	Temporary Rock Silt Check Type 'B'	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.02	Rock Pipe Inlet Sediment Trap Type 'A'	
1630.03	Rock Pipe Inlet Sediment Trap Type 'B'	
1630.04	Type A	
1630.05	Type B	
1630.06	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
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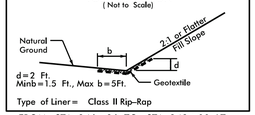
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

NOTE:
1. ACCESS TO BRIDGE #14 EAST ABUTMENT IS FROM GC #14.
2. ACCESS TO BRIDGE #25 WEST ABUTMENT IS FROM GC #24.
3. SEE PLAN SHT EC-31 FOR TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE

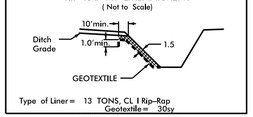
DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = Class II Rip-Rap

FROM STA. 246+96 TO STA. 248+00 LT

DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner = 13 TONS, CL I Rip-Rap
Geotextile = 30sy

AT STA. 252+00.97RT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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lsandwell

REVISIONS	8/17/99

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

SEE SHEET 38 FOR –GREENWAY– PROFILE

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER M. SETZER 9/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-_____

NAD 83/2011

255

260

MATCH LINE –GREENWAY– STA. 253+00.00 SEE SHEET EC-19

MATCH LINE –GREENWAY– STA. 264+00.00 SEE SHEET EC-21

CONSTRUCT DURING C&G PHASE; REMOVE WHEN CULVERT 2201 IS FINISHED.

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

NPDES BOUNDARY LIMITS = 64.0 ACRES RIGHT-OF-WAY

NPDES BOUNDARY LIMITS = 64.0 ACRES RIGHT-OF-WAY

LIMITS OF DISTURBANCE = 34.5 ACRES

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

GCE #25

GCE #26

GCE #27

2201 DITCH

2202 DITCH

2300 DI

2301 DI

2302 DI

18" HDPE

15" CMP

36" CMP

18" RCP III

24" RCP III

100' Claimed Railroad ROW As Per Railroad Val Map 1PET

Jordan Street

Duke D.B. 548, Pg. 844 Plat 9568-17-3988

GH Properties of Henderson County LLC D.B. 1492, Pg. 746 Plat 9568-17-8444

Goodwill D.B. 1265, Pg. 482 Plat 9568-17-7479

Christ of Hendersonville HOA D.B. 1398, Pg. 653 Plat Slide 5726 Plat 9568-17-9133

1618 LLC D.B. 3115, Pg. 460

Town of Laurel Park 50 UNN, Pg. 229 Plat 9569-17-5500 No Description Found

Engler D.B. 1406, Pg. 757 Plat 9569-17-6417

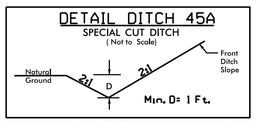
Trustees of Union Baptist Church D.B. 1400, Pg. 1 Plat 9569-17-6417

Christ of Hendersonville HOA D.B. 1398, Pg. 653 Plat Slide 5726 Plat 9568-17-9133

Goodwill D.B. 1265, Pg. 482 Plat 9568-17-7479

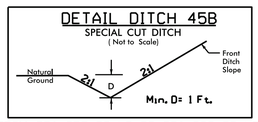
100' Claimed Railroad ROW As Per Railroad Val Map 1PET

DETAIL DITCH 45A
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 254+00 LT TO STA. 257+00 LT

DETAIL DITCH 45B
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 257+00 LT TO STA. 262+00 LT

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.01	Temporary Diversion	
1606.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1630.01	Temporary Rock Silt Check Type-A	
1630.01	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.01	Rock Pipe Inlet Sediment Trap Type-B	
1630.01	Type A	
1630.01	Type B	
1630.01	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-C)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUSION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50 25 0 50 100
1" = 50'

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER 8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

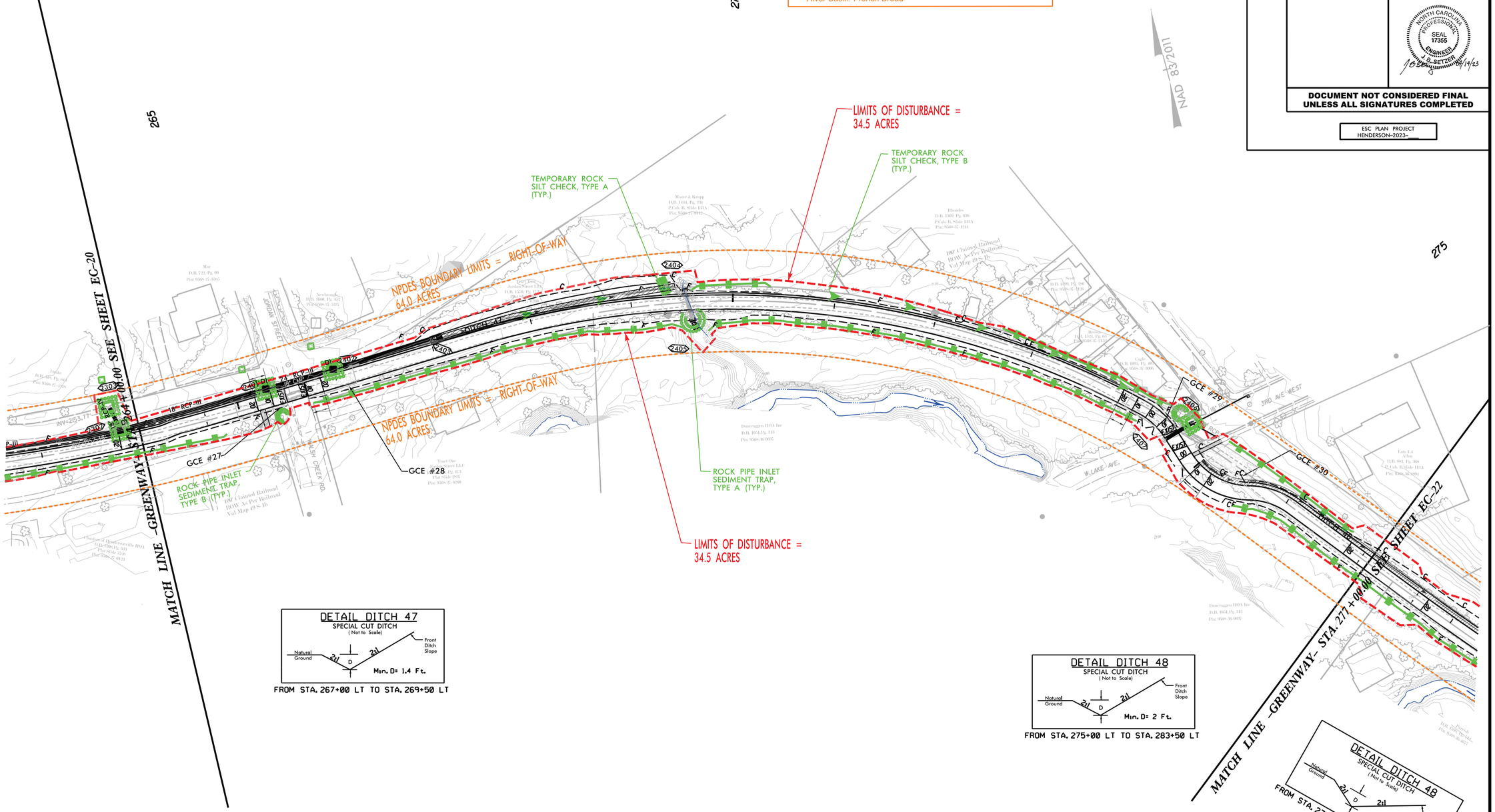
ESC PLAN PROJECT
HENDERSON-2023-_____

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

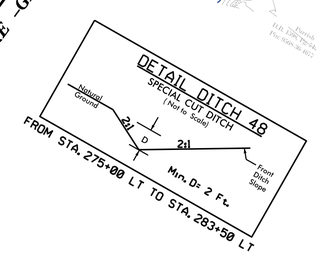
50 25 0 50 100
1" = 50'

SEE SHEETS 38 AND 39 FOR -GREENWAY- PROFILE

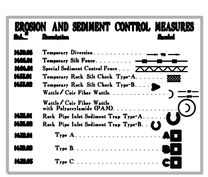


FROM STA. 267+00 LT TO STA. 269+50 LT

FROM STA. 275+00 LT TO STA. 283+50 LT



FROM STA. 275+00 LT TO STA. 283+50 LT





NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION. THE PURPOSE OF THE SEPCIAL SEDIIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

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lisenadwells

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REVISIONS

SEE SHEET 39 FOR
–GREENWAY– PROFILE

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER B. SETZER
10/4/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

MATCH LINE –GREENWAY– STA. 277+00.00 SEE SHEET EC-21

MATCH LINE –GREENWAY– STA. 290+00.00 SEE SHEET EC-23

280 285 290 290

LIMITS OF DISTURBANCE = 34.5 ACRES

TURBIDITY CURTAIN

SPECIAL SEDIMENT FENCE

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

DITCH 48

DITCH

16" RCP TYP.

GCE #31

GCE #32

LIMIT OF DISTURBANCE = NPDES BOUNDARY LIMITS 64.0 ACRES

SPECIAL SEDIMENT FENCE

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY SILT CHECK, (TYP.)

W ALLEN STREET

Lot 55-57 & Portions of A,B,C,D,S Van Deusen D.B. 1549, Pg. 192 P. Cab. B,Slide 183A Pin: 9568-36-6845

Lots 49, 50, 51, 57 & Moore D.B. 1181, Pg. 484 P. Cab. T,Slide 183A Pin: 9568-46-7951

Lots 53-55 Kuske D.B. 2101, Pg. 46 P. Cab. T,Slide 183A Pin: 9568-36-3838

Lots 56-59 Turner D.B. 1457, Pg. 872 P. Cab. B,Slide 183A Pin: 9568-36-9881

Lots 60-62 D.B. 1896, Pg. 161 P. Cab. B,Slide 183A Pin: 9568-36-9565

Lots 63-66 Snead D.B. 2300, Pg. 56 P. Cab. B,Slide 183A Pin: 9568-36-8474

Lots 67-70 Pfeifer D.B. 1808, Pg. 181 P. Cab. B, Slide 183A Pin: 9568-46-8029

Hendersonville Housing Authority P. Cab. C, Slide 53 Pin: 9568-46-5901

Cole D.B. 969, Pg. 239 Pin: 9568-46-3983

Wilbe D.B. 1506, P. Pin: 9568-4

Parrish D.B. 1598, Pg. 442 Pin: 9568-36-4927

Wilson D.B. 861, Pg. 337 Pin: 9568-36-6565

Hudson & Tomanova D.B. 1535, Pg. 419 Pin: 9568-36-6466

Lovelace D.B. 1851, Pg. 392 Pin: 9568-36-7410

Hamilton Landing HOA Assoc. D.B. 1394, Pg. 696 Pin: 9568-36-9153

Hamilton Landing HOA Assoc. D.B. 1394, Pg. 696 Pin: 9568-36-9133

DETAIL DITCH 48
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2H — D — 2H — Front Ditch Slope

Min. D= 2 Ft.

FROM STA. 275+00 LT TO STA. 283+50 LT

DETAIL DITCH 49
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground — 2H — D — 2H — Front Ditch Slope

Min. D= 1.3 Ft.

FROM STA. 289+00 LT TO STA. 291+90 LT

EROSION AND SEDIMENT CONTROL MEASURES

Std. No.	Description	Symbol
1605.01	Temporary Diversion	
1605.02	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1625.01	Temporary Rock Silt Check Type-A	
1625.02	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER
8/19/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-____

SEE SHEETS 39 AND 40 FOR -GREENWAY- PROFILE

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS
8/17/99

MATCH LINE -GREENWAY- STA 290+00.00 SEE SHEET EC-22

290 290 295 300

MATCH LINE -GREENWAY- STA 303+00.00 SEE SHEET EC-24

ROCK PIPE INLET SEDIMENT TRAP, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

NPDES BOUNDARY LIMITS = 64.0 ACRES

RIGHT-OF-WAY

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

DITCH 49

DITCH 50

DITCH 51

DITCH 52

CONTRACTOR'S STORAGE YARD

SOIL STOCKPILE

REMOVE REMOVE & REPLACE

GCE #34

GCE #33

S 70° 29' 10.8" E

SWITCHED STREET

Wilson D.B. 1588, Pg. 486 Plat 9568-45-4992

State D.B. 130, Pg. 95 Plat 9568-45-6798

25' Claimed Railroad ROW As Per Railroad Val Plat 69 B

Lots 88,89,90,91,92,93 State D.B. 1474, Pg. 183 P.Cab. B, Slide 53 Jan/1909 (13.53)

Lot 5 Smoot D.B. 1341, Pg. 545 Pl.Cab. H, Slide 255 Plat 9568-55-5445

Lot 6 Moulton D.B. 3089, Pg. 50 Pl.Cab. H, Slide 255 Plat 9568-55-3489

Lot 1 Lot 2 Lot 3 Lot 4 D.B. 3089, Pg. 464 Plat 9568-55-3430

100' Claimed Railroad ROW As Per Railroad Val Map 1908, Pg. Va. Blue Ridge Southern Railroad

Southern Railroad P.Cab. B, Slide 53

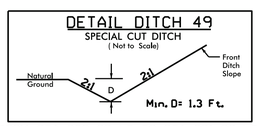
Tract One Hwy D.B. 4852, Pg. 812 Plat 9568-45-6486

Tract Two Hwy D.B. 693, Pg. 58 Plat 9568-45-9089

Cardinal Homes LLC D.B. 3965 Plat 9568-45-3983

Utility D.B. 500, Pg. 140 Plat 9568-55-4290

DETAIL DITCH 49
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 289+00 LT TO STA. 291+90 LT

EROSION AND SEDIMENT CONTROL MEASURES

Ref. #	Description	Symbol
1605.01	Temporary Diversion	
1605.02	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1630.04	Temporary Rock Silt Check Type-A	
1630.05	Temporary Rock Silt Check Type-B	
	Wattle/Coir Fiber Wattle	
	Wattle/Coir Fiber Wattle with Polyacrylamide (PAM)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	
1630.03	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- JUNCTION BOX w/ MANHOLE LID

NOTES:
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6. UNLESS OTHERWSE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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REVISIONS

SEE SHEET 40 FOR –GREENWAY– PROFILE

50 25 0 50 100
1" = 50'

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER
8/14/23

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

305 310 315

MATCH LINE –GREENWAY– STA. 303+00.00 SEE SHEET EC-23

MATCH LINE –GREENWAY– STA. 316+00.00 SEE SHEET EC-25

LIMITS OF DISTURBANCE = 34.5 ACRES

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

ROCK PIPE INLET SEDIMENT TRAP TYPE B (TYP.)

ROCK PLATING. SEE PLAN SHT 2A-1 FOR DETAIL

UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-32 FOR DETAIL

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

TOP=2107.58'
INV=2102.01'

24" RCP-III

Ellip. 24"38" RCP-IV

0.5' FLOWABLE FILL BETWEEN PIPES

18" RCP-III

15" RCP-III

DITCH 53

DITCH 54A

DITCH 54

DITCH 54B

DITCH 55

GCE #36

GCE #35

SPRING STREET

TOP=2108.03'
INV=2103.14'

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

TEMPORARY SILT FENCE (TYP.)

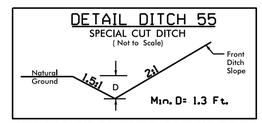
TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.5 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 64.0 ACRES

DETAIL DITCH 55

SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 311+14 LT TO STA. 315+50 LT

EROSION AND SEDIMENT CONTROL MEASURES

Bid Number	Description	Symbol
1605.01	Temporary Diversion	
1606.01	Temporary Silt Fence	
1632.01	Special Sediment Control Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
	Wattle/ Coir Fiber Wattle	
	Wattle/ Coir Fiber Wattle with Polyacrylamide (PAM)	
1638.01	Rock Pipe Inlet Sediment Trap Type-A	
1638.02	Rock Pipe Inlet Sediment Trap Type-B	
1638.03	Type A	
1638.03	Type B	
1638.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- NPDES BOUNDARY LIMITS
- LIMITS OF DISTURBANCE
- TOE PROTECTION RIP RAP
- ROCK PLATING (SEE SHT 2A-1)
- DITCH MATTING
- SLOPE MATTING
- ROCK OUTLET PROTECTION
- PAVEMENT REPAIR
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- JUNCTION BOX w/ MANHOLE LID

NOTES:
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETTER

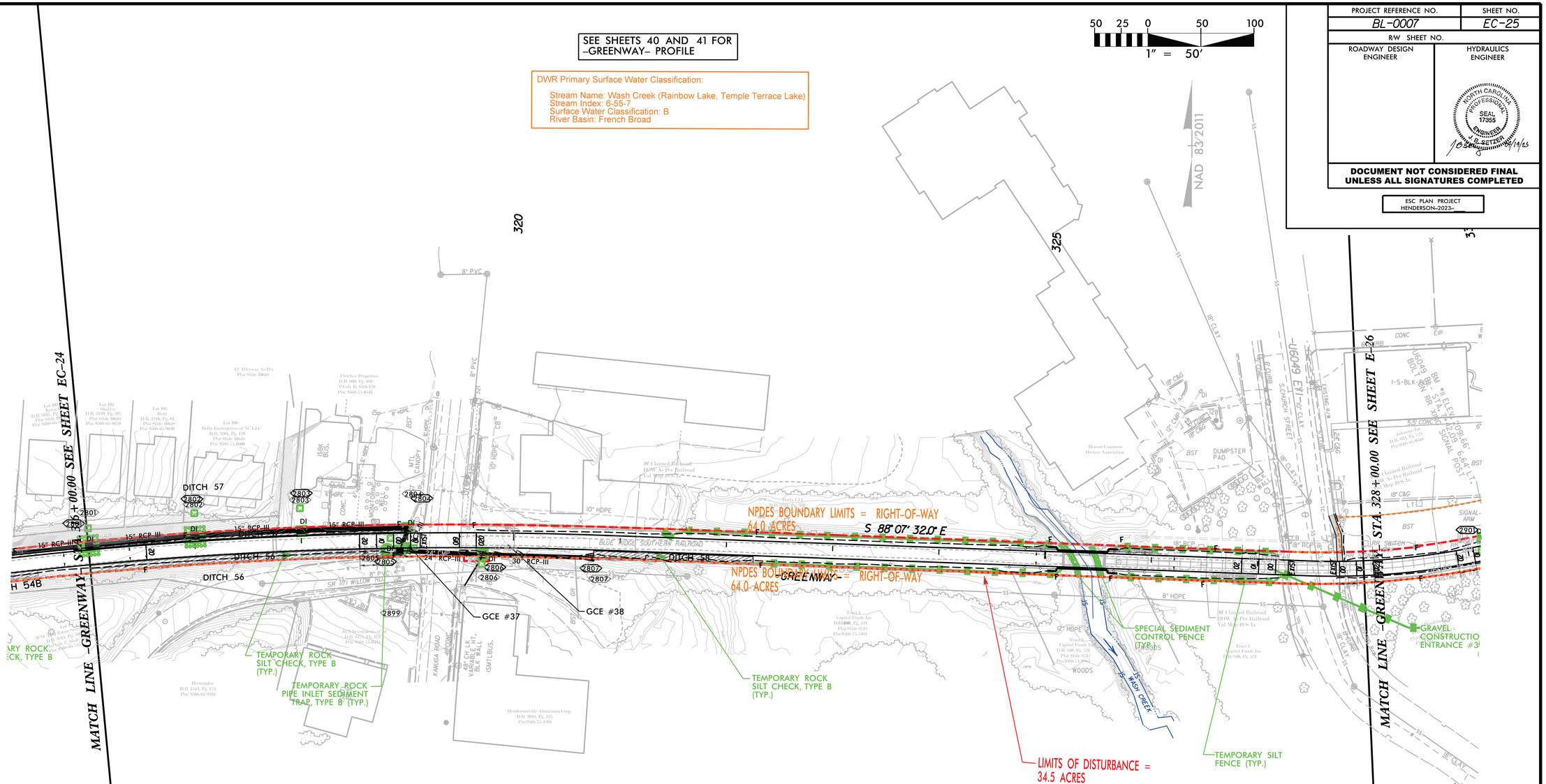
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

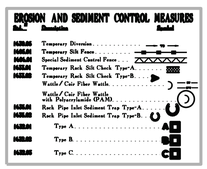
SEE SHEETS 40 AND 41 FOR -GREENWAY- PROFILE

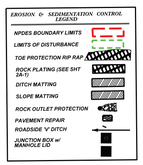
DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple Terrace Lake)
Stream Index: 6-55-7
Surface Water Classification: B
River Basin: French Broad



NOTE:
1. ACCESS TO BRIDGE #16 EAST ABUTMENT IS FROM GC #39.
2. ACCESS TO BRIDGE #16 WEST ABUTMENT IS FROM GC #38
3. SEE PLAN SHT EC-31 FOR TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE





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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 17355 ENGINEER J. B. SETZER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

-GREENWAY- CURVE DATA

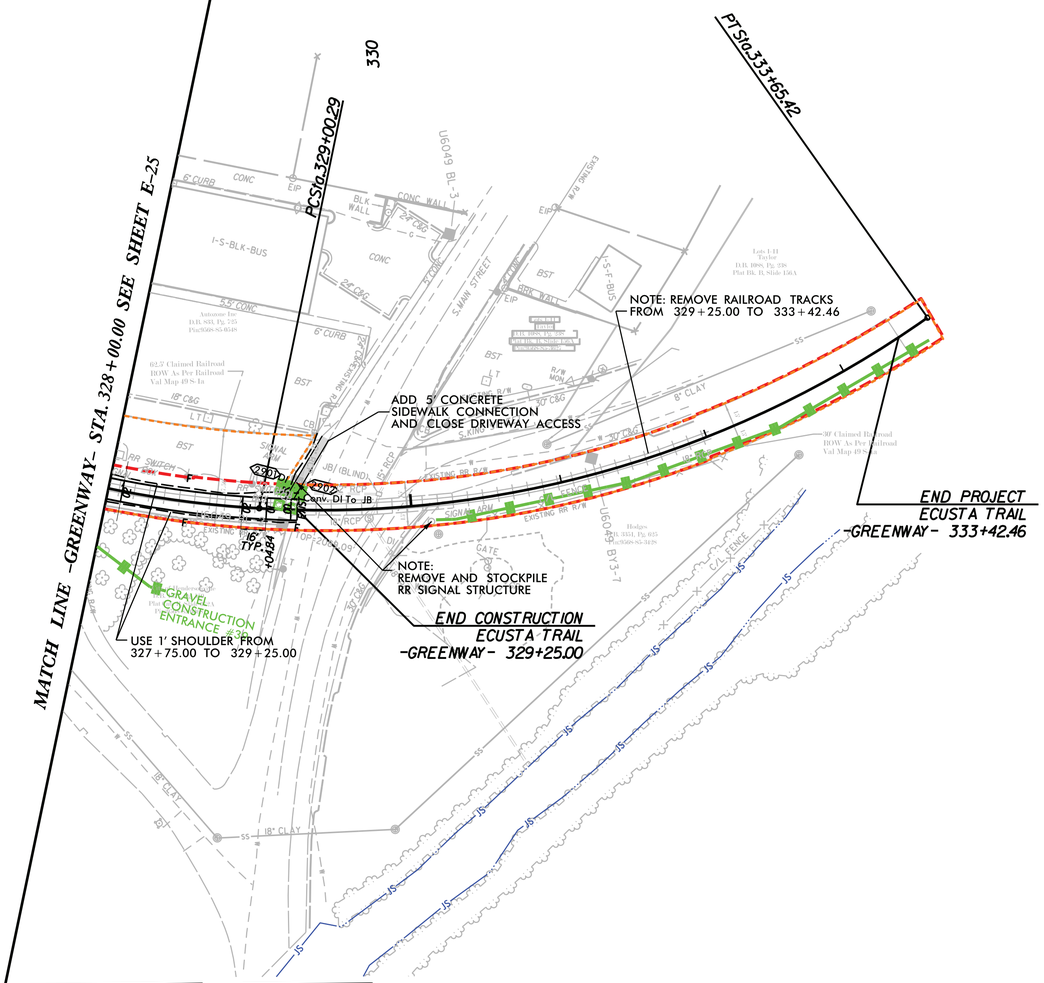
PI Sta 328+23.14	PI Sta 331+41.99
Δ = 12° 49' 39.8" (LT)	Δ = 38° 38' 28.7" (LT)
D = 8° 29' 17.7"	D = 8° 18' 13.5"
L = 151.12'	L = 465.35'
T = 75.88'	T = 241.91'
R = 675.00'	R = 690.00'

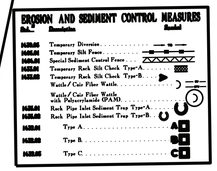
SEE SHEET 42 FOR -GREENWAY- PROFILE

50 25 0 50 100

1" = 50'

NAD 83/2011







NOTES:
1. THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE APRIL 1, 2019 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY DIVISION OF WATER RESOURCES.
2. UTILIZE FABRIC INSERT INLET PROTECTION IN LIEU OF TYPE C INLET PROTECTION IN CATCH BASINS WHERE WATER MIGHT POND ON ROADWAY USED BY PUBLIC AS DIRECTED BY THE ENGINEER.
3. PERIMETER EROSION CONTROL MEASURES SHALL BE INSTALLED DURING CLEARING AND GRUBBING PHASE.
4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.
5. IN AREAS WHERE TOE PROTECTION IS SHOWN, INSTALL SPECIAL SEDIMENT CONTROL FENCE WHERE SHOWN ON THE PLANS AND ABOVE THE TOP OF BANK. CAREFULLY INSTALL TOE PROTECTION TO PROTECT THE CREEK/STREAM FROM SOIL INTRUCION THE PURPOSE OF THE SEPCIAL SEDIMENT CONTROL FENCE IS TO MINIMIZE SPOILS FROM SPILLING INTO THE CREEK/STREAM.
6. UNLESS OTHERWISE DESIGNATED, ALL DITCH MATTING AND EMBANKMENT MATTING SHALL BE NAG S75 OR EQUIVALENT.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-__

EROSION CONTROL NOTES:

1. ALL EARTH DISTURBANCES, INCLUDING CLEARING AND GRUBBING AS WELL AS CUTS AND FILLS SHALL BE DONE IN ACCORDANCE WITH THE APPROVED E&S PLAN. A COPY OF THE APPROVED DRAWINGS (STAMPED, SIGNED AND DATED BY THE REVIEWING AGENCY) MUST BE AVAILABLE AT THE PROJECT SITE AT ALL TIMES. THE REVIEWING AGENCY SHALL BE NOTIFIED OF ANY CHANGES TO THE APPROVED PLAN PRIOR TO IMPLEMENTATION OF THOSE CHANGES. THE REVIEWING AGENCY MAY REQUIRE A WRITTEN SUBMITTAL OF THOSE CHANGES FOR REVIEW AND APPROVAL AT ITS DISCRETION.
2. AT LEAST 7 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, INCLUDING CLEARING AND GRUBBING, THE OWNER AND/OR OPERATOR SHALL INVITE ALL CONTRACTORS, THE LANDOWNER, APPROPRIATE MUNICIPAL OFFICIALS, THE E&S PLAN PREPARER, THE STORMWATER PLAN PREPARER, THE LICENSED PROFESSIONAL RESPONSIBLE FOR OVERSIGHT OF CRITICAL STAGES OF IMPLEMENTATION OF THE PCSM PLAN, AND A REPRESENTATIVE FROM THE COUNTY TO AN ON-SITE PRECONSTRUCTION MEETING.
3. AT LEAST 3 DAYS PRIOR TO STARTING ANY EARTH DISTURBANCE ACTIVITIES, OR EXPANDING IN TO AN AREA PREVIOUSLY UNMARKED, THE NORTH CAROLINA 811 "CALL BEFORE YOU DIG" SYSTEM SHALL BE NOTIFIED AT 1-800- 632-4949 FOR THE LOCATION OF EXISTING UNDERGROUND UTILITIES.
4. ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE SEQUENCE PROVIDED ON THE PLAN DRAWINGS. DEVIATION FROM THAT SEQUENCE MUST BE APPROVED IN WRITING FROM THE COUNTY PRIOR TO IMPLEMENTATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THAT ANY MATERIAL BROUGHT ON SITE IS CLEAN FILL.
6. AREAS TO BE FILLED ARE TO BE CLEARED, GRUBBED, AND STRIPPED OF TOPSOIL TO REMOVE TREES, VEGETATION, ROOTS AND OTHER OBJECTIONABLE MATERIAL.
7. CLEARING, GRUBBING, AND TOPSOIL STRIPPING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE OF THE CONSTRUCTION SEQUENCE. GENERAL SITE CLEARING, GRUBBING AND TOPSOIL STRIPPING MAY NOT COMMENCE IN ANY STAGE OR PHASE OF THE PROJECT UNTIL THE E&S BMPS SPECIFIED BY THE BMP SEQUENCE FOR THAT STAGE OR PHASE HAVE BEEN INSTALLED AND ARE FUNCTIONING AS DESCRIBED IN THIS E&S PLAN.
8. AT NO TIME SHALL CONSTRUCTION VEHICLES BE ALLOWED TO ENTER AREAS OUTSIDE THE LIMIT OF DISTURBANCE BOUNDARIES SHOWN ON THE PLAN MAPS. THESE AREAS MUST BE CLEARLY MARKED AND FENCED OFF BEFORE CLEARING AND GRUBBING OPERATIONS BEGIN.
9. TOPSOIL REQUIRED FOR THE ESTABLISHMENT OF VEGETATION SHALL BE STOCKPILED AT THE LOCATION(S) SHOWN ON THE PLAN MAPS(S) IN THE AMOUNT NECESSARY TO COMPLETE THE FINISH GRADING OF ALL EXPOSED AREAS THAT ARE TO BE STABILIZED BY VEGETATION. EACH STOCKPILE SHALL BE PROTECTED IN THE MANNER SHOWN ON THE PLAN DRAWINGS. STOCKPILE HEIGHTS SHALL NOT EXCEED 35 FEET. STOCKPILE SLOPES SHALL BE 2H:1V OR FLATTER.
10. IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO MINIMIZE THE POTENTIAL FOR EROSION AND SEDIMENT POLLUTION AND NOTIFY THE COUNTY AND/OR THE REGIONAL OFFICE OF THE DEPARTMENT.
11. ALL PUMPING OF WATER FROM ANY WORK AREA SHALL BE DONE ACCORDING TO THE PROCEDURE DESCRIBED IN THIS PLAN, OVER UNDISTURBED VEGETATED AREAS.
12. VEHICLES AND EQUIPMENT MAY NEITHER ENTER DIRECTLY NOR EXIT DIRECTLY FROM LOT.
13. EQUIPMENT UTILIZED DURING THE CONSTRUCTION ACTIVITY ON A SITE MUST BE OPERATED AND MAINTAINED IN SUCH A MANNER AS TO PREVENT THE POTENTIAL OR ACTUAL POLLUTION OF THE SURFACE OR GROUND WATERS OF THE STATE. FUELS, LUBRICANTS, COOLANTS, AND HYDRAULIC FLUIDS, OR ANY OTHER PETROLEUM PRODUCTS, SHALL NOT BE DISCHARGED ONTO THE GROUND OR INTO SURFACE WATERS. SPENT FLUIDS SHALL BE CLEANED UP AND DISPOSED OF IN A MANNER SO AS NOT TO ENTER THE WATERS, SURFACE OR GROUND, OF THE STATE AND IN ACCORDANCE WITH APPLICABLE STATE AND FEDERAL REGULATIONS.
14. SEDIMENT TRACKED ONTO ANY PUBLIC ROADWAY OR SIDEWALK SHALL BE RETURNED TO THE CONSTRUCTION SITE BY THE END OF EACH WORK DAY AND DISPOSED IN THE MANNER DESCRIBED IN THIS PLAN. IN NO CASE SHALL THE SEDIMENT BE WASHED, SHOVELED, OR SWEPT INTO ANY ROADSIDE DITCH, STORM SEWER, OR SURFACE WATER.
15. CONSTRUCTION ACTIVITIES SHALL BE LIMITED TO THE AREAS WITHIN THE LIMITS OF DISTURBANCE.
16. EROSION CONTROL BLANKETING SHALL BE INSTALLED ON ALL SLOPES 3H:1V OR STEEPER WITHIN 50' OF A SURFACE WATER AND ON ALL OTHER DISTRUBED AREAS SPECIFIED ON THE PLAN AND/OR DETAIL SHEETS.
17. CONCRETE WASH WATERS SHALL BE HANDLED IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS. IN NO CASE SHALL IT ALLOWED TO ENTER ANY SURFACE WATERS, WETLANDS, BUFFERS OR GROUNDWATER SYSTEMS. ANY HARDENED CONCRETE RESIDUE WILL BE DISPOSED OF, OR RECYCLED ON SITE IN ACCORDANCE WITH LOCAL AND STATE SOLID WASTE REGULATIONS.
18. ALL CHANNELS SHALL BE KEPT FREE OF OBSTRUCTIONS INCLUDING BUT NOT LIMITED TO FILL, ROCKS, LEAVES, WOODY DEBRIS, ACCUMULATED SEDIMENT, EXCESS VEGETATION, AND CONSTRUCTION MATERIAL/WASTES.
19. SEDIMENT BASINS AND/OR TRAPS SHALL BE KEPT FREE OF ALL CONSTRUCTION WASTE, WASH WATER, AND OTHER DEBRIS HAVING POTENTIAL TO CLOG THE BASIN/TRAP OUTLET STRUCTURES AND/OR POLLUTE THE SURFACE WATERS.
20. UNTIL THE SITE IS STABILIZED, ALL EROSION AND SEDIMENT BMPS SHALLL BE MAINTAINED PROPERLY. MAINTENANCE SHALL INCLUDE INSPECTIONS OF ALL EROSION AND SEDIMENT BMPS AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS. ALL PREVENTATIVE AND REMEDIAL MAINTENANCE WORK, INCLUDING CLEAN OUT, REPAIR, REPLACEMENT, REGRADING, RESEEDING, REMULCHING AND RENETTING MUST BE PERFORMED IMMEDIATELY IF THE E&S BMP FAIL TO PERFORM AS EXPECTED. REPLACEMENT BMPS OR MODIFICATIONS OF THOSE INSTALLED & FAILED WILL BE REQUIRED.
21. ONCE LAND DISTURBANCE HAS BEGUN ON THE SITE, STORMWATER RUNOFF DISCHARGE OUTFALLS SHALL BE INSPECTED BY OBSERVATION FOR EROSION, SEDIMENTATION AND OTHER STORMWATER DISCHARGE CHARACTERISTICS SUCH AS CLARITY, FLOATING SOLIDS, AND OIL SHEENS. INSPECTIONS OF THE OUTFALLS SHALL BE MADE AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT OF GREATER THAN 0.50 INCHES OF RAIN PER 24-HOUR PERIOD.
22. A LOG SHOWING DATES THAT E&S BMPS WERE INSPECTED AS WELL AS ANY DEFICIENCIES FOUND AND THE DATE THEY WERE CORRECTED SHALL BE MAINTAINED ON THE SITE AND BE MADE AVAILABLE TO REGULATORY AGENCY OFFICIALS AT THE TIME OF INSPECTION.
23. ALL SEDIMENT REMOVED FROM BMPS SHALL BE DISPOSED OF IN THE MANNER DESCRIBED ON THE PLAN DRAWINGS.
24. AREAS WHICH ARE TO BE TOPSOILED SHALL BE SCARIFIED TO A MINIMUM DEPTH OF 3 TO 5 INCHES — 6 TO 12 INCHES ON COMPACTED SOILS — PRIOR TO PLACEMENT OF TOPSOIL. AREAS TO BE VEGETATED SHALL HAVE A MINIMUM 4 INCHES OF TOPSOIL IN PLACE PRIOR TO SEEDING AND MULCHING. FILL OUTSLOPES SHALL HAVE A MINIMUM OF 2 INCHES OF TOPSOIL.
25. ALL FILLS SHALL BE COMPACTED AS REQUIRED TO REDUCE EROSION, SLIPPAGE, SETTLEMENT, SUBSIDENCE OR OTHER RELATED PROBLEMS. FILL INTENDED TO SUPPORT BUILDINGS, STRUCTURES AND CONDUITS, ETC. SHALL BE COMPACTED IN ACCORDANCE WITH LOCAL REQUIREMENTS OR CODES THICKNESS.
26. ALL EARTHEN FILLS SHALL BE PLACED IN COMPACTED LAYERS NOT TO EXCEED 9 INCHES IN THICKNESS.
27. FILL MATERIALS SHALL BE FREE OF FROZEN PARTICLES, BRUSH, ROOTS , SOD, OR OTHER FOREIGN OR OBJECTIONABLE MATERIALS OR SOFT, MUCKY, OR HIGHLY COMPRESSIBLE MATERIALS THAT WOULD INTERFERE WITH OR PREVENT CONSTRUCTION OF SATISFACTORY FILLS.
28. FILL SHALL NOT BE PLACED ON SATURATED OR FROZEN SURFACES.
29. CUT AND FILL SLOPES SHALL BE CAPABLE OF RESISTING FAILURE DUE TO SLUMPING, SLIDING, OR OTHER MOVEMENTS.
30. SEEPS OR SPRINGS ENCOUNTERED DURING CONSTRUCTION SHALL BE HANDLED IN ACCORDANCE WITH THE STANDARD AND SPECIFICATION FOR SUBSURFACE DRAIN OR OTHER APPROVED METHOD
31. E&S BMPS SHALL REMAIN FUNCTIONAL AS SUCH UNTIL ALL AREAS TRIBUTARY TO THEM ARE PERMANENTLY STABILIZED OR UNTIL THEY ARE REPLACED BY ANOTHER BMP APPROVED BY THE COUNTY.
32. IMMEDIATELY AFTER EARTH DISTURBANCE ACTIVITIES CEASE IN ANY AREA OR SUBAREA OF THE PROJECT, THE OPERATOR SHALL STABILIZE ALL DISTURBED AREAS. DURING NON- GERMINATING MONTHS, MULCH OR PROTECTIVE BLANKETING SHALL BE APPLIED AS DESCRIBED IN THE PLAN. AREAS NOT AT FINISHED GRADE, WHICH WILL BE REACTIVATED WITHIN 1 YEAR, MAY BE STABILIZED IN ACCORDANCE WITH THE TEMPORARY STABILIZATION SPECIFICATIONS. THOSE AREAS WHICH WILL NOT BE REACTIVATED WITHIN 1 YEAR SHALL BE STABILIZED IN ACCORDANCE WITH THE PERMANENT STABILIZATION SPECIFICATIONS.
33. FAILURE TO CORRECTLY INSTALL E&S BMPS, FAILURE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE CONSTRUCTION SITE, OR FAILURE TO TAKE IMMEDIATE CORRECTIVE ACTION TO RESOLVE FAILURE OF E&S BMPS MAY RESULT IN ADMINISTRATIVE, CIVIL, AND/OR CRIMINAL PENALTIES BEING INSTITUTED BY THE DEPARTMENT AS BY THE CLEAN WATER ACT PROVIDES A FINE OF NOT MORE THAN $10,000 PER VIOLATION, OR BY IMPRISONMENT FOR NOT MORE THAN TWO YEARS PER VIOLATION, OR BOTH.
34. ALL GRADED AREAS SHALL BE PERMANENTLY STABILIZED IMMEDIATELY UPON REACHING FINISHED GRADE. CUT SLOPES IN COMPETENT BEDROCK AND ROCK FILLS NEED NOT BE VEGETATED. SEEDED AREAS WITHIN 50 FEET OF A SURFACE WATER, OR AS OTHERWISE SHOWN ON THE PLAN DRAWINGS, SHALL BE BLANKETED ACCORDING TO THE STANDARDS OF THIS PLAN.
35. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM, PERENNIAL 70% VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED EROSION.
36. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, THE OWNER AND/OR OPERATOR SHALL CONTACT THE COUNTY FOR AN INSPECTION PRIOR TO REMOVAL/CONVERSION OF THE E&S BMPSAFTER FINAL SITE STABILIZATION HAS BEEN ACHIEVED, TEMPORARY EROSION AND SEDIMENT BMPS MUST BE REMOVED OR CONVERTED TO PERMANENT POST CONSTRUCT ION STORMWATER MANAGEMENT BMPS. AREAS DISTURBED DURING REMOVAL OR CONVERSION OF THE BMPS SHALL BE STABILIZED IMMEDIATELY. IN ORDER TO ENSURE RAPID REVEGETATION OF DISTURBED AREAS, SUCH REMOVAL/CONVER IONS ARE TO BE DONE ONLY DURING THE GERMINATING SEASON.
37. ALL WASTES COMPOSED OF BUILDING MATERIALS SHALL BE DISPOSED OF IN ACCORDANCE WITH NORTH CAROLINA GENERAL STATUTES, CHAPTER 130A, ARTICLE 9 – SOLID WASTE MANAGEMENT, AND RULES GOVERNING THE DISPOSAL OF SOLID WASTE (NORTH CAROLINA ADMINISTRATIVE CODE SECTION 15A NCAC 13B).
38. ALL WATERS OF THE STATE (WOS), INCLUDING WETLANDS, ARE TO BE FLAGGED OR OTHERWISE CLEARLY MARKED IN THE FIELD. A DOUBLE ROW OF SILT FENCE IS TO BE INSTALLED IN ALL AREAS WHERE A 50-FOOT BUFFER CAN'T BE MAINTAINED BETWEEN THE DISTURBED AREA AND ALL WOS. A 10-FOOT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WORK.
39. LITTER, CONSTRUCTION DEBRIS, OILS, FUELS, AND BUILDING PRODUCTS WITH SIGNIFICANT POTENTIAL FOR IMPACT (SUCH AS STOCKPILES OF FRESHLY TREATED LUMBER) AND CONSTRUCTION CHEMICALS THAT COULD BE EXPOSED TO STORM WATER MUST BE PREVENTE FROM BECOMING A POLLUTANT SOURCE IN STORM WATER DISCHARGES.
40. CONSTRUCTION ENTRANCES ARE TO BE PROVIDED AT ALL LOCATIONS WHERE CONSTRUCTION TRAFFIC ACCESSES A PAVED ROADWAY.
41. A DOUBLE ROW OF SILT FENCING SHALL BE INSTALLED IN ALL AREAS WHERE A MINIMUM SETBACK BUFFER CANNOT BE MAINTAINED BETWEEN THE DISTURBED AREA AND THE WATER BODY OR WETLAND. DOUBLE ROW OF SILT FENCING SHALL BE PLACED NO CLOSER THAN 5 FT DOWNHILL FROM THE TOE OF ANY FILL AREA AND A MINIMUM OF 5 FT SPACING SHALL BE MAINTAINED BETWEEN SILT FENCE ROWS. A MINIMUM 5 FT BUFFER SHOULD BE MAINTAINED BETWEEN THE LAST ROW OF SILT FENCE AND ALL WATER BODIES AND WETLANDS.
42. PORTABLE TOILET FACILITIES SHALL NOT BE LOCATED WITHIN 20 FEET OF ANY STORM WATER STRUCTURE AND/OR 50 FEET OF ANY WATER COURSE, WETLAND AREA, STREAM, FLOODPLAIN, OR LAKE.
43. SOLID WASTE CONTAINERS SHALL BE SHALL BE OFF-HAULED FROM THE SITE ON A DAILY BASIS.
44. THE CONCRETE WASHOUT AREA SHALL BE PORTABLE AND SHALL BE REMOVED FROM THE SITE ON A DAILY BASIS.

CONSTRUCTION SEQUENCE

ALL EARTH DISTURBANCE ACTIVITIES SHALL PROCEED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE. EACH STAGE SHALL BE COMPLETED BEFORE ANY FOLLOWING STAGE IS INITIATED. CLEARING AND GRUBBING SHALL BE LIMITED TO THOSE AREAS DESCRIBED IN EACH STAGE.

IMMEDIATELY UPON DISCOVERING UNFORESEEN CIRCUMSTANCES POSING POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION, THE OPERATOR SHALL IMPLEMENT APPROPRIATE BEST MANAGEMENT PRACTICES TO ELIMINATE THE POTENTIAL FOR ACCELERATED EROSION AND/OR SEDIMENT POLLUTION.

BEFORE IMPLEMENTING ANY REVISIONS TO THE APPROVED EROSION AND SEDIMENT CONTROL PLAN, OR REVISIONS TO THE OTHER PLANS WHICH MAY AFFECT THE EFFECTIVENESS OF THE APPROVED EROSION AND SEDIMENT POLLUTION CONTROL PLAN, THE OPERATOR MUST RECEIVE APPROVAL OF THE REVISION FROM THE JURIDICTIONAL CONSERVATION DISTRICT. RUNOFF ACCUMULATING IN EXCAVATED AREAS SHALL EITHER REMAIN IN THE EXCAVATED AREA IN ORDER TO INFILTRATE THE RUNOFF, OR BE DIRECTED TO AN APPROVED E&S CONTROL MEASURE TO ENSURE RUNOFF IS TREATED BEFORE LEAVING THE DISTURBED SITE OR WILL BE INFILTRATED BACK INTO THE GROUND. E&S CONTROL BMPS WILL BE MAINTAINED TO PERFORM AS DESIGNED IN THESE INSTANCES. CONSTRUCTION ACTIVITIES WITHIN EACH STAGE MAY OVERLAP IF WORK WITHIN EACH AREA IS CARRIED OUT IN SEQUENCE.
EACH STAGE OF THE SEQUENCE OF CONSTRUCTION MUST BE COMPLETED PRIOR TO INITIATION OF THE NEXT STAGE OF THE SEQUENCE OF CONSTRUCTION.

NOTE: PRIOR TO ANY GRADING, WETLANDS AND TOP OF BANK OF STREAMCREEKS SHALL BE FIELD DELINEATED AND STAKED WITH ORANGE CONSTRUCTION FENCE TO AVOID DISTURBANCE.

ALL BLASTING ACTIVITY, IF REQUIRED, SHOULD BE DONE IN ACCORDANCE WITH THE LOCAL, STATE AND FEDERAL REGULATIONS. CONTRACTOR SHOULD NOTIFY OWNER AND ALL REGULATORY AGENCIES IN WRITING AND OBTAIN ANY NECESSARY PERMITS PRIOR TO ANY BLASTING ACTIVITIES.

SITE CONSTRUCTION, PHASE 1: CLEARING AND GRUBBING

1. THE CONTRACTOR SHALL HAVE A PRE-CONSTRUCTION MEETING WITH REPRESENTATIVE(S) FROM BUNCOMBE COUNTY THAT SHALL TAKE PLACE AT THE SITE WITH THE DEVELOPER, THE CONTRACTOR, AND THE COUNTY ENGINEER AT LEAST 10 DAYS PRIOR TO BEGINNING ANY EARTH MOVING ACTIVITIES.
2. INSTALL TEMPORARY ROCK CONSTRUCTION ENTRANCES AT THE ENTRANCES TO THE SITE WHERE SHOWN ON THE PLANS AND PER THE DETAIL. ALL CONSTRUCTION TRAFFIC TO SHOULD BE LIMITED TO USING THESE ENTRANCES.
   A. MAINTAIN ROCK CONSTRUCTION ENTRANCE THROUGHOUT PROJECT.
   B. AT THE END OF EACH CONSTRUCTION DAY, OR AS REQUIRED, ALL SEDIMENT DEPOSITED ON PAVED ROADWAYS SHALL BE REMOVED AND RETURNED TO THE CONSTRUCTION SITE.
   C. INSTALL ALL TEMPORARY PIPES RELATED TO TEMPORARY SWALES AND ROCK CONSTRUCTION ENTRANCES.
3. FIELD MARK EXISTING UTILITIES AND LIMITS OF DISTURBANCE PRIOR TO EARTH DISTURBANCE.
4. INSTALL TEMPORARY SILT FENCE AND SPECIAL SEDIMENT CONTROL FENCE AS DESIGNATED DOWN SLOPE OF PROPOSED CONSTRUCTION ACTIVITY AT LOCATIONS INDICATED ON THE PLANS. CARE SHOULD BE TAKEN TO PROTECT THE STREAMS AND WATERS OF NORTH CAROLINA FROM ANY SEDIMENT POLLUTION. THE CONTRACTOR SHALL MAINTAIN THE SILT FENCING IN WORKING ORDER THROUGHOUT THE COURSE OF CONSTRUCTION, MAKING INSPECTIONS AFTER EACH RAINFALL EVENT AND MAKING ANY NECESSARY REPAIRS. IN THE EVENT THAT ANY SILT FENCE SHOULD FAIL IN THE COURSE OF CONSTRUCTION, SUPER SILT FENCE MAY BE INSTALLED AS A REPAIR MEASURE.
5. LIMIT CLEARING, GRUBBING AND TOPSOIL STRIPPING TO PROVIDE SITE ACCES AND TO THE IMMEDIATE AREA OF BRIDGE CONSTRUCTION. EARTH AND TOPSOIL TO BE RETAINED ON THE SITE SHALL BE STOCKPILED WITHIN THE RIGHT-OF-WAY. IMMEDIATELY INSTALL SILT FENCE AROUND STOCKPILES, SOW TEMPORARY SEED AND MULCH STOCKPILES TO ENSURE PROTECTION AGAINST SEDIMENT RUNOFF FROM THE TOPSOIL STOCKPILE.

SITE CONSTRUCTION, PHASE 2: CONSTRUCTION

6. INSTALL ROCK SILT CHECK (TYPE B) IN EXISTING DITCH LINE, ROCK SILT CHECK (TYPE A) AT EXISTING DISCHARGE OUTLET POINTS, AND ROCK INLET SEDIMENT TRAP (TYPE C) AT INLETS. LOCATIONS ARE SHOWN.
7. INSTALL REQUIRED EROSION CONTROL MEASURES AS SHOWN ADJACENT TO AND PARELLEL TO EXISTING STREAMS.
8. EARTH AND TOPSOIL TO BE RETAINED ON THE SITE SHALL BE STOCKPILED IN AN OPEN AREA WITHIN THE RIGHT-OF-WAY. THE COUNTY SHALL BE NOTIFIED AND GIVE CONCURRENCE PRIOR TO STOCKPILING TOPSOIL ON SITE. IMMEDIATELY INSTALL SILT FENCE AROUND STOCKPILES, SOW TEMPORARY SEED AND MULCH STOCKPILES TO ENSURE PROTECTION AGAINST SEDIMENT RUNOFF FROM THE TOPSOIL STOCKPILE. ALL OTHER SPOILS ARE TO BE OFF-HAULED.
9. COMMENCE WITH CONSTRUCTION OF SINGLE SPAN BRIDGES. REFER TO PLANS FOR SITE ACCESS.
10. EXCAVATE AND CONSTRUCT ROADSIDEPATH DITCHES AS SHOWN ON THE PLANS. INSTALL PERMANENT ROCK CHECK DAM AND OR TEMPORARY EROSION CONTROL MEASURES AS INDICATED ON THE PLANS. IMMEDIATELY STABILIZE DITCHES WITH NAG S-75 OR APPROVED EQUIVALENT MATTING.
11. CONSTRUCT AND EXTEND STORM PIPES AND OUTLET PROTECTION TO LINES AND GRADES AS SHOWN ON THE PLANS.
12. ROUGH GRADE SUBGRADE TO PLAN LINE AND GRADES. EXCESS MATERIAL TO BE HAULED OFF-SITE.
13. ONCE STORMWATER PIPING AND UNDERGROUND UTILITIES ARE INSTALLED BEGIN PLACING AND COMPACTING BASE ROCK.
14. PLACE ASPHALT CONCRETE SURFACE COURSE.
15. PROVIDE REMAINING PERMANENT SEEDING AND MULCHING.
16. COMPLETE ALL ON-SITE IMPROVEMENTS AND PERFORM AND CLEANUP. REMOVE AND DISPOSE OF ORANGE CONSTRUCTION FENCE.
17. UNTIL SUCH TIME AS THE SITE IS PERMANENTLY STABILIZED, ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE MAINTAINED IN WORKING ORDER. MAINTENANCE SHALL INCLUDE INSPECTION OF ALL EROSION AND SEDIMENT CONTROL DEVICES AFTER EACH RUNOFF EVENT AND ON A WEEKLY BASIS.
18. PERMANENT STABILIZATION IS DEFINED AS A MINIMUM UNIFORM 70% PERENNIAL VEGETATIVE COVER OR OTHER PERMANENT NON-VEGETATIVE COVER WITH A DENSITY SUFFICIENT TO RESIST ACCELERATED SURFACE EROSION AND SUBSURFACE CHARACTERISTICS SUFFICIENT TO RESIST SLIDING OR OTHER MOVEMENTS.
19. CONTACT THE HENDERSON COUNTY FOR FINAL INSPECTION AND CLOSE OUT OF PROJECT.
20. UPON COMPLETION OF ALL EARTH DISTURBANCE ACTIVITIES AND PERMANENT STABILIZATION OF ALL DISTURBED AREAS, REMOVE THE TEMPORARY BMPS.
21. IMMEDIATELY REPAIR AND STABILIZE ANY AREAS DISTURBED DURING REMOVAL OF THE TEMPORARY BMPS.

DAM AND PUMP STREAM DIVERSION

DAMS TO BE CONSTRUCTED WITH MATERIALS THAT MINIMIZE SEDIMENT AND PREVENT POLLUTANTS FROM ENTERING THE WATER WAY, SUCH AS GEOTEXTILE BAGS OR CLEAN GRAVEL WITH LINERS. PUMPS SHALL BE INSTALLED, OPERATED, AND CONTINUALLY MONITORED FOR SUFFICIENT FLOW TO MAINTAIN NATURAL FLOW VOLUMES. A PRACTICAL UPPER LIMIT TO CONSIDER FOR PUMPING IS 35 CUBIC FEET PER SECOND (CFS). ON-SITE BACKUP PUMPS WILL BE IN PLACE TO MAINTAIN NATURAL FLOW VOLUMES IN THE EVENT OF PUMP FAILURE, ENSURING ADEQUATE AND REDUNDANT POWER SUPPLY FOR PUMPS. PUMP INTAKES WILL BE SCREENED. PUMP DISCHARGE SHOULD BE LOCATED TO MINIMIZE STREAMBED SCOUR AND BANK EROSION. CHANNEL MORPHOLOGY AND FLOW CONDITIONS MAY ALLOW FOR THE USE OF PUMPS WITHOUT THE USE OF DAMS, COMMONLY REFERRED TO AS SUMP AND PUMP. A CHANNEL HAVING A POOL-RIFFLE OR BEADED SEQUENCE COULD HAVE PUMPS PLACED IN A NATURAL POOL OR BEAD UPSTREAM OF A RIFFLE. PUMPS SHALL DRAWDOWN WATER SURFACE ELEVATIONS SUCH THAT SURFACE FLOW THROUGH THE DOWNSTREAM RIFFLE WOULD TERMINATE. CLEAN WATER SHALL BE DISCHARGED SUFFICIENTLY DOWNSTREAM OF THE CROSSING SITE TO PREVENT BACKFLOW INTO THE EXCAVATION. IF ISOLATED POOLS PERSIST BETWEEN PUMP INTAKE AND DISCHARGE, FISH SALVAGE MAY BE NECESSARY. CONTACT THE COUNTY REPRESENTATIVE IMMEDIATELY IF FISH SALVAGE IS REQUIRED. PUMPING IS NOT A SUITABLE ISOLATION METHOD FOR STREAMS REQUIRING FISH PASSAGE.

NPDES NOTES

1. THE DEVELOPER IS RESPONSIBLE FOR THE CONTROL OF SEDIMENT ON-SITE IF THE APPROVED EROSION AND SEDIMENTATION CONTROL MEASURES PROVE INSUFFICIENT, THE DEVELOPER MUST TAKE THOSE ADDITIONAL STEPS NECESSARY TO STOP SEDIMENT FROM LEAVING THIS SITE (NCGS 113A-57(3)). EACH SEDIMENT STORAGE DEVICE MUST BE INSPECTED AFTER EACH STORM EVENT (NCGS 113A- 54.1 (E)). MAINTENANCE AND/OR CLEAN OUT IS NECESSARY ANYTIME THE DEVICE IS AT 50% CAPACITY. ALL SEDIMENT STORAGE MEASURES WILL REMAIN ON SITE AND FUNCTIONAL UNTIL ALL GRADING AND FINAL LANDSCAPING OF THE PROJECT IS COMPLETE (15A NCAC 04B .0113).
2. THE DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL PERMITS AND APPROVALS NECESSARY FOR THE DEVELOPMENT OF THIS PROJECT PRIOR TO THE COMMENCEMENT OF THIS LAND DISTURBING ACTIVITY. THIS COULD INCLUDE OUR AGENCY'S STORMWATER REGULATIONS AND THE DIVISION OF WATER RESOURCES' ENFORCEMENT REQUIREMENTS WITHIN SECTION 401 OF THE CLEAN WATER ACT, THE U.S. ARMY CORPS OF ENGINEERS' JURISDICTION OF SECTION 404 OF THE CLEAN WATER ACT, THE DIVISION OF COASTAL MANAGEMENT'S CAMA REQUIREMENTS, THE DIVISION OF SOLID WASTE MANAGEMENT'S LANDFILL REGULATIONS, THE ENVIRONMENTAL PROTECTION AGENCY AND/OR THE U.S. ARMY CORPS OF ENGINEERS JURISDICTION OF THE CLEAN WATER ACT, LOCAL COUNTY OR MUNICIPALITIES' ORDINANCES, OR OTHERS THAT MAY BE REQUIRED. THIS APPROVAL CANNOT SUPERSEDE ANY OTHER PERMIT OR APPROVAL.
3. ADEQUATE AND APPROPRIATE MEASURES MUST BE PROPERLY INSTALLED DOWNSTREAM, WITHIN THE LIMITS OF DISTURBANCE, OF ANY LAND DISTURBING ACTIVITY TO PREVENT SEDIMENT FROM LEAVING THE LIMITS OF DISTURBANCE, ENTERING EXISTING DRAINAGE SYSTEMS, IMPACTING AN ON-SITE NATURAL WATERCOURSE OR ADJOINING PROPERTY. (NCGS 113A-57)

RECYCLING AND DISPOSAL METHODS

1. AFTER CONSTRUCTION IS COMPLETED, ANY SEDIMENT REMOVED FROM THE SITE SHOULD BE SPREAD ON-SITE IF POSSIBLE. OTHERWISE, SEDIMENT SHALL BE TAKEN TO AN APPROVED DISPOSAL FACILITY. TRASH, DEBRIS, VEGETATIVE CLIPPINGS/BRUSH SHALL BE REMOVED FROM THE BMP'S AND MUST BE DISPOSED OF AT AN APPROVED FACILITY.

INSPECTION AND MAINTENANCE PLAN

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF PRODUCING RAINFALL BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. CONSTRUCTION EQUIPMENT SHALL NOT BE STORED OVERNIGHT OR FUELED ON SITE WITHOUT THE CONSENT OF THE COUNTY.

INSPECTION AND MAINTENANCE

SILT FENCE.

- INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES 1/2-INCHES OR MORE OF PRECIPITATION. CHECK FOR SEDIMENT BUILDUP AND FENCE INTEGRITY. CHECK WHERE RUNOFF HAS ERODED A CHANNEL BENEATH THE FENCE, OR WHERE THE FENCE HAS SAGGED OR COLLAPSED BY FENCE OVERTOPPING.
- IF THE FENCE FABRIC TEARS, BEGINS TO DECOMPOSE, OR N ANY WAY BECOMES INEFFECTIVE, REPLACE THE SECTION OF FENCE IMMEDIATELY.
- REMOVE SEDIMENT ACCUMULATED ALONG THE FENCE WHEN IT REACHES 1/3 THE HEIGHT OF THE FENCE, ESPECIALLY IF HEAVY RAINS ARE EXPECTED.
- REMOVE TRAPPED SEDIMENT FROM THE SITE OR STABILIZE IT ON SITE.
- REMOVE SILT FENCE WITHIN 30 DAYS AFTER FINAL STABILIZATION IS ACHIEVED OR AFTER TEMPORARY BEST MANAGEMENT PRACTICES (BMPS) ARE NO LONGER NEEDED.
- PERMANENTLY STABILIZE DISTURBED AREAS RESULTING FROM FENCE REMOVAL.

STABILIZED CONSTRUCTION ENTRANCE.

- INSPECT EVERY 7 CALENDAR DAYS AND WITHIN 24-HOURS AFTER EACH RAINFALL EVENT THAT PRODUCES "-INCHES OR MORE OF PRECIPITATION, OR AFTER HEAVY USE.
- CHECK FOR MUD AND SEDIMENT BUILDUP AND PAD INTEGRITY.
- MAKE DAILY INSPECTIONS DURING PERIODS OF WET WEATHER MAINTENANCE IS REQUIRED MORE FREQUENTLY IN WET WEATHER CONDITIONS. RESHAPE THE STONE PAD AS NEEDED FOR DRAINAGE AND RUNOFF CONTROL.
- WASH OR REPLACE STONES AS NEEDED.

Table 6.10a: Temporary Seeding Recommendations for Late Winter and Early Spring

Seeding mixture

Species	Rate (lb/acre)
Rye (grain)	120
Annual lespedeza (Kobe in Piedmont and Coastal Plain, Korean in Mountains)	50

Omit annual lespedeza when duration of temporary cover is not to extend beyond June.

Seeding dates
Mountains—Above 2500 feet: Feb. 15 - May 15
Below 2500 feet: Feb. 1- May 1
Piedmont—Jan. 1 - May 1
Coastal Plain—Dec. 1 - Apr. 15

Soil amendments
Follow recommendations of soil tests or apply 2,000 lb/acre ground agricultural limestone and 750 lb/acre 10-10-10 fertilizer.

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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ESC PLAN PROJECT HENDERSON-2023-

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT

Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes

Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None
(b) High Quality Water (HQW) Zones	7	None
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION

Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics such as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS

1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

EQUIPMENT AND VEHICLE MAINTENANCE

1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE

1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE

1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

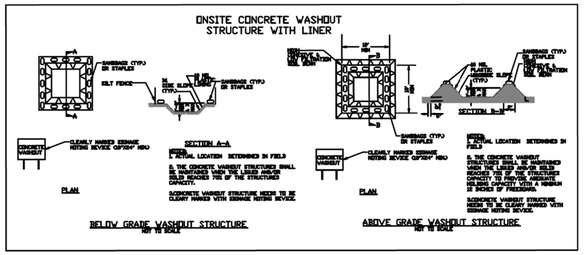
PORTABLE TOILETS

1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT

1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.

NORTH CAROLINA *Environmental Quality*



CONCRETE WASHOUTS

1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES

1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE

1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION

Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no individual-day rainfall information is available, record the cumulative rain measurement for those un-attended days (anc this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section C, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover). 2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING

1. E&SC Plan Documentation

The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with approved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site

In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years

All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING

1. Occurrences that Must be Reported

Permittees shall report the following occurrences:

(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements

After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days,*** a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6). • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA *Environmental Quality*

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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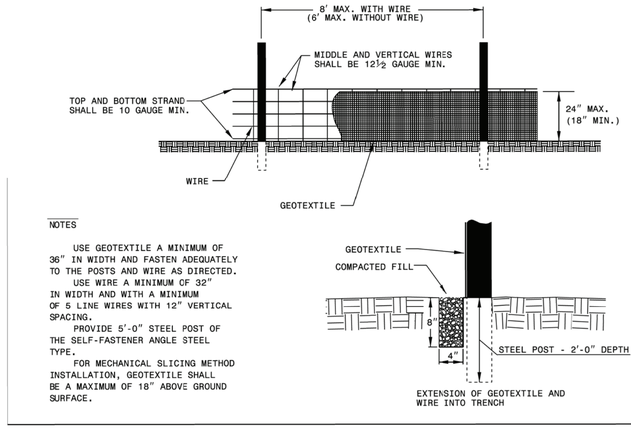
ESC PLAN PROJECT
HENDERSON-2023-



NOTES

USE GEOTEXTILE A MINIMUM OF 36" IN WIDTH AND FASTEN ADEQUATELY TO THE POSTS AND WIRE AS DIRECTED.

USE WIRE A MINIMUM OF 32" IN WIDTH AND WITH A MINIMUM OF 5 LINE WIRES WITH 12" VERTICAL SPACING.

PROVIDE 5'-0" STEEL POST OF THE SELF-FASTENER ANGLE STEEL TYPE.

FOR MECHANICAL SLICING METHOD INSTALLATION, GEOTEXTILE SHALL BE A MAXIMUM OF 18" ABOVE GROUND SURFACE.

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

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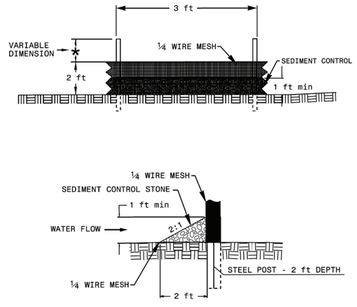
ROADWAY STANDARD DRAWING FOR
TEMPORARY SILT FENCE

SHEET 1 OF 1
1605.01



NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH ¼ INCH MESH OPENINGS.

INSTALL 5 FT. SELF FASTENER ANGLE STEEL POST 2 FT. DEEP MINIMUM.

ATTACH HARDWARE CLOTH TO POSTS WITH WIRE STAPLE OR OTHER ACCEPTABLE METHODS.

SPACE POSTS A MAXIMUM OF 3 FT.

FOR INSTALLATION BETWEEN SECTIONS OF SILT FENCE, EXTEND SEDIMENT CONTROL STONE A MINIMUM OF 12" ON EACH SIDE OF SPECIAL SEDIMENT CONTROL FENCE SECTION.

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

1-18

ROADWAY STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE

SHEET 1 OF 1
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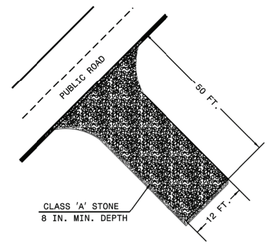


NOTES

1. PROVIDE TURNING RADIUS SUFFICIENT TO ACCOMMODATE LARGE TRUCKS.
2. LOCATE ENTRANCES TO PROVIDE FOR UTILIZATION BY ALL CONSTRUCTION VEHICLES.
3. MUST BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR DIRECT FLOW OF MUD ONTO STREETS. PERIODIC TOPDRESSING WITH STONE WILL BE NECESSARY.
4. ANY MATERIAL TRACKED ONTO THE ROADWAY MUST BE CLEANED UP IMMEDIATELY.
5. LOCATE GRAVEL CONSTRUCTION ENTRANCE AT ALL POINTS OF INGRESS AND EGRESS UNTIL SITE IS STABILIZED. PROVIDE FREQUENT CHECKS OF THE DEVICE AND TIMELY MAINTENANCE.
6. NUMBER AND LOCATION OF CONSTRUCTION ENTRANCES TO BE DETERMINED BY THE ENGINEER.
7. USE CLASS 'A' STONE OR OTHER COARSE AGGREGATE APPROVED BY THE ENGINEER.
8. INSTALL CONSTRUCTION ENTRANCES IN A WAY TO PREVENT VEHICLES FROM BYPASSING CONSTRUCTION ENTRANCE LEAVING PROJECT SITE.

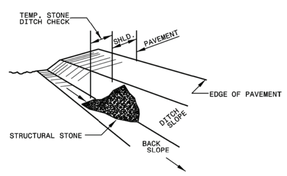
NOTE: PLACE GEOTEXTILE FOR DRAINAGE BENEATH STONE

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

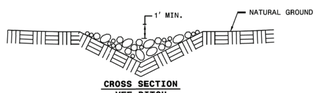
1-18

ROADWAY STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

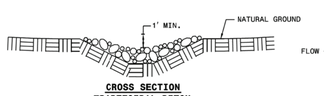
SHEET 1 OF 1
1607.01



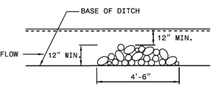
ISOMETRIC VIEW



CROSS SECTION VEE DITCH



CROSS SECTION TRAPEZOIDAL DITCH



ELEVATION VIEW

NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.

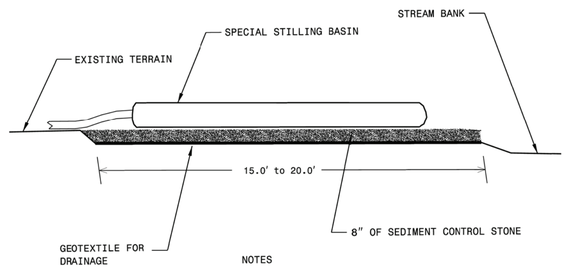
THE ENGINEER MAY DIRECT THE OPTION OF CLASS A STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.

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

1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE B

SHEET 1 OF 1
1633.02



NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

PROVIDE STABILIZED OUTLET TO STREAM BANK.

WOOD PALLETS MAY BE USED IN LIEU OF STONE AND GEOTEXTILE AS DIRECTED. A SUFFICIENT NUMBER OF PALLETS MUST BE PROVIDED TO ELEVATE THE ENTIRE SPECIAL STILLING BASIN ABOVE NATURAL GROUND.

NOT TO SCALE

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

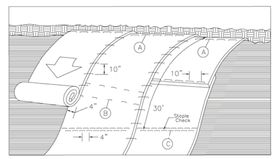
1-18

ROADWAY STANDARD DRAWING FOR
SPECIAL STILLING BASIN

SHEET 1 OF 1
1630.06



MATTING IN DITCHES



MATTING ON SLOPES

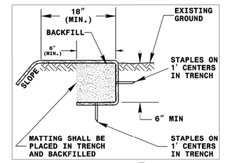


DIAGRAM (A)

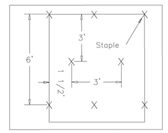


DIAGRAM (B)

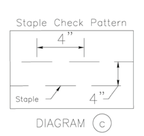


DIAGRAM (C)

NOTES

THIS DETAIL APPLIES TO STRAW, EXCELSIOR, COIR FIBER MAT AND PERMANENT SOIL REINFORCEMENT MAT (PSRM) INSTALLATION AND AS DIRECTED.

STAPLES SHALL BE NO. 11 GAUGE STEEL WIRE FORMED INTO A "U" SHAPE WITH A MINIMUM THROAT WIDTH OF 1 INCH AND NOT LESS THAN 8 INCHES IN LENGTH.

NOT TO SCALE

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

1-18

ROADWAY STANDARD DRAWING FOR
MATTING INSTALLATION

SHEET 1 OF 1
1631.01

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User:wells

8/17/99

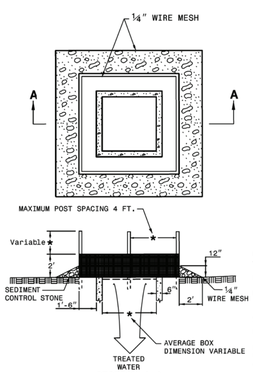
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-



NOTES

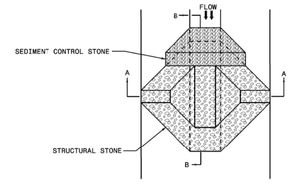
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE 24 GAUGE MINIMUM WIRE MESH HARDWARE CLOTH WITH 1/4 INCH MESH OPENINGS.
PLACE TOP OF WIRE MESH A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR ANY DIVERSION POINT.
ATTACH HARDWARE CLOTH TO POSTS WITH PLASTIC TIES, WIRE FASTENERS, OR OTHER APPROVED ATTACHMENT DEVICE.
INSTALL WIRE MESH UNDER SEDIMENT CONTROL STONE.
USE 5' STEEL POST, INSTALLED 2' DEEP MINIMUM, AND OF THE SELF-FASTENER ANGLE STEEL TYPE.
SPACE POST A MAXIMUM OF 4'.

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

1-18

ROADWAY STANDARD DRAWING FOR
ROCK INLET SEDIMENT TRAP TYPE C

SHEET 1 OF 1
1632.03



NOTES

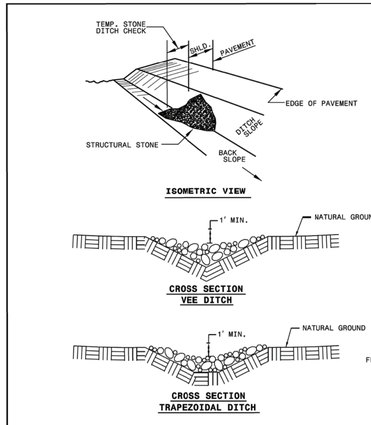
USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.

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

1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE A

SHEET 1 OF 1
1633.01



NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.

THE ENGINEER MAY DIRECT THE OPTION OF CLASS A STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.

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

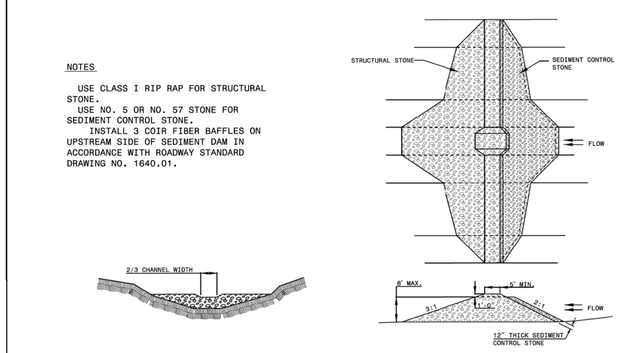
1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE B

SHEET 1 OF 1
1633.02

NOTES

USE CLASS I RIP RAP FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
INSTALL 3 COIR FIBER BAFFLES ON UPSTREAM SIDE OF SEDIMENT DAM IN ACCORDANCE WITH ROADWAY STANDARD DRAWING NO. 1640.01.



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

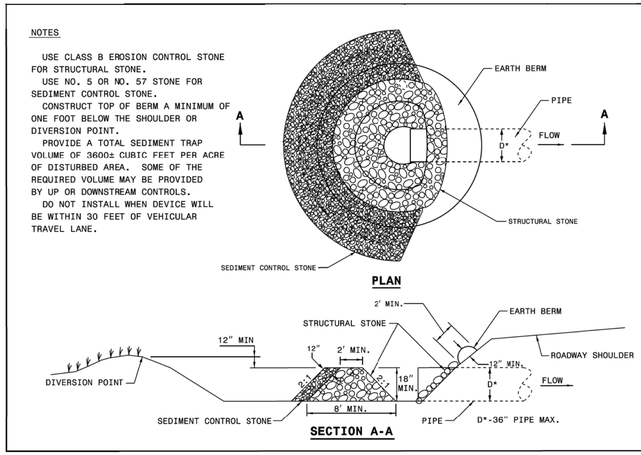
1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE A

SHEET 1 OF 1
1634.01

NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
CONSTRUCT TOP OF BERM A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR DIVERSION POINT.
PROVIDE A TOTAL SEDIMENT TRAP VOLUME OF 3600± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY UP OR DOWNSTREAM CONTROLS.
DO NOT INSTALL WHEN DEVICE WILL BE WITHIN 30 FEET OF VEHICULAR TRAVEL LANE.



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

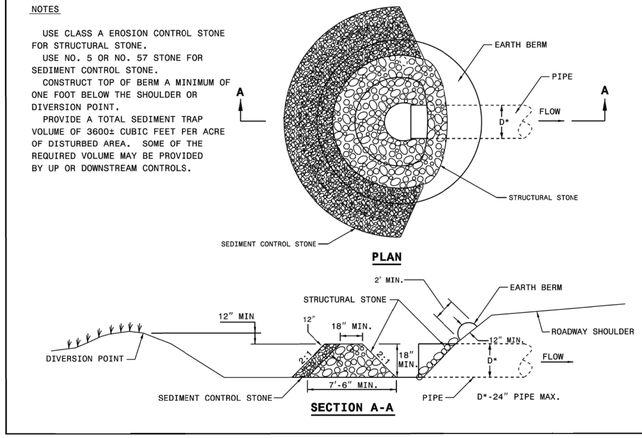
1-18

ROADWAY STANDARD DRAWING FOR
ROCK PIPE INLET SEDIMENT TRAP TYPE A

SHEET 1 OF 1
1635.01

NOTES

USE CLASS A EROSION CONTROL STONE FOR STRUCTURAL STONE.
USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
CONSTRUCT TOP OF BERM A MINIMUM OF ONE FOOT BELOW THE SHOULDER OR DIVERSION POINT.
PROVIDE A TOTAL SEDIMENT TRAP VOLUME OF 3600± CUBIC FEET PER ACRE OF DISTURBED AREA. SOME OF THE REQUIRED VOLUME MAY BE PROVIDED BY UP OR DOWNSTREAM CONTROLS.



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

1-18

ROADWAY STANDARD DRAWING FOR
ROCK PIPE INLET SEDIMENT TRAP TYPE B

SHEET 1 OF 1
1635.02

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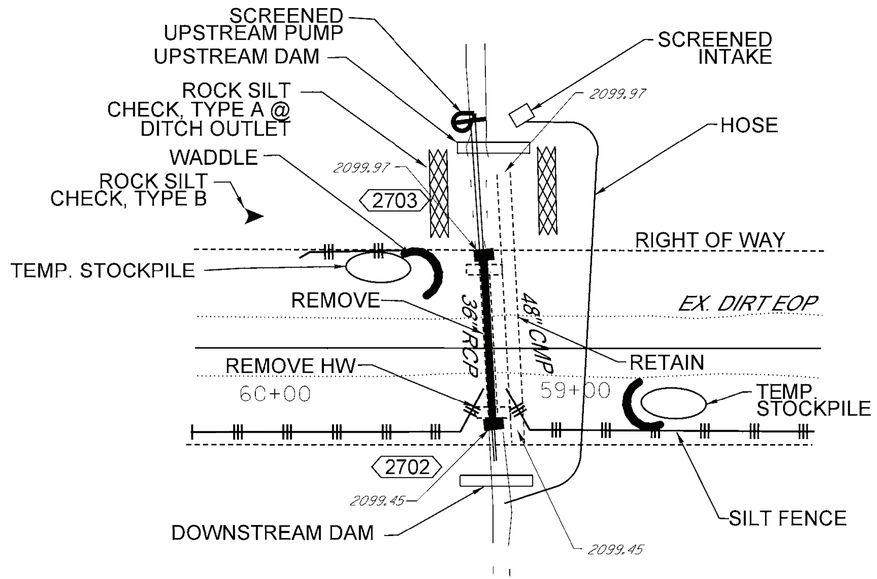
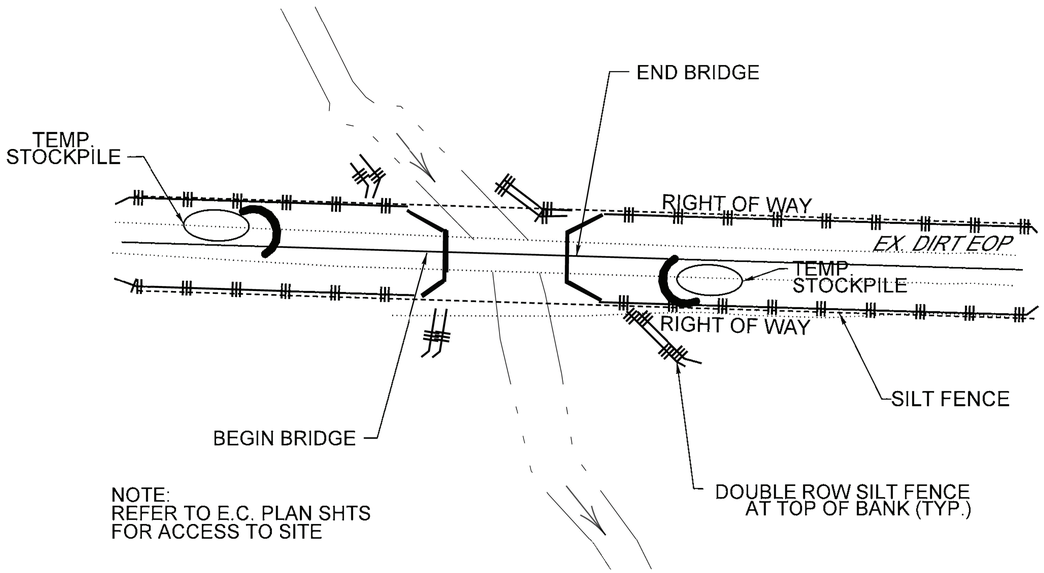
REVISIONS



DAM AND PUMP STREAM DIVERSION (TYPICAL)

NO SCALE



NOTE:
REFER TO E.C. PLAN SHTS
FOR ACCESS TO SITE

TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE CONSTRUCTION

NO SCALE

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

ESTIMATE OF EROSION CONTROL QUANTITIES

SHEET NO.	TEMPORARY SILT FENCE	TEMPORARY ROCK SILT CHECK, TYPE A	TEMPORARY ROCK SILT CHECK, TYPE B	TEMPORARY ROCK PIPE INLET SEDIMENT TRAP, TYPE A	TEMPORARY ROCK PIPE INLET SEDIMENT TRAP, TYPE B	ROCK INLET SEDIMENT TRAP, TYPE C	SPECIAL SEDIMENT CONTROL FENCE	DITCH/SLOPE MATTING (NAG S-75 OR EQUIVALENT)	FLOAT TURBITITY CURTAIN	ROCK CONSTRUCTION ENTRANCE
	(LF)	(EA)	(EA)	(EA)	(EA)	(EA)	(LF)	(SY)	(LF)	(EA)
EC-1	2,049	2	0	1	0	0	296	310	44	2
EC-2	1,310	0	5	2	0	0	172	505		2
EC-3	2,823	4	0	1	0	0	188	230		0
EC-4	1,910	1	0	4	0	0	172	723		2
EC-5	2,260	0	1	1	0	0	274	323		0
EC-6	1,619	0	2	0	0	0	328	368	40	2
EC-7	1,325	4	3	0	0	0	191	753		0
EC-8	1,610	0	10	2	1	0	0	626		2
EC-9	1,203	1	9	0	1	0	42	454	100	2
EC-10	1,182	3	9	1	1	0	162	372	110	2
EC-11	537	2	11	1	0	0	150	133		0
EC-12	1,829	0	3	1	0	0	90	123	52	0
EC-13	1,983	2	4	1	1	0	0	595		0
EC-14	1,418	0	2	2	1	0	0	198		4
EC-15	2,079	0	2	2	2	0	162	470		2
EC-16	498	0	6	1	3	1	0	1,657		2
EC-17	1,414	2	7	1	1	7	0	1,290		2
EC-18	548	2	12	3	0	1	0	682		0
EC-19	1,707	3	6	0	0	1	134	544	220	1
EC-20	1,172	1	3	0	0	3	0	704		1
EC-21	1,357	1	7	2	1	3	0	641		4
EC-22	1,569	1	2	0	0	0	110	547	90	2
EC-23	1,519	3	8	1	0	4	0	993		2
EC-24	483	4	9	0	0	3	0	1,157		2
EC-25	866	1	3	0	1	6	80	604		3
EC-26	350	0	0	0	0	0	0	0		0
TOTAL:	36,620	37	124	27	13	29	2,551	15,004	656	39

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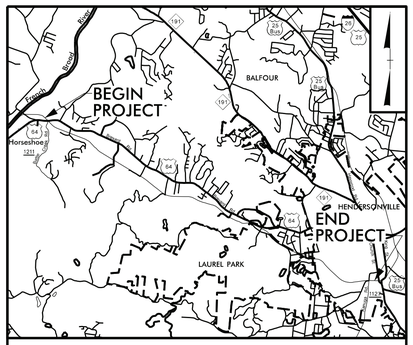
See Sheet 1A For Index of Sheets



VICINITY MAP (N.T.S.)

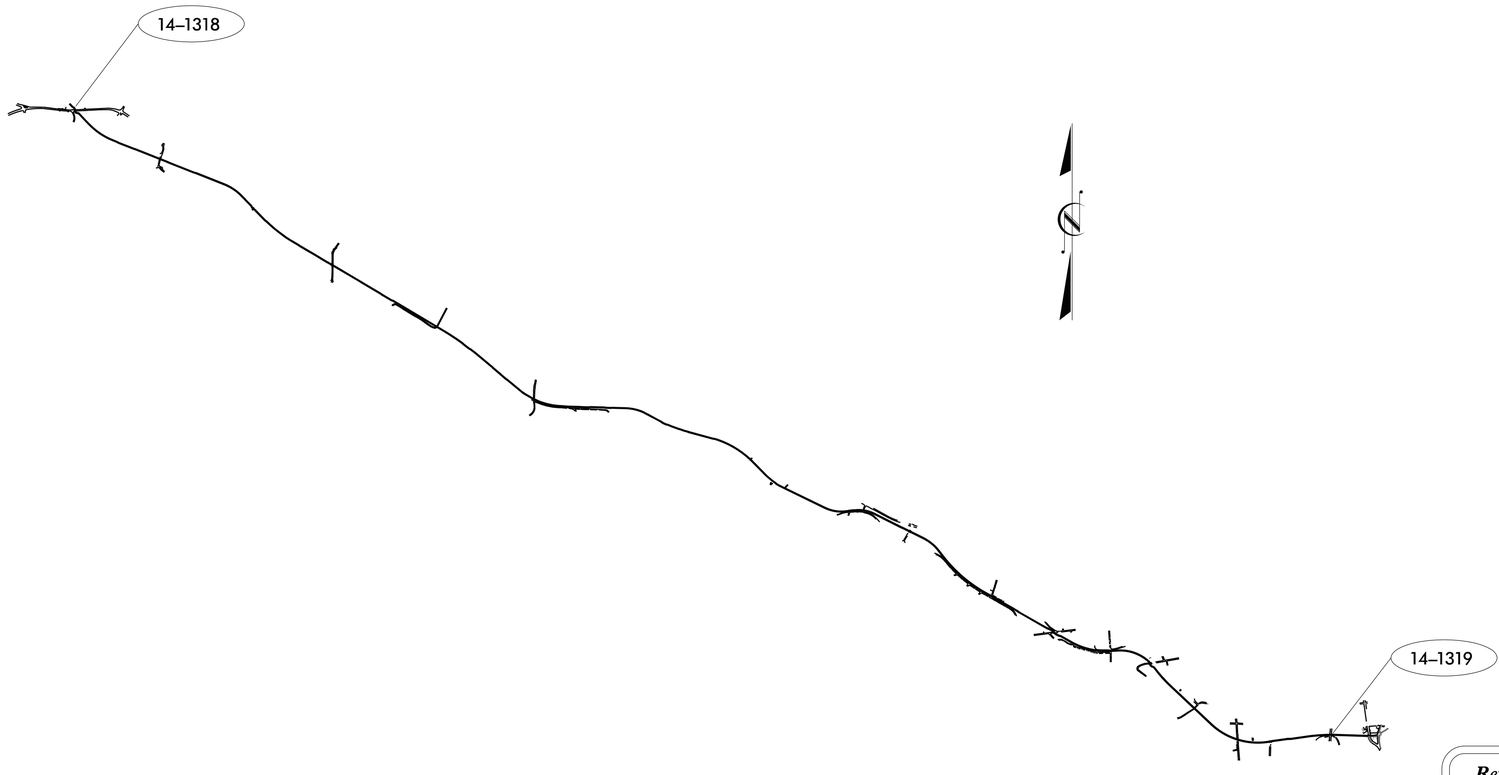
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Project No.	Sheet No.
BL–0007	Sig. 1.0

HENDERSON COUNTY

LOCATION: *US 64 NEAR HORSE SHOE TO SOUTH MAIN STREET IN HENDERSONVILLE*

TYPE OF WORK: *GRADING, PAVING, STRUCTURES, AND TRAFFIC SIGNALS*



Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.

Index of Plans

Sheet #	Reference #	Location/Description
Sig. 1.0	--------	Title Sheet
Sig. 2.0–2.3	14–1319	SR 1127 (Kanuga Rd) at SR 1171 (Willow Rd) & Israel St
Sig. 3.0–3.2	14–1318	US 64 (Brevard Rd) at SR 1211 (Battle Creek Rd)
Sig. 4.0–4.3	14–1318	US 64 (Brevard Rd) Communications Plan
Sig. 5.0–5.1	--------	Revised Standard Drawings
Sig. M1–M8	--------	Metal Pole Standard Drawings

INTELLIGENT TRANSPORTATION AND SIGNALS UNIT

Contacts:

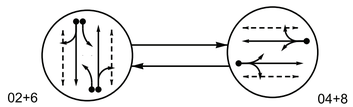
Richard N. Zinser, PE – Western Region Signals Engineer
Keith M. Mims, PE – Signal Equipment Design Engineer
Gregg A. Green – Signal Communications Project Engineer
Matthew T. Carlisle, PE – State Signal Systems Engineer

Prepared for the Office of:
DIVISION OF HIGHWAYS
TRANSPORTATION MOBILITY AND SAFETY DIVISION

750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 2.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

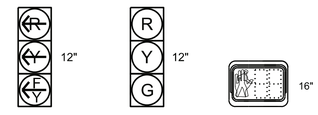
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 04+8	FLASH
21	~~F Y~~	~~R~~	~~Y~~
22, 23	G	R	Y
41, 42, 43	R	G	R
61	~~F Y~~	~~R~~	~~Y~~
62, 63	G	R	Y
81, 82, 83	R	G	R
P21, P22	W	DW	DRK
P41, P42	DW	W	DRK
P61, P62	W	DW	DRK
P81, P82	DW	W	DRK

~~R~~ - RED ARROW
~~Y~~ - YELLOW ARROW
~~F Y~~ - FLASHING YELLOW ARROW
R - STEADY RED
Y - STEADY YELLOW
G - GREEN
W - WALK
DW - DON'T WALK
DRK - DARK

SIGNAL FACE I.D.

All Heads L.E.D.



21
61

22, 23
41, 42, 43
62, 63
81, 82, 83

P21, P22
P41, P42
P61, P62
P81, P82

2 Phase
Fully Actuated
Isolated

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Program the controller to allow an Advance Walk movement before serving phase 4 and 8 vehicle phases.
8. Pedestrian pushbuttons shall be vibro-tactile.
9. This intersection features accessible pedestrian signals utilizing percussive tone walk indications and speech messages.

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Willow.
P22	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Willow.
P41	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.
P42	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.
P61	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Israel.
P62	X	-	Walk	Walk signal on to cross Israel.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Israel.
P81	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.
P82	X	-	Walk	Walk signal on to cross Kanuga.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.

MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING							
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6X6	70	4	X	2	-	-	X	-	X	-	X
2B	6X40	0	2-4-2	X	2	-	-	X	-	X	-	X
4A	6X40	0	2-4-2	X	4	10	-	X	-	X	-	X
6A	6X6	70	4	X	6	-	-	X	-	X	-	X
6B	6X40	0	2-4-2	X	6	-	-	X	-	X	-	X
8A	6X40	0	2-4-2	X	8	10	-	X	-	X	-	X

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 4	PHASE 6	PHASE 8
Walk *	7	7	7	7
Ped Clear *	4	7	4	7
Min Green	10	7	10	7
Passage *	3.0	2.0	3.0	2.0
Max 1 *	45	20	45	20
Yellow Change	3.7	3.5	3.7	3.5
Red Clear	2.0	1.5	2.0	1.5
Added Initial *	–	–	–	–
Maximum Initial *	–	–	–	–
Time Before Reduction *	–	–	–	–
Time To Reduce *	–	–	–	–
Minimum Gap	–	–	–	–
Advance Walk	–	4	–	4
Non Lock Detector	–	X	–	X
Vehicle Recall	MIN RECALL	–	MIN RECALL	–
Dual Entry	–	X	–	X

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

PROPOSED STOP BAR, CROSSWALK, AND SIGNAL POLE LOCATION DIAGRAM
NOT TO SCALE

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Sign	
	Metal Pole with Mastarm	
	Pedestrian Signal Head	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	N/A
DD	Directional Drill	N/A
N/A	Right of Way	
	Directional Arrow	
A	Signal Ahead Sign (W3-3)	A
B	No Motor Vehicles Sign (R5-3)	B
	Type I Pushbutton Post	
	Type II Signal Pedestal	

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1" = 20"

SR 1127 (Kanuga Rd) at SR 1171 (Willow Rd) & Israel St

DIVISION 14 HENDERSON COUNTY HENDERSONVILLE

PLAN DATE: May, 2023 REVIEWED BY: C. Kinton

PREPARED BY: R. Woutersz REVIEWED BY:

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1319

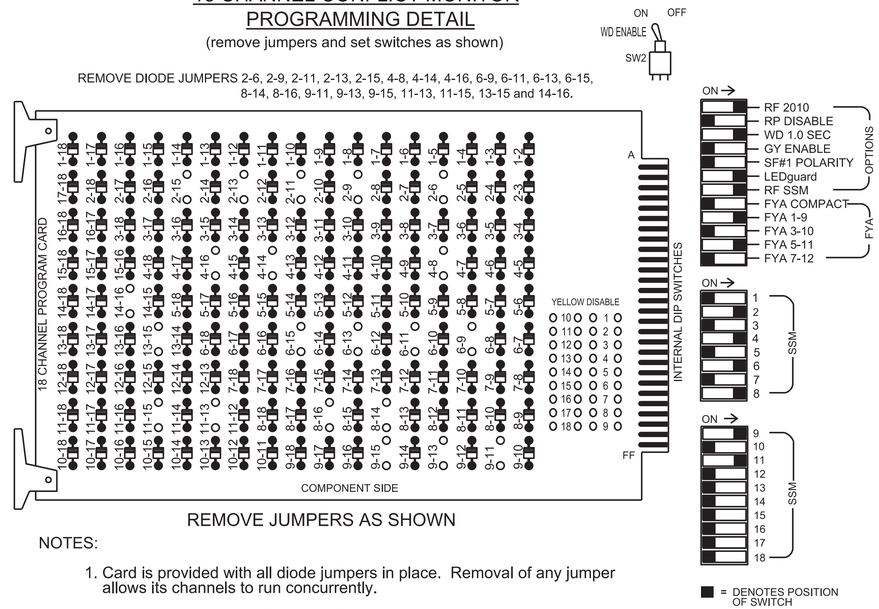
Traffic Planning and Design, Inc.

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 2.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that the Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

INPUT FILE POSITION LAYOUT

(front view)

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I"	U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 4 4A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 2 PED DC ISOLATOR	Ø 6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø 2 2B				NOT USED						Ø 4 PED DC ISOLATOR	Ø 8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J"	U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
	L		Ø 6 6B				NOT USED								

EX. : 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X		X	
2B	TB2-7,8	I2L	43	5	3	2			X		X	
4A	TB4-9,10	I6U	41	3	8	4	10		X		X	
6A	TB3-5,6	J2U	40	2	16	6			X		X	
6B	TB3-7,8	J2L	44	6	17	6			X		X	
8A	TB5-9,10	J6U	42	4	22	8	10		X		X	
PED PUSH BUTTONS												
P21;P22	TB8-4,6	I12U	67	33	2	PED 2						
P41;P42	TB8-5,6	I12L	69	35	4	PED 4						
P61;P62	TB8-7,9	I13U	68	34	6	PED 6						
P81;P82	TB8-8,9	I13L	70	36	8	PED 8						

NOTE:
INSTALL DC ISOLATORS IN INPUT FILE SLOTS I12 AND I13.

INPUT FILE POSITION LEGEND: J2L

FILE J
SLOT 2
LOWER

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program phases 4 and 8 for Dual Entry.
3. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
4. Program phases 4 and 8 for "Simultaneous Start".
5. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2,S3,S5,S6,S8,S9,S11,S12,AUX S1,AUX S4
Phases Used.....2,2PED,4,4PED,6,6PED,8,8PED
Overlap "1".....6
Overlap "2".....Not Used
Overlap "3".....2
Overlap "4".....Not Used

*See overlap programming detail on this sheet

OVERLAP PROGRAMMING

Front Panel
Main Menu >Controller >Overlap >Overlap Parameters/Overlap Timings

Web Interface
Home >Controller >Overlap Configuration >Overlaps

Overlap Plan 1

Overlap	1	3
Enabled	Enabled	Enabled
Description	61	21
Type	FYA 4 - Section	FYA 4 - Section
Included Phases	2	6
Modifier Phases	-	-
Trail Green	0	0
Trail Yellow	0.0	0.0
Trail Red	0.0	0.0

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 14-1319
DESIGNED: May 2023
SEALED:
REVISED: N/A

Prepared in the Office of:

SUMMIT
DESIGN AND ENGINEERING SERVICES
NC FIRM LICENSE No: P-0339
320 Executive Court
Hillsborough, NC 27278
(919) 732-3883
(919) 732-6676 (FAX)

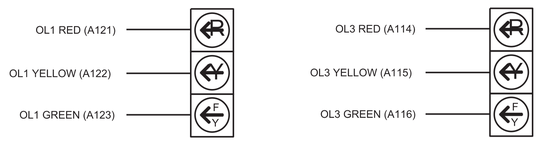
SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	22;23	P21, P22	NU	41;42	P41, P42	NU	62;63	P61, P62	NU	81;82	P81, P82	61★	NU	NU	21★	NU	NU
RED	·	128	·	·	101	·	·	134	·	·	107	·	·	·	·	·	·	·
YELLOW	·	129	·	·	102	·	·	135	·	·	108	·	·	·	·	·	·	·
GREEN	·	130	·	·	103	·	·	136	·	·	109	·	·	·	·	·	·	·
RED ARROW	·	·	·	·	·	·	·	·	·	·	·	·	A121	·	·	A114	·	·
YELLOW ARROW	·	·	·	·	·	·	·	·	·	·	·	·	A122	·	·	A115	·	·
FLASHING YELLOW ARROW	·	·	·	·	·	·	·	·	·	·	·	·	A123	·	·	A116	·	·
GREEN ARROW	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
✋	·	·	113	·	·	104	·	·	119	·	·	110	·	·	·	·	·	·
🚶	·	·	115	·	·	106	·	·	121	·	·	112	·	·	·	·	·	·

NU = Not Used
★See pictorial of head wiring in detail this sheet.

FYA SIGNAL WIRING DETAIL

(wire signal heads as shown)



ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

Electrical Detail

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Electrical and Programming Details For:

SR 1127 (Kanuga Rd) at
SR 1171 (Willow Rd) &
Israel St

Division 14 | Henderson County | Hendersonville

PLAN DATE:	May 2023	REVIEWED BY:	E. Sirgany
PREPARED BY:	J. Smith	REVIEWED BY:	

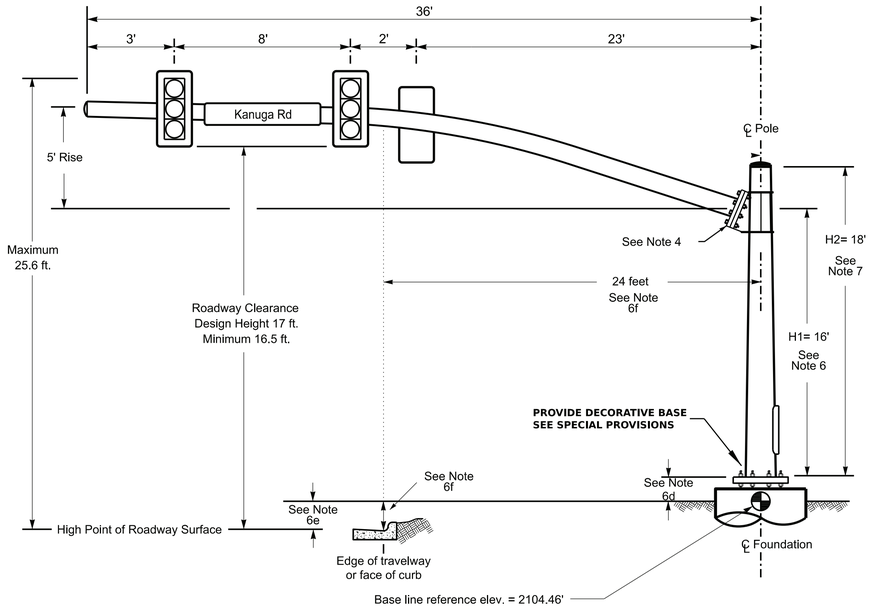
REVISIONS	INIT.	DATE

Prepared for:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Traffic Engineering Branch
Traffic Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

SEAL
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
DATE

SIG. INVENTORY NO. 14-1319

Design Loading for METAL POLE NO. 1



Westbound Elevation View

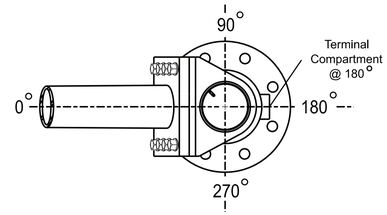
NOTE: This space intentionally left blank.

SPECIAL NOTE

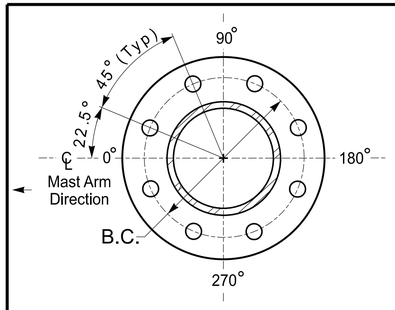
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Pole 1
Baseline reference point at ℄ Foundation @ ground level	2104.46 ft.
Elevation difference at High point of roadway surface	+1.92 ft.
Elevation difference at Edge of travelway or face of curb	+0.79 ft.

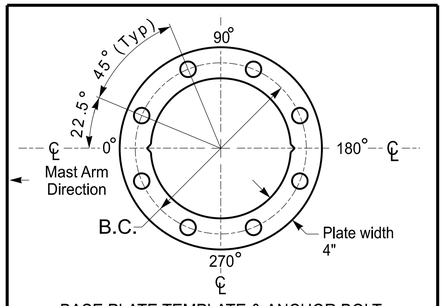


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 2.2

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
Kanuga Rd	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2018 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection shown as long as the connection meets all of the design requirements.
5. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
6. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
   f. Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
7. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
8. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
9. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
10. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

All metal poles and arms should be GREEN in color as specified in the project special provisions.

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www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

NCDOT Wind Zone 4 (90 MPH)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1127 (Kanuga Rd) at
SR 1171 (Willow Rd) &
Israel St

DIVISION 14	HENDERSON COUNTY	HENDERSONVILLE
PLAN DATE: May, 2023	REVIEWED BY:	C. Kinton
PREPARED BY: R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

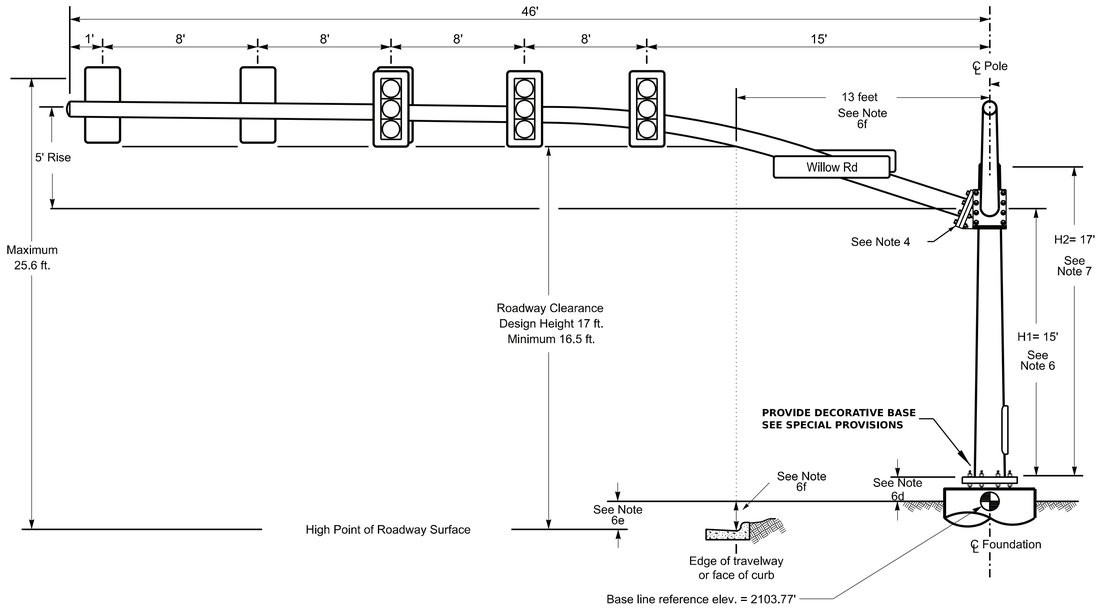
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1319

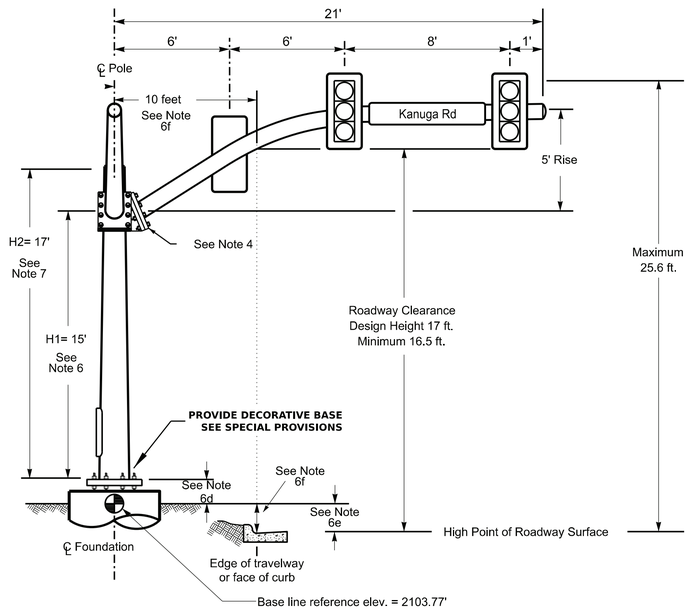
Traffic Planning and Design, Inc.

Design Loading for METAL POLE NO. 2, MAST ARM A



Northbound Elevation View

Design Loading for METAL POLE NO. 2, MAST ARM B



Eastbound Elevation View

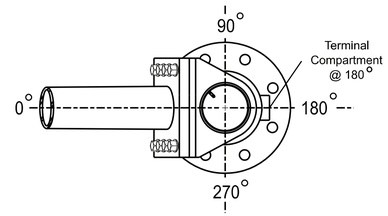
Traffic Planning and Design, Inc.

SPECIAL NOTE

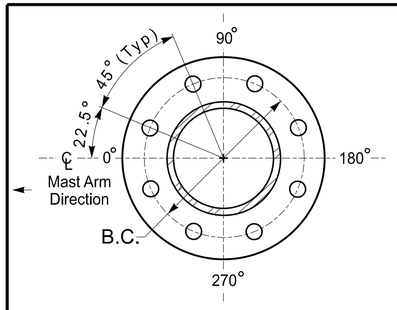
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at ℄ Foundation @ ground level	2103.77 ft.	2103.77 ft.
Elevation difference at High point of roadway surface	+1.22 ft.	+0.75 ft.
Elevation difference at Edge of travelway or face of curb	+0.66 ft.	+0.53 ft.

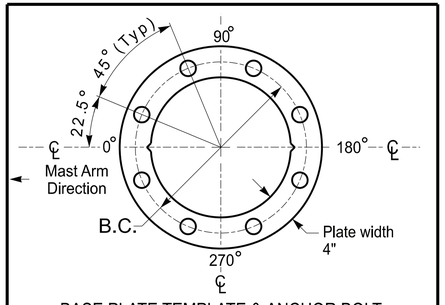


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate

METAL POLE No. 2

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 2.3

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
Kanuga Rd	STREET NAME SIGN RIGID MOUNTED	16.0 S.F.	24.0" W X 96.0" L	36 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
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DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection shown as long as the connection meets all of the design requirements.
5. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
6. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
   f. Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
7. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
8. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
9. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
10. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

All metal poles and arms should be GREEN in color as specified in the project special provisions.

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www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

NCDOT Wind Zone 4 (90 MPH)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SR 1127 (Kanuga Rd) at SR 1171 (Willow Rd) & Israel St

DIVISION 14	HENDERSON COUNTY	HENDERSONVILLE
PLAN DATE: May, 2023	REVIEWED BY: C. Kinton	
PREPARED BY: R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

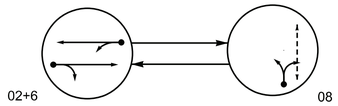
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1319

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 3.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

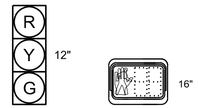
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 08	PHASE FLASH
21, 22	G	R	Y
61, 62	G	R	Y
81, 82	R	G	R
P81, P82	DW	W	DRK

Y - STEADY YELLOW
R - STEADY RED
W - WALK
DW - DON'T WALK
DRK - DARK

SIGNAL FACE I.D.

All Heads L.E.D.



21, 22
61, 62
81, 82

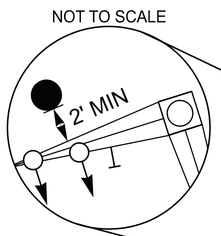
P81, P82

2 Phase
Fully Actuated
(Henderson Signal System)

NOTES

1. Refer to "Roadway Standard Drawings NCDOT" dated January 2018 and "Standard Specifications for Roads and Structures" dated January 2018.
2. Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
3. Set all detector units to presence mode.
4. Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
5. Program pedestrian heads to countdown the flashing "Don't Walk" time only.
6. Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.
7. Program the controller to allow an Advance Walk movement before serving phase 8 vehicle phase.
8. Pedestrian pushbuttons shall be vibro-tactile.
9. This intersection features accessible pedestrian signals utilizing percussive tone walk indications and speech messages.

NOT TO SCALE



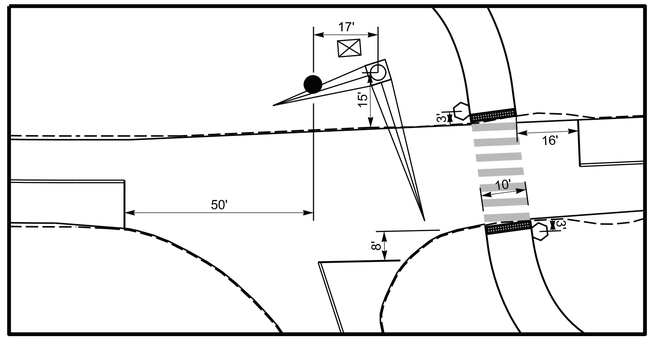
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING						
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN	NEW CARD
2A	6X6	300	4	X	2	-	-	X	X	X	-	X
6A	6X6	300	4	X	6	-	-	X	X	X	-	X
8A	6X40	0	2-4-2	X	8	10	-	X	-	X	-	X

MAXTIME TIMING CHART

FEATURE	PHASE 2	PHASE 6	PHASE 8
Walk *	0	0	7
Ped Clear *	0	0	5
Min Green	10	10	7
Passage *	6.0	6.0	2.0
Max 1 *	45	45	20
Yellow Change	4.8	4.8	3.8
Red Clear	1.3	1.3	1.2
Added Initial *	1.5	1.5	–
Maximum Initial *	34	34	–
Time Before Reduction *	15	15	–
Time To Reduce *	30	30	–
Minimum Gap	3.0	3.0	–
Advance Walk	–	–	–
Non Lock Detector	–	–	X
Vehicle Recall	MIN RECALL	MIN RECALL	–
Dual Entry	–	–	–

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.



PROPOSED STOP BAR, CROSSWALK, AND
SIGNAL POLE LOCATION DIAGRAM
NOT TO SCALE

ACCESSIBLE PEDESTRIAN SIGNAL OPERATION

SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P81	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Brevard.
P82	-	X	Walk	PERCUSSIVE TONE
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Brevard.

LEGEND

PROPOSED		EXISTING
	Traffic Signal Head	
	Sign	
	Metal Pole with Mastarm	
	Pedestrian Signal Head	
	Inductive Loop Detector	
	Controller & Cabinet	
	Junction Box	
	2-in Underground Conduit	N/A
DD	Directional Drill	N/A
N/A	Right of Way	
	Directional Arrow	
A	Stop Here On Red (Left) Sign (R10-6AL)	A
B	Turning Vehicles Yield to Peds Sign (R10-15)	B
C	Signal Ahead Sign (W3-3)	C
D	No Motorized Vehicles (R5-3)	D
	Wireless Communication Antenna	N/A
	Type II Signal Pedestal	

New Installation

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for:
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 64 (Brevard Rd) at
SR 1211 (Battle Creek Rd)

DIVISION 14 HENDERSON COUNTY

PLAN DATE:	May, 2023	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

SCALE 0 20 1" = 20"

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER SCOLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

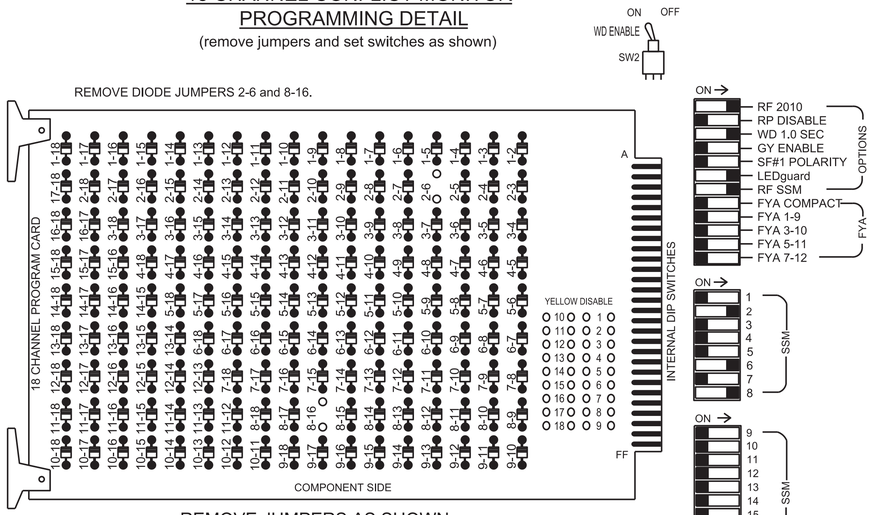
Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

Traffic Planning and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 3.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



REMOVE JUMPERS AS SHOWN

NOTES:

1. Card is provided with all diode jumpers in place. Removal of any jumper allows its channels to run concurrently.
2. Ensure jumpers SEL2-SEL5 and SEL9 are present on the monitor board.
3. Ensure that the Red Enable is active at all times during normal operation.
4. Connect serial cable from conflict monitor to comm. port 1 of 2070 controller. Ensure conflict monitor communicates with 2070.

NOTES

1. To prevent "flash-conflict" problems, insert red flash program blocks for all unused vehicle load switches in the output file. The installer shall verify that signal heads flash in accordance with the signal plan.
2. Program controller to start up in phase 2 Green No Walk and 6 Green No Walk.
3. If this signal will be managed by an ATMS software, enable controller and detector logging for all detectors used at this location.

EQUIPMENT INFORMATION

Controller.....2070LX
Cabinet.....332 w/ Aux
Software.....Q-Free MAXTIME
Cabinet Mount.....Base
Output File Positions.....18 With Aux. Output File
Load Switches Used.....S2,S8,S11,S12
Phases Used.....2,6,8,8PED
Overlaps.....None

SIGNAL HEAD HOOK-UP CHART

LOAD SWITCH NO.	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	AUX S1	AUX S2	AUX S3	AUX S4	AUX S5	AUX S6
CMU CHANNEL NO.	1	2	13	3	4	14	5	6	15	7	8	16	9	10	17	11	12	18
PHASE	1	2	2 PED	3	4	4 PED	5	6	6 PED	7	8	8 PED	OL1	OL2	SPARE	OL3	OL4	SPARE
SIGNAL HEAD NO.	NU	21;22	NU	NU	NU	NU	NU	61,62	NU	NU	81;82	P81, P82	NU	NU	NU	NU	NU	NU
RED	·	128	·	·	·	·	·	134	·	·	107	·	·	·	·	·	·	·
YELLOW	·	129	·	·	·	·	·	135	·	·	108	·	·	·	·	·	·	·
GREEN	·	130	·	·	·	·	·	136	·	·	109	·	·	·	·	·	·	·
RED ARROW	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
YELLOW ARROW	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
GREEN ARROW	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·	·
✋	·	·	·	·	·	·	·	·	·	·	·	110	·	·	·	·	·	·
🚶	·	·	·	·	·	·	·	·	·	·	·	112	·	·	·	·	·	·

NU = Not Used

ACCESSIBLE PEDESTRIAN SIGNAL (APS) INSTALLATION NOTES

1. Install push buttons and APS equipment per manufacturer's instructions.
2. Provide a dedicated cable to each push button per manufacturer's instructions.
3. If APS equipment is mounted in cabinet, use filtered power (i.e., Controller Receptacle) to power APS equipment. Do not use Equipment Receptacle, which is a GFCI outlet.
4. Never attempt to operate a standard contact closure push button with the APS system unless cabinet is re-wired for standard button operation or unless explicitly allowed by the manufacturer.
5. Place manufacturer's instructions in cabinet with cabinet prints, signal plans, and electrical details.

INPUT FILE POSITION LAYOUT

(front view)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
FILE "I" U	SLOT EMPTY	Ø 2 2A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	NOT USED	FS DC ISOLATOR
FILE "I" L		NOT USED											Ø 8 PED DC ISOLATOR	ST DC ISOLATOR
FILE "J" U	SLOT EMPTY	Ø 6 6A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	Ø 8 8A	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY	SLOT EMPTY
FILE "J" L		NOT USED				NOT USED								

EX.: 1A, 2A, ETC. = LOOP NO.'S

FS = FLASH SENSE
ST = STOP TIME

INPUT FILE CONNECTION & PROGRAMMING CHART

LOOP NO.	LOOP TERMINAL	INPUT FILE POS.	PIN NO.	INPUT POINT	DETECTOR NO.	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	CALL	DELAY DURING GREEN
2A	TB2-5,6	I2U	39	1	2	2			X	X	X	
6A	TB3-5,6	J2U	40	2	16	6			X	X	X	
8A	TB5-9,10	J6U	42	4	22	8	10		X		X	
PED PUSH BUTTONS												
P81;P82	TB8-8,9	I13L	70	36	8	PED 8						

NOTE:
INSTALL DC ISOLATOR
IN INPUT FILE SLOT I13.

INPUT FILE POSITION LEGEND: J2L
FILE J
SLOT 2
LOWER

COUNTDOWN PEDESTRIAN SIGNAL OPERATION

Countdown Ped Signals are required to display timing only during Ped Clearance Interval. Consult Ped Signal Module user's manual for instructions on selecting this feature.

THIS ELECTRICAL DETAIL IS FOR
THE SIGNAL DESIGN: 14-1318
DESIGNED: May 2023
SEALED:
REVISED: N/A

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

Electrical Detail

Electrical and Programming Details For:

Prepared for:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Traffic Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

US 64 (Brevard Rd) at
SR 1211 (Battle Creek Rd)

Division 14 | Henderson County | Hendersonville

PLAN DATE:	May 2023	REVIEWED BY:	E. Sirgany
PREPARED BY:	J. Smith	REVIEWED BY:	

REVISIONS	INIT.	DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

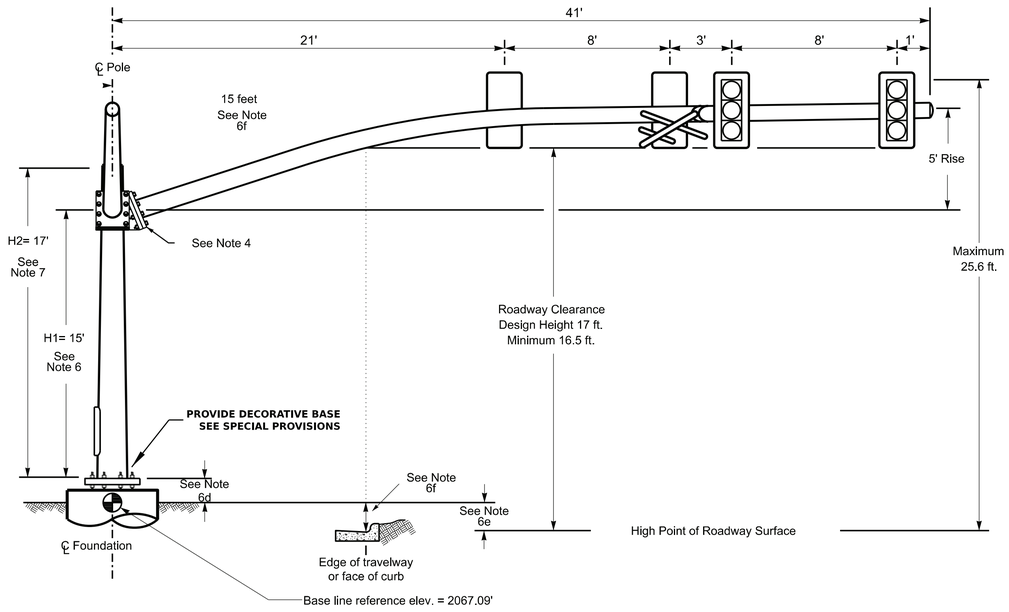
SEAL

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE

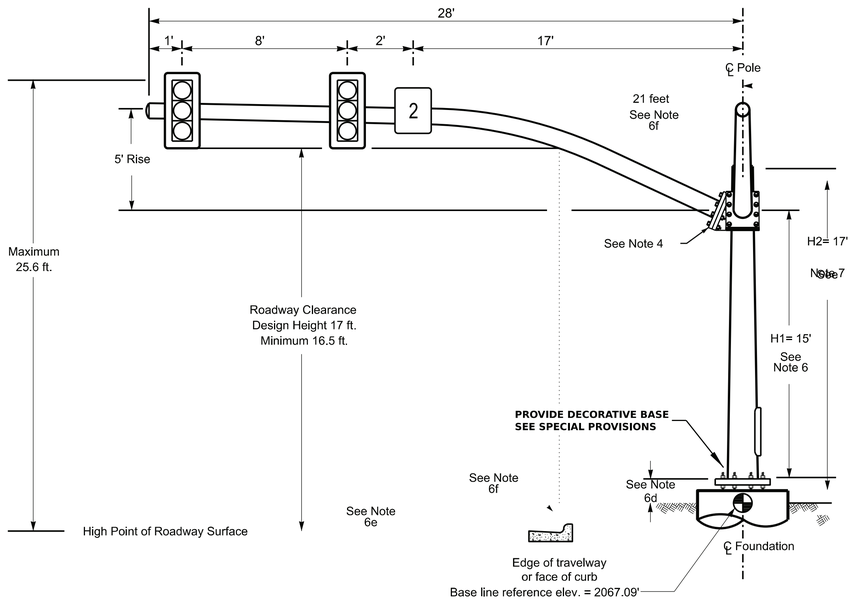
SIG. INVENTORY NO. 14-1318

Design Loading for METAL POLE NO. 1, MAST ARM A



Eastbound Elevation View

Design Loading for METAL POLE NO. 1, MAST ARM B



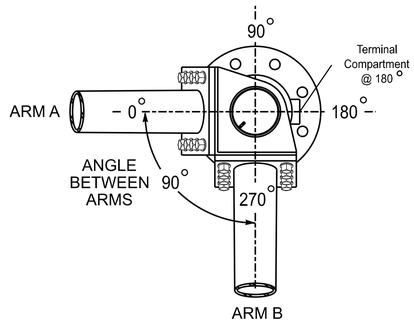
Northbound Elevation View

SPECIAL NOTE

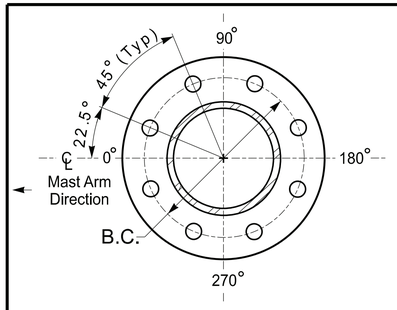
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm A	Arm B
Baseline reference point at ℄ Foundation @ ground level	2067.09 ft.	2067.09 ft.
Elevation difference at High point of roadway surface	+0.89 ft.	+1.17 ft.
Elevation difference at Edge of travelway or face of curb	+0.62 ft.	+0.15 ft.

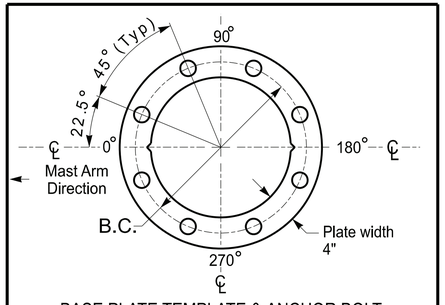


POLE RADIAL ORIENTATION



8 BOLT BASE PLATE DETAIL

See Note 5



BASE PLATE TEMPLATE & ANCHOR BOLT LOCK PLATE DETAIL

For 8 Bolt Base Plate

METAL POLE No. 1

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 3.2

MAST ARM LOADING SCHEDULE

LOADING SYMBOL	DESCRIPTION	AREA	SIZE	WEIGHT
	RIGID MOUNTED SIGNAL HEAD 12"-3 SECTION-WITH BACKPLATE	9.3 S.F.	25.5" W X 52.5" L	60 LBS
	WIRELESS COMMUNICATION ANTENNA RIGID MOUNTED WITH ASTRO-BRAC	0.46 S.F.	53.5"	2.31 LBS
2	SIGN RIGID MOUNTED	7.5 S.F.	30.0" W X 36.0" L	14 LBS

NOTES

DESIGN REFERENCE MATERIAL

1. Design the traffic signal structure and foundation in accordance with:
   - The 6th Edition 2013 AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, including all of the latest interim revisions.
   - The 2018 NCDOT "Standard Specifications for Roads and Structures." The latest addenda to the specifications can be found in the traffic signal project special provisions.
   - The 2018 NCDOT Roadway Standard Drawings.
   - The traffic signal project plans and special provisions.
   - The NCDOT "Metal Pole Standards" located at the following NCDOT website: https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

DESIGN REQUIREMENTS

2. Design the traffic signal structure using the loading conditions shown in the elevation views. These are anticipated worst case "design loads" and may not represent the actual loads that will be applied at the time of the installation. The contractor should refer to the traffic signal plans for the actual loads that will be applied at the time of the installation.
3. Design all signal supports using stress ratios that do not exceed 0.9.
4. A clamp-type bolted mast arm-to-pole connection may be used instead of the welded ring stiffened box connection shown as long as the connection shown as long as the connection meets all of the design requirements.
5. Design base plate with 8 anchor bolt holes. Provide 2 inch x 60 inch anchor bolts.
6. The mast arm attachment height (H1) shown is based on the following design assumptions:
   a. Nominal vertical rise in mast arm is 5 feet as measured from the centerline of the arm base to the centerline of the free end of the arm.
   b. Signal heads are rigidly mounted and vertically centered on the mast arm.
   c. The roadway clearance height for design is as shown in the elevation views.
   d. The top of the pole base plate is 0.75 feet above the ground elevation.
   e. Refer to the Elevation Data Chart for the elevation differences between the proposed foundation ground level and the high point of the roadway.
   f. Provide horizontal distance from the proposed centerline of the foundation to the edge of travelway. Refer to the Elevation Data Chart for elevation difference between the proposed foundation ground level and the edge of travelway. This information is necessary to ensure that the roadway clearance is maintained at the edge of the travelway and to aid in the camber design of the arm.
7. The pole manufacturer will determine the total height (H2) of each pole using the greater of the following:
   - Mast arm attachment height (H1) plus 2 feet, or
   - H1 plus 1/2 of the total height of the mast arm attachment assembly plus 1 foot.
8. If pole location adjustments are required, the contractor must gain approval from the Engineer as this may affect the mast arm lengths and arm attachment heights. The contractor may contact the Signal Design Section Senior Structural Engineer for assistance at (919) 814-5000.
9. The contractor is responsible for verifying that the mast arm length shown will allow proper positioning of the signal heads over the roadway.
10. The contractor is responsible for providing soil penetration testing data (SPT) to the pole manufacturer so site specific foundations can be designed.

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www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

NCDOT Wind Zone 4 (90 MPH)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for: Transportation Mobility and Safety Division, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

US 64 (Brevard Rd) at SR 1211 (Battle Creek Rd)

DIVISION 14 HENDERSON COUNTY

PLAN DATE:	May, 2023	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

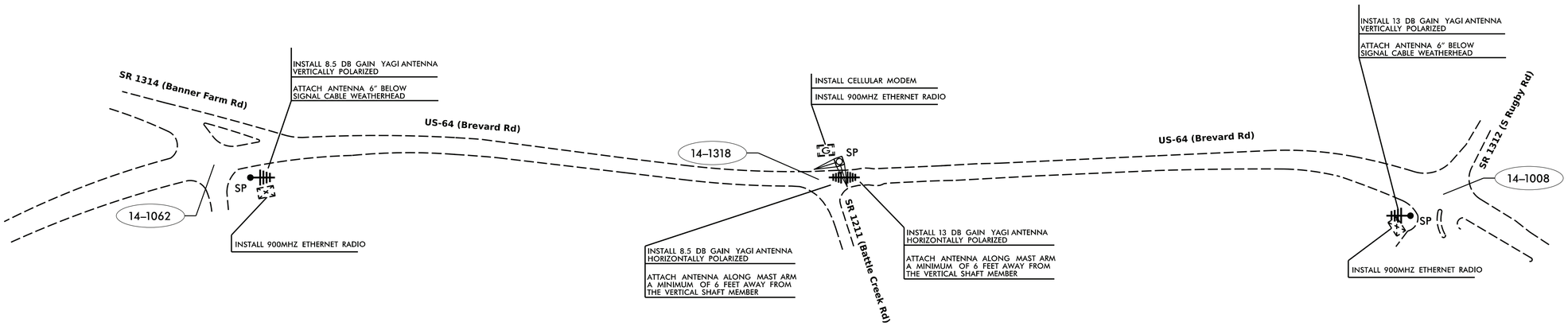
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

Traffic Planning and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	--------



NOTES FOR WIRELESS COMMUNICATIONS:

1. FIVE (5) DAYS PRIOR TO BEGINNING WORK ON THE SIGNAL SYSTEM, CONTACT THE DIVISION 14 TRAFFIC ENGINEER AT (828)631–1150. NOTIFY THE TRAFFIC ENGINEER AFTER ALL WORK IS PERFORMED TO ENSURE THAT ALL WIRELESS CIRCUITS ARE FUNCTIONING PROPERLY. WORK IS NOT COMPLETE UNTIL THE SIGNAL SYSTEM IS BACK UP AND OPERATIONAL.
2. INSTALL COAXIAL CABLE:
   A. ON WOOD POLES, REQUIRING A NEW RIGID GALVANIZED STEEL RISER, INSTALL A 2" RISER WITH WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   B. ON METAL POLES WITH MAST ARMS, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE MAST ARM; FIELD DRILL A 1/2" HOLE UP THROUGH THE BOTTOM OF MAST ARM FOR INSTALLATION OF THE COAXIAL CABLE TO THE ANTENNA.
   C. ON METAL STRAIN POLES, RUN COAXIAL CABLE UP THROUGH THE POLE AND OUT THE WEATHERHEAD AND ROUTE THE COAXIAL CABLE TO THE ANTENNA.
   D. BETWEEN THE POINT OF EXITING THE RISER, METAL POLE OR MAST ARM AND THE ANTENNA, SECURE THE COAXIAL CABLE TO THE STRUCTURE USING 3/4" STAINLESS STEEL STRAPS EVERY 12".
3. IF AN EXISTING 2" SPARE RIGID GALVANIZED STEEL RISER IS AVAILABLE, INSTALL THE COAXIAL CABLE IN THE SPARE RISER WITH 2" WEATHERHEAD.
4. INSTALL WIRELESS ANTENNA ON POLE WITH RF WARNING SIGN.
   (NOTE: RF WARNING SIGN NOT REQUIRED WHEN ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
5. INSTALL WIRELESS RADIO WITH EXTERIOR DISCONNECT SWITCH LOCATED ON CABINET.
   (NOTE: RF ANTENNA DISCONNECT SWITCH AND DECAL ARE NOT REQUIRED WHEN THE ANTENNA IS INSTALLED ON AN NCDOT–OWNED POLE.)
6. MAINTAIN PROPER CLEARANCE FROM ALL UTILITIES PER THE NATIONAL ELECTRICAL SAFETY CODE.
7. REFERENCE "WIRELESS RADIO ANTENNA TYPICAL DETAILS."
8. CELL MODEMS TO BE SUPPLIED BY THE DEPARTMENT. CONTACT THE DIVISION TRAFFIC ENGINEER AT (828)–631–1150 TO REQUEST THE CELL MODEM. ALLOW 8 WEEKS LEAD TIME BEFORE ANTICIPATED DEPLOYMENT.

LEGEND

- YAGI ANTENNA (DOUBLE) FOR REPEATER OPERATION
- YAGI ANTENNA (SINGLE)
- OMNI ANTENNA
- EXISTING CONTROLLER AND CABINET
- GATEWAY RADIO LOCATION
- XX-XXXX SIGNAL INVENTORY NUMBER
- NEW METAL POLE W/MAST ARM
- EXISTING METAL POLE W/MAST ARM
- EXISTING WOOD POLE
- NEW METAL POLE
- SP SIGNAL POLE
- EXISTING METAL POLE
- NEW OVERSIZED JUNCTION BOX
- EXISTING OVERSIZED JUNCTION BOX
- EXISTING CONDUIT
- NEW CONDUIT
- EXISTING COMMUNICATIONS CABLE

Wireless Communication Plan

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
1750 N. Greenfield Pkwy, Garner, NC 27529

US 64 (Brevard Rd) at
SR 1211 (Battle Creek Rd)

DIVISION 14	HENDERSON COUNTY	HENDERSONVILLE
PLAN DATE: May, 2023	REVIEWED BY:	C. Kinton
PREPARED BY: R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

SCALE 0 100 1" = 100"

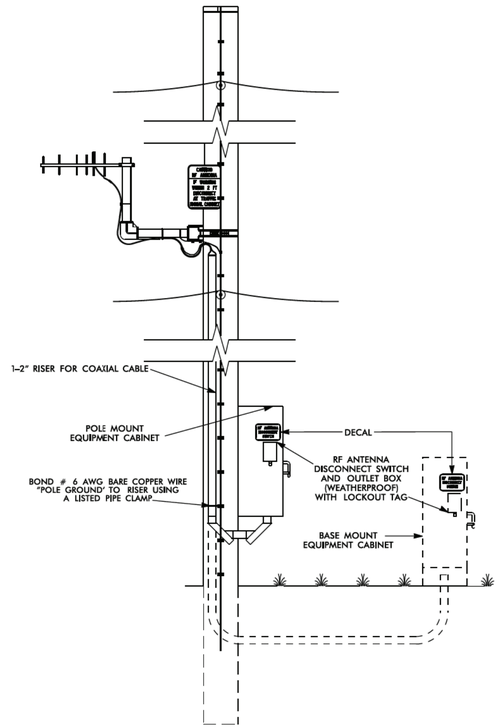
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER SCOTT KINTON

SIGNATURE DATE

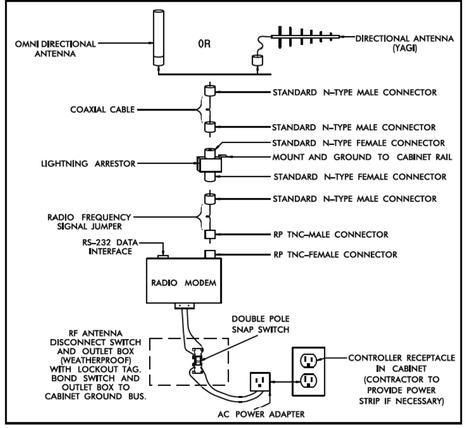
SIG. INVENTORY NO. --------

SEALS
DATES
STIMES
SUSERS
Traffic, Planning, and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 4.1



ANTENNA AND COAXIAL CABLE CONNECTION SCHEMATIC



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

1-18

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
RADIO SYSTEM INSTALLATION

SHEET 1 OF 5
1736.01

NOTES

1. WOOD POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE GROUND USING A SPLIT BOLT CONNECTOR. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE GROUND. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "POLE GROUND" IS IN PLACE.

   METAL POLE — BOND # 6 AWG SOLID BARE COPPER WIRE TO ANTENNA SUPPORT USING LISTED PIPE CLAMP. BOND OTHER END OF # 6 AWG SOLID BARE COPPER WIRE TO THE POLE OR EXISTING SYSTEM GROUND USING A METHOD APPROVED BY THE ENGINEER. BOND SHIELD OF COAXIAL CABLE WITH AN APPROVED GROUNDING SYSTEM (USING #6 AWG STRANDED COPPER WIRE) BONDED TO THE POLE BY A METHOD APPROVED BY THE ENGINEER. WEATHERPROOF THE CONNECTION ONCE THE GROUNDING SYSTEM IS INSTALLED. ENSURE "SYSTEM GROUND" IS IN PLACE.

2. YAGI ANTENNA SHOWN IN VERTICAL POLARIZATION POSITION FOR CLARIFICATION. TYPICALLY INSTALL ANTENNA IN HORIZONTAL POLARIZATION POSITION.

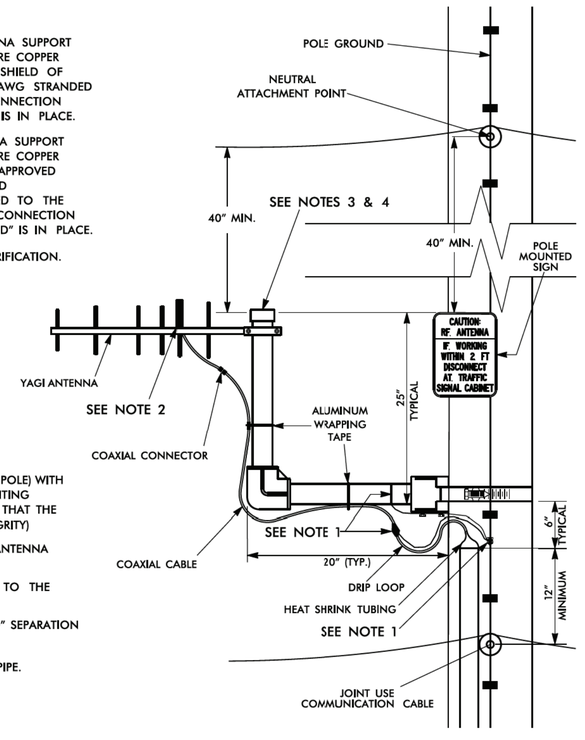
3. TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT–USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)

   A) ROTATE THE VERTICAL SUPPORT ARM 90 DEGREES SUCH THAT THE ANTENNA IS AT THE SAME HEIGHT AS THE HORIZONTAL SUPPORT ARM.

   B) ELIMINATE THE VERTICAL SUPPORT ARM AND MOUNT THE ANTENNA TO THE HORIZONTAL SUPPORT ARM.

   C) ANTENNA, ANTENNA SUPPORT ARM, AND SIGN TO MAINTAIN A 40" SEPARATION FROM NEUTRAL /POWER AND 12" FROM OTHER UTILITIES.

4. INSTALL AN END CAP TO SEAL THE EXPOSED END OF THE MOUNTING PIPE.



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

1-18

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
ANTENNA AND COAXIAL CABLE

SHEET 2 OF 5
1736.01

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SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER JOHN M NORTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1318

Prepared for:
Transportation Mobility and Safety Division
Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

Traffic Planning and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 4.2

DECAL

SIGN NUMBER: SP05224
TYPE: DECAL
QUANTITY:

SIGN WIDTH: 0'-9"
HEIGHT: 0'-6"
TOTAL AREA: 0.4 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 0.25"
RADII: 1"

NO. Z BARS:
LENGTH:

BACKG COLOR: Yellow
COPY COLOR: Black

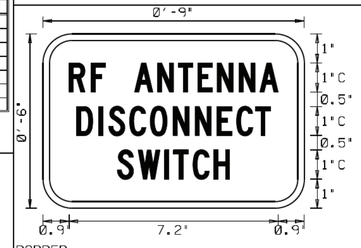
SYMBOL	X	Y	WID	HT

MAT'L: 0.063" (1.6 mm) ALUMINUM

USE NOTES:

1. Legend and border shall be direct applied non-reflective sheeting.
2. Background shall be Grade C reflective sheeting.

DESIGN BY: S PIOTROWSKI DATE: Revised M.Manriquez 5/23/2017 CHECKED BY: SUSAN B. KUNZ
PROJECT ID: ID DIV: INTELLIGENT TRANSPORTATION SYSTEM



BORDER
R=1"
TH=0.25"

NOTE: THIS SIGN SHALL BE PRODUCED AS A DECAL

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		R	F		A	N	T	E	N	N	A															
	0.9	0.8	0.5	1	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.9														C1 7.2
		D	I	S	C	O	N	N	E	C	T															
	1.2	0.8	0.3	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.5	1.2														C1 6.7
		S	W	I	T	C	H																			
	2.6	0.7	0.9	0.3	0.7	0.7	0.5	2.6																		C1 3.9

Spacing Factor is 1 unless specified otherwise

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
RF ANTENNA DISCONNECT DECAL

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

1-18

SHEET 3 OF 5
1736.01

POLE MOUNTED SIGN

SIGN NUMBER: SP05223
TYPE: D
QUANTITY:

SIGN WIDTH: 0'-9"
HEIGHT: 1'-0"
TOTAL AREA: 0.8 Sq.Ft.

BORDER TYPE: FLUSH
RECESS: 0"
WIDTH: 0.2"
RADII: 1"

NO. Z BARS:
LENGTH:

BACKG COLOR: Yellow
COPY COLOR: Black

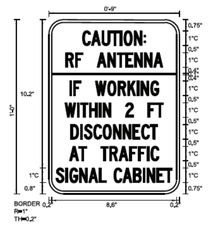
SYMBOL	X	Y	WID	HT
BAR	0.2	8.2	8.6	1.0

MAT'L: 0.063" (1.6 mm) ALUMINUM

USE NOTES:

1. Legend and border shall be direct applied non-reflective sheeting.
2. Background shall be Grade C reflective sheeting.

DESIGN BY: M. TRACEY DATE: Revised M.Manriquez 5/23/2017 CHECKED BY: SUSAN KUNZ
PROJECT ID: DIV: INTELLIGNET TRANSPORTATION SYSTEMS



0.60 SPACING FACTOR

LETTER POSITIONS

Letter spacings are to start of next letter

																										Series/Size Text Length
		C	A	U	T	I	O	N	I																	
	2.3	0.6	0.7	0.6	0.6	0.3	0.7	0.7	0.1	2.3																C 4.4
		R	F		A	N	T	E	N	N	A																
	1.1	0.7	0.5	1	0.7	0.6	0.6	0.6	0.7	0.6	0.6	1.1														C 6.7
		I	F		W	O	R	K	I	N	G																
	1.4	0.3	0.5	1	0.8	0.7	0.7	0.6	0.3	0.7	0.5	1.4														C 6.1
		W	I	T	H	I	N		2		F	T															
	1.1	0.9	0.2	0.6	0.7	0.3	0.5	1	0.5	1	0.6	0.5	1.1													C 6.8
		D	I	S	C	O	N	N	E	C	T																
	1.5	0.7	0.3	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	1.5														C 6
		A	T		T	R	A	F	F	I	C																
	1.4	0.7	0.5	1	0.6	0.6	0.7	0.6	0.6	0.3	0.6	1.4														C 6.2
		S	I	G	N	A	L		C	A	B	I	N	E	T												
	0.5	0.7	0.3	0.7	0.6	0.7	0.5	0.4	0.6	0.7	0.7	0.3	0.7	0.6	0.5	0.5										C 7.9

ROADWAY STANDARD DRAWING FOR
SPREAD SPECTRUM RADIO
RF ANTENNA WARNING SIGN

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

1-18

SHEET 4 OF 5
1736.01

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www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

Prepared for:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

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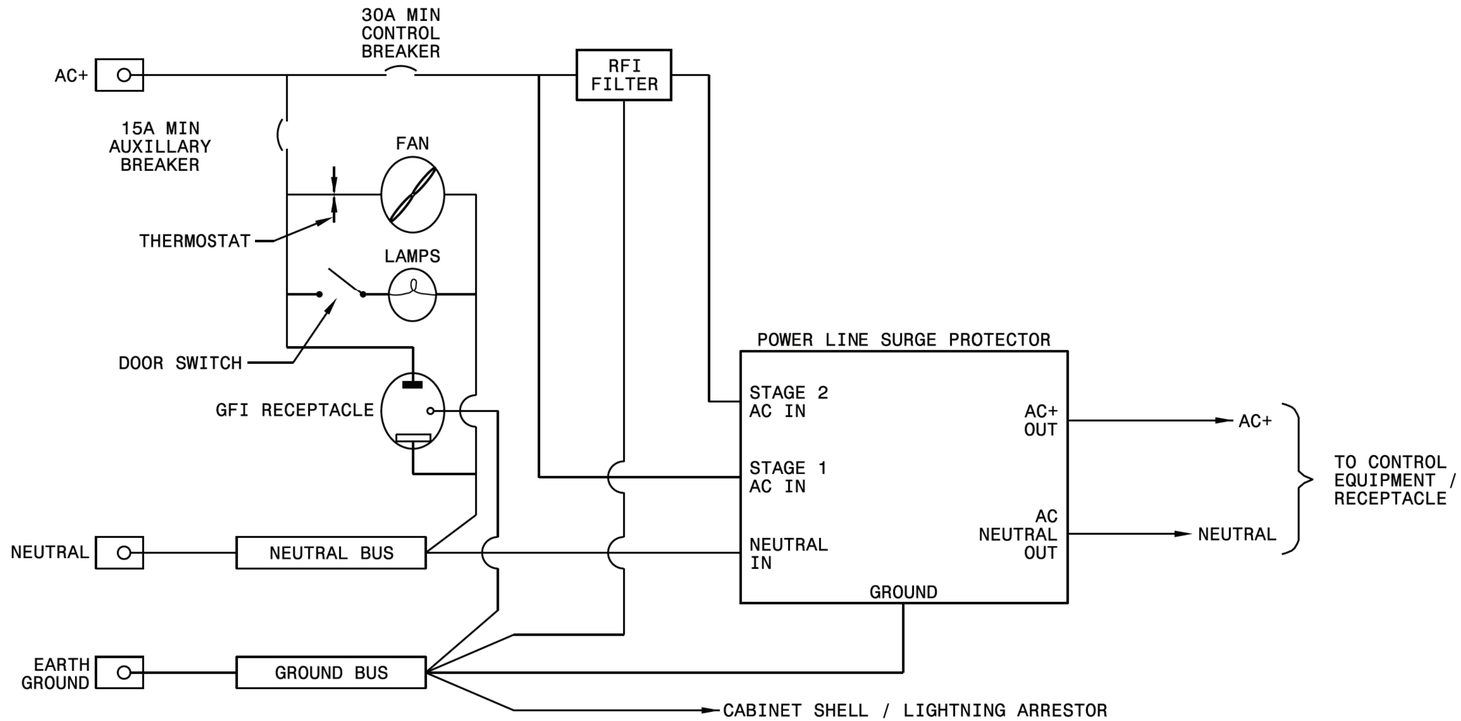
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER SCOTT N. WILSON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	Sig. 4.3



1-18

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

ROADWAY STANDARD DRAWING FOR

SPREAD SPECTRUM RADIO

POWER, GROUND AND AUXILIARY POWER SYSTEMS
FOR STANDALONE REPEATER CABINET

SHEET 5 OF 5

1736.01

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750 N. Greenfield Pkwy, Garner, NC 27529

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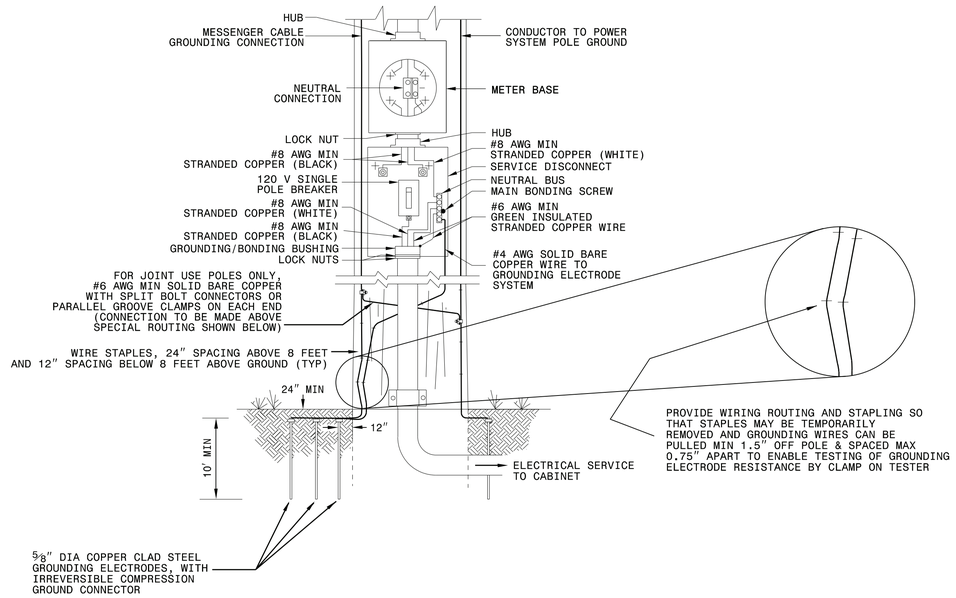
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER SCOTT KINTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1318

PROJECT NO.	SHEET NO.
BL-0007	Sig. 5.0



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

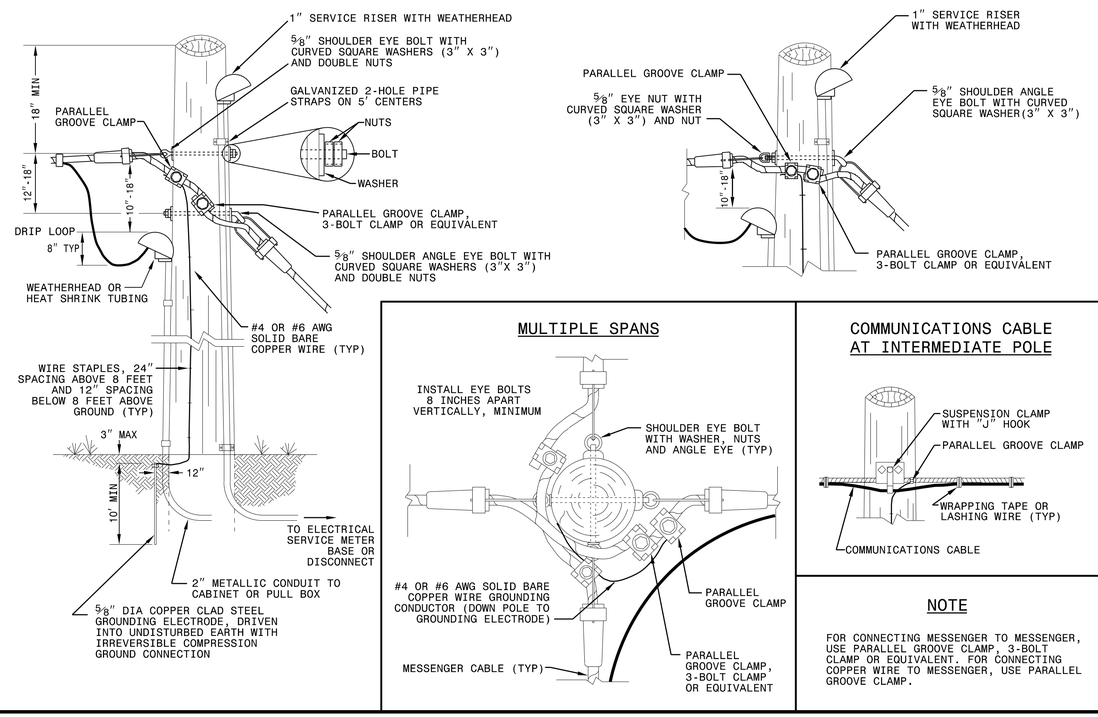
ENGLISH STANDARD DRAWING FOR

ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING

SHEET 1 OF 1

1700D01



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

WOOD POLES

METHODS OF ATTACHMENT AND GROUNDING

SHEET 1 OF 1

1720D01

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See Plate for Title

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Transportation Mobility and Safety Division
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Unit

750 N. Greenfield Parkway
Garner, NC 27529

SEAL

NORTH CAROLINA PROFESSIONAL SEAL 032108 ENGINEER MOHD A. ASLAMI

DocuSigned by: Mohd Aslami 5D9B3BA5D0B6496...

10/11/2017 DATE

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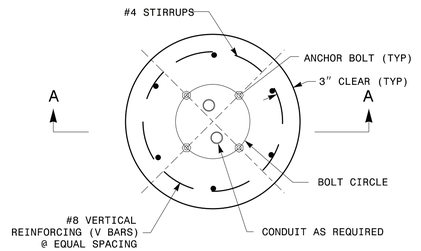
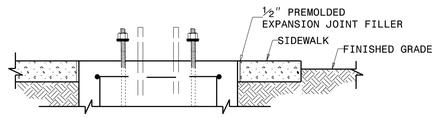
PROJECT NO.	SHEET NO.
BL-0007	Sig. 5.1



PEDESTAL FOUNDATION - PLAN VIEW

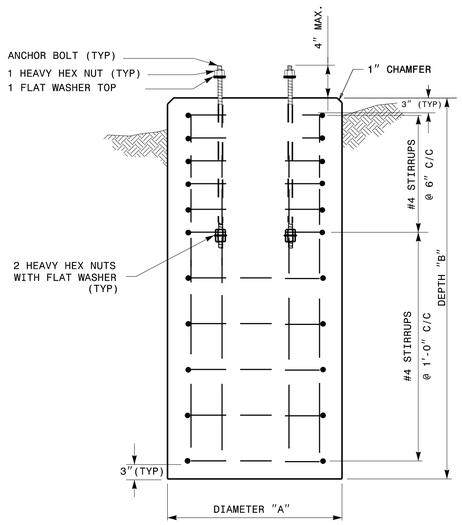


PEDESTAL FOUNDATION DETAILS FOR SIDEWALK

NOTES:

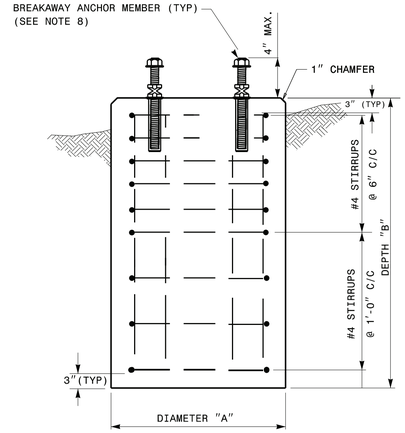
1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION STRENGTH AT 28 DAYS OF F'c= 3000 PSI (MIN.).
4. USE ASTM GRADE 60 DEFORMED BARS FOR ALL REINFORCING STEEL.
5. GRADE IS ASSUMED TO BE (8H:1V) OR FLATTER. FOUNDATION SIZE AND DEPTHS ARE BASED ON THE FOLLOWING SOIL DESIGN PARAMETERS:
   A. SANDY TYPE SOIL
   B. NO GROUND WATER WITHIN 5'-0" OF SURFACE ELEVATION
   C. WIND SPEED NOT TO EXCEED 140 MPH

   IF ACTUAL CONDITIONS VARY SUBSTANTIALLY FROM THOSE ASSUMED, THE FOUNDATION DEPTH MAY BE ADJUSTED. IN THIS CASE, CONTACT THE ENGINEER.
6. MAINTAIN AT LEAST 3" COVER ON ALL REINFORCEMENT.
7. ORIENT CONDUIT AS REQUIRED BY THE DESIGN OR AS DICTATED BY FIELD CONDITIONS.
8. USE ADHESIVE ANCHOR FOR THREADED COUPLING INSERT. FOR TYPE I MINIMUM DEPTH NECESSARY IS 0'-4½" AND FOR TYPE II MINIMUM DEPTH NECESSARY IS 0'-6⅝". FOLLOW MANUFACTURER'S INSTALLATION INSTRUCTIONS.



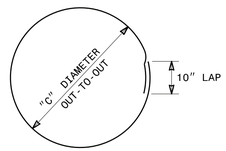
TYPES I, II & III

SECTION A-A

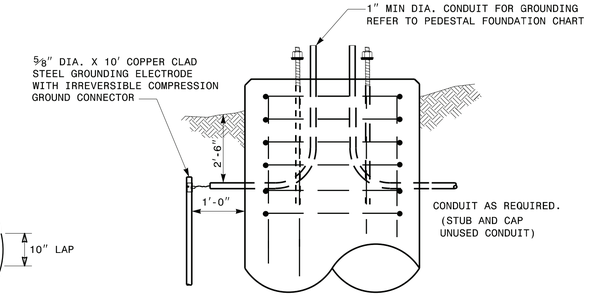


TYPES I & II ONLY

SECTION A-A



CLOSED HOOPS



GROUNDING & CONDUIT DETAIL

PEDESTAL FOUNDATION TYPE AND SIZE

TYPE	PEDESTAL DESCRIPTION	SIZE			ANCHOR BOLT		INSTALL GROUNDING SYSTEM (YES/NO)
		DIAMETER "A" FT	DEPTH "B" FT	CONCRETE VOLUME CY	DIAMETER (MIN.) IN	LENGTH FT-IN	
I	PEDESTRIAN PUSHBUTTON	2'-0"	3'-6"	.41	½	1'-6"	NO
II	NORMAL-DUTY	2'-0"	5'-0"	.58	¾	2'-0"	YES
III	HEAVY-DUTY	2'-6"	7'-0"	1.27	1	4'-0"	YES

REINFORCING STEEL SCHEDULE

TYPE	V-BAR				STIRRUP								TOTAL STEEL WEIGHT LBS
	SIZE #	QTY	LENGTH	WEIGHT LBS	SIZE #	QUANTITY VERTICAL SPACING ON 6" CENTERS	QUANTITY VERTICAL SPACING ON 12" CENTERS	QUANTITY TOTAL	LENGTH	DIAMETER "C" FT	OVERLAP MIN.	WEIGHT LBS	
I	8	6	3'-0"	56	4	0	4	4	5'-7"	1'-6"	0'-10"	15	71
II	8	6	4'-6"	86	4	5	3	8	5'-7"	1'-6"	0'-10"	30	116
III	8	6	6'-6"	122	4	7	4	11	7'-2"	2'-0"	0'-10"	53	175

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

1-18

ENGLISH STANDARD DRAWING FOR

PEDESTALS

FOUNDATIONS

SHEET 1 OF 1

1743D01

See Plate for Title

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Prepared in the Offices of:

Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ITS & Signals Unit

750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
028094
ENGINEER
DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
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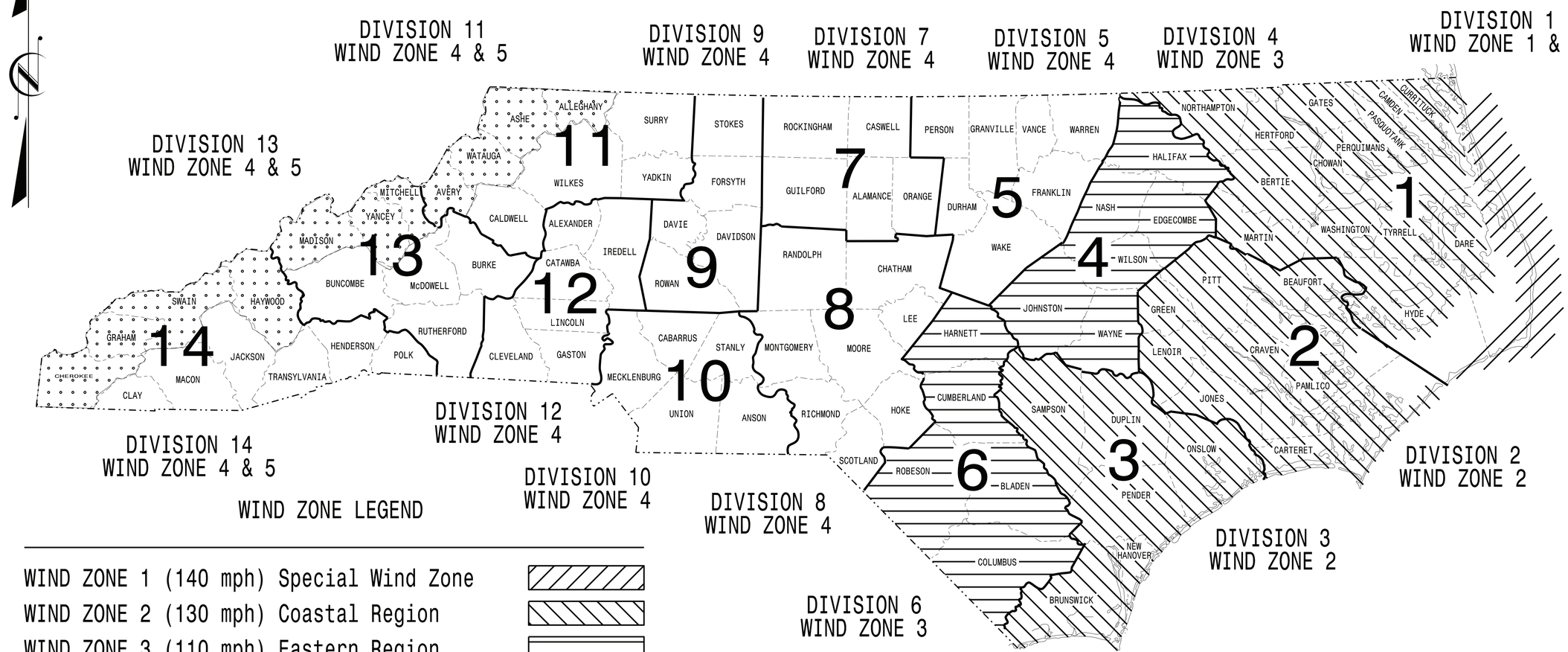
NCDOT METAL POLE STANDARDS

PROJECT I.D. NO.	SHEET NO.
BL-0007	Sig.M1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES



WIND ZONE LEGEND

WIND ZONE 1 (140 mph) Special Wind Zone	
WIND ZONE 2 (130 mph) Coastal Region	
WIND ZONE 3 (110 mph) Eastern Region	
WIND ZONE 4 (90 mph) Central & Mtn. Region	
WIND ZONE 5 (120 mph) Special Wind Zone	

https://connect.ncdot.gov/resources/safety/Pages/ITS-Design-Resources.aspx

Prepared in the Offices of:

Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.
Garner,NC 27529

Designed in conformance with the latest 2015 Interim to the 6th Edition 2013

AASHTO

Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals

INDEX OF PLANS

DRAWING NUMBER	DESCRIPTION
Sig. M 1	Statewide Wind Zone Map
Sig. M 2	Typical Fabrication Details–All Metal Poles
Sig. M 3	Typical Fabrication Details–Strain Poles
Sig. M 4	Typical Fabrication Details–Mast Arm Poles
Sig. M 5	Typical Fabrication Details–Mast Arm Connection
Sig. M 6	Typical Fabrication Details–Strain Pole Attachments
Sig. M 7	Construction Details–Foundations
Sig. M 8	Standard Strain Pole Foundation–All Soil Conditions

NCDOT CONTACTS:

MOBILITY AND SAFETY DIVISION – ITS AND SIGNALS UNIT

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J. P. GALLOWAY, P.E. – STATE SIGNALS ENGINEER

D.C. SARKAR, P.E. – ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

SEAL

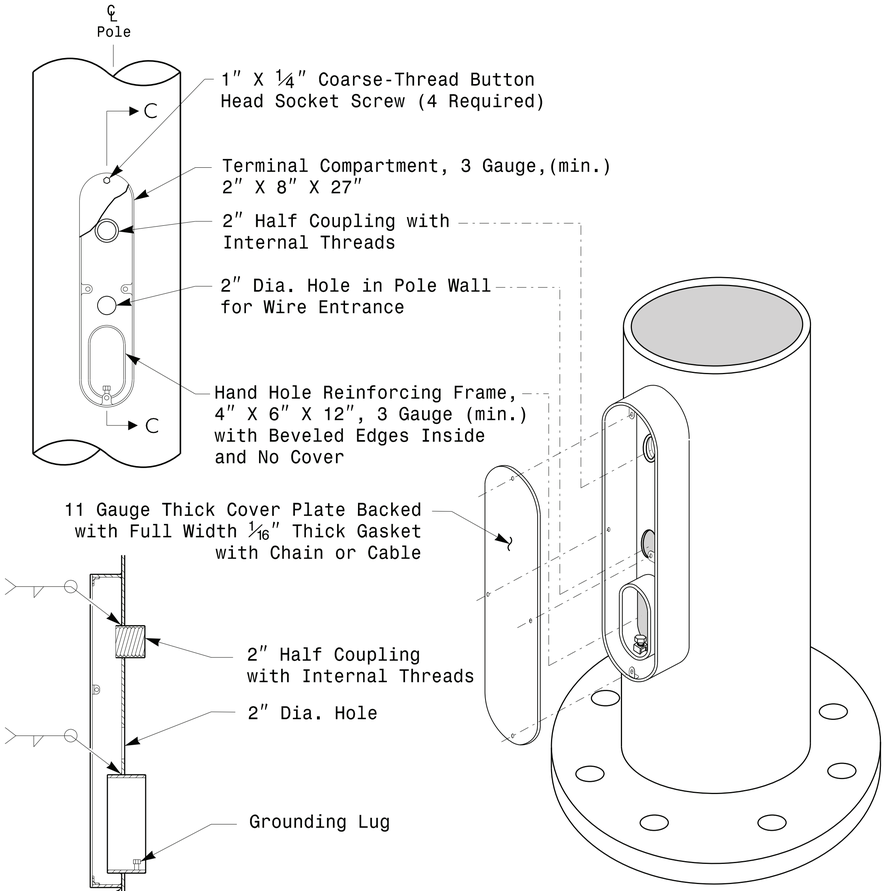
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DIBESH C. SARKAR

Docu Signed by: Dibesh C. Sarkar
44E8E83E9E9F4C8... SIGNATURE

10/11/2017 DATE

PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M2

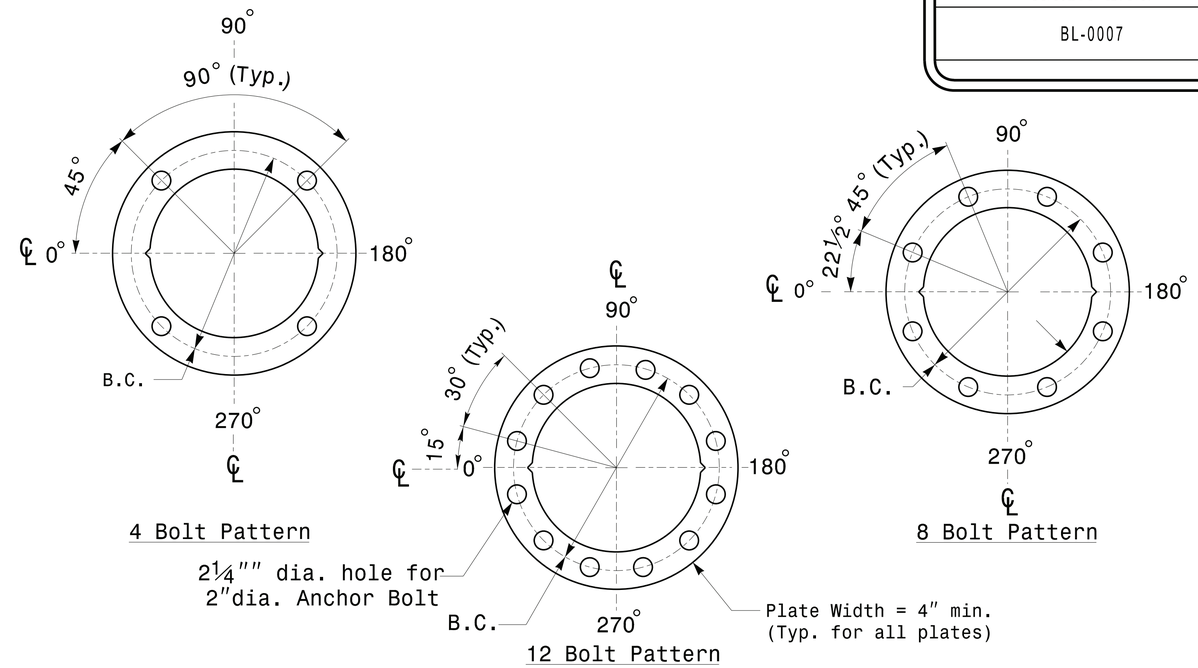
Fabrication Details – All Metal Poles



Section C-C

Note: Unless otherwise specified, locate Terminal Compartment 1 foot above the pole base plate at 180 degrees on the pole's radial index.

Terminal Compartment Detail



Construct Templates and Plates from ¼" min. thick Steel. Galvanizing is not required.

Base Plate Template and Anchor Bolt Lock Plate Details

MFG _____ MFG. DATE: MM/YY
SHAFT D/T/L/Y ----/----/----/----
ARM-A D/T/L/Y ----/----/----/----
----/----/----/----
ARM-B D/T/L/Y ----/----/----/----
----/----/----/----
A.B. DIA./B.C./L/Y ----/----/----/----
NCDOT SIG. INV. NO. _____
NCDOT POLE NO. _____

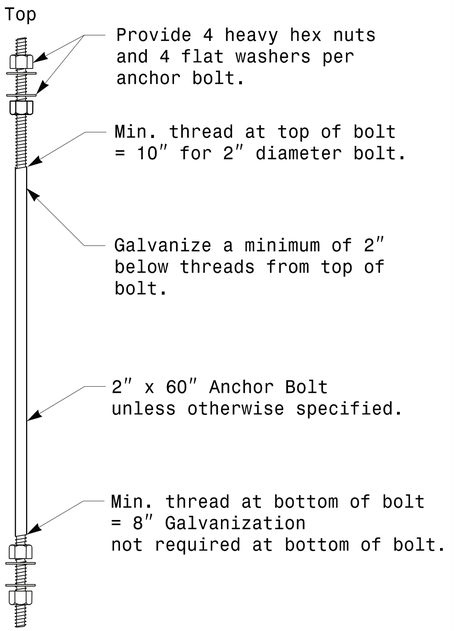
Shaft I.D. Tag
(Provide on Shaft of Strain Poles and Mast Arm Poles Shaft)

MFG _____ MFG. DATE: MM/YY
SECTION D/T/L/Y ----/----/----/----
NCDOT SIG. INV. NO. _____
NCDOT POLE NO. _____

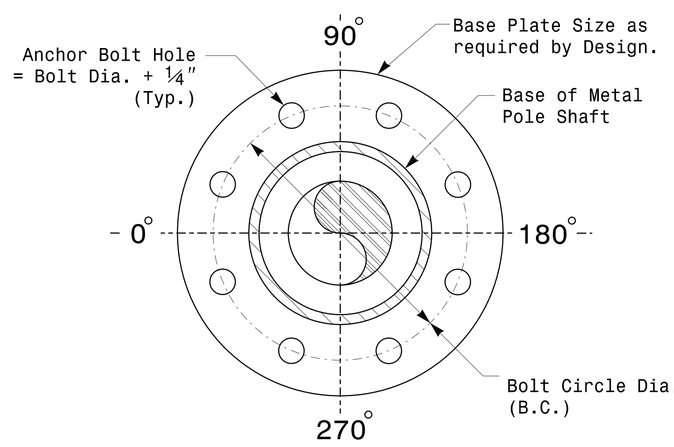
Arm I.D. Tag
(Provide on each section of a multi-section mast arm.)

Notes:
1) D= Diameter, T= Thickness, L= Length, Y= Yield Strength
2) A.B. = Anchor Bolt
3) B.C. = Bolt Circle of Anchor Bolts
4) If Custom Design, use "NCDOT STANDARD" line for Signal Inv. Number and pole I.D. number
5) See drawing M3 and M4 for mounting positions of I.D. tags.

Identification Tag Details



Anchor Bolt Detail



Note: Base plate may be circular,octagonal,square or rectangular in shape.

Typical Base Plate Detail

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Typical Fabrication Details For All Metal Poles

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F.ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

SCALE 0 NA NONE

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
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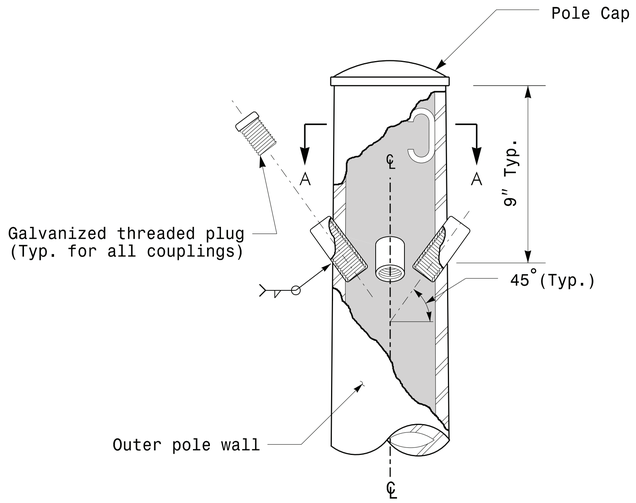
rnzinser

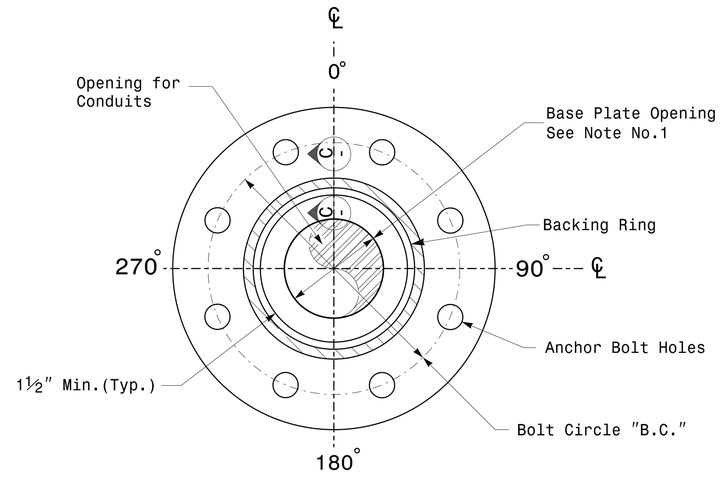
PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M3

Fabrication Details – Strain Poles

Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3½" but shall not be less than 8½".

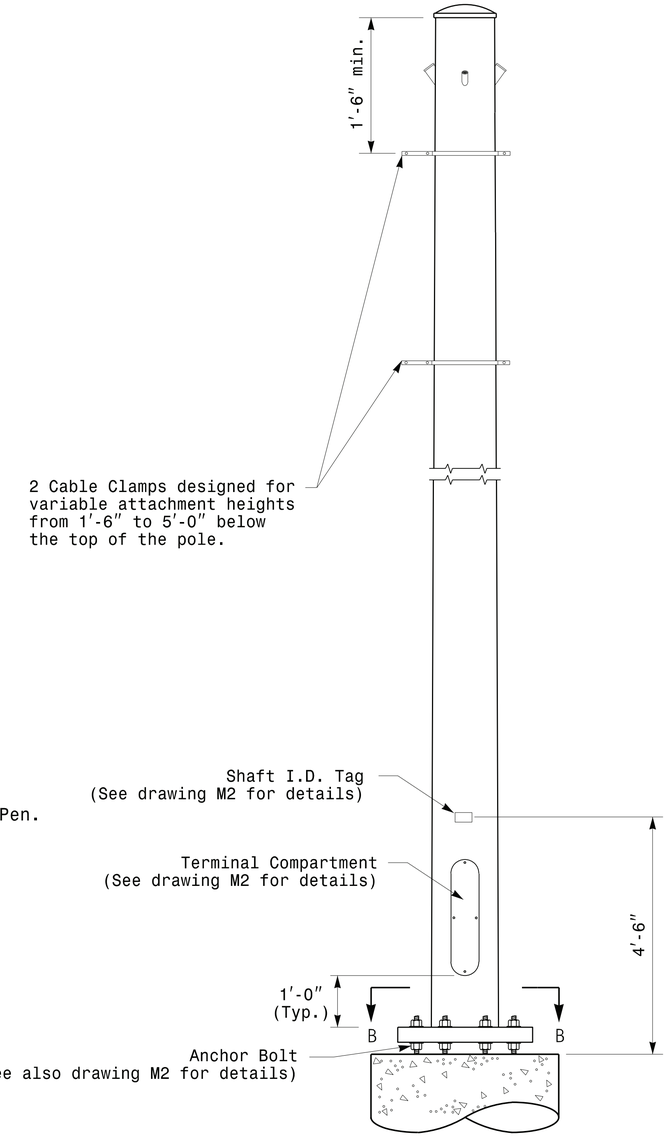


Cable Entrances at Top of Pole

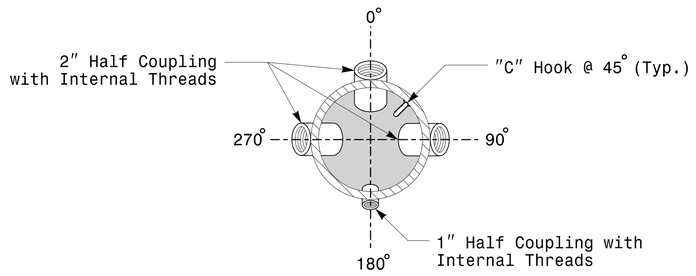


Section B-B

Pole Base Plate Details
(8 and 12 Bolt Pattern)

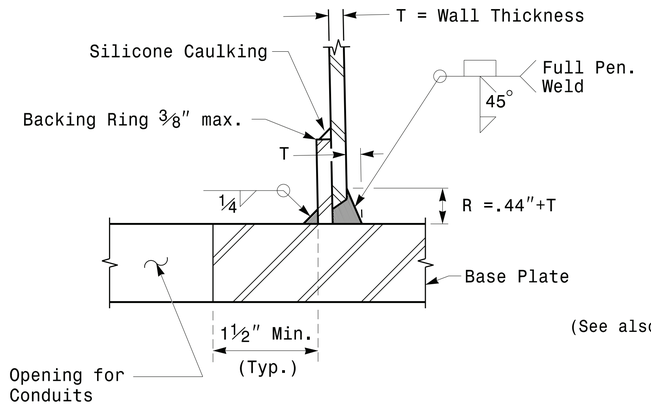


Monotube Strain Pole



Section A-A

Radial Orientation for Factory Installed
Accessories at Top of Pole



Section C-C

(Pole Attachment to Base Plate)

Full-Penetration
Groove Weld Detail

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

SCALE
0 NA
NONE

Typical Fabrication Details
For
Strain Poles

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	K.C.DURIGON
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by:
Debesh C. Sarkar
4488E3C8E5FE4C4
ENGINEER
10/11/2017
DATE

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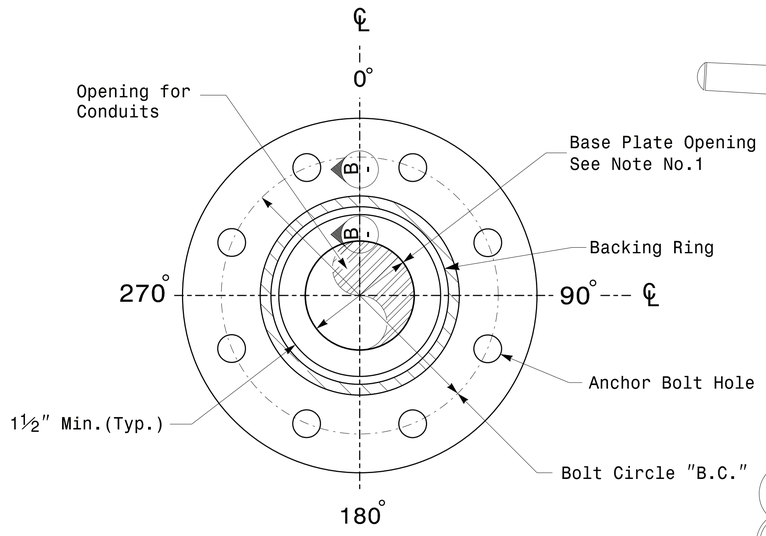
rnzinser

PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M4

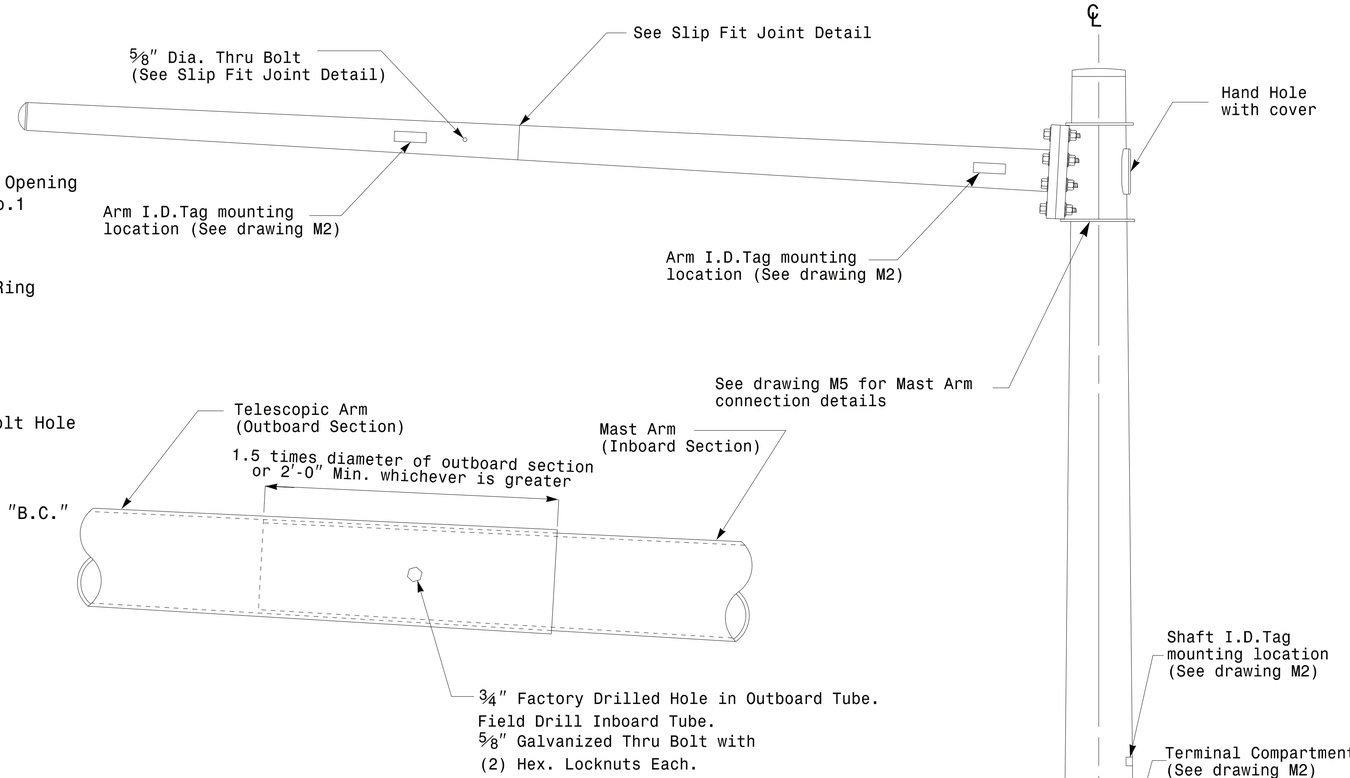
Fabrication Details – Mast Arm Poles

Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3½" but shall not be less than 8½".

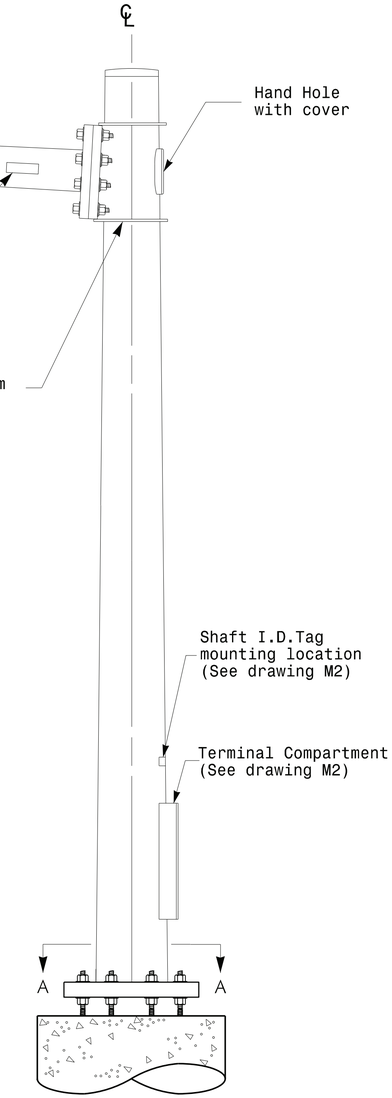


Section A-A

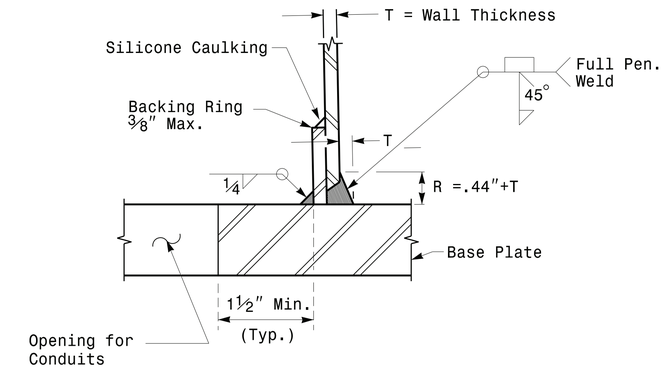
Pole Base Plate Details



Slip Fit Joint Detail for Mast Arm



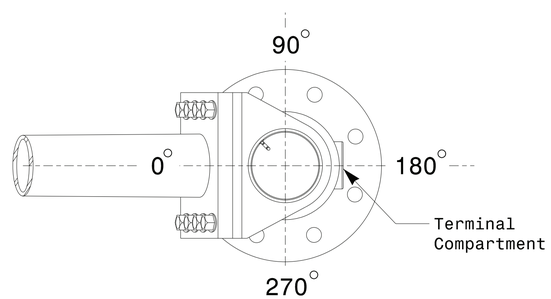
Mast Arm Pole



Section B-B

(Pole Attachment to Base Plate)

Full-Penetration Groove Weld Detail



Mast Arm Radial Orientation

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

SCALE
0 NA
NONE

Typical Fabrication Details For Mast Arm Poles

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	K.C.DURIGON
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
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10/11/2017
DATE

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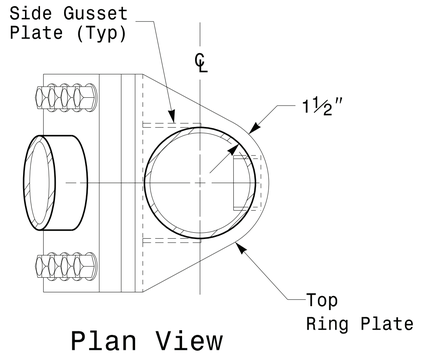
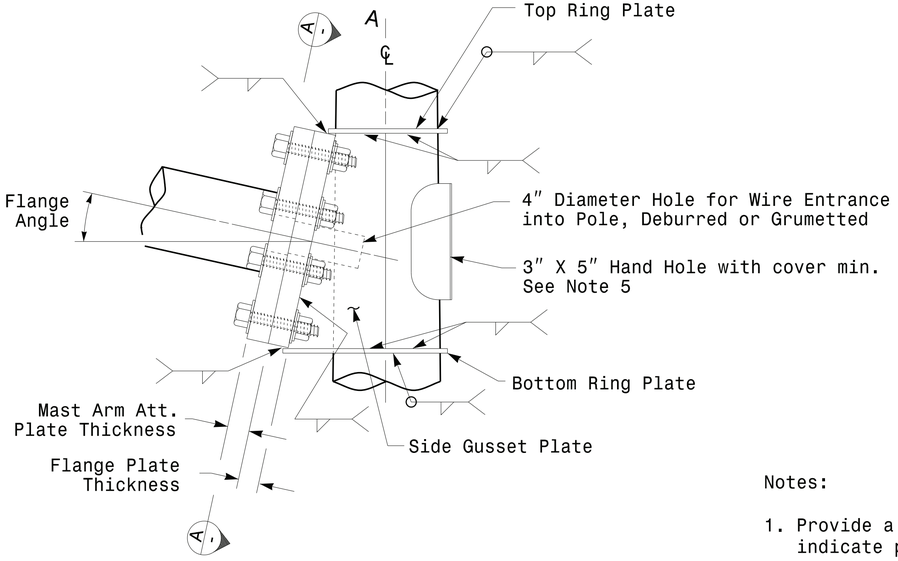
rnzinser

Welded Ring Stiffened Mast Arm Connection

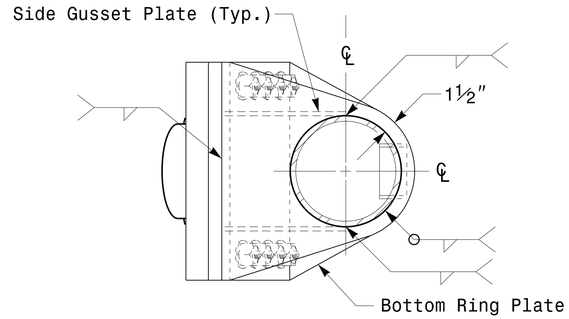
PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M5



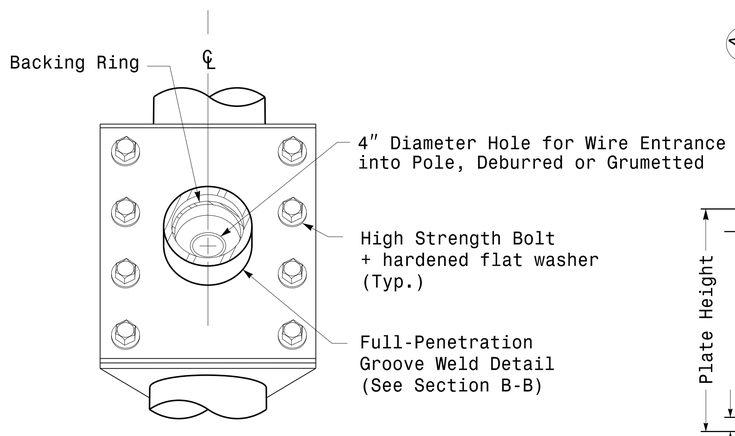
Plan View



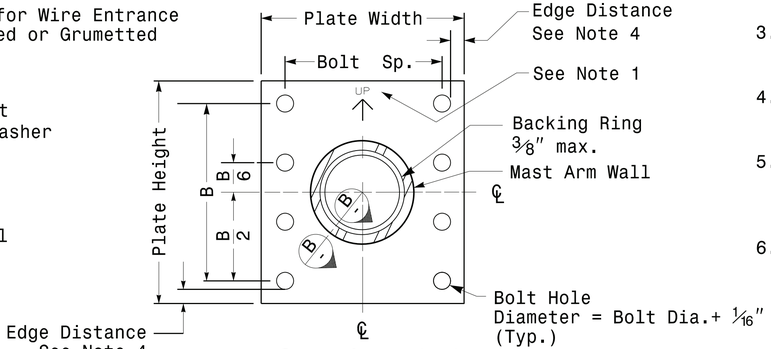
Side Elevation View



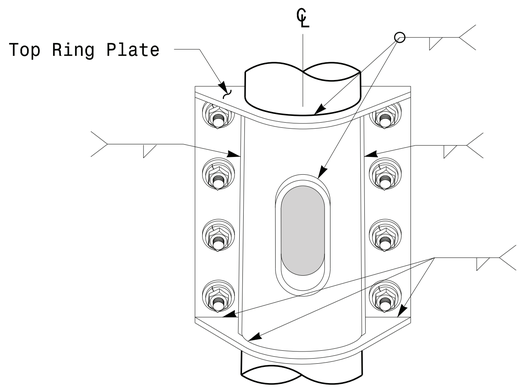
Bottom View



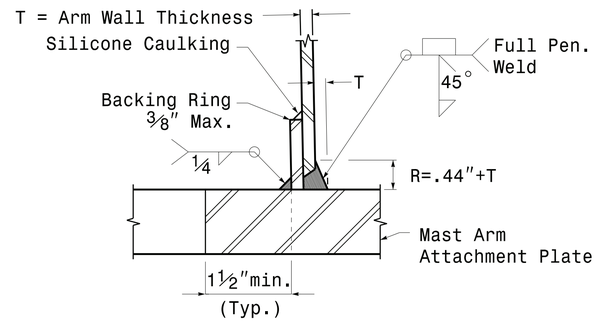
Front Elevation View



Section A-A
Mast Arm Attachment Plate



Back Elevation View



Section B-B
Full-Penetration Groove Weld Detail

Notes:

1. Provide a permanent means of identification above the mast arm to indicate proper attachment orientation of the mast arm.
2. Designer will determine the size of all structural components, plates, fasteners, and welds shown unless they are already specified.
3. Fabricator is responsible for providing appropriate holes at drainage points to drain galvanizing materials.
4. For minimum edge distance follow AISC Table J3.4 and J3.5. For nominal bolt hole size use Table J3.3.
5. Provide upper handhole as necessary when shaft extensions are reguired for luminaire arms or camera. For poles without luminaires/camera, wiring can be done through the top of pole.
6. Allowable range of flange tilt angle will vary from 0° to as required.

Fabrication Details – Mast Arm Connection

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

Typical Fabrication Details For Mast Arm Connection To Pole

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F.ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SCALE 0 NA NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

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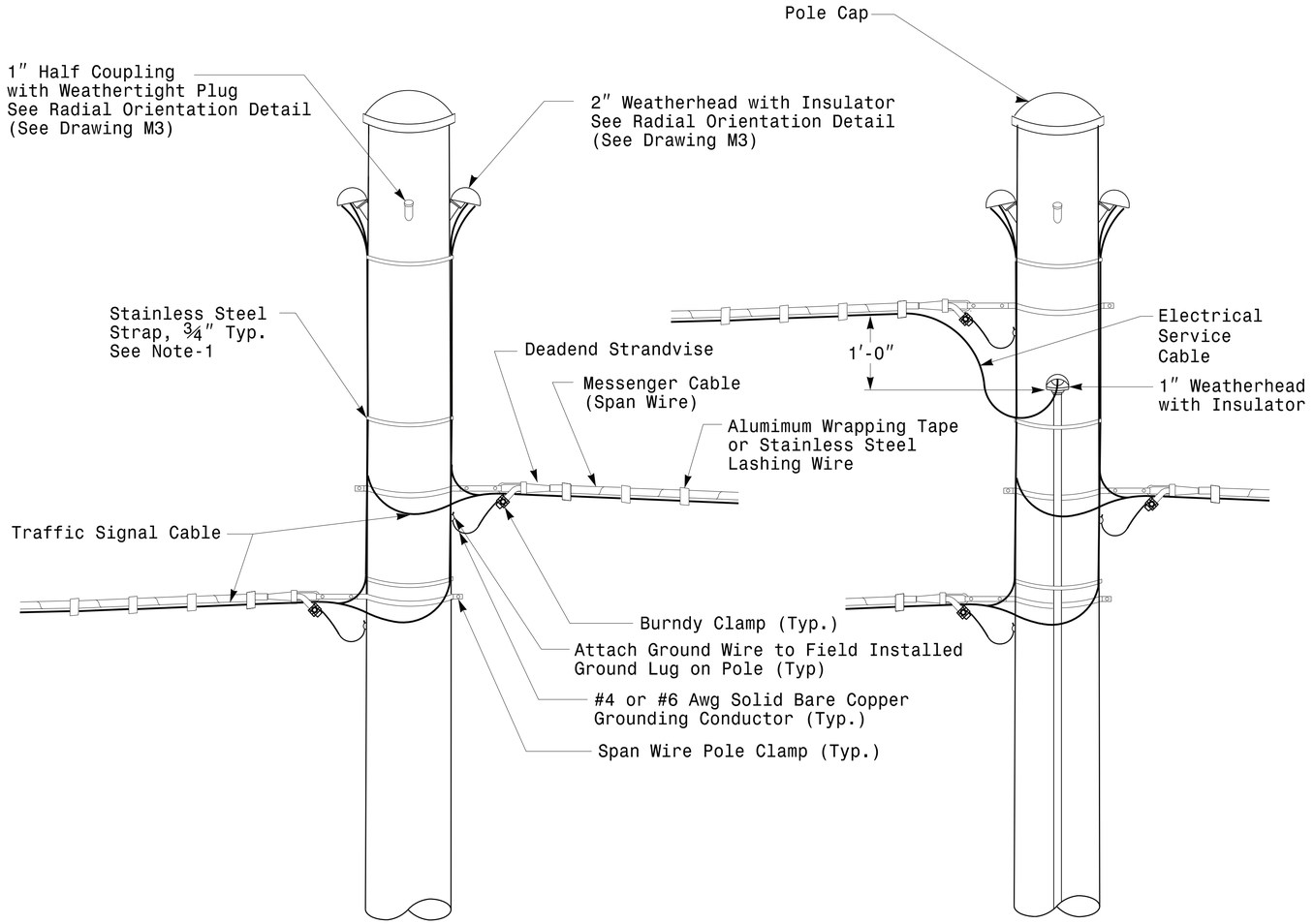
PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M6

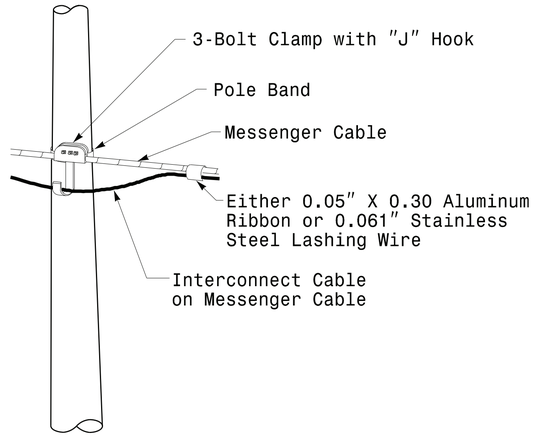
Fabrication Details – Strain Pole Attachments



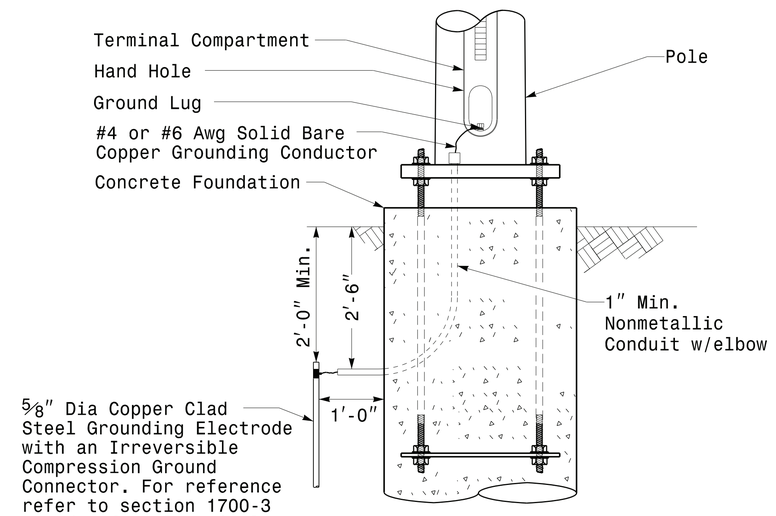
Strain Pole Attachments

NOTE:

1. Strap all signal cables to the side of the pole with ¾″ stainless steel straps when the distance between the spanwire attachment clamp and the weatherheads exceeds 3′-0″.
2. Provide minimum two spanwire pole clamps per pole.
3. It is prohibited to attach two span wires at one pole clamp.
4. For general requirements refer to NCDOT Standard Specifications for Roadway and Structures, January 2018.



Attachment of Cable to Intermediate Metal Pole



Metal Pole Grounding Detail For Strain Pole and Mast Arm

Prepared in the Offices of:
Transportation Mobility and Safety Division
Signal Design Section
750 N.Greenfield Pkwy.Garner.NC 27529

SCALE
0 NA
NONE

Typical Fabrication Details
For
Strain Pole Attachments

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.F.ANDREWS
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
028094
ENGINEER
DEBASH C. SARKAR

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Debashi C. Sarkar
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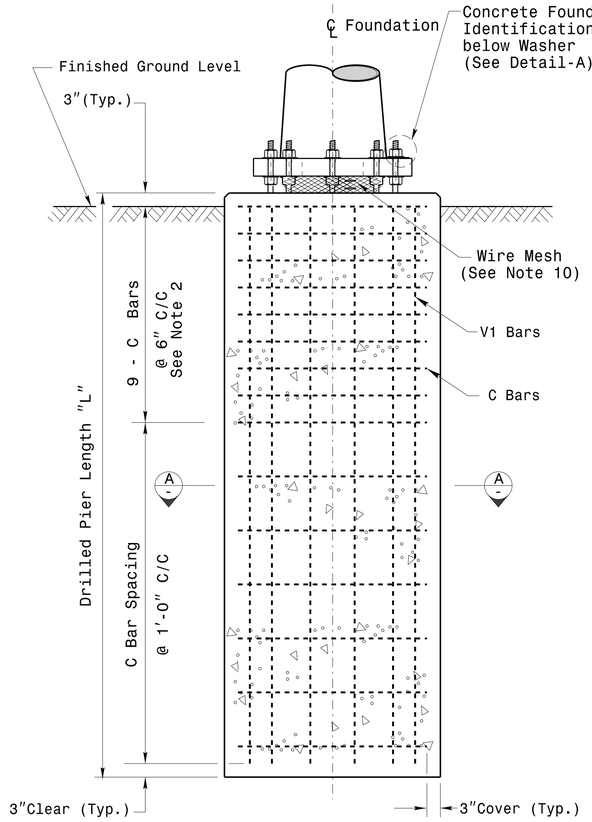
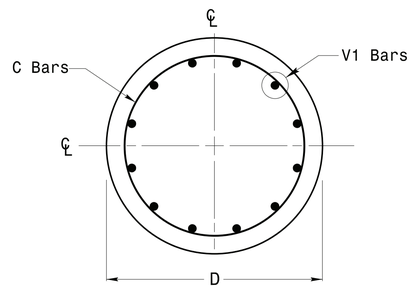
PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M7

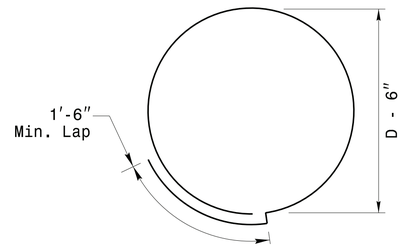
Construction Details – Foundations



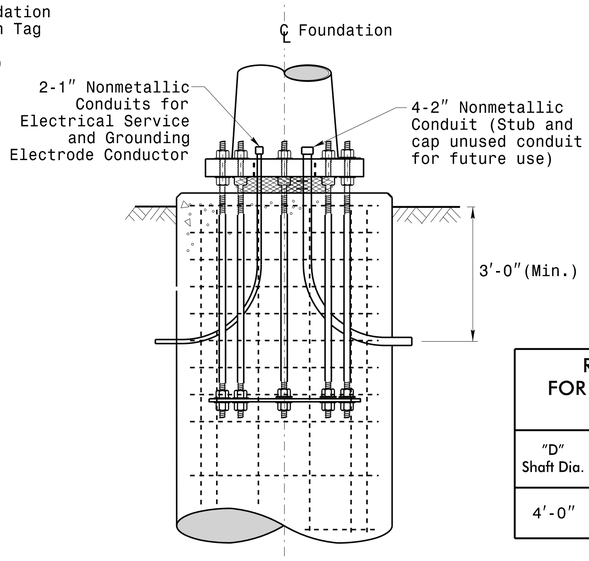
Concrete Shaft Elevation



Section A-A



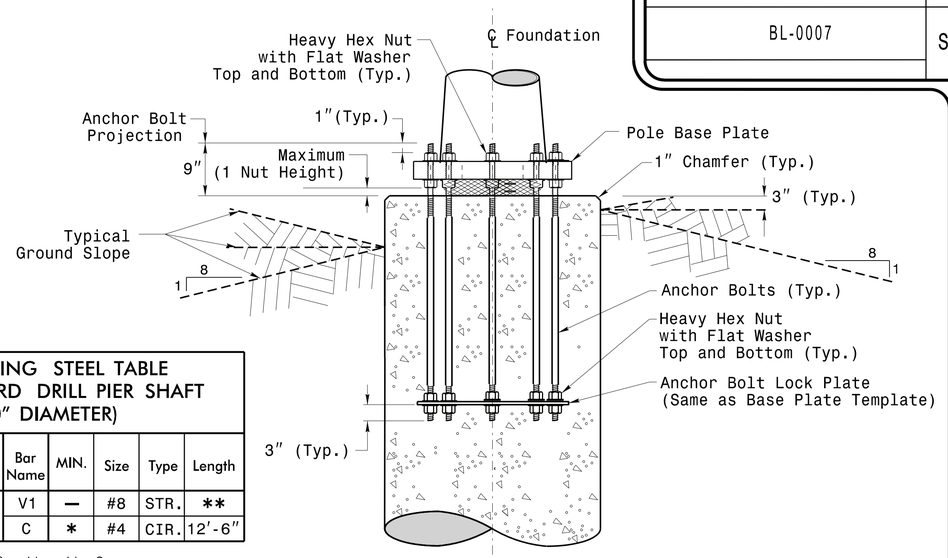
Typical "C" Bar Detail



Typical Foundation Conduit Details

REINFORCING STEEL TABLE FOR STANDARD DRILL PIER SHAFT (4′–0″ DIAMETER)						
"D" Shaft Dia.	Conc. Volume (cu. yds.)	Bar Name	MIN.	Size	Type	Length
4′-0″	.465 x L	V1	—	#8	STR.	**
		C	*	#4	CIR.	12′-6″

* See Note No. 2
** See Note No. 3



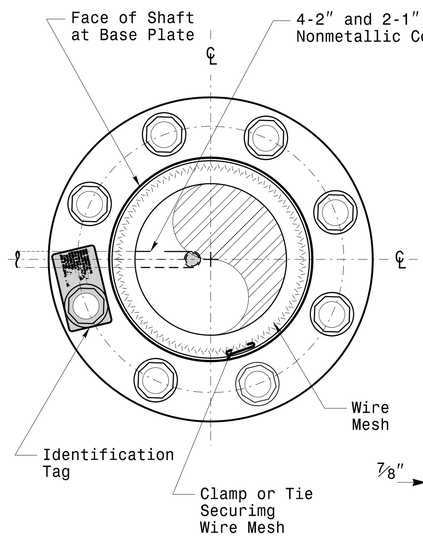
Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

General Notes:

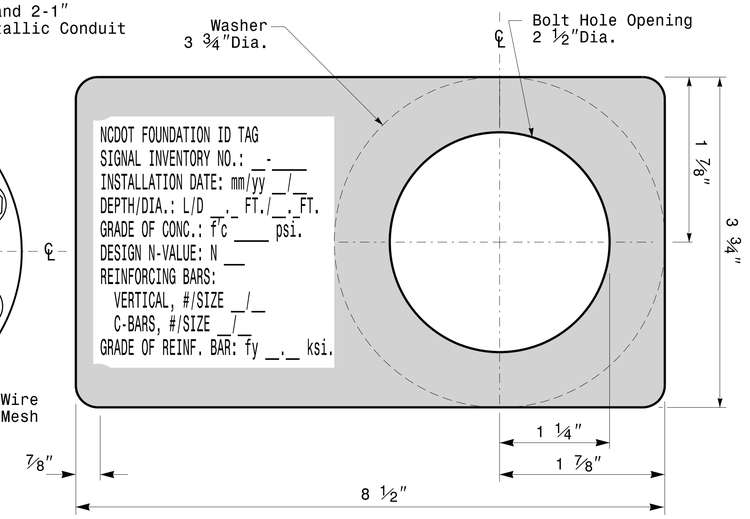
1. If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
2. Circular tie reinforcing rings may be vertically adjusted by +/-3″ at a depth between 2′-0″ and 3′-0″ to facilitate the installation of electrical conduit entering in the cage.
3. For standard foundations, see sheet Sig. M8 for details. Vertical reinforcing bars (V1) may be horizontally adjusted by +/-3″ to facilitate the installation of electrical conduit entering into the cage.
4. Provide 2″ to 5″ foundation projection above ground level depending on the ground slope.
5. Unless otherwise shown, foundation designs are based on non-sloping level ground surfaces with slope ratios of 8:1 (H:V) or flatter. If actual ground line slopes are steeper contact the Engineer before excavating or placing concrete.
6. Construct foundations in accordance with NCDOT Standard Provisions SP09 R005- Foundations and Anchor Rod Assemblies for Metal Poles. All applicable 2018 NCDOT Standard Specifications are referenced in this provision. Refer to the NCDOT Resources/Specifications page located on the Connect NCDOT website.

   https://connect.ncdot.gov/resources/Specifications and Special Provisions.aspx
7. Use air entrained AA concrete mix with a compression strength of f'c=4500 psi.(min.) after 28 days.
8. Use ASTM A615 grade 60 deformed bars for all reinforcing steel. Maintain at least 3″ cover on all reinforcement.
9. Locate the Identification Tag on the top of the base plate, directly above the conduit's entry point.
10. Provide two layers of galvanized welded 23 gauge (0.25) 6″ wide 4 mesh wire around pipes under the base plate and secure it with ties if necessary.
11. Preferred location for the I.D. Tag is as shown in Detail-A; directly above the conduit entering the foundation.



D = Diameter
L = Length/Depth
mm = Month
yy = Year

Detail-A



Concrete Foundation Identification Tag Details

Prepared in the Offices of:
Transportation Mobility and Safety Division
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy.Garner,NC 27529

Construction Details For Foundations

PLAN DATE:	OCTOBER 2018	DESIGNED BY:	C.B.COGDELL
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REV. NO.	COMMENTS	INIT.	DATE
1	Revised Foundation Tag Details	N.B.	5/11/2015

SCALE
0 NA
NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

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DATE

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SOIL CONDITION

PROJECT ID. NO.	SHEET NO.
BL-0007	Sig.M8

		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48″ Diameter Drilled Pier Length (L) – Feet							Reinforcement			
					Reactions at the Pole Base			Clay				Sand			Longitudinal		Stirrups	
		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Axial (kip)	Shear (kip)	Moment (ft-kip)	Medium N-Value 4–8	Stiff N-Value 9–15	Very Stiff N-Value 16–30	Hard N-Value >30	Loose N-Value 4–10	Medium N-Value 11–30	Dense N-Value >30	Bar Size (#)	Quantity (ea.)	Bar Size (#)	Spacing (in.)
WIND ZONE 1	LIGHT	S26L3	26	25	2	11	270	19	13	10	8	17	14.5	12.5	8	12	4	12
		S30L3	30	25	2	11	300	19.5	13.5	10	8	17.5	15	13	8	14	4	12
		S35L3	35	25	3	11	320	20	13.5	10.5	8	17.5	15	13	8	14	4	12
	HEAVY	S30H3	30	29	3	16	450	24.5	16	12	9	21	17.5	15	8	16	4	6
		S35H3	35	29	4	16	515	26	17	12.5	9.5	22	18.5	16	8	16	4	6
WIND ZONE 2	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 3	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6
WIND ZONE 4	LIGHT	S26L1	26	22	2	8	190	16	11.5	8.5	8	15	12.5	11	8	12	4	12
		S30L1	30	22	2	8	205	16.5	11.5	9	8	15	13	11.5	8	12	4	12
		S35L1	35	22	3	8	230	17	12	9	8	15.5	13.5	11.5	8	12	4	12
	HEAVY	S30H1	30	25	3	12	320	20.5	13.5	10.5	8	18	15	13.5	8	16	4	6
		S35H1	35	25	4	12	350	21	14	10.5	8.5	18.5	15.5	13.5	8	16	4	6
WIND ZONE 5	LIGHT	S26L2	26	23	2	10	245	18	12.5	9.5	8	16.5	14	12	8	12	4	12
		S30L2	30	23	2	10	270	18.5	12.5	10	8	16.5	14	12.5	8	12	4	12
		S35L2	35	23	3	10	300	19.5	13	10	8	17	14.5	13	8	12	4	12
	HEAVY	S30H2	30	29	3	15	415	23	15.5	11.5	9	20	17	14.5	8	16	4	6
		S35H2	35	29	4	15	475	25	16.5	12	9.5	21	17.5	15.5	8	16	4	6

48″ Dia. Foundations Concrete Volume (cubic yards) = (0.465) x Drilled Pier Length

General Notes:

1. Values shown in the "Reactions at the Pole Base" column represent the minimum acceptable capacity allowed for design using a design CSR of 1.00.
2. Use chairs and spacers to maintain proper clearance.
3. For foundation, always use air-entrain concrete mix.

Foundation Selection:

1. Perform a standard penetration test at each proposed foundation site to determine "N" value.
2. Select the appropriate wind zone from M 1 drawing.
3. Select the soil type (Clay or Sand) that best describes the soil characteristics.
4. Get the appropriate standard pole case number from the plans or from the Engineer.
5. Select the appropriate column under "Standard Foundations" based on soil type and "N" value. Select the appropriate row based on the pole load case.
6. The foundation depth is the value shown in the "Standard Foundations" category where the column and the row intersect.
7. Use Construction Procedures and Design Methods prescribed by FHWA-NHI-10-016 for Reference Drilled Shafts.

Standard Strain Pole Foundation–All Soil Condition

Prepared in the Offices of:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N.Greenfield Pkwy.,Garner,NC 27529

Standard Strain Pole Foundation for All Soil Conditions

PLAN DATE:	OCTOBER 2017	DESIGNED BY:	C.B. COGDELL
PREPARED BY:	N. BITTING	REVIEWED BY:	D.C. SARKAR

REVISIONS	INIT.	DATE
Changed "Foundation Depth" to "Drilled Pier Length"in Conc. Eqn.	N.B.	7/12/2015

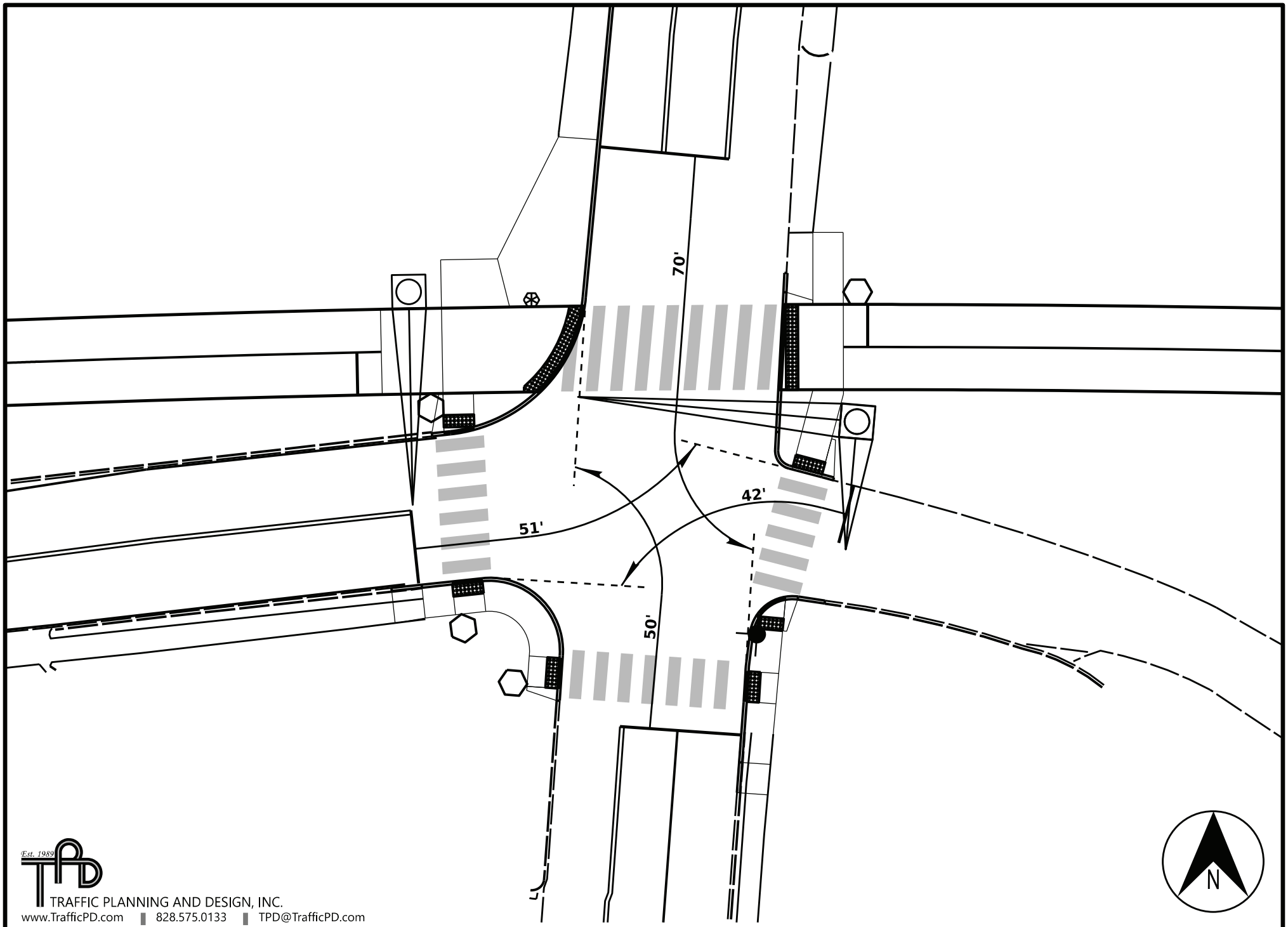
SCALE: 0 NA — NONE

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
4AEBE3B3B3A24A2...

10/11/2017
DATE

11-OCT-2017 08:40
S:\TS&S\Unit\TS Signals\Signal Design Section\Eastern Region\MM Sheets\2016\2014 Sig.M8 Std. Strain Pole Found.-Saturated Soil Condition.dgn
rtaylor



Est. 1989

TRAFFIC PLANNING AND DESIGN, INC.

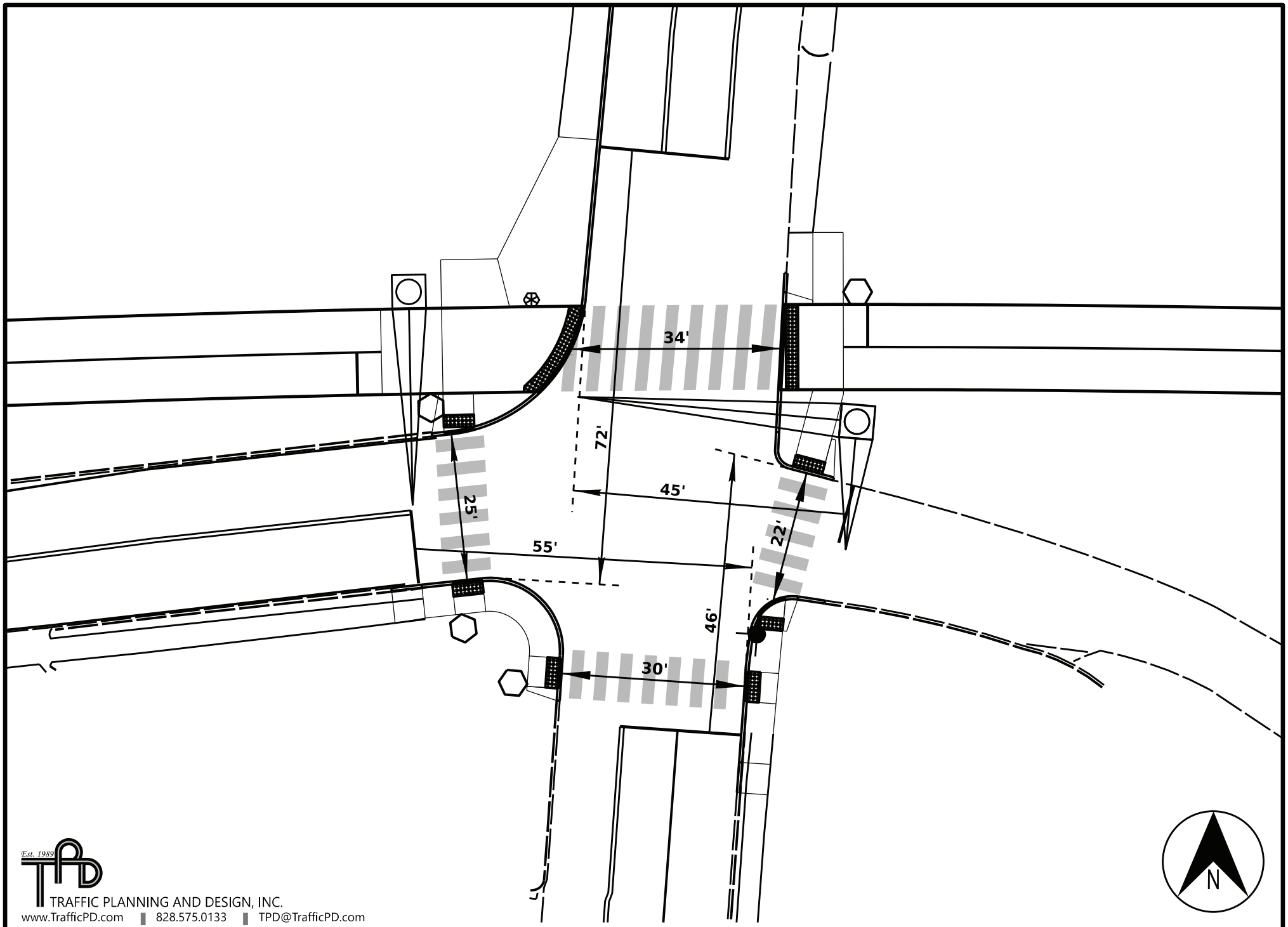
www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

N

1" = 20'

SCALE

Clearance Distances For: SR 1127 (Kanuga Rd) at SR 1171 (Willow Rd) & Israel St



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Clearance Distances For: SR 1127 (Kanuga Rd) at SR 1171 (Willow Rd) & Israel St

1" = 20'

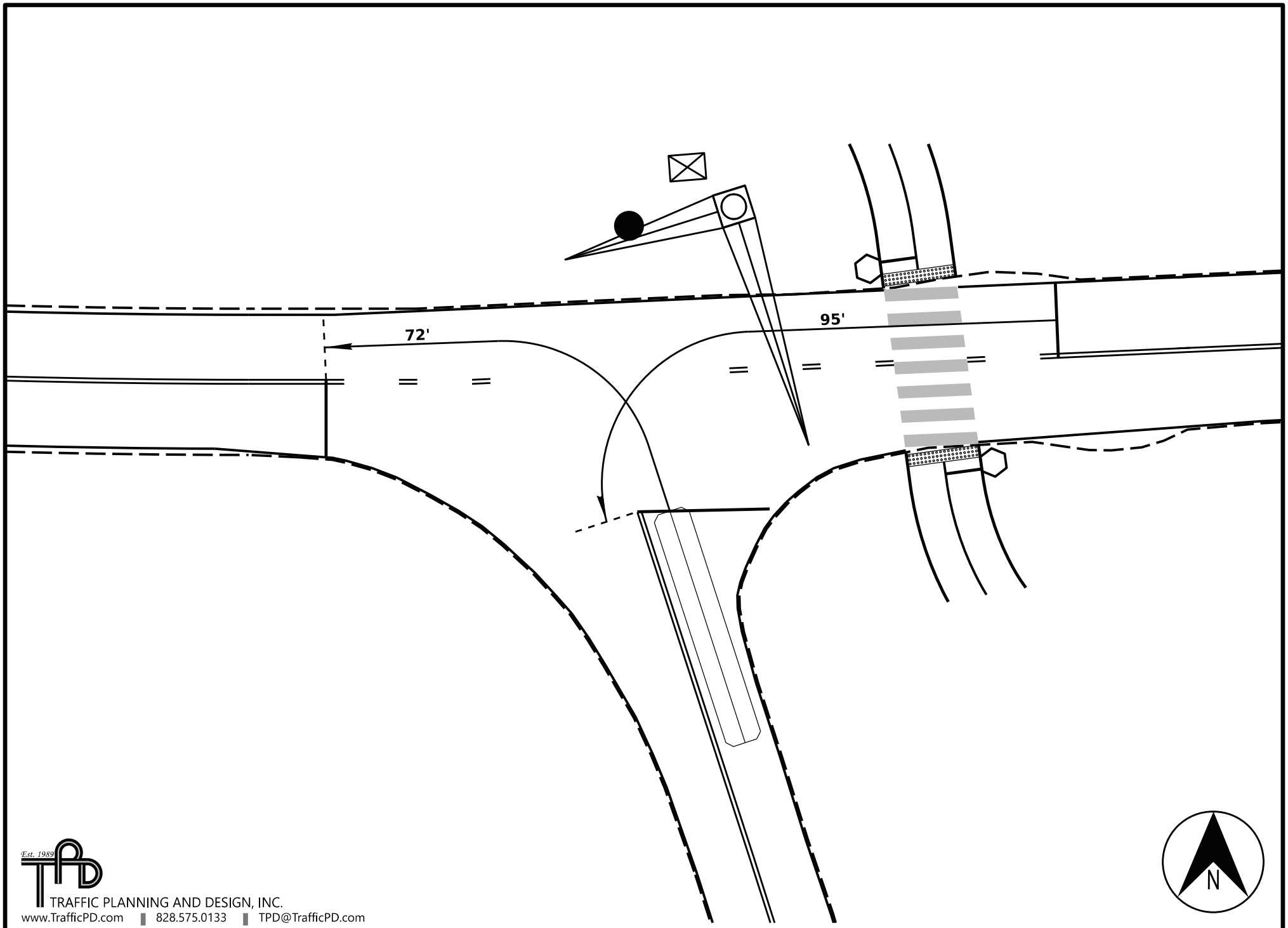
SCALE

Clearance Time Calculations

Rev 2010-02-16

City:	**Hendersonville**	Division:	**14**
County:	**Henderson**	Sig. Inv. #:	**14-1319**
NB Street:	**SR 1127 (Kanuga Road)**	Project/TIP #:	**BL-0007**
SB Street:	**SR 1127 (Kanuga Road)**	Computed by:	**R. Woutersz**
EB Street:	**SR 1171 (Willow Road)**	Checked by:	**C. Kinton**
WB Street:	**Israel Street**	Approved by:	

Movement	Street Name	**SR 1127 (Kanuga Road)**		**SR 1127 (Kanuga Road)**		**SR 1171 (Willow Road)**		**Israel Street**	
	Orientation	**Northbound**		**Southbound**		**Eastbound**		**Westbound**	
	Turn movement	**Left**	**Thru**	**Left**	**Thru**	**Left**	**Thru**	**Left**	**Thru**
NEMA Phase #	Protected		6		2		8		4
	Permissive								
Speed	mph		35		35		25		25
	ft/sec		51.33		51.33		36.67		36.67
Grade	%	-5%		3%		-5%		-1%	
	Elevation at Stopbar, ft								
	Elevation at Setback, ft								
	Dist to Setback, ft								
	-OR- Enter Grade, %	-5.0%		3.5%		-4.7%		-1.0%	
Clear Distance	feet		70		90		50		50
	meters								
Ped Cross Dist	feet		25		25		35		35
	meters								
Parameters	Percept-React Time, sec	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Decel Rate, ft/sec^2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
	Walk Speed, fps	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Movement Calcs	Yellow, sec		4.2		3.7		3.5		3.2
	All Red, sec		1.4		1.8		1.4		1.4
	Mitigated Red, sec		-		-		-		-
	Unadjusted FDW, sec		7.1		7.1		10.0		10.0
Movement Results	Yellow, sec		4.2		3.7		3.5		3.2
	All Red, sec		1.4		1.8		1.4		1.4
	Total Clear, sec		5.6		5.5		4.9		4.6
Shared Mvmt Calc	Yellow, sec	None		None		None		None	
	All Red, sec	None		None		None		None	
	Total Clear, sec	None		None		None		None	
	Unadjusted FDW, sec	None		None		None		None	
Recommended:	**Phase #**		**6**		**2**		**8**		**4**
Yellow	**sec**		**4.2**		**3.7**		**3.5**		**3.2**
All Red	**sec**		**1.4**		**1.8**		**1.4**		**1.4**
FDW	**sec**		**4**		**4**		**7**		**7**



Est. 1989

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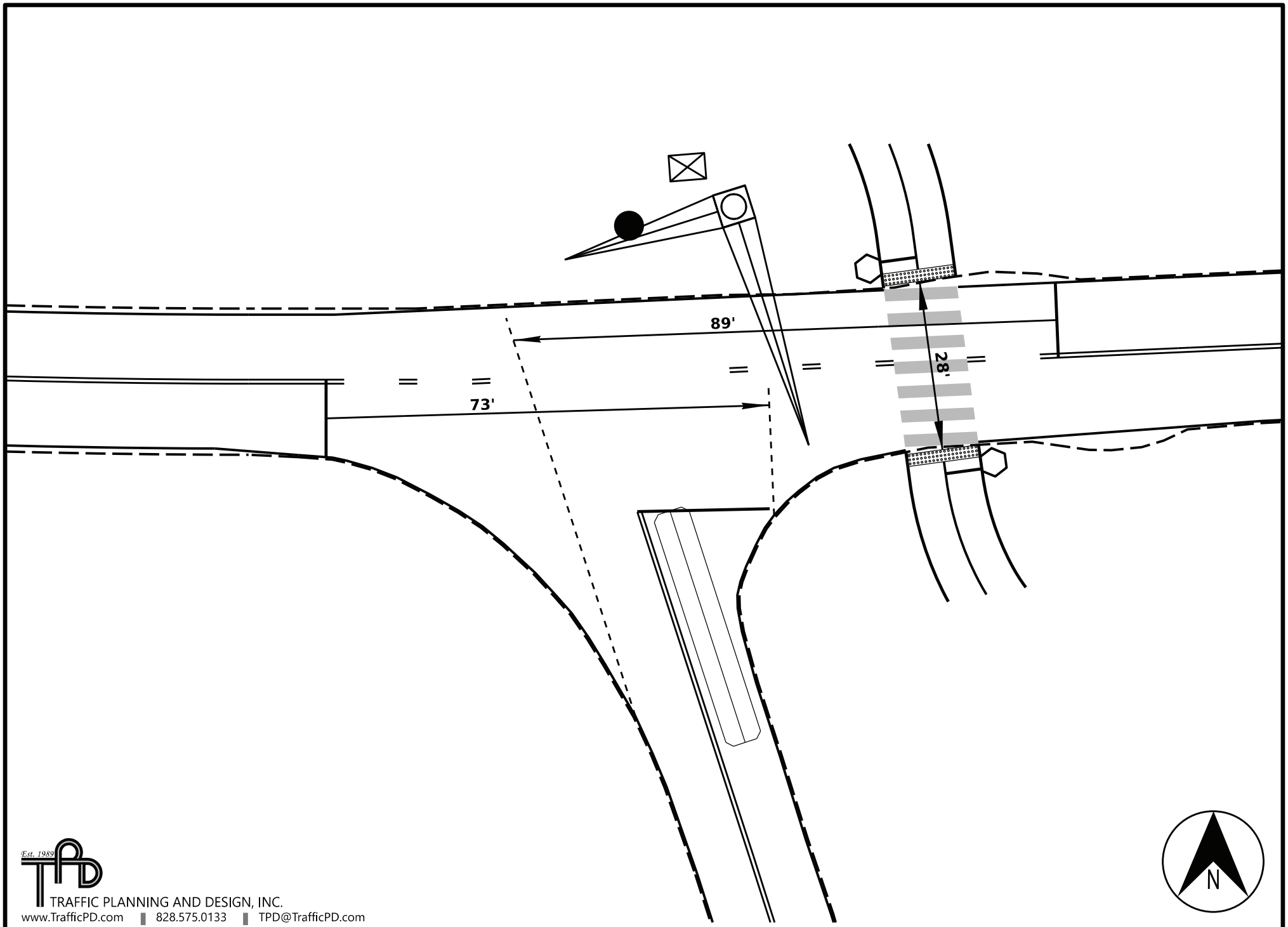
Clearance Distances For: US 64 (Brevard Rd) at SR 1211 (Battle Creek Rd)

1" = 20'

SCALE



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Clearance Distances For: US 64 (Brevard Rd) at SR 1211 (Battle Creek Rd)

1" = 20'

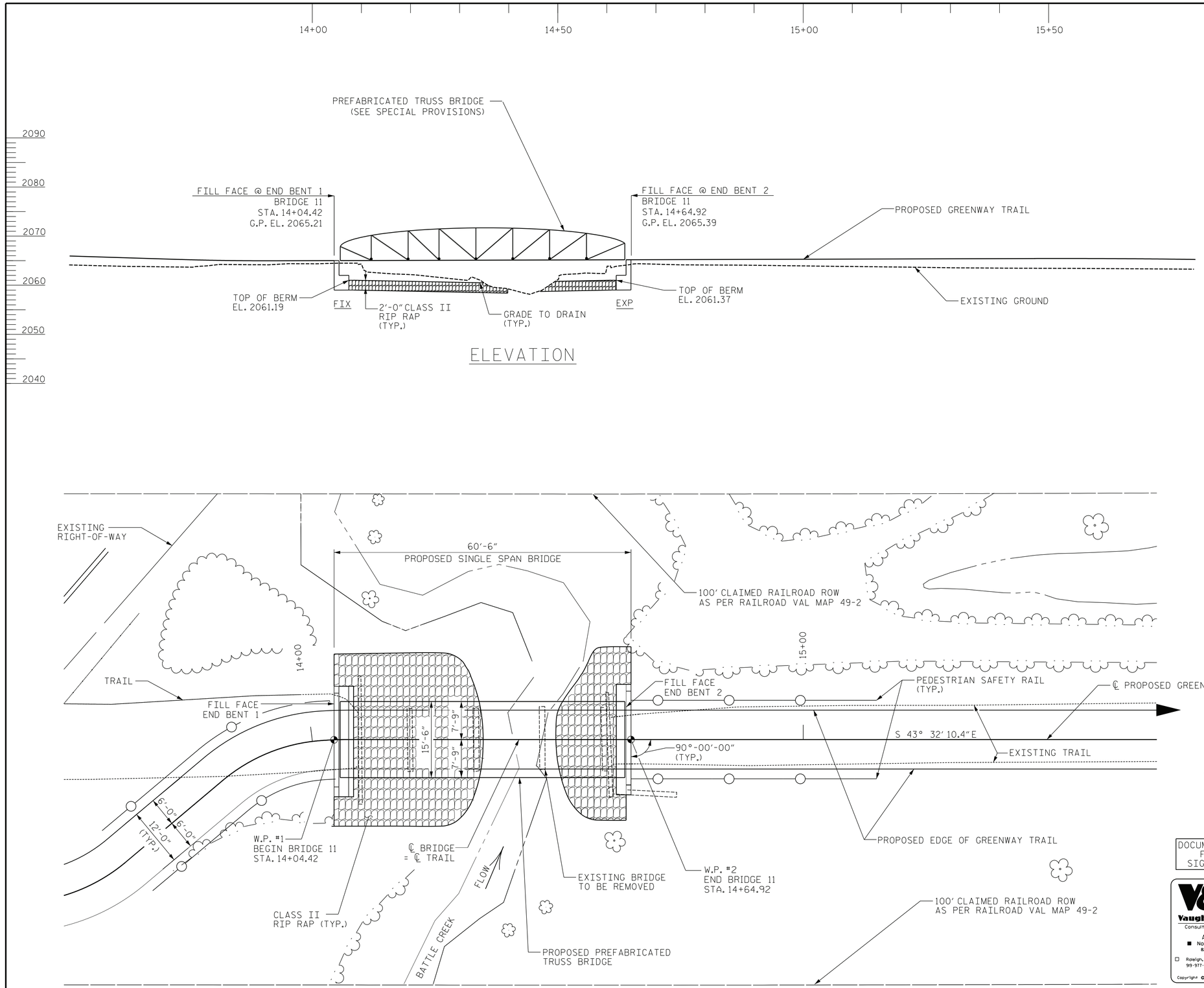
SCALE

Clearance Time Calculations

Rev 2010-02-16

City:		Division:	**14**
County:	**Henderson**	Sig. Inv. #:	**14-1318**
NB Street:	**SR 1211 (Battle Creek Road)**	Project/TIP #:	**BL-0007**
SB Street:		Computed by:	**R. Woutersz**
EB Street:	**US-64 (Brevard Road)**	Checked by:	**C. Kinton**
WB Street:	**US-64 (Brevard Road)**	Approved by:	

Movement	Street Name	**SR 1211 (Battle Creek Road)**				**US-64 (Brevard Road)**		**US-64 (Brevard Road)**	
	Orientation	**Northbound**		**Southbound**		**Eastbound**		**Westbound**	
	Turn movement	**Left**	**Thru**	**Left**	**Thru**	**Left**	**Thru**	**Left**	**Thru**
NEMA Phase #	Protected		8				2		6
	Permissive								
Speed	mph		35				45		45
	ft/sec		51.33				66.00		66.00
Grade	%	1%				-3%		1%	
	Elevation at Stopbar, ft								
	Elevation at Setback, ft								
	Dist to Setback, ft								
	-OR- Enter Grade, %	1.0%				-3.0%		1.6%	
Clear Distance	feet		60				80		80
	meters								
Ped Cross Dist	feet		30						
	meters								
Parameters	Percept-React Time, sec	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
	Decel Rate, ft/sec^2	11.2	11.2	11.2	11.2	11.2	11.2	11.2	11.2
	Walk Speed, fps	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Movement Calcs	Yellow, sec		3.8				4.8		4.4
	All Red, sec		1.2				1.3		1.3
	Mitigated Red, sec		-				-		-
	Unadjusted FDW, sec		8.6						
Movement Results	Yellow, sec		3.8				4.8		4.4
	All Red, sec		1.2				1.3		1.3
	Total Clear, sec		5.0				6.1		5.7
Shared Mvmt Calc	Yellow, sec	None				None		None	
	All Red, sec	None				None		None	
	Total Clear, sec	None				None		None	
	Unadjusted FDW, sec	None				None		None	
Recommended:	**Phase #**		**8**				**2**		**6**
Yellow	**sec**		**3.8**				**4.8**		**4.4**
All Red	**sec**		**1.2**				**1.3**		**1.3**
FDW	**sec**		**5**						



(-)3.1223% (+)0.3006%

PI = 13+82.68
EL = 2,065.14
VC = 20'

GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.

NC GRID
NAD 83 NA 2011

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
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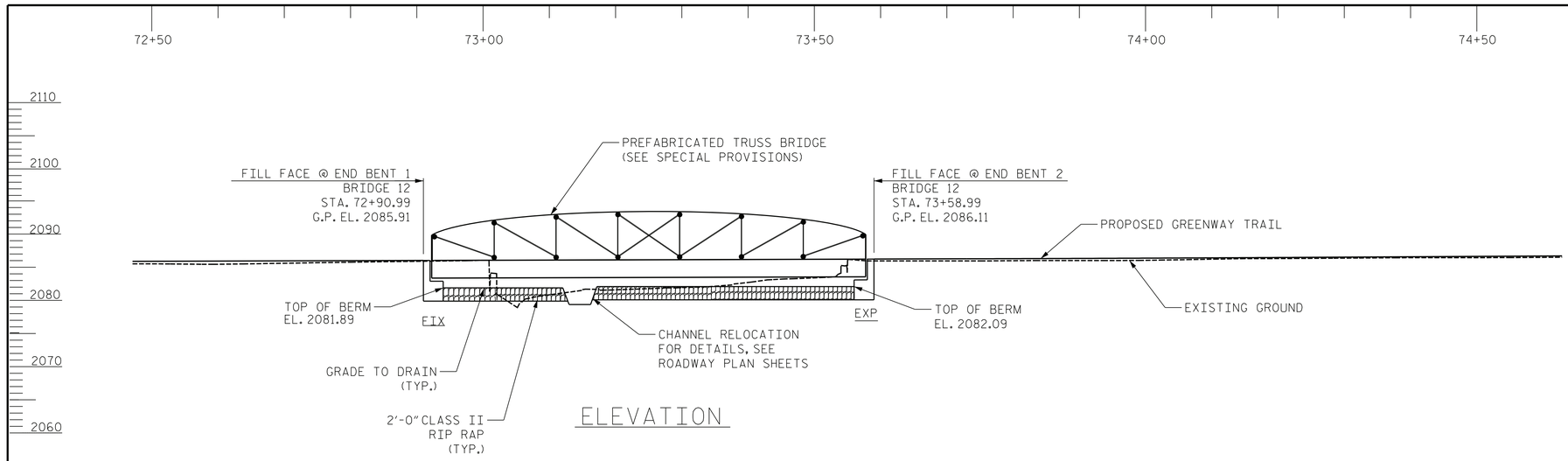
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 11 LAYOUT

DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-1
						TOTAL SHEETS
						S-10



ELEVATION

(+)0.3000% (+)0.5500%

PI= 73+98.00
EL = 2,086.23
VC = 50'

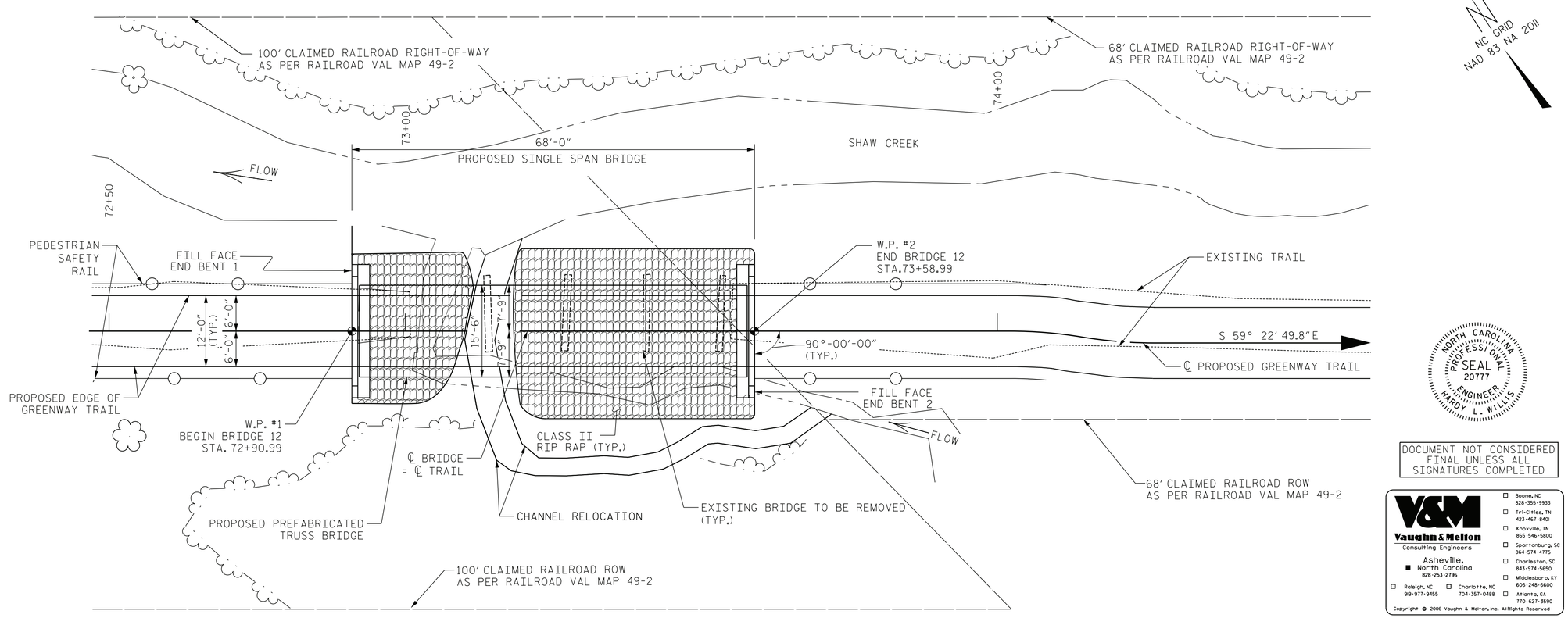
GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.



PLAN

NC GRID
NAD 83 NA 2011

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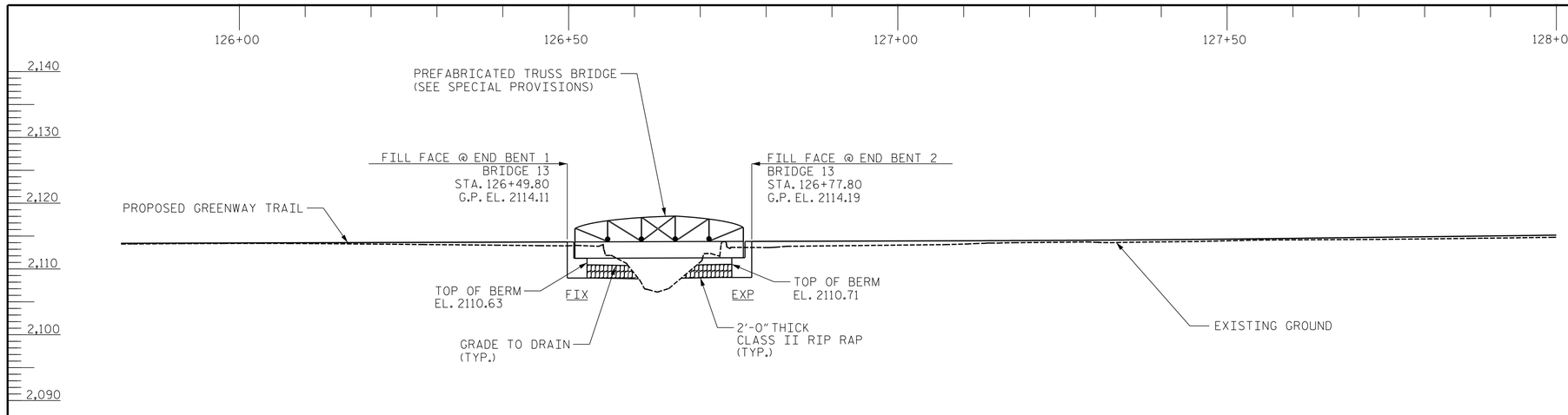
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 12 LAYOUT

DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-2
						TOTAL SHEETS
						S-10



ELEVATION

(+)0.3000% (+)1.2177%

PI = 127+36.76
EL = 2,114.37
VC = 50'

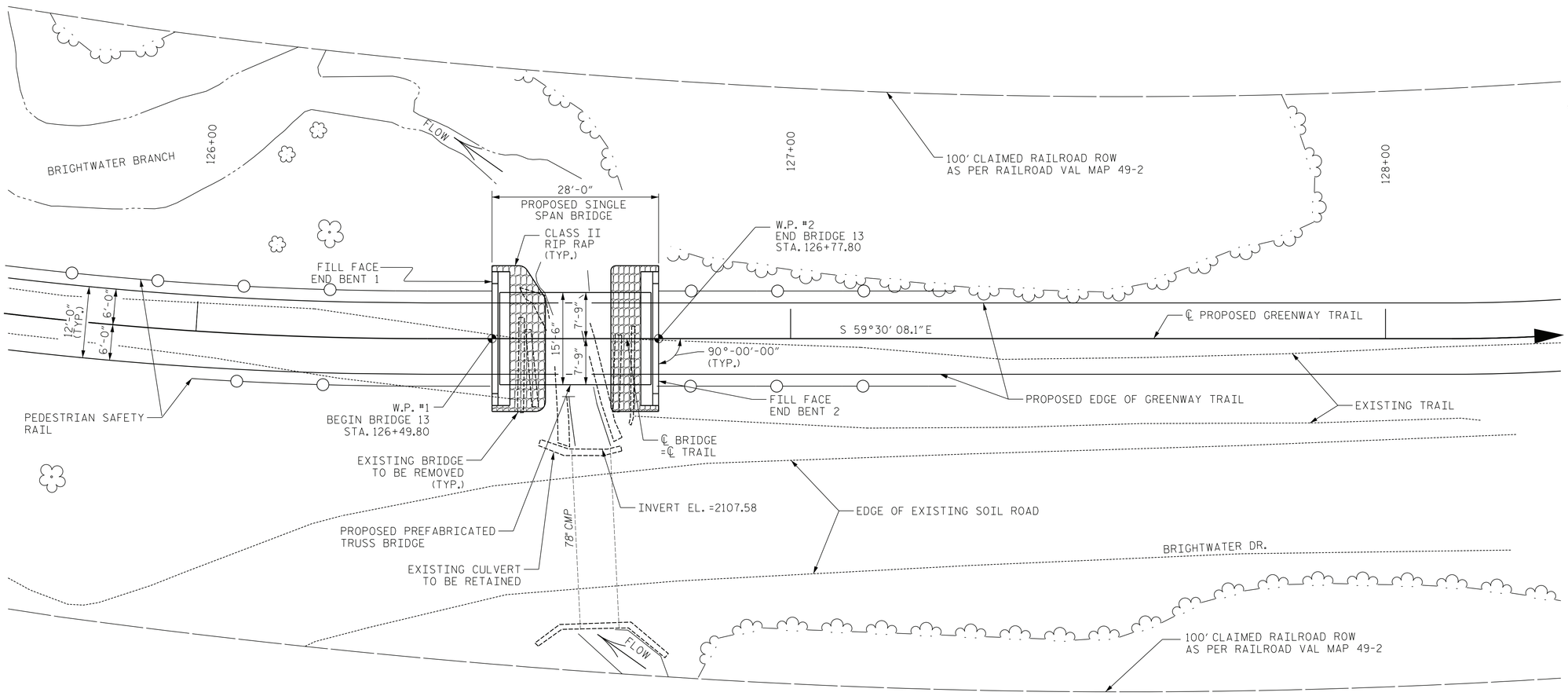
GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.



PLAN

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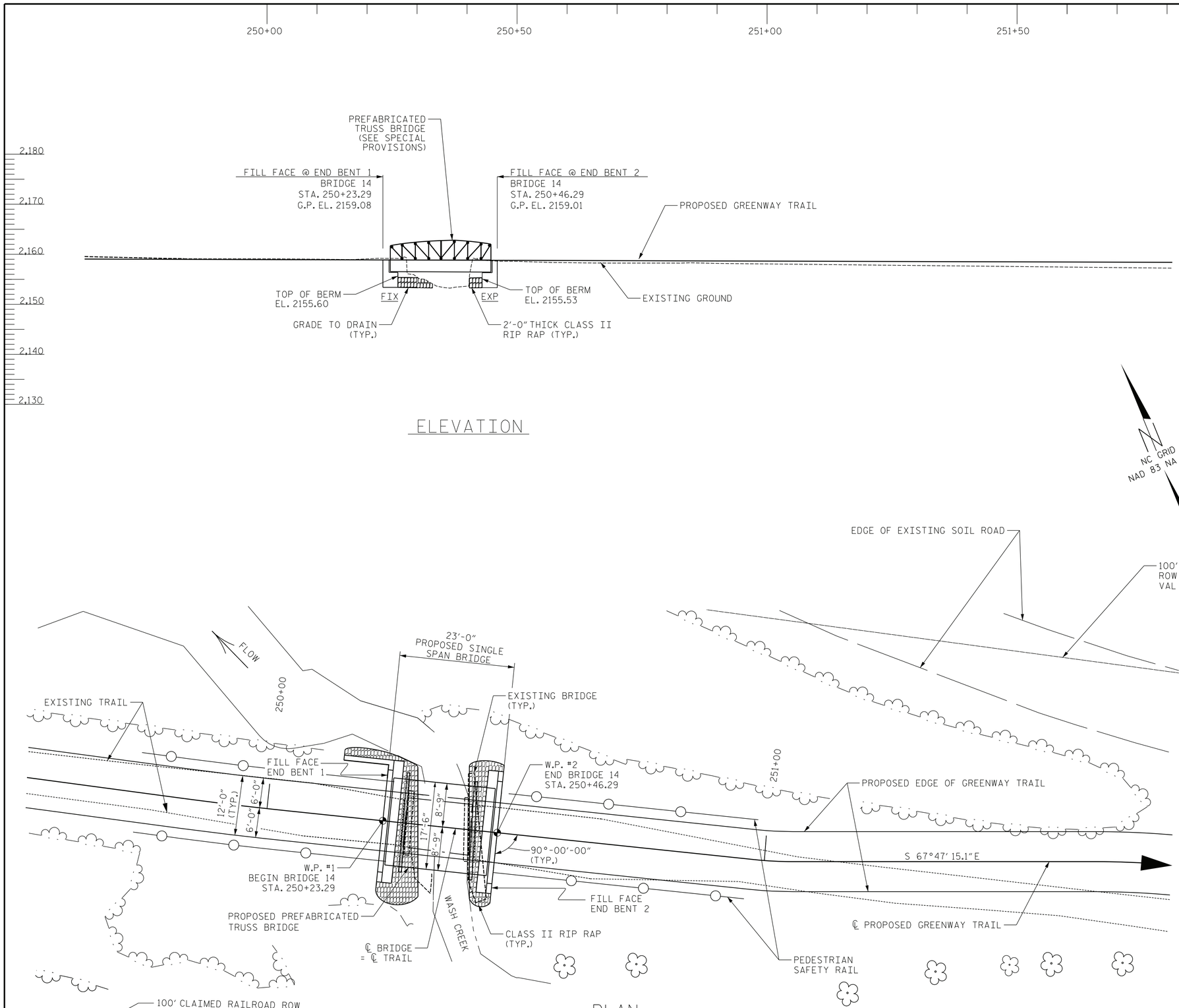
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 13 LAYOUT

DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-3
						TOTAL SHEETS
						S-10



ELEVATION

(-)1.8655% (-)0.3000%

PI = 249+19.51
EL = 2,159.39
VC = 75'

GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.

PLAN

NC GRID
NAD 83 NA 2011

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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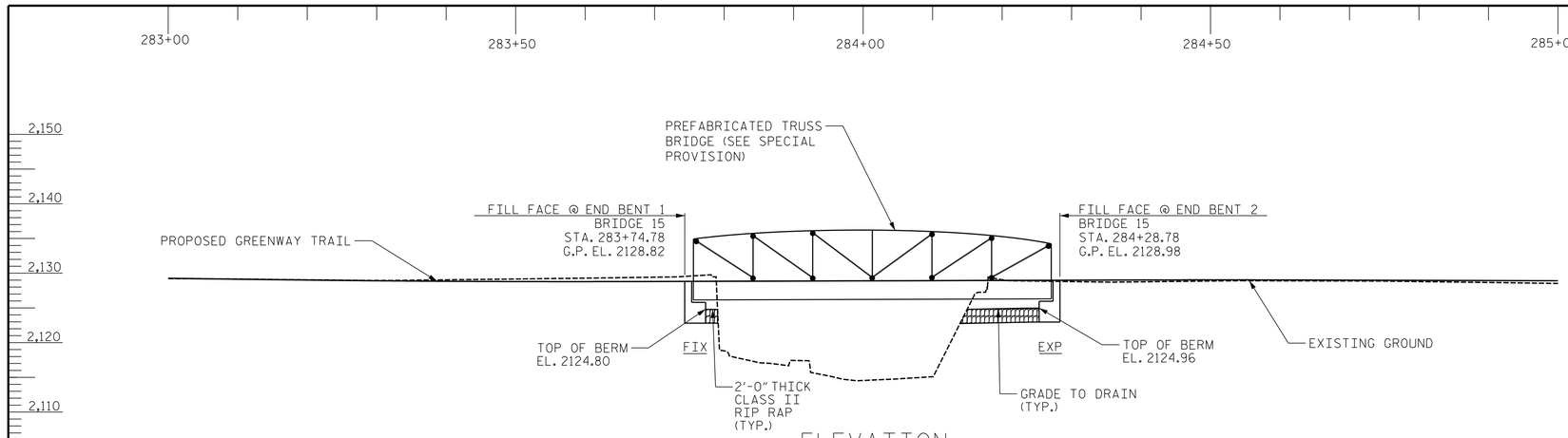
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 14 LAYOUT

DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-4
						TOTAL SHEETS
						S-10



ELEVATION

(-)1.2760% (+)0.3000%

PI = 283+42.52

EL = 2,128.72

VC = 50'

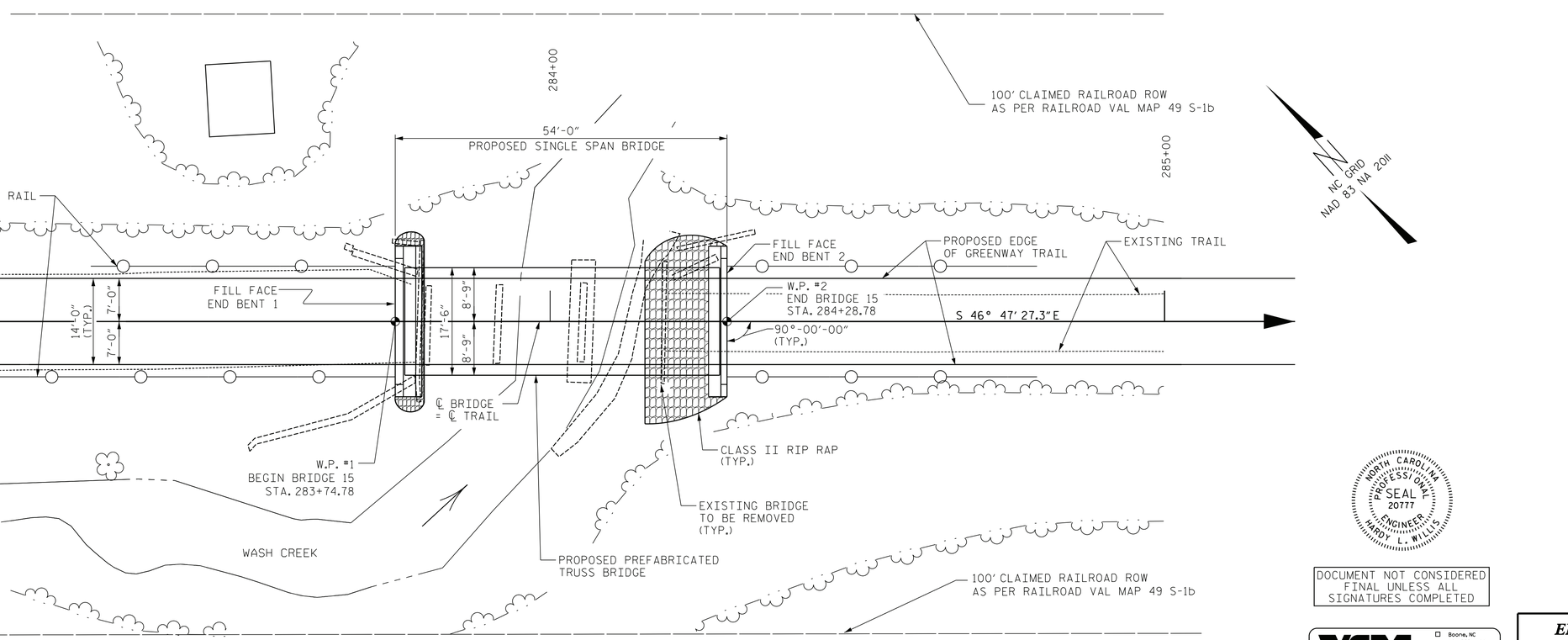
GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.



PLAN

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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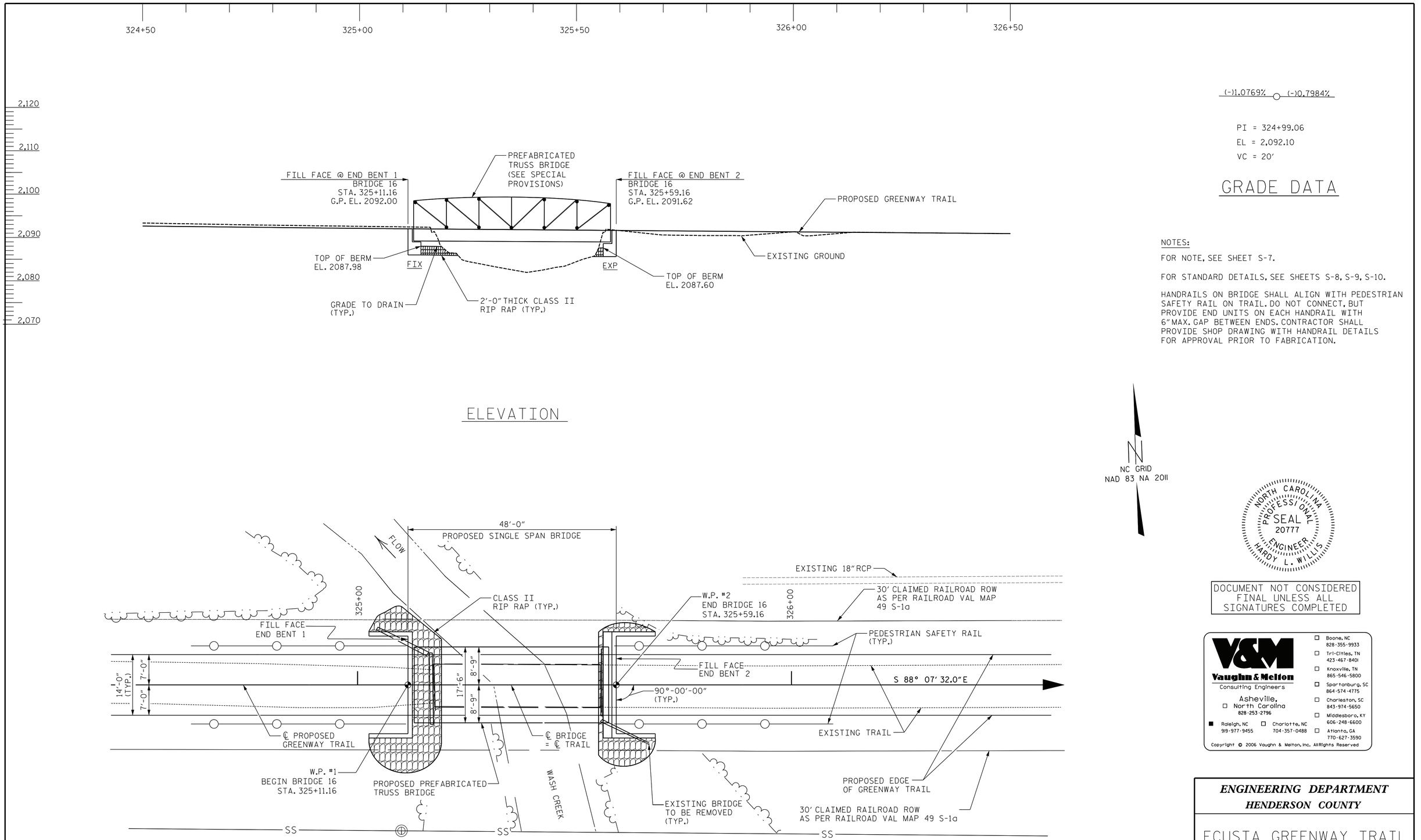
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL BRIDGE 15 LAYOUT

DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-5
						TOTAL SHEETS
						S-10

DWN. BY: JA



ELEVATION

(-)1.0769% (-)0.7984%

PI = 324+99.06
EL = 2,092.10
VC = 20'

GRADE DATA

NOTES:

FOR NOTE, SEE SHEET S-7.

FOR STANDARD DETAILS, SEE SHEETS S-8, S-9, S-10.

HANDRAILS ON BRIDGE SHALL ALIGN WITH PEDESTRIAN SAFETY RAIL ON TRAIL. DO NOT CONNECT, BUT PROVIDE END UNITS ON EACH HANDRAIL WITH 6" MAX. GAP BETWEEN ENDS. CONTRACTOR SHALL PROVIDE SHOP DRAWING WITH HANDRAIL DETAILS FOR APPROVAL PRIOR TO FABRICATION.

PLAN

NC GRID
NAD 83 NA 2011

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 16 GREENWAY

DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
						TOTAL SHEETS
						S-10

GENERAL NOTES

MATERIALS DESIGN SPECIFICATIONS:

CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES, DATED JANUARY 2018.

FOR CLASS 'A' REINFORCED CONCRETE
F'C = 3000 psi. MIN. AT 28 DAYS
FOR STEEL REINFORCEMENT
FY = 60,000 psi.
FOR STEEL H-PILES
FY = 50,000 psi.

REINFORCEMENT:

DIMENSIONS SHOWN FROM THE FACE OF CONCRETE TO BARS ARE TO CENTER OF BARS UNLESS OTHERWISE SHOWN.

SPACING OF BARS IS FROM CENTER TO CENTER OF BARS. CLEAR DISTANCE TO FACE OF CONCRETE IS 2 INCHES UNLESS OTHERWISE NOTED.

BEVELED EDGES:

BEVEL ALL EXPOSED EDGES 3/4" UNLESS OTHERWISE NOTED.

FOR DRIVEN PILES:

BRIDGE 11:

1) FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT THE END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 35 TONS PER PILE.
3) DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 1. EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,051 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
4) DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 2. EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,044 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5) FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2 WITH CONCRETE OR GROUT.

BRIDGE 12:

1) FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 35 TONS PER PILE.
3) DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 1 EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,071 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT. INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
4) DRILLED -IN PILES ARE REQUIRED FOR END BENT NO. 2. EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,067 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5) FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2 WITH CONCRETE OR GROUT.

BRIDGE 13:

1) FOR PILES, SEE PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 30 TONS PER PILE.
3) DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 50 TONS PER PILE.
4) STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H- PILES AT END BENT NO. 1 AND END BENT NO. 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5) IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 10,000 TO 15,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2. THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUBARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

BRIDGE 14:

1) FOR PILES, SEE PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 30 TONS PER PILE.
3) DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 1. EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,140 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
4) DRILLED-IN PILES ARE REQUIRED FOR END BENT NO. 2. EXCAVATE HOLES TO A TIP ELEVATION NO HIGHER THAN 2,140 FT WITH THE REQUIRED TIP RESISTANCE AND A PENETRATION OF AT LEAST 5 FT INTO WEATHERED ROCK / ROCK. FOR PILE EXCAVATION, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS,
5) FILL HOLES FOR PILE EXCAVATION AT END BENT NO. 1 AND END BENT NO. 2 WITH CONCRETE OR GROUT.

BRIDGE 15:

1) FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT END BENT NO. 1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 35 TONS PER PILE.
3) DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 60 TONS PER PILE.
4) STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENT NO. 1 AND END BENT NO. 2 FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.
5) IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 10,000 TO 15,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 THIS ESTIMATED ENERGy RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUB ARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

BRIDGE 16:

1) FOR PILES, SEE PILES PROVISION AND SECTION 450 OF THE STANDARD SPECIFICATIONS.
2) PILES AT END BENT NO.1 AND END BENT NO. 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 30 TONS PER PILE.
3) DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 TO A REQUIRED DRIVING RESISTANCE OF 50 TONS PER PILE.
4) IT HAS BEEN ESTIMATED THAT A HAMMER WITH AN EQUIVALENT RATED ENERGY IN THE RANGE OF 10,000 TO 20,000 FT-LBS PER BLOW WILL BE REQUIRED TO DRIVE PILES AT END BENT NO. 1 AND END BENT NO. 2 THIS ESTIMATED ENERGY RANGE DOES NOT RELEASE THE CONTRACTOR FROM PROVIDING DRIVING EQUIPMENT IN ACCORDANCE WITH SUB ARTICLE 450-3(D)(2) OF THE STANDARD SPECIFICATIONS.

IF PRE-DRILLING IS USED, PILE TIPS WILL NOT BE REQUIRED.

EXPANSION JOINT:

PROVIDE 1" NEOPRENE EXPANSION JOINT MATERIAL BETWEEN END OF PREFABRICATED TRUSS BRIDGE AND FACE OF BACKWALL AT EACH END BENT.

MISCELLANEOUS:

PREFABRICATED STRUCTURES SHALL BE A PRATT STYLE PONY TRUSS.

CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR THE PREFABRICATED TRUSSES TO THE ENGINEER OF RECORD, FOR APPROVAL, PRIOR TO FABRICATION

CLEAR WIDTH OF THE TRAIL BETWEEN HANDRAILS ON THE TRUSS SHALL BE EQUAL TO THE TRAIL WIDTH ABUTTING THE TRUSS.

THE HEIGHT OF THE BACKWALL (SHOWN AS "I") MAY BE ADJUSTED UP OR DOWN BY AS MUCH AS 6" TO ACCOUNT FOR FINAL TRUSS AND BEARING DIMENSIONS. HOWEVER, TOP OF CAP ELEVATIONS SHALL REMAIN UNCHANGED.

ALTERNATE ANCHOR DETAILS MAY BE SUBMITTED TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO CONSTRUCTION OF THE END BENTS.

FOR PREFABRICATED TRUSS BRIDGE, SEE SPECIAL PROVISIONS.

DECK OF PREFABRICATED TRUSS, SHALL BE SLOPED TO MATCH THE TRAIL CROSS SLOPE.

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NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARRY L. WILLIS

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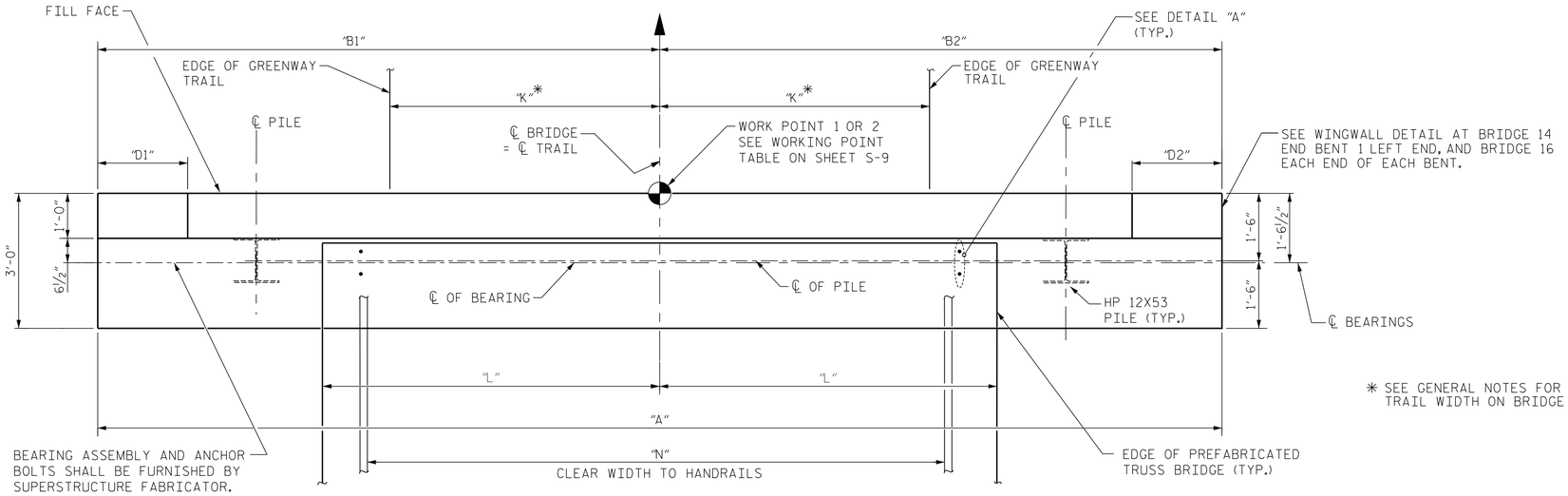
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
GENERAL NOTES

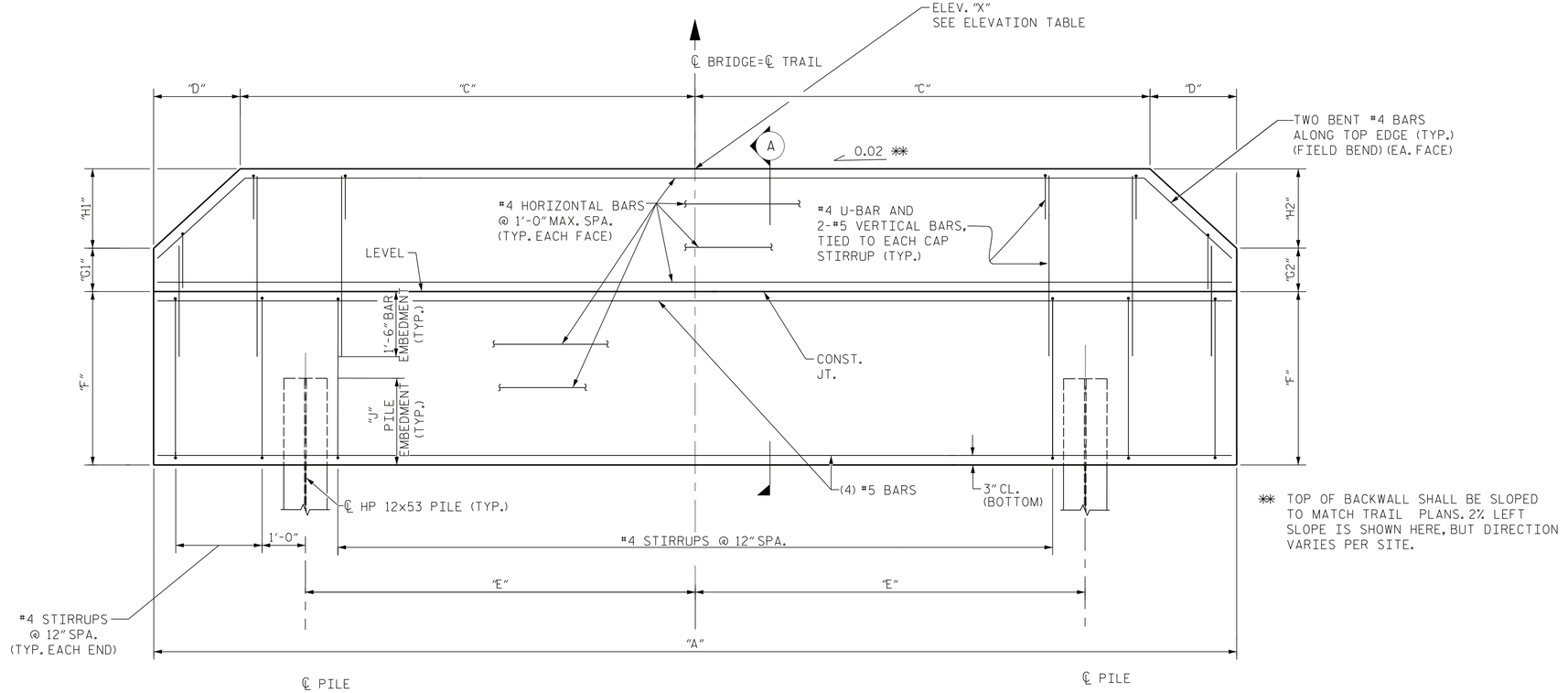
DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
						TOTAL SHEETS
						S-10



PLAN VIEW

END BENT 2 SHOWN. END BENT 1 SIMILAR BY ROTATION.



ELEVATION VIEW

(LOOKING AHEAD STATION)

** TOP OF BACKWALL SHALL BE SLOPED TO MATCH TRAIL PLANS. 2% LEFT SLOPE IS SHOWN HERE, BUT DIRECTION VARIES PER SITE.

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HAROLD L. WILLIS

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ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
END BENT DETAILS

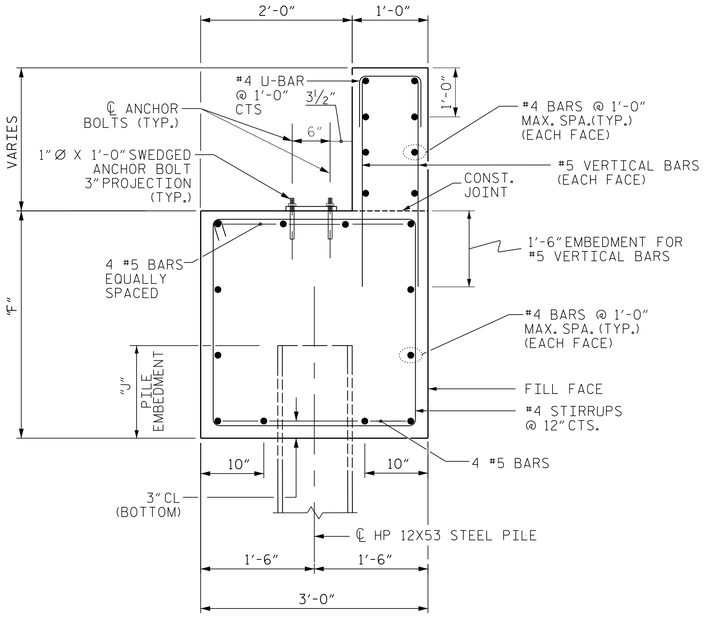
DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-8
						TOTAL SHEETS
						S-10

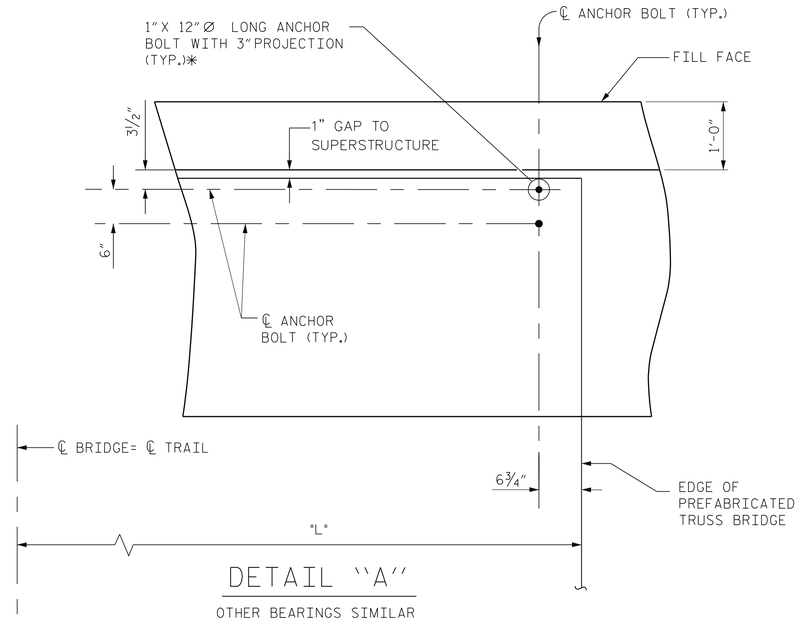
DIMENSION TABLE

LABEL	BRIDGE 11		BRIDGE 12		BRIDGE 13		BRIDGE 14		BRIDGE 15		BRIDGE 16	
	END BENT 1	END BENT 2	END BENT 1	END BENT 2	END BENT 1	END BENT 2	END BENT 1	END BENT 2	END BENT 1	END BENT 2	END BENT 1	END BENT 2
A	22'-6"	22'-6"	22'-6"	22'-6"	22'-6"	22'-6"	22'-3"	24'-6"	24'-6"	24'-6"	20'-0"	20'-0"
B1	11'-3"	11'-3"	11'-3"	11'-3"	11'-3"	11'-3"	10'-3"	12'-3"	12'-3"	12'-3"	10'-0"	10'-0"
B2	11'-3"	11'-3"	11'-3"	11'-3"	11'-3"	11'-3"	12'-3"	12'-3"	12'-3"	12'-3"	10'-0"	10'-0"
C	9'-3"	9'-3"	9'-3"	9'-3"	9'-3"	9'-3"	9'-3"	9'-3"	10'-3"	10'-3"	10'-0"	10'-0"
D1	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	0"	2'-0"	2'-0"	2'-0"	0"	0"
D2	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	0"	0"
E	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	7'-3"	8'-3"	8'-3"	8'-3"	8'-3"
F	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"
G1	2'-6 15/16"	2'-6 15/16"	2'-6 15/16"	2'-6 15/16"	2'-0 1/2"	2'-0 1/2"	2'-8 1/4"	2'-0 5/8"	2'-1 1/4"	2'-1 1/4"	2'-9 7/8"	2'-9 7/8"
G2	2'-1 1/2"	2'-1 1/2"	2'-1 1/2"	2'-1 1/2"	1'-7"	1'-7"	1'-6 13/16"	1'-6 13/16"	2'-7 3/16"	2'-7 3/16"	3'-2 5/8"	3'-2 5/8"
H1	8"	8"	8"	8"	8"	8"	0"	8"	8"	8"	0"	0"
H2	8"	8"	8"	8"	8"	8"	8"	8"	8"	8"	0"	0"
J	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"
K	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	6'-0"	7'-0"	7'-0"	7'-0"	7'-0"
L*	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	7'-9"	8'-9"	8'-9"	8'-9"	8'-9"
M	N/A	N/A	N/A	N/A	N/A	N/A	16'-0"	16'-0"	N/A	N/A	13'-0"	13'-0"
N	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	12'-0"	14'-0"	14'-0"	14'-0"	14'-0"

*"L" DIMENSION IS APPROXIMATE.



SECTION A

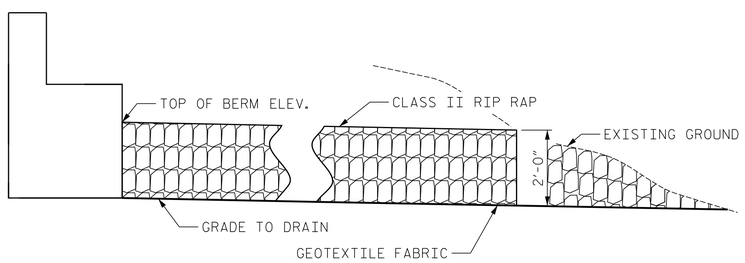


DETAIL "A"

OTHER BEARINGS SIMILAR

* VERIFY BOLT DIAMETER AND LOCATION WITH FINAL FABRICATION DRAWINGS PRIOR TO POURING END BENT CONCRETE.

DECK WALKING SURFACE SHOULD BE FLUSH WITH THE TOP BACKWALL.



RIP RAP DETAIL

TOP OF CAP ELEVATION

BRIDGE NO.	END BENT 1	END BENT 2
11	2062.19	2062.37
12	2082.89	2083.09
13	2111.63	2111.71
14	2156.60	2156.53
15	2125.80	2125.96
16	2088.98	2088.60

WORKING POINT TABLE

BRIDGE NO.	END BENT 1 (W.P.1)	END BENT 2 (W.P.2)	SPAN LENGTH (W.P. TO W.P.)
11	14+04.42	14+64.92	60'-6"
12	72+90.99	73+58.99	68'-0"
13	126+49.80	126+77.80	28'-0"
14	250+23.29	250+46.29	23'-0"
15	283+74.78	284+28.78	54'-0"
16	325+11.16	325+59.16	48'-0"

ELEVATION TABLE "X"

BRIDGE NO.	END BENT 1 ELEV. (FT.) @ ℄ TRAIL	END BENT 2 ELEV. (FT.) @ ℄ TRAIL
11	2065.21	2065.39
12	2085.91	2086.11
13	2114.11	2114.19
14	2159.08	2159.01
15	2128.82	2128.98
16	2092.00	2091.62

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
END BENT DETAILS

DWN. BY: JA DATE: 12/2022
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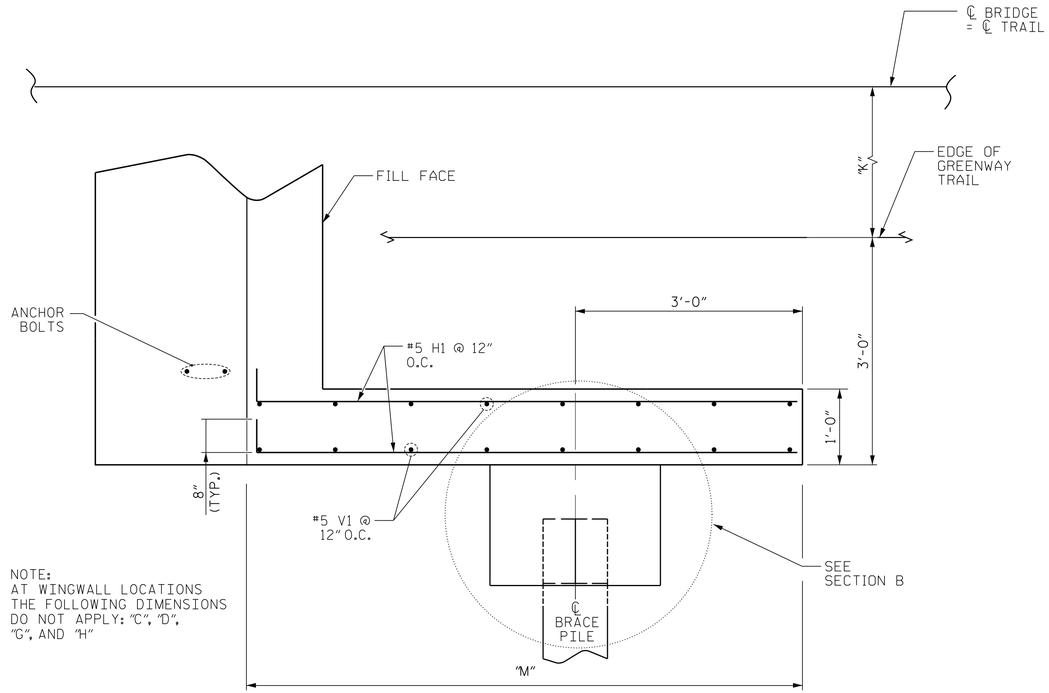
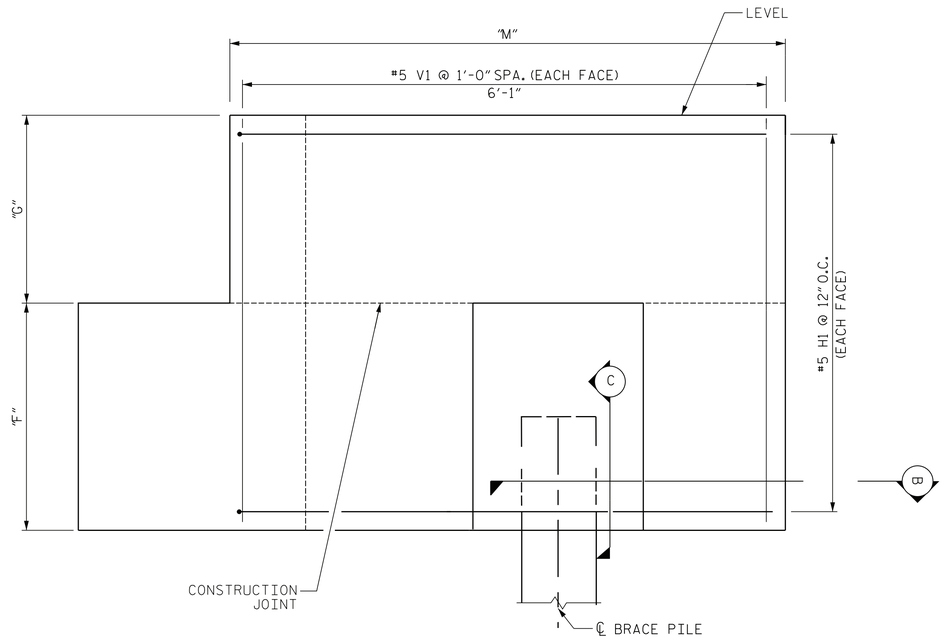
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-9
						TOTAL SHEETS
						S-10

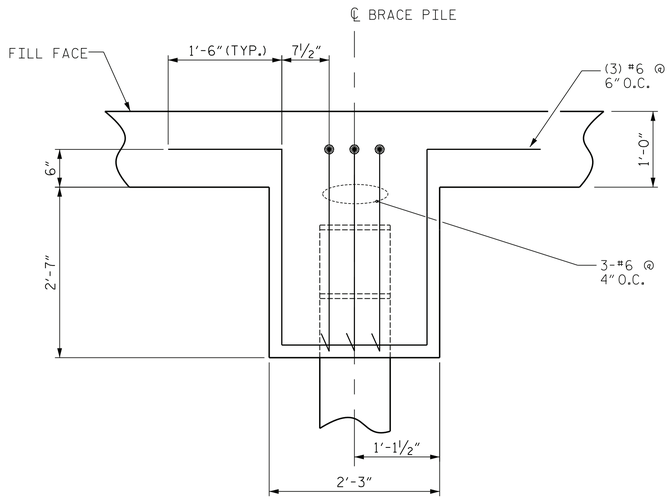


WINGWALL DETAIL

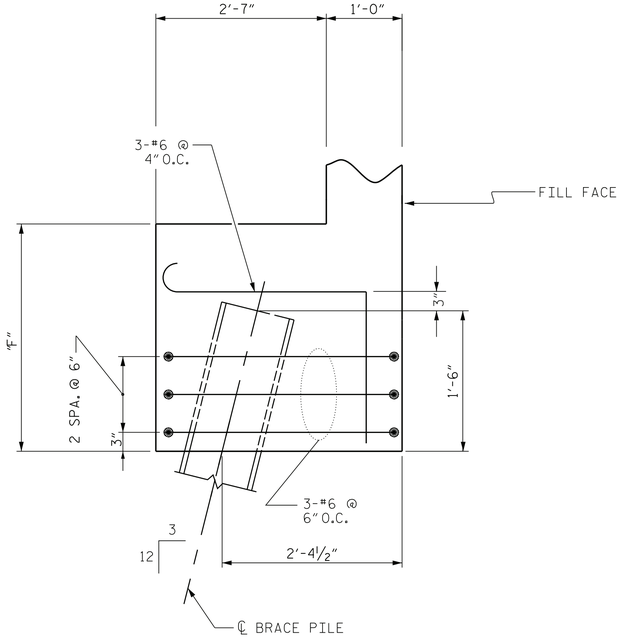
PLAN VIEW



WINGWALL ELEVATION

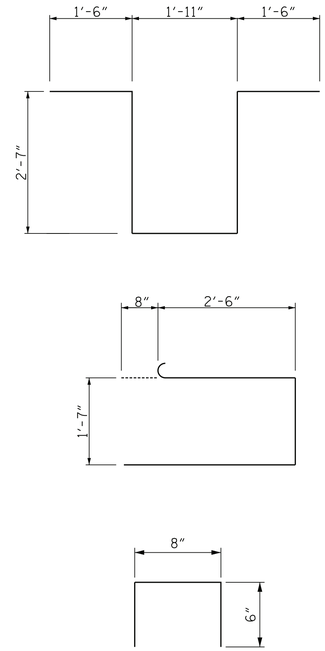


SECTION B



SECTION C

BAR DIMENSIONS ARE OUT TO OUT



REBAR DETAILS

NORTH CAROLINA PROFESSIONAL SEAL 20777 ENGINEER HARDY L. WILLIS

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ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
END BENT DETAILS

DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-10
						TOTAL SHEETS
						S-10

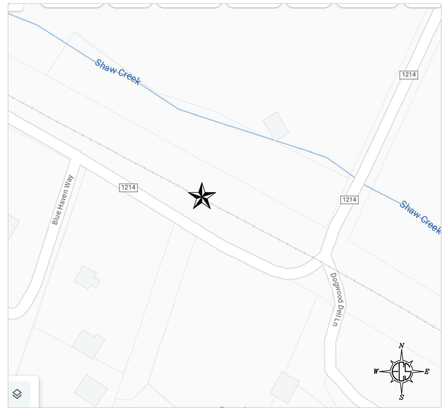
ECUSTA TRAIL NEAR YALE ROAD

PERMANENT SOLDIER BEAM LAGGING AND PRECAST PANEL WALL

HENDERSONVILLE, NC

SHEET	TITLE	ISSUE DATE	REVISION NO.	REVISION DATE
W0.0	COVER	05/02/23	----	----
W0.1	NOTES AND SPECIFICATIONS	05/02/23	----	----
W1.0	WALL PLAN VIEW	05/02/23	----	----
W2.0	WALL PROFILE VIEW 1	05/02/23	----	----
W2.1	WALL PROFILE VIEW 2	05/02/23	----	----
W3.0	WALL DETAILS	05/02/23	----	----
			----	----

DESIGNED BY:	REVIEWED BY:	ENGINEER:	ISSUE DATE:		DRAWN BY:
JAG	JR	JR	05/02/23	ECS PROJECT NO. 31-4356	JAG



SITE VICINITY MAP

ECS SOUTHEAST, LLP
1900 HENDERSONVILLE RD
UNIT 10
ASHEVILLE, NC 28803
+1 (828) 665-2307

NC FIRM NUMBER F-1078

"SETTING THE STANDARD FOR SERVICE"

ECUSTA TRAIL NEAR YALE ROAD
PERMANENT SBL WALL
HENDERSONVILLE, NC

PERMANENT SBL WALL
COVER

	ECS REVISIONS	
REV. NO.	REVISION DESCRIPTION	ISSUE DATE
0	----	----
1	----	----
2	----	----
3	----	----
4	----	----
5	----	----

ENGINEER	DRAFTING
JR	JAG

SCALE: AS SHOWN
PROJECT NO.: 31-4356
ISSUE DATE: 5/2/2023
SHEET: W0.0

GENERAL NOTES

1. THESE DRAWINGS HAVE BEEN PREPARED FOR THE SOLE USE OF JMT, INC.
2. CIVIL PLAN AND WALL PROFILE PROVIDED ELECTRONICALLY BY JMT, INC. VIA EMAIL ON APRIL 13, 2023
3. CONTRACTOR SHALL CONFORM TO THE NOTES AND DETAILS PROVIDED ON THESE DRAWINGS AS WELL THE REFERENCED STANDARDS AND SPECIFICATIONS.

RETAINING WALL DESIGN PARAMETERS

1. DESIGN WALL GEOMETRY:

1.1. DESIGN WALL HEIGHT: 3 TO 6.5 FT

2. DESIGN WALL SURCHARGE LOADS:

2.1. WALL HAS BEEN DESIGNED FOR A CONSTRUCTION LIVE LOAD SURCHARGE OF 250 PSF, APPLIED IN A ZONE MEASURING 1 TO 12 FT FROM FACE OF CREST OF WALL.

3. DESIGN MINIMUM FACTORS OF SAFETY:

AGAINST SLIDING: 1.5

AGAINST OVERTURNING: 2.0

AGAINST BEARING CAPACITY FAILURE: 2.0

AGAINST GLOBAL INSTABILITY: 1.5

4. DESIGN SOIL PARAMETERS:

SOIL DESCRIPTION	LAYER	ELE TOP LAYER (FT):	DENSITY (PCF):	PHI (DEG):	COHESION (PSF):
RR BALLAST, GRAVEL	1	2100	139	35	0
LOOSE SILTY SANDS/SANDY SILTS, RESIDUAL	2	2094	120	27	0
MED. STIFF SILTY SANDS, RESIDUAL	3	2086	131	32	0
PARTIALLY WEATHERED ROCK	4	VARIES	150	38	0

5. LEVELING PAD AT BOTTOM OF WALL:
6. LEVELING PAD MUST BE CONSTRUCTED WITH A MINIMUM 8 INCH LIFT OF WELL COMPACTED, AGGREGATE (TAMPED NO. 57 STONE)
7. THE WALL HAS NOT BEEN DESIGNED FOR FLOOD LOADS, SCOUR, OR OVERTOPPING. SCOUR PROTECTION TO BE PROVIDED AND DESIGNED BY OTHERS, IF REQUIRED.
8. IF THE WALL EXPERIENCES A SCOUR EVENT IN THE FUTURE, THE PROPOSED GRADES SHALL BE RESTORED WITH APPROVED FILL.

RESPONSIBILITY FOR CONSTRUCTION COMPLIANCE

1. CONSTRUCTION OF THE RETAINING WALLS SHOWN ON THIS PLAN SHALL BE PERFORMED UNDER THE OBSERVATION OF THE OWNERS INDEPENDENT TESTING AGENCY (ITA) ON A FULL TIME BASIS TO CONFIRM THAT THE CONSTRUCTION IS IN ACCORDANCE WITH THE INTENT OF THE DESIGN.
2. CONTRACTOR IS SOLELY RESPONSIBLE FOR QUALITY OF THE WORK. INSPECTION, MONITORING, AND WALL TESTING BY THE OWNER, THEIR DESIGNATED REPRESENTATIVE, OR ECS ARE SOLELY AT THE DISCRETION OF THE OWNER, AND IN NO WAY RELIEVE THE CONTRACTOR OF SOLE RESPONSIBILITY FOR MAINTAINING A QUALITY CONTROL PLAN.
3. THE CONTRACTOR MUST PROVIDE FOR THE CONSTRUCTION OF THE WALL IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, PLANS, AND SPECIFICATIONS. THE CONTRACTOR IS ALSO RESPONSIBLE FOR THE VERIFICATION OF WALL ALIGNMENT, GRADE, OTHER PHYSICAL FEATURES, INCLUDING VERIFICATION THAT CONSTRUCTION IS WITHIN APPROPRIATE PROPERTY BOUNDARIES AND CONSTRUCTION EASEMENTS.
4. IF THE ELEVATION, LOCATION, SURCHARGE LOADING , OR GRADING SURROUNDING THE RETAINING WALL CHANGES FROM DETAILS DEPICTED ON THESE PLANS, ECS SHALL BE NOTIFIED SO THAT MODIFICATIONS TO THE GEOTECHNICAL DESIGN CAN BE MADE, IF NECESSARY. NO MATERIAL SUBSTITUTIONS ARE PERMITTED WITHOUT APPROVAL OF DESIGNER.
5. CONTRACTOR SHALL CONTACT 811 A MINIMUM OF THREE (3) DAYS PRIOR TO START OF WORK.
6. APPROXIMATE FIELD LOCATION OF EXISTING UTILITIES, FOUNDATIONS AND OTHER STRUCTURES IDENTIFIED TO THE ENGINEER ARE SHOWN ON THESE DRAWINGS. THE ENGINEER IS NOT RESPONSIBLE FOR FIELD VERIFYING THESE LOCATIONS AND DAMAGE TO IDENTIFIED AND UNIDENTIFIED UTILITIES AND FOUNDATION. THE CONTRACTOR SHALL FIELD VERIFY LOCATIONS AND ELEVATIONS OF ALL UTILITIES WITH IN 50 FEET BEHIND AND IN FRONT OF WALLS.
7. NO NEW UTILITIES AT TOE OF OR UNDERNEATH RETAINING WALL ARE ANTICIPATED.
8. THE CONTRACTOR SHALL PROVIDE ALL LABOR, EQUIPMENT, AND MATERIALS TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE REQUIREMENTS OF THESE PLANS AND SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER. DURING THE COURSE OF THE CONSTRUCTION. ALTERNATIVES TO, OR CHANGES IN, THE PLANS AND SPECIFICATIONS MUST BE APPROVED BY THE ENGINEER PRIOR TO COMMENCEMENT OF WORK.
9. CONTRACTOR TO BENCH OR SHORE TEMPORARY EXCAVATION AS NECESSARY, IN COMPLIANCE WITH LOCAL CODE, TO FACILITATE WALL CONSTRUCTION.
10. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR SITE SAFETY AND UNDER NO CIRCUMSTANCES SHALL THE ENGINEER BE RESPONSIBLE FOR CONSTRUCTION SITE SAFETY.
11. THE CONTRACTOR SHALL PROVIDE, AS NEEDED, ANY SAFETY RAILING AND/OR MEANS OF EGRESS AND INGRESS, IN COMPLIANCE WITH OSHA STANDARDS.
12. CONSTRUCTION OPERATIONS BEHIND AND IN FRONT OF PREVIOUSLY CONSTRUCTION PORTIONS FOR WALLS SHALL BE RESTRICTED TO PREVENT DAMAGE TO EXISTING WALLS. ONLY LIGHT COMPACTION EQUIPMENT SHALL BE USED WITHIN 5 FEET BEHIND WALL TO PREVENT EXCESSIVE LATERAL STRESS ON CONSTRUCTED PORTIONS OF THE WALLS.
13. FLEXIBLE PAVEMENTS ABOVE THE WALL SHALL NOT BE PLACED UNTIL A MINIMUM OF 1 WEEK AFTER THE PAVEMENT SUBGRADES ARE REACHED.

SOLDIER BEAM AND LAGGING CONSTRUCTION

SOLDIER PILE INSTALLATION - DRILLED H-PILES

1. DRILLED PILES SHOULD BE INSTALLED WITHIN 1 INCHES OF PLANNED VERTICAL AND WITHIN 1 INCHES HORIZONTAL ALIGNMENT WITH NO NEGATIVE BATTER (PILES LEANING FORWARD).
2. CONTRACTOR SHALL INSTALL H-PILE SOLDIER BEAMS WITH A MINIMUM 2.5 FT DIAMETER PREDRILLED LOCATION, AND A TREMIE GROUTED COLUMN ENVELOPING THE H-PILE FOR THE ENTIRE LENGTH BELOW GRADE.
3. CONTRACTOR SHALL USE CLASS A CONCRETE THAT MEETS THE REQUIREMENTS OF ARTICLE 450-2, THE NCDOT STANDARD SPECIFICATIONS FOR GROUTED DRILLED-IN PILES.
4. CONTRACTOR SHALL BE RESPONSIBLE FOR MEANS AND METHODS REQUIRED TO MAINTAIN HOLE STABILITY UNTIL CONCRETE IS PLACED, INCLUDING, BUT NOT LIMITED TO CASED DRILLING METHODS.
5. CONCRETE SHALL BE PLACED AT THE BOTTOM OF THE PREDRILLED HOLE VIA TREMIE METHOD.
6. AFTER FILLING HOLES WITH CONCRETE OR GROUT TO THE ELEVATION OF THE BOTTOM OF THE WALL LEVELING PAD, REMOVE ANY FLUIDS AND FILL REMAINING PORTIONS OF HOLES WITH FLOWABLE FILL.
7. IF OVERFLOW OF CONCRETE ABOVE WALL LEVELING PAD ELEVATION OCCURS, OVER EXCAVATION OF THE TOPS OF THE GROUTED SOLDIER BEAM LOCATIONS AND 1 TO 3 FEET BACKFILL WITH NO. 57 STONE MAY BE REQUIRED PRIOR TO PLACEMENT OF THE SOLDIER BEAM.
8. CURE CONCRETE OR GROUT A MINIMUM OF 2 DAYS BEFORE BACKFILLING WALL ADJACENT TO GROUTED LOCATIONS.
9. ALL STRUCTURAL STEEL SHALL BE OF THE GRADES INDICATED BELOW, UNLESS NOTED OTHERWISE ON PLANS OR DETAILS:

9.1. PILING SHALL CONFORM TO ASTM A572, GRADE 50 OR HIGHER.

9.2. FOR SOLDIER PILE WALLS WITH PANELS, GALVANIZATION OF PILES IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS IS REQUIRED.

9.3. ALL STRUCTURAL STEEL SHALL BE DETAILED AND FABRICATED IN ACCORDANCE WITH THE AISC CODE OF STANDARD PRACTICE OR AS MODIFIED IN THESE NOTES AND THE PROJECT SPECIFICATIONS.

9.4. SPLICING OF STEEL MEMBERS, UNLESS SHOWN ON THE DRAWINGS, IS PROHIBITED WITHOUT WRITTEN APPROVAL OF THE ENGINEER. IF NECESSARY, CUT OFF PILES AT TOP OF WALL ALONG A PLANE NORMAL TO THE PILE AXIS.

10. STORE STEEL MATERIALS ON BLOCKING AT LEAST 12" ABOVE THE GROUND AND PROTECT IT AT ALL TIMES FROM DAMAGE; AND WHEN PLACING IN THE WORK MAKE SURE IT IS FREE FROM DIRT, DUST, LOOSE MILL SCALE, LOOSE RUST, PAINT, OIL OR OTHER FOREIGN MATERIALS. LOAD, TRANSPORT, UNLOAD AND STORE SOLDIER PILE WALL MATERIALS SO MATERIALS ARE KEPT CLEAN AND FREE OF DAMAGE. BENT, DAMAGED OR DEFECTIVE MATERIALS WILL BE REJECTED.
11. NO CHANGE IN SIZE OR POSITION OF ANY STRUCTURAL ELEMENT NOR HOLES, SLOTS, CUTS, ETC. SHALL BE MADE UNLESS DETAILED AND NOTED AS A PROPOSED CHANGE ON THE SHOP DRAWINGS AND REVIEWED AND ACCEPTED BY THE ENGINEER OF RECORD.

WALL EXCAVATION - WOOD BEAM LAGGING

1. CONTRACTOR SHALL:

1.1. USE UNTREATED TIMBER LAGGING WITH A MINIMUM REQUIRED THICKNESS OF 5 INCHES, CAPABLE OF RESISTING A MINIMUM BENDING STRESS OF 1,000 PSI.

1.2. REMOVE FLOWABLE FILL AND MATERIAL IN BETWEEN PILES AS NECESSARY TO INSTALL TIMBER LAGGING. POSITION LAGGING WITH AT LEAST 3" OF CONTACT IN THE HORIZONTAL DIRECTION BETWEEN THE LAGGING AND PILE FLANGES. DO NOT EXCAVATE THE NEXT LIFT UNTIL TEMPORARY SUPPORT FOR THE CURRENT LIFT IS ACCEPTED.

1.3. BACKFILL VOIDS BEHIND PANELS, LAGGING AND PILES WITH NO. 57 STONE. SEPARATION GEOTEXTILES ARE REQUIRED BETWEEN NO. 57 STONE AND OVERLYING FILL SECTIONS, SEE SHEET W3.0 FOR MORE DETAILS.

2. GRANULAR FILL PLACED ABOVE WALL SHALL BE APPOVED BY THE GEOTECHNICAL ENGINEER OF RECORD. COMPACTION REQUIREMENTS AND SUBGRADE PREPARATION REQUIREMENTS ALSO PER THE GEOTECHNICAL ENGINEER OF RECORD.
3. CONTRACTOR SHALL:

3.1. CONTROL DRAINAGE DURING CONSTRUCTION IN THE VICINITY OF SOLDIER PILE WALLS. DIRECT RUN OFF AWAY FROM SOLDIER PILE WALLS AND AREAS ABOVE AND BEHIND WALLS. CONTAIN AND MAINTAIN NO. 57 STONE AND BACKFILL AND PROTECT MATERIAL FROM EROSION.

3.2. DEWATER AS NEEDED TO PROPERLY PLACE BACKFILL MATERIALS AND LEVELING PADS.

3.3. IF REQUIRED FOR STABILITY, PROVIDE TYPE 2 GEOTEXTILE FOR SEPARATION GEOTEXTILES AND CLASS VI SELECT MATERIAL (STANDARD SIZE NO. 57 STONE) FOR LEVELING PADS AND BACKFILLING.

3.4. INSTALL TEMPORARY SUPPORT WITHIN 24 HOURS OF EXCAVATING EACH LIFT UNLESS OTHERWISE APPROVED. THE INSTALLATION MAY BE DELAYED IF IT CAN BE DEMONSTRATED THAT DELAYS WILL NOT ADVERSELY AFFECT EXCAVATION STABILITY. IF EXCAVATION FACES WILL BE EXPOSED FOR MORE THAN 24 HOURS, USE POLYETHYLENE SHEETS ANCHORED AT TOP AND BOTTOM OF LIFTS TO PROTECT EXCAVATION FACES FROM CHANGES IN MOISTURE CONTENT.

4. IF AN EXCAVATION BECOMES UNSTABLE AT ANY TIME, SUSPEND SOLDIER PILE WALL CONSTRUCTION AND TEMPORARILY STABILIZE THE EXCAVATION BY IMMEDIATELY PLACING AN EARTH BERM UP AGAINST THE UNSTABLE EXCAVATION FACE. WHEN THIS OCCURS, REPAIR WALLS WITH AN APPROVED METHOD AND A REVISED SOLDIER PILE WALL DESIGN OR CONSTRUCTION PLAN MAY BE REQUIRED.

PRECAST PANEL INSTALLATION

1. CONTRACTOR SHALL:

1.1. USE CLASS A CONCRETE FOR PRECAST PANEL CONCRETE FACING

1.2. UNLESS REQUIRED OTHERWISE IN THE CONTRACT, PRODUCE PANELS WITH A SMOOTH FLAT FINAL FINISH THAT MEETS ARTICLE 1077-11 OF NC DOT STANDARD SPECIFICATIONS.

1.3. PRODUCE PANELS WITHIN 1/4" OF THE PANEL DIMENSIONS SHOWN IN THE ACCEPTED SUBMITTALS.

2. AS DETERMINED BY THE ENGINEER OF RECORD, DAMAGED PANELS WITH EXCESSIVE DISCOLORATION, CHIPS OR CRACKS WILL BE REJECTED.
3. PLACE GEOCOMPOSITE SHEET DRAINS WITH THE GEOTEXTILE SIDE FACING AWAY FROM WALL FACES. SECURE SHEET DRAINS SO DRAINS ARE IN CONTINUOUS CONTACT WITH SURFACES TO WHICH THEY ARE ATTACHED AND ALLOW FOR FULL FLOW THE ENTIRE HEIGHT OF SOLDIER PILE WALLS. DISCONTINUOUS SHEET DRAINS ARE NOT ALLOWED. IF SPLICES ARE NEEDED, OVERLAP SHEET DRAINS AT LEAST 12" SO FLOW IS NOT IMPEDED. CONNECT SHEET DRAINS TO AGGREGATE LEVELING PADS BY EMBEDDING DRAIN ENDS AT LEAST 4" INTO NO. 57 STONE.
4. CONSTRUCT AGGREGATE LEVELING PADS AT ELEVATIONS AND WITH DIMENSIONS SHOWN IN THE ACCEPTED SUBMITTALS. COMPACT LEVELING PADS WITH A VIBRATORY COMPACTOR TO THE SATISFACTION OF THE ENGINEER.
5. SET PANELS AGAINST PILE FLANGES AS SHOWN IN THE ACCEPTED SUBMITTALS. POSITION PANELS WITH AT LEAST 2" OF CONTACT IN THE HORIZONTAL DIRECTION BETWEEN THE PANELS AND PILE FLANGES. IF CONTACT CANNOT BE MAINTAINED, REMOVE PANELS, FILL GAPS WITH JOINT FILLER AND RESET PANELS. SECURELY SUPPORT PANELS UNTIL ENOUGH NO. 57 STONE OR BACKFILL IS PLACED TO HOLD PANELS IN PLACE.
6. ITA SHALL TAKE A SET OF 6 CONCRETE CYLINDERS EVERY OTHER WORKING CONCRETE POUR DAY AND PERFORM BREAKS, (3 @ 7 DAYS, 3 @ 28 DAYS) TO CONFIRM DESIGN CONCRETE STRENGTH IS REACHED.

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PERMANENT SBL WALL
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PERMANENT SBL WALL
NOTES AND SPECIFICATIONS

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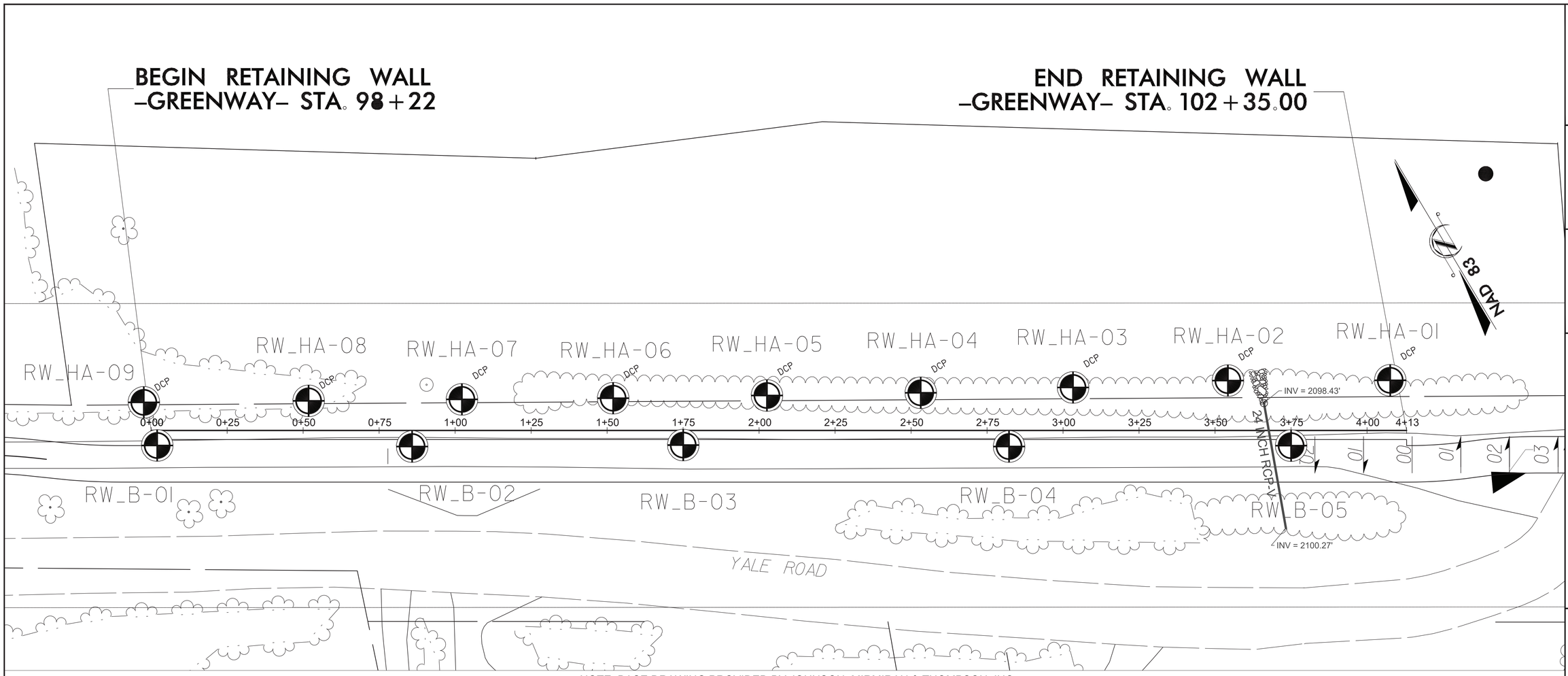
ENGINEER	DRAFTING
JR	JAG

SCALE: AS SHOWN
PROJECT NO.: 31-4356
ISSUE DATE: 5/2/2023
SHEET: W0.1



SCALE: 1" = 16' - 0"

16 0 32

8 16

NOTE: BASE DRAWING PROVIDED BY JOHNSON, MIRMIRAN & THOMPSON, INC.

SOLDIER BEAM AND LAGGING WALL LAYOUT

GENERAL NOTES:

1. SOLDIER BEAM AND LAGGING WALL STA 0+00 TO 4+13 IS DESIGNED FOR A NOMINAL LIVE LOAD SURCHARGE LOAD OF 250 PSF, MEASURED 1 TO 12 FT FROM CREST OF WALL.
2. WALL ALIGNMENT ON SITE PLAN IS ASSUMED AS TOP OF WALL.
3. WALL HEIGHTS SHOWN ARE BASED ON INFORMATION AVAILABLE AT THE TIME OF DESIGN. IF THE ACTUAL WALL HEIGHTS ARE MORE THAN ONE FOOT GREATER THAN THE WALL HEIGHTS SHOWN ON THE DRAWINGS, THE WALL CONTRACTOR SHALL IMMEDIATELY INFORM THE ENGINEER OF HIS REPRESENTATIVE WHO WILL DETERMINE IF ADDITIONAL WALL MODIFICATIONS ARE REQUIRED.
4. THE FINAL GRADES SURROUNDING THE WALL SHALL NOT BE MODIFIED WITHOUT NOTIFYING THE ECS ENGINEER OF RECORD. ANY MODIFICATION TO THE GRADES BELOW OR ABOVE THE WALL MAY POSE CONSIDERABLE RISK TO THE PERFORMANCE/STABILITY OF THE WALLS.
5. WHERE DISCREPANCIES ARE NOTED WITHIN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER OF SUCH DISCREPANCIES IN WRITING.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LAYOUT OF THE SHORING WALLS AND FIELD VERIFICATION OF ALL DIMENSIONS AND JOB SITE CONDITIONS, INCLUDING WALL AND SOLDIER BEAM LOCATION, ALIGNMENT, AND ELEVATIONS. CONTACT ECS IF ANY SITE CONDITIONS ARE IN CONFLICT WITH THESE PLANS.
7. BASEMAP INFORMATION TAKEN FROM SOURCES REFERENCED. TOPOGRAPHIC AND ELEVATION DATA SHOWN IS NOT VERIFIED AS CORRECT BY ECS. USERS OF THIS DATA SHALL DO SO AT THEIR OWN RISK. THE WALL ALIGNMENT AND ELEVATIONS WERE ESTABLISHED BASED ON THE INFORMATION SHOWN ON THE GRADING PLAN. THE SITE PLAN INCLUDED IN THESE WALL DRAWINGS ARE FOR RETAINING WALL IDENTIFICATION PURPOSES ONLY. REFERENCE THE SITE CIVIL PLANS FOR ADDITIONAL INFORMATION PERTAINING TO SITE LAYOUT, GRADING, AND DEVELOPMENT REQUIREMENTS.
8. THESE PLANS SHALL NOT BE SCALED OR USED FOR LOCATION OF PAVEMENTS, STRUCTURES OR RETAINING WALLS. THE CIVIL ENGINEER OF RECORD / CONTRACTOR SHALL PROVIDE LAYOUT AND COORDINATION AS NEEDED BY THE WALL CONTRACTOR.
9. GENERAL CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND ELEVATION OF ALL EXISTING UTILITIES, PROPERTY LINES, AND EASEMENTS PRIOR TO THE START OF WALL EXCAVATION/CONSTRUCTION. THE GENERAL CONTRACTOR SHALL NOTIFY ECS OF ANY POTENTIAL CONFLICTS. PROPOSED UTILITIES BEHIND OR NEAR THE TOE OF WALL SHALL BE INSTALLED PRIOR TO WALL INSTALLATION.
10. OTHERS TO MAINTAIN DRAINAGE AND TO DIRECT SURFACE WATER RUNOFF AWAY FROM TOP AND TOE OF WALL. SEE CIVIL PLANS FOR ROUTING RUNOFF AWAY FROM WALL. THE DESIGN ASSUMES PERMANENT EROSION CONTROL MEASURES WILL BE IMPLEMENTED AT THE TOP AND BOTTOM OF THE WALL IMMEDIATELY UPON COMPLETION OF WALL CONSTRUCTION. THESE EROSION CONTROL MEASURES SHOULD BE SPECIFIED BY THE PROJECT CIVIL ENGINEER, IMPLEMENTED BY THE GENERAL CONTRACTOR, AND SHOUL BE MAINTAINED BY THE OWNER. FAILURE TO IMPLEMENT AND MAINTAIN PERMANENT EROSION CONTROL MEASURES MAY RESULT IN DAMAGE OF THE WALL.

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PERMANENT SBL WALL
WALL PLAN VIEW

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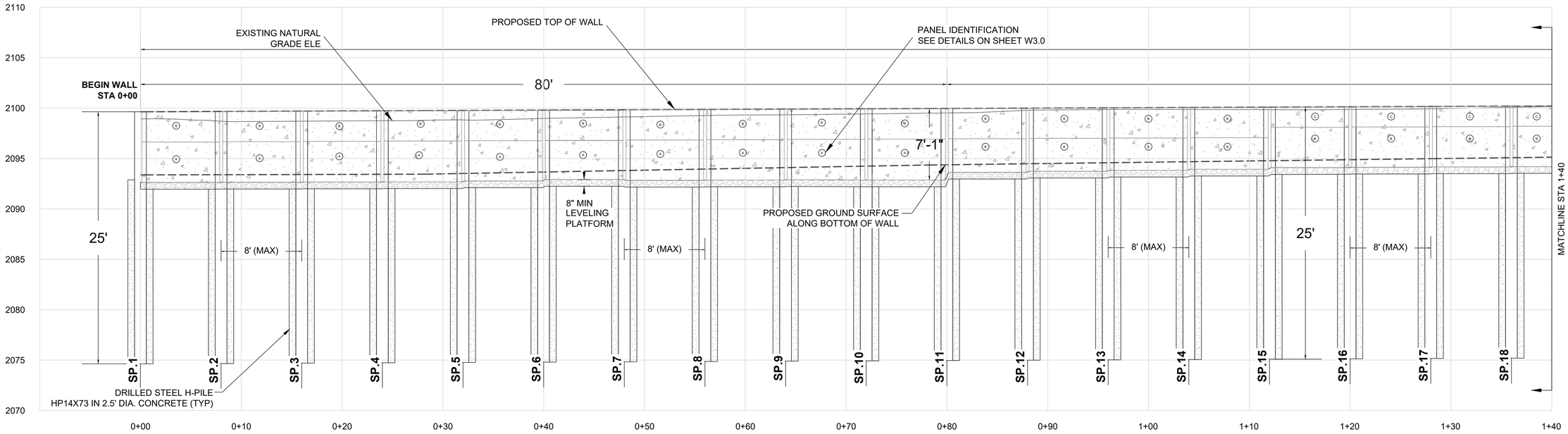
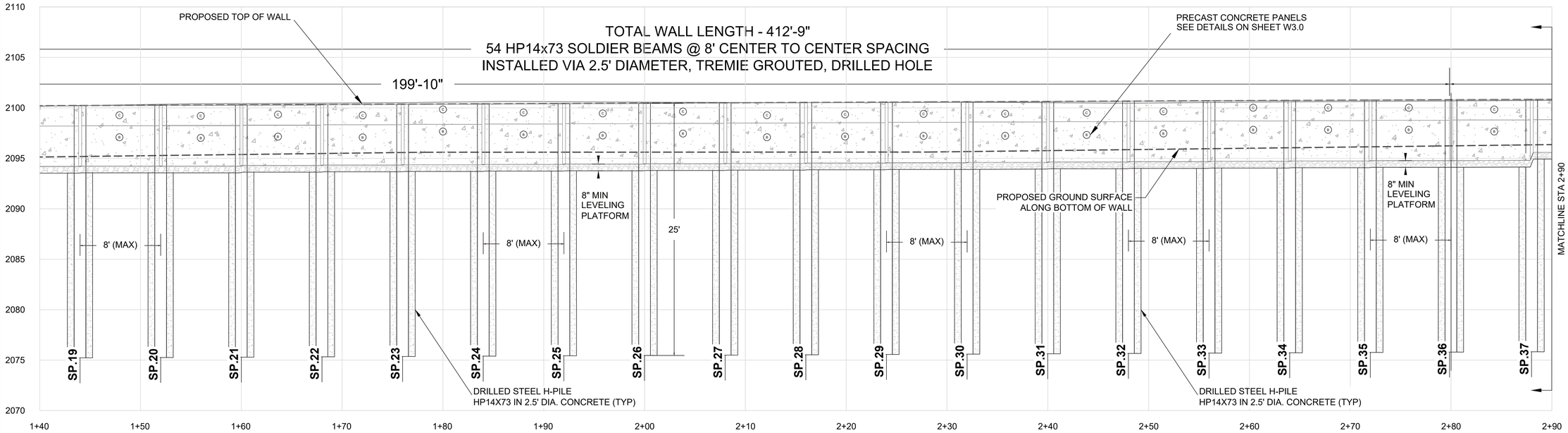
JR	JAG

SCALE: AS SHOWN
PROJECT NO.: 31-4356
ISSUE DATE: 5/2/2023
SHEET: W1.0



PERMANENT SOLDIER BEAM AND LAGGING WALL PROFILE STA 0+00 TO 1+40
SCALE: 1"=5'



PERMANENT SOLDIER BEAM AND LAGGING WALL PROFILE STA 1+40 TO 2+90
SCALE: 1"=5'

GENERAL NOTES:

1. FACING FOR THE SOLDIER PILE WALL SHALL CONSIST OF PRECAST CONCRETE PANELS
   - 1.1. REFER TO SHEET W3.0 FOR PRECAST PANEL TYPES, SIZES, AND DETAILS.
   - 1.2. MEASURED FROM FINAL TOP OF WALL ELEVATION, SOLDIER PILES SHALL BE INSTALLED TO A MINIMUM DEPTH OF 25 FT
   - 1.3. IF REFUSAL IS ENCOUNTERED ABOVE THE MINIMUM TIP ELEVATION, CONTACT THE ENGINEER OF RECORD.

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PERMANENT SBL WALL
WALL PROFILE VIEW 1

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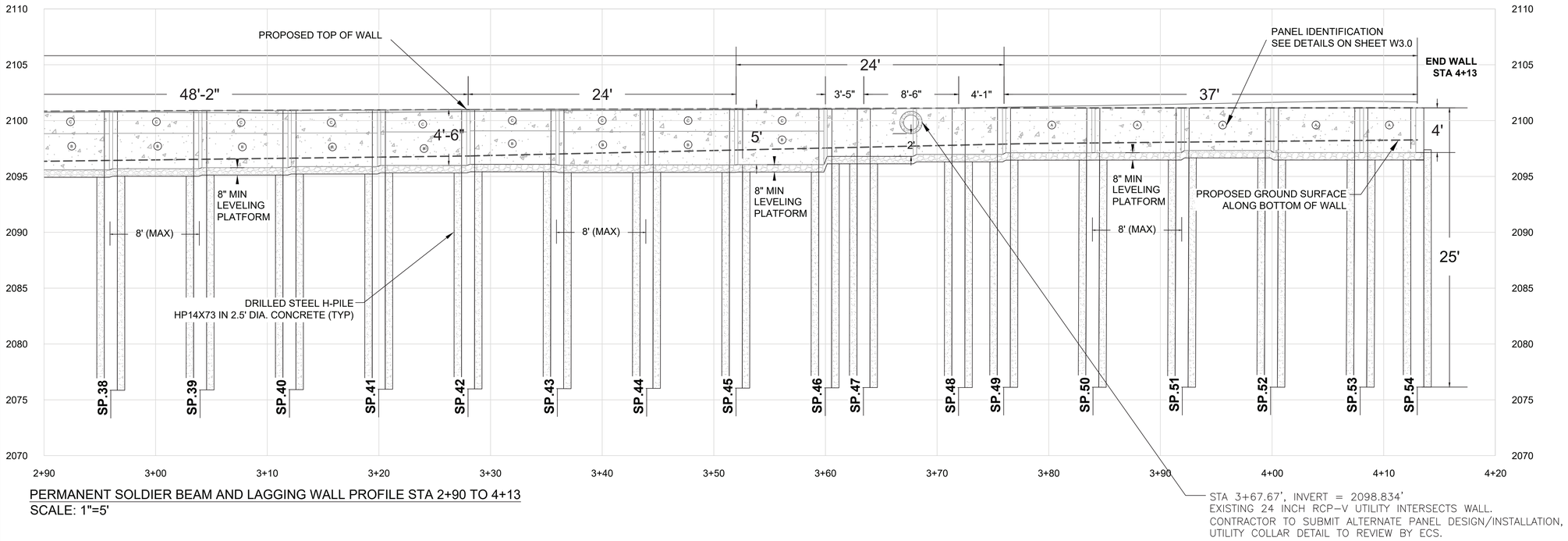
SCALE: AS SHOWN
PROJECT NO.: 31-4356
ISSUE DATE: 5/2/2023
SHEET: W2.0



PERMANENT SOLDIER BEAM AND LAGGING WALL PROFILE STA 2+90 TO 4+13
SCALE: 1"=5'

GENERAL NOTES:

1. FACING FOR THE SOLDIER PILE WALL SHALL CONSIST OF PRECAST CONCRETE PANELS
   - 1.1. REFER TO SHEET W3.0 FOR PRECAST PANEL TYPES, SIZES, AND DETAILS.
   - 1.2. MEASURED FROM FINAL TOP OF WALL ELEVATION, SOLDIER PILES SHALL BE INSTALLED TO A MINIMUM DEPTH OF 25 FT
   - 1.3. IF REFUSAL IS ENCOUNTERED ABOVE THE MINIMUM TIP ELEVATION, CONTACT THE ENGINEER OF RECORD.

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PERMANENT SBL WALL
WALL PROFILE VIEW 2

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SCALE: AS SHOWN
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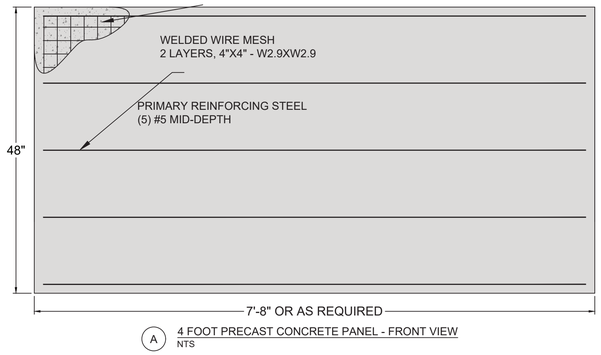
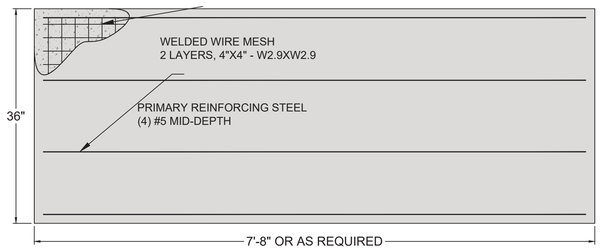
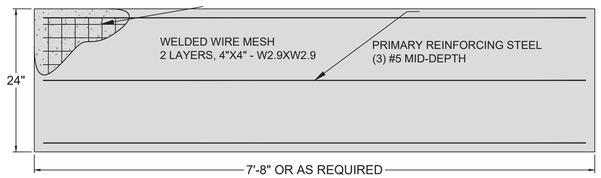


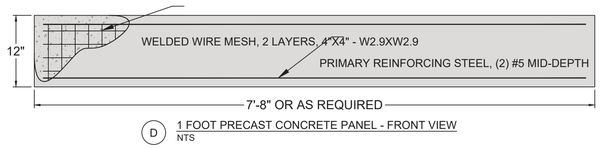
A 4 FOOT PRECAST CONCRETE PANEL - FRONT VIEW
NTS



B 3 FOOT PRECAST CONCRETE PANEL - FRONT VIEW
NTS

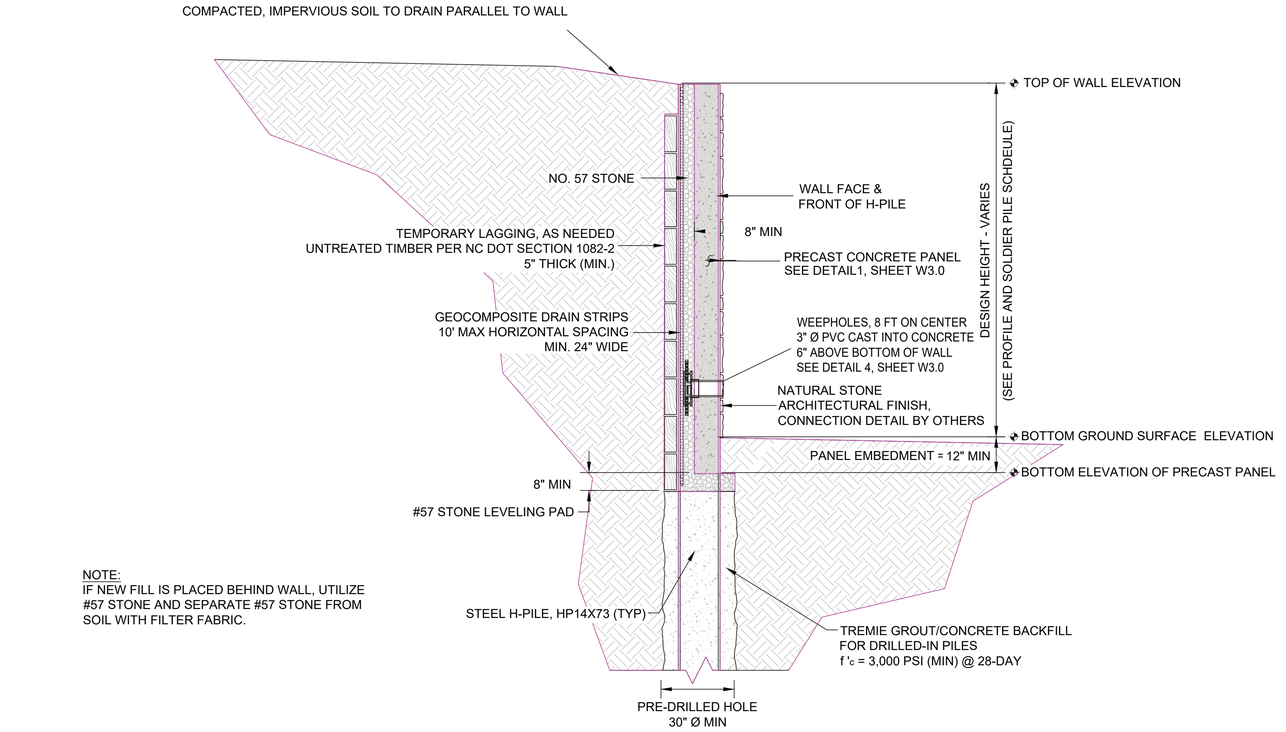


C 2 FOOT PRECAST CONCRETE PANEL - FRONT VIEW
NTS



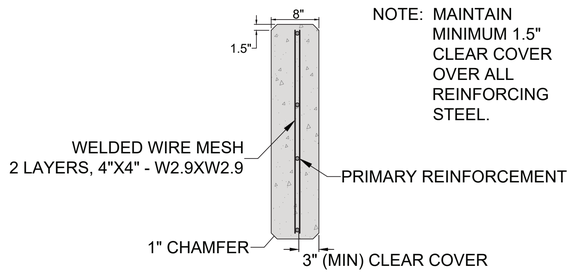
D 1 FOOT PRECAST CONCRETE PANEL - FRONT VIEW
NTS

1 **PRECAST CONCRETE PANEL DETAILS** SCALE: N.T.S.

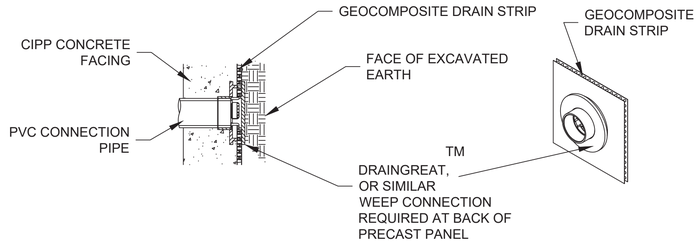


NOTE:
IF NEW FILL IS PLACED BEHIND WALL, UTILIZE #57 STONE AND SEPARATE #57 STONE FROM SOIL WITH FILTER FABRIC.

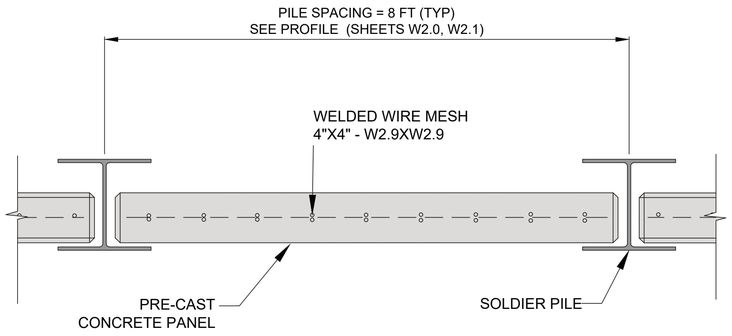
2 **TYPICAL SOLDIER PILE WALL SECTION WITH PRECAST PANELS** SCALE: N.T.S.



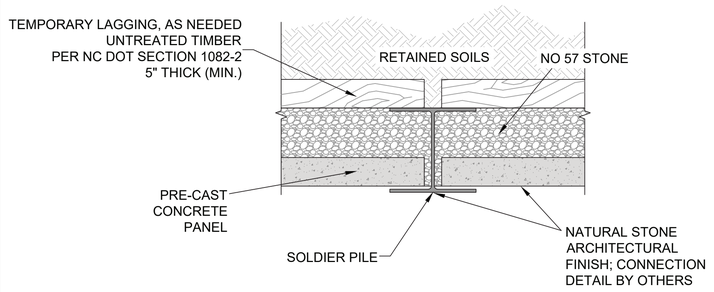
3 **TYPICAL PRECAST CONCRETE PANEL - SECTION VIEW** SCALE: N.T.S.



4 **PRECAST PANEL GEOCOMPOSITE DRAIN CONNECTION DETAIL** SCALE: N.T.S.



5 **TYPICAL PRECAST CONCRETE PANEL - PLAN VIEW** SCALE: N.T.S.



6 **TYPCIAL LAGGING DETAIL WITH PRECAST PANELS** SCALE: N.T.S.

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PERMANENT SBL WALL
HENDERSONVILLE, NC

PERMANENT SBL WALL
WALL DETAILS

ECS REVISIONS		
REV. NO.	REVISION DESCRIPTION	ISSUE DATE
0	----	----
1	----	----
2	----	----
3	----	----
4	----	----
5	----	----

ENGINEER	JR
DRAFTING	JAG
SCALE	AS SHOWN
PROJECT NO.	31-4356
ISSUE DATE	5/2/2023
SHEET	W3.0

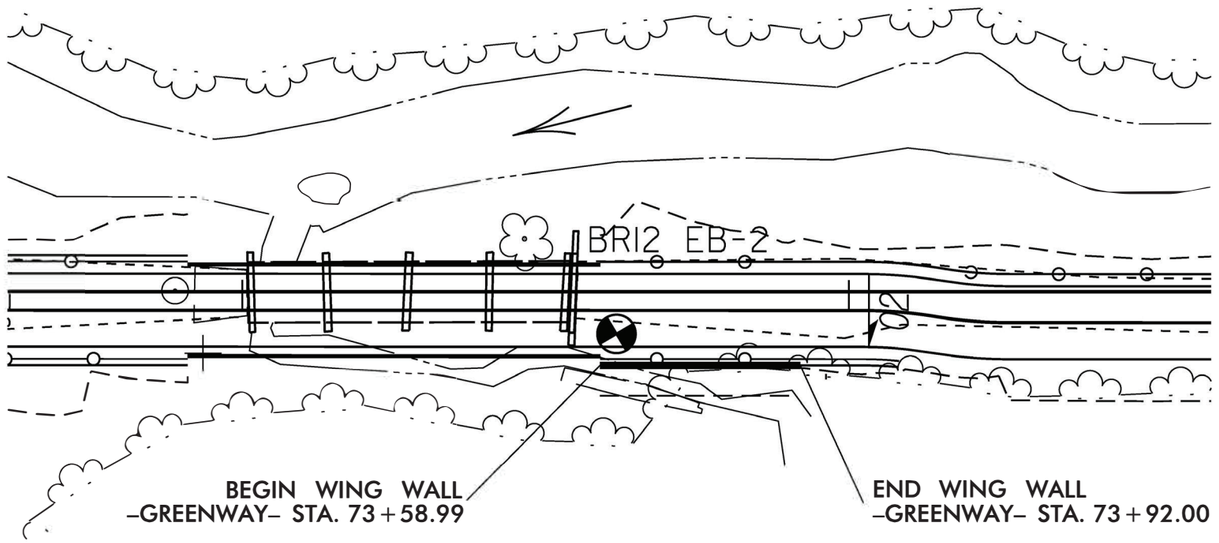
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026917 ENGINEER MICHAEL J. WALKER

5/24/23

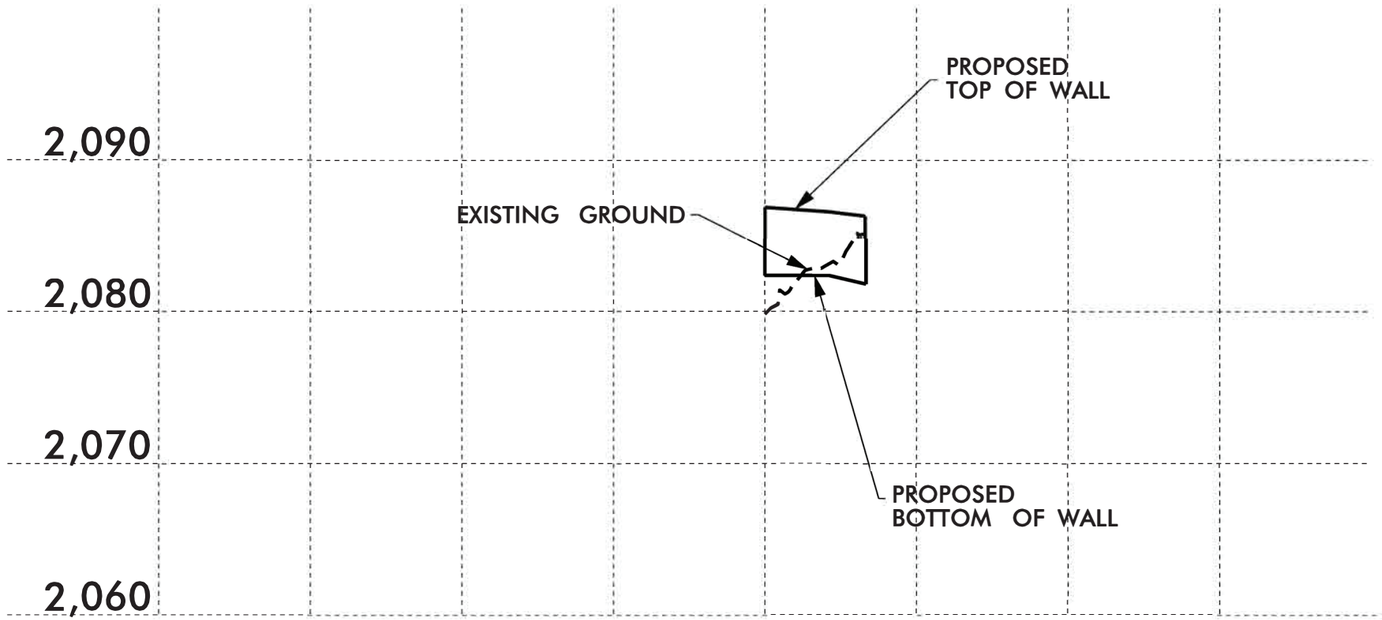
SIGNATURE DATE | SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





RETAINING WALL NO. 2 - SITE PLAN



RETAINING WALL NO. 2 - PROFILE

TOTAL WALL AREA = 144 SF

RECOMMENDATIONS BASED ON BORING BR–12_EB–2. REFER TO ECS's BRIDGE NO. 12 OVER TRIBUTARY TO SHAW CREEK REPORT DATED JANUARY 5, 2023 FOR ADDITIONAL INFORMATION.

PROJECT NO.: BL-0007

HENDERSON COUNTY

STATION: -GREENWAY- STA. 73+58.99 to STA. 73+92.00

SHEET 1 OF 2 WALL NO. 2

PREPARED BY: ARS	DATE: 05/2023
REVIEWED BY: MJW	DATE: 05/2023

Prepared in the Office of:

ECS SOUTHEAST, LLP
1812 CENTER PARK DRIVE, SUITE D
CHARLOTTE, NC 28217
(704) 525-5152 [PHONE]
(704) 357-0023 [FAX]
NC REGISTERED ENGINEERING FIRM # F-1078

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

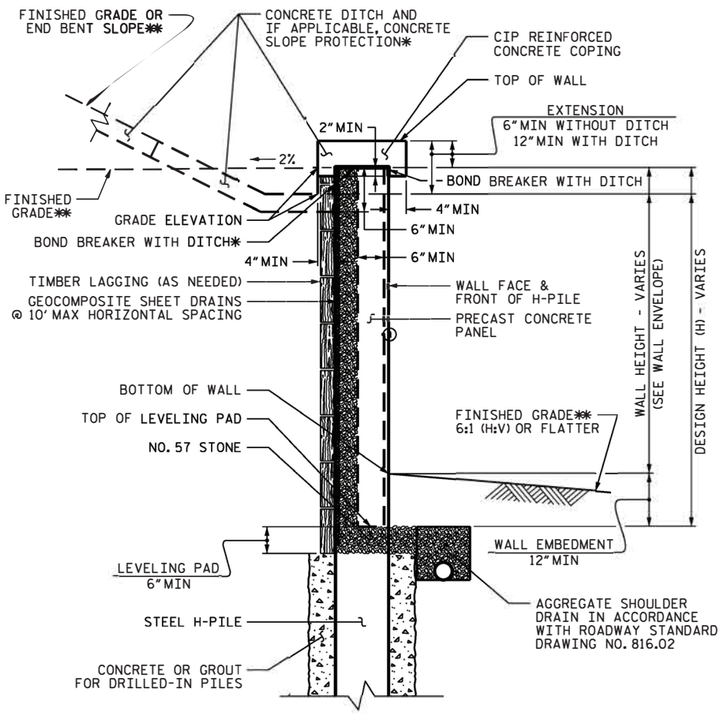
GEOTECHNICAL ENGINEERING UNIT

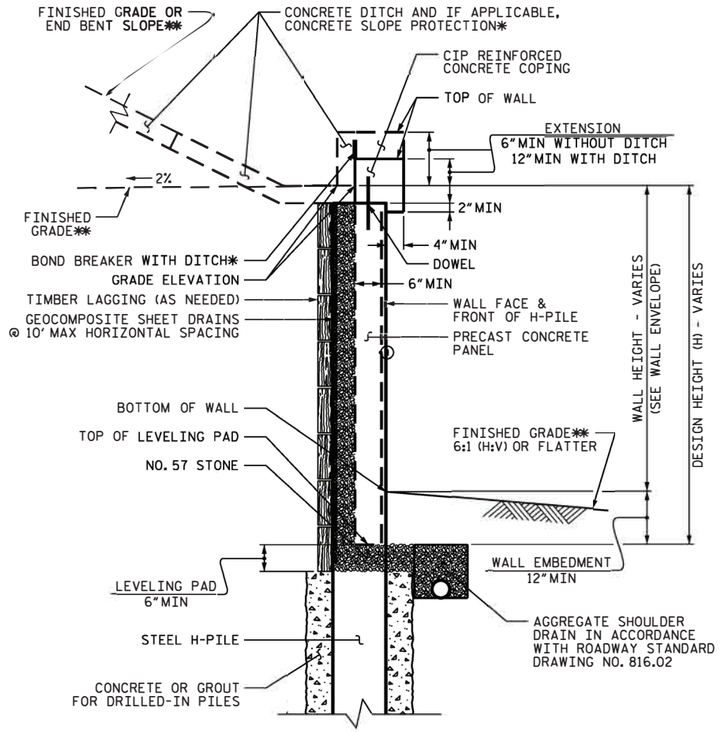
SOLDIER PILE WALL NO. 2
SITE PLAN/PROFILE

REVISIONS

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

SHEET NO. 1





GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026917 ENGINEER MICHAEL J. WALKER

5/24/23

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SOLDIER PILE WALL WITH PRECAST PANEL - TYPICAL SECTIONS

AT THE CONTRACTOR'S OPTION, CONNECT COPING TO PANELS WITH DOWELS OR EXTEND COPING DOWN BACK OF PANELS AND PILES.
*SEE CONCRETE DITCH BEHIND WALL DETAILS.
**SEE PLANS FOR FINISHED GRADE OR END BENT SLOPE DETAILS.

NOTES:

FOR SOLDIER PILE RETAINING WALLS, SEE SOLDIER PILE RETAINING WALLS PROVISION.

A FENCE OR HANDRAIL IS REQUIRED ON TOP OF RETAINING WALL NO. 2. SEE ROADWAY PLANS FOR FENCE OR HANDRAIL ATTACHMENT DETAILS.

DRILLED-IN H-PILES ARE REQUIRED FOR RETAINING WALL NO. 2.

USE A SOLDIER PILE RETAINING WALL WITH PRECAST CONCRETE PANELS THAT MEET SECTION 1077 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 2.

PAINT GALVANIZED H-PILES GRAY or BLACK IN ACCORDANCE WITH ARTICLE 442-13 OF THE STANDARD SPECIFICATIONS FOR RETAINING WALL NO. 2.

BEFORE BEGINNING SOLDIER PILE WALL DESIGN FOR RETAINING WALL NO. 2, SURVEY WALL LOCATION AND SUBMIT A REVISED WALL PROFILE VIEW (WALL ENVELOPE) FOR REVIEW. DO NOT START WALL DESIGN OR CONSTRUCTION UNTIL THE REVISED WALL ENVELOPE IS ACCEPTED.

ROCK PLATING/RIP RAP SHALL BE USED IN FRONT OF THE WALL FOR SCOUR PROTECTION.

DESIGN RETAINING WALL NO. FOR THE FOLLOWING:
1) DESIGN HEIGHT (H) = WALL HEIGHT + WALL EMBEDMENT
2) DESIGN LIFE = 75 YEARS
3) MINIMUM WALL EMBEDMENT DEPTH = 1 FT
4) MINIMUM PILE PENETRATION INTO ROCK = 5 FT
5) IN-SITU ASSUMED MATERIAL PARAMETERS ABOVE ELEVATION 2077 FT:
   UNIT WEIGHT, γ = 105 PCF
   FRICTION ANGLE, ϕ = 26 DEGREES
   COHESION, c = 0 PSF
6) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 2077 FT:
   UNIT WEIGHT, γ= 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
7) IN-SITU ASSUMED MATERIAL PARAMETERS BELOW ELEVATION 2072 FT:
   ROCK MASS SHEAR STRENGTH, Sm = 3000PSF

DESIGN RETAINING WALL NO. 2 FOR A LIVE LOAD (TRAFFIC) SURCHARGE.

AT THE CONTRACTOR'S OPTION, USE A TEMPORARY SLOPE INSTEAD OF TEMPORARY SUPPORT OF EXCAVATIONS FOR RETAINING WALL NO. 2.

"TEMPORARY SHORING" MAY BE REQUIRED FOR RETAINING WALL NO. 2 IN ACCORDANCE WITH THE TEMPORARY SHORING PROVISION. SEE STUCTURE PLANS.

PROJECT NO.: BL-0007

HENDERSON COUNTY

STATION: -GREENWAY- STA. 73+58.99 to STA. 73+92.00

SHEET 2 OF 2 WALL NO. 2

PREPARED BY: ARS	DATE: 05/2023
REVIEWED BY: MJW	DATE: 05/2023

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SOLDIER PILE WALL NO. 2
SITE PLAN/PROFILE

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SHEET NO. 2