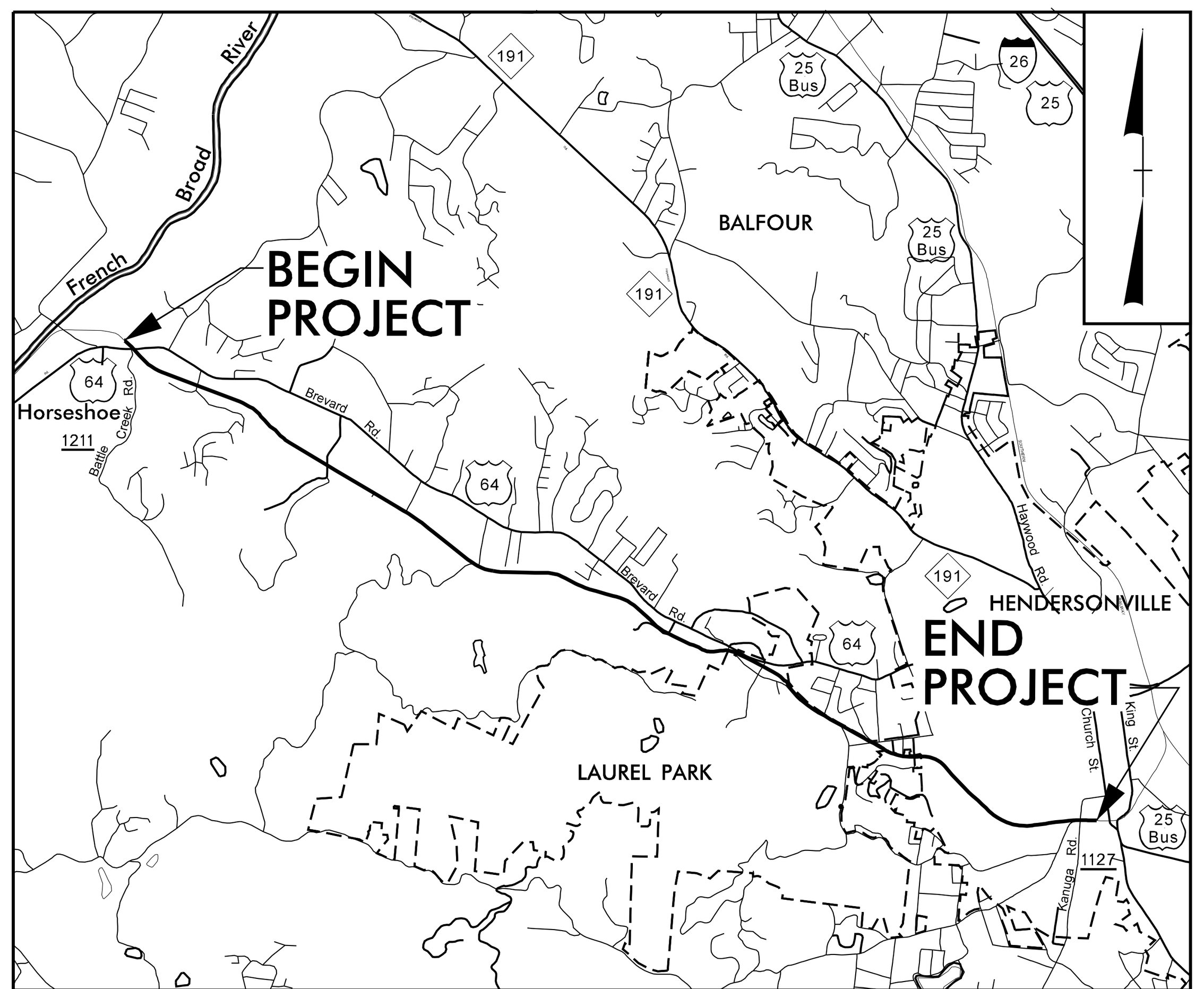
PROJECT: ECUSTA TRAIL



VICINITY MAP (N.T.S.)

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

90% PLANS

HENDERSON COUNTY
ENGINEERING DEPARTMENT

HENDERSON COUNTY

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

TYPE OF WORK: GRADING, PAVING, DRAINAGE AND STRUCTURES

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.

V&M
Vaughn & Melton
Consulting Engineers
■ Asheville, North Carolina 828·253·2796
☐ Tri-Cities, TN 423·467·8401
☐ Knoxville, TN 865·546·5800
☐ Spartanburg, SC 864·574·4775
☐ Charleston, SC 843·974·5650
☐ Middlesboro, KY 606·248·6600
☐ Atlanta, GA 770·627·3509
☐ Charlotte, NC 704·357·0488
☐ Boone, NC 828·355·9933

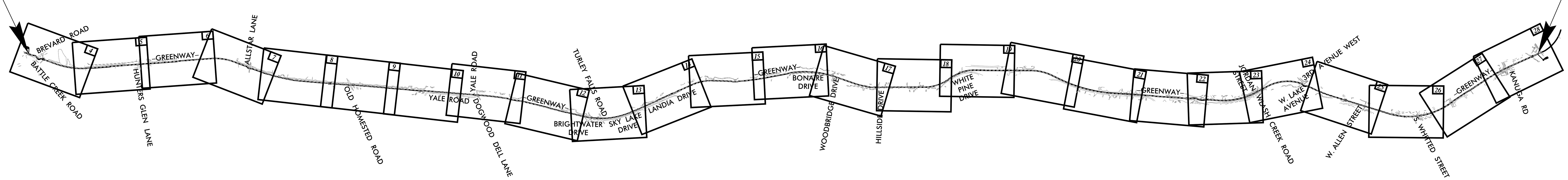
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83 NA 2011

BEGIN PROJECT ECUSTA TRAIL –GREENWAY– STA. 10+95.00

END PROJECT ECUSTA TRAIL –GREENWAY– STA. 326+50.00



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

TOTAL LENGTH OF ECUSTA TRAIL PROJECT = 5.980 MI.

Prepared In the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE NC, 28806
FOR THE NORTH CAROLINA DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

LETTING DATE:

JOEL SETZER, PE
PROJECT ENGINEER

ALEX FITZPATRICK
PROJECT DESIGN ENGINEER

HENDERSON COUNTY CONTACT:
MARCUS JONES, PE

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

ENGINEERING DEPARTMENT HENDERSON COUNTY

HENDERSON COUNTY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	PROJECT REFERENCE NO.	SHEET NO.
	BL-0007	1A
	R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS
1B	CONVENTIONAL SYMBOLS
2A-1	TYPICAL SECTIONS
3B-1	SUMMARIES OF PEDESTRIAN HANDRAIL AND 5' CONCRETE SIDEWALK
3D-1 THRU 3D-3	DRAINAGE SUMMARY SHEETS
4 THRU 28	PLAN SHEETS
29 THRU 41	PROFILE SHEETS
LO.1 THRU LO.7	LANDSCAPE ARCHITECTURE DETAILS
TMP-1 THRU TMP-11	TRANSPORTATION MANAGEMENT PLANS
PMP-1 THRU PMP-20	PAVEMENT MARKING AND SIGNING PLANS
EC-1 THRU EC-31	EROSION CONTROL PLANS
SIG 1.0 THRU SIG. M8	SIGNAL PLANS
X-1 THRU X-160	CROSS SECTIONS
S-1 THRU S-9	STRUCTURE 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
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.14	Concrete Drop Inlet 12" thru 30" Pip
840.72	Pipe Collars
852.05	Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter
876.02	Guide for Rip Rap at Pipe Outlets

5/14/99

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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.

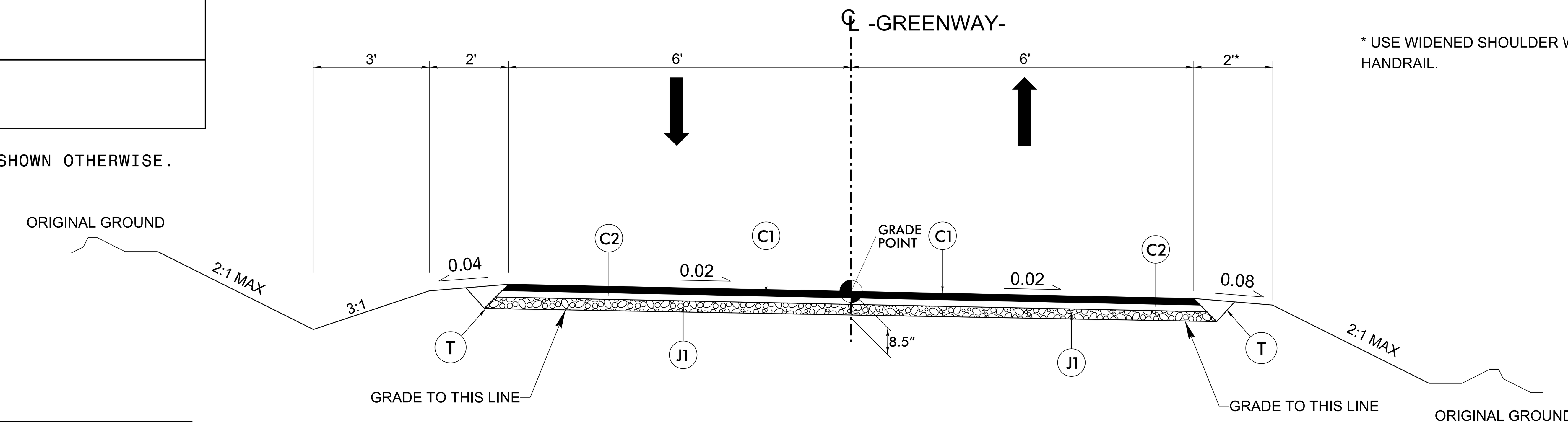
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
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

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)

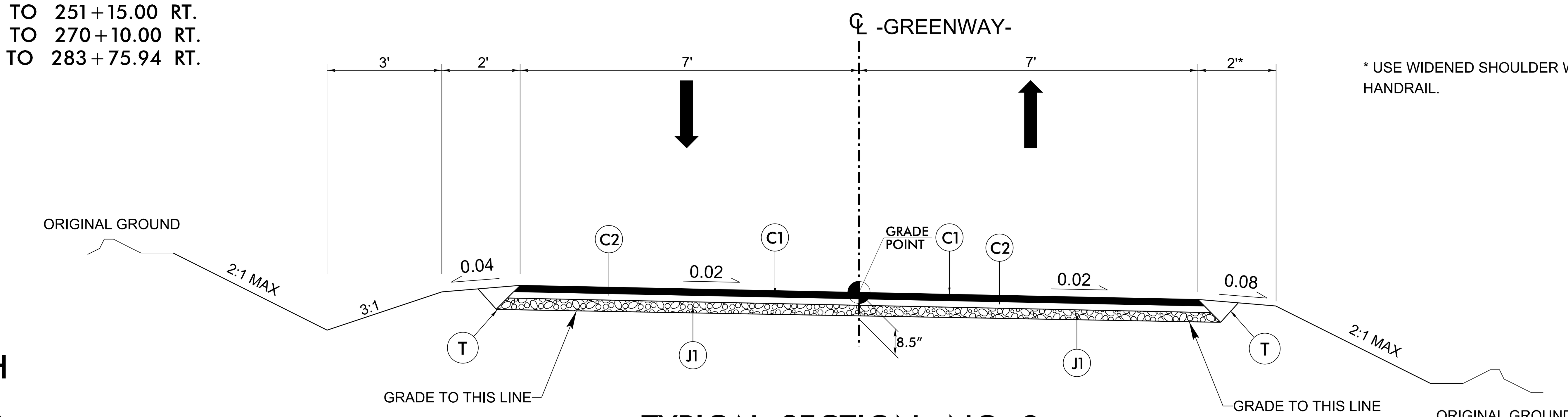
-GREENWAY- STA. 14+64.92 (END BRIDGE 11) TO
-GREENWAY- STA. 72+90.99 (BEGIN BRIDGE 12)

-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+32.69

USE 4' SHOULDER WITH PEDESTRIAN HANDRAIL

14+75.00 TO 33+65.00 LT.
37+00.00 TO 42+25.00 LT.
53+75.00 TO 56+05.00 LT.
62+80.00 TO 72+90.99 LT.
73+58.99 TO 77+10.62 LT.
77+78.91 TO 92+75.00 LT.
97+00.00 TO 102+82.00 LT.
107+00.00 TO 112+25.00 LT.
120+25.00 TO 121+75.00 LT.
124+25.00 TO 126+49.80 LT.
136+25.00 TO 137+75.00 RT.
138+50.00 TO 141+00.00 LT.
152+00.00 TO 154+25.00 LT.
155+25.00 TO 157+45.00 LT.
158+65.00 TO 160+75.00 LT.
161+75.00 TO 168+25.00 LT.
162+50.00 TO 163+50.00 RT.
170+50.00 TO 173+00.00 LT.
178+80.00 TO 181+75.00 LT.
183+00.00 TO 184+35.00 LT.
185+50.00 TO 186+35.00 LT.
197+25.00 TO 199+90.00 LT.
199+80.00 TO 201+15.00 RT.
243+60.00 TO 250+24.45 RT.
250+47.45 TO 251+15.00 RT.
268+65.00 TO 270+10.00 RT.
281+00.00 TO 283+75.94 RT.



TYPICAL SECTION NO. 2

* USE WIDENED SHOULDER WITH PEDESTRIAN HANDRAIL.

TYPICAL SECTION NO. 2

-GREENWAY- STA. 203+32.69 TO
-GREENWAY- STA. 250+23.29 (BEGIN BRIDGE 14)

-GREENWAY- STA. 250+46.29 (END BRIDGE 14) TO
-GREENWAY- STA. 283+74.78 (BEGIN BRIDGE 15)

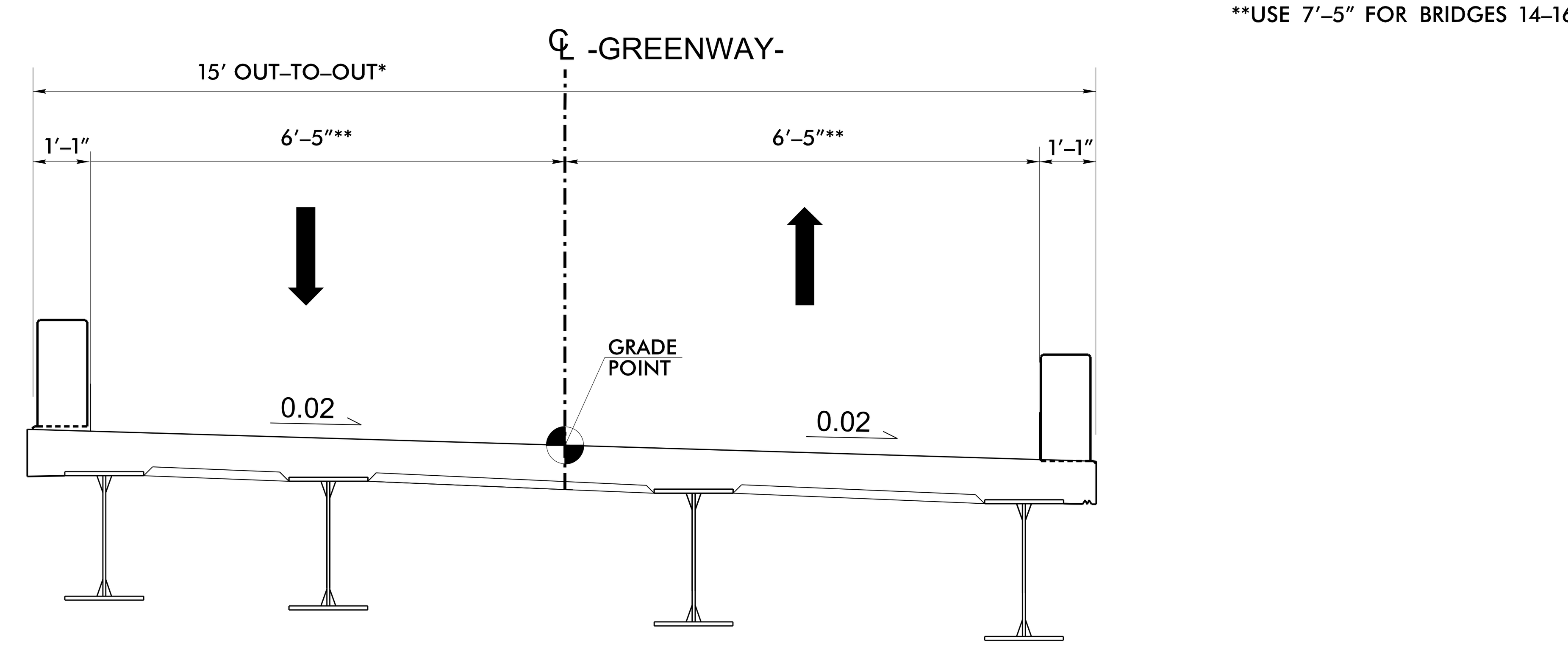
-GREENWAY- STA. 284+28.78 (END BRIDGE 15) TO
-GREENWAY- STA. 325+11.16 (BEGIN BRIDGE 16)

-GREENWAY- STA. 325+59.16 (END BRIDGE 16) TO
-GREENWAY- STA. 326+50.00

USE 3' SHOULDER WITH PEDESTRIAN HANDRAIL

35+70.00 TO 37+00.00 LT.
57+00.00 TO 60+40.00 LT.
143+60.00 TO 145+60.00 LT.
247+00.00 TO 250+24.45 LT.

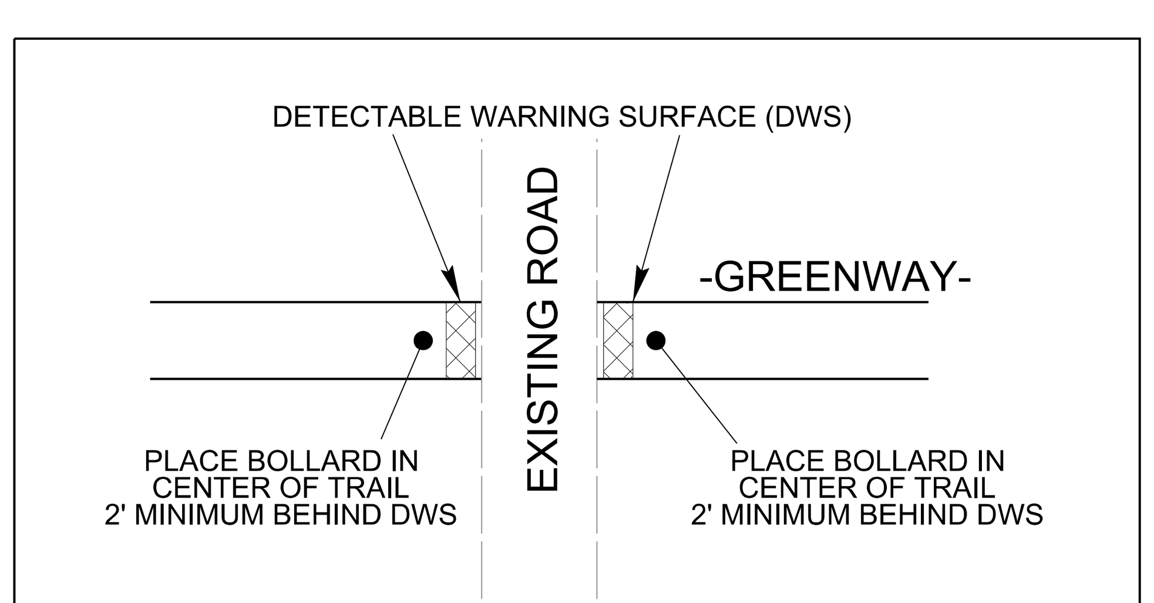
*USE 17' FOR BRIDGES 14-16
**USE 7'-5" FOR BRIDGES 14-16



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



BOLLARD PLACEMENT AT ROAD CROSSINGS

SEE DETAIL ON SHEET L0.6

6/2/99

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HENDERSON COUNTY
ENGINEERING DEPARTMENT

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

PEDESTRIAN HANDRAIL SUMMARY

LINE	STATION	STATION	LOCATION LT/RT/CL	FT
–GREENWAY–	14+75.00	33+65.00	LT.	1890.00′
–GREENWAY–	35+70.00	37+00.00	LT.	130.00′
–GREENWAY–	37+00.00	42+25.00	LT.	525.00′
–GREENWAY–	53+75.00	56+05.00	LT.	230.00′
–GREENWAY–	57+00.00	60+40.00	LT.	340.00′
–GREENWAY–	62+80.00	72+90.99	LT.	1010.99′
–GREENWAY–	73+58.99	77+10.62	LT.	351.63′
–GREENWAY–	77+78.91	92+75.00	LT.	1496.09
–GREENWAY–	97+00.00	102+82.00	LT.	582.00′
–GREENWAY–	107+00.00	112+25.00	LT.	525.00′
–GREENWAY–	120+25.00	121+75.00	LT.	150.00′
–GREENWAY–	124+25.00	126+49.80	LT.	224.80′
–GREENWAY–	136+25.00	137+75.00	RT.	150.00′
–GREENWAY–	138+50.00	141+00.00	LT.	250.00′
–GREENWAY–	143+60.00	145+60.00	LT.	200.00′
–GREENWAY–	152+00.00	154+25.00	LT.	225.00′
–GREENWAY–	155+25.00	157+45.00	LT.	220.00′
–GREENWAY–	158+65.00	160+75.00	LT.	210.00′
–GREENWAY–	161+75.00	168+25.00	LT.	650.00′
–GREENWAY–	162+50.00	163+50.00	RT.	100.00′
–GREENWAY–	170+50.00	173+00.00	LT.	250.00′
–GREENWAY–	178+80.00	181+75.00	LT.	295.00
–GREENWAY–	183+00.00	184+35.00	LT.	135.00′
–GREENWAY–	185+50.00	186+35.00	LT.	85.00′
–GREENWAY–	197+25.00	199+90.00	LT.	265.00′
–GREENWAY–	199+80.00	201+15.00	RT.	135.00′
–GREENWAY–	243+60.00	250+24.45	RT.	664.45′
–GREENWAY–	247+00.00	250+24.45	LT.	324.45′
–GREENWAY–	250+47.45	251+15.00	RT.	67.55′
–GREENWAY–	268+65.00	270+10.00	RT.	145.00′
–GREENWAY–	281+00.00	283+75.94	RT.	275.94′
			TOTAL	12,102.9′
			SAY	12,105′

5’ CONCRETE SIDEWALK

IN SQUARE YARDS			
LINE	LOCATION	LENGTH (FT)	CONCRETE (SY)
–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
	TOTAL		24.04
	SAY		25

6/21/00

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User:amfitzpatrick

P40V-21H1-54

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)

ABBREVIATIONS

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER		TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS III							R. C. PIPE CLASS IV								R. C. PIPE CLASS V							15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE	QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)			C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03			CONCRETE TRANSITIONAL SECTION		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
		FROM	TO					15	18	24	30	36	42	48	12	15	18	24	30	36	42	48	15	18	24	30	36	42	48						MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.		GRATE TYPE E	F	G	D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05																														
12+53.53	16 RT	0401																																3.400																																										
		0401	OUT		2062.7	2061.4															32																																																					22	
23+11.08	12 RT	0501	OUT		2062.9	2061.8														28																																																							20	
41+40.92	15 RT	0601																																3.400																																										
		0601	OUT		2068.7	2068.3																40																																																			Pad
54+21.91	18 RT	0701																																3.400																																										
		0701	OUT		2070.5	2069.1								40																																																													25	Pad
56+54.09	4 LT	0702																																																																						0.7640			
		0702	OUT		2074.3	2074.0						20																																																														
56+57.34	11 RT	0703	OUT		2075.6	2074.4												32																																																								20	
59+59.27	15 RT	0704	OUT		2076.7	2076.2																			36																																																	
63+43.20	13 RT	0801																																4.500																																										
		0801	OUT		2076.4	2074.9																28																																																		25	
77+94.70	54 RT	0901																																3.400																																										
		0901	OUT		2082.6	2081.0								88																																																												86	Pad
92+59.20	14 RT	1001																																											1																														
		1001	OUT		2089.9	2087.8								44																																																												31	
98+14.98	15 RT	1002																																3.400																																										
		1002	OUT		2094.6	2093.1						40																																																														32	
101+94.36	23 RT	1101	OUT		2100.3	2098.4																			44																																																	
103+19.84	14 RT	1102																																6.800																																										
		1102	1103		2098.0	2097.3						32																																																													21	
109+76.26	15 RT	1104																																3.400																																										
		1104	1105		2102.2	2101.8						8																																																														
109+75.93	8 RT	1105																																																																							0.7640			
118+17.98	16 RT	1201	1202		2105.7	2103.6																36																																																	25	
118+05.25	16 LT	1202																																4.500																																										
129+15.60	18 RT	1301	OUT		2111.0	2110.0					40																																																															27	
136+42.48	19 RT	1302																																3.400																																										
		1302	OUT		2116.6	2113.1															48																																																				25	
144+85.24	21 RT	1401																																4.500																																										
		1401	OUT		2124.1	2123.5								48																																																												
153+45.25	15 RT	1501																																																																					0.6560			
		1501	OUT		2137.0	2136.3					4																																																													
153+34.47	17 LT	1502																																																																					0.6560			
		1502	OUT		2131.9	2131.4					4																																																												
163+02.98	24 RT	1601																																																																					0.8856			
		1601	OUT		2142.7	2137.9								56																																																											43	
165+69.02	10 RT	1602																																3.400																																										
		1602	OUT		2150.5	2148.0						36																																																														
174+67.45	12 RT	1604																																																																					0.6560			
		1604	OUT		2159.4	2159.2					4																																																												
174+62.48	14 LT	1605																																																																					0.6560			
		1605	OUT		2158.0	2157.8					4																																																												
174+74.41	16 RT	1606	OUT		2160.5	2158.5			32																																																																	
176+84.12	12 RT	1701	OUT		2164.5	2162.1													44																																																							41	
177+26.17	14 RT	1702																																3.400																																										
		1702	OUT		2165.5	2064.2																					32																																																	18	
183+71.30	16 RT	1703																																3.400																																										
		1703	1704									4																																																														
					SHEET TOTALS				32		56	140	276					32	72	80	104				80		32						54.300											1																											5.0376		461	

P40V-21H1-54

COMPUTED BY: DATE:

CHECKED BY: DATE:

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

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

LINE & STATION SIZE THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS III 15	R. C. PIPE CLASS III 18	R. C. PIPE CLASS III 24	R. C. PIPE CLASS III 30	R. C. PIPE CLASS III 36	R. C. PIPE CLASS III 42	R. C. PIPE CLASS III 48	R. C. PIPE CLASS IV 12	R. C. PIPE CLASS IV 15	R. C. PIPE CLASS IV 18	R. C. PIPE CLASS IV 24	R. C. PIPE CLASS IV 30	R. C. PIPE CLASS IV 36	R. C. PIPE CLASS IV 42	R. C. PIPE CLASS IV 48	R. C. PIPE CLASS V 15	R. C. PIPE CLASS V 18	R. C. PIPE CLASS V 24	R. C. PIPE CLASS V 30	R. C. PIPE CLASS V 36	R. C. PIPE CLASS V 42	R. C. PIPE CLASS V 48	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE
		1704																														
183+71.09	18 LT	1705																														
		1705	OUT									16																				
192+34.59	12 LT	1803	OUT		2188.3	2188.2											32															
192+44.22	12 RT	1804	OUT		2089.3	2088.5											32															
202+24.02	14 RT	1901	OUT		2204.8	2202.5												28														
203+92.14	10 RT	1902																														
		1902	OUT															12														
204+66.03	10 LT	1903	OUT		2207.9	2207.5											24															
214+91.31	13 RT	2001	OUT		2213.1	2212.9												36														
214+91.48	12 LT	2002	OUT		2211.7	2211.1												32														
217+98.84	15 RT	2003																														
		2003	2004		2202.6	2201.0						36																				
		2004																														
226+32.00	15 RT	2005																														
		2005	OUT		2191.7	2190.9						32																				
228+46.35	16 RT	2101	OUT		2090.8	2090.7											24															
230+62.22	17 RT	2102																														
		2102	OUT		2186.9	2184.9																36										
234+56.50	18 RT	2103	OUT		2083.9	2083.5													24													
237+21.43	13 RT	2104	OUT		2179.1	2080.3												68														
237+25.19	10 LT	2105	OUT		2181.1	2180.9												36														
239+51.37	14 RT	2106																														
		2106	2107		2173.7	2173.0															28											
		2107																														
252+00.97	12 LT	2201																														
		2201	OUT		2153.5	2151.3															32											
265+45.22	10 LT	2401	OUT		2146.7	2146.5												44														
269+49.83	13 LT	2402																														
269+63.10	18 RT	2403																														
		2403	OUT		3132.7	2131.7						16																				
274+62.15	24 LT	2404																														
		2404	2405		2127.2	2126.7					32																					
291+90.37	12 LT	2601	OUT		2120.0	2119.5			32																							
299+31.66	11 LT	2602	OUT		2110.1	2109.3				12																						
299+34.90	11 LT	2603	OUT		2109.9	2109.6																				56						
306+28.32	11 LT	2701	OUT		2104.7	2103.9																				52						
318+91.36	11 RT	2801																														
		2801	2802		2103.2	2103.2		4																								
		2801	2803		2103.2	2099.5												68														
SHEET TOTALS								4	32	12	32	100					112	324	24		60	36				108						
PROJECT TOTALS								4	64	12	88	240	276				112	356	96	80	164	36			80	108	32					

QUANTITIES FOR DRAINAGE STRUCTURES — NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

LINE & STATION	FROM	TO	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	CONCRETE TRANSITIONAL SECTION 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
	1704																																							0.7640			
183+71.09	1705																																							0.7640			
	1705	OUT																																									
192+34.59	1803	OUT																																								30	
192+44.22	1804	OUT																																								28	
202+24.02	1901	OUT																																									
203+92.14	1902													1																													
	1902	OUT																																									
204+66.03	1903	OUT																																								20	
214+91.31	2001	OUT																																								29	
214+91.48	2002	OUT																																								29	
217+98.84	2003		3.400																																							31	
	2003	2004																																									
	2004				1.053																																						
226+32.00	2005		3.400																																								
	2005	OUT																																								26	
228+46.35	2101	OUT																																									
230+62.22	2102		6.000																																								
	2102	OUT																																								30	
234+56.50	2103	OUT																																									
237+21.43	2104	OUT																																								66	
237+25.19	2105	OUT																																								45	
239+51.37	2106		4.500																																								
	2106	2107																																								19	
	2107													1																													
252+00.97	2201		3.400																																								
	2201	OUT																																									Pad
265+45.22	2401	OUT																																								30	
269+49.83	2402		3.400																																								
269+63.10	2403																																							0.7640			
	2403	OUT																																									
274+62.15	2404													1																													
	2404	2405																																								31	
291+90.37	2601	OUT																																									
299+31.66	2602	OUT																																								9	
299+34.90	2603	OUT																																								53	
306+28.32	2701	OUT																																								50	
318+91.36	2801									1																																	
	2801	2802																																									
	2801	2803																																								112	
SHEET TOTALS			24.100		1.053					1				3																										2.2920		638	
PROJECT TOTALS			78.400		1.053					1				4																										7.3296		1099	

ABBREVIATIONS

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

P40V-21H1-54

COMPUTED BY: ____________ DATE: ________

CHECKED BY: ____________ DATE: ________

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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 SIZE THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	R. C. PIPE CLASS III 54	60	66	72	78	84		R. C. PIPE CLASS IV 54	60	66	72	78	84		R. C. PIPE CLASS V 54	60	66	72	78	84		ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY
188+03.42	24	RT	1801		2171.6																									10.014	
			1801	1802		2171.6	2169.6				52																				
199+43.45	25	RT	1805																											5.007	
			1805	OUT		2189.5	2187.2				64																				
311+07.62	12	RT	2702		2098.0																									7.299	
			2702	2703		2098.0	2097.7			28																					
SHEET TOTALS										28	116																			22.320	
PROJECT TOTALS										28	116																			22.320	

QUANTITIES FOR DRAINAGE STRUCTURES NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)

LINE & STATION	FROM	TO	DRAINAGE STRUCTURE MASONRY CY	0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	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
188+03.42	1801																																																					
	1801	1802																																																			50	Pad
199+43.45	1805																																																					
	1805	OUT																																																			61	Pad
311+07.62	2702																																																					
	2702	2703																																																			26	
SHEET TOTALS																																																					137	
PROJECT TOTALS																																																					137	

ABBREVIATIONS

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

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

SEE SHEET 29 FOR -GREENWAY- PROFILE

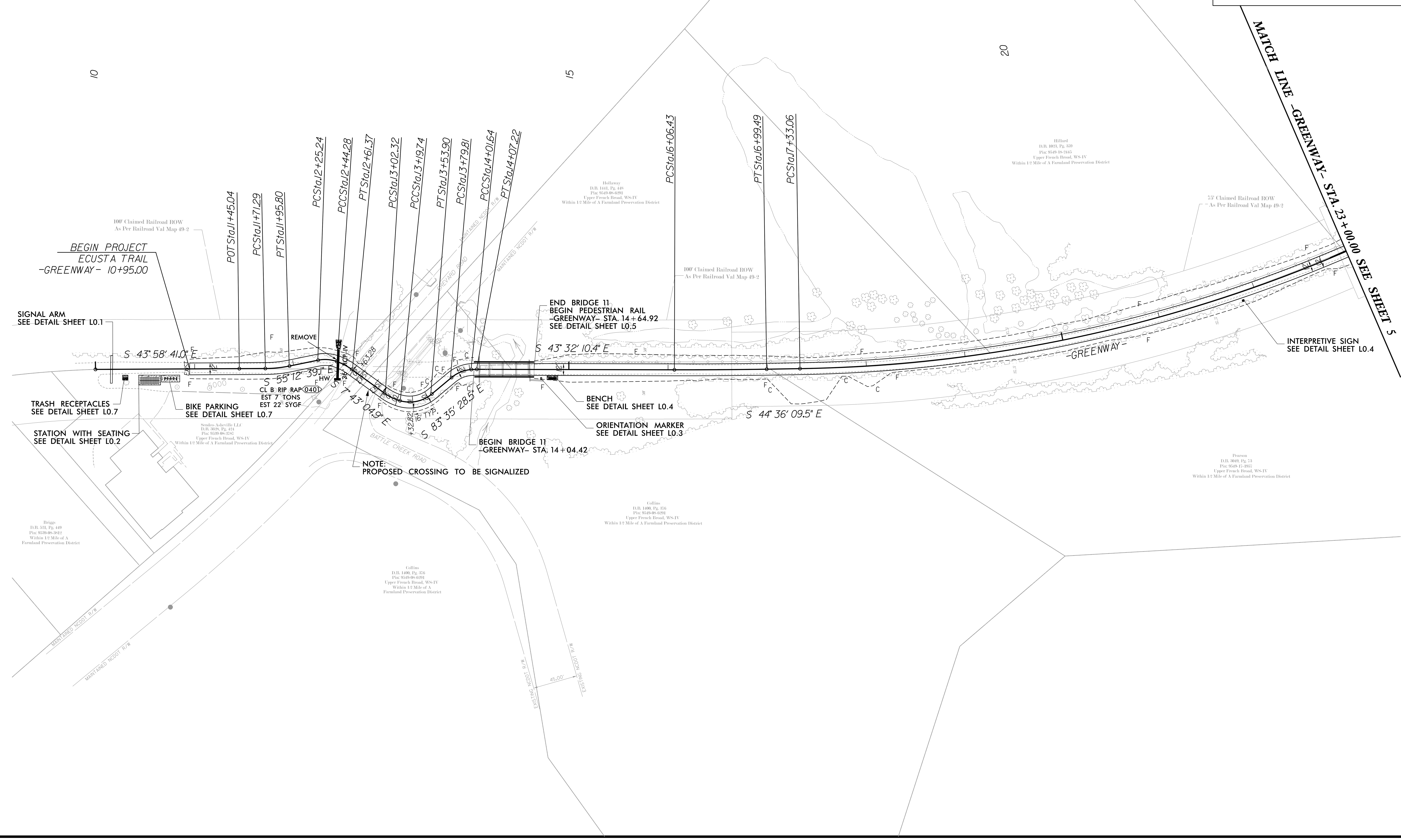
SCALE 1" = 50'

50 25 0 50 100
1" = 50'

NAD 83/2011

-GREENWAY- CURVE DATA

PI Sta	Δ	D	L	T	R
11+83.58	11° 13' 58.1" (LT)	45° 50' 11.8"	24.51'	12.29'	125.00'
12+35.00	31° 10' 30.7" (RT)	163° 42' 08.0"	19.04'	9.76'	35.00'
12+52.88	16° 19' 03.5" (RT)	95° 29' 34.7"	17.09'	8.60'	60.00'
13+11.12	19° 57' 41.1" (LT)	114° 35' 29.6"	17.42'	8.80'	50.00'
13+38.32	55° 54' 42.5" (LT)	163° 42' 08.0"	34.15'	18.58'	35.00'
13+91.09	35° 43' 42.5" (RT)	163° 42' 08.0"	21.83'	11.28'	35.00'
14+04.43	4° 19' 35.6" (RT)	77° 25' 36.2"	5.59'	2.80'	74.00'
16+52.96	1° 03' 59.1" (LT)	1° 08' 45.3"	93.06'	46.53'	5,000.00'
20+38.22	23° 46' 09.9" (LT)	3° 57' 05.2"	601.54'	305.16'	1,450.00'



BEGIN PROJECT
ECUSTA TRAIL
-GREENWAY- 10+95.00
SIGNAL ARM
SEE DETAIL SHEET L0.1
TRASH RECEPTACLES
SEE DETAIL SHEET L0.7
BIKE PARKING
SEE DETAIL SHEET L0.7
STATION WITH SEATING
SEE DETAIL SHEET L0.2
POT Sta.11+45.04
PC Sta.11+71.29
PT Sta.11+95.80
PC Sta.12+25.24
PCC Sta.12+44.28
PT Sta.12+61.37
PC Sta.13+02.32
PCC Sta.13+19.74
PT Sta.13+53.90
PC Sta.13+79.81
PCC Sta.14+01.64
PT Sta.14+07.22
PC Sta.16+06.43
PT Sta.16+99.49
PC Sta.17+33.06
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
REMOVE
CL B RIP RAP
EST 7 TONS
EST 22 SYGF
HW
BATTLE CREEK ROAD
NOTE:
PROPOSED CROSSING TO BE SIGNALIZED
END BRIDGE 11
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 14+64.92
SEE DETAIL SHEET L0.5
BEGIN BRIDGE 11
-GREENWAY- STA. 14+04.42
BENCH
SEE DETAIL SHEET L0.4
ORIENTATION MARKER
SEE DETAIL SHEET L0.3
INTERPRETIVE SIGN
SEE DETAIL SHEET L0.4
-GREENWAY-
100' Claimed Railroad ROW
As Per Railroad Val Map 49-2
75' Claimed Railroad ROW
As Per Railroad Val Map 49-2
MAINTAINED NCDOT R/W
10
15
20
MATCH LINE -GREENWAY- STA. 23+00.00 SEE SHEET 5

1/9/2023 2:20:02 PM

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	05
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

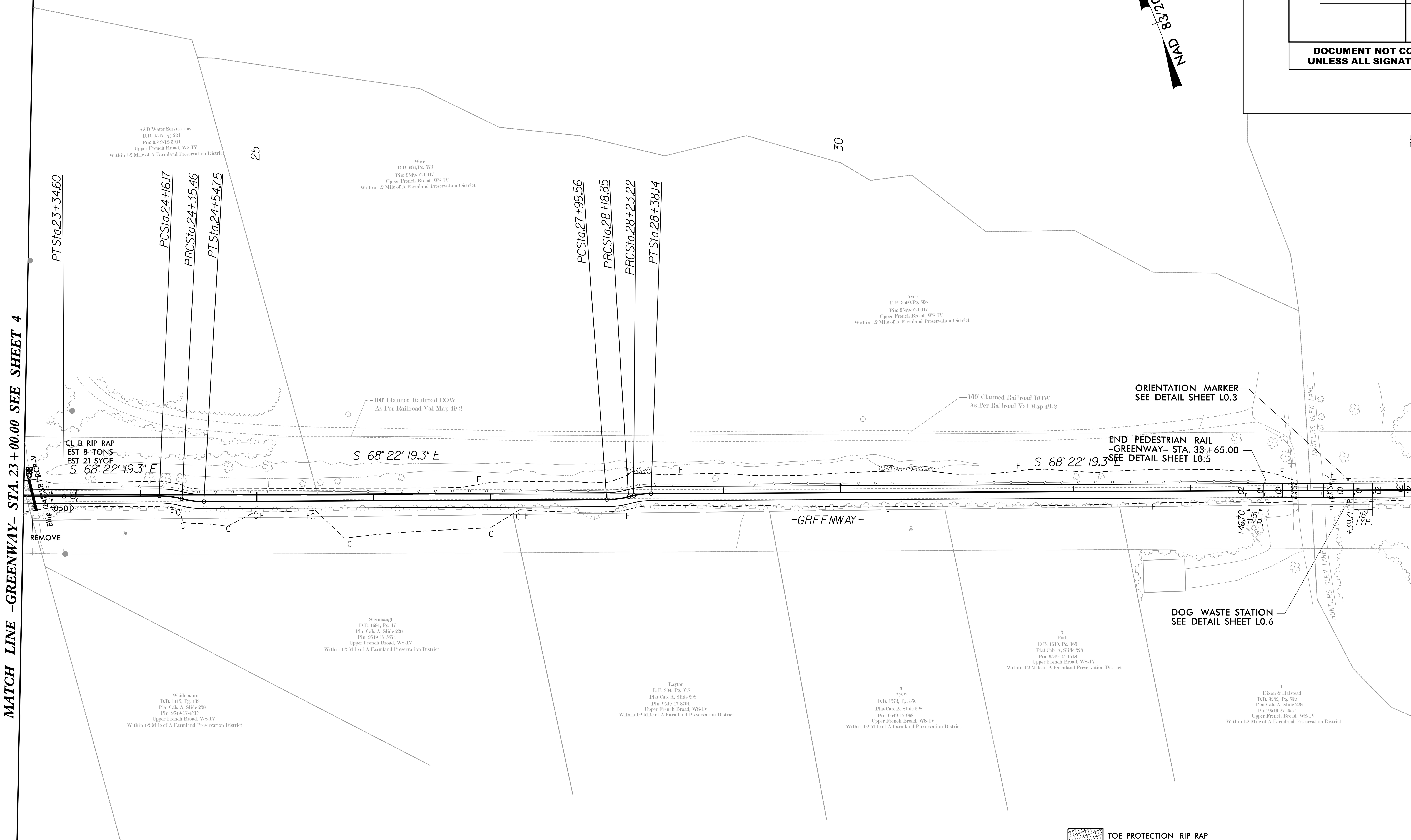
SEE SHEET 29 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

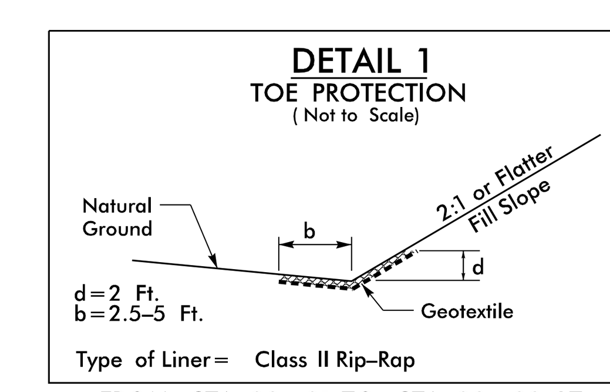
NAD 83/2011

-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
Δ = 14° 56' 08.1" (RT)	Δ = 14° 56' 08.1" (LT)	Δ = 14° 56' 08.1" (LT)	Δ = 3° 22' 46.9" (RT)	Δ = 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'



TOE PROTECTION RIP RAP



FROM STA. 28+21 TO STA. 28+39 LT

1/9/2023 2:48:40 PM
...Ecusta Trail_rdy_psh05.dgn

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	06
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEETS 29 AND 30 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

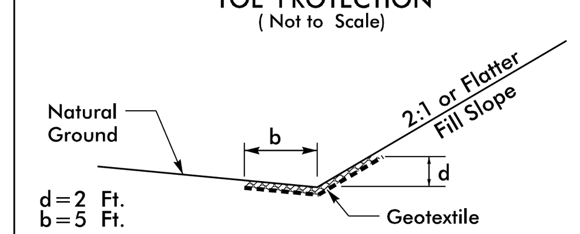
NAD 83/2011

-GREENWAY- CURVE DATA

PI Sta 35+76.95	PI Sta 35+91.87	PI Sta 41+59.55	PI Sta 42+14.78
Δ = 11° 33' 21.2" (RT)	Δ = 11° 33' 21.2" (LT)	Δ = 6° 24' 22.4" (LT)	Δ = 6° 24' 22.4" (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 = 8.27'	L = 8.27'
T = 7.49'	T = 7.49'	T = 4.14'	T = 4.14'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

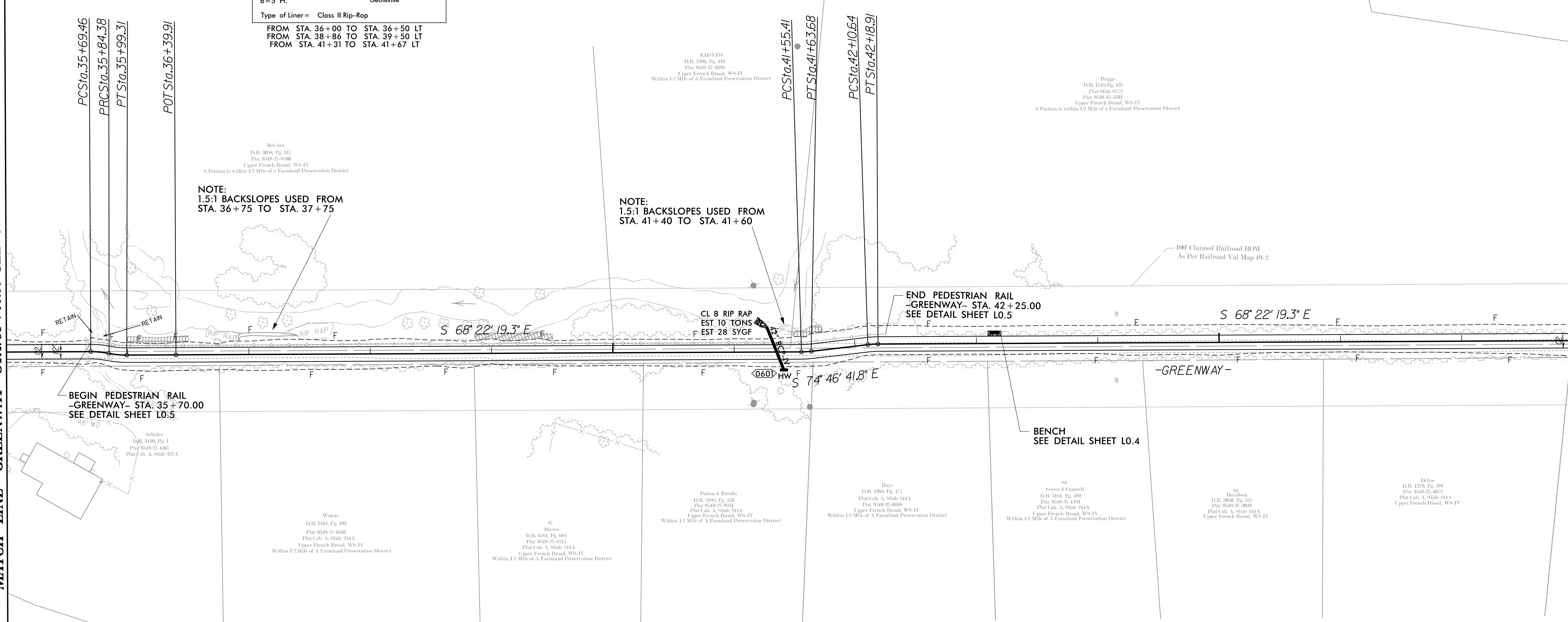
TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = Class II Rip-Rap

FROM STA. 36+00 TO STA. 36+50 LT
FROM STA. 38+86 TO STA. 39+50 LT
FROM STA. 41+31 TO STA. 41+67 LT



REVISIONS

1/7/2023 11:06:26 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 30 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS

8/17/99

-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'

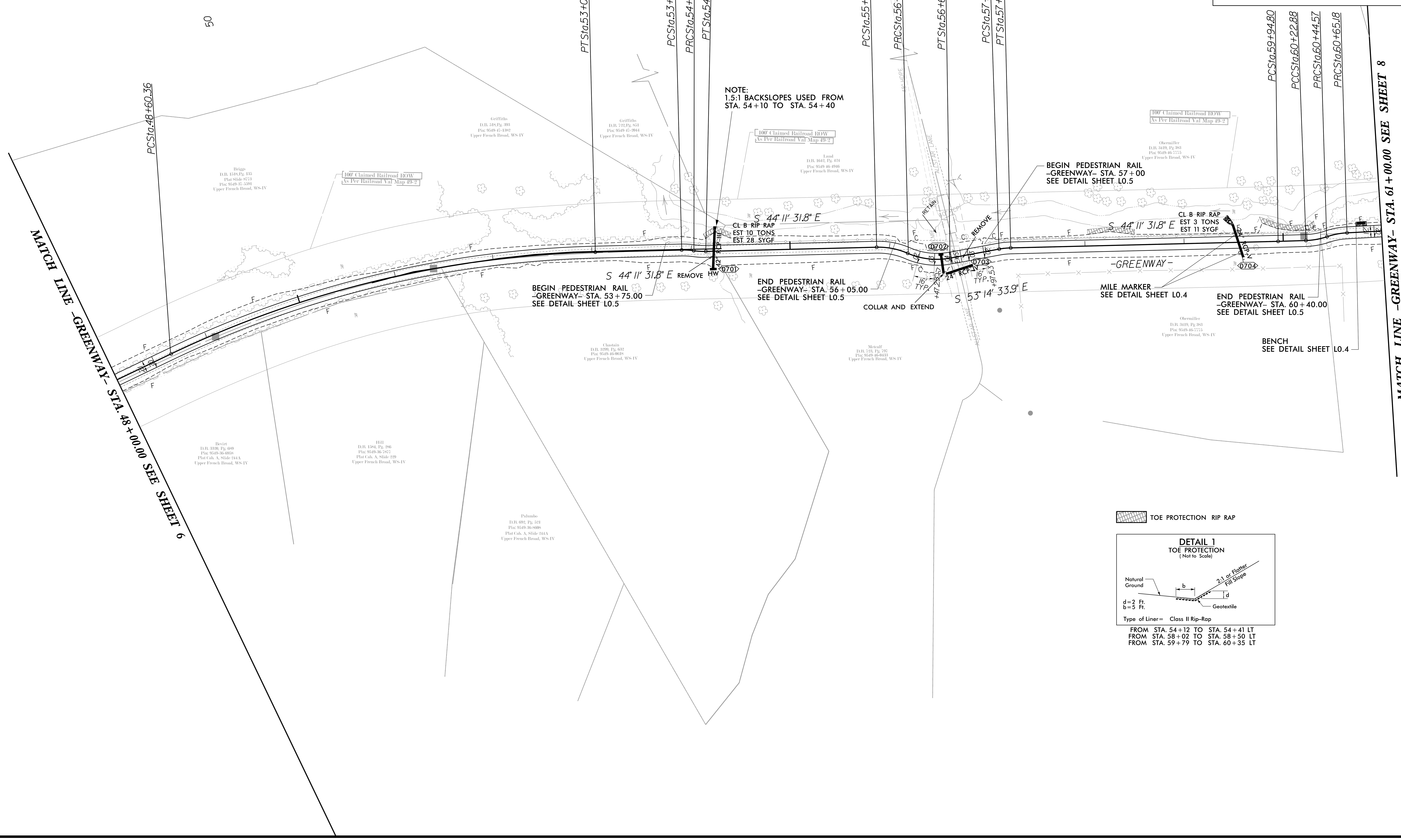
PI Sta 56+42.01
△ = 33° 55' 51.2" (LT)
D = 77° 25' 36.2"
L = 43.82'
T = 22.58'
R = 74.00'

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'



TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)

FROM STA. 54+12 TO STA. 54+41 LT
FROM STA. 58+02 TO STA. 58+50 LT
FROM STA. 59+79 TO STA. 60+35 LT

1/7/2023 11:06:56 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	08
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEETS 30 AND 31 FOR -GREENWAY- PROFILE

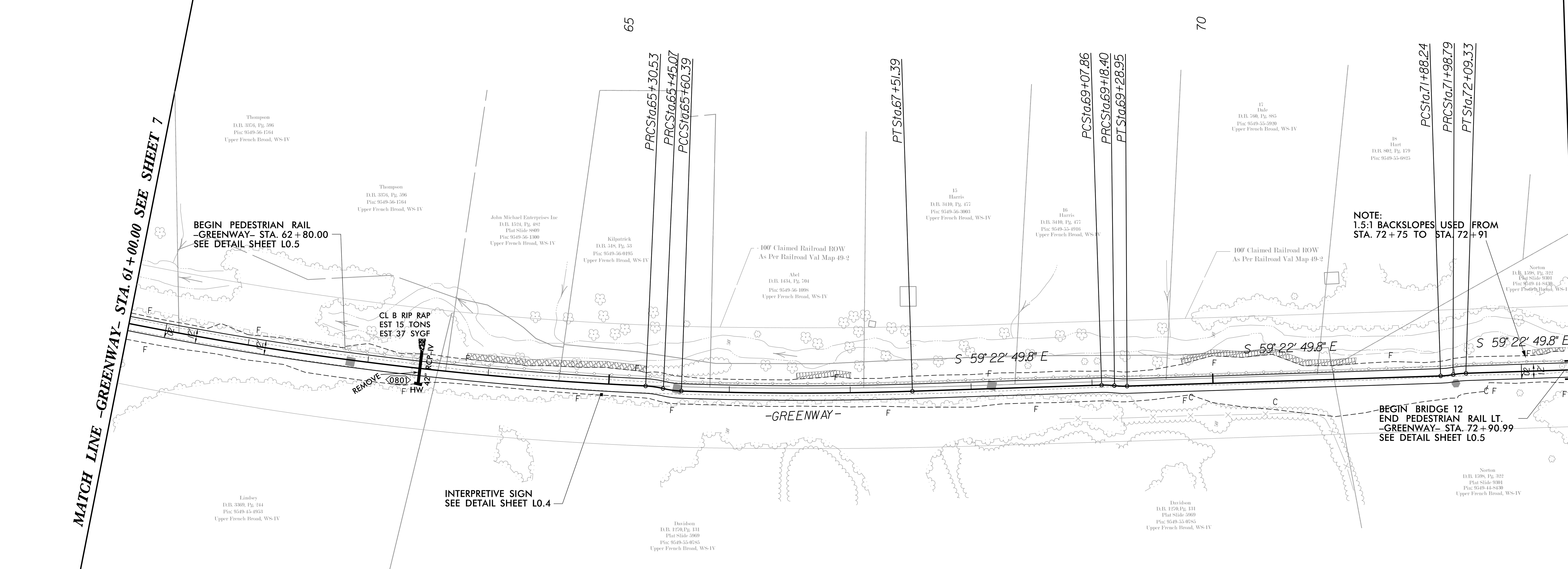
50 25 0 50 100
1" = 50'

NAD 83/2011

-GREENWAY- CURVE DATA

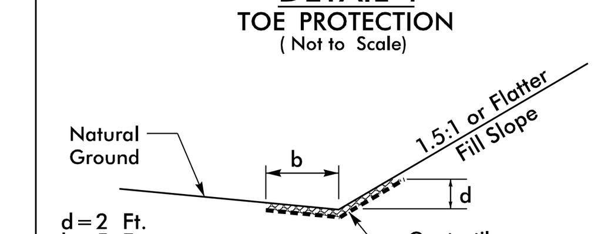
PI Sta 62+98.37	PI Sta 65+37.82	PI Sta 65+52.76	PI Sta 66+55.92
Δ = 9° 21' 18.7" (LT)	Δ = 11° 15' 42.2" (RT)	Δ = 11° 51' 27.5" (LT)	Δ = 3° 50' 09.1" (LT)
D = 2° 00' 37.4"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 2° 00' 29.8"
L = 465.35'	L = 14.55'	L = 15.31'	L = 191.00'
T = 233.19'	T = 7.30'	T = 7.68'	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
Δ = 8° 09' 51.5" (RT)	Δ = 8° 09' 51.5" (LT)	Δ = 8° 09' 51.5" (LT)	Δ = 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'



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. 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
FROM STA. 72+64 TO STA. 72+91 LT

REVISIONS

8/17/99

1/7/2023 11:07:17 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	09
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

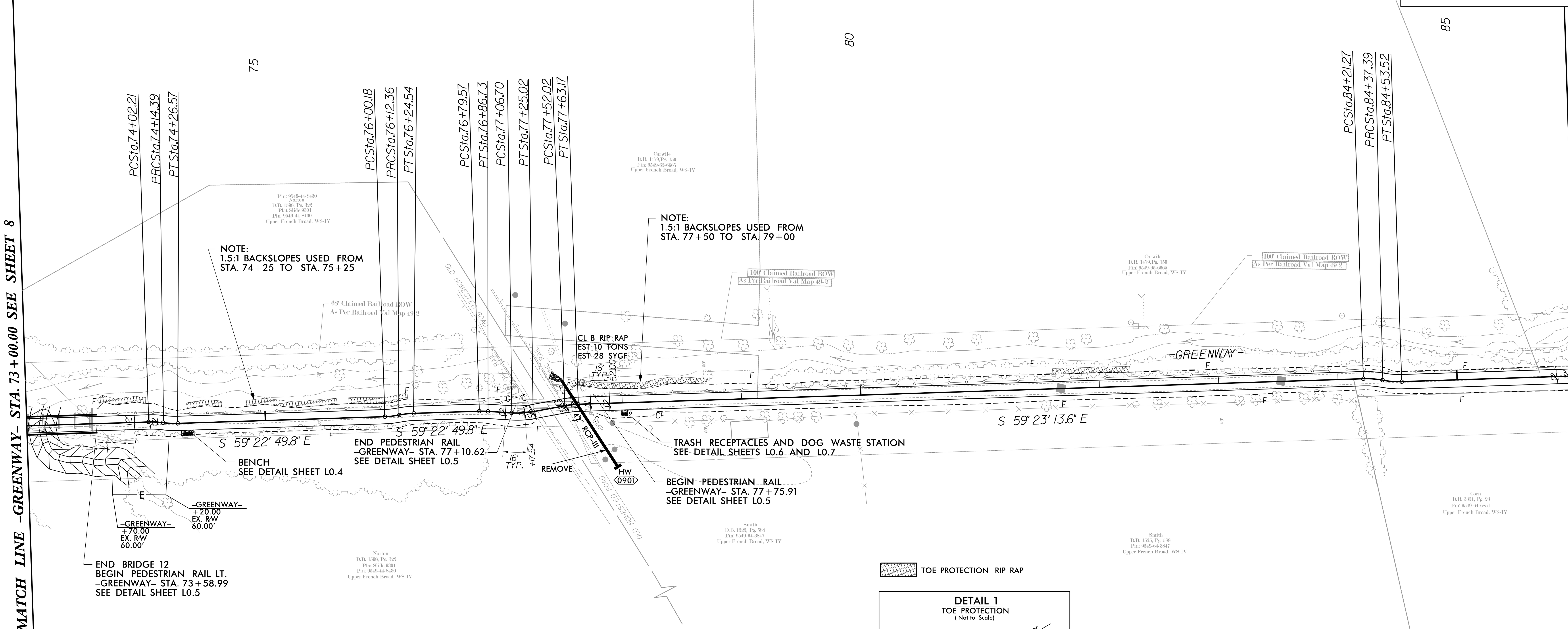
SEE SHEET 31 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011

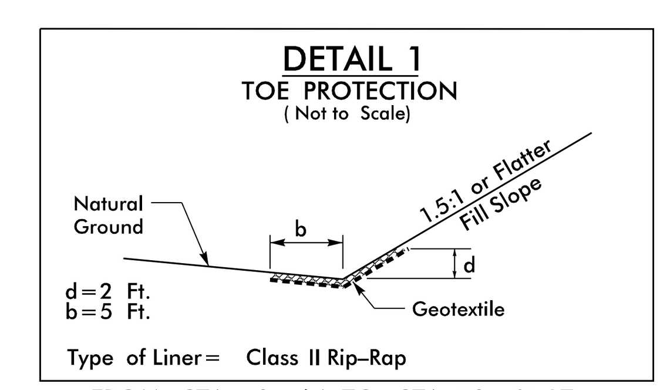
-GREENWAY- CURVE DATA

PI Sta	Δ	D	L	T	R
74+08.31	9° 25' 48.0" (RT)	77° 25' 36.2"	12.18'	6.10'	74.00'
74+20.49	9° 25' 48.0" (LT)	77° 25' 36.2"	12.18'	6.10'	74.00'
76+06.28	9° 25' 48.0" (LT)	77° 25' 36.2"	12.18'	6.10'	74.00'
76+18.46	9° 25' 48.0" (RT)	77° 25' 36.2"	12.18'	6.10'	74.00'
76+83.15	5° 32' 28.1" (RT)	77° 25' 36.2"	7.16'	3.58'	74.00'
77+15.91	14° 10' 57.2" (LT)	77° 25' 36.2"	18.32'	9.21'	74.00'
77+57.61	8° 38' 05.4" (RT)	77° 25' 36.2"	11.15'	5.59'	74.00'
84+29.36	12° 29' 07.2" (RT)	77° 25' 36.2"	16.13'	8.09'	74.00'
84+45.49	12° 29' 07.2" (LT)	77° 25' 36.2"	16.13'	8.09'	74.00'

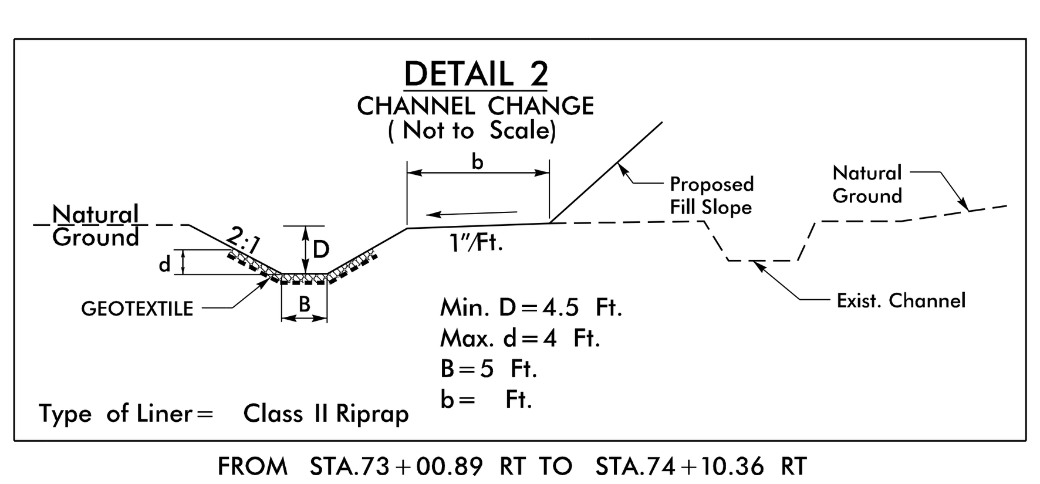


MATCH LINE -GREENWAY- STA. 73+00.00 SEE SHEET 8
MATCH LINE -GREENWAY- STA. 86+00.00 SEE SHEET 10
75
80
85
PCSta.74+02.21
PRCSta.74+14.39
PTSta.74+26.57
PCSta.76+00.18
PRCSta.76+12.36
PTSta.76+24.54
PCSta.76+79.57
PTSta.76+86.73
PCSta.77+06.70
PTSta.77+25.02
PCSta.77+52.02
PTSta.77+63.17
PCSta.84+21.27
PRCSta.84+37.39
PTSta.84+53.52
NOTE:
1.5:1 BACKSLOPES USED FROM
STA. 74+25 TO STA. 75+25
NOTE:
1.5:1 BACKSLOPES USED FROM
STA. 77+50 TO STA. 79+00
CL B RIP RAP
EST 10 TONS
EST 28 SYGF
-GREENWAY-
S 59° 22' 49.8" E
S 59° 22' 49.8" E
S 59° 23' 13.6" E
BENCH
SEE DETAIL SHEET L0.4
END PEDESTRIAN RAIL
-GREENWAY- STA. 77+10.62
SEE DETAIL SHEET L0.5
TRASH RECEPTACLES AND DOG WASTE STATION
SEE DETAIL SHEETS L0.6 AND L0.7
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 77+75.91
SEE DETAIL SHEET L0.5
REMOVE
HW
0901
-GREENWAY-
+20.00
EX. R/W
60.00'
-GREENWAY-
+70.00
EX. R/W
60.00'
END BRIDGE 12
BEGIN PEDESTRIAN RAIL LT.
-GREENWAY- STA. 73+58.99
SEE DETAIL SHEET L0.5
60' Claimed Railroad ROW
As Per Railroad Val Map 49-2
100' Claimed Railroad ROW
As Per Railroad Val Map 49-2
100' Claimed Railroad ROW
As Per Railroad Val Map 49-2
OLD HOMESTEAD ROAD

TOE PROTECTION RIP RAP



FROM STA. 72+64 TO STA. 72+91 LT
FROM STA. 73+59 TO STA. 74+00 LT
FROM STA. 74+34 TO STA. 74+64 LT
FROM STA. 74+84 TO STA. 76+20 LT
FROM STA. 77+57 TO STA. 78+24 LT
FROM STA. 81+61 TO STA. 82+25 LT



FROM STA.73+00.89 RT TO STA.74+10.36 RT

REVISIONS

8/17/99

1/7/2023 11:07:36 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	10
	RW SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

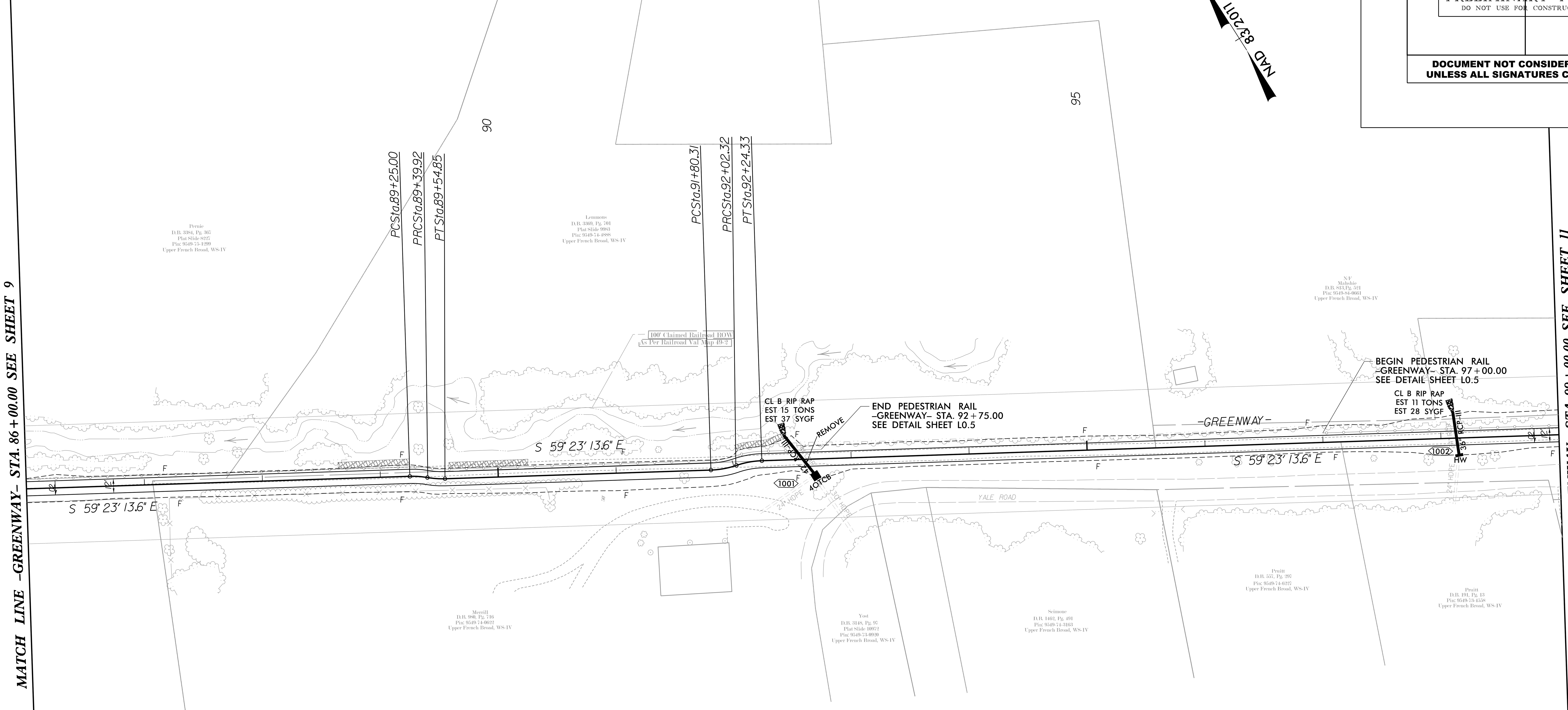
REVISIONS

SEE SHEETS 31 AND 32 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

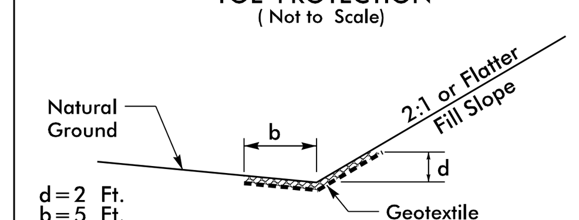
-GREENWAY- CURVE DATA

PI Sta 89+32.49	PI Sta 89+47.41	PI Sta 91+91.39	PI Sta 92+13.41
△ = 11° 33' 21.2" (RT)	△ = 11° 33' 21.2" (LT)	△ = 17° 02' 37.6" (LT)	△ = 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'



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. 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

1/7/2023 11:07:56 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

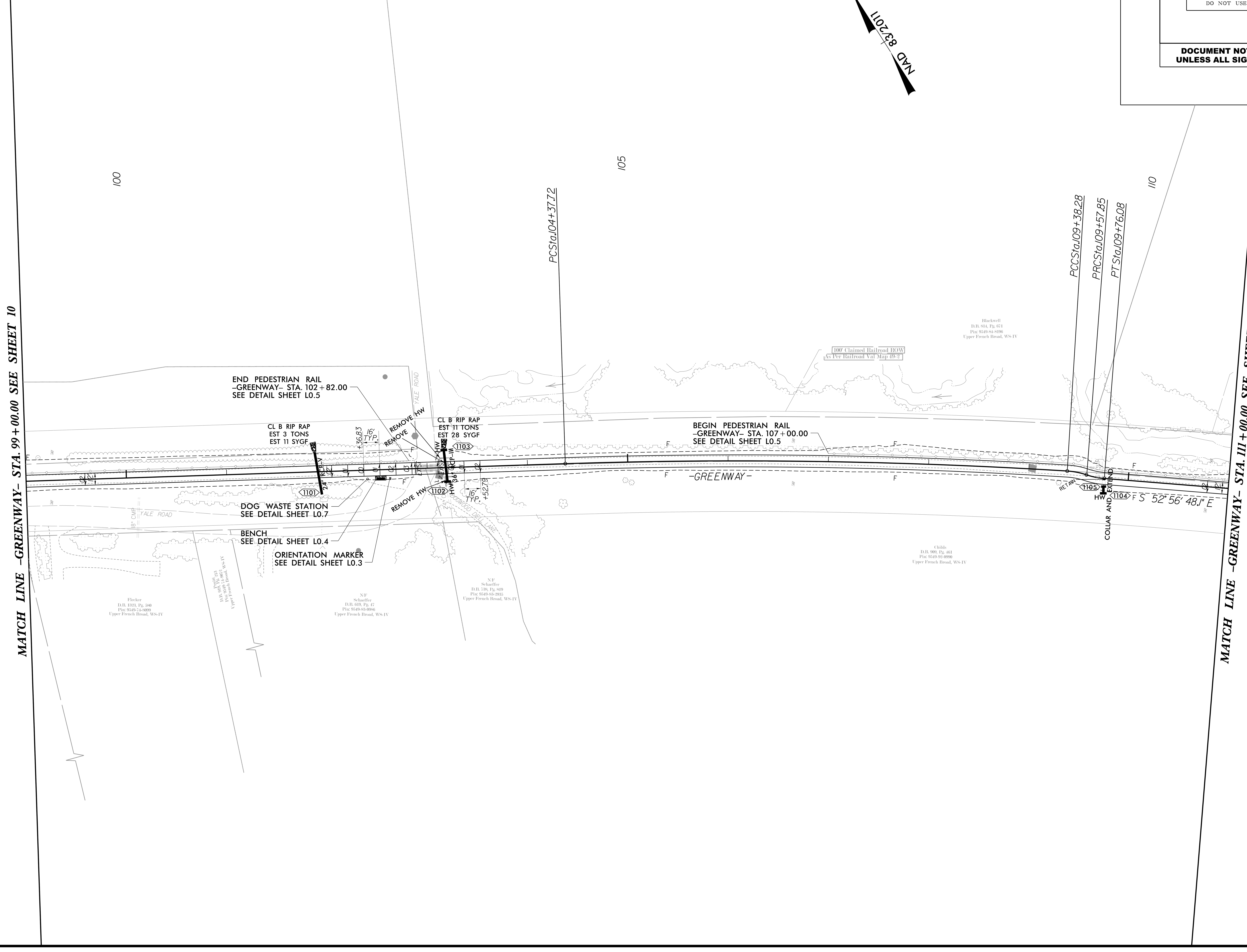
-GREENWAY- CURVE DATA

PI Sta 106+88.19	PI Sta 109+48.12	PI Sta 109+67.01
△ = 5° 24′ 40.7″ (RT)	△ = 15° 08′ 58.9″ (RT)	△ = 14° 07′ 14.2″ (LT)
D = 1° 04′ 51.8″	D = 77° 25′ 36.2″	D = 77° 25′ 36.2″
L = 500.56′	L = 19.57′	L = 18.24′
T = 250.47′	T = 9.84′	T = 9.17′
R = 5,300.00′	R = 74.00′	R = 74.00′

SEE SHEET 32 FOR -GREENWAY- PROFILE

50 25 0 50 100
1″ = 50′

NAD 83/2011



MATCH LINE -GREENWAY- STA. 99+00.00 SEE SHEET 10
MATCH LINE -GREENWAY- STA. 111+00.00 SEE SHEET 12
100
105
110
PCSta104+37.72
PCCSta109+38.28
PRCSta109+57.85
PTSta109+76.08
END PEDESTRIAN RAIL
-GREENWAY- STA. 102+82.00
SEE DETAIL SHEET L0.5
CL B RIP RAP
EST 3 TONS
EST 11 SYGF
CL B RIP RAP
EST 11 TONS
EST 28 SYGF
REMOVE HW
REMOVE
REMOVE HW
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 107+00.00
SEE DETAIL SHEET L0.5
-GREENWAY-
DOG WASTE STATION
SEE DETAIL SHEET L0.7
BENCH
SEE DETAIL SHEET L0.4
ORIENTATION MARKER
SEE DETAIL SHEET L0.3
1101
1102
1103
1104
1105
HW
RETAIN
COLLAR AND EXTEND
S 52° 56′ 48.1″ E
YALE ROAD

1/9/2023 2:17:54 PM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50 25 0 50 100
1" = 50'

NAD 83/2011

SEE SHEETS 32 AND 33 FOR -GREENWAY- PROFILE

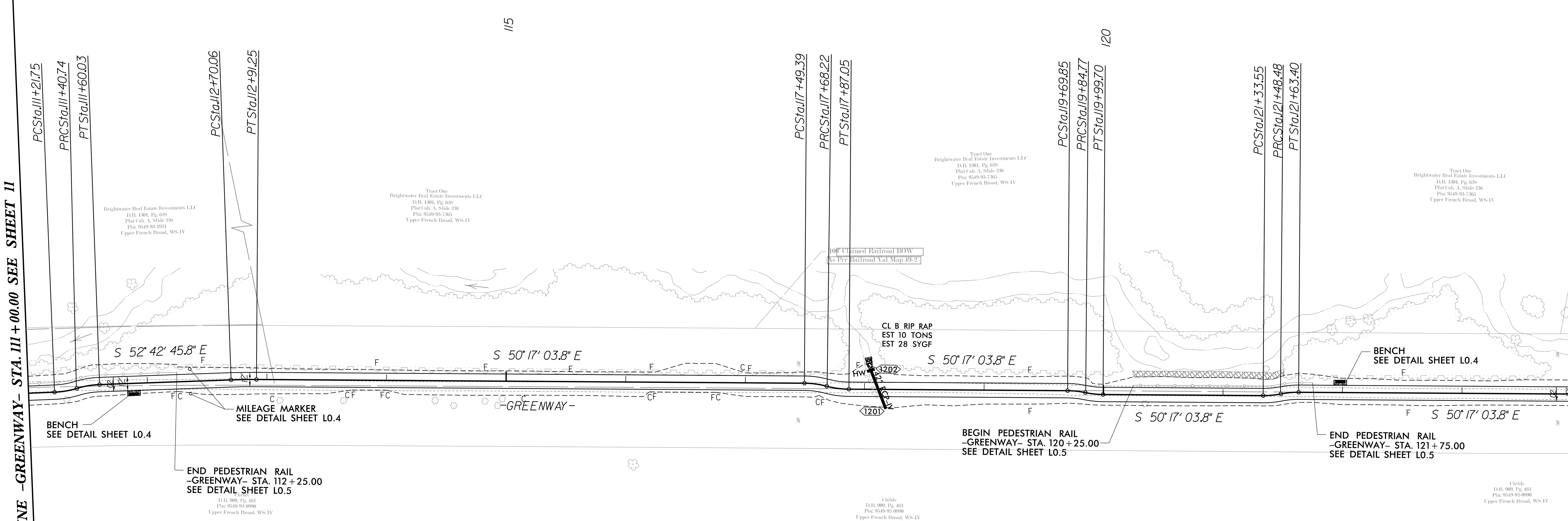
-GREENWAY- CURVE DATA

PI Sta 111+31.30	PI Sta 111+50.44	PI Sta 112+80.66	PI Sta 117+58.86	PI Sta 117+77.68
Δ = 14° 42' 09.0" (LT)	Δ = 14° 56' 11.3" (RT)	Δ = 2° 25' 42.1" (RT)	Δ = 14° 34' 35.3" (RT)	Δ = 14° 34' 35.3" (LT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 11° 27' 33.0"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 18.99'	L = 19.29'	L = 21.19'	L = 18.83'	L = 18.83'
T = 9.55'	T = 9.70'	T = 10.60'	T = 9.46'	T = 9.46'
R = 74.00'	R = 74.00'	R = 500.00'	R = 74.00'	R = 74.00'

PI Sta 119+77.34	PI Sta 119+92.26	PI Sta 121+41.04	PI Sta 121+55.96
Δ = 11° 33' 21.2" (RT)	Δ = 11° 33' 21.2" (LT)	Δ = 11° 33' 21.2" (LT)	Δ = 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"
L = 14.92'	L = 14.92'	L = 14.92'	L = 14.92'
T = 7.49'	T = 7.49'	T = 7.49'	T = 7.49'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

REVISIONS

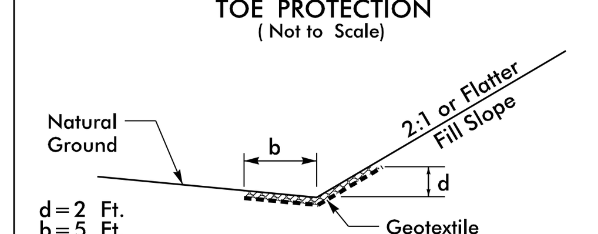
MATCH LINE -GREENWAY- STA. 111+00.00 SEE SHEET 11



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

TOE PROTECTION RIP RAP

DETAIL 1
TOE PROTECTION
(Not to Scale)



Type of Liner = Class II Rip-Rap

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

1/7/2023 11:20:37 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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′

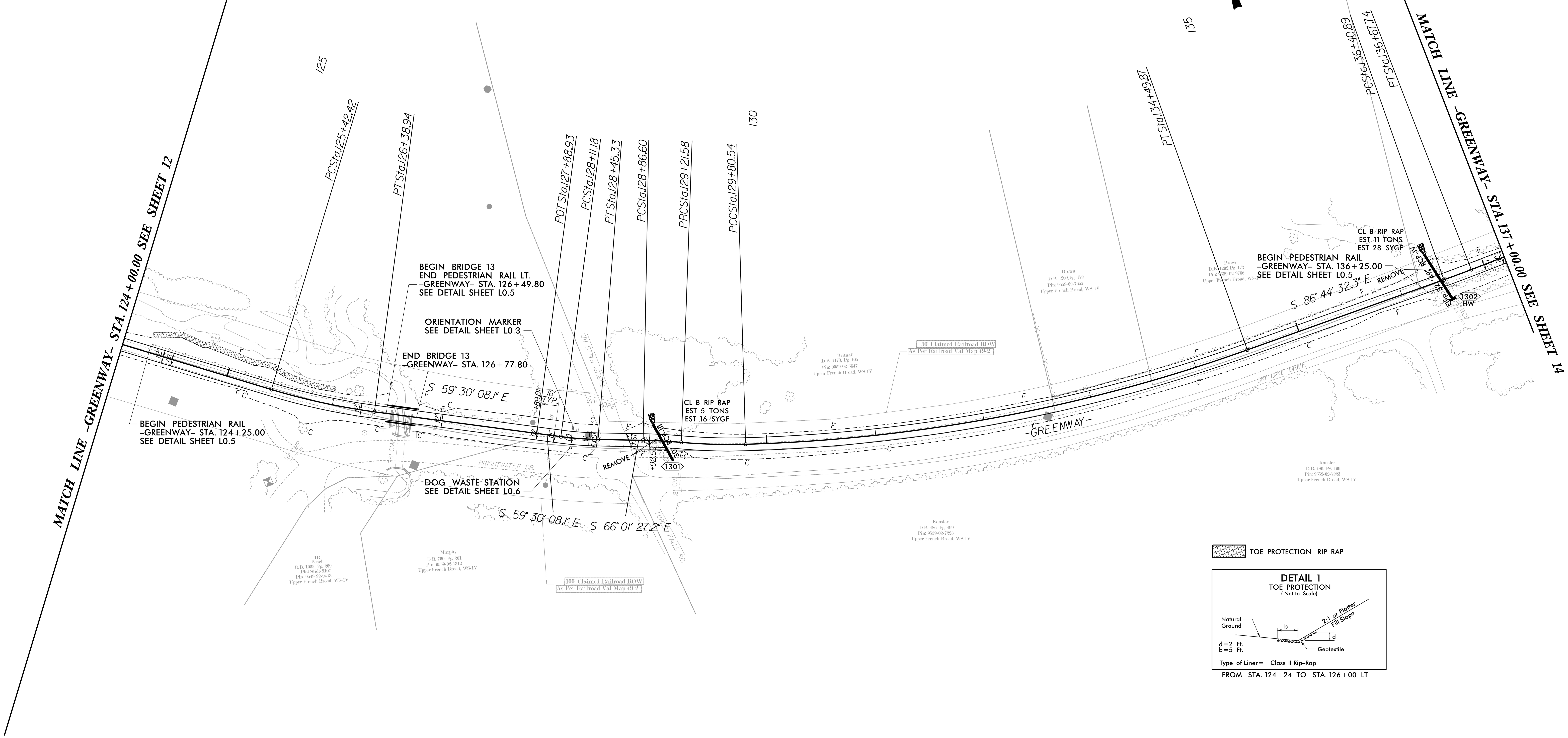
PI Sta 129+04.09
△ = 4° 00′ 30.4″ (RT)
D = 11° 27′ 33.0″
L = 34.98′
T = 17.50′
R = 500.00′

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 33 FOR -GREENWAY- PROFILE



50 25 0 50 100
1″ = 50′
NAD 83/2011
MATCH LINE -GREENWAY- STA. 124+00.00 SEE SHEET 12
MATCH LINE -GREENWAY- STA. 137+00.00 SEE SHEET 14
125
130
135
PCSta.125+42.42
PTSta.126+38.94
POTSta.127+88.93
PCSta.128+11.18
PTSta.128+45.33
PCSta.128+86.60
PRCSta.129+21.58
PCCSta.129+80.54
PTSta.134+49.87
PCSta.136+40.89
PTSta.136+67.74
BEGIN BRIDGE 13
END PEDESTRIAN RAIL LT.
-GREENWAY- STA. 126+49.80
SEE DETAIL SHEET L0.5
ORIENTATION MARKER
SEE DETAIL SHEET L0.3
END BRIDGE 13
-GREENWAY- STA. 126+77.80
S 59° 30′ 08.1″ E
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 124+25.00
SEE DETAIL SHEET L0.5
DOG WASTE STATION
SEE DETAIL SHEET L0.6
S 59° 30′ 08.1″ E
S 66° 01′ 27.2″ E
CL B RIP RAP
EST 5 TONS
EST 16 SYGF
REMOVE
1301
-GREENWAY-
S 86° 44′ 32.3″ E
CL B RIP RAP
EST 11 TONS
EST 28 SYGF
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 136+25.00
SEE DETAIL SHEET L0.5
REMOVE
1302
HW
50′ Claimed Railroad ROW
As Per Railroad Val Map 49-2
100′ Claimed Railroad ROW
As Per Railroad Val Map 49-2
BRIGHTWATER DR.
TOE PROTECTION RIP RAP
DETAIL 1
TOE PROTECTION
(Not to Scale)
Natural Ground
b
2:1 or Flatter Fill Slope
d
d=2 Ft.
b=5 Ft.
Geotextile
Type of Liner = Class II Rip-Rap
FROM STA. 124+24 TO STA. 126+00 LT

8/17/99

1/7/2023 11:08:41 AM

-GREENWAY- CURVE DATA

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

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

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

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

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

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

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

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

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

SEE SHEETS 33 AND 34 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

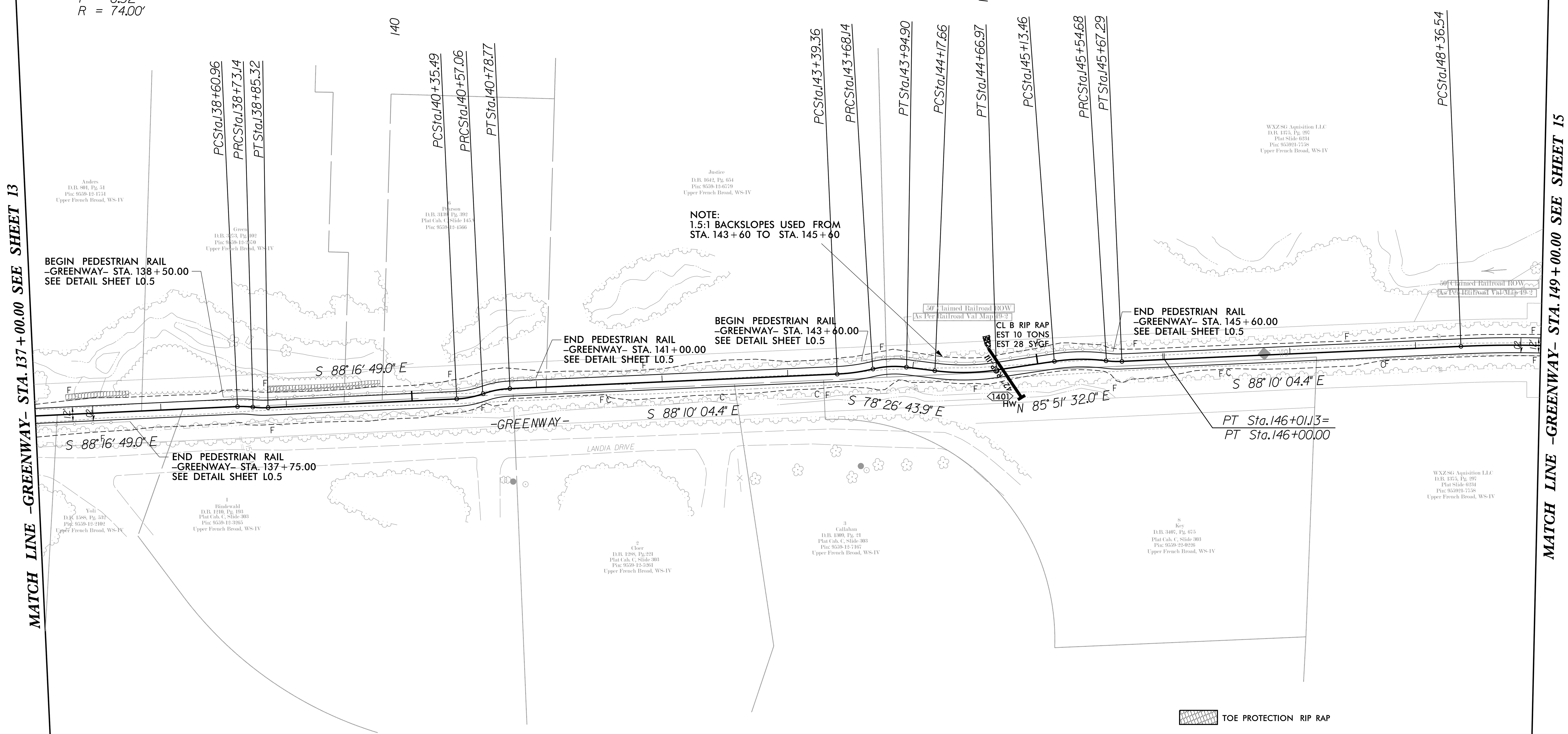
NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

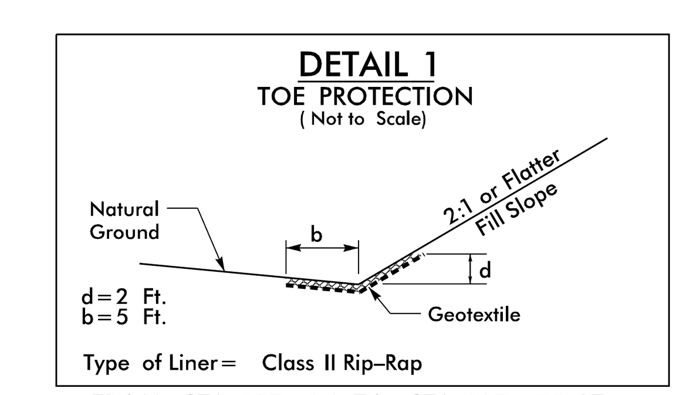
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS


MATCH LINE -GREENWAY- STA. 137+00.00 SEE SHEET 13
MATCH LINE -GREENWAY- STA. 149+00.00 SEE SHEET 15
140
145
PCSta.138+60.96
PRCSta.138+73.14
PTSta.138+85.32
PCSta.140+35.49
PRCSta.140+57.06
PTSta.140+78.77
PCSta.143+39.36
PRCSta.143+68.14
PTSta.143+94.90
PCSta.144+17.66
PTSta.144+66.97
PCSta.145+13.46
PRCSta.145+54.68
PTSta.145+67.29
PCSta.148+36.54
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 138+50.00
SEE DETAIL SHEET L0.5
END PEDESTRIAN RAIL
-GREENWAY- STA. 137+75.00
SEE DETAIL SHEET L0.5
END PEDESTRIAN RAIL
-GREENWAY- STA. 141+00.00
SEE DETAIL SHEET L0.5
NOTE:
1.5:1 BACKSLOPES USED FROM
STA. 143+60 TO STA. 145+60
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 143+60.00
SEE DETAIL SHEET L0.5
CL B RIP RAP
EST 10 TONS
EST 28 SYGF
END PEDESTRIAN RAIL
-GREENWAY- STA. 145+60.00
SEE DETAIL SHEET L0.5
S 88° 16' 49.0" E
S 88° 16' 49.0" E
S 88° 10' 04.4" E
S 78° 26' 43.9" E
N 85° 51' 32.0" E
S 88° 10' 04.4" E
-GREENWAY-
LANDIA DRIVE
PT Sta.146+01.13=
PT Sta.146+00.00
HW
140

TOE PROTECTION RIP RAP



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

8/17/99

1/9/2023 8:50:19 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	15

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 34 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011

-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" (LT)
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'

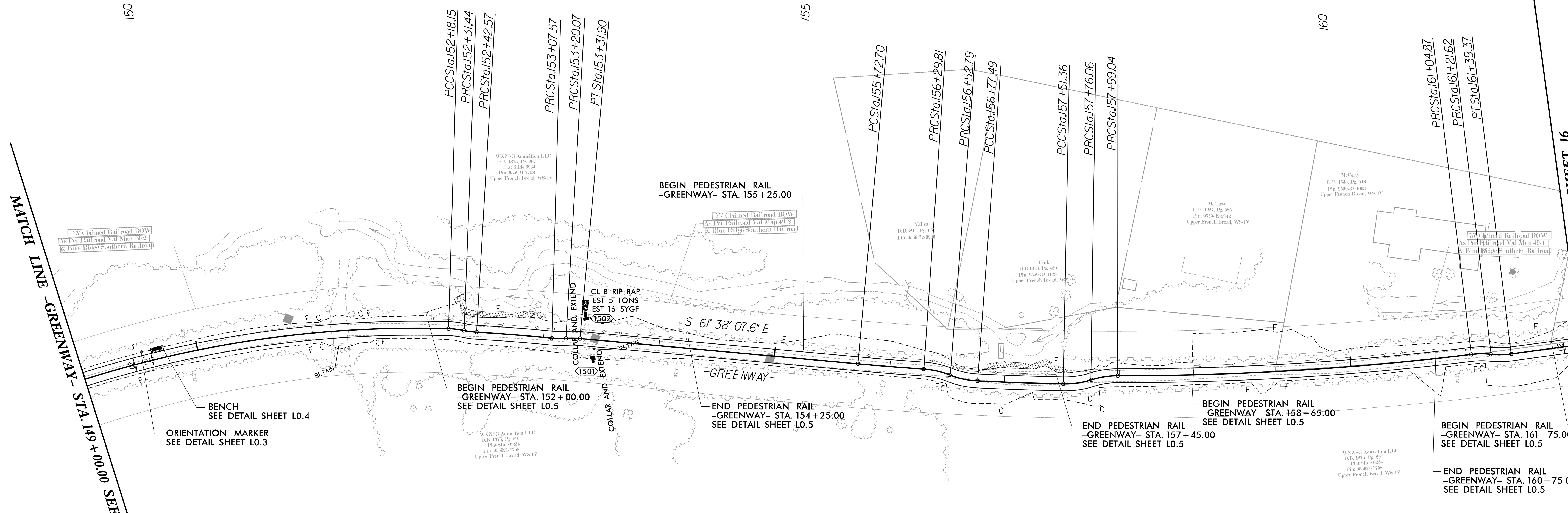
PI Sta 157+63.82
△ = 19° 07' 21.8" (LT)
D = 77° 25' 36.2"
L = 24.70'
T = 12.46'
R = 74.00'

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'

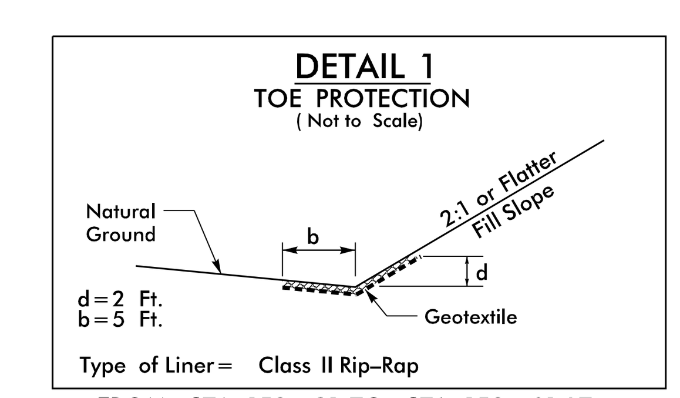
PI Sta 161+13.28
△ = 12° 57' 55.2" (RT)
D = 77° 25' 36.2"
L = 16.75'
T = 8.41'
R = 74.00'

PI Sta 161+30.54
△ = 13° 44' 53.9" (LT)
D = 77° 25' 36.2"
L = 17.76'
T = 8.92'
R = 74.00'



150
155
160
PCCSta.152+18.15
PRCSta.152+31.44
PRCSta.152+42.57
PRCSta.153+07.57
PRCSta.153+20.07
PTSta.153+31.90
PCSta.155+72.70
PRCSta.156+29.81
PRCSta.156+52.79
PCCSta.156+77.49
PCCSta.157+51.36
PRCSta.157+76.06
PRCSta.157+99.04
PRCSta.161+04.87
PRCSta.161+21.62
PTSta.161+39.37
MATCH LINE -GREENWAY- STA. 149+00.00 SEE SHEET 14
MATCH LINE -GREENWAY- STA. 162+00.00 SEE SHEET 16
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 155+25.00
CL B RIP RAP EST 5 TONS EST 16 SYGF
COLLAR AND EXTEND
1502
1501
S 61° 38' 07.6" E
-GREENWAY-
RETAIN
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
END PEDESTRIAN RAIL -GREENWAY- STA. 154+25.00 SEE DETAIL SHEET L0.5
END PEDESTRIAN RAIL -GREENWAY- STA. 157+45.00 SEE DETAIL SHEET L0.5
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 158+65.00 SEE DETAIL SHEET L0.5
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 161+75.00 SEE DETAIL SHEET L0.5
END PEDESTRIAN RAIL -GREENWAY- STA. 160+75.00 SEE DETAIL SHEET L0.5
75' Claimed Railroad ROW As Per Railroad Val Map 49-2 & Blue Ridge Southern Railroad

TOE PROTECTION RIP RAP



FROM STA. 152+21 TO STA. 153+01 LT
FROM STA. 156+85 TO STA. 157+56 LT

REVISIONS

8/17/99

1/7/2023 11:46:13 AM

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 34 AND 35 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

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

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

Garza
D.B. 3085, Pg. 330
Plat 9539-31-6602
Upper French Broad, WS-IV

8
Pereira
D.B. 3182, Pg. 655
Plat Slide 11677
Pin: 9539-31-9871
Upper French Broad, WS-IV

7
Pereira
D.B. 3182, Pg. 655
Plat Slide 11677
Pin: 9539-31-9994
Upper French Broad, WS-IV

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

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

N/F
Dowling
D.B. 106, Pg. 372
Pin: 9539-41-6692
Upper French Broad, WS-IV

N/F
Dowling
D.B. 106, Pg. 372
Pin: 9539-41-6692
Upper French Broad, WS-IV

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

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

75' Claimed Railroad ROW
As Per Railroad Val Map 49-1
& Blue Ridge Southern Railroad

BENCH
SEE DETAIL SHEET L0.4

BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 170+50.00
SEE DETAIL SHEET L0.5

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

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

CL B RIP RAP
EST 10 TONS
EST 28 SYGF

CL B RIP RAP
EST 7 TONS
EST 22 SYGF

CL B RIP RAP
EST 8 TONS
EST 21 SYGF

CL B RIP RAP
EST 3 TONS
EST 10 SYGF

S 74° 34' 11.5" E

-GREENWAY-

RIP RAP III 42'

1601 HW

1602 HW

MILE MARKER
SEE DETAIL SHEET L0.4

BONAIRE DRIVE

REMOVE HW

REMOVE HW

1604

1605

1606

COLLAR AND EXTEND 18" RCP

COLLAR AND EXTEND

Tract A
McClung
D.B. 3415, Pg. 99
Plat Slide 11677
Pin: 9539-31-7883
Upper French Broad, WS-IV

Tract Two
Goodrich
D.B. 980, Pg. 458
Plat Cab. A, Slide 122
Pin: 9539-31-8518
Upper French Broad, WS-IV

Tract Three
Newman
D.B. 1065, Pg. 346
Plat Cab. A, Slide 122
Pin: 9539-31-9343
Upper French Broad, WS-IV

Allen
D.B. 1043, Pg. 49
Plat Slide 11788
Pin: 9539-41-1438
Upper French Broad, WS-IV

Barnwell
D.B. 3407, Pg. 706
Pin: 9539-41-7474
Upper French Broad, WS-IV

Barnwell
D.B. 3417, Pg. 3
Plat Slide 11111
Pin: 9539-41-5536
Upper French Broad, WS-IV
(HOW Widened to 30' On This Parcel
As Per Plat Slide 11111)

1/7/2023 3:58:01 PM
...\Ecusta Trail_rdy_psh16.dgn
User:phillipsk

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

50 25 0 50 100
1" = 50'

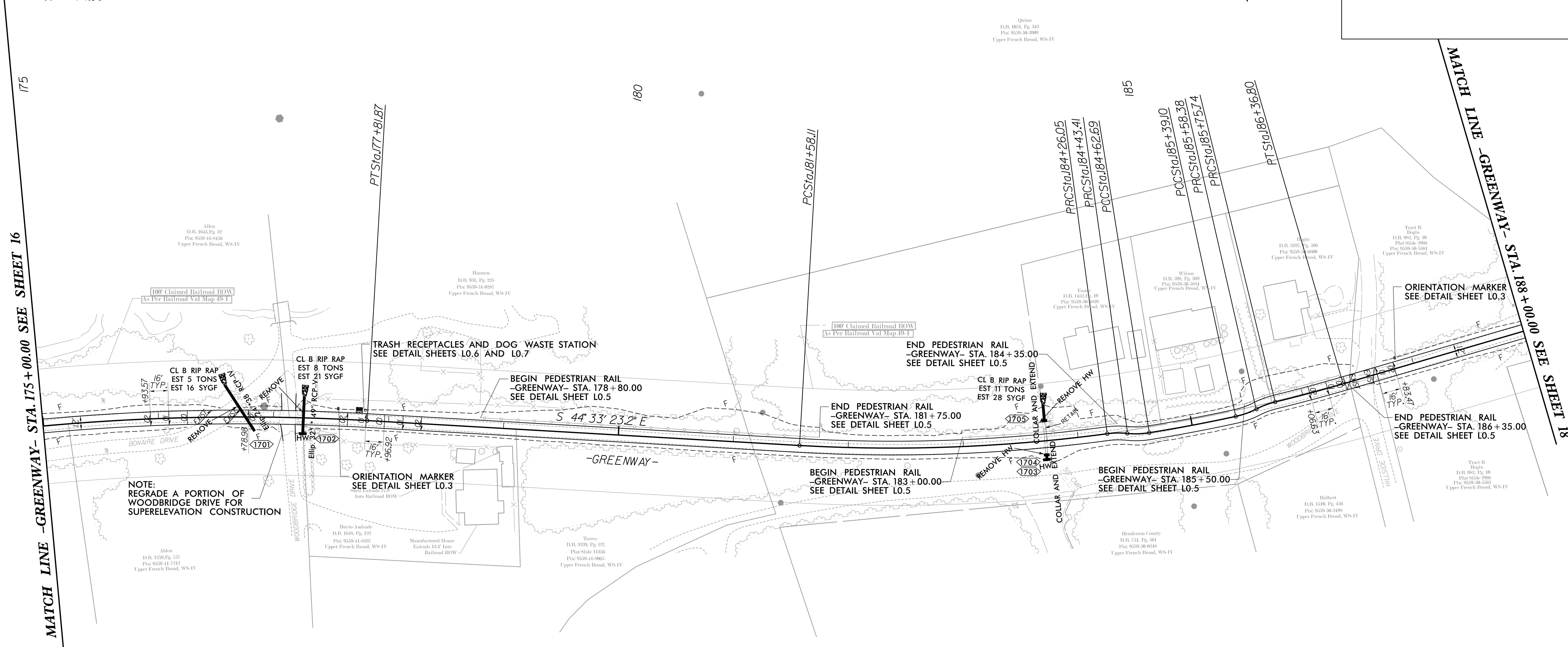
NAD 83/2011

SEE SHEET 35 FOR -GREENWAY- PROFILE

-GREENWAY- CURVE DATA

PI Sta 182+92.54	PI Sta 184+34.82	PI Sta 184+53.16	PI Sta 185+00.95	PI Sta 185+48.84
Δ = 10° 57' 56.1" (LT)	Δ = 13° 26' 35.3" (RT)	Δ = 14° 55' 30.0" (LT)	Δ = 3° 07' 01.9" (LT)	Δ = 14° 55' 30.0" (LT)
D = 4° 05' 33.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 4° 04' 46.0"	D = 77° 25' 36.2"
L = 267.94'	L = 17.36'	L = 19.28'	L = 76.41'	L = 19.28'
T = 134.38'	T = 8.72'	T = 9.69'	T = 38.22'	T = 9.69'
R = 1,400.00'	R = 74.00'	R = 74.00'	R = 1,404.50'	R = 74.00'

PI Sta 185+67.15	PI Sta 186+06.32
Δ = 13° 26' 35.3" (RT)	Δ = 2° 29' 56.2" (LT)
D = 77° 25' 36.2"	D = 4° 05' 33.2"
L = 17.36'	L = 61.06'
T = 8.72'	T = 30.54'
R = 74.00'	R = 1,400.00'



REVISIONS

8/17/99

1/7/2023 11:09:55 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

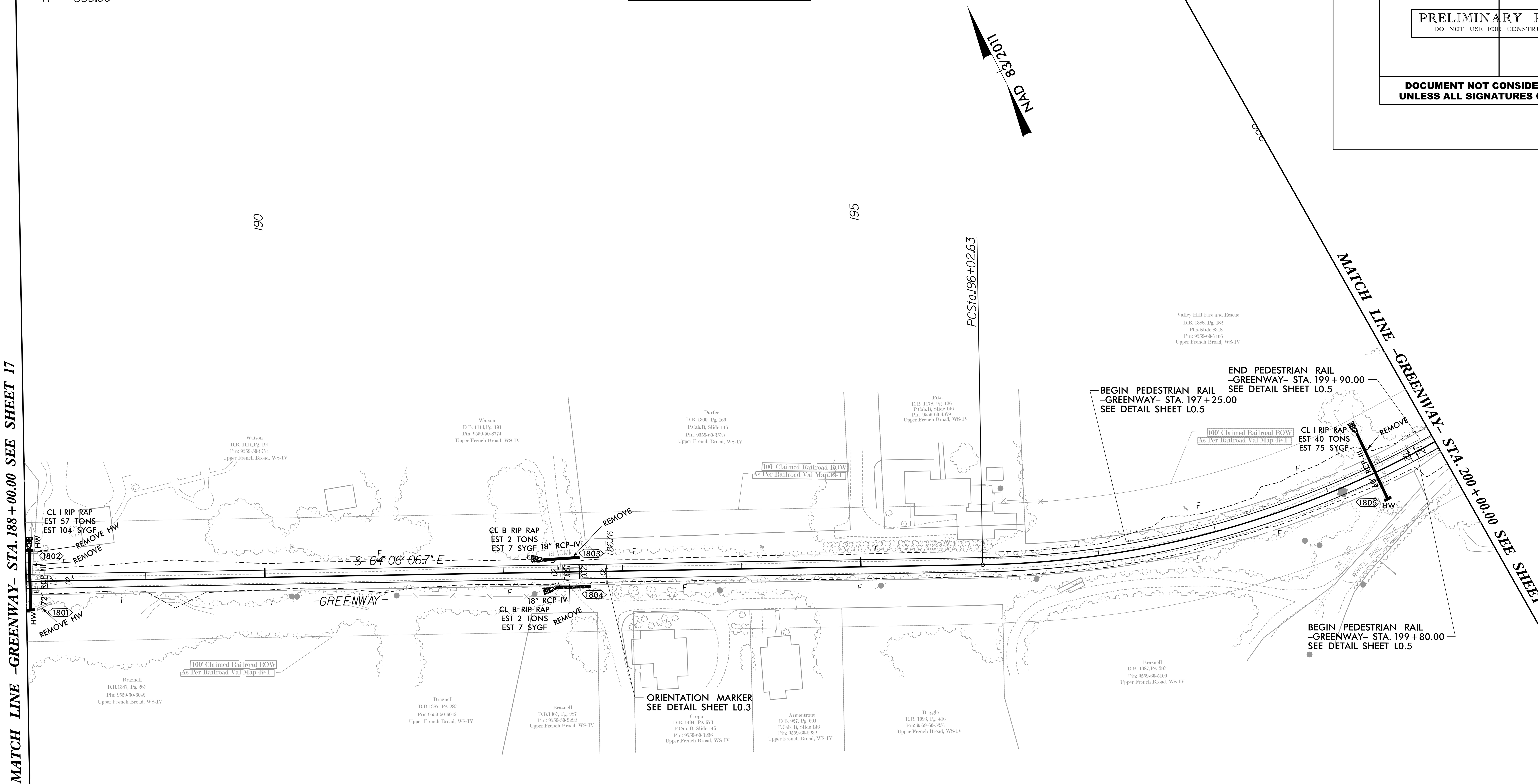
REVISIONS

-GREENWAY- CURVE DATA

PI Sta 198+37.29
Δ = 32° 41' 22.9" (LT)
D = 7° 09' 43.1"
L = 456.43'
T = 234.62'
R = 800.00'

SEE SHEETS 35 AND 36 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'



8/17/99

1/7/2023 11:54:54 AM

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 36 FOR -GREENWAY- PROFILE

-GREENWAY- CURVE DATA

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

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

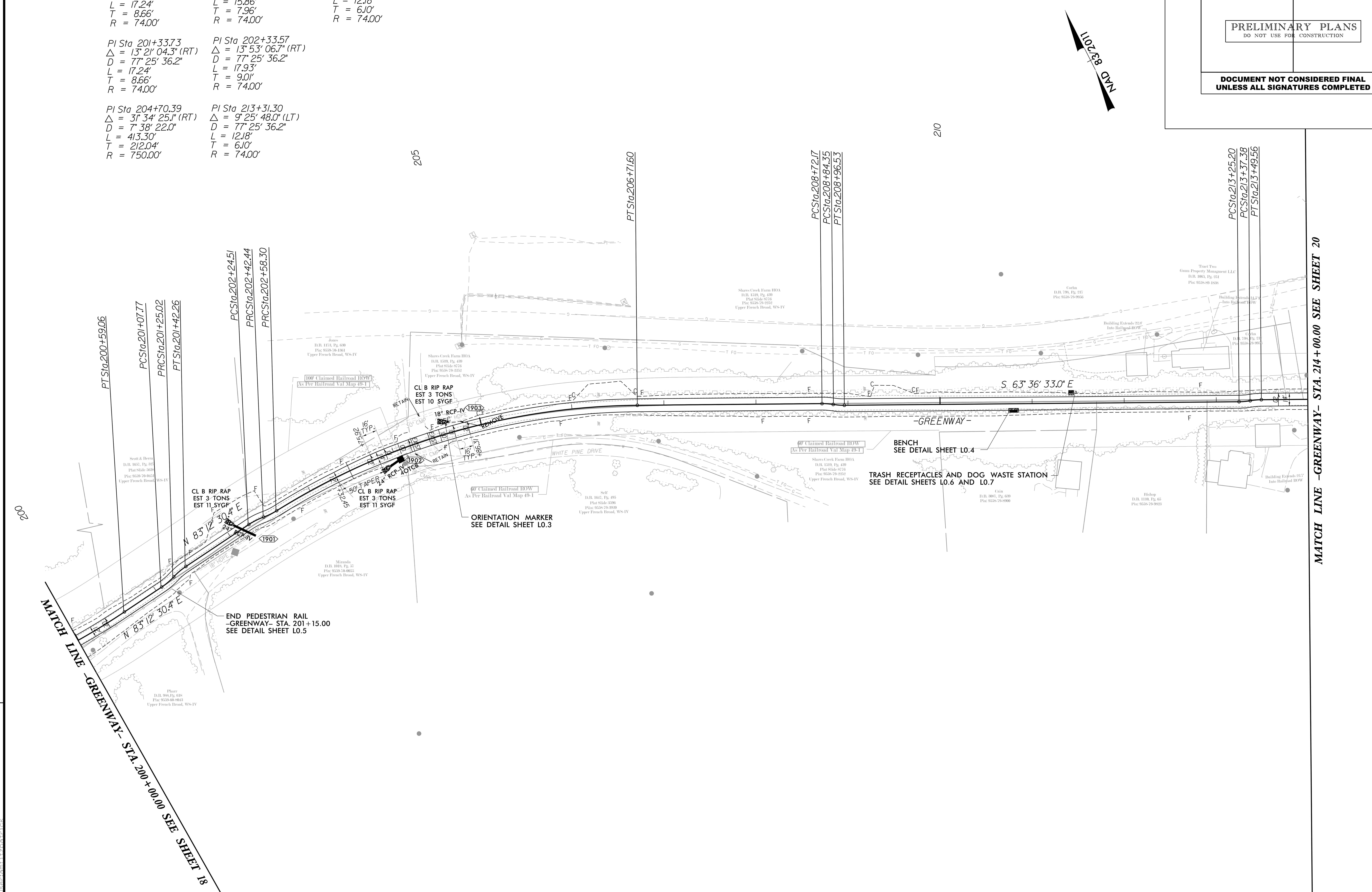
PI Sta 213+43.48
Δ = 9° 25' 48.0" (RT)
D = 77° 25' 36.2"
L = 12.18'
T = 6.10'
R = 74.00'

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

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

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

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



PROJECT REFERENCE NO.	SHEET NO.
BL-0007	20
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

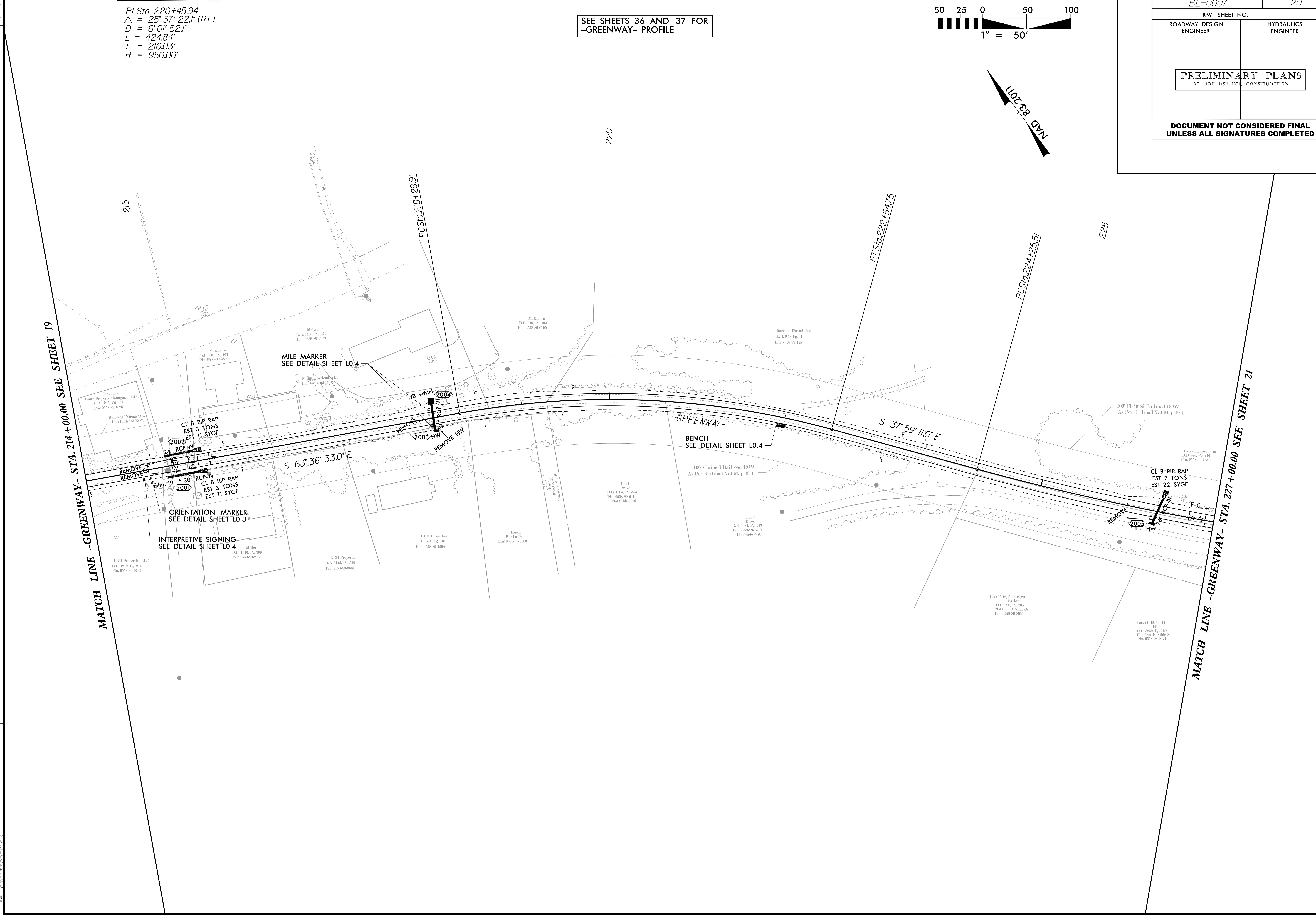
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-GREENWAY- CURVE DATA

PI Sta 220+45.94
△ = 25° 37' 22.1" (RT)
D = 6° 01' 52.1"
L = 424.84'
T = 216.03'
R = 950.00'

SEE SHEETS 36 AND 37 FOR -GREENWAY- PROFILE



REVISIONS

8/17/99

1/7/2023 11:0:46 AM

-GREENWAY- CURVE DATA

PI Sta 229+92.90	PI Sta 238+82.61
Δ = 22° 08′ 24.2″ (LT)	Δ = 0° 06′ 10.8″ (LT)
D = 1° 58′ 32.6″	D = 0° 08′ 35.7″
L = 1,120.61′	L = 71.91′
T = 567.38′	T = 35.96′
R = 2,900.00′	R = 40,000.00′

SEE SHEET 37 FOR -GREENWAY- PROFILE

50 25 0 50 100
1″ = 50′

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	21
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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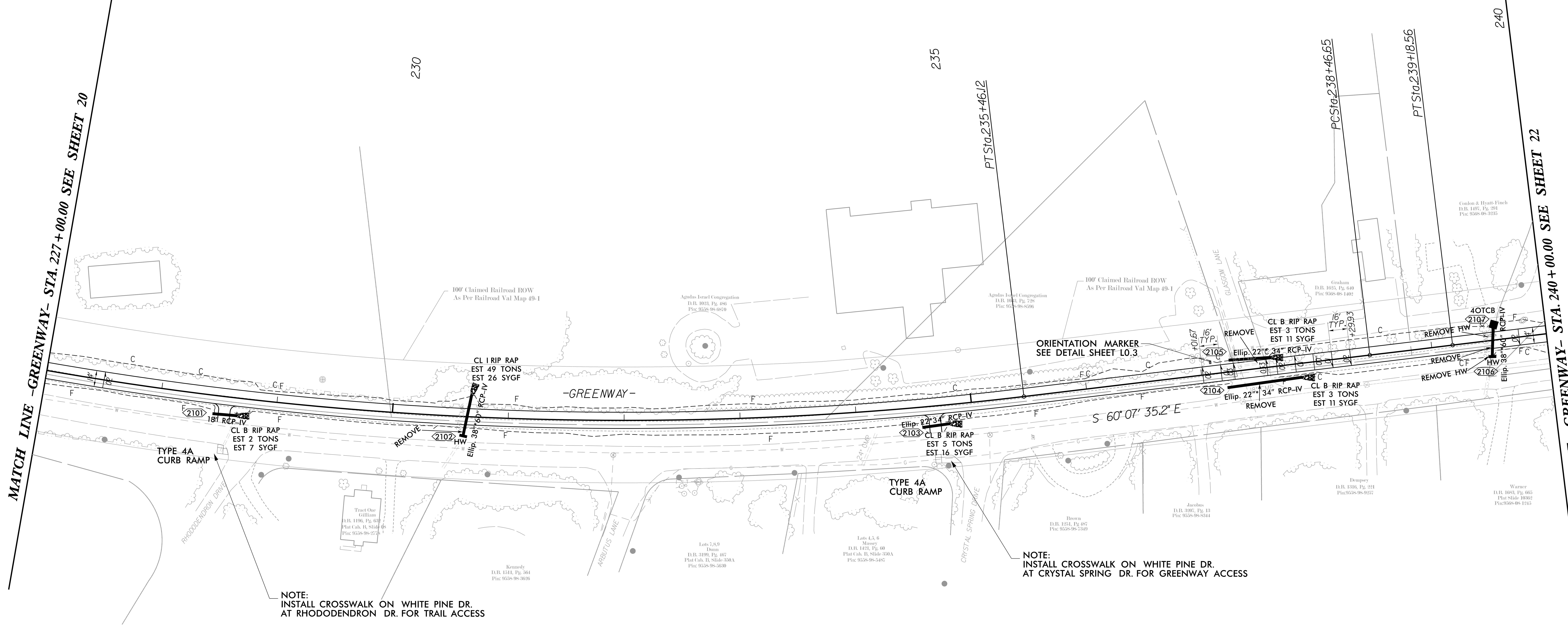
REVISIONS



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+46.12
PC Sta 238+46.65
PT Sta 239+18.56
-GREENWAY-
S 60° 07′ 35.2″ E
100′ Claimed Railroad ROW As Per Railroad Val Map 49-1
CL I RIP RAP EST 49 TONS EST 26 SYGF
CL B RIP RAP EST 2 TONS EST 7 SYGF
CL B RIP RAP EST 5 TONS EST 16 SYGF
CL B RIP RAP EST 3 TONS EST 11 SYGF
18″ RCP-IV
Ellip. 38″x60″ RCP-IV
Ellip. 22″x34″ RCP-IV
Ellip. 38″x60″ RCP-IV
4OTCB
REMOVE
REMOVE HW
HW
2101
2102
2103
2104
2105
2106
2107
ORIENTATION MARKER SEE DETAIL SHEET L0.3
TYPE 4A CURB RAMP
TYPE 4A CURB RAMP
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
RHODODENDRON DRIVE
ARBUTUS LANE
CRYSTAL SPRING DRIVE
GLASGOW LANE
16′ TYP.

8/17/99

1/7/2023 11:11:05 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	22

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
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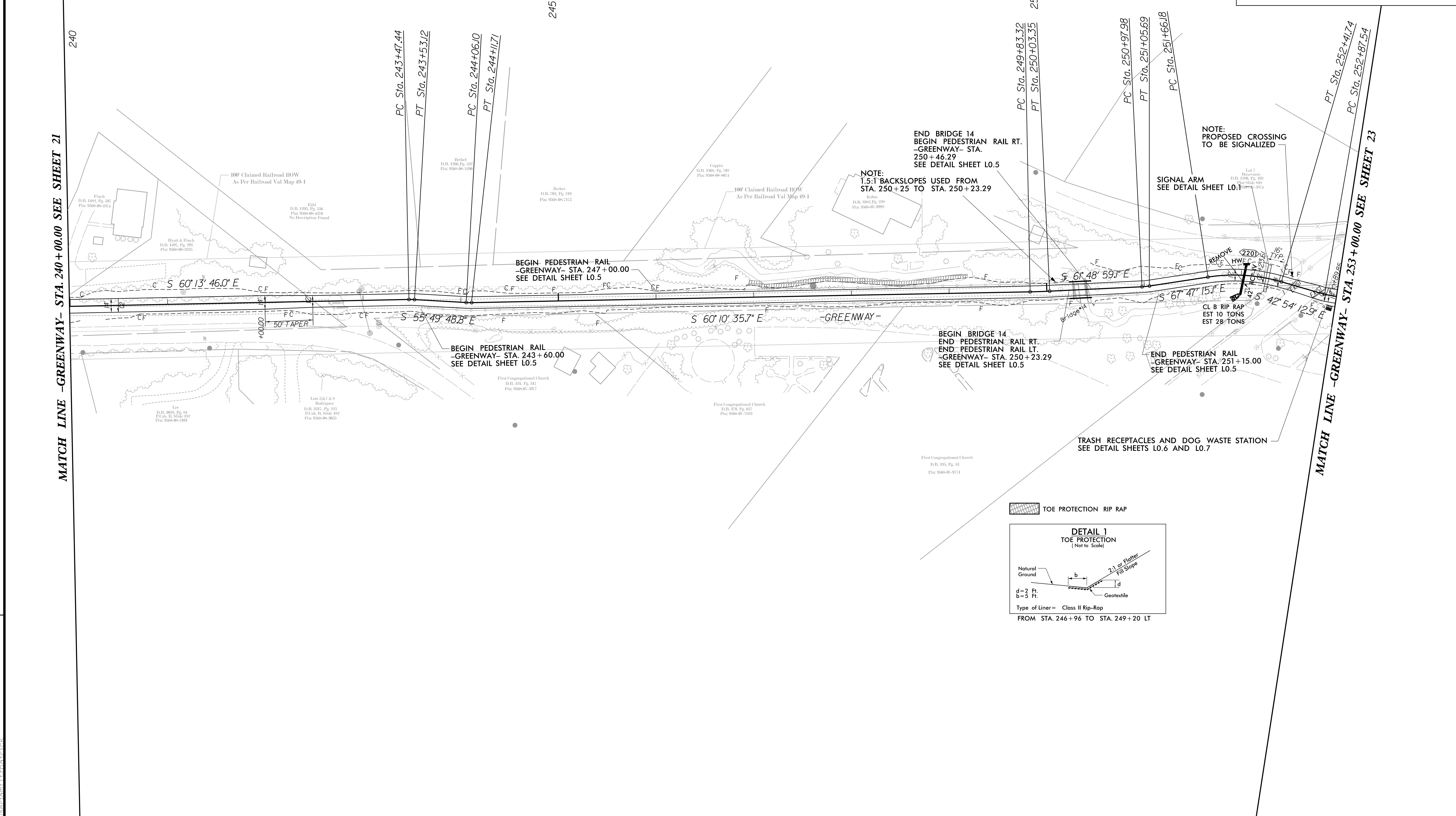
-GREENWAY- CURVE DATA

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 37 AND 38 FOR -GREENWAY- PROFILE

50 25 0 50 100
1″ = 50′

NAD 83/2011



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
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 67° 47′ 15.1″ E
S 42° 54′ 12.9″ E
-GREENWAY-
50′ TAPER
100′ Claimed Railroad ROW As Per Railroad Val Map 49-1
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 247+00.00 SEE DETAIL SHEET L0.5
BEGIN PEDESTRIAN RAIL -GREENWAY- STA. 243+60.00 SEE DETAIL SHEET L0.5
END BRIDGE 14 BEGIN PEDESTRIAN RAIL RT. -GREENWAY- STA. 250+46.29 SEE DETAIL SHEET L0.5
NOTE: 1.5:1 BACKSLOPES USED FROM STA. 250+25 TO STA. 250+23.29
BEGIN BRIDGE 14 END PEDESTRIAN RAIL RT. END PEDESTRIAN RAIL LT. -GREENWAY- STA. 250+23.29 SEE DETAIL SHEET L0.5
Bridge 14
NOTE: PROPOSED CROSSING TO BE SIGNALIZED
SIGNAL ARM SEE DETAIL SHEET L0.1
REMOVE
HW
CL B RIP RAP EST 10 TONS EST 28 TONS
END PEDESTRIAN RAIL -GREENWAY- STA. 251+15.00 SEE DETAIL SHEET L0.5
TRASH RECEPTACLES AND DOG WASTE STATION SEE DETAIL SHEETS L0.6 AND L0.7
First Congregational Church
TOE PROTECTION RIP RAP
DETAIL 1
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
d=2 Ft.
b=5 Ft.
Geotextile
Type of Liner= Class II Rip-Rap
FROM STA. 246+96 TO STA. 249+20 LT

REVISIONS

8/17/99

1/9/2023 2:55:57 PM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SEE SHEET 38 FOR -GREENWAY- PROFILE

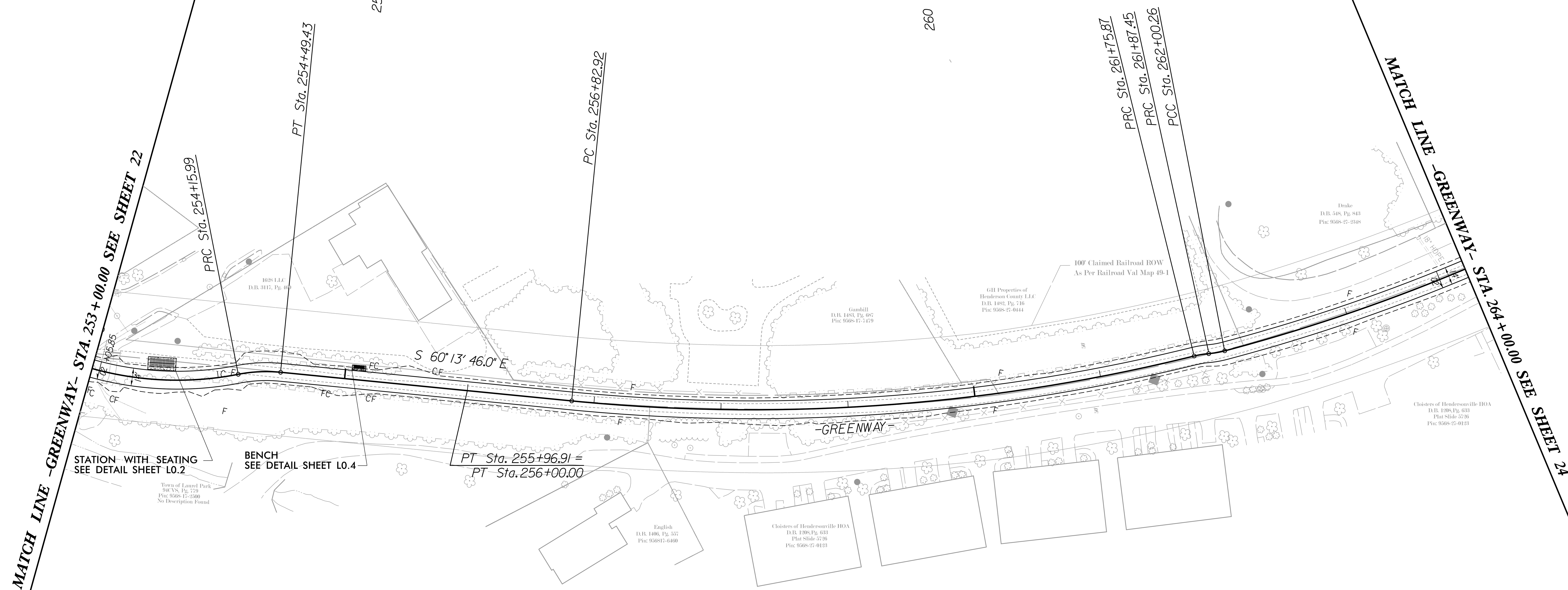
REVISIONS

-GREENWAY- CURVE DATA

PI Sta 253+53.22	PI Sta 254+32.83	PI Sta 259+31.80	PI Sta 261+81.67	PI Sta 261+93.87
Δ = 29° 26′ 18.3″ (LT)	Δ = 16° 39′ 34.7″ (RT)	Δ = 19° 28′ 43.0″ (LT)	Δ = 8° 57′ 45.7″ (RT)	Δ = 9° 55′ 17.2″ (LT)
D = 22° 55′ 05.9″	D = 49° 49′ 20.7″	D = 3° 57′ 05.2″	D = 77° 25′ 36.2″	D = 77° 25′ 36.2″
L = 128.45′	L = 33.44′	L = 492.95′	L = 11.58′	L = 12.81′
T = 65.68′	T = 16.84′	T = 248.88′	T = 5.80′	T = 6.42′
R = 250.00′	R = 115.00′	R = 1,450.00′	R = 74.00′	R = 74.00′

PI Sta 263+08.34
Δ = 8° 30′ 49.4″ (LT)
D = 3° 56′ 45.6″
L = 215.76′
T = 108.08′
R = 1,452.00′

NAD 83/2011



50 25 0 50 100
1″ = 50′

8/17/99

1/7/2023 11:54:22 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	24
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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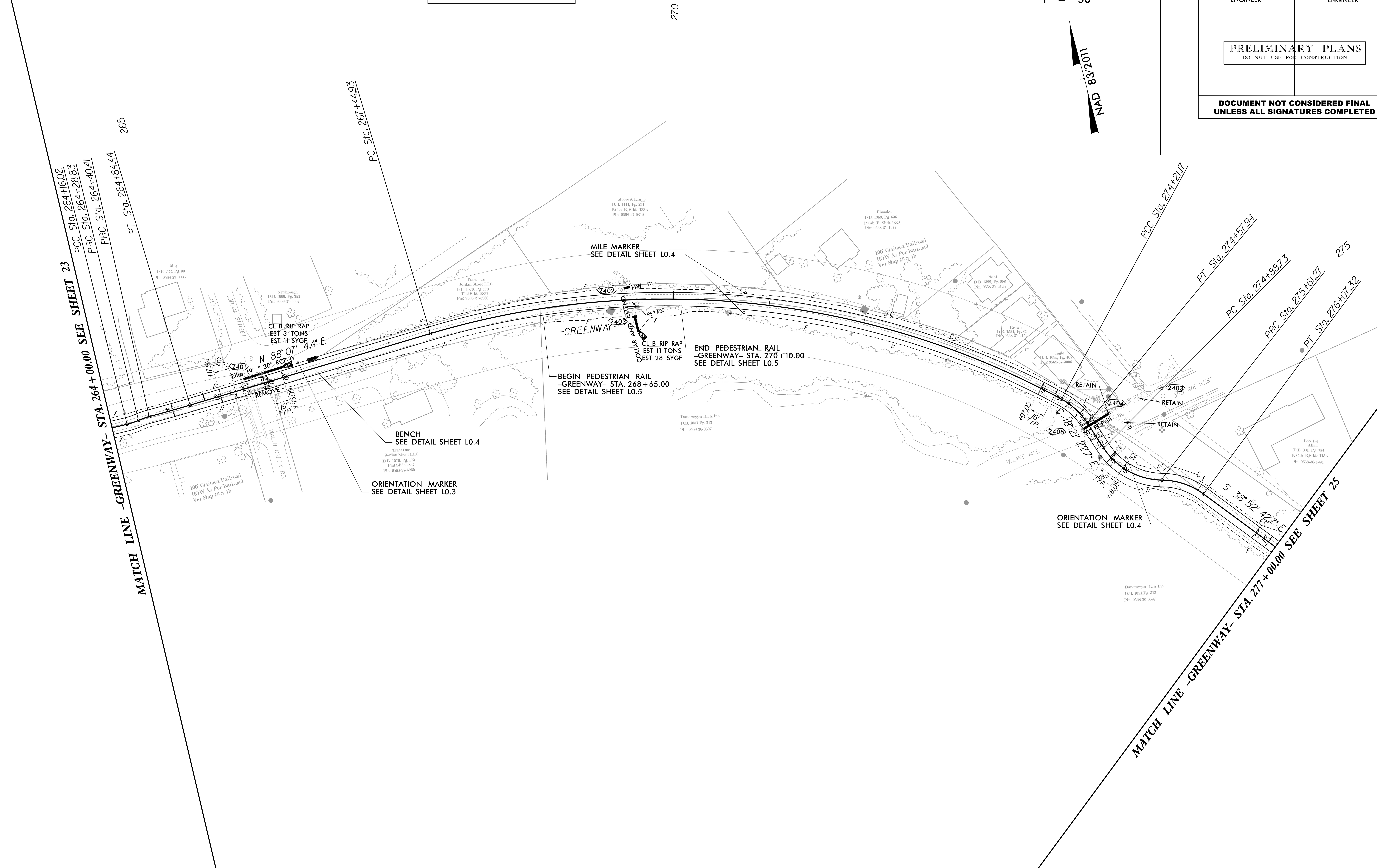
REVISIONS

SEE SHEETS 38 AND 39 FOR -GREENWAY- PROFILE



50 25 0 50 100
1" = 50'
NAD 83/2011
MATCH LINE -GREENWAY- STA. 264+00.00 SEE SHEET 23
MATCH LINE -GREENWAY- STA. 277+00.00 SEE SHEET 25
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
265
270
275
N 88° 07' 14.4" E
S 38° 52' 42.7" E
-GREENWAY-
CL B RIP RAP
EST 3 TONS
EST 11 SYGF
CL B RIP RAP
EST 11 TONS
EST 28 SYGF
MILE MARKER
SEE DETAIL SHEET L0.4
BEGIN PEDESTRIAN RAIL
-GREENWAY- STA. 268+65.00
SEE DETAIL SHEET L0.5
END PEDESTRIAN RAIL
-GREENWAY- STA. 270+10.00
SEE DETAIL SHEET L0.5
BENCH
SEE DETAIL SHEET L0.4
ORIENTATION MARKER
SEE DETAIL SHEET L0.3
ORIENTATION MARKER
SEE DETAIL SHEET L0.4
COLLAR AND EXTEND
RETAIN
REMOVE
RCP-IV
RCP-III
2401
2402
2403
2404
2405
JORDAN STREET
W. LAKE AVE.

-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'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	25

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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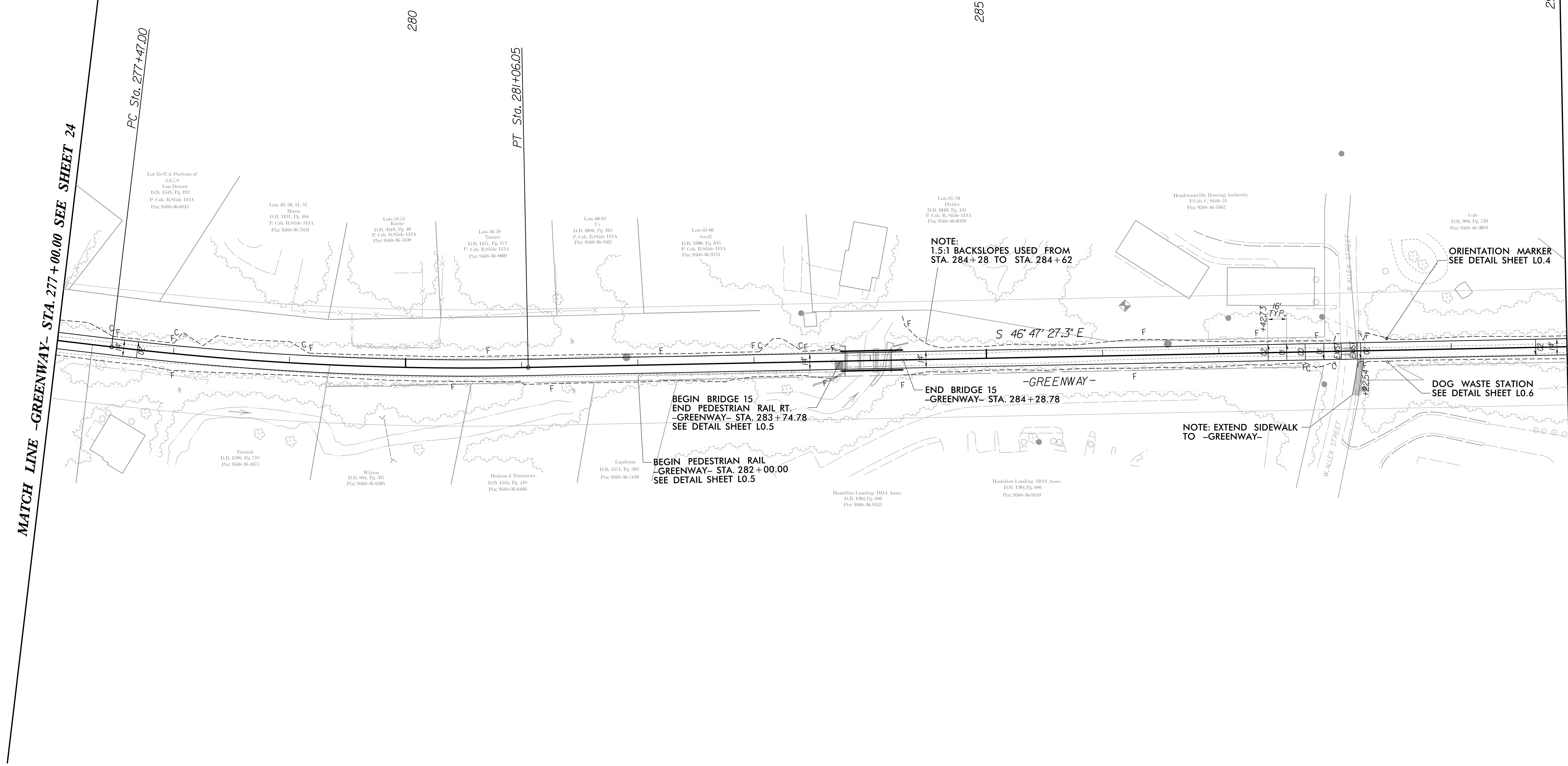
-GREENWAY- CURVE DATA

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

SEE SHEET 39 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011



REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	26

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	27
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

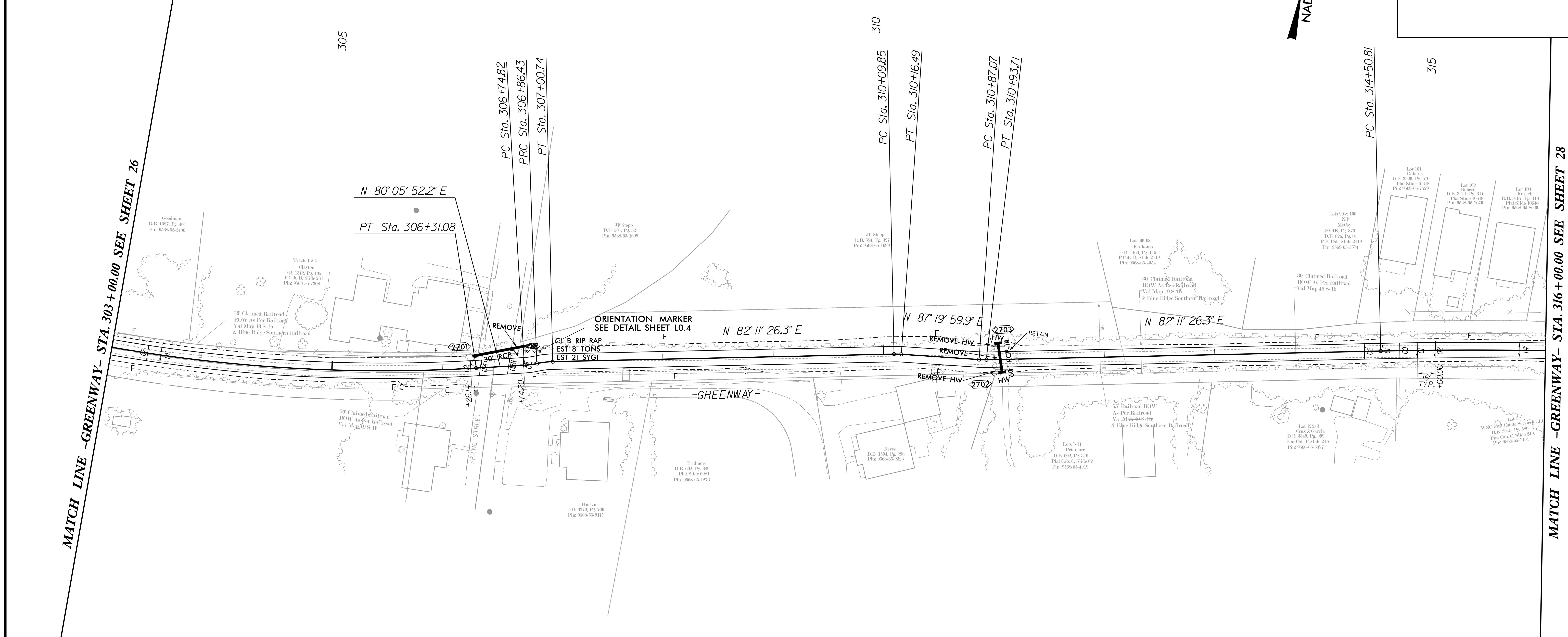
-GREENWAY- CURVE DATA

PI Sta 306+80.64	PI Sta 306+93.61	PI Sta 310+13.17	PI Sta 310+90.39
△ = 8° 59' 11.1" (LT)	△ = 11° 04' 45.2" (RT)	△ = 5° 08' 33.6" (RT)	△ = 5° 08' 33.6" (LT)
D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"	D = 77° 25' 36.2"
L = 11.61'	L = 14.31'	L = 6.64'	L = 6.64'
T = 5.82'	T = 7.18'	T = 3.32'	T = 3.32'
R = 74.00'	R = 74.00'	R = 74.00'	R = 74.00'

SEE SHEET 40 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011



1/7/2023 11:13:23 AM

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

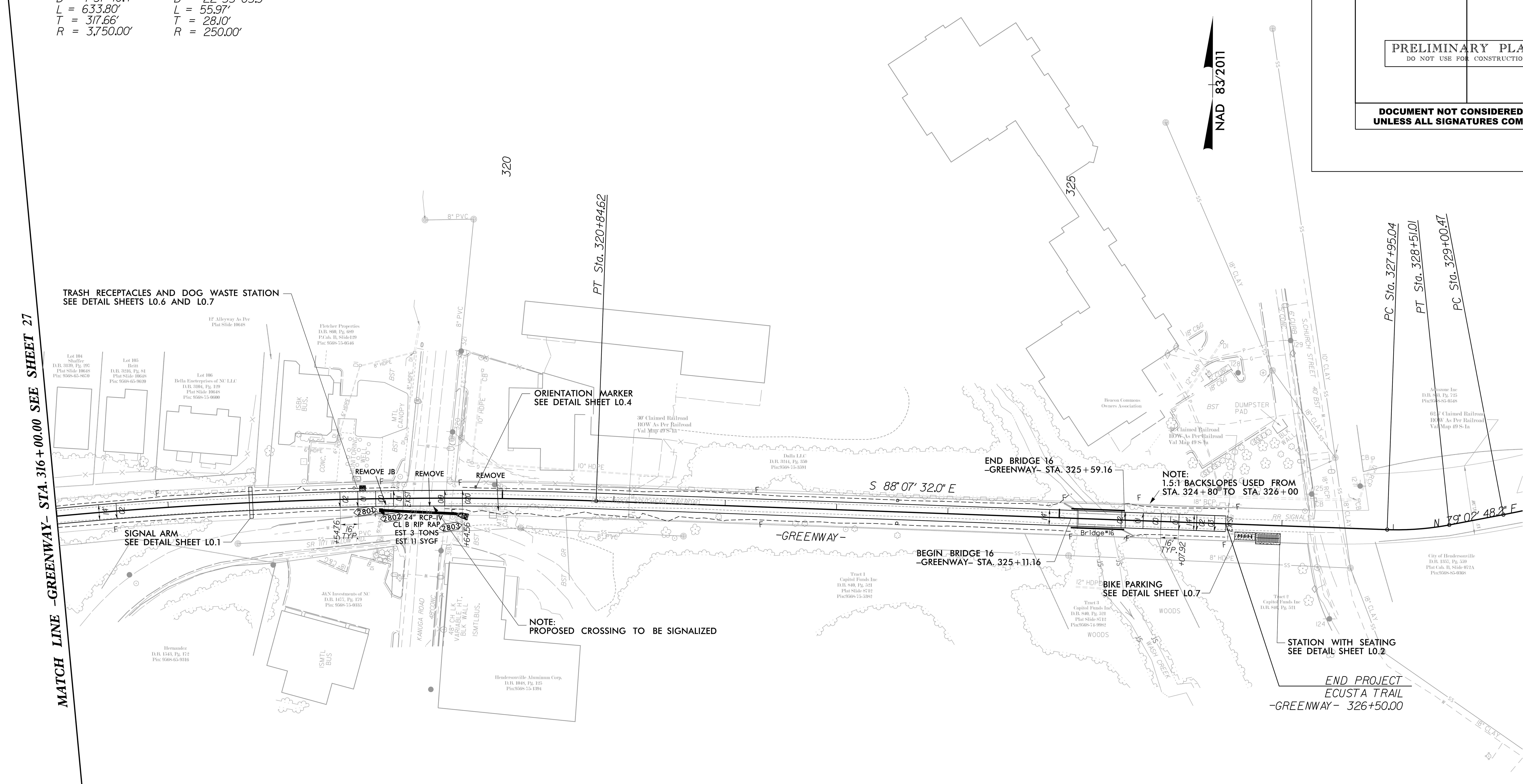
-GREENWAY- CURVE DATA

PI Sta 317+68.47	PI Sta 328+23.14
△ = 9° 41' 01.8" (RT)	△ = 12° 49' 39.8" (LT)
D = 1° 31' 40.4"	D = 22° 55' 05.9"
L = 633.80'	L = 55.97'
T = 317.66'	T = 28.10'
R = 3,750.00'	R = 250.00'

SEE SHEETS 40 AND 41 FOR -GREENWAY- PROFILE

50 25 0 50 100
1" = 50'

NAD 83/2011



REVISIONS

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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–GREENWAY–

BEGIN GRADE –GREENWAY– EL. 2,068.87

PI = 12+14.76
EL = 2,066.84'
VC = 50'

(−)1.6937%

(−)1.0708%

BREVARD ROAD (US 64)

PI = 13+82.68
EL = 2,065.14'
VC = 20'

(−)3.1223%

BEGIN BRIDGE II –GREENWAY– STA. 14+04.42

PI = 13+13.52
EL = 2,067.30'
VC = 20'

(+)0.3006%

END BRIDGE II –GREENWAY– STA. 14+64.92

PI = 15+72.13
EL = 2,065.71'
VC = 50'

(−)2.4301%

PI = 16+98.59
EL = 2,063.79'
VC = 50'

(−)0.4625%

(−)1.8088%

PI = 16+40.00
EL = 2,064.06'
VC = 20'

PI = 17+48.59
EL = 2,062.89'
VC = 20'

(+)0.3031%

PI = 20+43.59
EL = 2,063.78'
VC = 50'

(+)1.2268%

PI = 21+98.59
EL = 2,065.68'
VC = 50'

(+)0.3036%

MATCH LINE –GREENWAY– STA. 23+00 SEE SHEET 29

–GREENWAY–

MATCH LINE –GREENWAY– STA. 23+00 SEE SHEET 29

(+)0.3038%

PI = 29+10.00
EL = 2,067.84'
VC = 500'

(−)0.1934%

PI = 31+95.86
EL = 2,067.29'
VC = 50'

(+)0.4588%

PI = 33+15.36
EL = 2,067.84'
VC = 50'

(+)1.2000%

HUNTERS GLEN LANE

PI = 34+30.53
EL = 2,069.59'
VC = 20'

(−)1.3937%

PI = 34+84.60
EL = 2,068.84'
VC = 50'

(+)0.5202%

PI = 35+39.46
EL = 2,069.12'
VC = 50'

(+)0.3033%

MATCH LINE –GREENWAY– STA. 36+00 SEE SHEET 30

1/7/2023 11:16:14 AM
\\Ecusta_rail_rdy_pl129.dgn

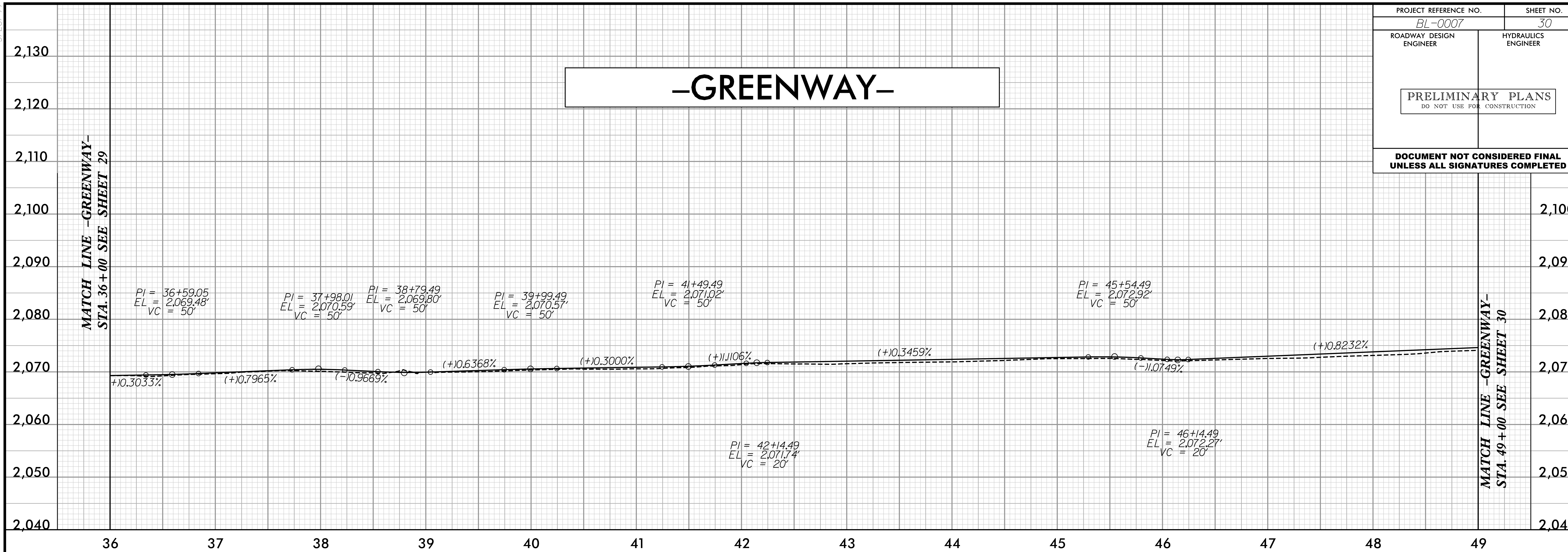
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	30

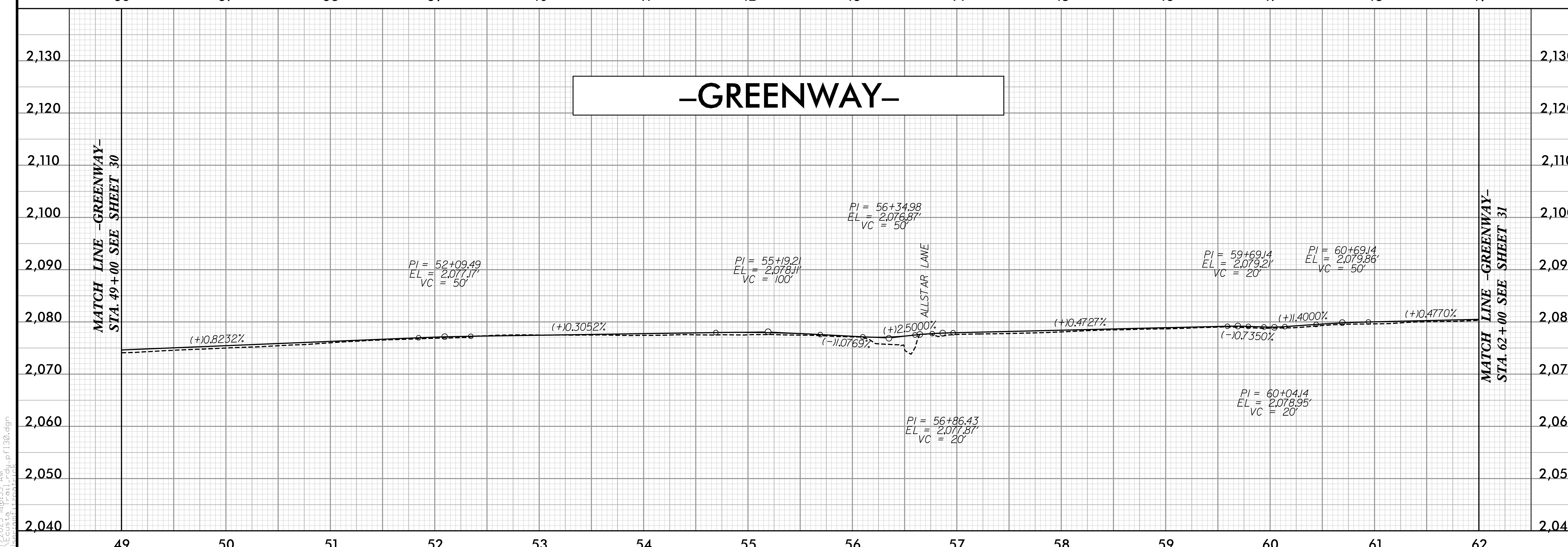
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





PROJECT REFERENCE NO.	SHEET NO.
BL-0007	31

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
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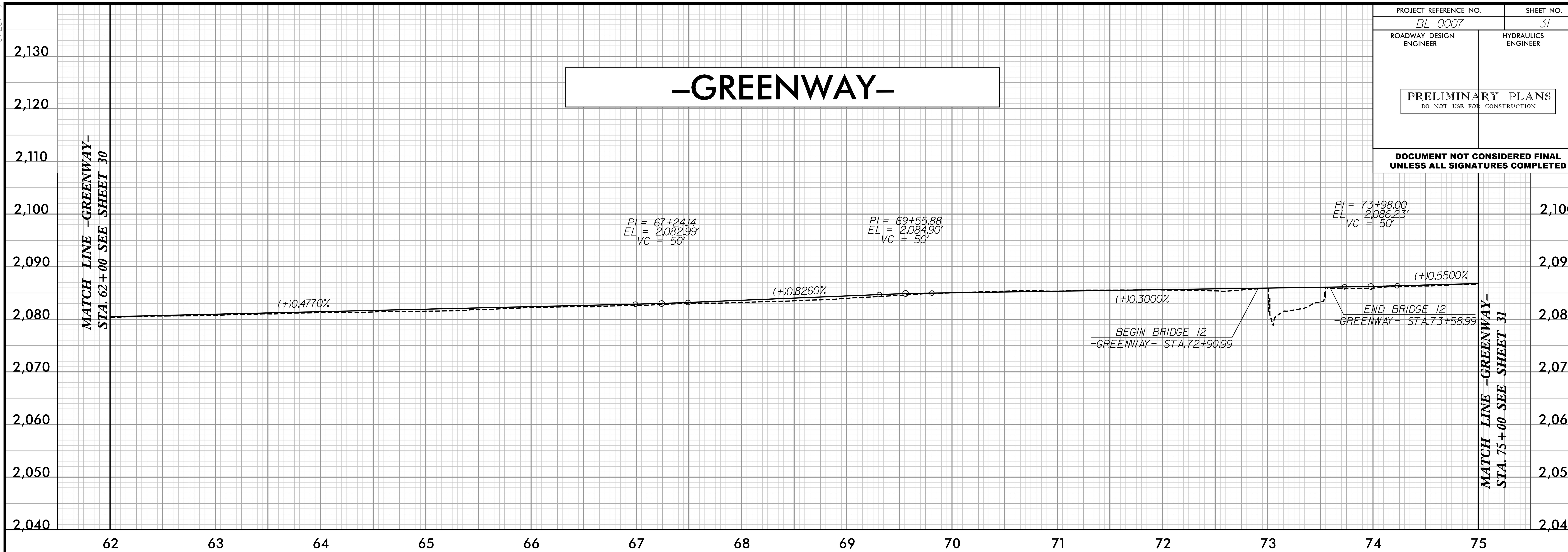
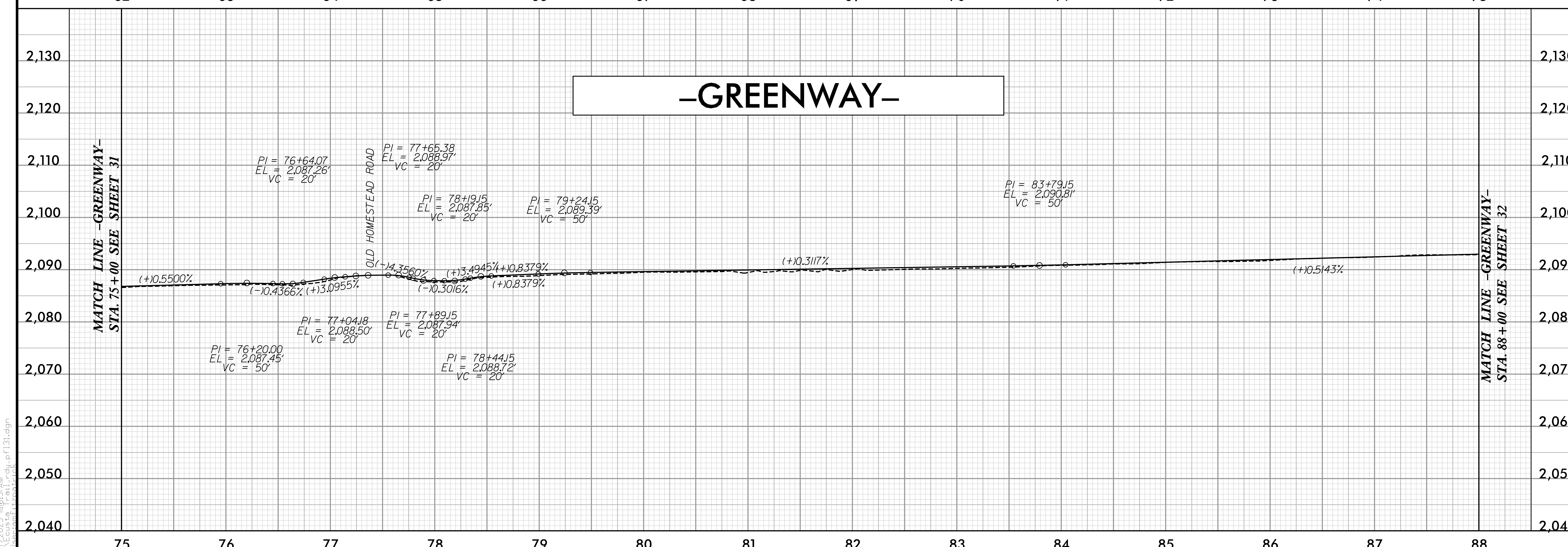


-GREENWAY-
MATCH LINE -GREENWAY- STA. 62+00 SEE SHEET 30
MATCH LINE -GREENWAY- STA. 75+00 SEE SHEET 31
PI = 67+24.14
EL = 2,082.99'
VC = 50'
PI = 69+55.88
EL = 2,084.90'
VC = 50'
PI = 73+98.00
EL = 2,086.23'
VC = 50'
(+)0.4770%
(+)0.8260%
(+)0.3000%
(+)0.5500%
BEGIN BRIDGE 12
-GREENWAY- STA.72+90.99
END BRIDGE 12
-GREENWAY- STA.73+58.99
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060
2,050
2,040
62
63
64
65
66
67
68
69
70
71
72
73
74
75



-GREENWAY-
MATCH LINE -GREENWAY- STA. 75+00 SEE SHEET 31
MATCH LINE -GREENWAY- STA. 88+00 SEE SHEET 32
OLD HOMESTEAD ROAD
PI = 76+64.07
EL = 2,087.26'
VC = 20'
PI = 77+65.38
EL = 2,088.97'
VC = 20'
PI = 78+19.15
EL = 2,087.85'
VC = 20'
PI = 79+24.15
EL = 2,089.39'
VC = 50'
PI = 83+79.15
EL = 2,090.81'
VC = 50'
PI = 77+04.18
EL = 2,088.50'
VC = 20'
PI = 77+89.15
EL = 2,087.94'
VC = 20'
PI = 76+20.00
EL = 2,087.45'
VC = 50'
PI = 78+44.15
EL = 2,088.72'
VC = 20'
(+)0.5500%
(-)0.4366%
(+)3.0955%
(-)4.3560%
(-)0.3016%
(+)3.4945%
(+)0.8379%
(+)0.8379%
(+)0.3117%
(+)0.5143%
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060
2,050
2,040
75
76
77
78
79
80
81
82
83
84
85
86
87
88

5/28/99

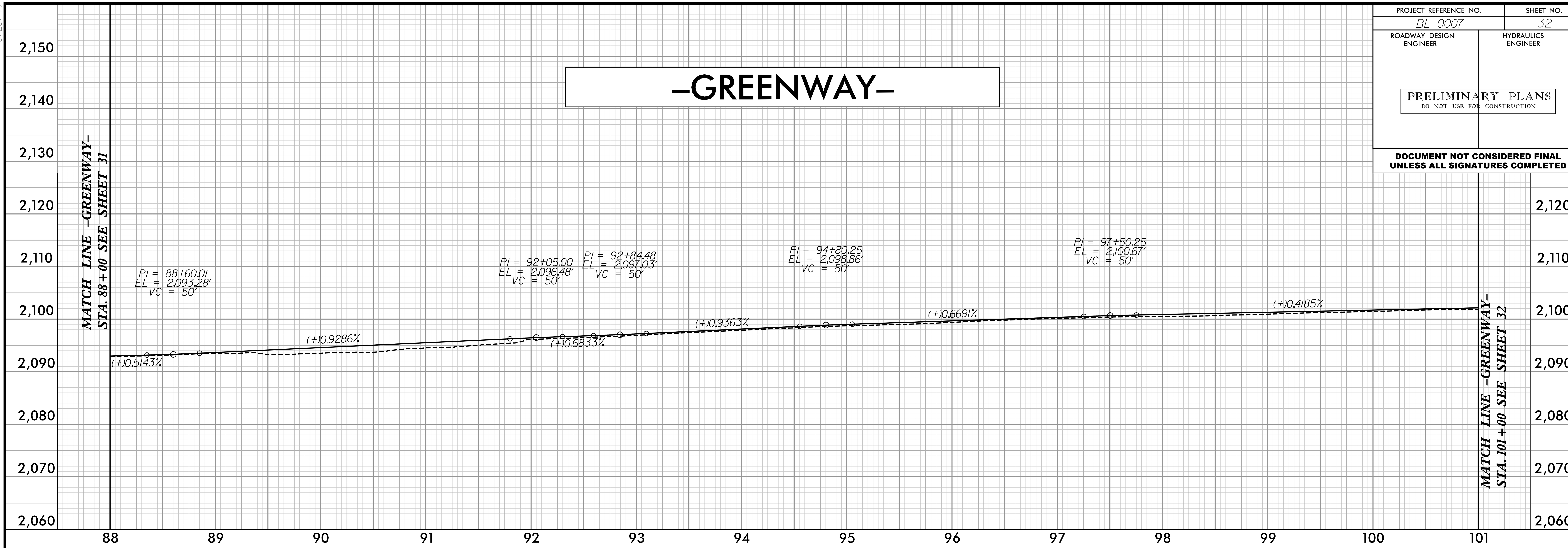
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	32

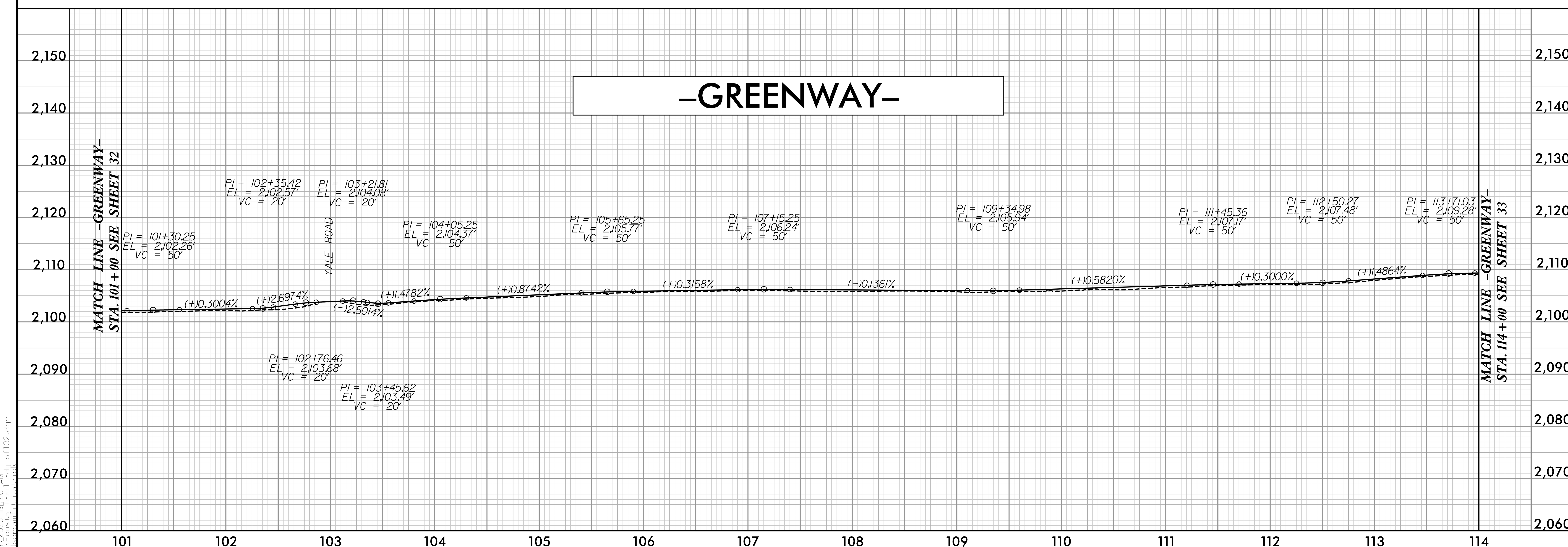
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


-GREENWAY-
MATCH LINE -GREENWAY- STA. 88+00 SEE SHEET 31
MATCH LINE -GREENWAY- STA. 101+00 SEE SHEET 32
PI = 88+60.01 EL = 2,093.28' VC = 50'
PI = 92+05.00 EL = 2,096.48' VC = 50'
PI = 92+84.48 EL = 2,097.03' VC = 50'
PI = 94+80.25 EL = 2,098.86' VC = 50'
PI = 97+50.25 EL = 2,100.67' VC = 50'
(+)0.5143%
(+)0.9286%
(+)0.6833%
(+)0.9363%
(+)0.6691%
(+)0.4185%
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060
88
89
90
91
92
93
94
95
96
97
98
99
100
101


-GREENWAY-
MATCH LINE -GREENWAY- STA. 101+00 SEE SHEET 32
MATCH LINE -GREENWAY- STA. 114+00 SEE SHEET 33
PI = 101+30.25 EL = 2,102.26' VC = 50'
PI = 102+35.42 EL = 2,102.57' VC = 20'
PI = 103+21.81 EL = 2,104.08' VC = 20'
YALE ROAD
PI = 104+05.25 EL = 2,104.37' VC = 50'
PI = 105+65.25 EL = 2,105.77' VC = 50'
PI = 107+15.25 EL = 2,106.24' VC = 50'
PI = 109+34.98 EL = 2,105.94' VC = 50'
PI = 111+45.36 EL = 2,107.17' VC = 50'
PI = 112+50.27 EL = 2,107.48' VC = 50'
PI = 113+71.03 EL = 2,109.28' VC = 50'
PI = 102+76.46 EL = 2,103.68' VC = 20'
PI = 103+45.62 EL = 2,103.49' VC = 20'
(+)0.3004%
(+)2.6974%
(−)2.5014%
(+)1.4782%
(+)0.8742%
(+)0.3158%
(−)0.1361%
(+)0.5820%
(+)0.3000%
(+)1.4864%
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
2,060
101
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113
114

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	33

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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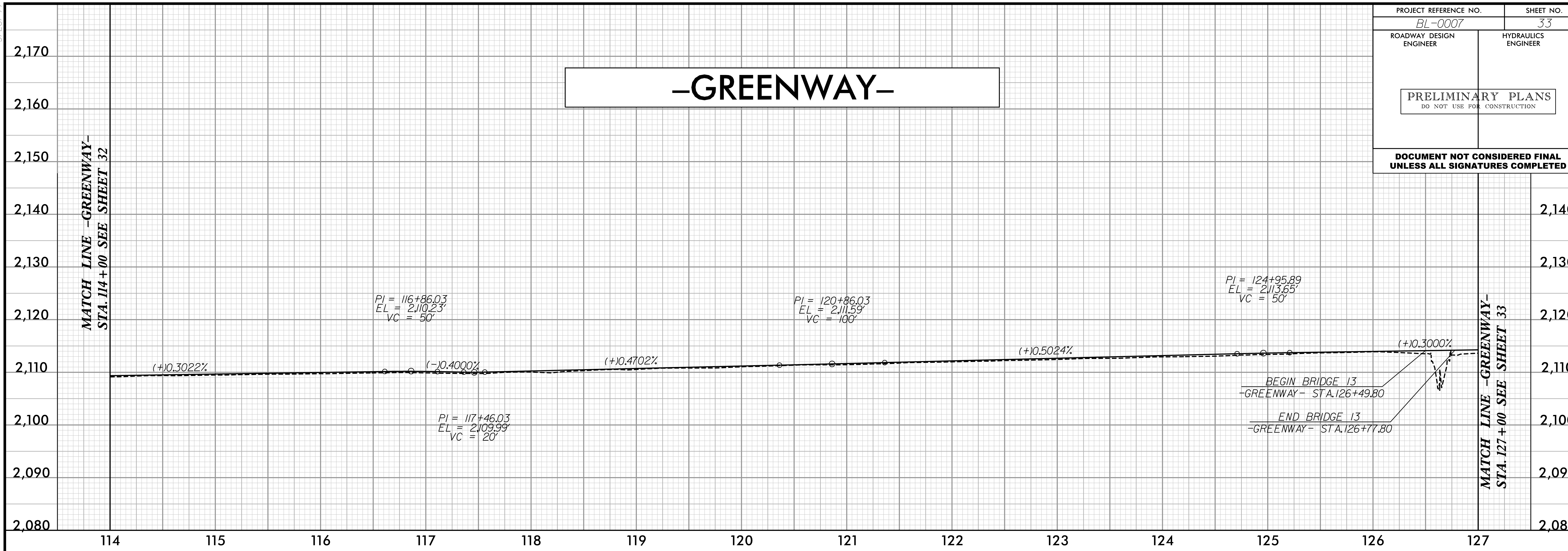

-GREENWAY-
MATCH LINE -GREENWAY- STA. 114+00 SEE SHEET 32
MATCH LINE -GREENWAY- STA. 127+00 SEE SHEET 33
PI = 116+86.03
EL = 2,110.23'
VC = 50'
PI = 117+46.03
EL = 2,109.99'
VC = 20'
PI = 120+86.03
EL = 2,111.59'
VC = 100'
PI = 124+95.89
EL = 2,113.65'
VC = 50'
(+)0.3022%
(-)0.4000%
(+)0.4702%
(+)0.5024%
(+)0.3000%
BEGIN BRIDGE 13
-GREENWAY- STA.126+49.80
END BRIDGE 13
-GREENWAY- STA.126+77.80
2,170
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
114
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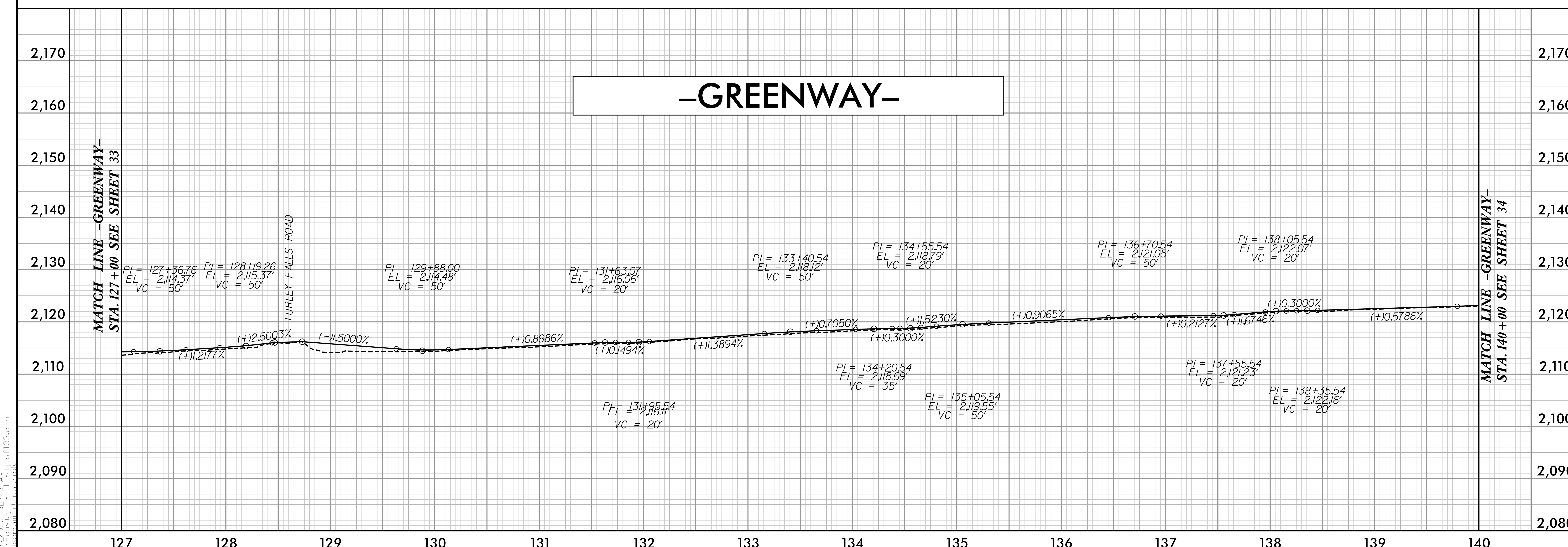

-GREENWAY-
MATCH LINE -GREENWAY- STA. 127+00 SEE SHEET 33
MATCH LINE -GREENWAY- STA. 140+00 SEE SHEET 34
TURLEY FALLS ROAD
PI = 127+36.76
EL = 2,114.37'
VC = 50'
PI = 128+19.26
EL = 2,115.37'
VC = 50'
PI = 129+88.00
EL = 2,114.48'
VC = 50'
PI = 131+63.07
EL = 2,116.06'
VC = 20'
PI = 131+95.54
EL = 2,116.11'
VC = 20'
PI = 133+40.54
EL = 2,118.12'
VC = 50'
PI = 134+20.54
EL = 2,118.69'
VC = 35'
PI = 134+55.54
EL = 2,118.79'
VC = 20'
PI = 135+05.54
EL = 2,119.55'
VC = 50'
PI = 136+70.54
EL = 2,121.05'
VC = 50'
PI = 137+55.54
EL = 2,121.23'
VC = 20'
PI = 138+05.54
EL = 2,122.07'
VC = 20'
PI = 138+35.54
EL = 2,122.16'
VC = 20'
(+)1.2177%
(+)2.5003%
(-)1.5000%
(+)0.8986%
(+)0.1494%
(+)1.3894%
(+)0.7050%
(+)0.3000%
(+)1.5230%
(+)0.9065%
(+)0.2127%
(+)1.6746%
(+)0.3000%
(+)0.5786%
2,170
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
127
128
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140

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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–GREENWAY–

MATCH LINE –GREENWAY– STA. 140+00 SEE SHEET 33

PI = 140+05.34
EL = 2,123.14'
VC = 50'

(+)2.2462%

PI = 140+75.36
EL = 2,124.71'
VC = 50'

(+)0.4588%

PI = 142+00.02
EL = 2,125.28'
VC = 20'

(+)1.6397%

PT STA. 146+01.13 –GREENWAY–=
PT STA. 146+00.00 –GREENWAY–
EL = 2,131.86

PI = 146+19.77
EL = 2,132.18'
VC = 50'

(+)1.0110%

PI = 146+71.50
EL = 2,132.71'
VC = 50'

(+)1.6703%

PI = 147+76.50
EL = 2,134.46'
VC = 50'

(+)1.0623%

PI = 149+58.06
EL = 2,136.39'
VC = 50'

(+)0.9799%

PI = 151+31.48
EL = 2,138.09'
VC = 50'

(+)0.6087%

PI = 152+70.36
EL = 2,138.93'
VC = 50'

MATCH LINE –GREENWAY– STA. 153+00 SEE SHEET 34

2,100 2,110 2,120 2,130 2,140 2,150 2,160 2,170 2,180 2,190

140 141 142 143 144 145 146 147 148 149 150 151 152 153

–GREENWAY–

MATCH LINE –GREENWAY– STA. 153+00 SEE SHEET 34

PI = 157+10.36
EL = 2,143.97'
VC = 50'

(+)1.1451%

PI = 158+01.72
EL = 2,145.33'
VC = 50'

(+)1.4861%

PI = 158+63.61
EL = 2,145.90'
VC = 50'

(+)0.9196%

PI = 159+38.59
EL = 2,147.25'
VC = 50'

(+)1.8047%

PI = 159+78.61
EL = 2,147.50'
VC = 20'

(+)0.6300%

PI = 161+06.71
EL = 2,149.07'
VC = 50'

(+)1.2199%

PI = 162+95.36
EL = 2,151.63'
VC = 50'

(+)1.3576%

PI = 164+00.36
EL = 2,152.41'
VC = 20'

(+)0.7490%

PI = 165+24.46
EL = 2,154.90'
VC = 50'

(+)2.0032%

(+)0.7237%

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

2,120 2,130 2,140 2,150 2,160 2,170 2,180 2,190 2,200

153 154 155 156 157 158 159 160 161 162 163 164 165 166

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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–GREENWAY–

MATCH LINE –GREENWAY– STA. 166+00 SEE SHEET 34

MATCH LINE –GREENWAY– STA. 179+00 SEE SHEET 35

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

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

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

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

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

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

BONAIRE DRIVE

WOODBRIDGE DRIVE

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

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

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

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

(+)2.1613%
(+)0.1414%
(+)0.4065%
(+)1.4111%
(+)1.2751%
(+)2.0000%
(+)4.4858%
(−)4.7842%
(−)1.0000%
(+)1.8408%
(+)1.2448%

2,220
2,210
2,200
2,190
2,180
2,170
2,160
2,150
2,140

166 179

–GREENWAY–

MATCH LINE –GREENWAY– STA. 179+00 SEE SHEET 35

MATCH LINE –GREENWAY– STA. 192+00 SEE SHEET 36

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

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

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

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

HILLSIDE DRIVE

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

PI = 188+00.67
EL = 2,182.14'
VC = 50'

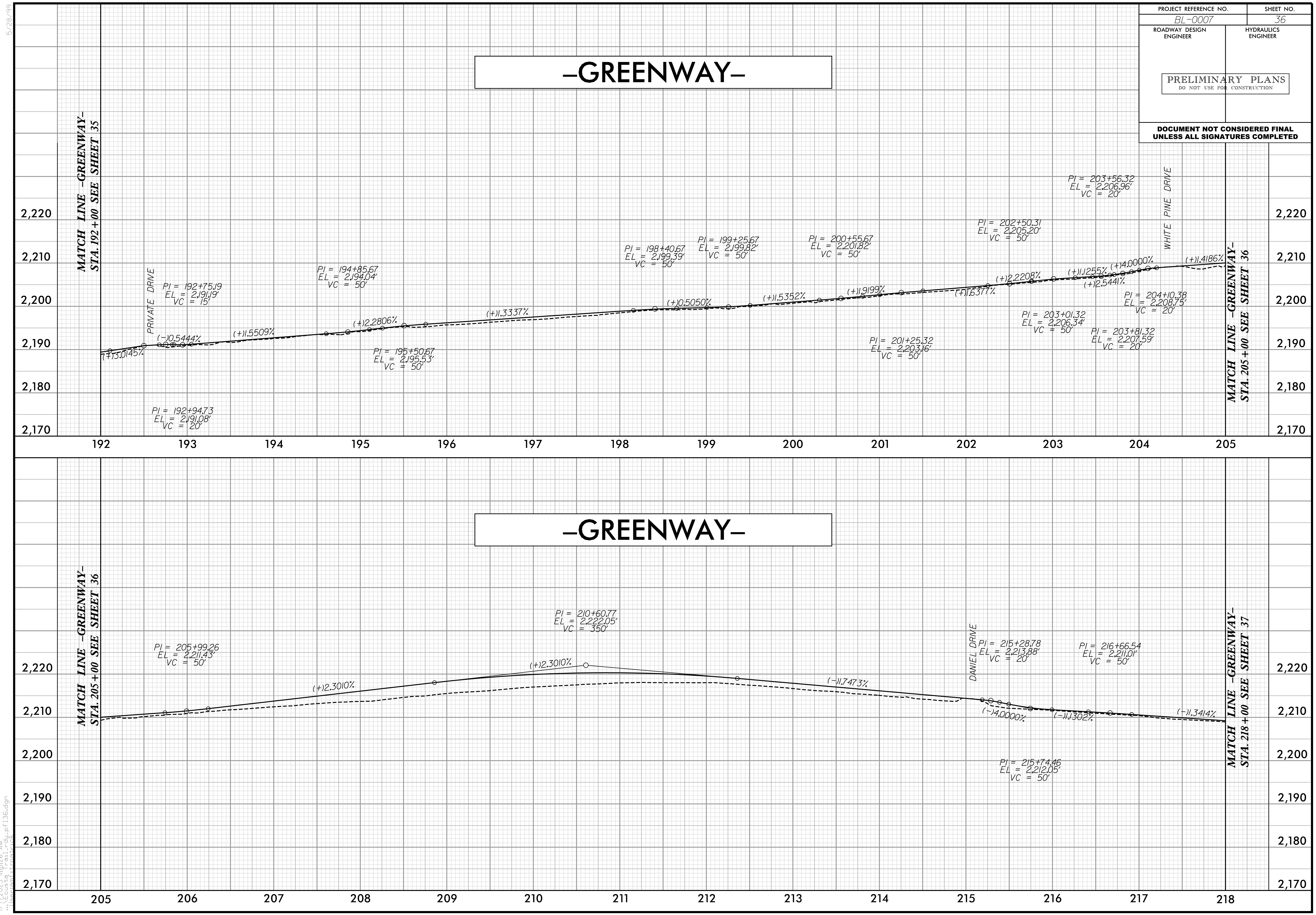
PI = 191+85.67
EL = 2,188.97'
VC = 50'

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

(+)1.9289%
(+)1.2238%
(+)1.8483%
(+)1.0520%
(+)1.6405%
(−)2.0092%
(+)0.8902%
(+)1.8377%
(+)1.5297%

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

179 180 181 182 183 184 185 186 187 188 189 190 191 192



PROJECT REFERENCE NO.
SHEET NO.
BL-0007
36
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
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-GREENWAY-
MATCH LINE -GREENWAY- STA. 192+00 SEE SHEET 35
MATCH LINE -GREENWAY- STA. 205+00 SEE SHEET 36
PRIVATE DRIVE
WHITE PINE DRIVE
PI = 192+75.19
EL = 2,191.19'
VC = 15'
PI = 192+94.73
EL = 2,191.08'
VC = 20'
PI = 194+85.67
EL = 2,194.04'
VC = 50'
PI = 195+50.67
EL = 2,195.53'
VC = 50'
PI = 198+40.67
EL = 2,199.39'
VC = 50'
PI = 199+25.67
EL = 2,199.82'
VC = 50'
PI = 200+55.67
EL = 2,201.82'
VC = 50'
PI = 201+25.32
EL = 2,203.16'
VC = 50'
PI = 202+50.31
EL = 2,205.20'
VC = 50'
PI = 203+01.32
EL = 2,206.34'
VC = 50'
PI = 203+56.32
EL = 2,206.96'
VC = 20'
PI = 203+81.32
EL = 2,207.59'
VC = 20'
PI = 204+10.38
EL = 2,208.75'
VC = 20'
(+)3.0145%
(-)0.5444%
(+)1.5509%
(+)2.2806%
(+)1.3337%
(+)0.5050%
(+)1.5352%
(+)1.9199%
(+)1.6377%
(+)2.2208%
(+)1.1255%
(+)2.5441%
(+)4.0000%
(+)1.4186%
2,220
2,210
2,200
2,190
2,180
2,170
192
193
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196
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200
201
202
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204
205
-GREENWAY-
MATCH LINE -GREENWAY- STA. 205+00 SEE SHEET 36
MATCH LINE -GREENWAY- STA. 218+00 SEE SHEET 37
DANIEL DRIVE
PI = 205+99.26
EL = 2,211.43'
VC = 50'
PI = 210+60.77
EL = 2,222.05'
VC = 350'
PI = 215+28.78
EL = 2,213.88'
VC = 20'
PI = 215+74.46
EL = 2,212.05'
VC = 50'
PI = 216+66.54
EL = 2,211.01'
VC = 50'
(+)2.3010%
(+)2.3010%
(-)1.7473%
(-)4.0000%
(-)1.1302%
(-)1.3414%
2,220
2,210
2,200
2,190
2,180
2,170
205
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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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–GREENWAY–

MATCH LINE –GREENWAY– STA. 218+00 SEE SHEET 36

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

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

(–)1.0609%

(–)1.5451%

(–)1.5451%

PI = 225+36.54
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'

(–)0.7408%

MATCH LINE –GREENWAY– STA. 231+00 SEE SHEET 37

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 37

(–)0.7408%

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

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

(–)1.3431%

(–)2.1811%

PI = 236+89.95
EL = 2,181.80'
VC = 50'

GLASGLOW LANE

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

(–)2.0000%

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

(–)1.7428%

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

(–)0.5523%

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

(–)2.0465%

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

(–)0.6822%

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

(–)2.8292%

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

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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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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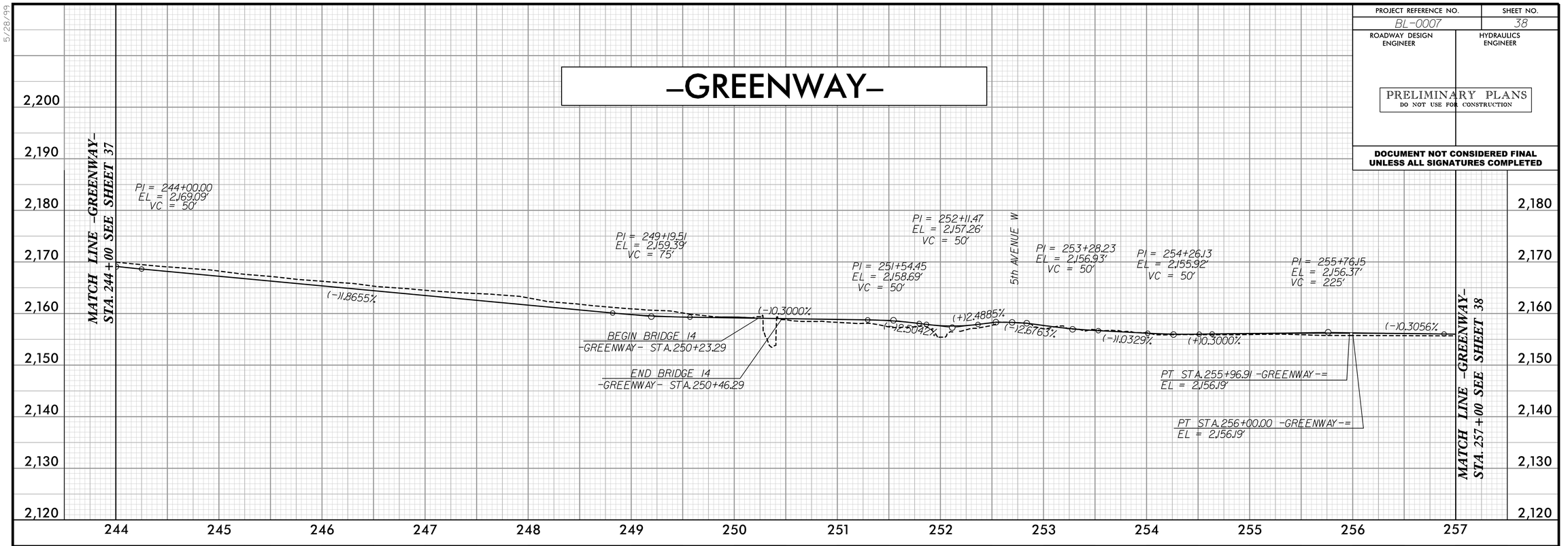
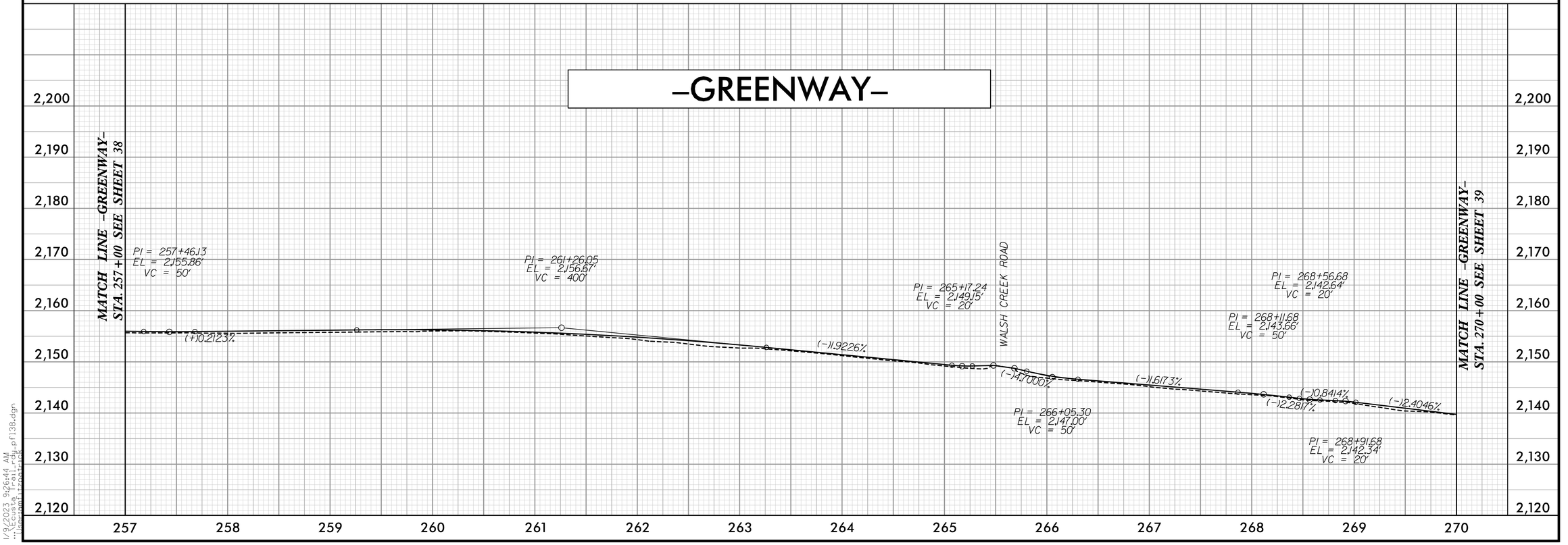
–GREENWAY–



–GREENWAY–



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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
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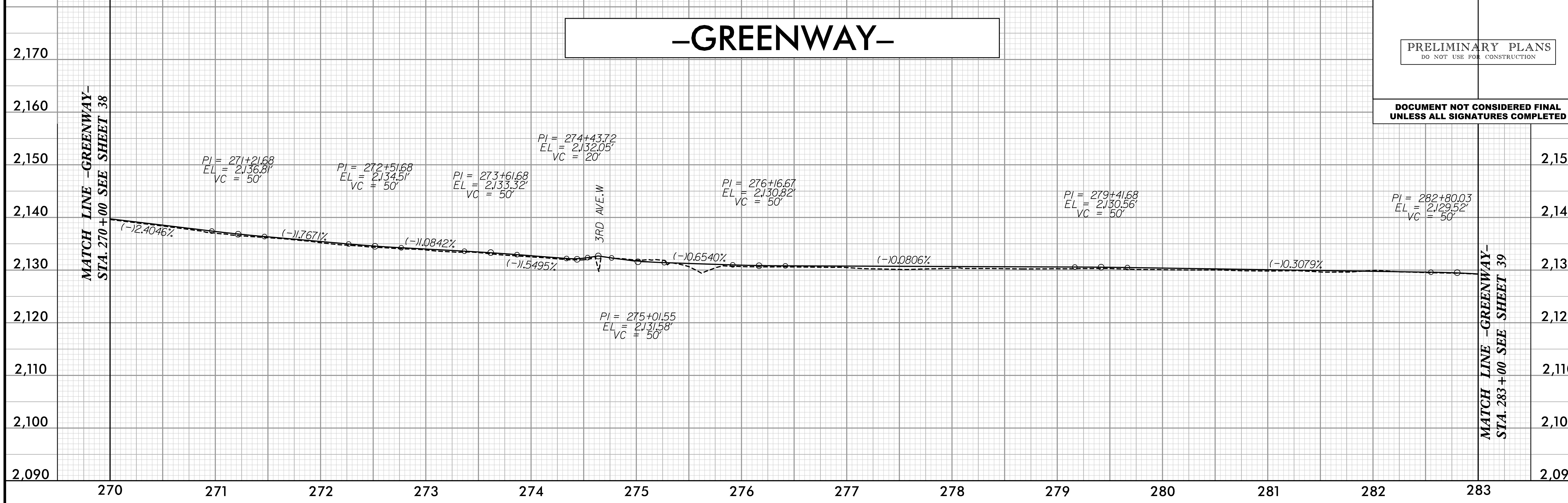
-GREENWAY-
MATCH LINE -GREENWAY-
STA. 270+00 SEE SHEET 38
MATCH LINE -GREENWAY-
STA. 283+00 SEE SHEET 39
PI = 271+21.68
EL = 2,136.81'
VC = 50'
PI = 272+51.68
EL = 2,134.51'
VC = 50'
PI = 273+61.68
EL = 2,133.32'
VC = 50'
PI = 274+43.72
EL = 2,132.05'
VC = 20'
PI = 275+01.55
EL = 2,131.58'
VC = 50'
PI = 276+16.67
EL = 2,130.82'
VC = 50'
PI = 279+41.68
EL = 2,130.56'
VC = 50'
PI = 282+80.03
EL = 2,129.52'
VC = 50'
3RD AVE.W
(-)2.4046%
(-)1.7671%
(-)1.0842%
(-)1.5495%
(-)0.6540%
(-)0.0806%
(-)0.3079%
2,170
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
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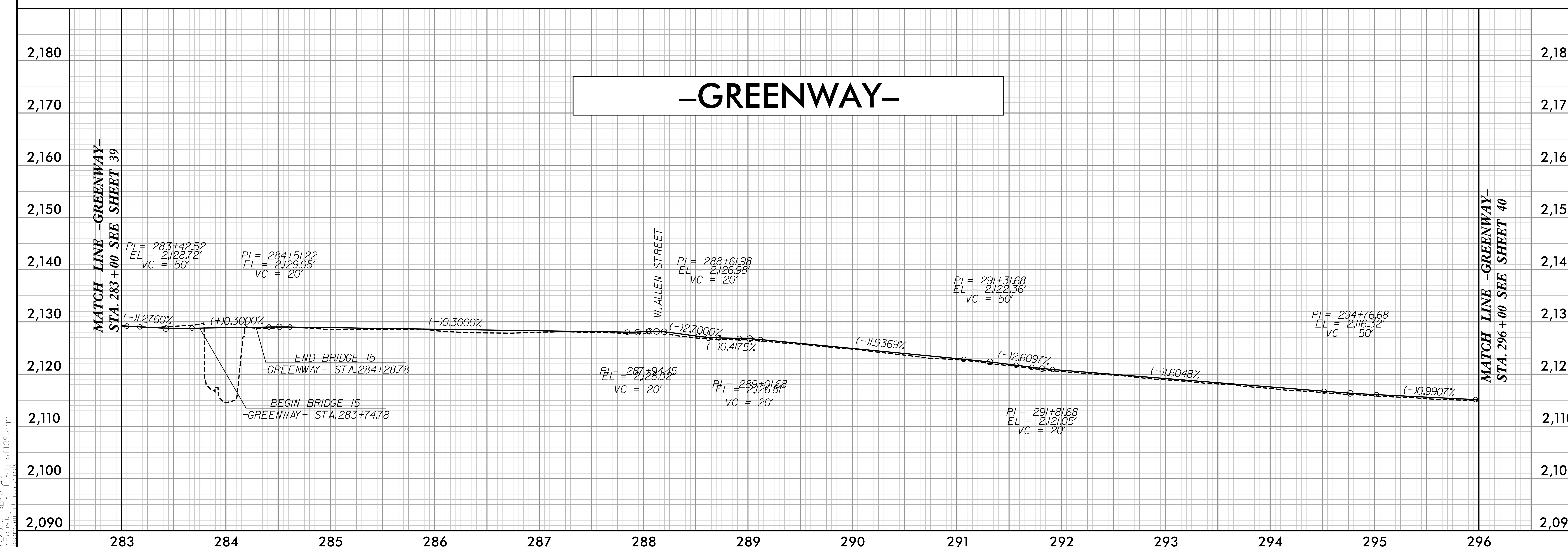
-GREENWAY-
MATCH LINE -GREENWAY-
STA. 283+00 SEE SHEET 39
MATCH LINE -GREENWAY-
STA. 296+00 SEE SHEET 40
PI = 283+42.52
EL = 2,128.72'
VC = 50'
PI = 284+51.22
EL = 2,129.05'
VC = 20'
PI = 287+94.45
EL = 2,128.02'
VC = 20'
PI = 288+61.98
EL = 2,126.98'
VC = 20'
PI = 289+01.68
EL = 2,126.81'
VC = 20'
PI = 291+31.68
EL = 2,122.36'
VC = 50'
PI = 291+81.68
EL = 2,121.05'
VC = 20'
PI = 294+76.68
EL = 2,116.32'
VC = 50'
W. ALLEN STREET
END BRIDGE 15
-GREENWAY- STA. 284+28.78
BEGIN BRIDGE 15
-GREENWAY- STA. 283+74.78
(-)1.2760%
(+)0.3000%
(-)0.3000%
(-)2.7000%
(-)0.4175%
(-)1.9369%
(-)2.6097%
(-)1.6048%
(-)0.9907%
2,180
2,170
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
283
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PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
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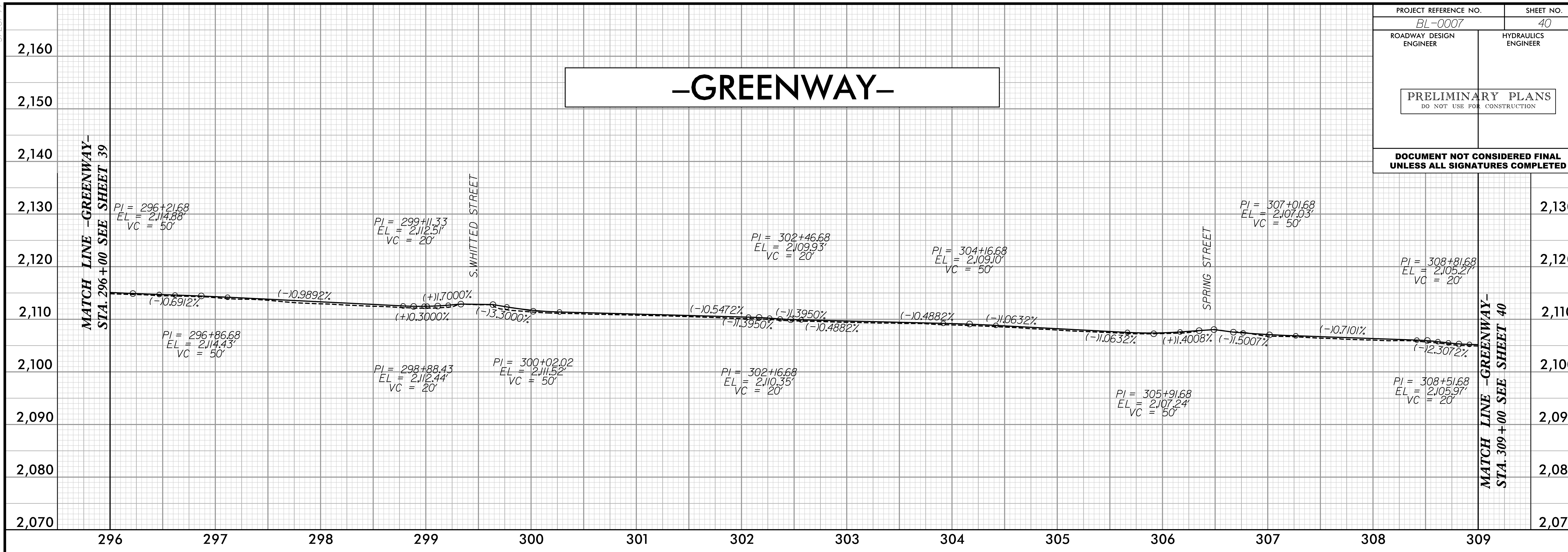

–GREENWAY–
MATCH LINE –GREENWAY– STA. 296+00 SEE SHEET 39
MATCH LINE –GREENWAY– STA. 309+00 SEE SHEET 40
S.WHITTED STREET
SPRING STREET
PI = 296+21.68
EL = 2,114.88'
VC = 50'
PI = 296+86.68
EL = 2,114.43'
VC = 50'
PI = 298+88.43
EL = 2,112.44'
VC = 20'
PI = 299+11.33
EL = 2,112.51'
VC = 20'
PI = 300+02.02
EL = 2,111.52'
VC = 50'
PI = 302+16.68
EL = 2,110.35'
VC = 20'
PI = 302+46.68
EL = 2,109.93'
VC = 20'
PI = 304+16.68
EL = 2,109.10'
VC = 50'
PI = 305+91.68
EL = 2,107.24'
VC = 50'
PI = 307+01.68
EL = 2,107.03'
VC = 50'
PI = 308+51.68
EL = 2,105.97'
VC = 20'
PI = 308+81.68
EL = 2,105.27'
VC = 20'
(–)0.6912%
(–)0.9892%
(+)0.3000%
(+)1.7000%
(–)3.3000%
(–)0.5472%
(–)1.3950%
(–)1.3950%
(–)0.4882%
(–)0.4882%
(–)1.0632%
(–)1.0632%
(+)1.4008%
(–)1.5007%
(–)0.7101%
(–)2.3072%
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
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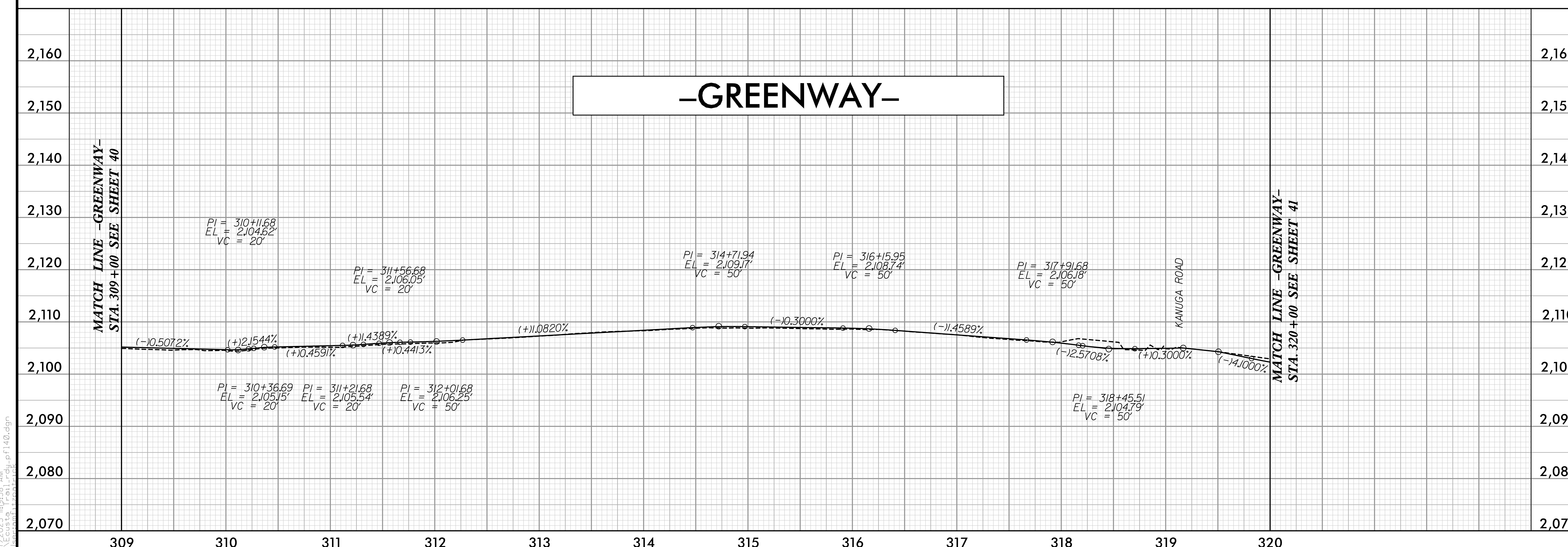

–GREENWAY–
MATCH LINE –GREENWAY– STA. 309+00 SEE SHEET 40
MATCH LINE –GREENWAY– STA. 320+00 SEE SHEET 41
KANUGA ROAD
PI = 310+11.68
EL = 2,104.62'
VC = 20'
PI = 310+36.69
EL = 2,105.15'
VC = 20'
PI = 311+21.68
EL = 2,105.54'
VC = 20'
PI = 311+56.68
EL = 2,106.05'
VC = 20'
PI = 312+01.68
EL = 2,106.25'
VC = 50'
PI = 314+71.94
EL = 2,109.17'
VC = 50'
PI = 316+15.95
EL = 2,108.74'
VC = 50'
PI = 317+91.68
EL = 2,106.18'
VC = 50'
PI = 318+45.51
EL = 2,104.79'
VC = 50'
(–)0.5072%
(+)2.1544%
(+)0.4591%
(+)1.4389%
(+)0.4413%
(+)1.0820%
(–)0.3000%
(–)1.4589%
(–)2.5708%
(+)0.3000%
(–)4.1000%
2,160
2,150
2,140
2,130
2,120
2,110
2,100
2,090
2,080
2,070
309
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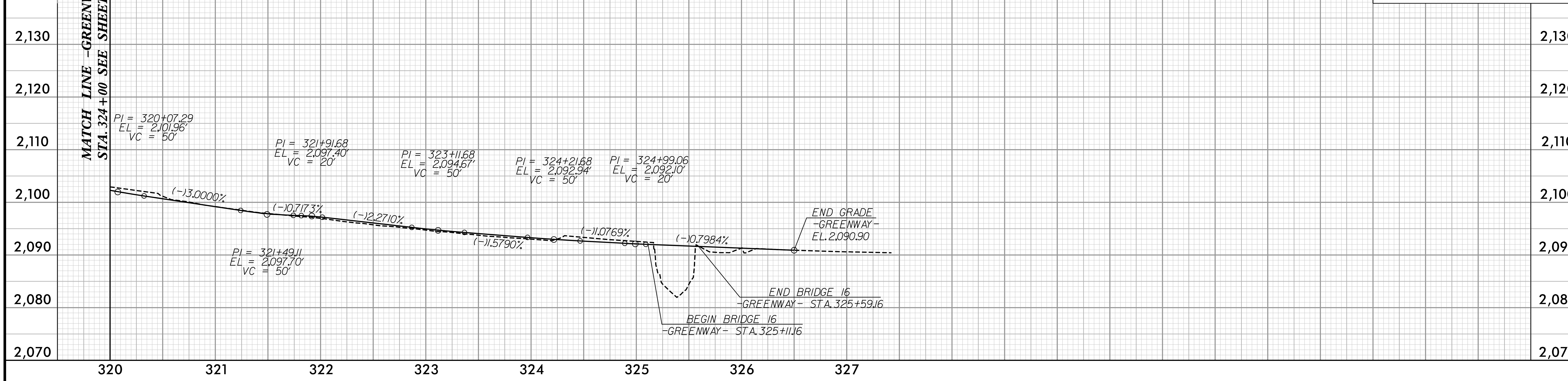
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	41

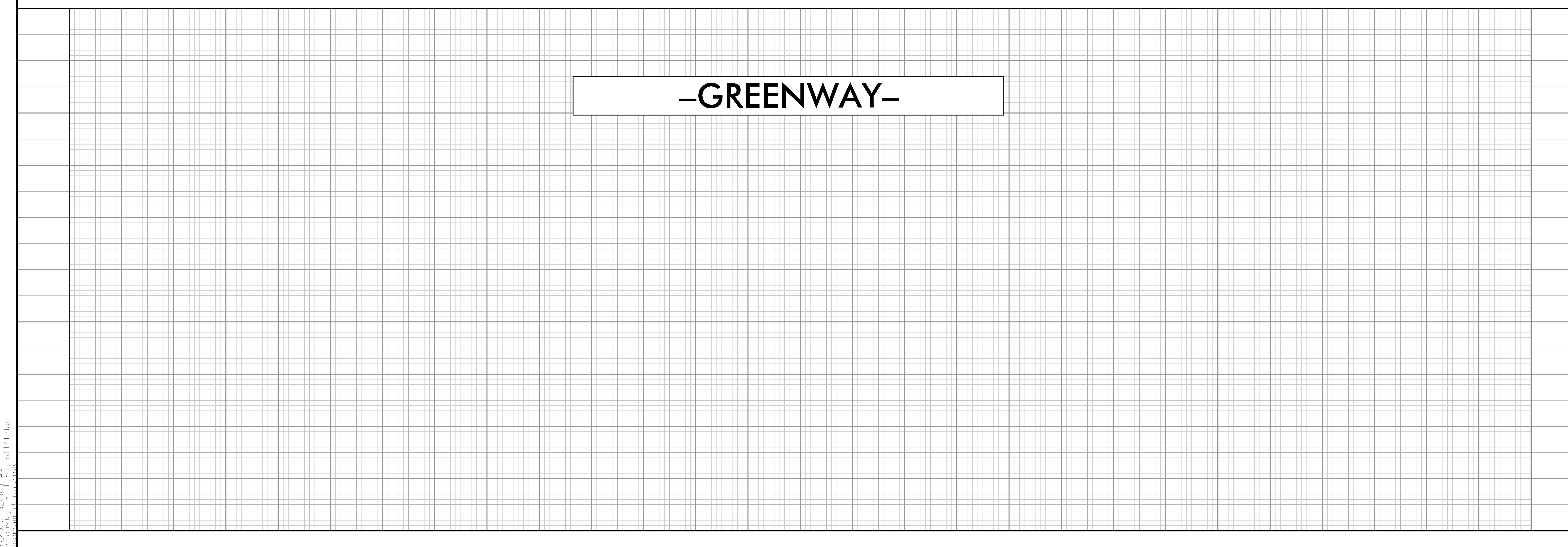
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED





C = 81%
M = 44%
Y = 67%
K = 34%

C = 36%
M = 34%
Y = 96%
K = 6%

C = 5%
M = 25%
Y = 99%
K = 0%

C = 4%
M = 38%
Y = 100%
K = 0%

C = 74%
M = 67%
Y = 66%
K = 85%

C = 83%
M = 40%
Y = 21%
K = 1%

NOTE: COLOR PALETTE INSPIRED BY ORIGINAL SOUTHERN RAILROAD LOGO

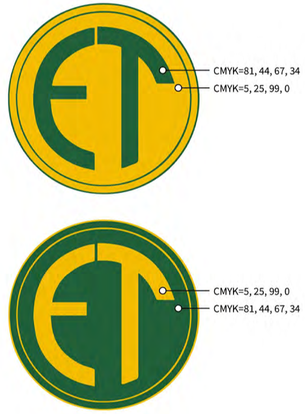
1 L0.1 COLOR PALETTE

HEADER (DUNBAR TALL, MEDIUM)

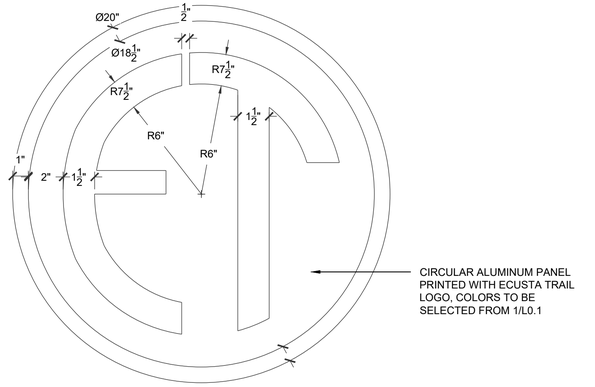
subheader (dunbar low, light italic)

Body (Source Serif Pro, ExtraLight) Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut. Lorem ipsum dolor sit amet, consectetuer adipiscing elit, sed diam nonummy nibh euismod tincidunt ut

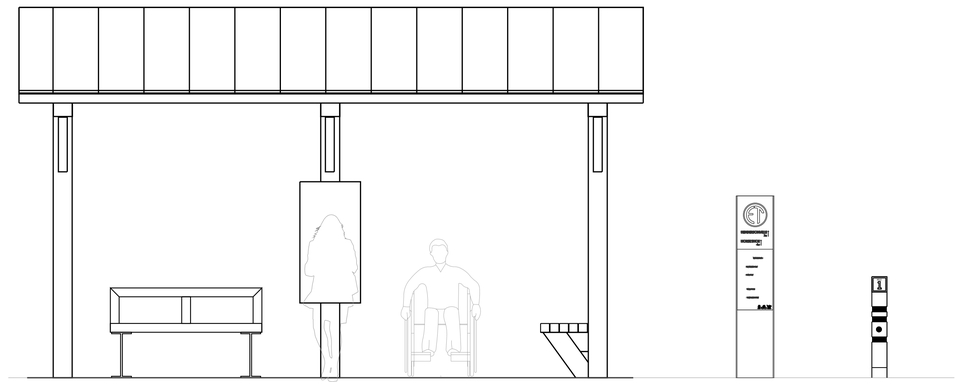
2 L0.1 FONT FAMILY



3 L0.1 LOGO



4 L0.1 MEDALLION



5 L0.1 WAYFINDING HIERARCHY

6 L0.1 SIGNAL ARM GATEWAY

GENERAL NOTES ON WAYFINDING INSPIRATION:

1. COLOR PALETTE AND ECUSTA TRAIL LOGO DESIGN INSPIRED BY THE HISTORIC SOUTHERN RAILWAY BRANDING.
2. WHISTLE POST MARKINGS INSPIRED BY WHISTLE POSTS THAT WERE USED BY HISTORIC RAILROAD FOR ONCOMING TRAINS TO WARN OF CROSSINGS AHEAD. THIS DESIGN IS REPLICATED THROUGHOUT THE WAYFINDING SUITE.
3. THE STATION DESIGN IS INSPIRED BY THE HISTORIC ECUSTA RAIL STATIONS OF THE PAST, INCLUDING THE STRUCTURAL FORM AND CORBELS.

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WATERMARK
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SEAL

NOT FOR CONSTRUCTION

DESIGN BY:	DRAWN BY:	CHECKED BY:
.	.	.

REVISIONS

DATE

Henderson County
ECUSTA TRAIL
Henderson County NC

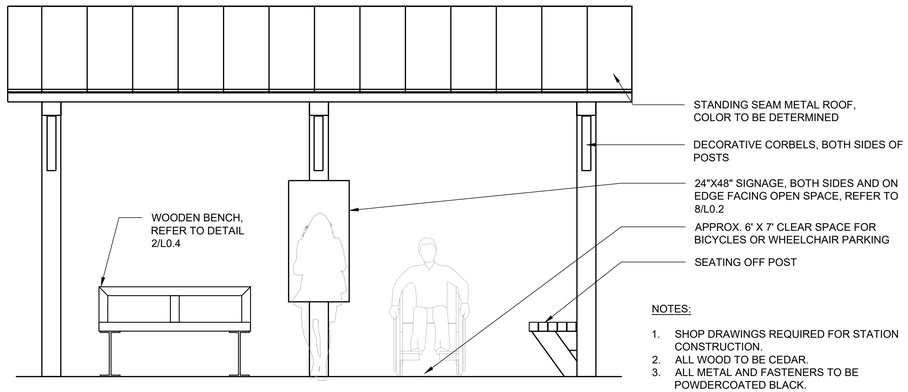
PHASE
90% CD

DATE
12/22/2022

DRAWING SCALE
AS SHOWN
NOTE: If this drawing is not 22x34" it has been revised from its original size and the scales noted on drawings/details are no longer applicable.

DRAWING NAME
WAYFINDING DETAILS

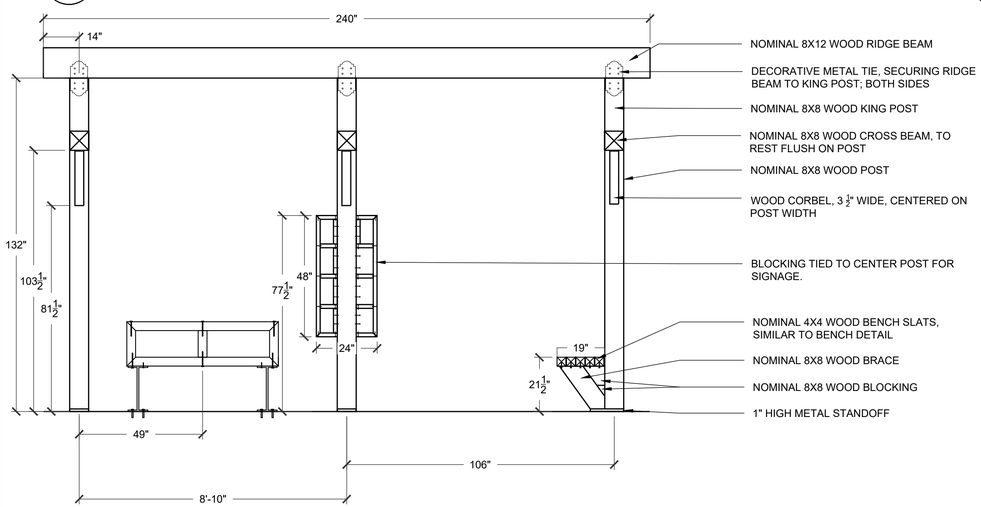
L0.1



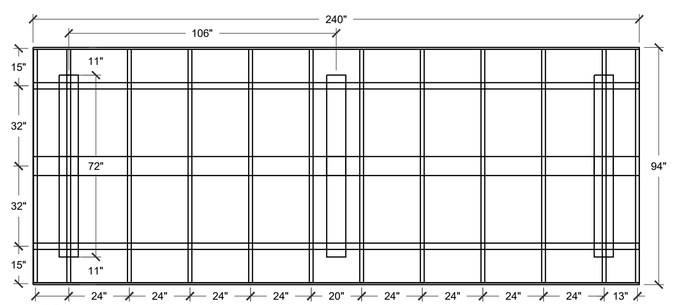
NOTES:

1. SHOP DRAWINGS REQUIRED FOR STATION CONSTRUCTION.
2. ALL WOOD TO BE CEDAR.
3. ALL METAL AND FASTENERS TO BE POWDERCOATED BLACK.
4. FINAL DIMENSIONS AND DESIGN TO BE APPROVED BY LANDSCAPE ARCHITECT.

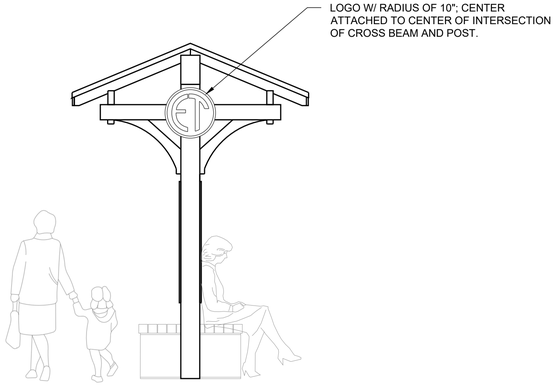
1 L0.2 ACCESSIBLE STATION WITH SEATING - FRONT ELEVATION
1" = 2.5'



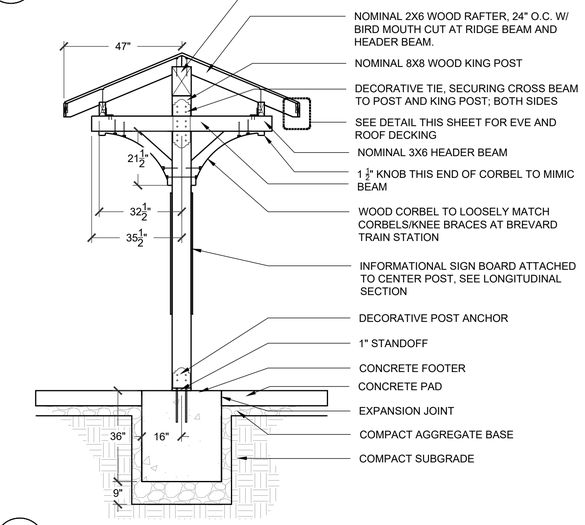
4 L0.2 STATION - FRAMING DETAILS, LONGITUDINAL CENTER SECTION
1" = 2.5'



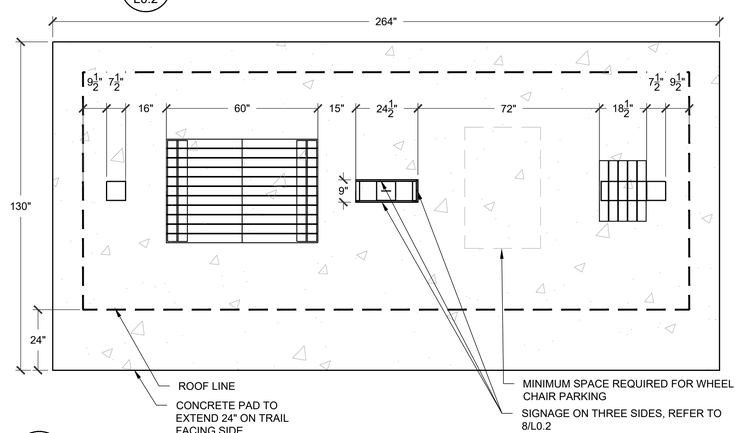
6 L0.2 STATION - ROOF FRAMING DETAILS
1" = 2.5'



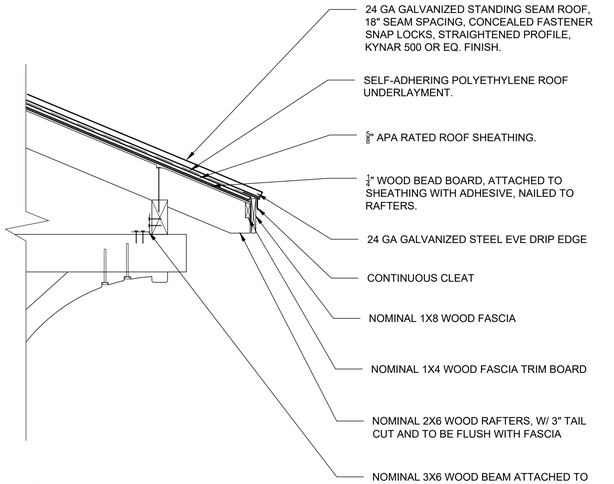
2 L0.2 STATION WITH SEATING- SIDE ELEVATION
1" = 2.5'



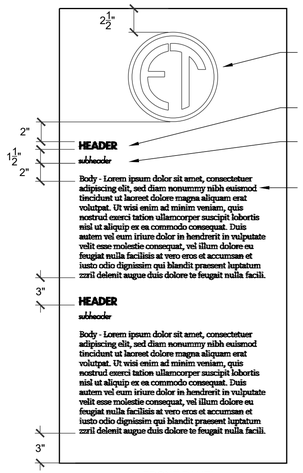
5 L0.2 STATION ELEVATION - FRONT
1" = 2.5'



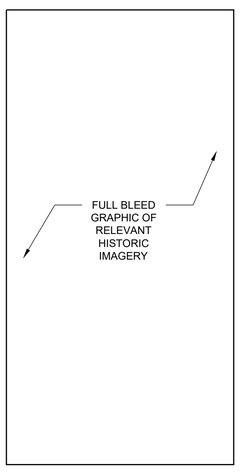
7 L0.2 ACCESSIBLE STATION - PLAN VIEW
1" = 2.5'



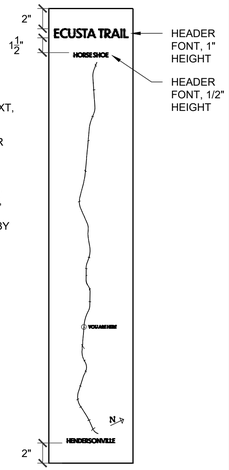
3 L0.2 STATION EVE AND ROOF DECKING
1" = 2.5'



A. FRONT PANEL



B. REAR PANEL



C. SIDE PANEL

8 L0.2 STATION SIGNAGE PANELS
1-1/2"=1'-0"

NOTES:

1. SHOP DRAWINGS REQUIRED FOR ALL SIGNAGE.
2. ALL MATERIALS AND METHODS TO BE CONFIRMED BY SIGNAGE CONTRACTOR.
3. FINAL DIMENSIONS AND DESIGN TO BE APPROVED BY LANDSCAPE ARCHITECT.
4. REFER TO L0.1 FOR COLORS AND FONTS.

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WATERMARK
LANDSCAPE ARCHITECTURE ■ LAND PLANNING ■ CONSULTING

SEAL

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DESIGN BY:	DRAWN BY:	CHECKED BY:
.	.	.

DATE

REVISIONS

Henderson County
ECUSTA TRAIL
L0.2

PHASE
90% CD

DATE
12/22/2022

DRAWING SCALE
AS SHOWN
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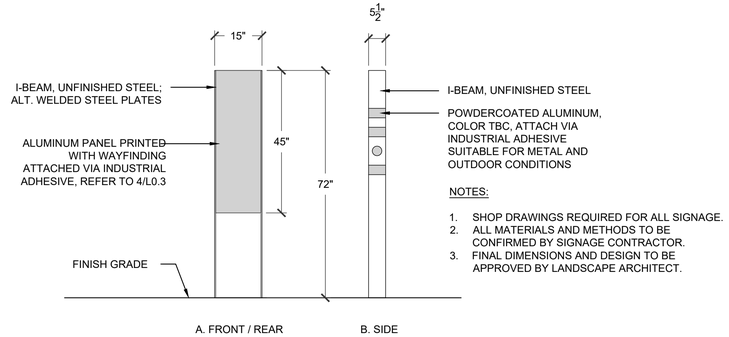
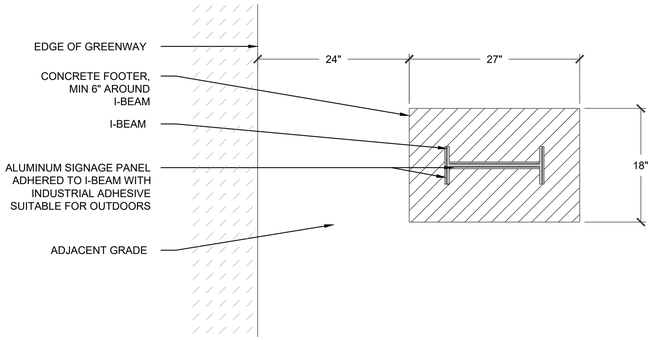
DRAWING NAME
STATION DETAILS

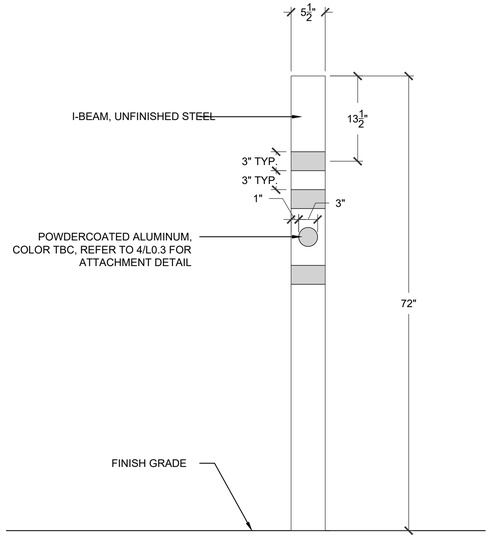
L0.2



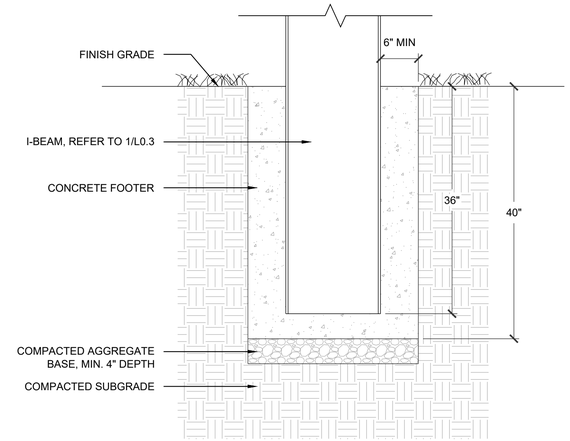
1 L0.3 ORIENTATION MARKER ELEVATION + PROFILE
1"=1'-0"



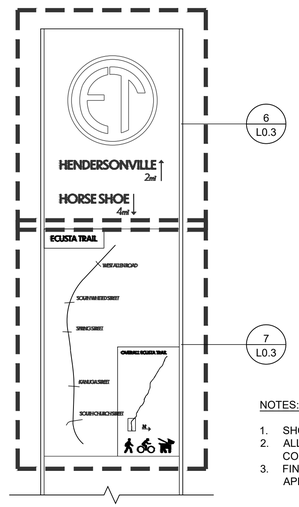
4 L0.3 OREINTATION MARKER PLAN
1"=1'-0"



2 L0.3 ORIENTATION MARKER PROFILE DETAIL
1"=1'-0"

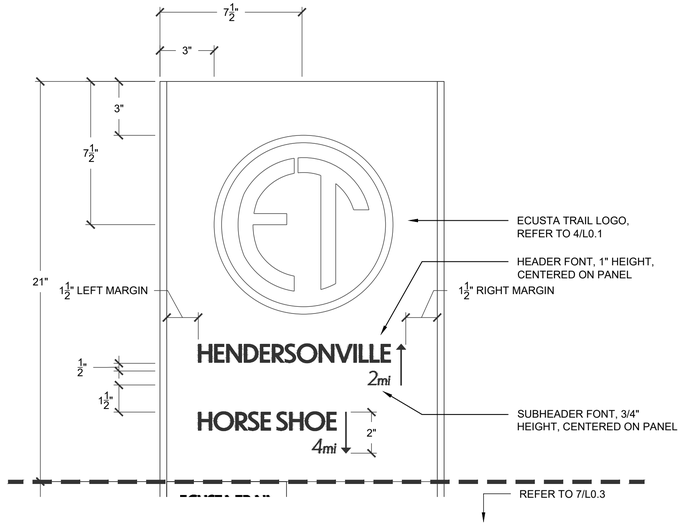


3 L0.3 ORIENTATION MARKER FOOTER DETAIL
1"=1'-0"

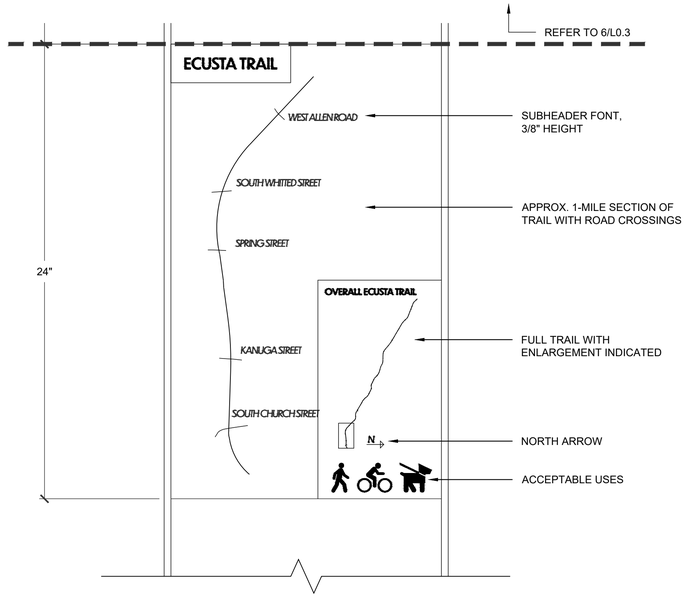


NOTES:
1. SHOP DRAWINGS REQUIRED FOR ALL SIGNAGE.
2. ALL MATERIALS AND METHODS TO BE CONFIRMED BY SIGNAGE CONTRACTOR.
3. FINAL DIMENSIONS AND DESIGN TO BE APPROVED BY LANDSCAPE ARCHITECT.

5 L0.3 ORIENTATION MARKER ALUMINUM PANEL
1-1/2"=1'-0"



6 L0.3 ORIENTATION MARKER ALUMINUM PANEL - TOP
3"=1'-0"



NOTES:
1. REFER TO L0.1 FOR ALL FONTS AND COLORS.

7 L0.3 ORIENTATION MARKER ALUMINUM PANEL - TOP
3"=1'-0"

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WATERMARK
LANDSCAPE ARCHITECTURE ★ LAND PLANNING ★ CONSULTING

SEAL

NOT FOR CONSTRUCTION

DESIGN BY:	DRAWN BY:	CHECKED BY:
.	.	.

DATE

REVISIONS

Henderson County ECUSTA TRAIL Henderson County, NC

PHASE
90% CD

DATE
12/22/2022

DRAWING SCALE
AS SHOWN
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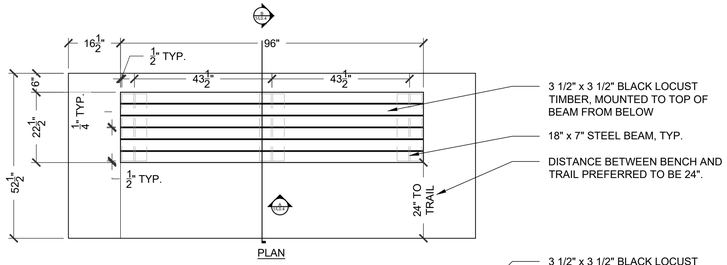
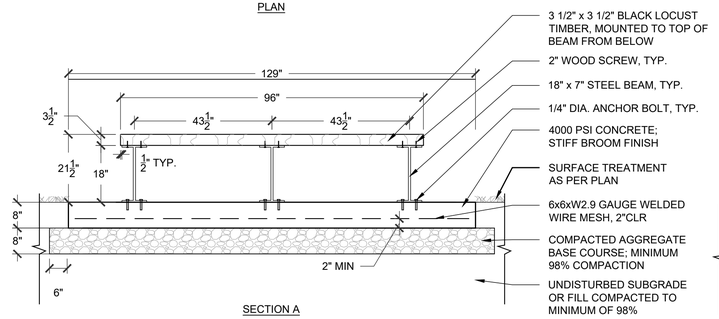
DRAWING NAME
ORIENTATION MARKER DETAILS

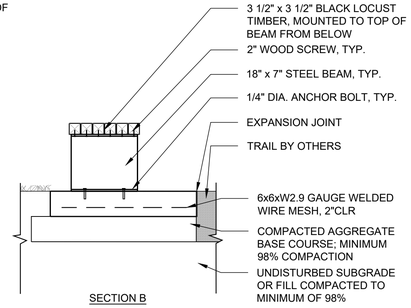
L0.3



PLAN



SECTION A



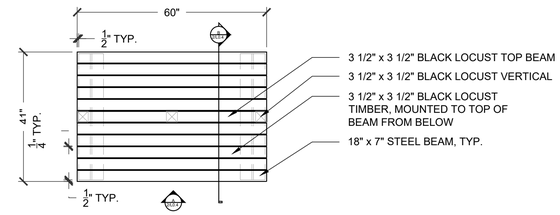
SECTION B

NOTES:

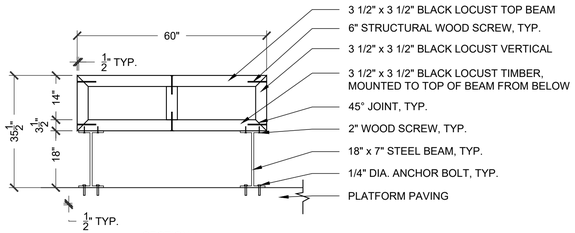
1. IF SITE CONDITIONS PROHIBIT CONCRETE PAD, BENCH MAYBE BE PLACED WITH STEEL BEAMS ON INDIVIDUAL FOOTERS. IN THIS CASE, CONCRETE TO BE 1' DEPTH WITH A MINIMUM OFFSET OF 4" AROUND EACH BEAM.

1 L0.4 FREESTANDING BENCH WITH CONCRETE PAD

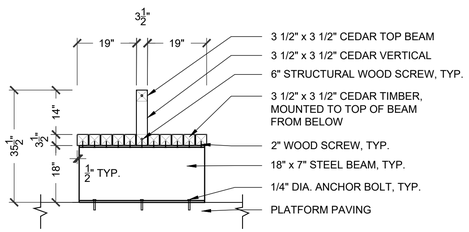
1" = 1'



PLAN



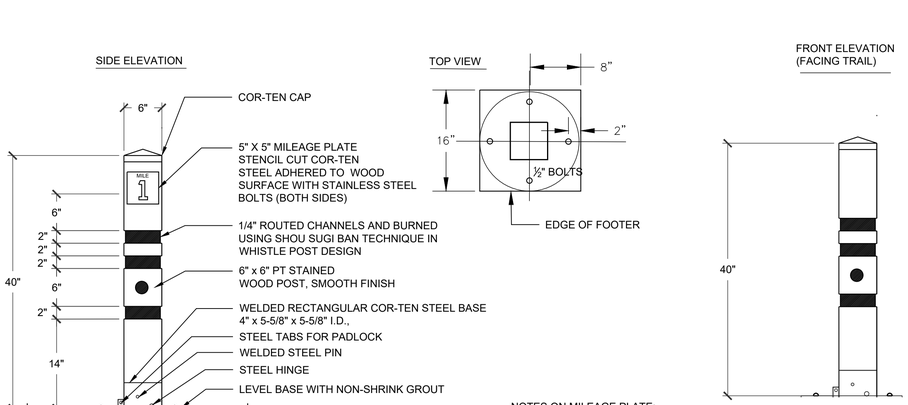
SECTION A



SECTION B

2 L0.4 STATION PLATFORM BENCH

1" = 1'



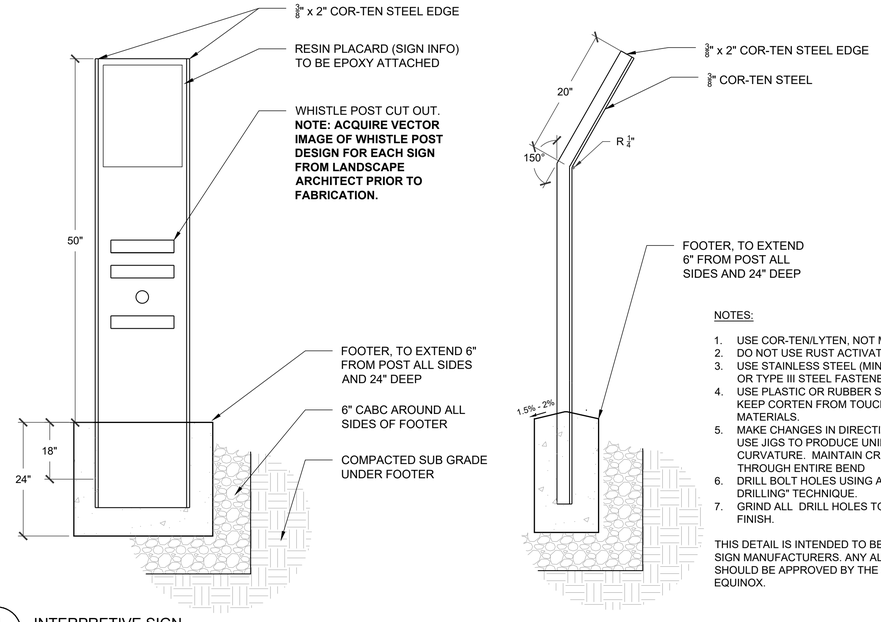
NOTES ON MILEAGE PLATE:

1. USE COR-TEN/LYTEN, NOT MILD STEEL.
2. DO NOT USE RUST ACTIVATORS.
3. USE STAINLESS STEEL (MIN. GRADE 304) OR TYPE III STEEL FASTENERS.
4. USE PLASTIC OR RUBBER SPACERS TO KEEP CORTEN FROM TOUCHING OTHER MATERIALS.
5. DRILL BOLT HOLES USING A "PECK DRILLING" TECHNIQUE.
6. GRIND ALL DRILL HOLES TO SMOOTH FINISH.

THIS DETAIL IS INTENDED TO BE A GUIDE FOR SIGN MANUFACTURERS. ANY ALTERATION SHOULD BE APPROVED BY THE CLIENT OR EQUINOX.

3 L0.4 MILEAGE MARKER

1" = 1'



NOTES:

1. USE COR-TEN/LYTEN, NOT MILD STEEL.
2. DO NOT USE RUST ACTIVATORS.
3. USE STAINLESS STEEL (MIN. GRADE 304) OR TYPE III STEEL FASTENERS.
4. USE PLASTIC OR RUBBER SPACERS TO KEEP CORTEN FROM TOUCHING OTHER MATERIALS.
5. MAKE CHANGES IN DIRECTION BY BENDING. USE JIGS TO PRODUCE UNIFORM CURVATURE. MAINTAIN CROSS SECTION THROUGH ENTIRE BEND
6. DRILL BOLT HOLES USING A "PECK DRILLING" TECHNIQUE.
7. GRIND ALL DRILL HOLES TO SMOOTH FINISH.

THIS DETAIL IS INTENDED TO BE A GUIDE FOR SIGN MANUFACTURERS. ANY ALTERATION SHOULD BE APPROVED BY THE CLIENT OR EQUINOX.

4 L0.4 INTERPRETIVE SIGN

1" = 1'

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WATERMARK
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DESIGN BY:	DRAWN BY:	CHECKED BY:
.	.	.

DATE

REVISIONS

Henderson County
ECUSTA TRAIL
Henderson County, NC

PHASE
90% CD

DATE
12/22/2022

DRAWING SCALE
AS SHOWN
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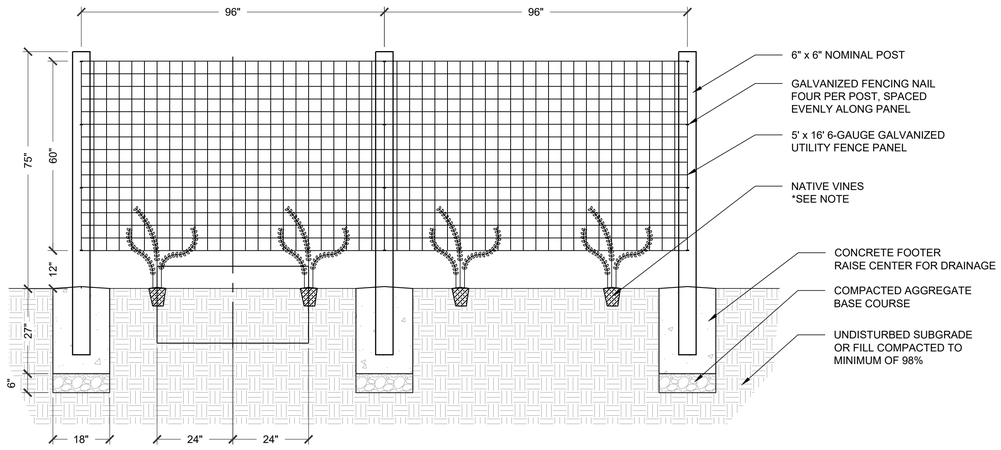
DRAWING NAME
BENCH + WAYFINDING DETAILS

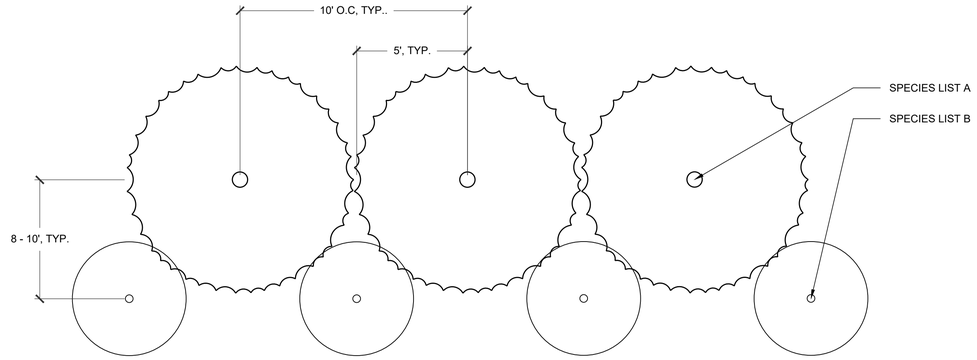
L0.4



NOTES:

1. VEGETATED FENCING TO BE LOCATED WHERE CLIENT DETERMINES IS APPROPRIATE ALONG CORRIDOR.
2. SECTION IS REPRESENTATIVE OF A SINGLE UNIT WHICH CAN BE EXPANDED BY INCREMENTS OF 8 OR 16 FEET, AS IS APPROPRIATE.
3. VINES TO BE SIZED AT 1 GALLON, MINIMUM. SPECIES TO BE LONICERA SEMPERVIRENS OR CAMPSIS RADICAN. EACH FENCING UNIT MAY CONTAIN A SINGLE OR COMBINATION OF SPECIES.
4. WHEN PLANTING, ROOT CROWN TO BE LEVEL WITH FINISH GRADE. PLANTS ARE TO BE THOROUGHLY WATERED, AND EXPOSED SOIL COVERED WITH 2" OF MULCH.

1 L0.5 VEGETATED FENCE
1" = 2'



SPECIES LIST A:

1. ILEX OPACA
2. AMELANCHIER ARBOREA
3. CRATAEGUS VIRIDUS

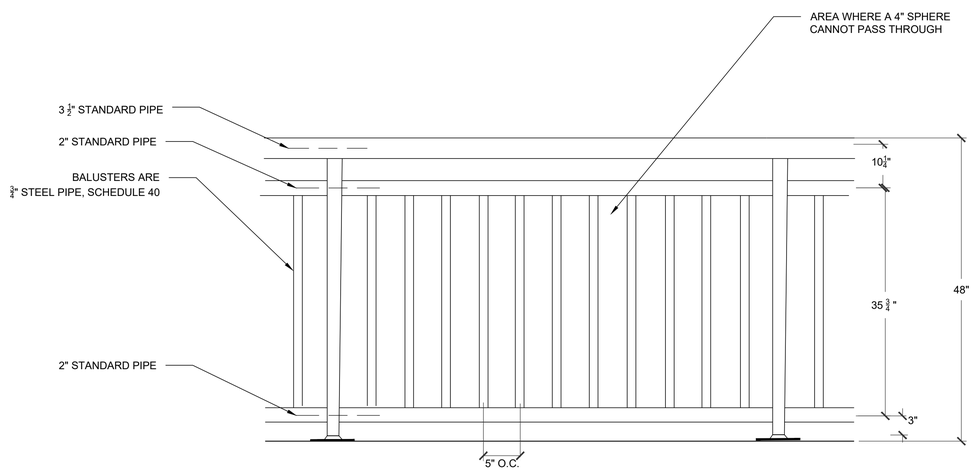
SPECIES LIST B:

1. ILEX GLABRA
2. CLETHRA ALNIFOLIA
3. DIERVILLA SESSILIFOLIA

NOTES:

1. VEGETATED SCREENING TO BE LOCATED WHERE CLIENT DETERMINES IS APPROPRIATE ALONG CORRIDOR.
2. SPECIES A TO BE SIZED AT 6' HT, MINIMUM. SPECIES B TO BE SIZED AT 3 GALLON, MINIMUM. EACH UNIT TO CONTAIN A SINGLE SPECIES FROM LIST A, BUT MAY CONTAIN A COMBINATION OF SPECIES FROM LIST B.
3. WHEN PLANTING, ROOT CROWN TO BE LEVEL WITH FINISH GRADE. PLANTS ARE TO BE THOROUGHLY WATERED, AND EXPOSED SOIL COVERED WITH 2" OF MULCH.
4. SPECIES B TO BE LOCATED CLOSEST TO TRAIL; CENTERLINE OF ROW TO BE A MINIMUM OF 3' FROM EDGE OF TRAIL.
5. SPECIES A TO BE LOCATED MIN 3' FROM PROPERTY LINE, FENCE, ETC. ON OUTSIDE OF BUFFER. IF SPACING DOES NOT ALLOW APPROPRIATE CLEARANCES FROM TRAIL OR OUTSIDE EDGE, USE ONLY SPECIES A.

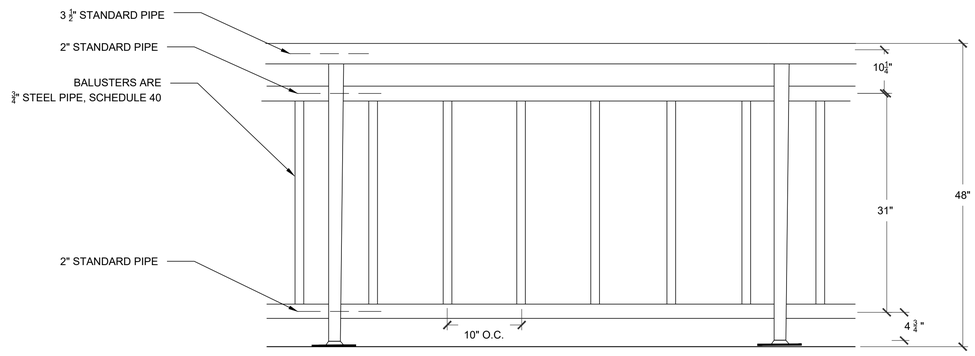
2 L0.5 VEGETATIVE SCREEN
1" = 1'



NOTES:

1. GUARD RAILS TO BE LOCATED IN LOCATIONS WHERE THERE IS A DROP OF MORE THAN 30 INCHES VERTICALLY FROM THE TRAIL SHOULDER POINT TO TIE IN OVER 36 INCHES HORIZONTALLY.
2. SHOP DRAWINGS SHOULD BE SUPPLIED TO LANDSCAPE ARCHITECT AND CLIENT THAT INCORPORATES THESE DETAILS WITH THE EXACT LOCATIONS OF POSTS, RADIUS OF RAILING, DESIGN TO CONNECT TO POST POCKET, AND/OR ANY SUGGESTED ALTERATIONS FROM THESE DETAILS.
3. WELDING: ALL WELDING SHOULD BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE.
4. JOINTS: ALL FIXED JOINTS ARE TO BE WELDED AROUND AND GROUND SMOOTH.
5. OPENINGS IN RAILING: BALUSTERS SHOULD BE SUCH THAT A 4" DIAMETER SPHERE CANNOT PASS THROUGH ANY OPENING UP TO A HEIGHT OF 34". FROM THE HEIGHT OF 34-42" ABOVE THE ADJACENT WALKING SURFACE, A SPHERE OF 8" IN DIAMETER SHALL NOT PASS.
6. 5' SECTION MOCKUP REQUIRED PRIOR TO CONSTRUCTION.

3 L0.5 PEDESTRIAN GUARD RAIL
1" = 1'



NOTES:

1. SAFETY RAILS TO BE LOCATED IN LOCATIONS WHERE THERE IS A 48 INCH OR GREATER DROP FROM SHOULDER POINT TO TIE IN OR WHERE THE TRAIL SURFACE IS LOCATED ADJACENT TO A PARALLEL BODY OF WATER.
2. SHOP DRAWINGS SHOULD BE SUPPLIED TO LANDSCAPE ARCHITECT AND CLIENT THAT INCORPORATES THESE DETAILS WITH THE EXACT LOCATIONS OF POSTS, RADIUS OF RAILING, DESIGN TO CONNECT TO POST POCKET, AND/OR ANY SUGGESTED ALTERATIONS FROM THESE DETAILS.
3. WELDING: ALL WELDING SHOULD BE IN ACCORDANCE WITH THE AMERICAN WELDING SOCIETY STRUCTURAL WELDING CODE.
4. JOINTS: ALL FIXED JOINTS ARE TO BE WELDED AROUND AND GROUND SMOOTH.
5. 5' SECTION MOCKUP REQUIRED PRIOR TO CONSTRUCTION.

4 L0.5 PEDESTRIAN SAFETY RAIL
1" = 1'

EQUINOX
37 Haywood St.
Suite 100
Asheville, NC 28801
t 828.253.6856
f 828.253.8256

WATERMARK
LANDSCAPE ARCHITECTURE • LAND PLANNING • CONSULTING

SEAL

NOT FOR CONSTRUCTION

DESIGN BY:	DRAWN BY:	CHECKED BY:
.	.	.

REVISIONS

DATE									

Henderson County
ECUSTA TRAIL
Henderson County, NC

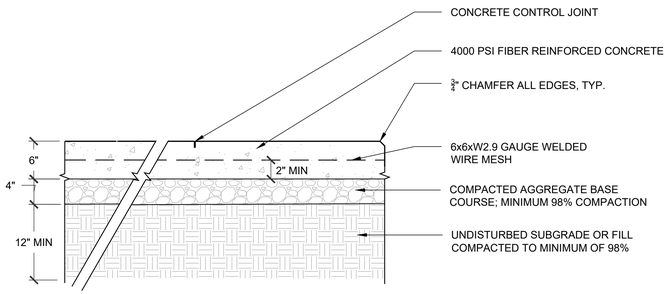
PHASE
90% CD

DATE
12/22/2022

DRAWING SCALE
AS SHOWN
NOTE: If this drawing is not 22x34" it has been revised from its original size and the scales noted on drawings/details are no longer applicable.

DRAWING NAME
SCREEN + RAIL DETAILS

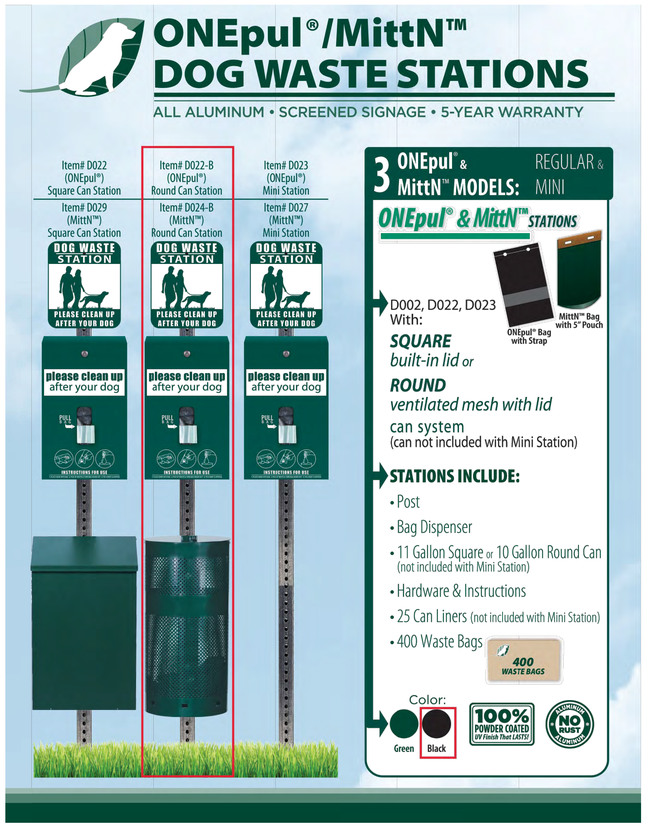
L0.5



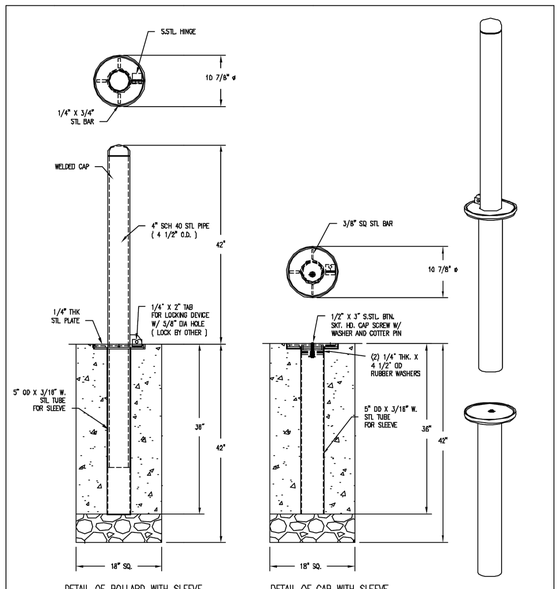
NOTES:

1. CONCRETE TO BE ½" TO ¾" ABOVE THE GRADE IF ADJACENT TO VEGETATED SURFACE AND FLUSH WITH HARD SURFACE TO ACHIEVE POSITIVE DRAINAGE.
2. PLACE A ⅛" SAW CUT CONTROL JOINT AS SHOWN ON PLAN TO 1 ½" DEPTH.
3. PLACE A ⅛" EXPANSION JOINT AT EVERY MATERIAL CHANGE.

1 / L0.6 CONCRETE PAD
1" = 1'



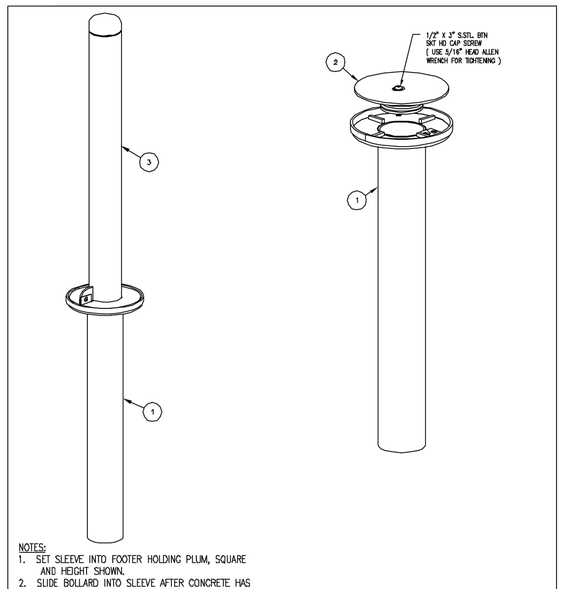
2 / L0.6 DOG WASTE STATION
NTS



NOTES

1.) STL. MEMBERS COATED W/ ZINC RICH EPOXY THEN FINISHED W/ POLYESTER POWDER COATING.
2.) LOCKING DEVICE PROVIDED BY OTHER.

DuMor, inc. P.O. Box 142 Mifflintown, PA 17059-0142	SCALE : NONE	DATE DRAWN : 10/27/05	DRAWN BY : AWH	DATE REV. : 01/10/07	REV. BY : ESS	TITLE : BOLLARD	REV. B	DRAWING NUMBER 400-42/S-1SL	SHEET 1 OF 2



NOTES:
1. SET SLEEVE INTO FOOTER HOLDING PLUM, SQUARE AND HEIGHT SHOWN.
2. SLIDE BOLLARD INTO SLEEVE AFTER CONCRETE HAS HARDENED. BE SURE TO HAVE HINGE TAB SLIDE INTO BOLLARD BASE PLATE SLOT FOR LOCKING.
3. FOR USE OF CAP. WHEN BOLLARD IS REMOVED, PLACE CAP INTO SLEEVE. TIGHTEN CAP BY USING 1/2" X 3" BUTTON HEAD BOLT. THIS WILL COMPRESS THE RUBBER WASHERS THICKNESS AND EXPAND THE DIAMETER TO FIT SNUG TO SLEEVE.

ITEM	QTY	PART NO	DESCRIPTION
1	1	D-400-02	STL BOLLARD SLEEVE W/ HINGE
2	1	D-400-03	BOLLARD SLEEVE CAP ASSEMBLY
3	1	D-400-42-01/13	42" STL BOLLARD, EMBED FOR SLEEVE

DuMor, inc. P.O. Box 142 Mifflintown, PA 17059-0142	SCALE : NONE	DATE DRAWN : 10/27/05	DRAWN BY : AWH	DATE REV. : 01/10/07	REV. BY : ESS	TITLE : BOLLARD	REV. B	DRAWING NUMBER 400-42/S-1SL	SHEET 2 OF 2

3 / L0.6 BOLLARD
NTS

NOTES:

1.BOLLARD TO BE BLACK
2. 3M FLEXIBLE PRISMATIC CONSPICUITY TAPE SERIES 913 (OR APPROVED EQUAL) TO BE APPLIED TO EACH BOLLARD IN TWO LEVEL, HORIZONTAL BANDS, REACHING THE ENTIRE WAY AROUND THE BOLLARD. THE FIRST BAND IS TO BE PLACED 4" FROM TOP OF BOLLARD; THE SECOND BAND IS TO BE PLACED 4" BELOW THE BOTTOM OF THE FIRST. TAPE IS TO BE WHITE OR YELLOW.

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37 Haywood St.
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f 828.253.8256

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REVISIONS

DATE

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Henderson County, NC

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DRAWING NAME
MISC. DETAILS

L0.6

STREETLIFE®

Product Sheet **Solid Bicycle Rack**

Bicycle rack in the Solid product range: FSC® hardwood slat and steel frame.

Product Code	**SOL-BP-70-TH/CT/PC**
Dimensions	ca. 70x75x7cm | 28x30x2.8" (wxhxd)
Weight	ca. 24kg | 53lbs
Material	Timber: Untreated FSC® 100% Cumaru hardwood Single slat (7x7cm | 2.8x2.8") Support TH: hot dip galvanized steel Support CT: weathering steel, delivered unweathered Support PC: high temperature galvanized steel with a double powder coated finish in RAL color
Delivery	Pre-assembled bike rack
Cleaning & Maintenance	Timber: with clear water and soft brush or cloth; do not use high pressure cleaner or similar (this can open up the wood grain and make the surface coarse). The timber can be gently sanded every 2-3 year (in the direction of the wood grain). The steel does not need additional maintenance other than incidental cleaning.
Surface attachment	Steel framework intended for root-fixed installation ca. 25cm deep

STREETLIFE BV, Herengracht 36, 2312 LD Leiden, The Netherlands; tel. +31 71 333 33 33; fax +31 71 333 3349; www.streetlife.nl
Chamber of Commerce: 28.073.827 Tax No. NL 806077049B01

STREETLIFE BV, Herengracht 36, 2312 LD Leiden, The Netherlands; tel. +31 71 333 33 33; fax +31 71 333 3349; www.streetlife.nl
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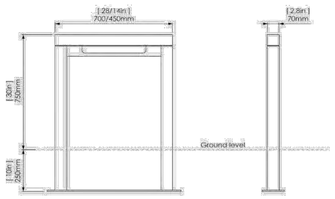
1 L0.7 BIKE RACK
NTS

STREETLIFE®



*Metric units are leading

Design: Streetlife
Protected by int. Modeldepots & Patents

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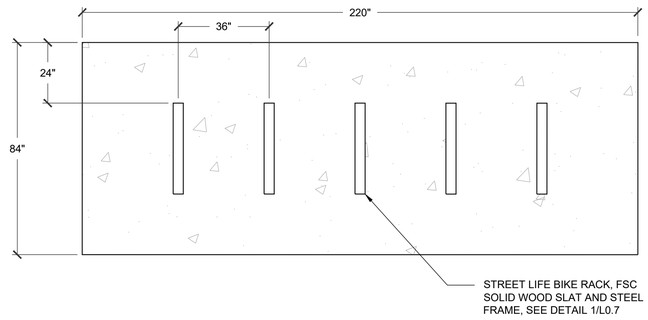


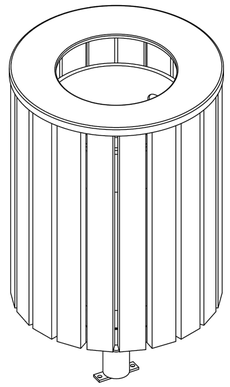
2 L0.7 CONCRETE PAD FOR BIKE RACK
NTS

SITESCAPES **P.O. Box 22326 Lincoln, NE 68542**

PF: 402/421-9464 | FX: 402/421-9479 | WEBSITE: www.sitescapesonline.com E-MAIL: info@sitescapesonline.com

TITLE	PRODUCT NO.	INCH TOLERANCES U.O.S.	
AVONDALE RECEPTACLE	*AV2-3020*	FRACTION-- ±1/16" ANG---------- ±1°	THE INFORMATION CONTAINED IN THIS DRAWING IS THE SOLE PROPERTY OF SITESCAPES, INC. ANY REPRODUCTION IN PART OR AS A WHOLE WITHOUT THE WRITTEN PERMISSION OF SITESCAPES, INC. IS PROHIBITED.

*Available in powder coat and DuraCoat finishes



5

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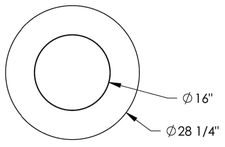
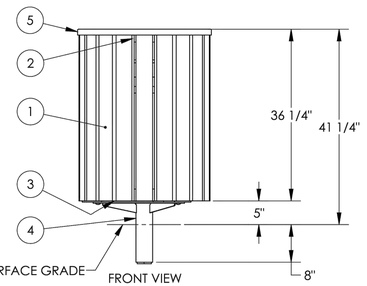
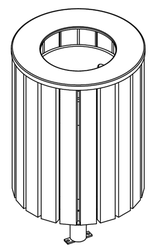
Materials List
(1) Vertical Slats - 2" x 4" Nominal Ipe Wood
(2) Support Ring - 7 Gauge Laser Cut Steel Sheet
(3) Support Bars - 3/8" x 3/4" Steel Flat Bar
(4) Embedded Tube - 3" Schedule 40 Steel Pipe
(5) Lid - ∅28" x .075" Wall Steel Lid
Attached to Basket with Stainless Steel Airline Cable
(6) 32 Gallon Rigid Plastic Liner with Handles Included



TOP VIEW



FRONT VIEW



6

3 L0.7 WASTE RECEPTACLE
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37 Haywood St.
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t 828.253.6856
f 828.253.8256

WATERMARK
LANDSCAPE ARCHITECTURE ■ LAND PLANNING ■ CONSULTING

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DATE

REVISIONS

Henderson County
ECUSTA TRAIL
Henderson County, NC

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MISC. DETAILS

L0.7

SHEET NO.
TMP-1

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

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
1101.11	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

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

PLANS PREPARED BY:

S. COLIN KINTON, P.E.
WZTC ENGINEER

CHRIS WACHTER, P.E.
DESIGN ENGINEER

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
- TEMP TEMPORARY

PAVEMENT MARKINGS
- EXISTING LINES
- TEMPORARY LINES

PAVEMENT MARKING SYMBOLS
- ↑↰ PAVEMENT MARKING SYMBOLS

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.

APPROVED:

DATE:

SEAL

SEAL 048897
S. COLIN KINTON

PROJECT: ECUSTA TRAIL

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

5/14/99

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 6:00 A.M. TO 9:00 A.M. AND 4:00 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 6:00 A.M. DECEMBER 31st TO 9:00 A.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 A.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 A.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 A.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE DAY AFTER INDEPENDENCE DAY.

   IF INDEPENDENCE DAY IS ON A FRIDAY, SATURDAY, SUNDAY OR MONDAY THEN BETWEEN THE HOURS OF 6:00 A.M. THE THURSDAY BEFORE INDEPENDENCE DAY AND 7:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.
6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 A.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 7:00 P.M. TUESDAY TO 9:00 A.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 7:00 P.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 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) TIE PROPOSED PAVEMENT MARKING LINES TO EXISTING PAVEMENT MARKING LINES.

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

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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.

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

GENERAL NOTES & MANAGEMENT STRATEGIES

5/14/99

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PHASING NOTES

1. CONTRACTOR SHALL MAINTAIN ACCESS TO DRIVEWAYS FOR ALL PHASES WITHIN THE PROJECT LIMITS AND COORDINATE AS NECESSARY WITH PROPERTY OWNERS.
2. SOME PHASES MAY BE CONSTRUCTED CONCURRENTLY AT THE DISCRETION OF THE RESIDENT ENGINEER.
3. FLAGGERS SHALL BE USED AS NECESSARY ON ALL MAJOR DRIVEWAYS AND SIDE STREETS.
4. UNLESS PEDESTRIAN DIVERSIONS OR DETOURS ARE SPECIFIED IN THE PLANS, ALL WORK ZONE LOCATIONS SHALL HAVE A DEDICATED PEDESTRIAN FLAGGER TO ASSIST PEDESTRIANS THROUGH THE WORK ZONE.
5. REMOVE ALL TEMPORARY TRAFFIC LANE SHIFTS, TAPERS, AND CLOSURES AT THE END OF EACH WORK DAY UNLESS SPECIFIED OTHERWISE IN THE PLANS.

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

USING NCDOT RSD 1101.02 SHEET 2 OF 14, 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

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND 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. 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

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND 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. 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

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 ON TMP-8.

STEP 6

WITH TEMPORARY PEDESTRIAN FACILITIES IN PLACE, USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND 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. 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

USING NCDOT RSD 1101.02 SHEET 2 OF 14 AND 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. 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 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

TEMPORARY TRAFFIC MANAGEMENT PHASING NOTES

p:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Equsta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-1B - Phasing.dgn
12/23/2022 9:50:26 AM 1:20 cweather

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-2

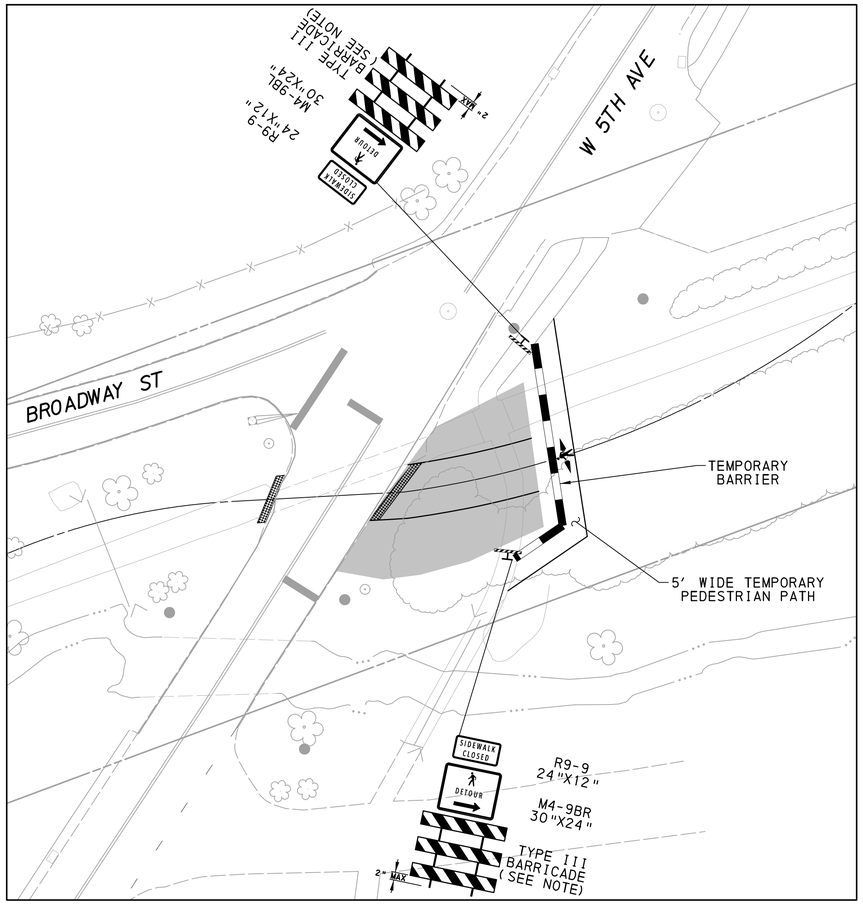
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

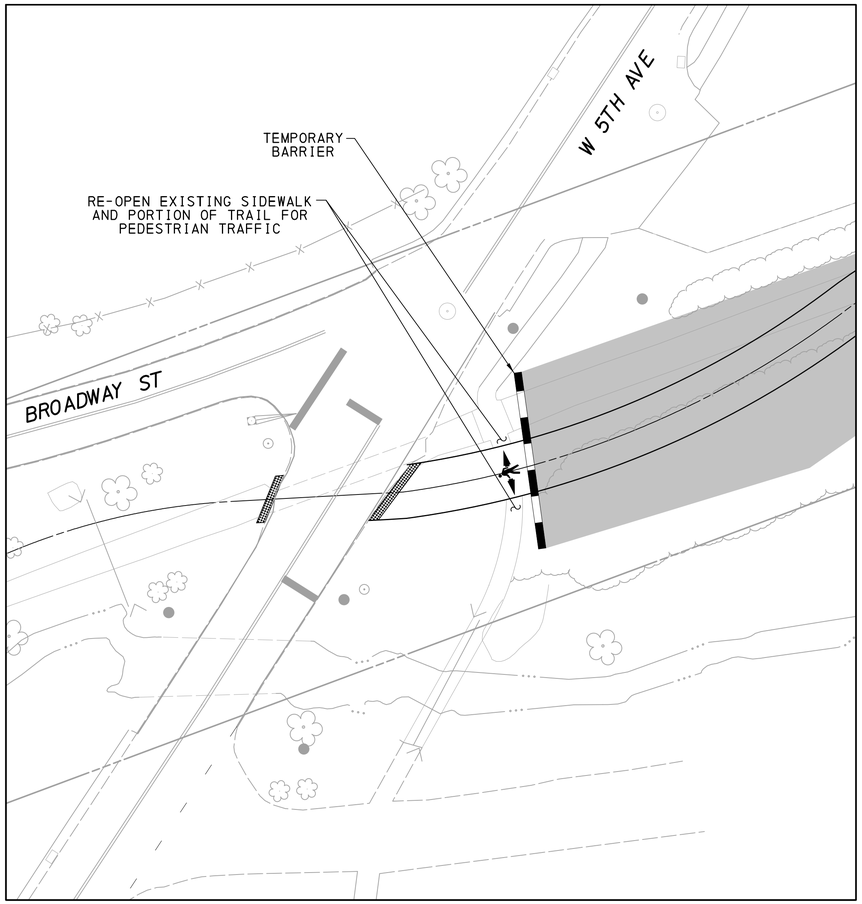
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

20 10 0 20 40

SCALE



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

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-2 - 5th Ave Ped MPT Plan.dgn
1/9/2023 1:51:18 PM 1:20 rwouterse

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-3

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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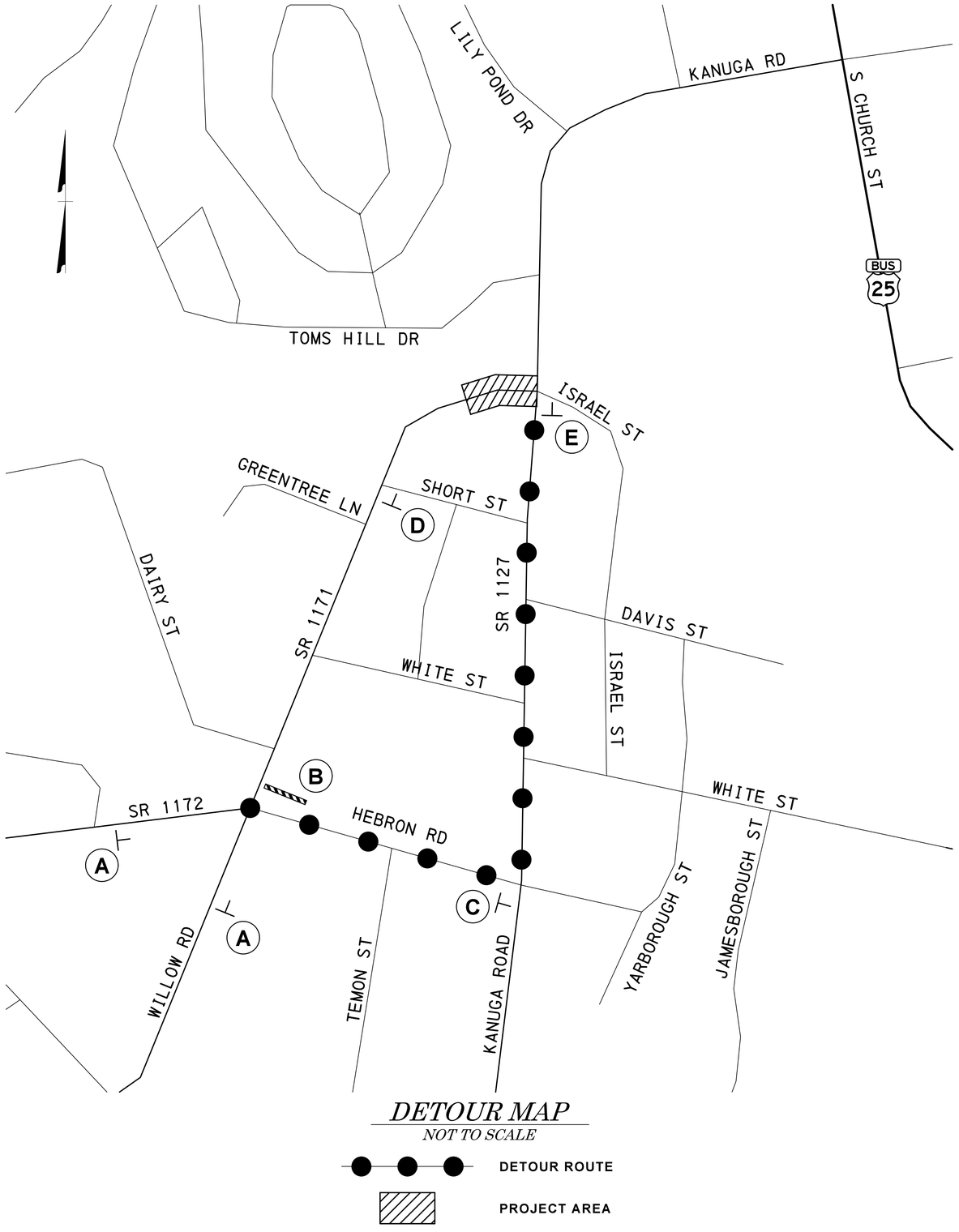


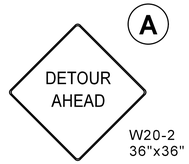
DETOUR MAP

NOT TO SCALE

DETOUR ROUTE

PROJECT AREA

A



W20-2
36"x36"

B

R11-4
60"x30"

M4-10R
48"x18"

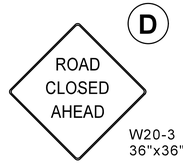
TYPE III
BARCRADE

C

SP-1
36"x18"

M4-9L
30"x24"

D



W20-3
36"x36"

E

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
12/23/2022 9:50:31 AM 1:20 gweather

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-4

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

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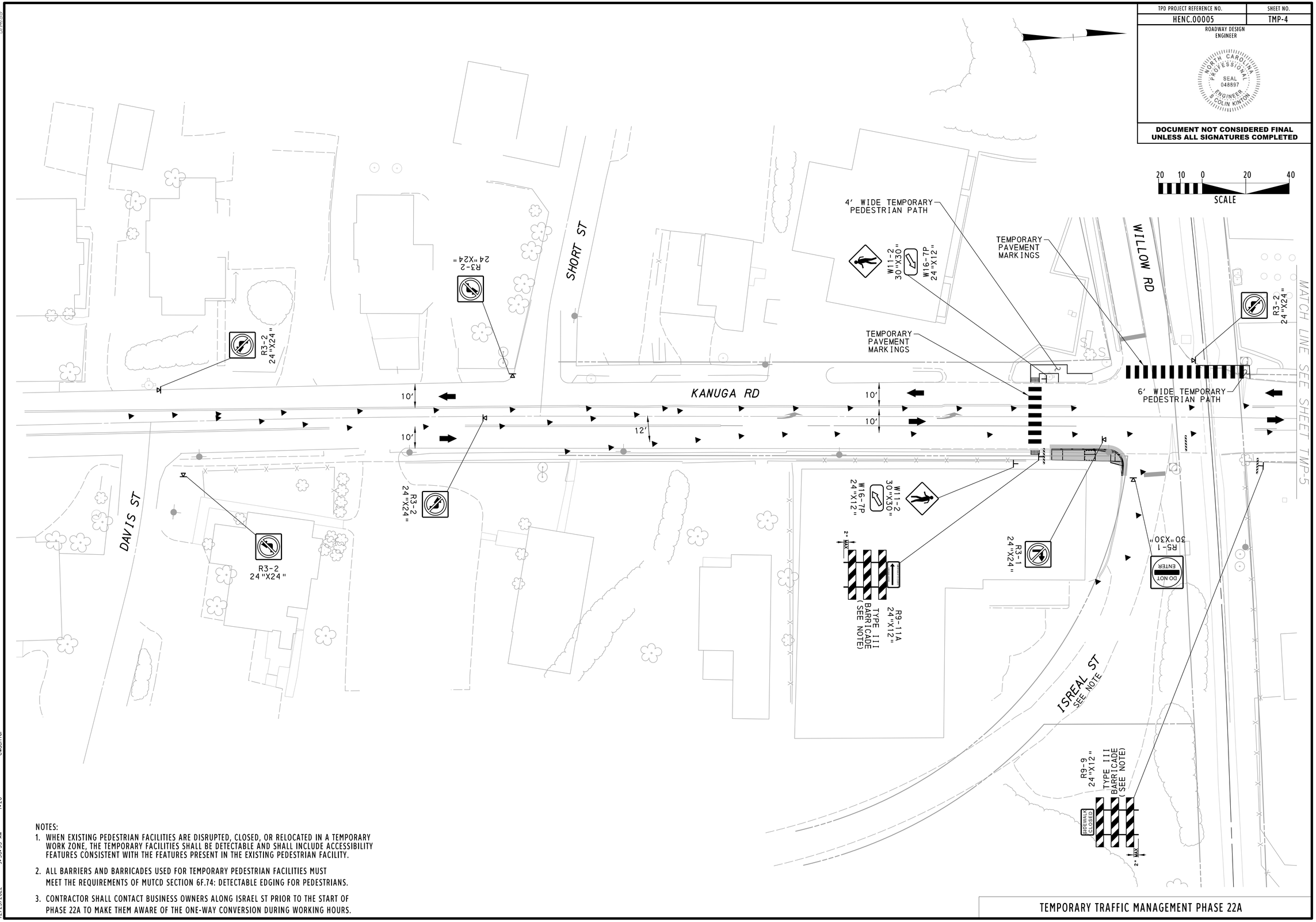
SCALE



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

5/14/99
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
12/23/2022 9:50:33 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-5

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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20 10 0 20 40
SCALE

TOMS HILL RD

MATCH LINE SEE SHEET TMP-4

KANUGA RD

10'

10'

12'

LILY POND DR

TEMPORARY DETECTABLE WARNING SURFACE

W11-2 30"X30"

W16-7P 24"X12"

TEMPORARY PAVEMENT MARKINGS

TEMPORARY DETECTABLE WARNING SURFACE

W16-7P 24"X12"

W11-2 30"X30"

TEMPORARY 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 22A

5/14/99

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12/23/2022 9:50:36 AM 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

SHORT ST

KANUGA RD

WILLOW RD

DAVIS ST

ISREAL ST
SEE NOTE

4' WIDE TEMPORARY PEDESTRIAN PATH

TEMPORARY PAVEMENT MARKINGS

TEMPORARY PAVEMENT MARKINGS

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"

W11-2 30"X30"
W16-7P 24"X12"

R3-1 24"X24"

R5-1 30"X30"
DO NOT ENTER

2" MAX

TYPE III BARRICADE (SEE NOTE)

R9-11A 24"X12"

R9-9 24"X12"
SIDEWALK CLOSED

10'
10'
12'
10'

MATCH LINE SEE SHEET TMP-7

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
p:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-6 - Kanuga Phase 22B-1.dgn
12/23/2022 9:50:39 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-7

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-6

KANUGA RD

10'

10'

12'

LILY POND DR

TEMPORARY DETECTABLE WARNING SURFACE

W11-2 30"X30"

W16-7P 24"X12"

TEMPORARY PAVEMENT MARKINGS

TEMPORARY DETECTABLE WARNING SURFACE

W16-7P 24"X12"

W11-2 30"X30"

TEMPORARY 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

5/14/99

pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\TCP\TMP-7 - Kanuga Phase 22B-2.dgn
12/23/2022 9:50:40 AM 1:20 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

SHORT ST

KANUGA RD

DAVIS ST

WILLOW RD

ISREAL ST

4' WIDE TEMPORARY PEDESTRIAN PATH

R5-1 30"X30" DO NOT ENTER

W11-2 30"X30"

W16-7P 24"X12"

R3-2 24"X24"

12'

10'

10'

R9-11A 24"X12"

TYPE III BARRICADE (SEE NOTE)

2" MAX.

MATCH LINE SEE SHEET TMP-9

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-8 - Kanuga Phase 22C-1.dgn
12/23/2022 9:50:42 AM cwachter
1:20

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-9

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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"

MATCH LINE SEE SHEET TMP-8

KANUGA RD

10'

10'

12'

LILY POND DR

TEMPORARY PAVEMENT MARKINGS

TEMPORARY DETECTABLE WARNING SURFACE

W16-7P 24"X12"

W11-2 30"X30"

TEMPORARY BARRIER PLACED BEHIND LANDING AREA TO PROVIDE REFUGE FROM STRIP MALL PARKING

20 10 0 20 40

SCALE

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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12/23/2022 9:50:44 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-10

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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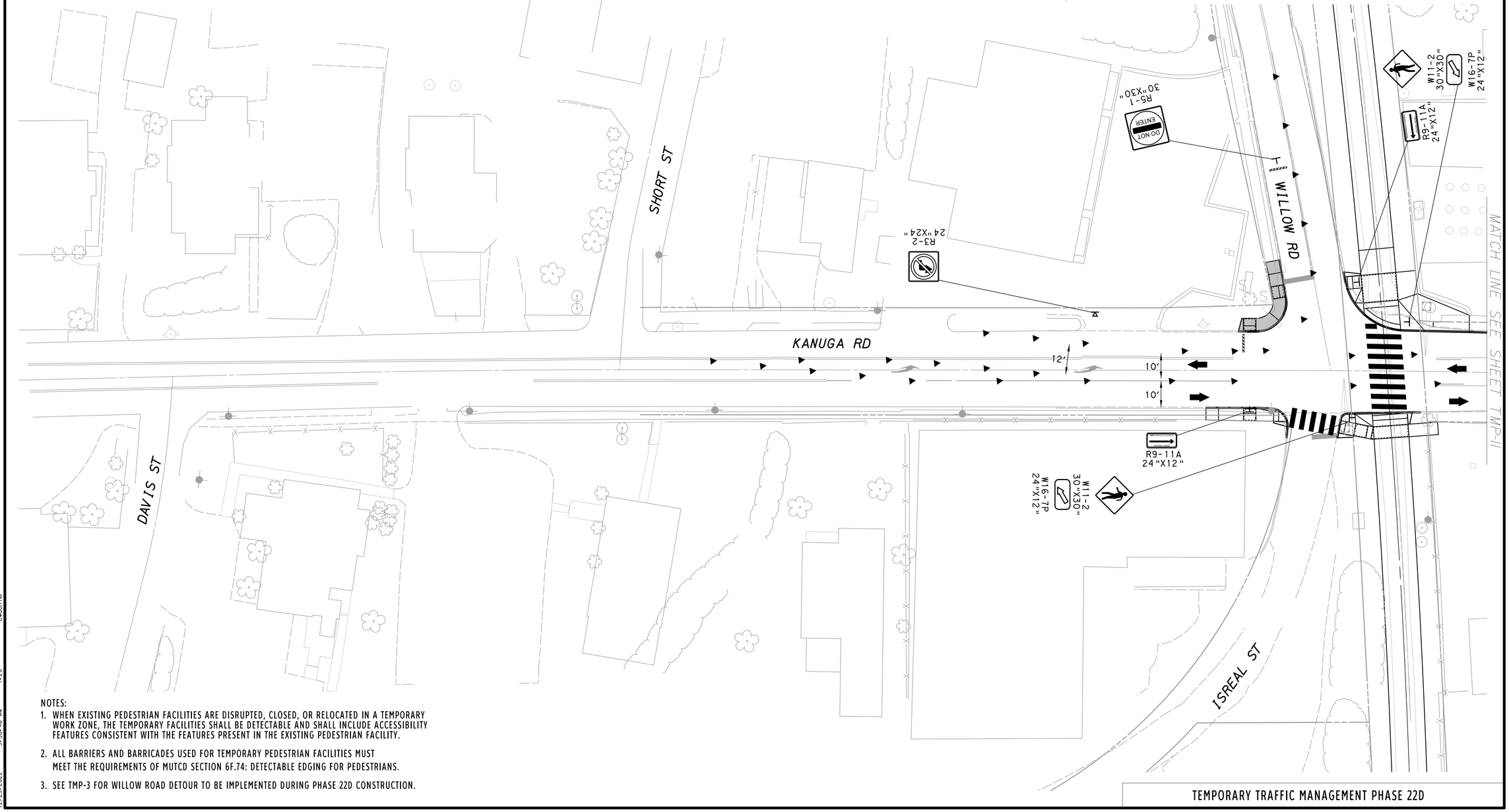

NOTES:

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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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	TMP-11

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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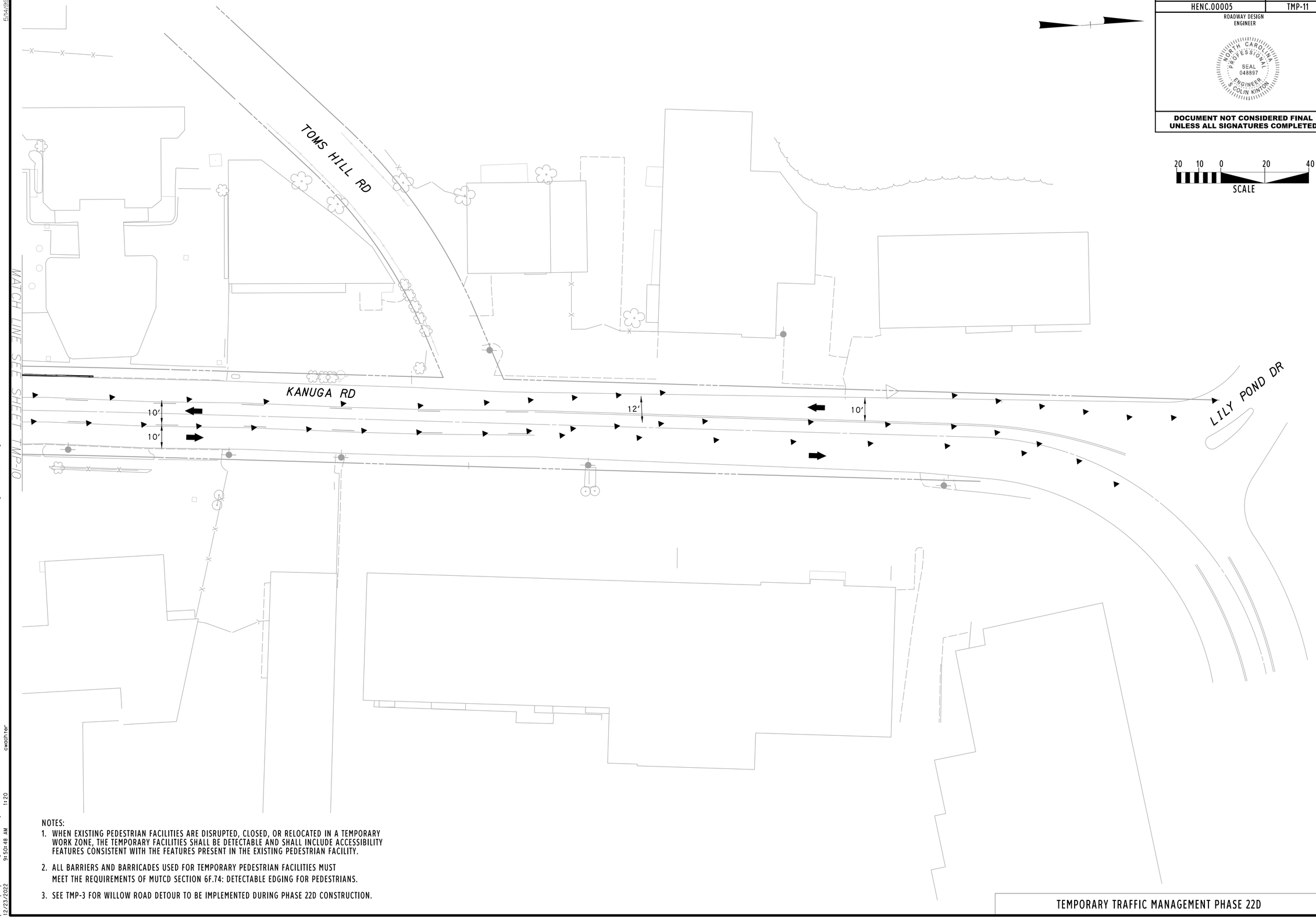

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PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-1

APPROVED: ____________________

DATE: ____________

SEAL

SEAL 048897
S. COLIN KINTON

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PROJECT: *ECUSTA TRAIL*

HENDERSON COUNTY ENGINEERING DEPARTMENT

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.

PLANS PREPARED BY:

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.

FINAL PAVEMENT MARKINGS, SYMBOLS AND CHARACTERS

T11	YELLOW SINGLE CENTERLINE (4", 90 MIL)	THERMOPLASTIC
T13	YELLOW DOUBLE CENTERLINE (4", 90 MIL)	THERMOPLASTIC
T61	WHITE STOPBAR/CROSSWALK LINE (24", 90 MIL)	THERMOPLASTIC
T100	ALPHANUMERIC CHARACTER (90 MIL)	THERMOPLASTIC
T102	12" YIELD LINE TRIANGLE (90 MIL)	THERMOPLASTIC

SHEET INDEX

SHEET NO.	DESCRIPTION
PMP-1	PAVEMENT MARKING AND SIGNING PLAN TITLE SHEET
PMP-1A	DETAIL SHEET
PMP-2	TYPE 'E' SIGNS
PMP-3 - 20	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

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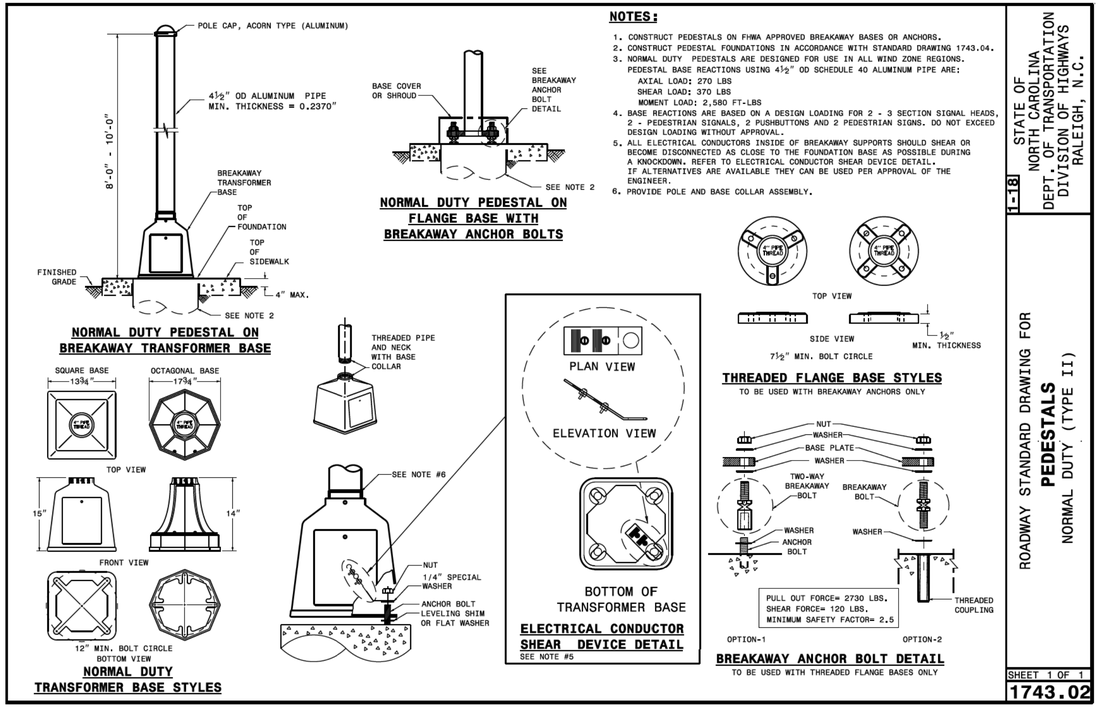


NOTES:

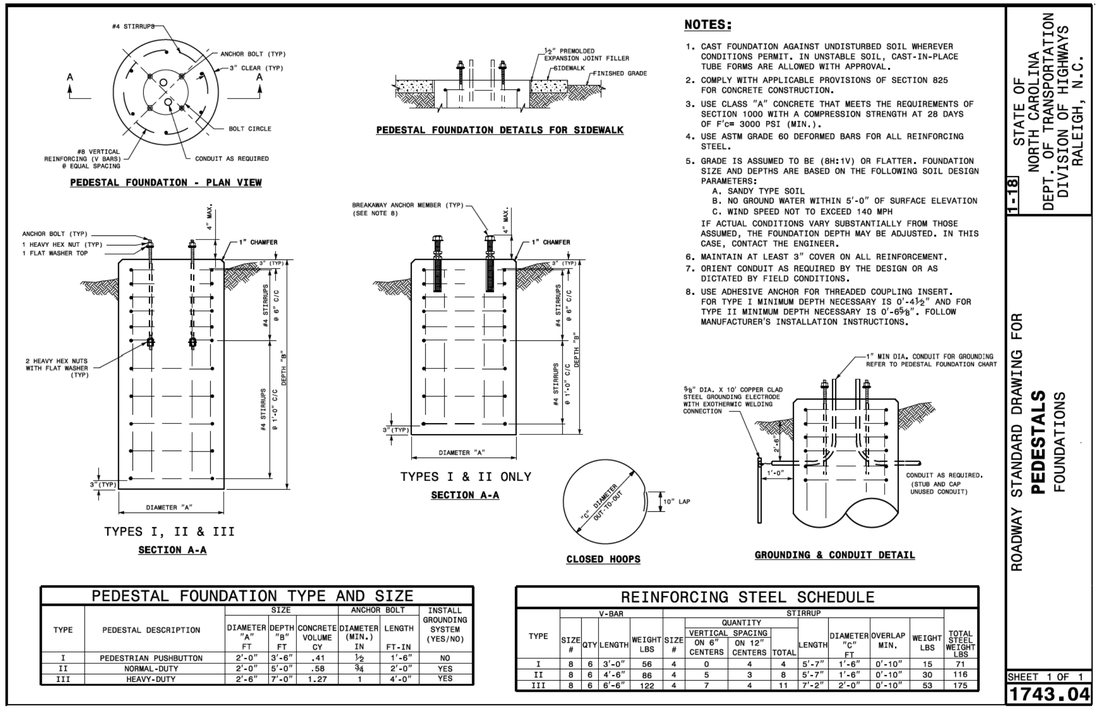
1. CONSTRUCT PEDESTALS ON FHWA APPROVED BREAKAWAY BASES OR ANCHORS.
2. CONSTRUCT PEDESTAL FOUNDATIONS IN ACCORDANCE WITH STANDARD DRAWING 1743.04.
3. NORMAL DUTY PEDESTALS ARE DESIGNED FOR USE IN ALL WIND ZONE REGIONS.
   PEDESTAL BASE REACTIONS USING 4½" OD SCHEDULE 40 ALUMINUM PIPE ARE:
   AXIAL LOAD: 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

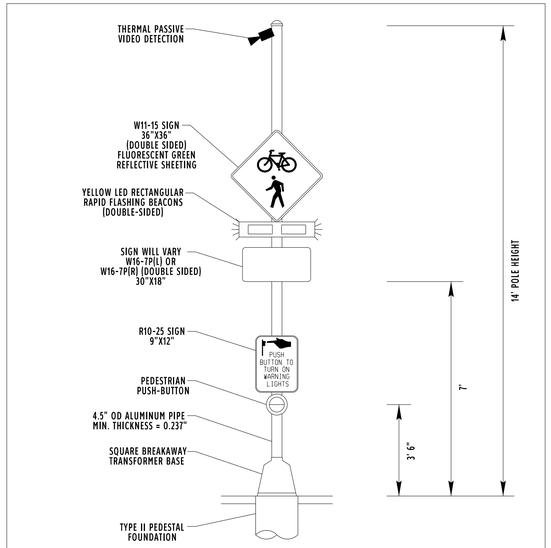
SHEET 1 OF 1
1743.04

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



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.

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

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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DETAIL SHEET

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-2

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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401 QUANTITY REQ'D XX STOP 36" X 36" R1-1 ONE "U" POST PER SIGN	402 QUANTITY REQ'D XX 36" X 36" W3-1 ONE "U" POST PER SIGN	403 QUANTITY REQ'D XX YIELD 36" X 36" R1-2 ONE "U" POST PER SIGN	404 QUANTITY REQ'D XX 36" X 36" W3-2 ONE "U" POST PER SIGN	405 QUANTITY REQ'D XX HERE TO 36" X 36" R1-5L ONE "U" POST PER SIGN	
406 QUANTITY REQ'D XX 30" X 30" W11-15 FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	408 QUANTITY REQ'D XX 24" X 12" W16-7PR FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	409 QUANTITY REQ'D XX 24" X 12" W16-7PL FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	410 QUANTITY REQ'D XX LOOK 36" X 18" R15-8 ONE "U" POST PER SIGN	411 QUANTITY REQ'D XX ECUSTA TRAIL 24" X 8" W16-8P ONE "U" POST PER SIGN	412 QUANTITY REQ'D XX STREET NAME VAR" X 8" D3-1 ONE "U" POST PER SIGN
413 QUANTITY REQ'D XX NO MOTOR VEHICLES 24" X 24" R5-3 ONE "U" POST PER SIGN	414 QUANTITY REQ'D XX AHEAD 24" X 12" W16-9P FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	415 QUANTITY REQ'D XX 36" X 36" W11-15 FLUORESCENT GREEN REFLECTIVE SHEETING MOUNTED TO RRFB ASSEMBLY	419 QUANTITY REQ'D 1 24" X 12" W16-7PL FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	420 QUANTITY REQ'D 1 24" X 12" W16-7PR FLUORESCENT GREEN REFLECTIVE SHEETING ONE "U" POST PER SIGN	

TYPE 'E' SIGNS

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TPD PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER S. COLIN KINTON

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SCALE

REMOVE EXISTING RR CROSSING MARKINGS

SPEED LIMIT SIGN TO REMAIN

RR CROSSING SIGN TO BE REMOVED

T100

AHEAD 414 406

406 414 AHEAD

406 ECUSTA TRAIL 411 408

409 412 ECUSTA TRAIL 406

405 HERE TO

220'

HUNTERS GLEN LN.

T102

HALF SIZE T100

413 NO MOTOR VEHICLES

T61

25'

T102

100' T11

412 HUNTERS GLEN LANE

403 YIELD

410 LOOK

404

T102

T11 100'

25'

T102

413 NO MOTOR VEHICLES

T100 HALF SIZE

LOOK 410

403 YIELD

412 HUNTERS GLEN LANE

404

HERE TO 405

125'

408 ECUSTA TRAIL 412

406

406 AHEAD 414

406 ECUSTA TRAIL 411 409

T100

MAREN CT.

HUNTERS GLEN LN.

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

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ROADWAY DESIGN ENGINEER

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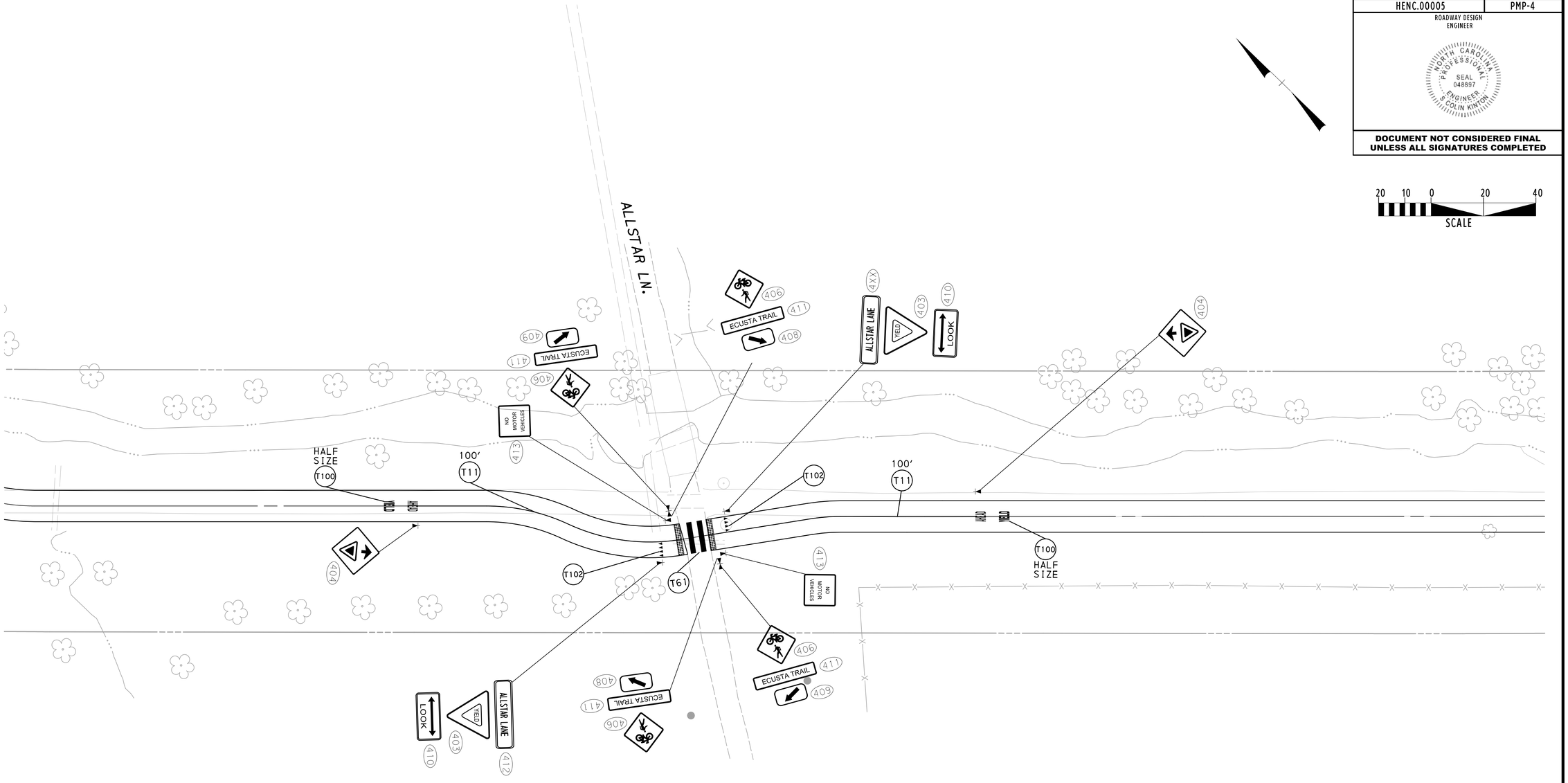

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FINAL PAVEMENT MARKING AND SIGNING DETAILS

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-5

ROADWAY DESIGN ENGINEER

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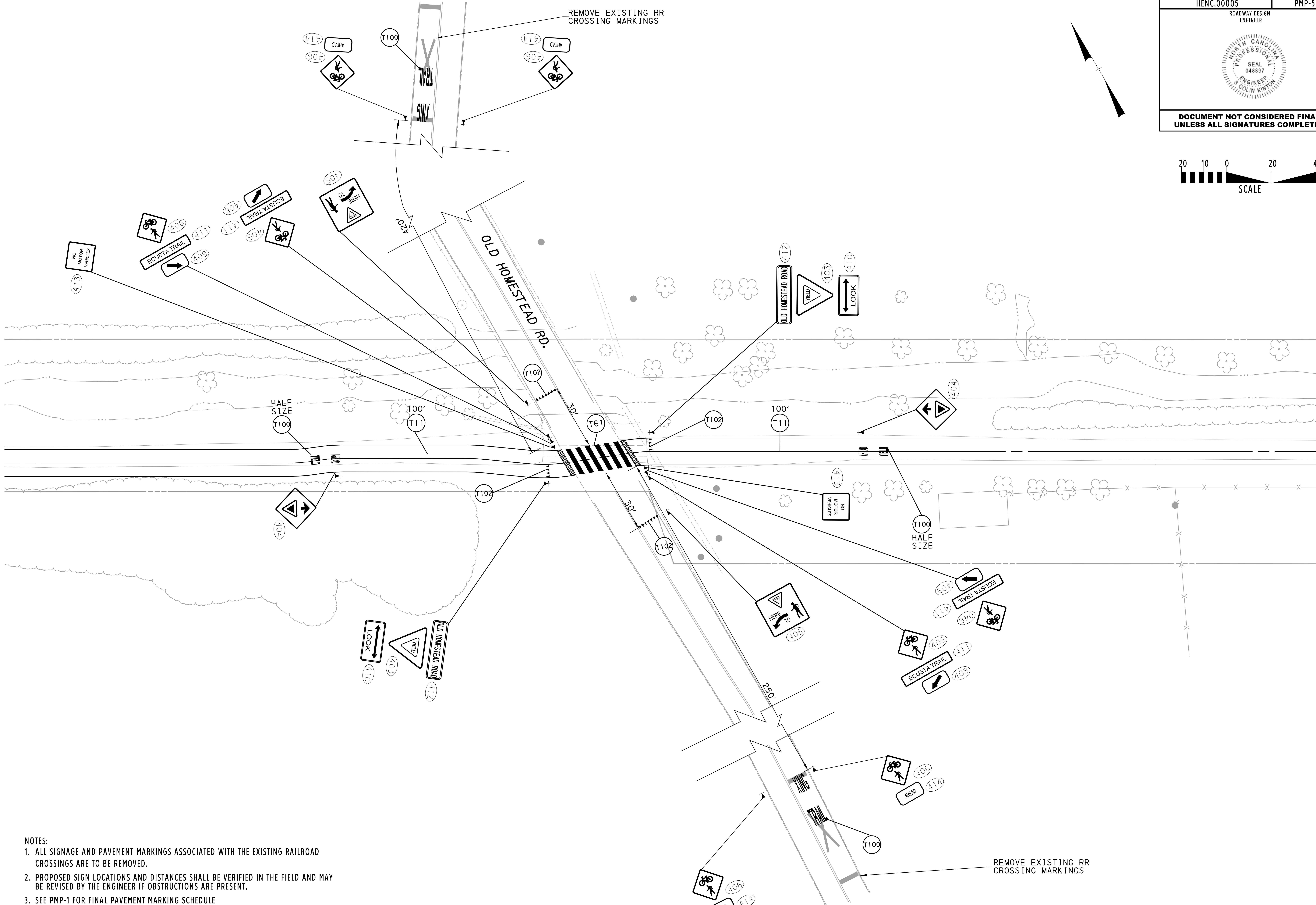

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FINAL PAVEMENT MARKING AND SIGNING DETAILS

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-6

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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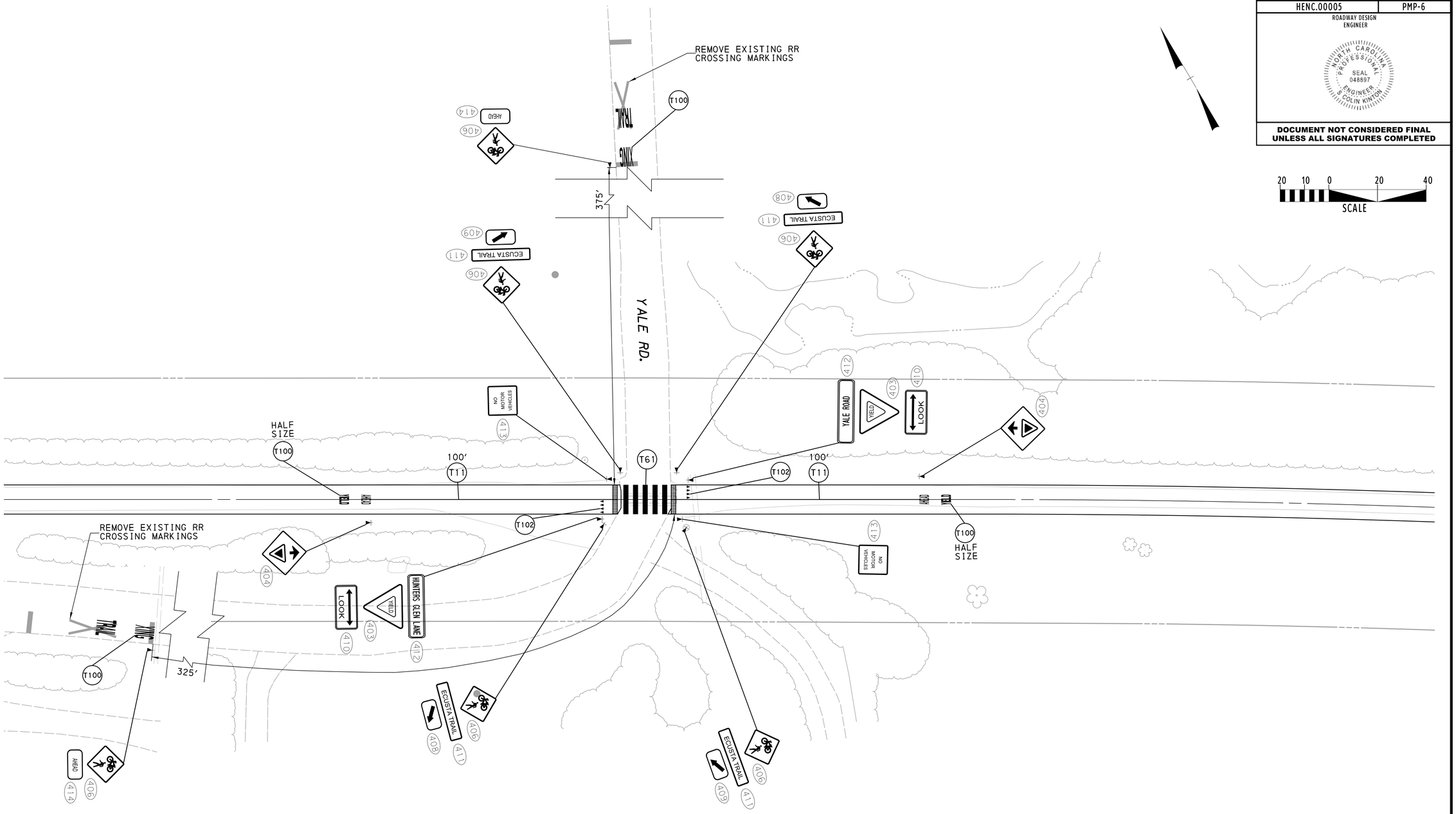

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FINAL PAVEMENT MARKING AND SIGNING DETAILS

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-7

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

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SCALE

REMOVE EXISTING RR CROSSING MARKINGS

TURLEY FALLS RD.

BRIGHTWATER DR.

SKY LAKE DR.

ECUSTA TRAIL

TURLEY FALLS ROAD

HALF SIZE

NO MOTOR VEHICLES

AHEAD

HERE TO

LOOK

YIELD

310'

30'

100'

235'

NOTES:
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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-8

ROADWAY DESIGN ENGINEER

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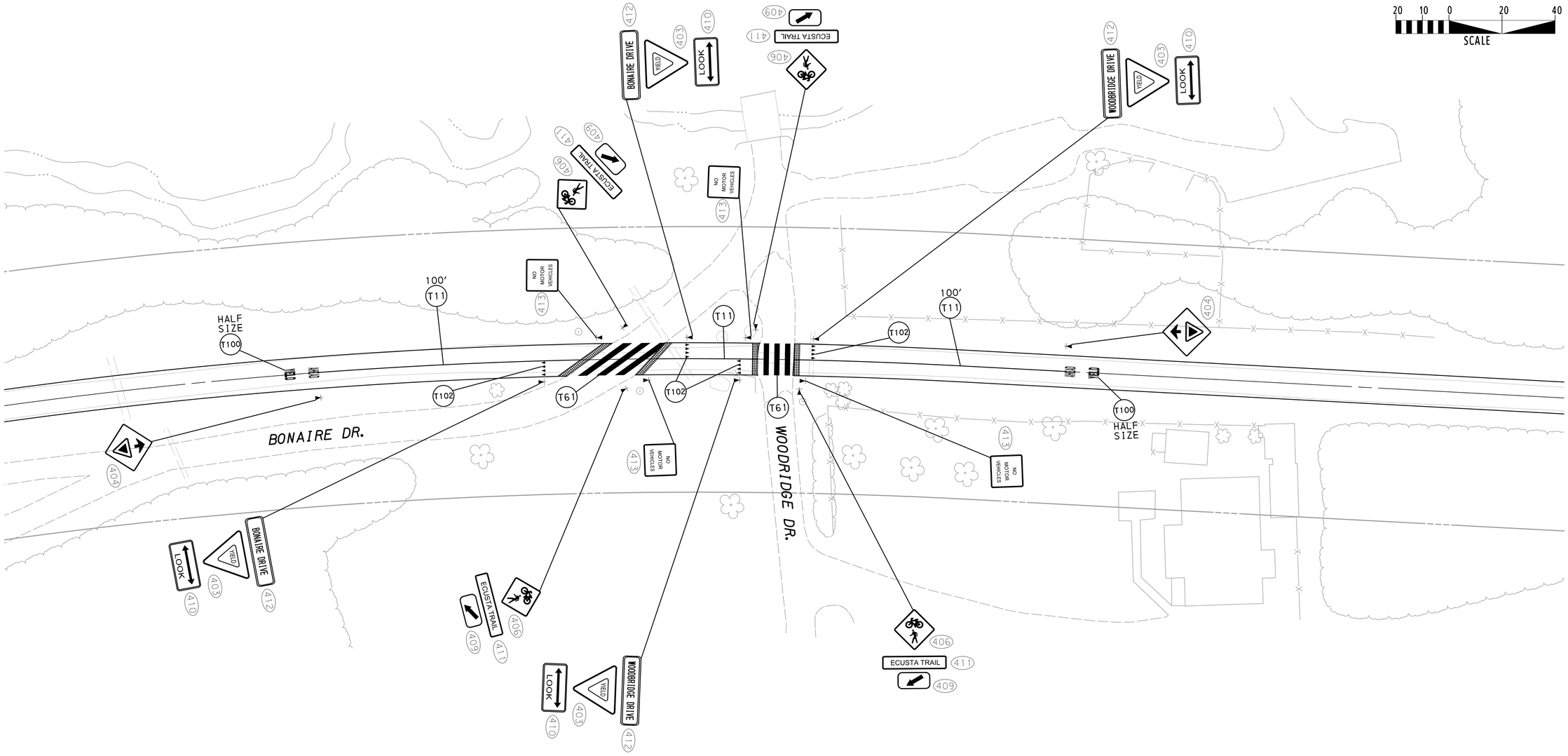

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TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-9

ROADWAY DESIGN ENGINEER

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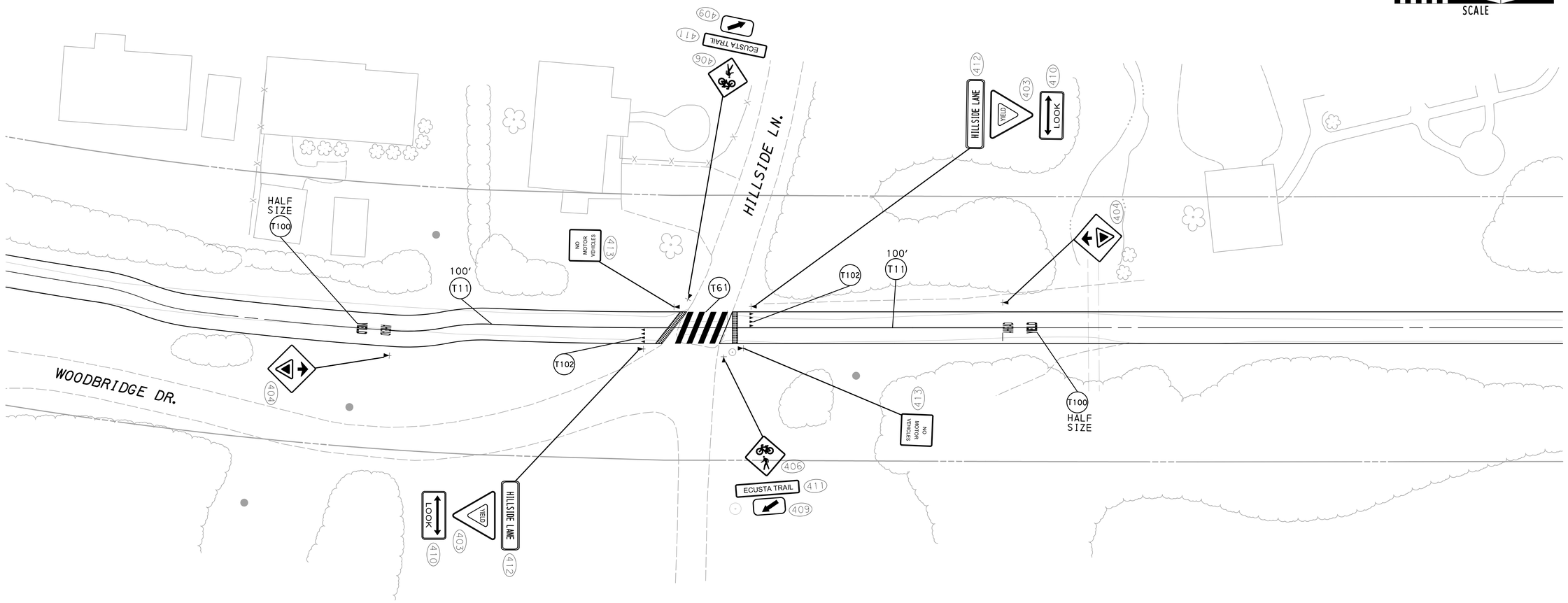
20 10 0 20 40

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 InRoads SS2)\Plan\plan08.dgn
12/23/2022 10:23:27 AM 1:20 gweather

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-10

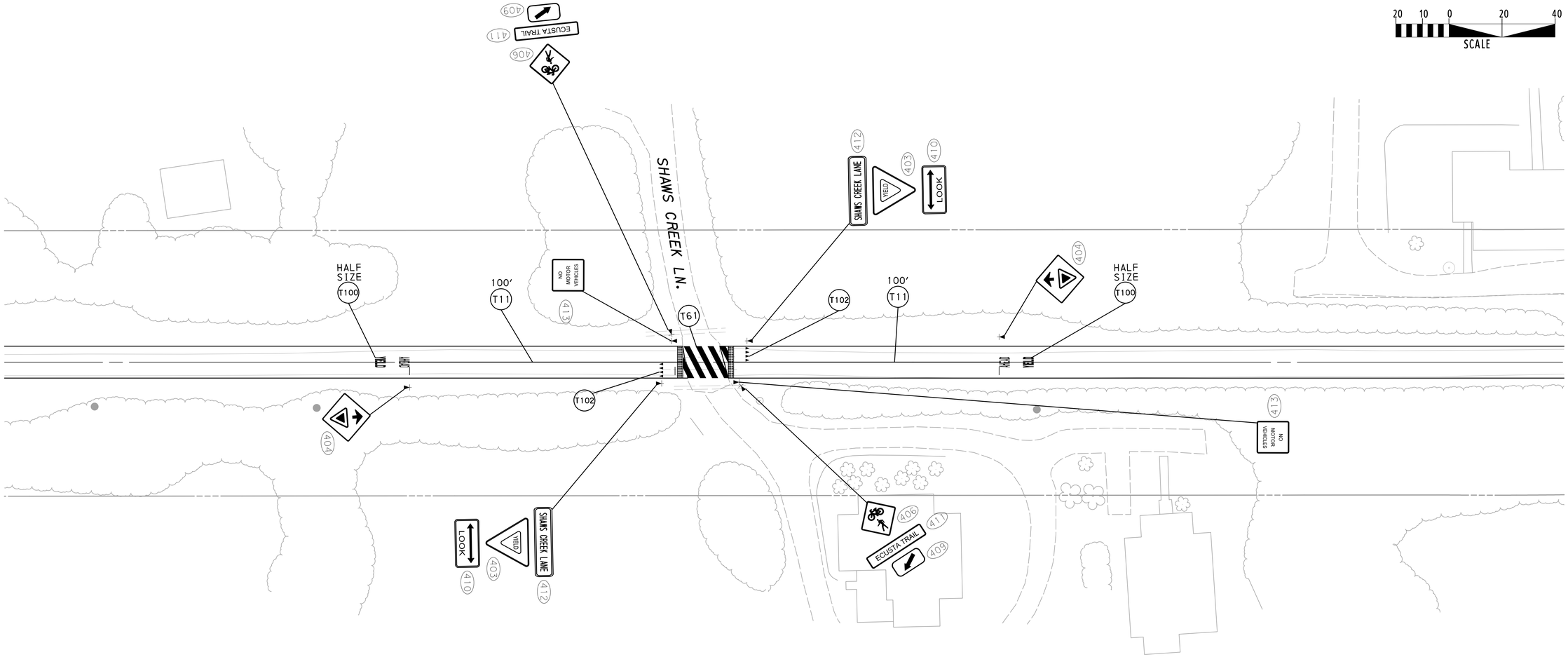
ROADWAY DESIGN ENGINEER

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 (MOP InRoads SS2)\Planplan09.dgn
12/23/2022 10:23:31 AM 1:20 cwachter

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

20 10 0 20 40
SCALE

REMOVE EXISTING PAVEMENT MARKINGS

REMOVE EXISTING PAVEMENT MARKINGS

REMOVE EXISTING PAVEMENT MARKINGS

BREVARD RD. (US-64)

WHITE PINE DR.

ECUSTA TRAIL

HERE TO

NO MOTOR VEHICLES

WHITE PINE DRIVE

STOP

AHEAD

HALF SIZE

100′

55′

20′

30′

155′

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.
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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 (nRoads SS2)\Plan\plan10.dgn
12/23/2022 10:23:34 AM 1:20 cwachter

5/14/99

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

REMOVE EXISTING RR CROSSING MARKINGS

BREVARD RD. (US-64)

ECUSTA TRAIL

NO MOTOR VEHICLES

HERE TO

TRAIL XING

DANIEL DRIVE

STOP

HALF SIZE

100′

22′

30′

150′

DANIEL DR.

XING

TRAIL

AHEAD

REMOVE EXISTING RR CROSSING MARKINGS

REMOVE EXISTING RR CROSSING SIGNAGE AND REPLACE WITH TRAIL CROSSING SIGNAGE

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
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3. SEE PMP-1 FOR FINAL PAVEMENT MARKING SCHEDULE

FINAL PAVEMENT MARKING AND SIGNING DETAILS

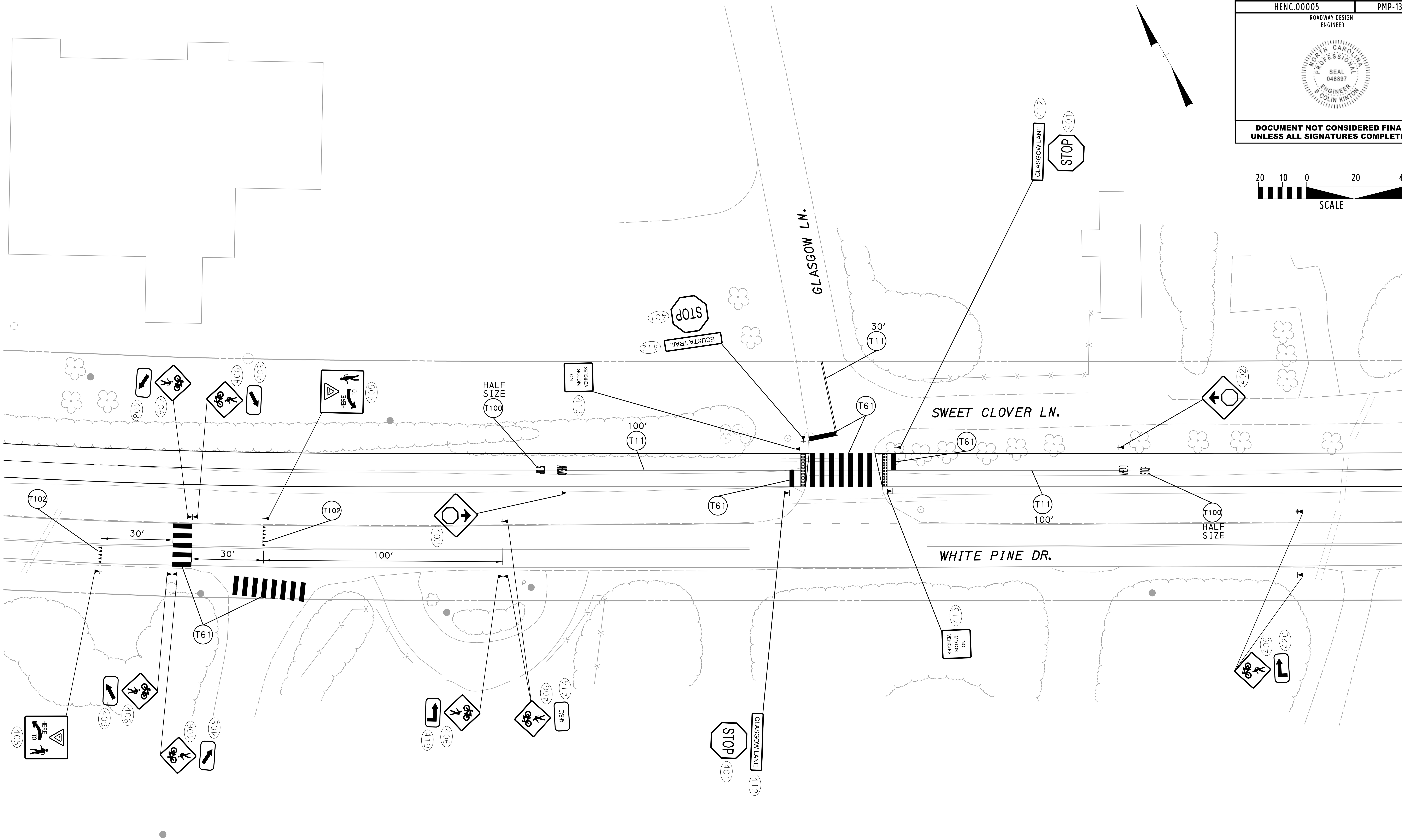
pw:\\tpd-pw.bentley.com:TPDProjectwise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP InRoads SS2)\Plan\plan11.dgn
12/23/2022 10:23:40 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-13

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 (HDP InRoads SS2)\Plan\plan12.dgn
12/27/2022 10:23:44 AM 1:20 cwachter

5/14/99

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-14

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

BROADWAY ST.

W 5TH AVE.

5TH AVENUE W

STOP

HALF SIZE

T100

T11 100'

T61

T102

360'

65'

30'

340'

REMOVE EXISTING RR CROSSING MARKINGS

REMOVE EXISTING PAVEMENT MARKINGS

EXISTING MAST ARM TO BE REMOVED

NO MOTOR VEHICLES

SEE RRFB DETAIL

HERE TO

THRU

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)\Plan\plan13.dgn
1/9/2023 12:32:13 PM 1:20 rwouters2

5/14/99

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

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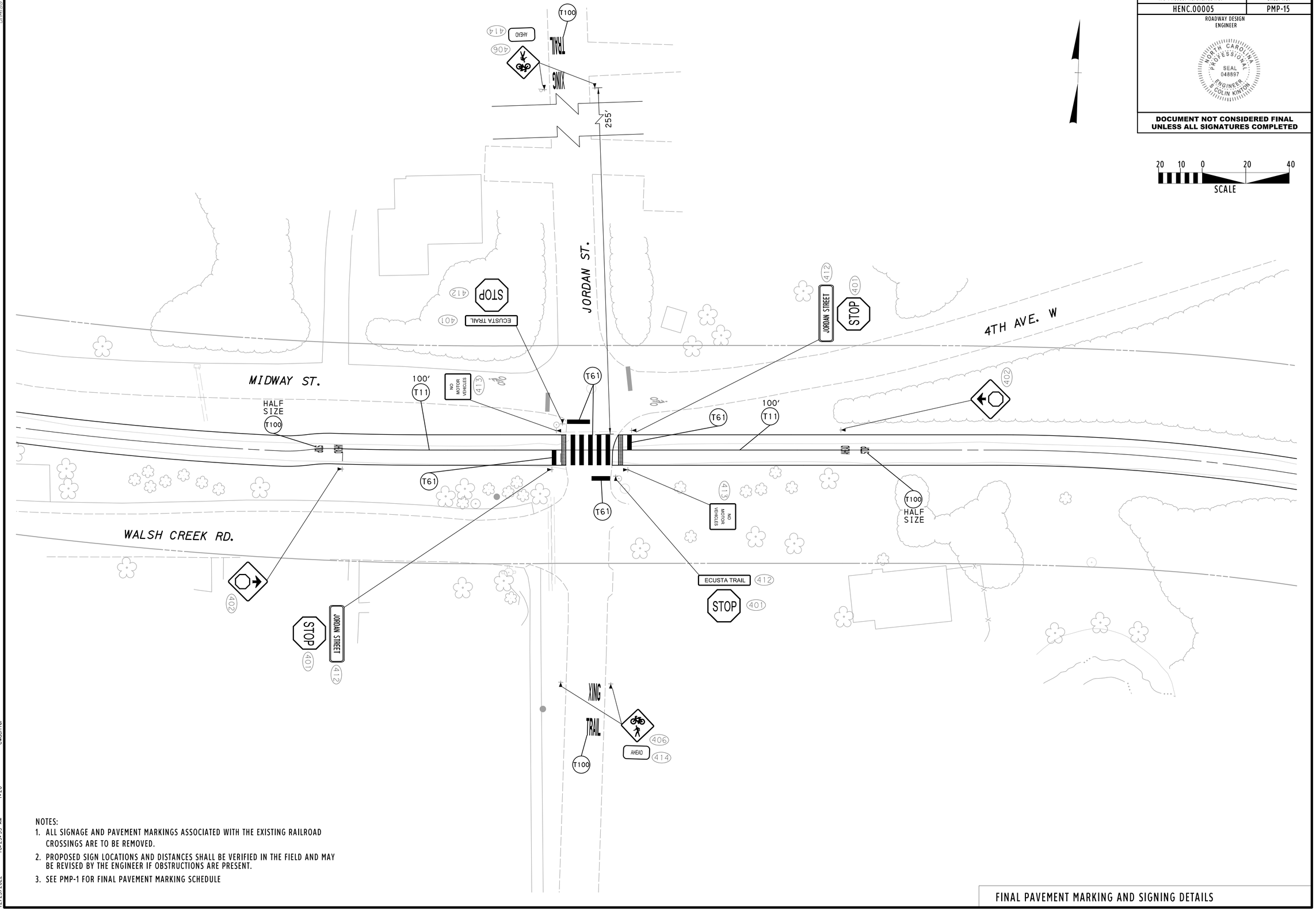
SCALE



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

pw:\\tpd-pw.bentley.com:TPDProjectWise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HOP Infoods SS2)\Plan\plan14.dgn
12/23/2022 10:23:53 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-16

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

MAINTAIN EXISTING 3-WAY STOP SIGN

260'

3RD AVE. W

BLYTHE ST.

T100 HALF SIZE

T102

T61

T11

100'

30'

10'

215'

3RD AVENUE

STOP

AHEAD

HERE TO

ECUSTA TRAIL

NO MOTOR VEHICLES

XING

TRAIL

EWART'S HILL RD.

WELLS ST.

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

pw:\\tpd-pw.bentley.com:TPDProjectWise\Documents\Active\HENC\00005 - Ecusta Rail Trail\CADD (HQP InRoads SS2)\Plan\plan15.dgn
12/23/2022 10:24:06 AM cwachter 1:20

5/14/99

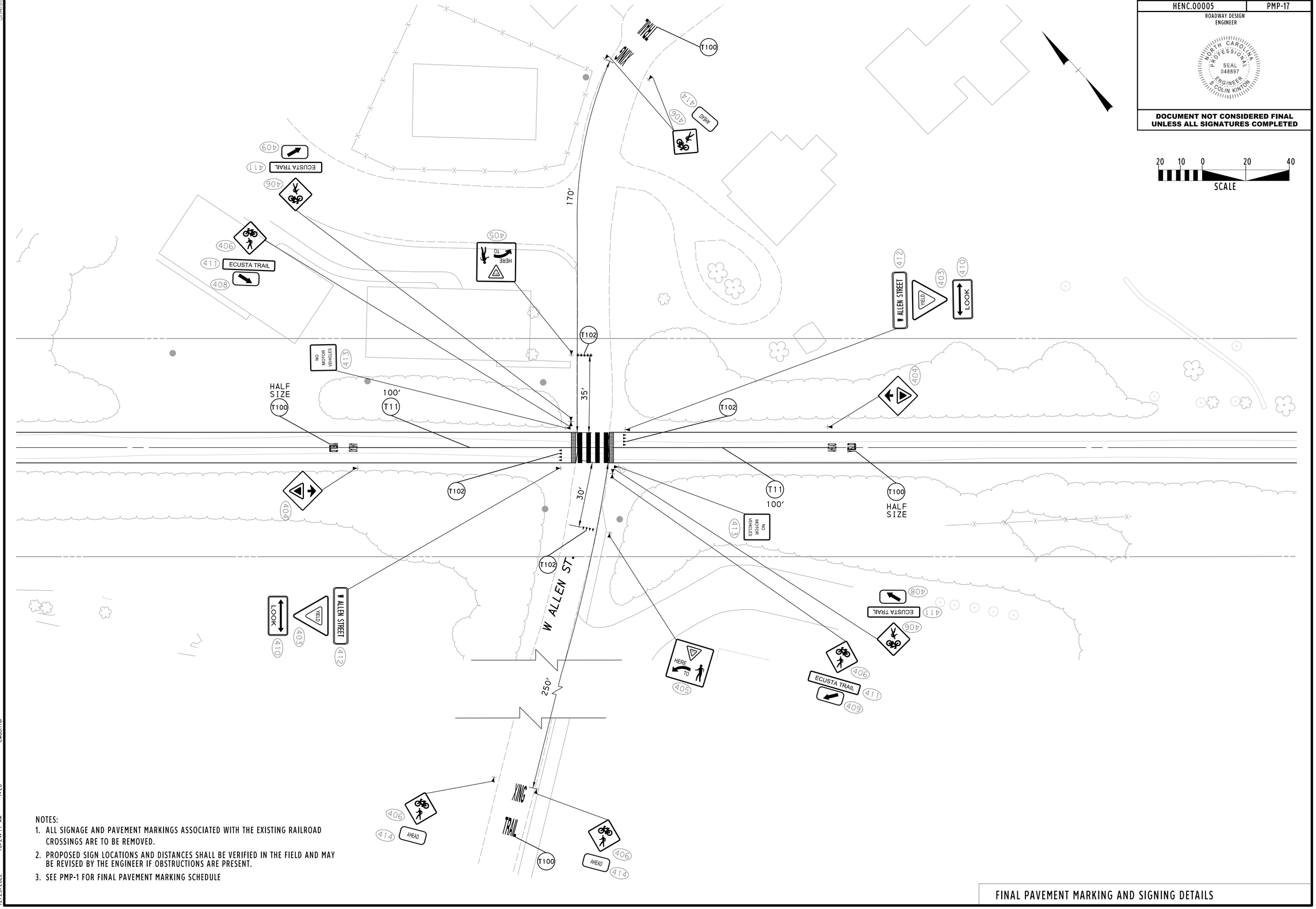
TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-17

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:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
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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 Infoads SS2)\Plan\plan16.dgn
12/23/2022 10:24:17 AM 1:20 cwachter

TPD PROJECT REFERENCE NO.	SHEET NO.
HENC.00005	PMP-18

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

S WHITTED ST.

DALE ST.

SEE MATCHLEG TO RIGHT

SEE MATCHLEG TO LEFT

240'

35'

35'

190'

S WHITTED ST.

LENOX PARK DR.

XING TRAIL

HALF SIZE

100'

ECUSTA TRAIL

S WHITTED STREET

YIELD

LOOK

HERE TO

AHEAD

NO MOTOR VEHICLES

NOTES:
1. ALL SIGNAGE AND PAVEMENT MARKINGS ASSOCIATED WITH THE EXISTING RAILROAD CROSSINGS ARE TO BE REMOVED.
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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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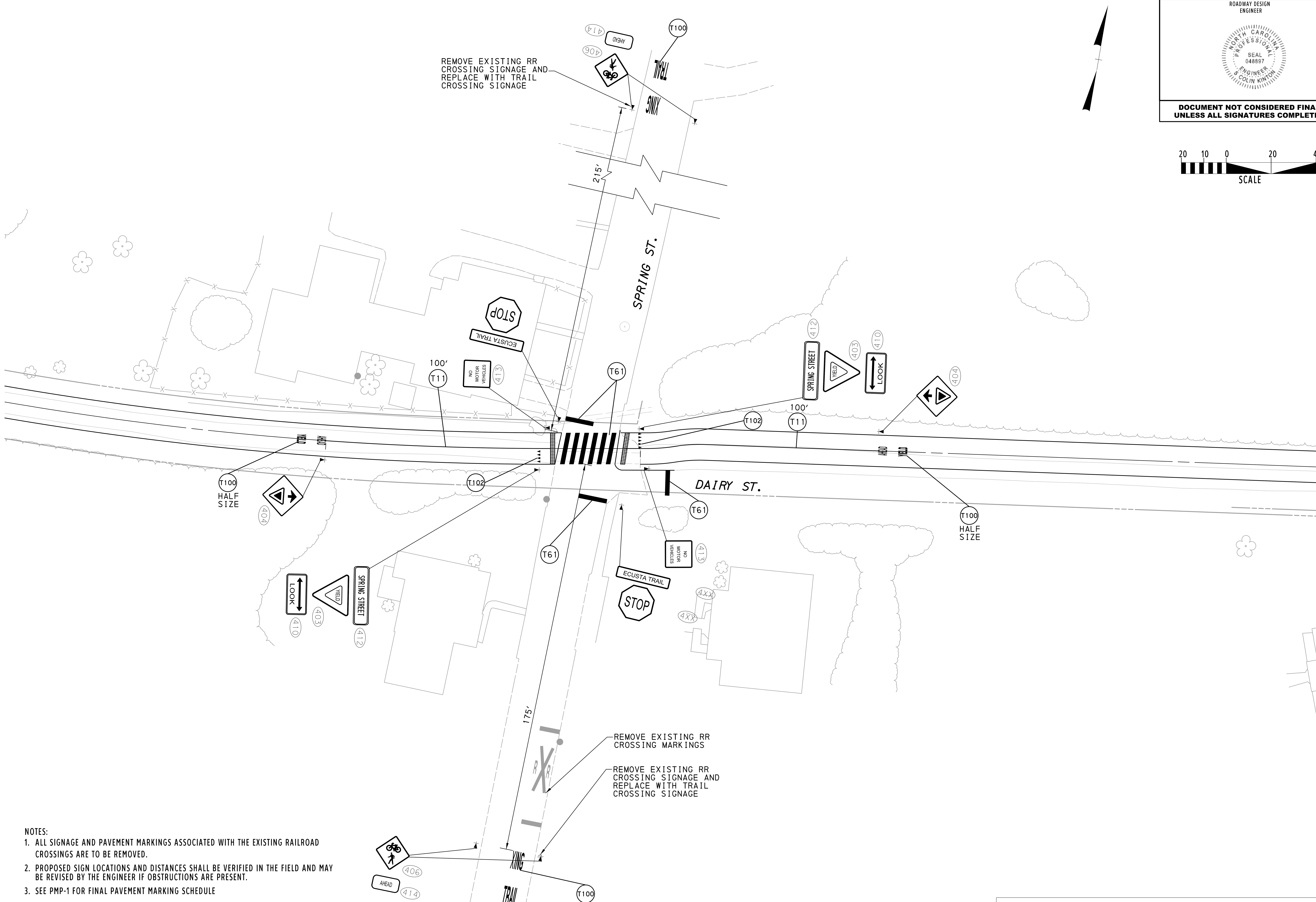
12/23/2022 10:24:21 AM 1:20 cwachter

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:

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

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

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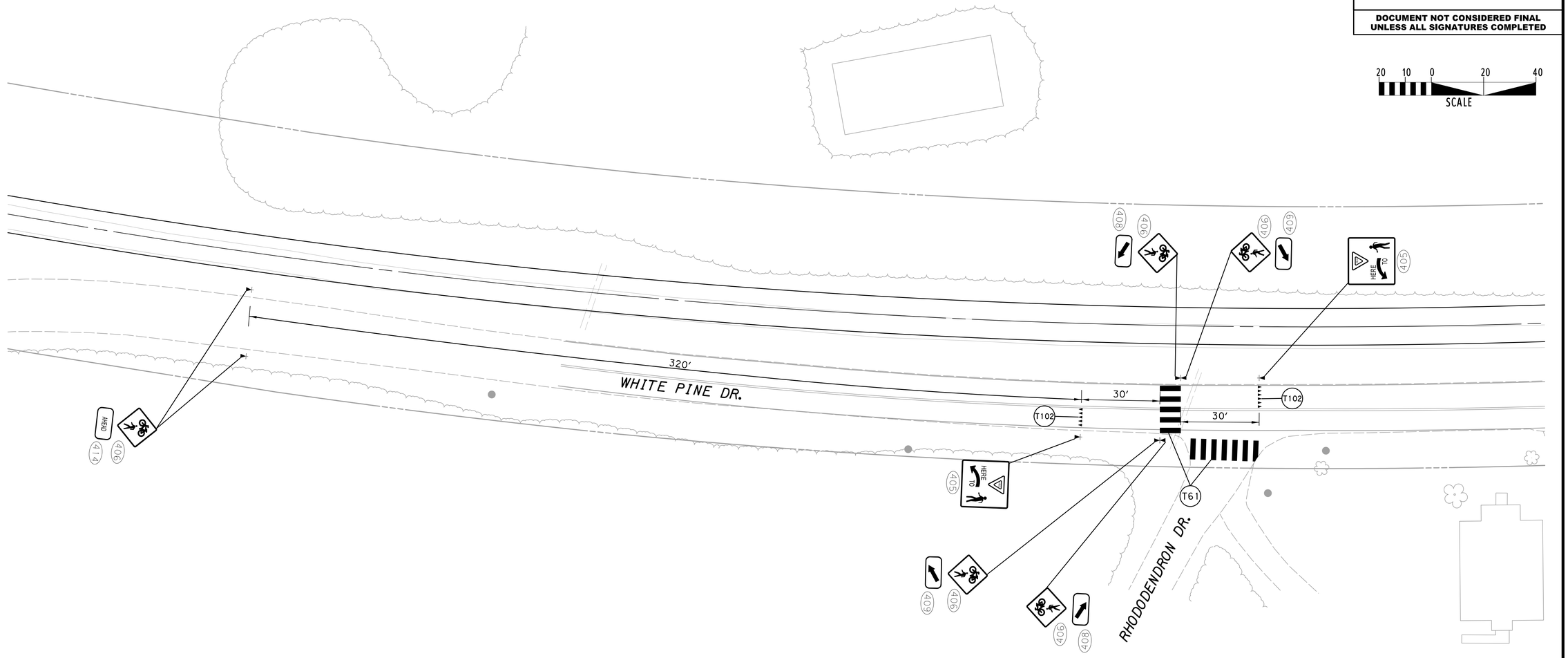
SCALE



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\plan20.dgn
12/23/2022 10:24:35 AM 1:20 cwachter

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

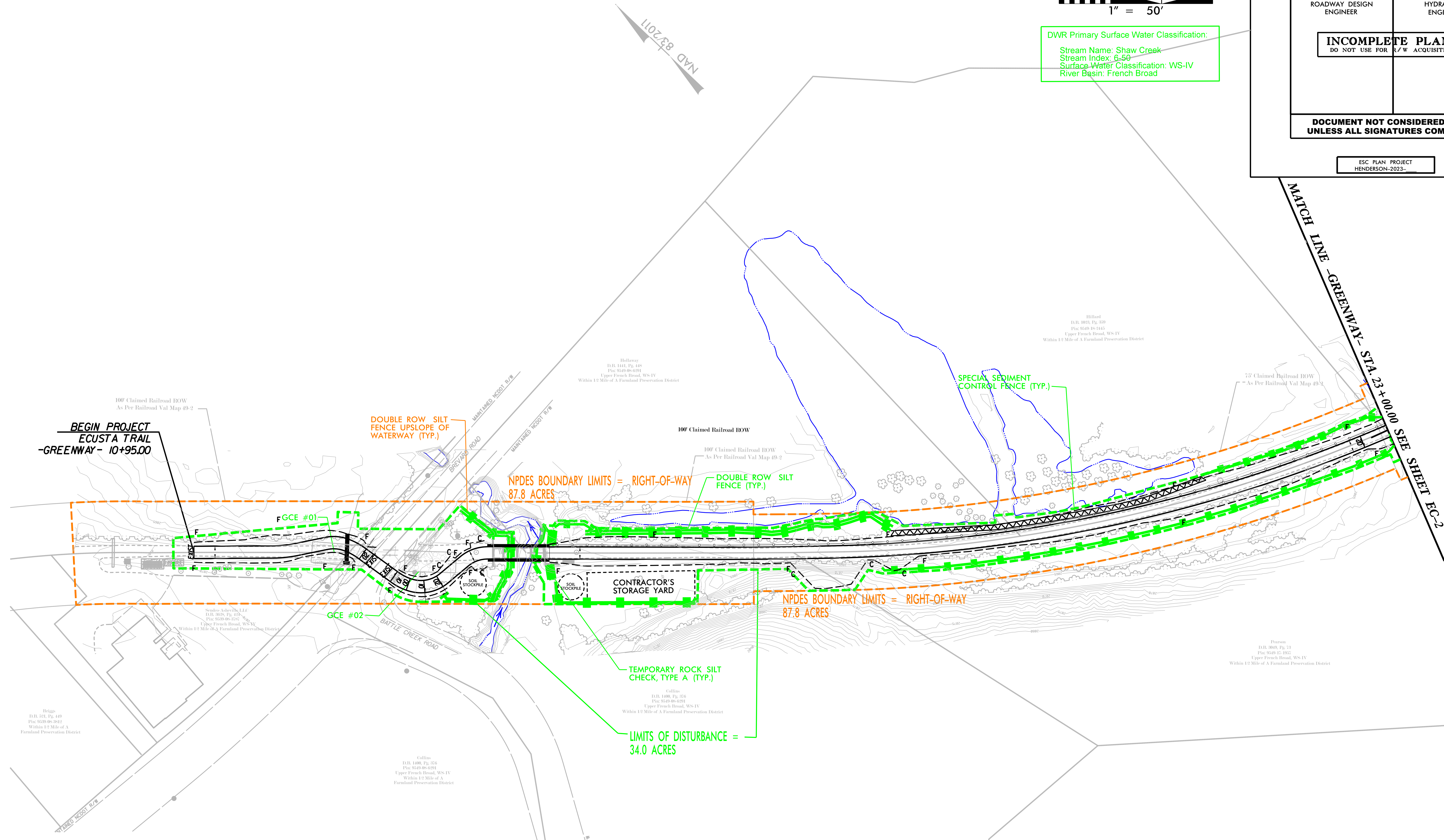
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

NOTE:
1. ACCESS TO BRIDGE #11 EAST ABUTMENT IS FROM GC #03.
2. ACCESS TO BRIDGE #11 WEST ABUTMENT IS FROM GC #023.
3. SEE PLAN SHT EC-31 FOR TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-

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

REVISIONS
8/17/99

MATCH LINE –GREENWAY– STA. 23+00.00 SEE SHEET EC-1

MATCH LINE –GREENWAY– STA. 35+00.00 SEE SHEET EC-3

LIMITS OF DISTURBANCE = 34.0 ACRES

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

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

S 68° 22' 19.3" E

GREENWAY

GCE #04

GCE #03

HUNTERS GLEN LANE

ROCK PIPE INLET SEDIMENT TRAP, TYPE 'A' (TYP.)

LIMITS OF DISTURBANCE = 34.0 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

A&D Water Service Inc.
D.B. 1547, Pg. 221
Plat 9349-18-5231
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Wise
D.B. 984, Pg. 573
Plat 9349-37-4917
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Ayers
D.B. 3100, Pg. 306
Plat 9349-37-4917
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Steinbaugh
D.B. 1091, Pg. 17
Plat Cab. A, Slide 228
Plat 9349-17-5074
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

Weidemann
D.B. 1442, Pg. 439
Plat Cab. A, Slide 228
Plat 9349-17-4241
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
Plat 9349-17-5701
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

3
Ayers
D.B. 1324, Pg. 330
Plat Cab. A, Slide 228
Plat 9349-17-9084
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

3
Roth
D.B. 1040, Pg. 869
Plat Cab. A, Slide 228
Plat 9349-17-1145
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

1
Dixon & Halstead
D.B. 1282, Pg. 552
Plat Cab. A, Slide 228
Plat 9349-17-3557
Upper French Broad, WS-IV
Within 1/2 Mile of A Farmland Preservation District

EROSION AND SEDIMENT CONTROL MEASURES

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)	
1630.03	Rock Pipe Inlet Sediment Trap Type-A	
1630.05	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

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	PR
ROADSIDE 'V' DITCH	
WATTLE	C
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

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User:dwells

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-3

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

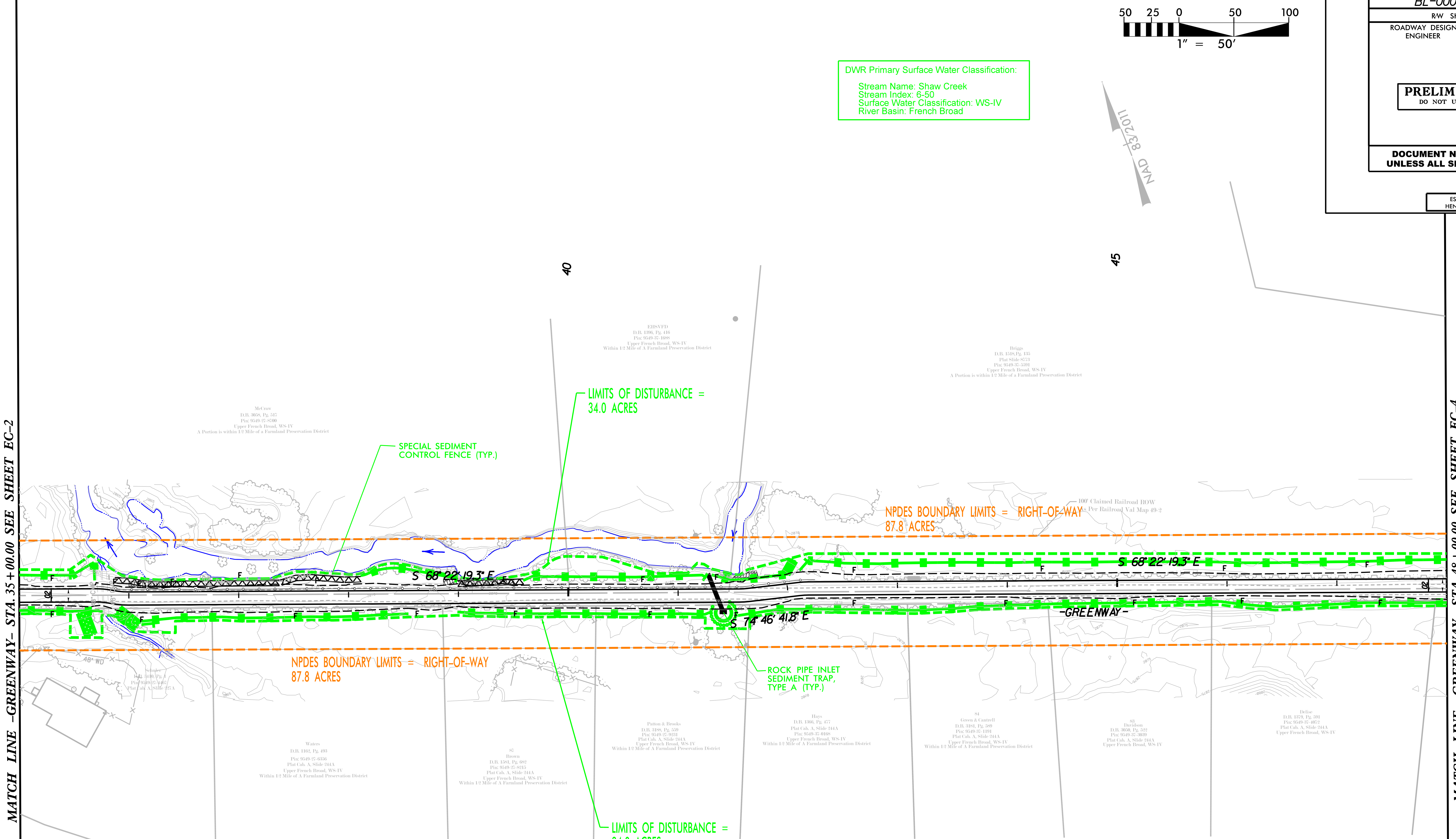
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

REVISIONS

8/17/99



EROSION AND SEDIMENT CONTROL MEASURES		
Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C'
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = NPDES BOUNDARY LIMITS

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.

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

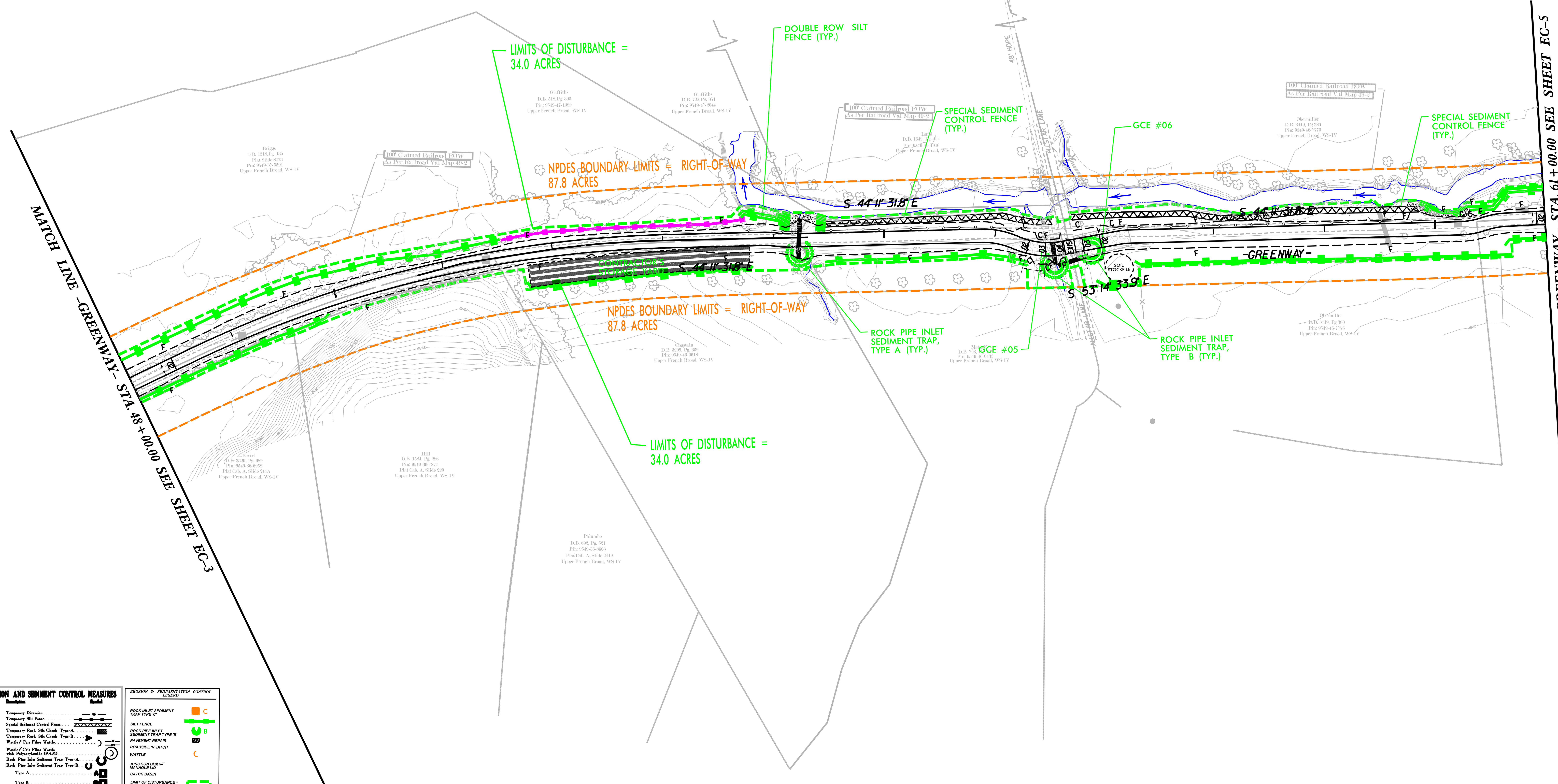
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

50 25 0 50 100
1" = 50'

NAD 83/2011



REVISIONS

8/17/99

EROSION AND SEDIMENT CONTROL MEASURES

- 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

- ROCK INLET SEDIMENT TRAP TYPE 'C'
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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.

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...User:dwells

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

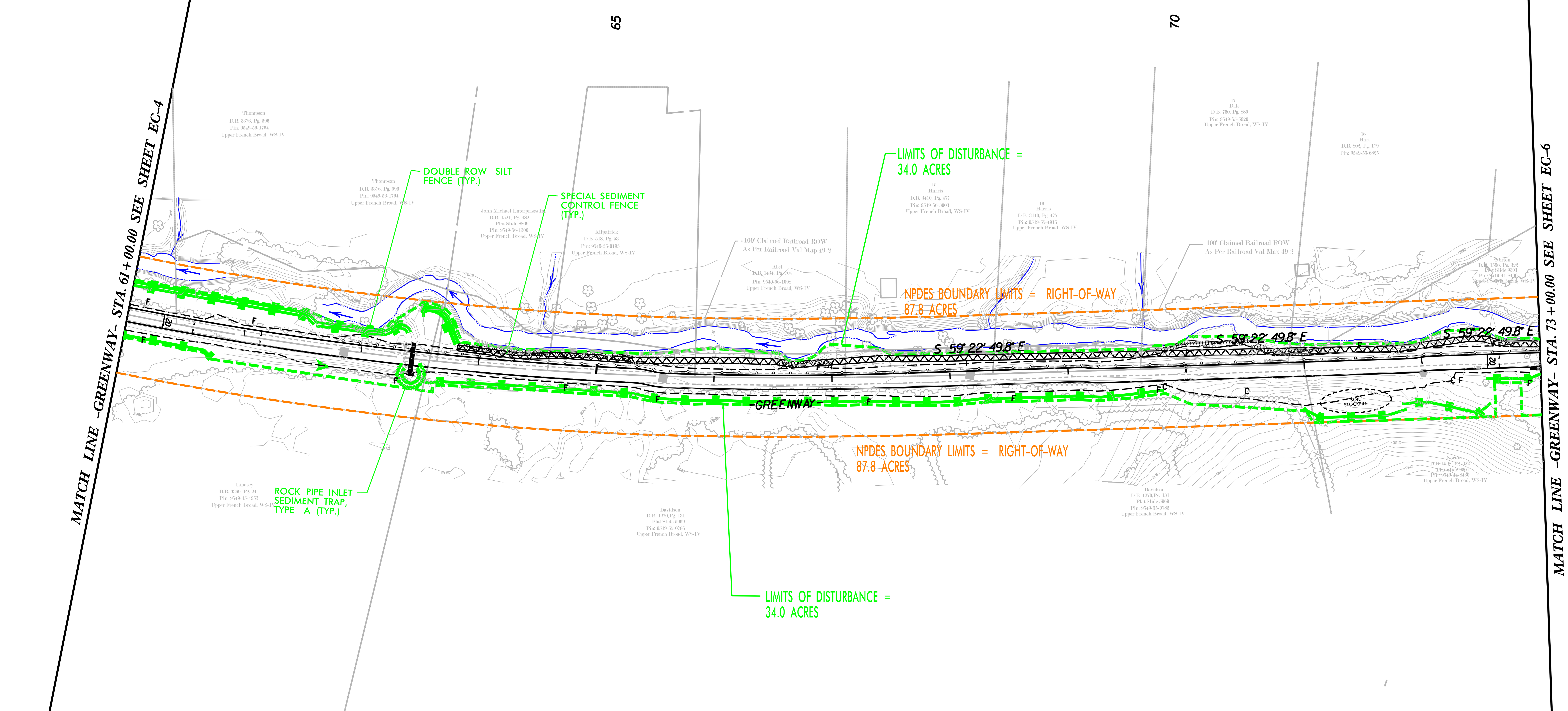
REVISIONS

8/17/99

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

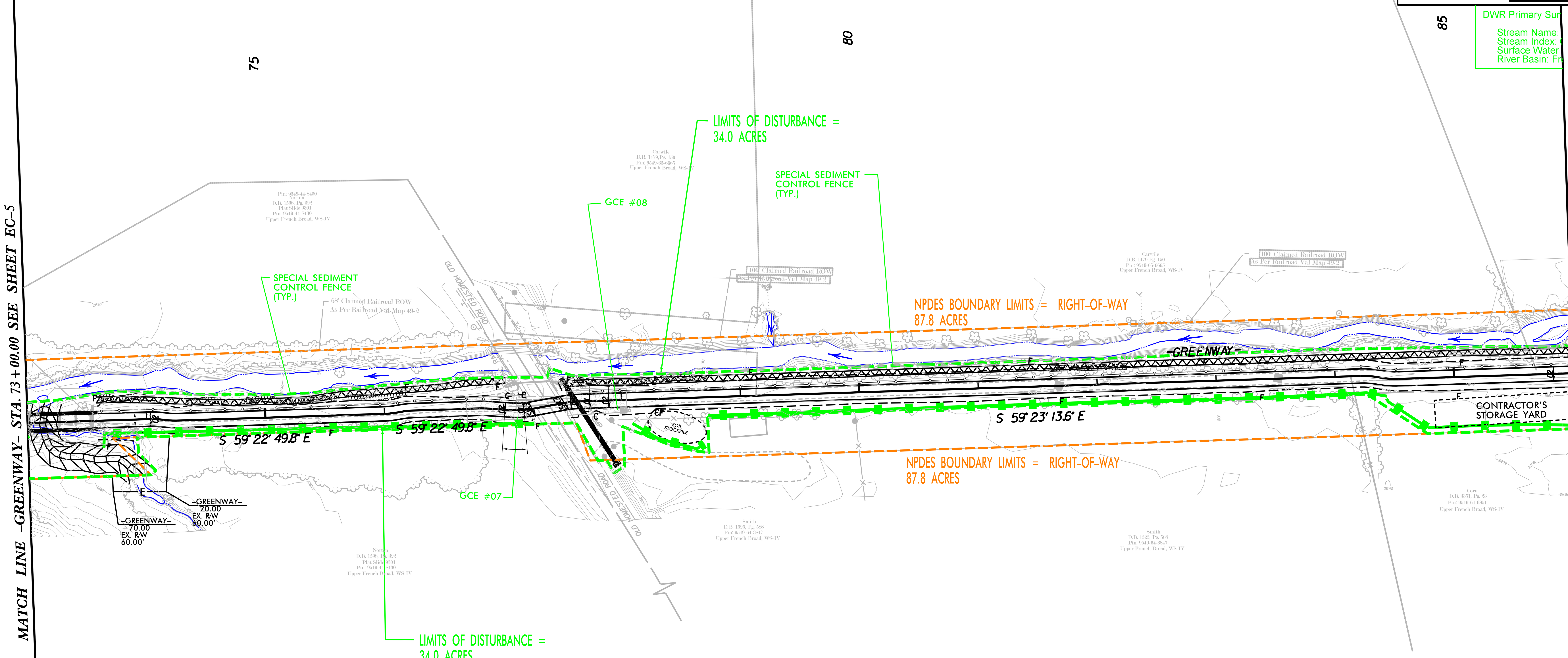
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

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'



EROSION AND SEDIMENT CONTROL MEASURES		
Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.05	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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.

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-7

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-____

EROSION AND SEDIMENT CONTROL MEASURES

Std.	Description	Symbol
1630.01	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C'
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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.

8/17/99

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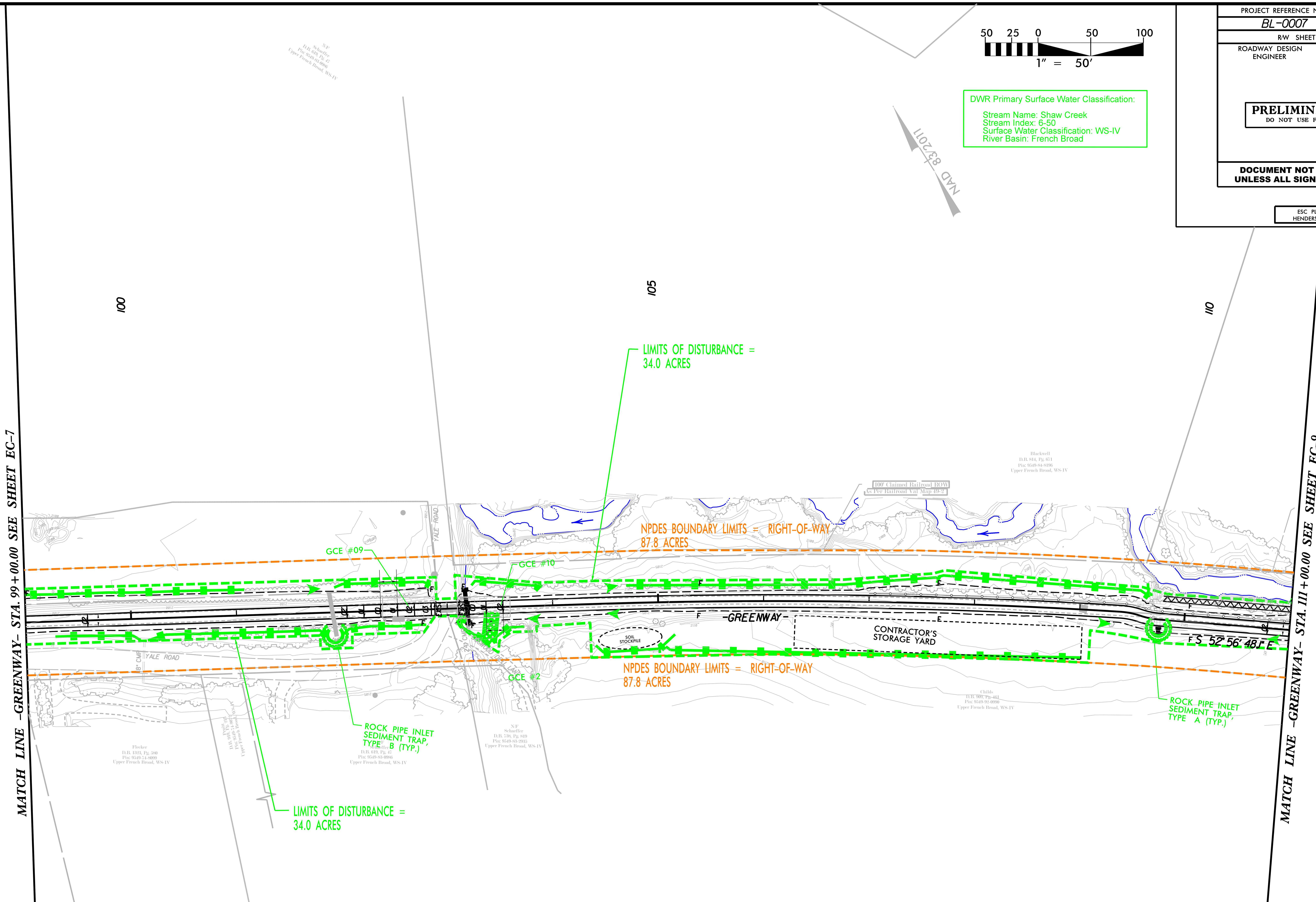
PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C' — C
SILT FENCE
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
WATTLE
JUNCTION BOX w/ MANHOLE LID
CATCH BASIN
LIMIT OF DISTURBANCE = 34.0 Acres

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.

REVISIONS

8/17/99

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8/17/99

REVISIONS

50 25 0 50 100

1" = 50'

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

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 = 34.0 ACRES

SPECIAL SEDIMENT CONTROL FENCE (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

Tract One
Brightwater Real Estate Investments LLC
D.B. 1301, Pg. 628
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. 628
Plat Cab. A, Slide 236
Pin: 9649-93-2365
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–

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.0 ACRES

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

EROSION AND SEDIMENT CONTROL MEASURES

Bid #	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)	
1630.04	Rock Pipe Inlet Sediment Trap Type-A	
1630.05	Rock Pipe Inlet Sediment Trap Type-B	
1630.06	Type A	A
1630.07	Type B	B
1630.08	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE — C
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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.

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

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

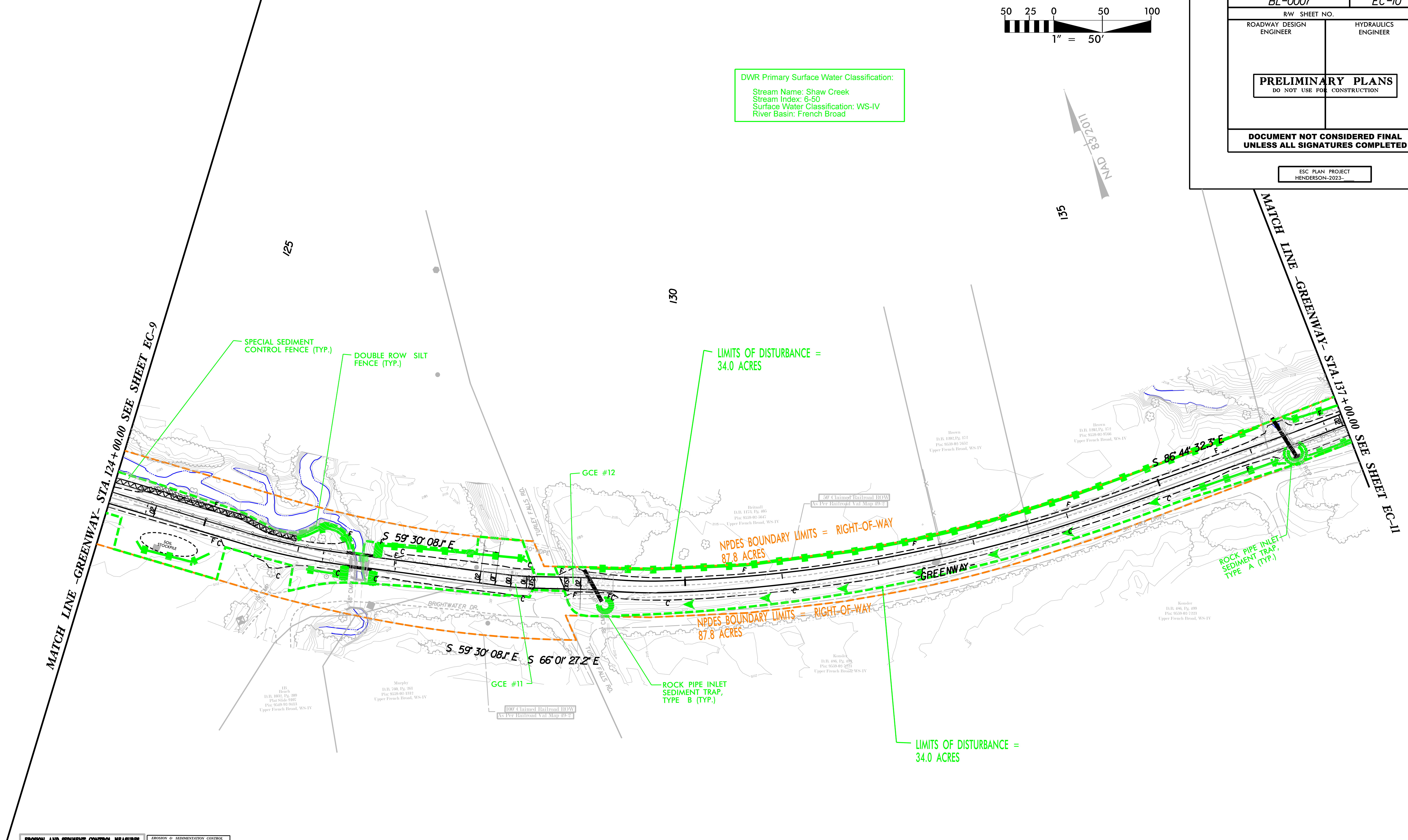
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

8/17/99

REVISIONS



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
[illegible]	Temporary Diversion	
[illegible]	Temporary Silt Fence	
[illegible]	Special Sediment Control Fence	
[illegible]	Temporary Rock Silt Check Type-A	
[illegible]	Temporary Rock Silt Check Type-B	
	Wattle / Coir Fiber Wattle	
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
[illegible]	Rock Pipe Inlet Sediment Trap Type-A	
[illegible]	Rock Pipe Inlet Sediment Trap Type-B	
[illegible]	Type A	
[illegible]	Type B	
[illegible]	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C' — C
SILT FENCE
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
PAVEMENT REPAIR
ROADSIDE 'V' DITCH
WATTLE
JUNCTION BOX w/ MANHOLE LID
CATCH BASIN
LIMIT OF DISTURBANCE = 34.0 Acres

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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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-___

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. 137+00.00 SEE SHEET EC-10

MATCH LINE -GREENWAY- STA. 149+00.00 SEE SHEET EC-12

140

145

LIMITS OF DISTURBANCE = 34.0 ACRES

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

S 88°16'49.0" E

S 88°10'04.4" E

S 78°26'43.9" E

N 85°51'32.0" E

-GREENWAY-

LANDIA DRIVE

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.0 ACRES

EROSION AND SEDIMENT CONTROL MEASURES

No.	Description	Symbol
1605.01	Temporary Diversion	
1606.01	Temporary Silt Fence	SF
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)	
1630.01	Rock Pipe Inlet Sediment Trap Type-A	C
1630.02	Rock Pipe Inlet Sediment Trap Type-B	B
1630.04	Type A	A
1630.03	Type B	B
1630.05	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE — C
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

NOTES:
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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-12

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

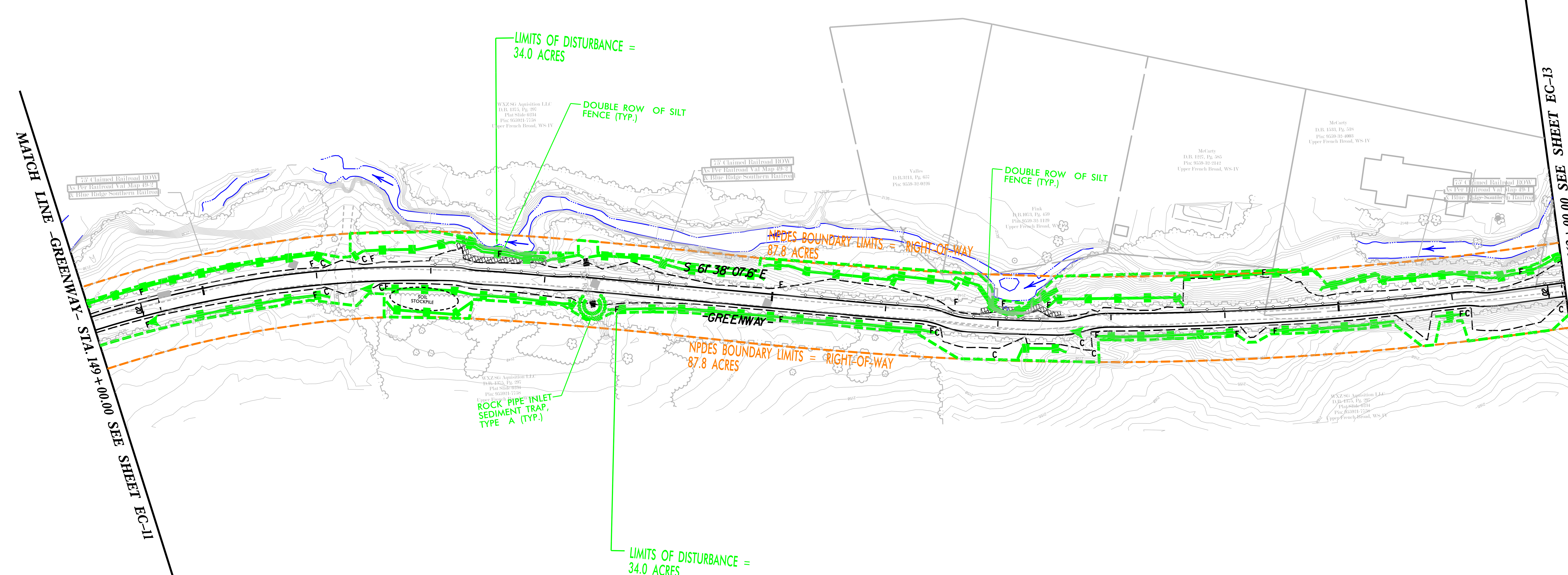
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.05	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

NOTES:
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REVISIONS

8/17/99

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

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

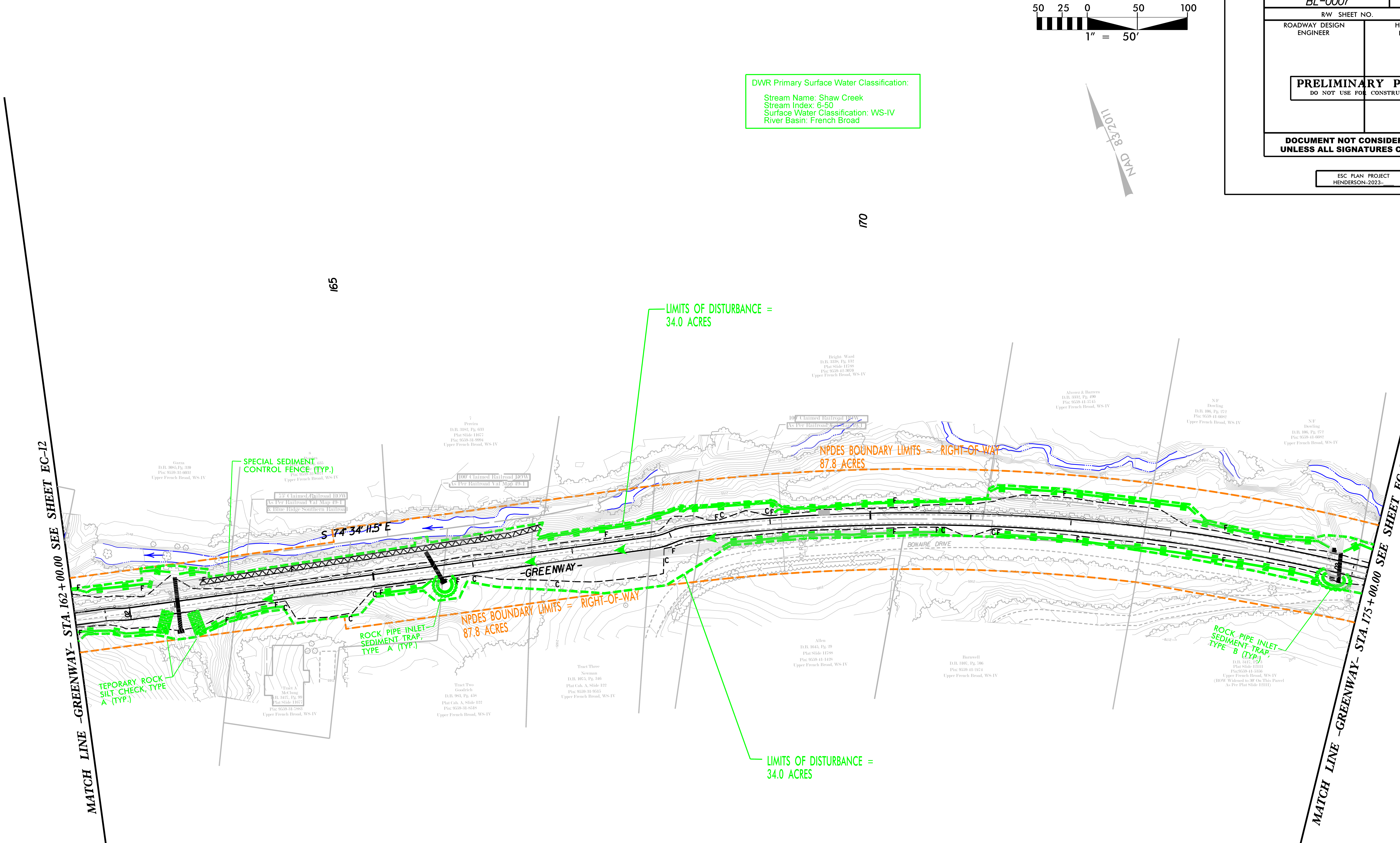
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

8/17/99

REVISIONS

DWR Primary Surface Water Classification:
Stream Name: Shaw Creek
Stream Index: 6-50
Surface Water Classification: WS-IV
River Basin: French Broad



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.05	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

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

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

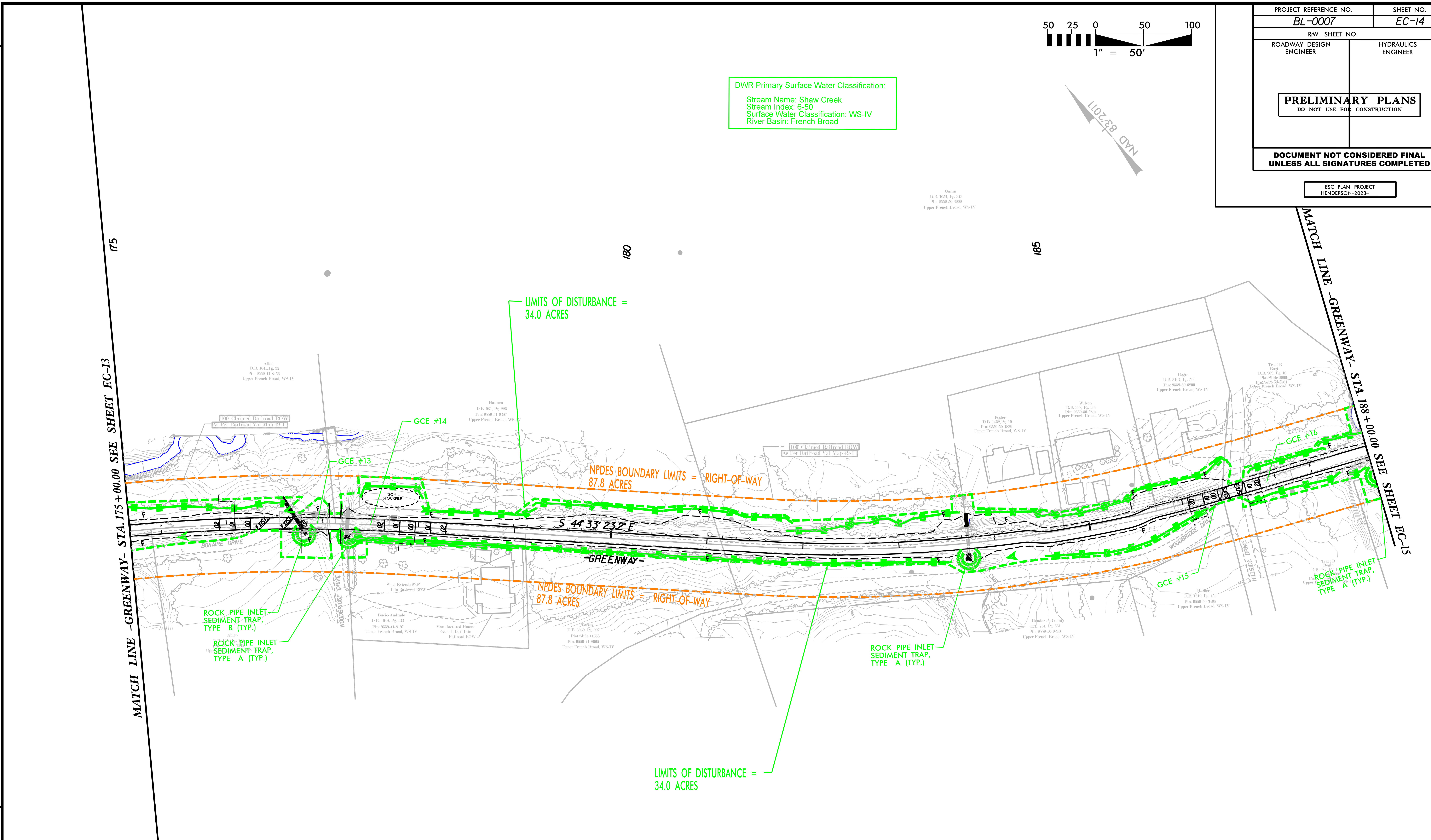
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

8/17/99

REVISIONS



ERROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

NOTES:

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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.

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

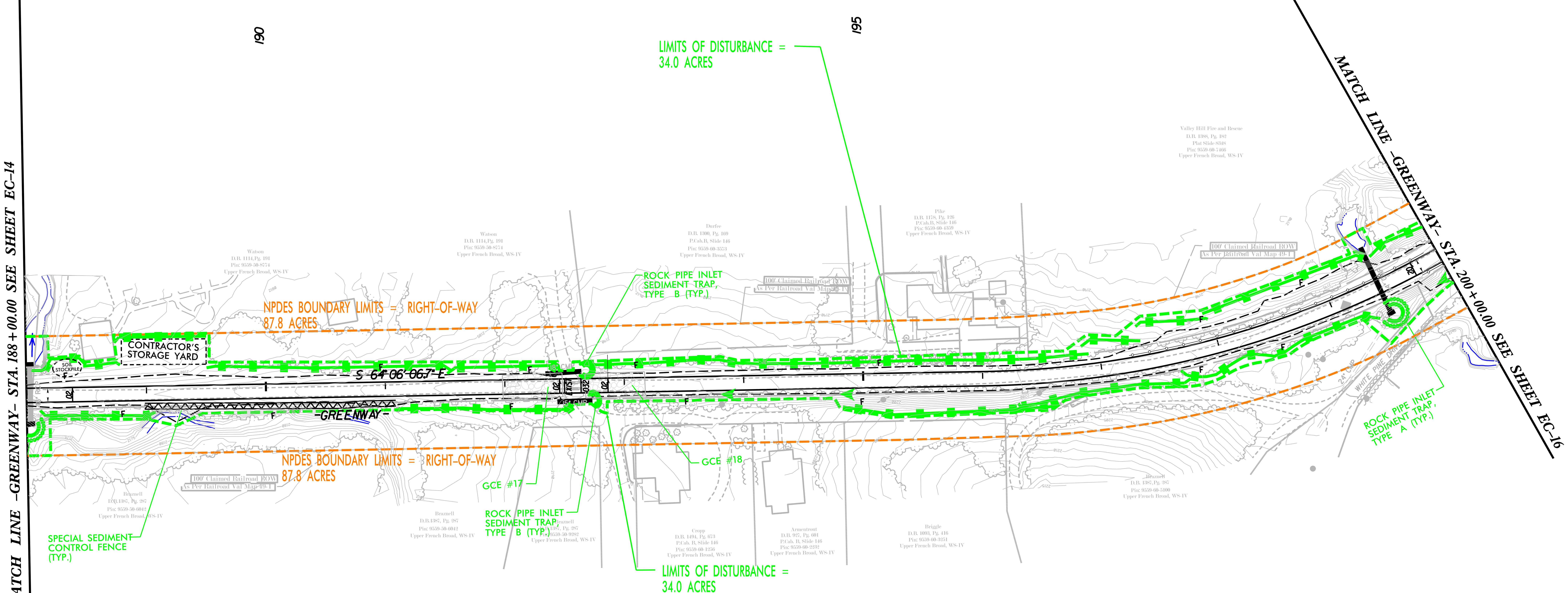
ESC PLAN PROJECT
HENDERSON-2023-__

REVISIONS

8/17/99

50 25 0 50 100
1" = 50'

NAD 83/2011



ERIOSION AND SEDIMENT CONTROL MEASURES		
Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	
1632.02	Type B	
1632.05	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND	
ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

NOTES:
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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-16

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

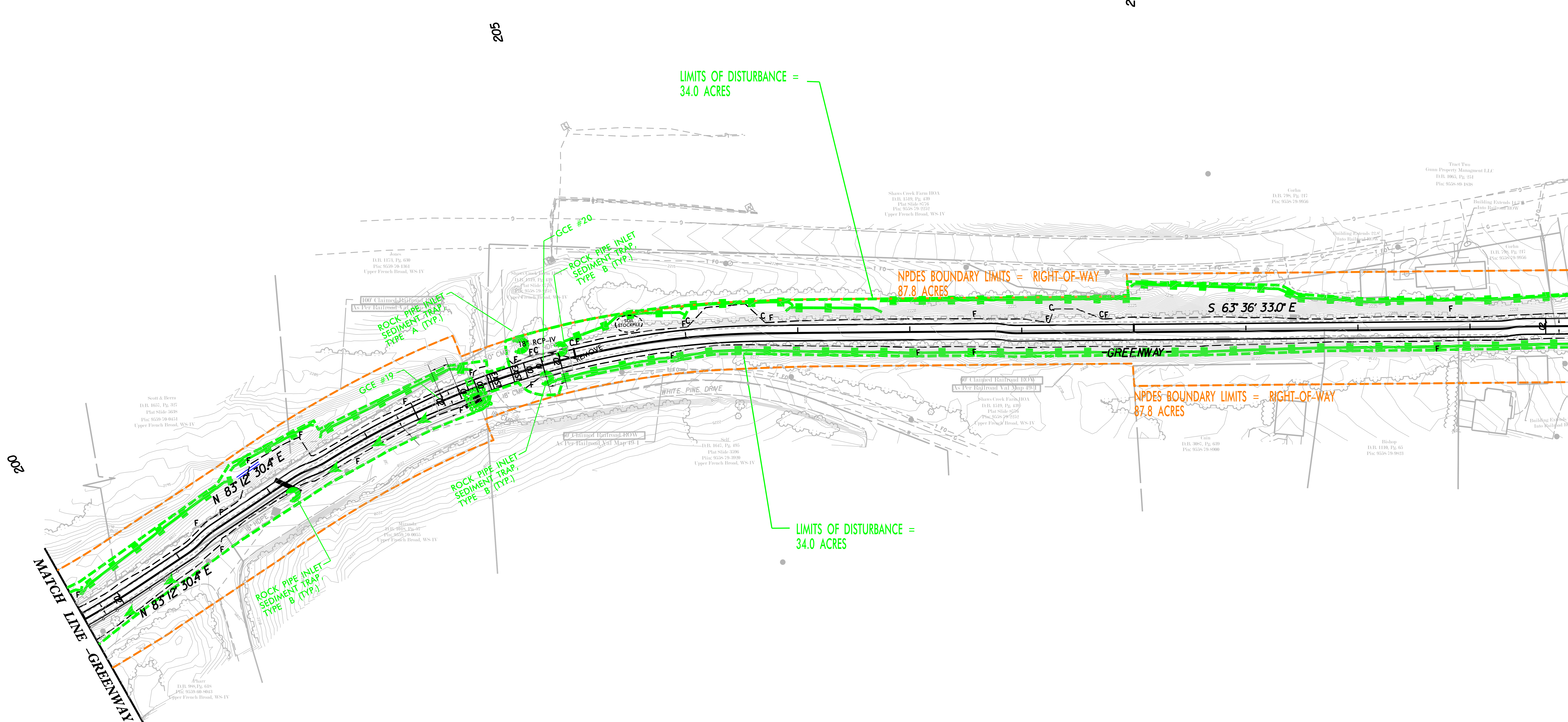
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-

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



REVISIONS

8/17/99

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
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	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

NOTES:
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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-17

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

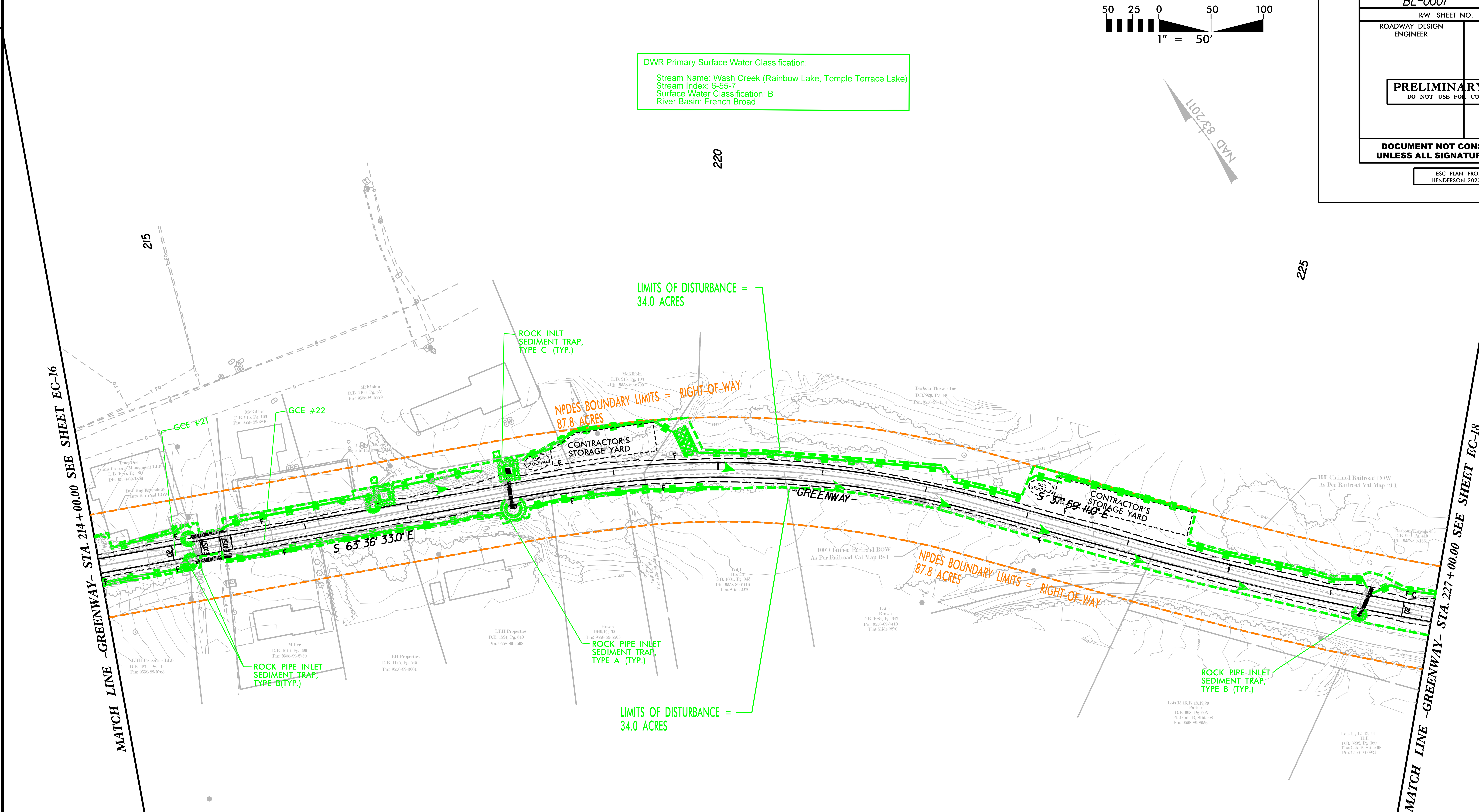
ESC PLAN PROJECT HENDERSON-2023-

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
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	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

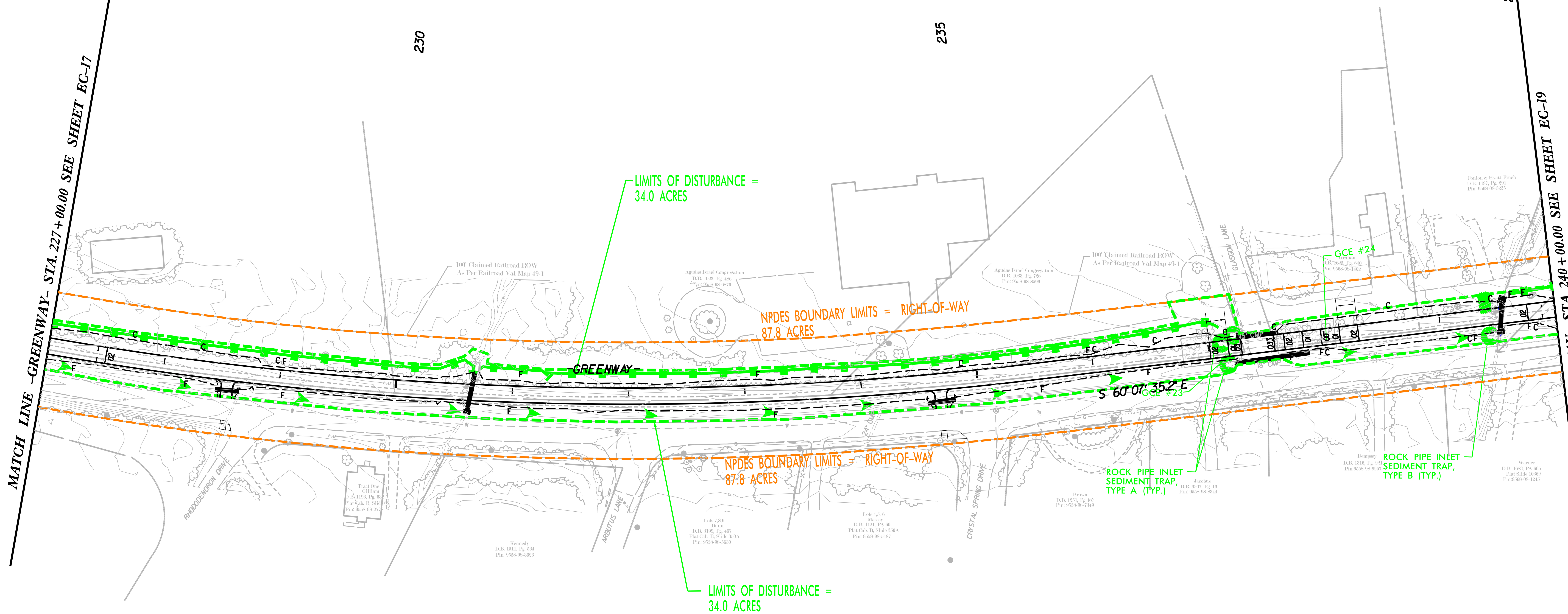
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

50 25 0 50 100
1" = 50'

NAD 83/2011

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
1633.01	Temporary Rock Silt Check Type-A	
1633.02	Temporary Rock Silt Check Type-B	
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	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

NOTES:
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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.

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User:dwells

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-19

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

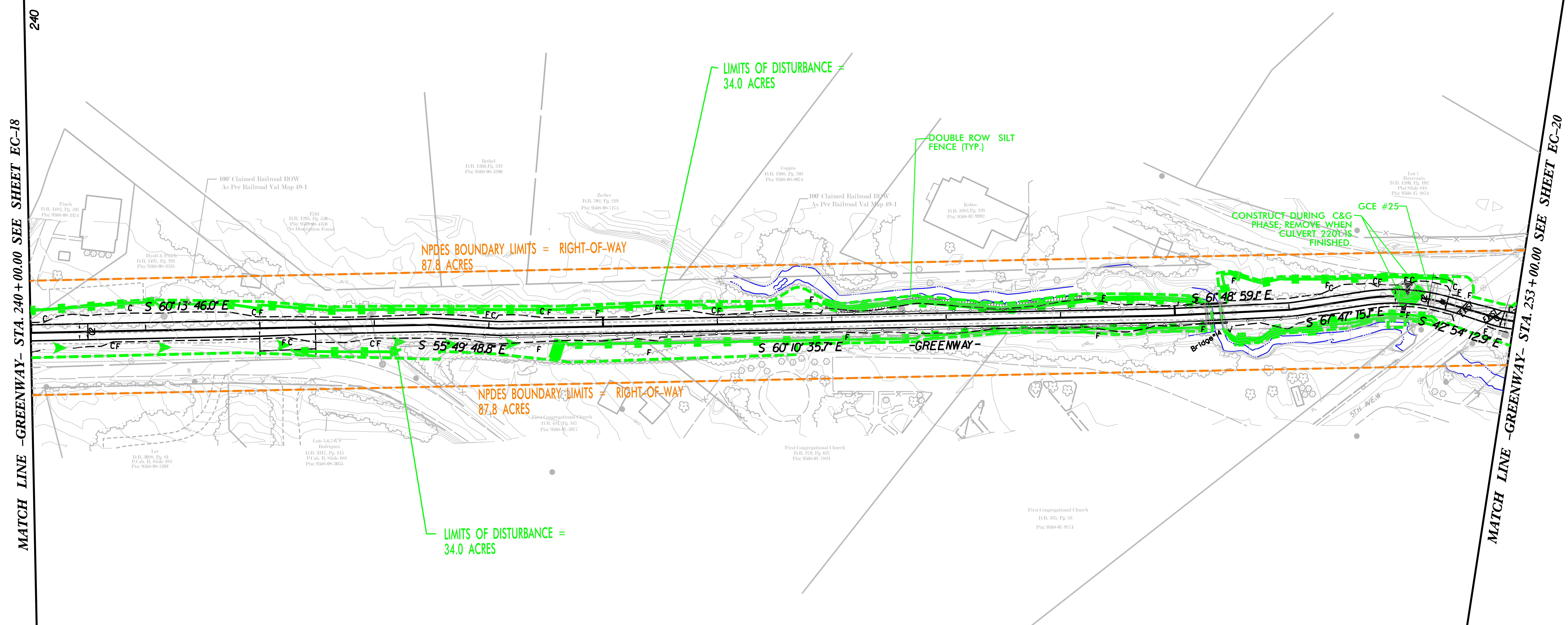
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-____

50 25 0 50 100
1" = 50'

NAD 83/2011

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 #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

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	Special Sediment Control Fence	
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1635.01	Rock Pipe Inlet Sediment Trap Type-A	
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1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

NOTES:
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4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

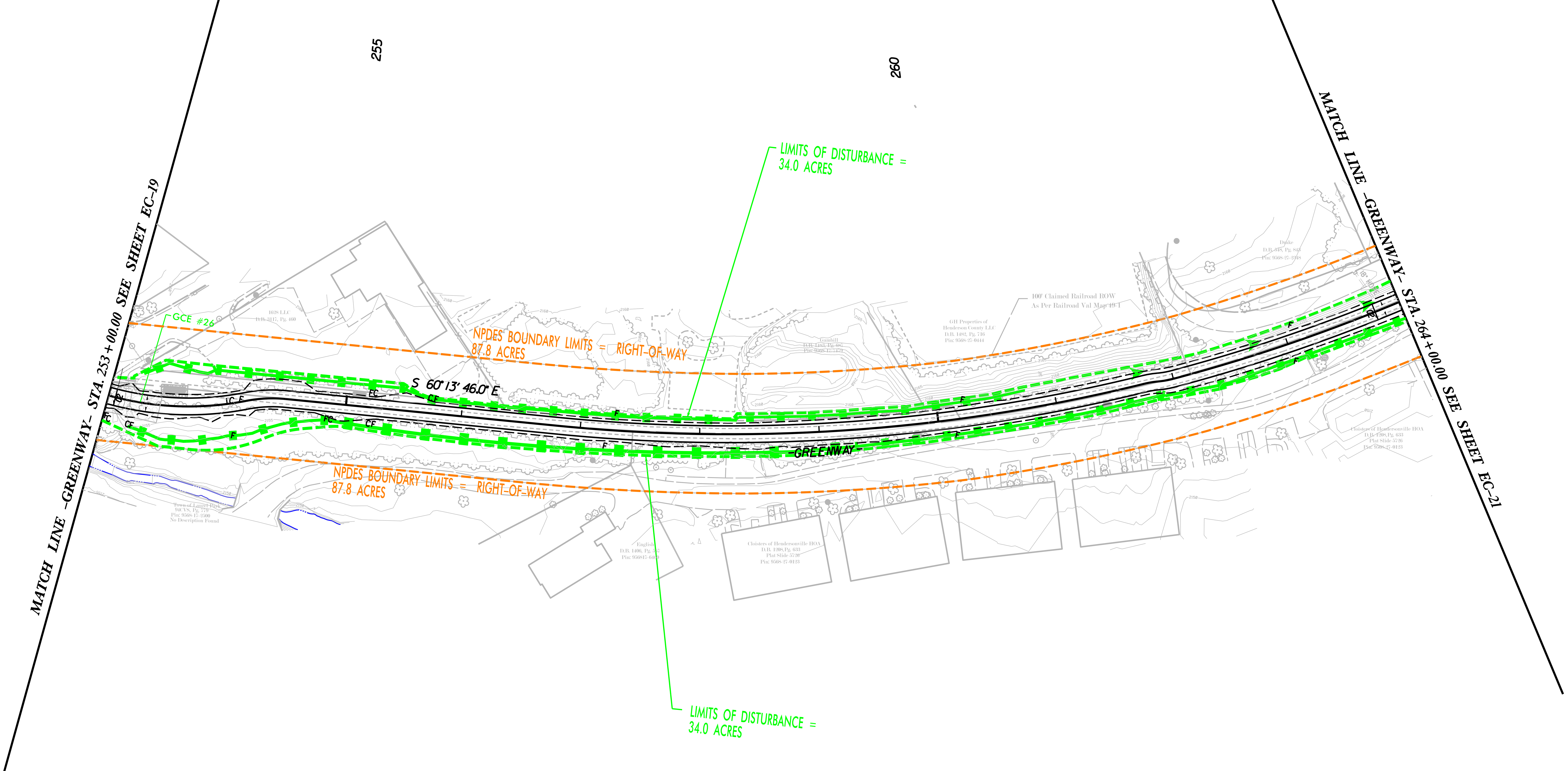
REVISIONS

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

NAD 83/2011



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
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1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
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4. AS DIRECTED BY THE ENGINEER, PLACE TEMPORARY ROCK SEDIMENT DAMS TYPE 'B' AND TEMPORARY ROCK SILT CHECKS TYPE 'A' AT DRAINAGE OUTLETS.

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

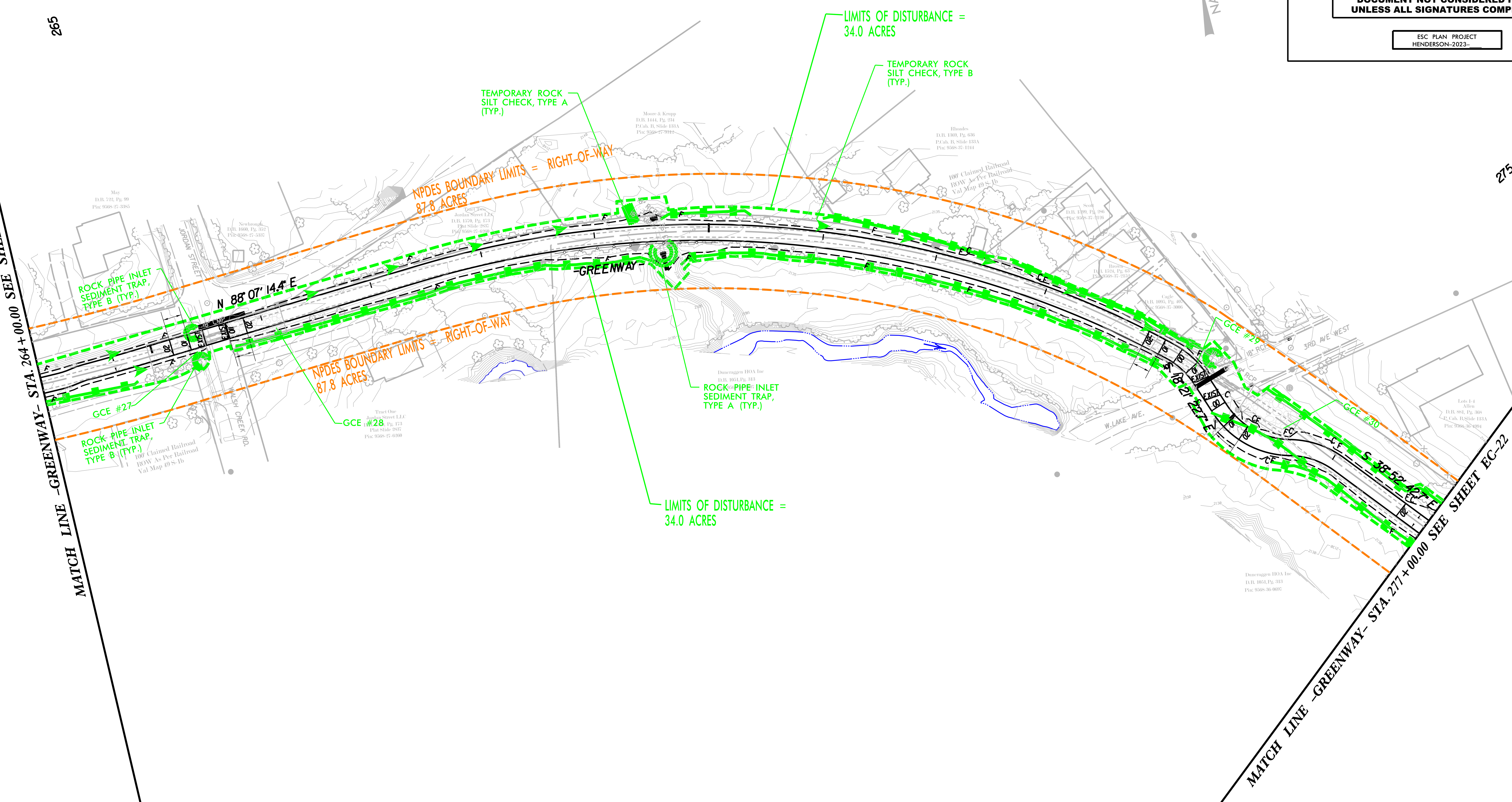
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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'

NAD 83/2011



REVISIONS

8/17/99

EROSION AND SEDIMENT CONTROL MEASURES		
Std. #	Description	Symbol
1630.05	Temporary Diversion	
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1632.01	Type A	
1632.02	Type B	
1632.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND	
ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

NOTES:
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User:dwells

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

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

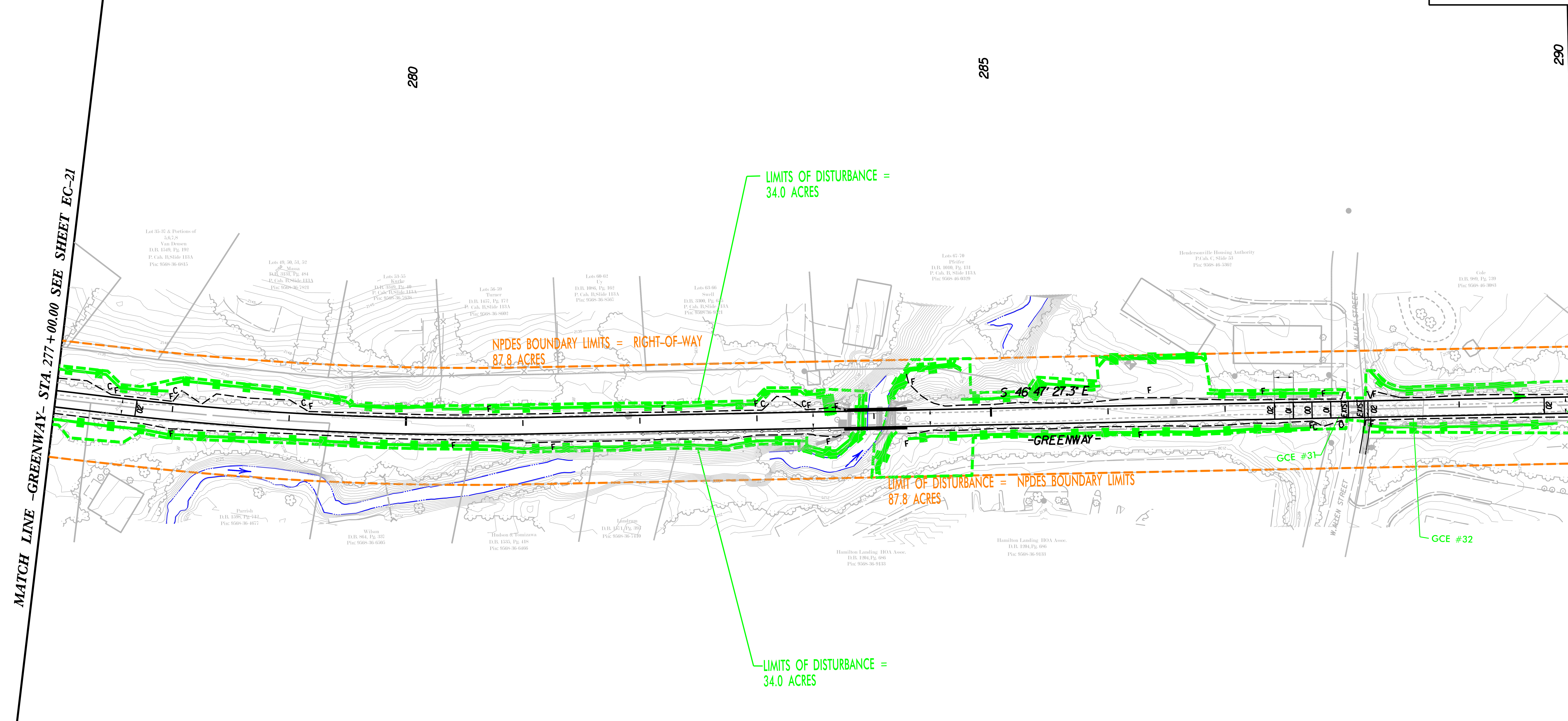
ESC PLAN PROJECT
HENDERSON–2023–____

1" = 50'

NAD 83/2011

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

EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

- ROCK INLET SEDIMENT TRAP TYPE 'C' — C
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B' — B
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.0 Acres

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.

NOTE:
1. ACCESS TO BRIDGE #15 EAST ABUTMENT IS FROM GC #9.
2. ACCESS TO BRIDGE #31 WEST ABUTMENT IS FROM GC #30.
3. SEE PLAN SHT EC–34 FOR TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-23

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT
HENDERSON-2023-___

8/17/99

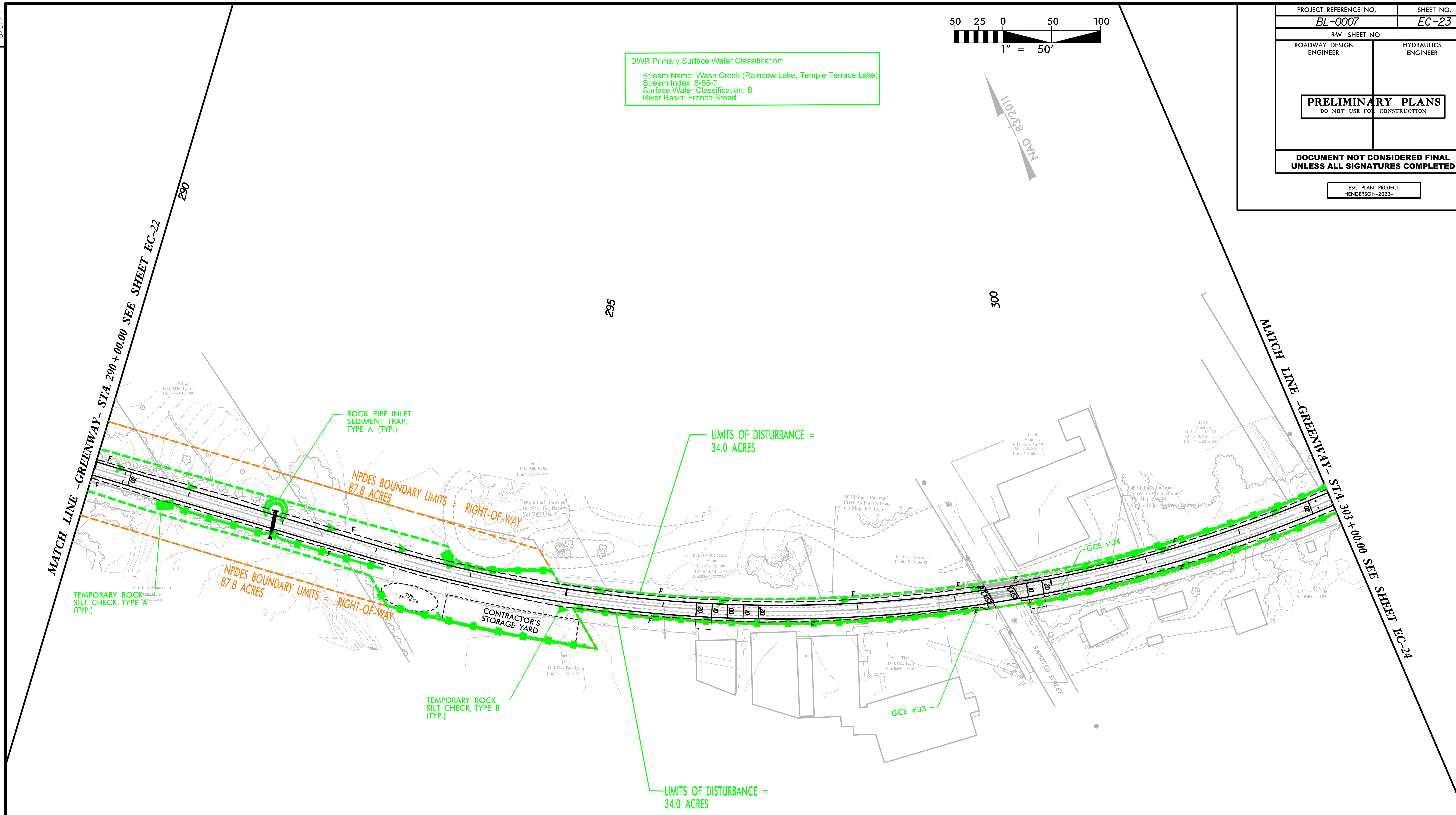
REVISIONS

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



EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1630.05	Temporary Diversion	
1605.01	Temporary Silt Fence	
1606.01	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)	
1635.01	Rock Pipe Inlet Sediment Trap Type-A	
1635.02	Rock Pipe Inlet Sediment Trap Type-B	
1632.01	Type A	A
1632.02	Type B	B
1632.03	Type C	C

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-__

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

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

N 80° 05' 52.2" E

LIMITS OF DISTURBANCE = 34.0 ACRES

ROCK PIPE INLET SEDIMENT TRAP TYPE B (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY 87.8 ACRES

N 82° 11' 26.3" E

N 87° 19' 59.9" E

UTILIZE DAM & PUMP STREAM DIVERSION TO MANAGE STREAM FLOW. SEE PLAN SHT EC-34 FOR DETAIL

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

-GREENWAY-

GCE #36

GCE #35

SPRING STREET

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

TEMPORARY ROCK SILT CHECK, TYPE B (TYP.)

LIMITS OF DISTURBANCE = 34.0 ACRES

EROSION AND SEDIMENT CONTROL MEASURES

Pay Number	Description	Symbol
1605.05	Temporary Diversion	
1606.01	Temporary Silt Fence	
1607.01	Special Sediment Control Fence	
1615.01	Temporary Rock Silt Check Type-A	
1615.02	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	C
1630.02	Rock Pipe Inlet Sediment Trap Type-B	B
1630.03	Type A	A
1630.03	Type B	
1630.03	Type C	

EROSION & SEDIMENTATION CONTROL LEGEND

ROCK INLET SEDIMENT TRAP TYPE 'C'	C
SILT FENCE	
ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'	B
PAVEMENT REPAIR	
ROADSIDE 'V' DITCH	
WATTLE	C
JUNCTION BOX w/ MANHOLE LID	
CATCH BASIN	
LIMIT OF DISTURBANCE = 34.0 Acres	

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.

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ESC PLAN PROJECT HENDERSON-2023-_____

50 25 0 50 100
1" = 50'

NAD 83/2011

REVISIONS
8/17/99

MATCH LINE -GREENWAY- STA. 316+00.00 SEE SHEET EC-24

320

325

DWR Primary Surface Water Classification:

Stream Name: Wash Creek (Rainbow Lake, Temple
Stream Index: 6-65-7
Surface Water Classification: B
River Basin: French Broad

TEMPORARY ROCK SILT CHECK, TYPE A (TYP.)

NPDES BOUNDARY LIMITS = RIGHT-OF-WAY
87.8 ACRES

S 88° 07' 32.0" E

N 79° 02' 48.2" E

GREENWAY

Bridge #16

TEMPORARY ROCK PIPE INLET SEDIMENT TRAP, TYPE B (TYP.)

GCE #37

GCE #38

GRAVEL CONSTRUCTION ENTRANCE #39

END PROJECT
ECUSTA TRAIL
-GREENWAY- 326+50.00

TEMPORARY SILT FENCE (TYP.)

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

EROSION AND SEDIMENT CONTROL MEASURES

Ref.	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

- ROCK INLET SEDIMENT TRAP TYPE 'C'
- SILT FENCE
- ROCK PIPE INLET SEDIMENT TRAP TYPE 'B'
- PAVEMENT REPAIR
- ROADSIDE 'V' DITCH
- WATTLE
- JUNCTION BOX w/ MANHOLE LID
- CATCH BASIN
- LIMIT OF DISTURBANCE = 34.6 Acres

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.

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	*EC-26*
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 DRA'MNGS (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 IMPLE MENTATION 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 SEDIIMENT 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 WI TH 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 PENAL TIES BEING INSTITUTED BY THE DEPARTMENT AS BY THE CLEAN WATER ACT PROVIDES A FINE OF NOT MORE THAN $L0,000 PER VIOLATION, OR BY IMPRISONMENT FOR NOT MORE THAN TWO YEARS PER VIOLATION,OR BY 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 UNITED 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 STREAM/CREEKS 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 ROADSIDE/PATH 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.

<u>INSPECTION AND MAINTENANCE</u>
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 IN 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 6.10c

Seeding mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding dates
Mountains—Aug. 15 - Dec. 15
Coastal Plain and Piedmont—Aug. 15 - Dec. 30

Soil amendments
Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extent temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

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.

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

Table 6.10b: Temporary Seeding Recommendations for Summer

Seeding mixture

Species	Rate (lb/acre)
German millet	40

In the Piedmont and Mountains, a small-stemmed Sudangrass may be substituted at a rate of 50 lb/acre.

Seeding dates
Mountains—May 15 - Aug. 15
Piedmont—May 1 - Aug. 15
Coastal Plain—Apr. 15 - Aug. 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.

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Refertilize if growth is not fully adequate. Reseed, refertilize and mulch immediately following erosion or other damage.

Temporary Seeding Recommendations for Fall

Seeding mixture

Species	Rate (lb/acre)
Rye (grain)	120

Seeding dates
Mountains—Aug. 15 - Dec. 15
Coastal Plain and Piedmont—Aug. 15 - Dec. 30

Soil amendments
Follow soil tests or apply 2,000 lb/acre ground agricultural limestone and 1,000 lb/acre 10-10-10 fertilizer.

Mulch
Apply 4,000 lb/acre straw. Anchor straw by tacking with asphalt, netting, or a mulch anchoring tool. A disk with blades set nearly straight can be used as a mulch anchoring tool.

Maintenance
Repair and refertilize damaged areas immediately. Topdress with 50 lb/acre of nitrogen in March. If it is necessary to extent temporary cover beyond June 15, overseed with 50 lb/acre Kobe (Piedmont and Coastal Plain) or Korean (Mountains) lespedeza in late February or early March.

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-27

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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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.

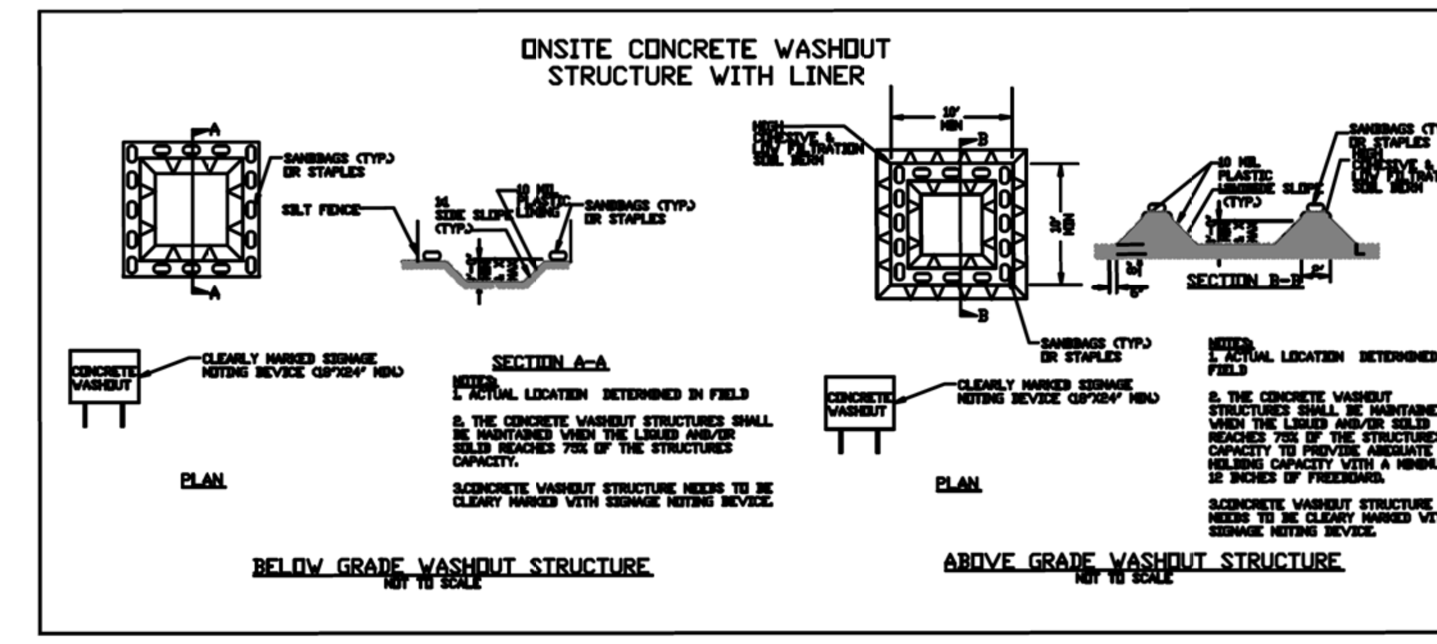
PORTABLE TOILETS

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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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-28

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REVISIONS

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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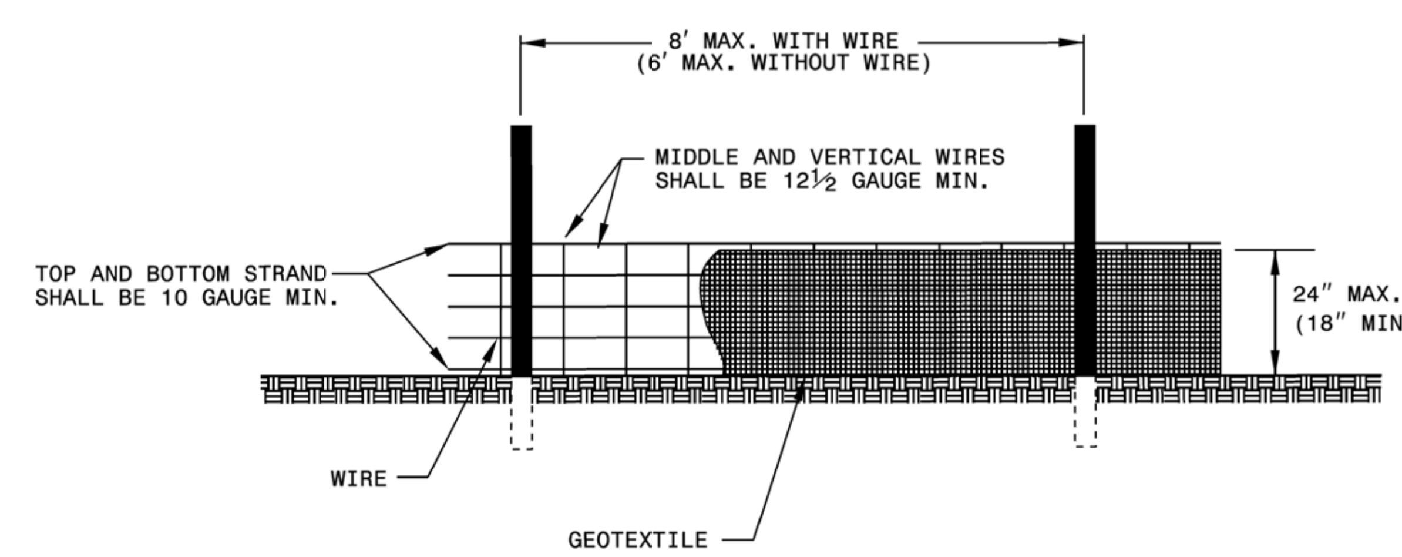
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	EC-29
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-___



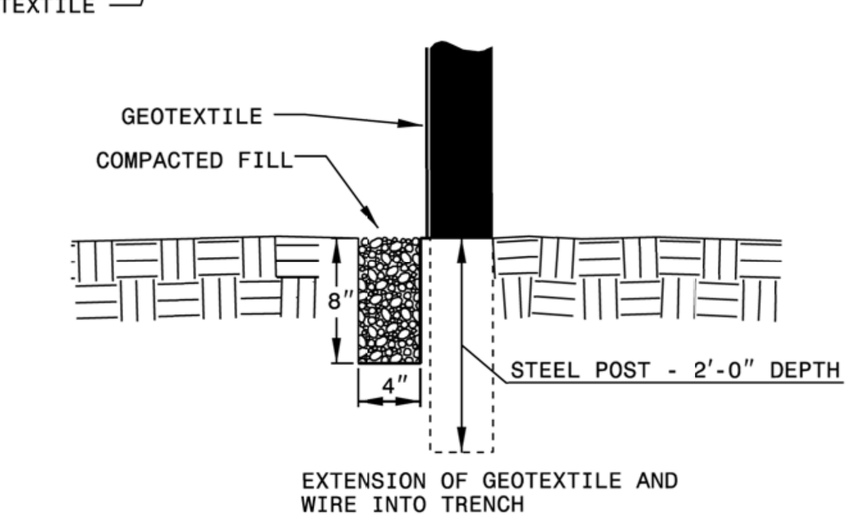
NOTES

USE 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.



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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-18

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.

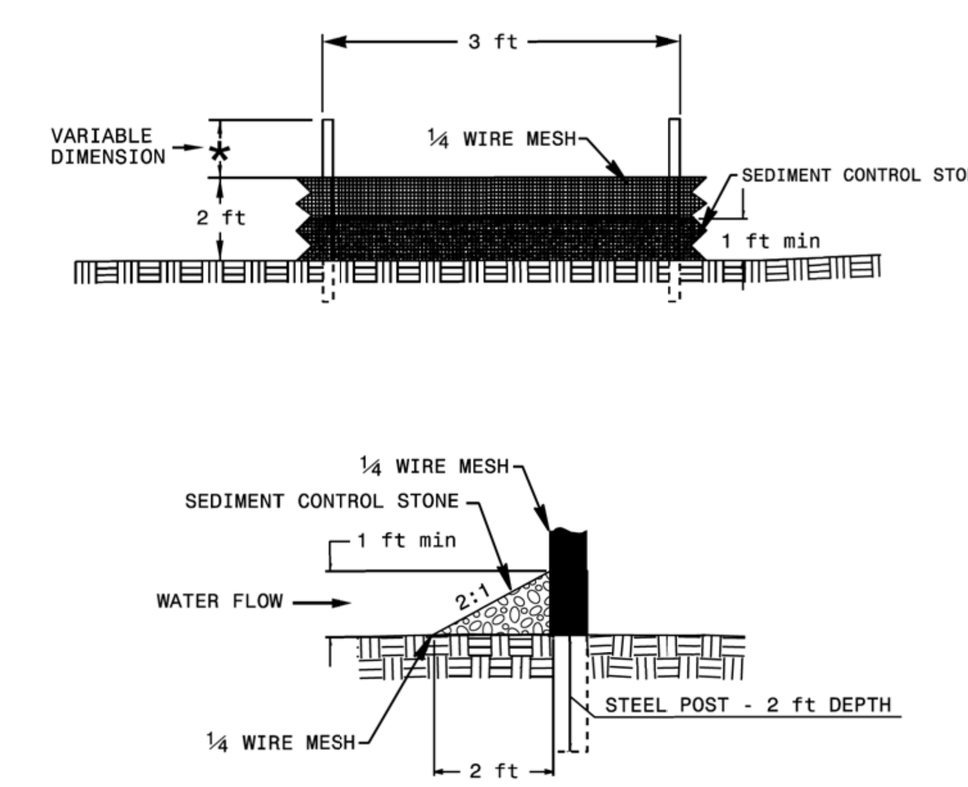
USE HARDWARE CLOTH 24 GAUGE WIRE MESH WITH ¼ INCH MESH OPENINGS.

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.
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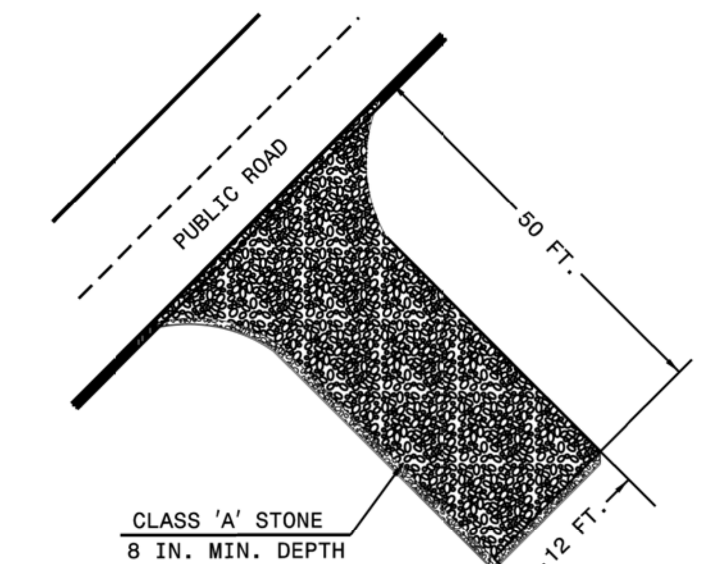
ROADWAY STANDARD DRAWING FOR
SPECIAL SEDIMENT CONTROL FENCE

SHEET 1 OF 1
1606.01

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
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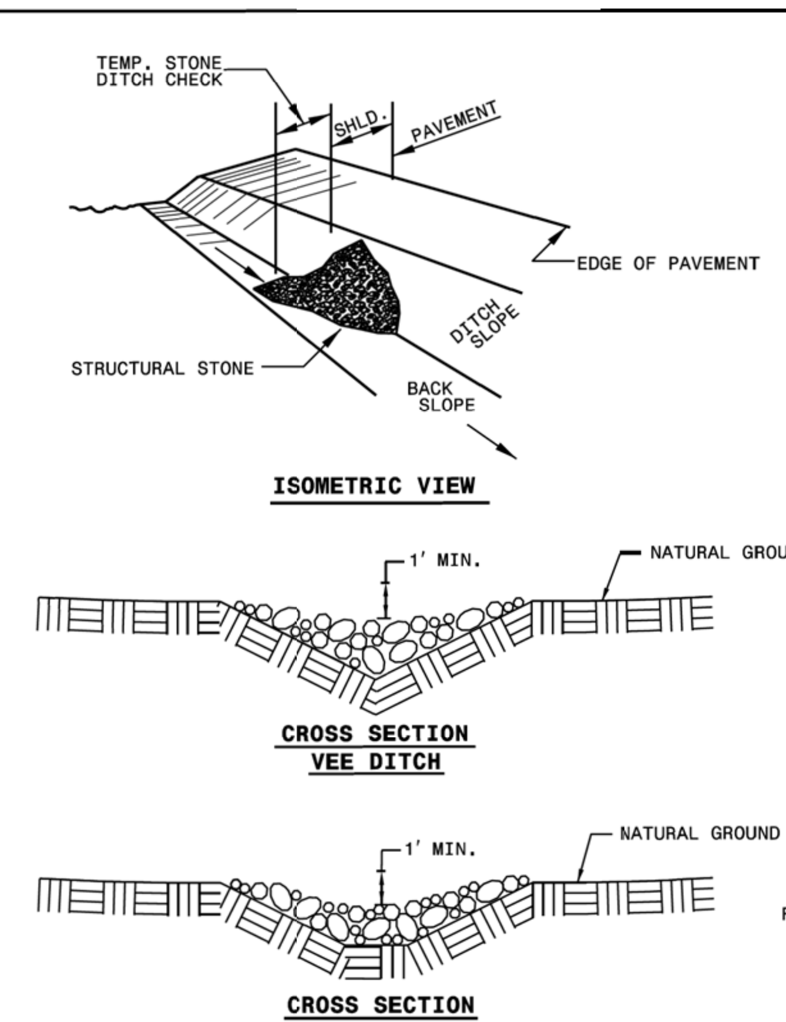
ROADWAY STANDARD DRAWING FOR
GRAVEL CONSTRUCTION ENTRANCE

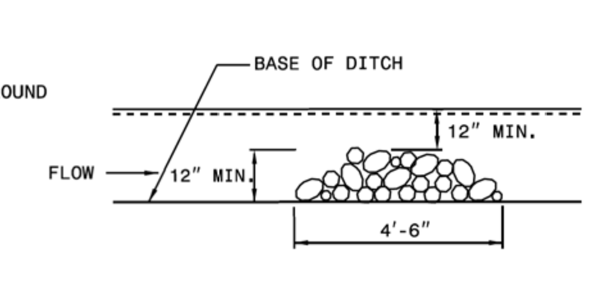
SHEET 1 OF 1
1607.01



NOTES

USE CLASS B EROSION CONTROL STONE FOR STRUCTURAL STONE.

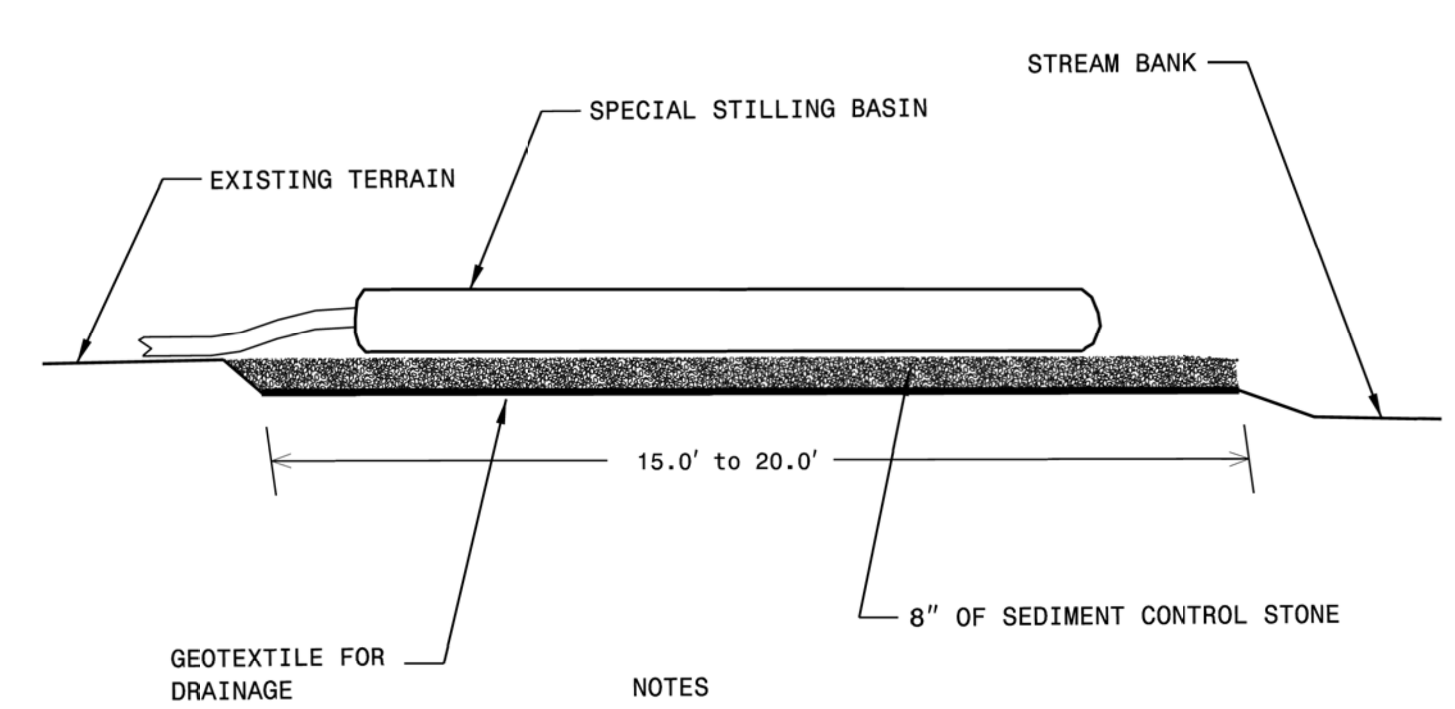
THE ENGINEER MAY DIRECT THE OPTION OF CLASS A STONE FOR SITES HAVING LESS THAN ONE (1) ACRE DRAINAGE AREA AND A DITCH GRADE LESS THAN 3%.



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 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
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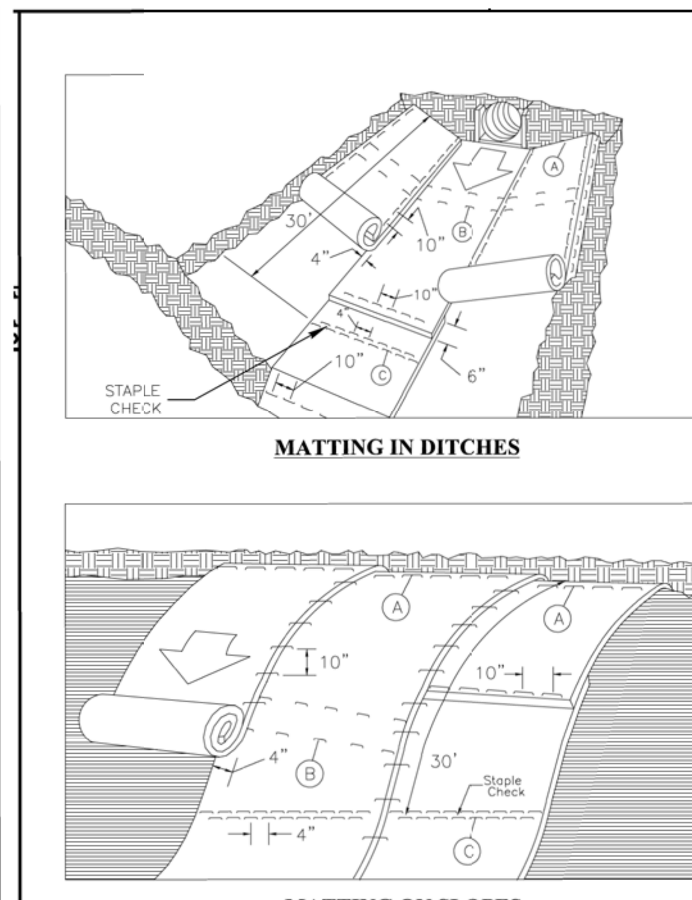
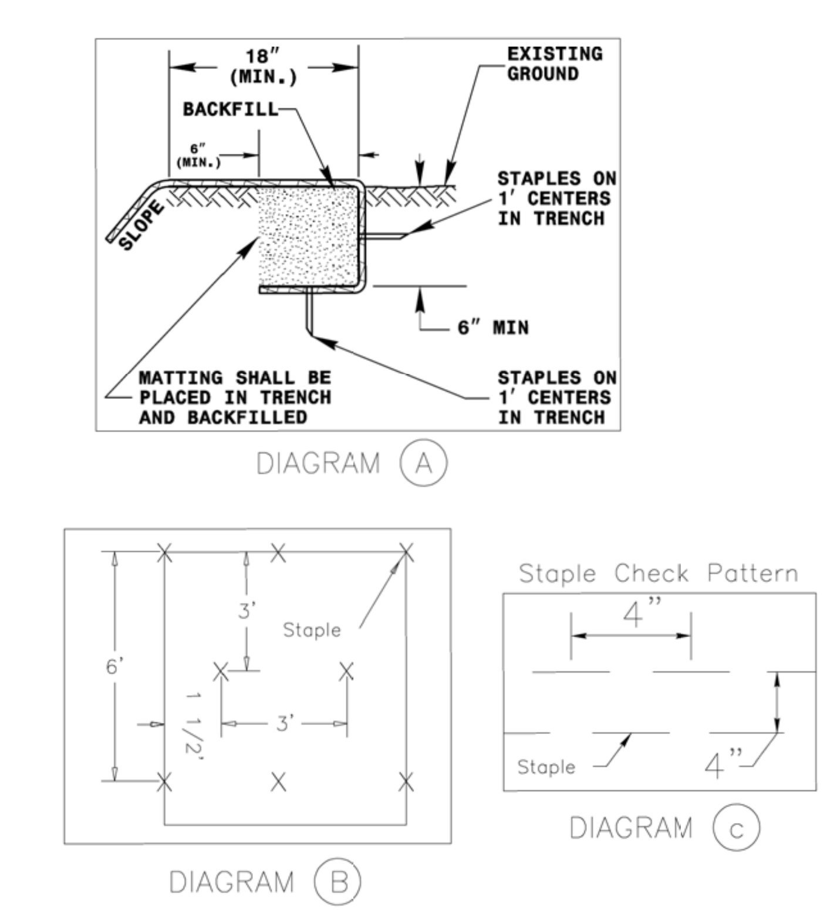
ROADWAY STANDARD DRAWING FOR
SPECIAL STILLING BASIN

SHEET 1 OF 1
1630.06





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 6 INCHES IN LENGTH.

NOT TO SCALE

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
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ROADWAY STANDARD DRAWING FOR
MATTING INSTALLATION

SHEET 1 OF 1
1631.01

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PROJECT REFERENCE NO.	SHEET NO.
BL-0007	30
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

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REVISIONS

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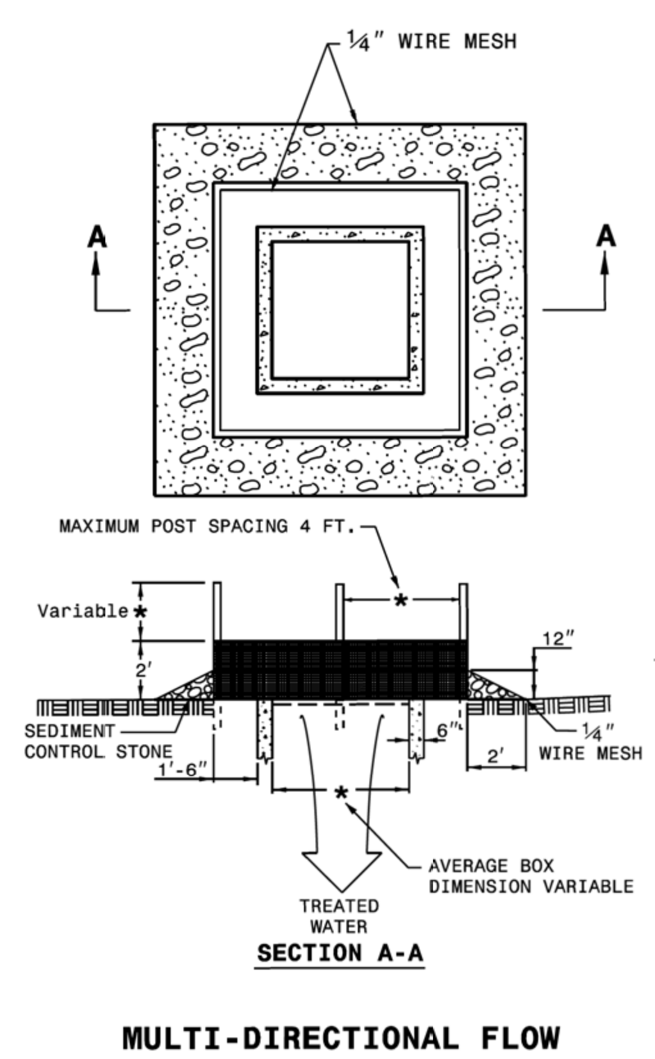
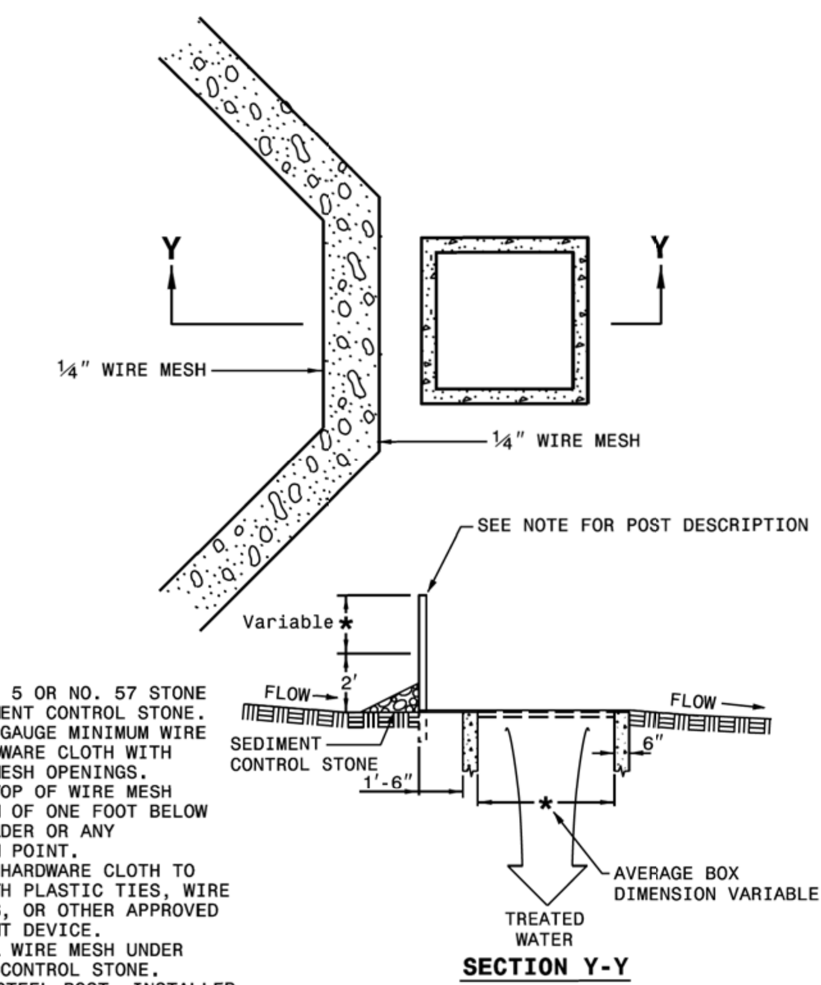


MULTI-DIRECTIONAL FLOW

NOTES

USE NO. 5 OR NO. 57 STONE FOR SEDIMENT CONTROL STONE.
USE 24 GAUGE MINIMUM WIRE MESH HARDWARE CLOTH WITH ¼ 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'.

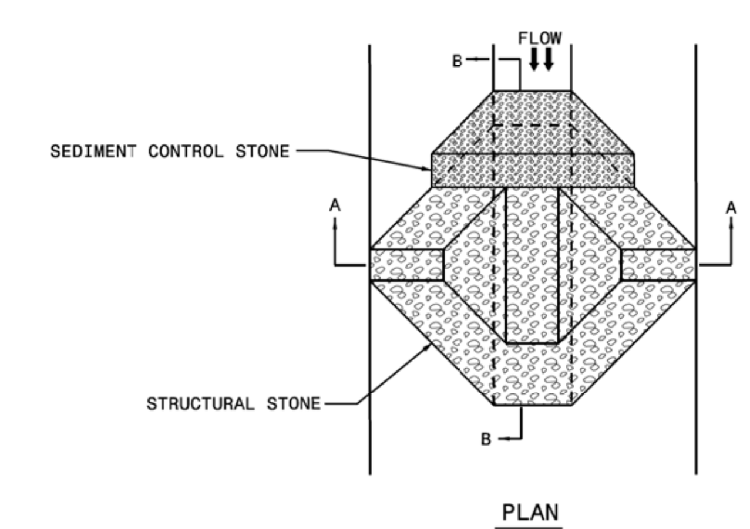


SINGLE-DIRECTIONAL FLOW

STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-18

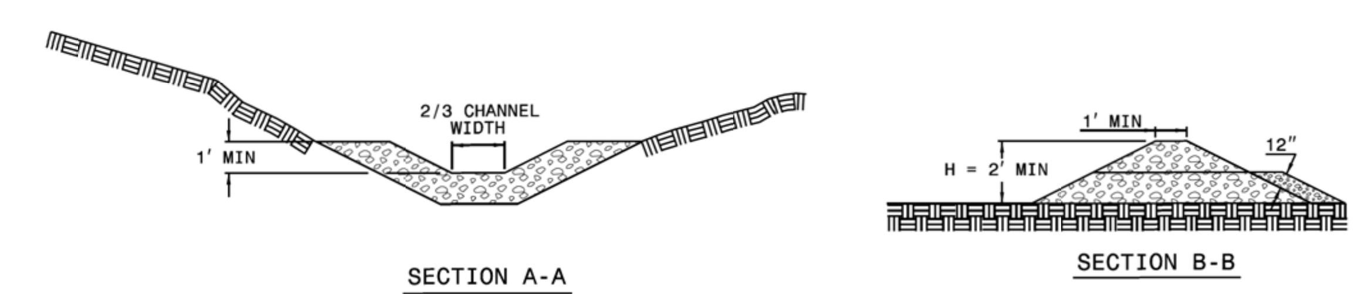
ROADWAY STANDARD DRAWING FOR
ROCK INLET SEDIMENT TRAP TYPE C

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
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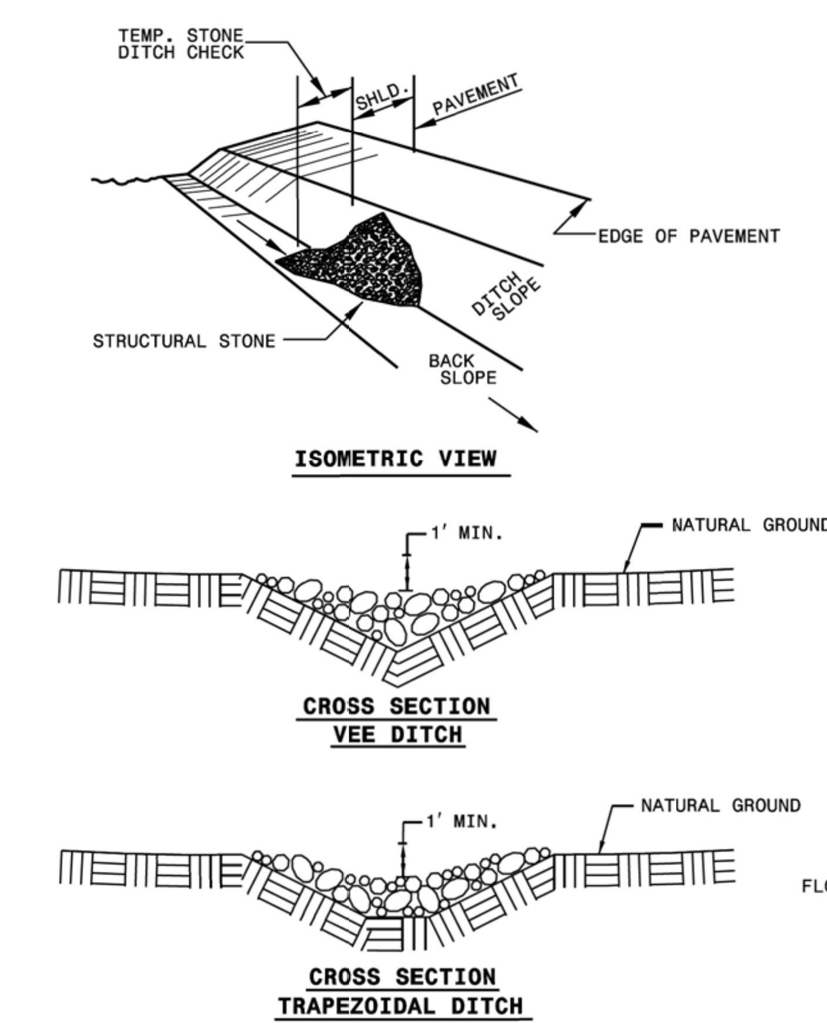
RALEIGH, N.C.
1-18

ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE A

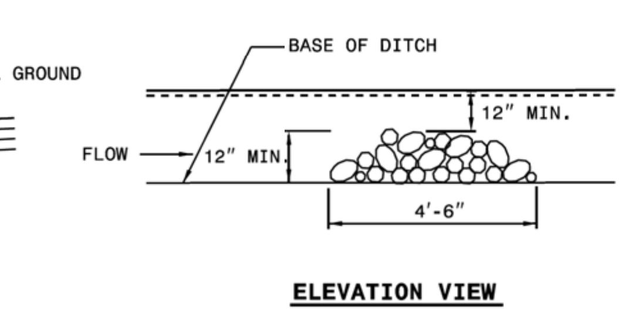
SHEET 1 OF 1
1633.01



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%.



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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
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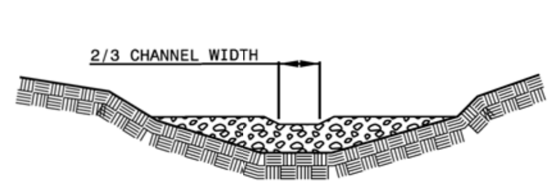
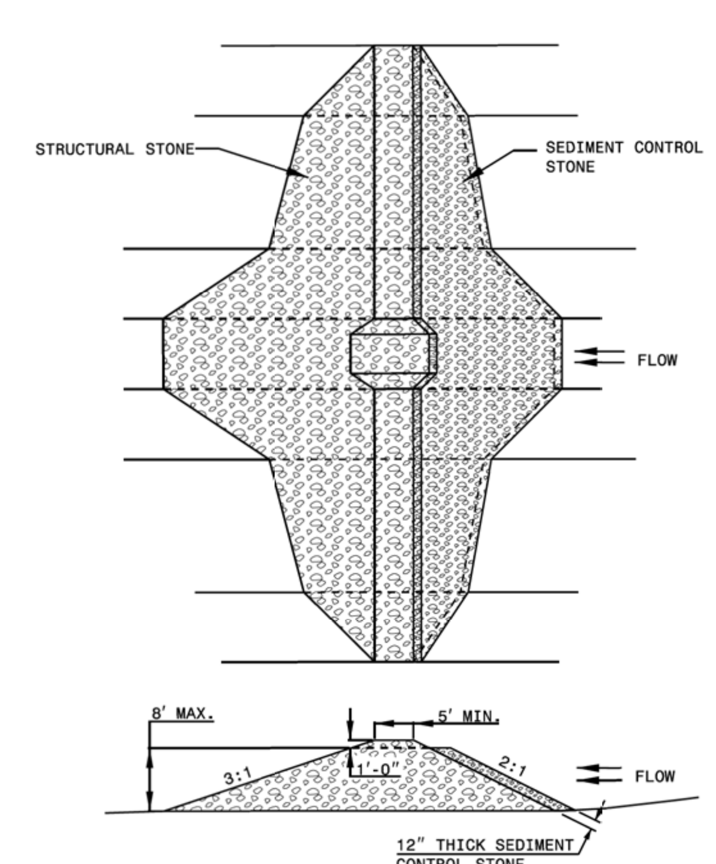
ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SILT CHECK TYPE B

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
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RALEIGH, N.C.
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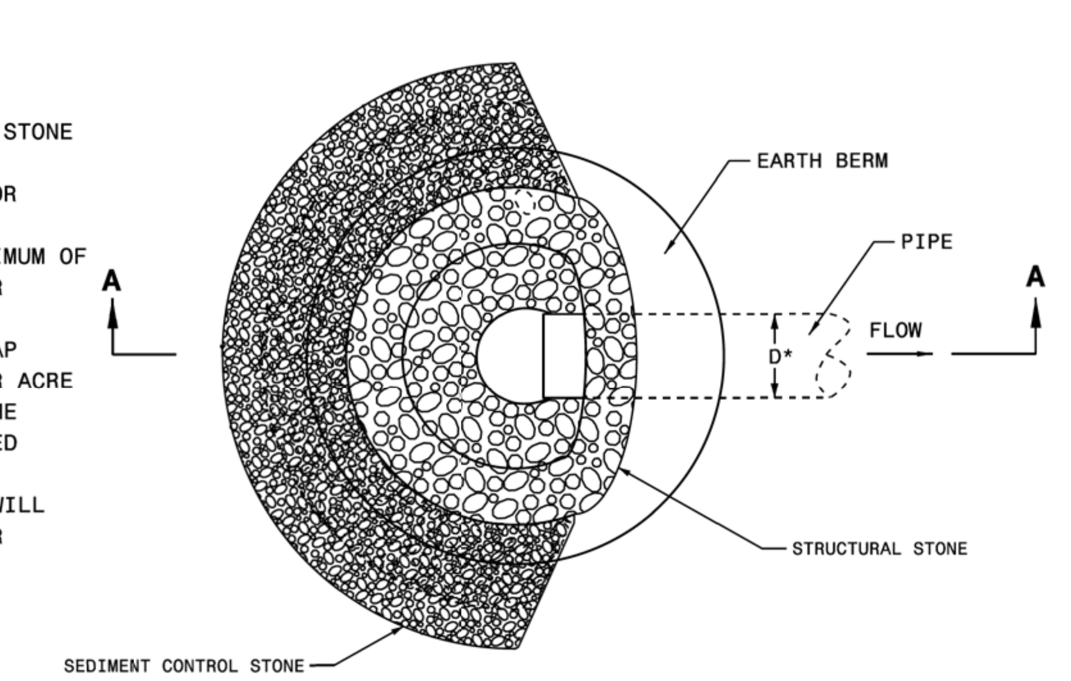
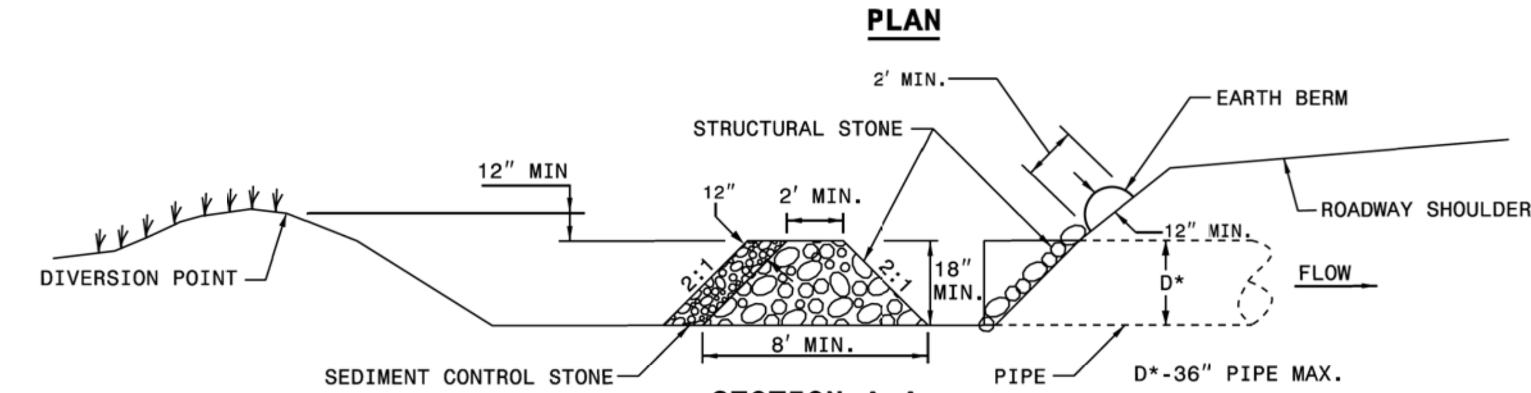
ROADWAY STANDARD DRAWING FOR
TEMPORARY ROCK SEDIMENT DAM TYPE A

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.





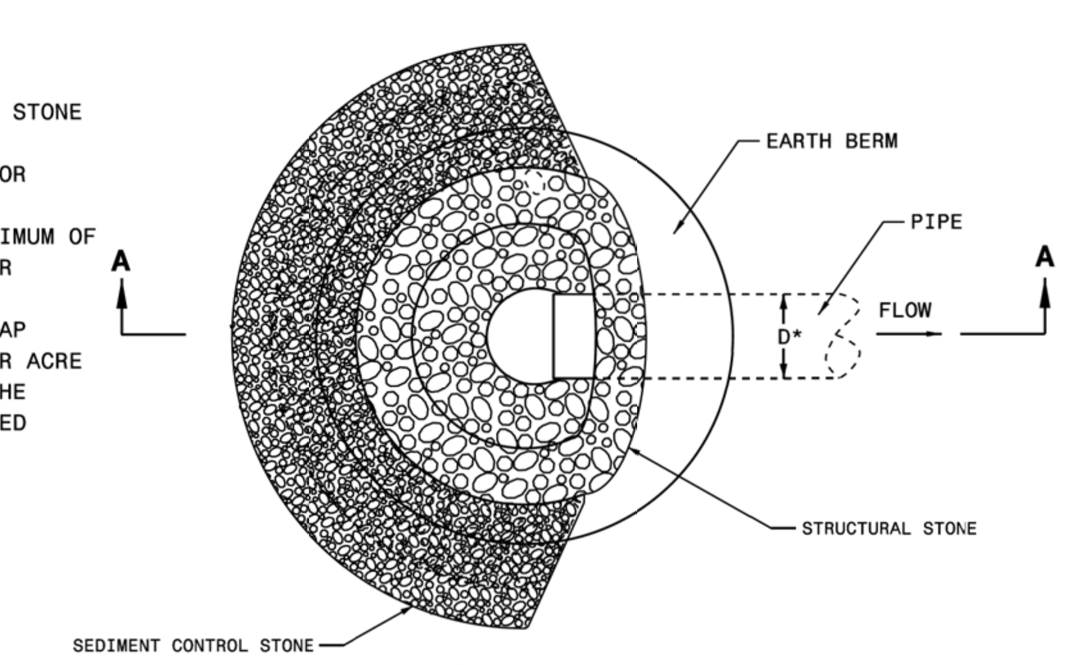
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.
1-18

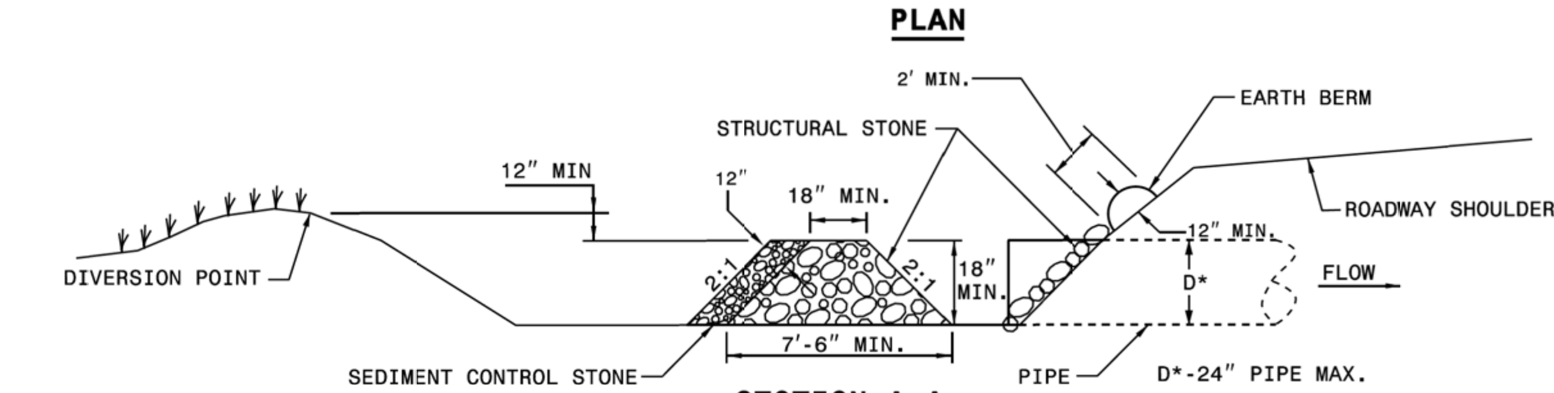
ROADWAY STANDARD DRAWING FOR
ROCK PIPE INLET SEDIMENT TRAP TYPE A

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.
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ROADWAY STANDARD DRAWING FOR
ROCK PIPE INLET SEDIMENT TRAP TYPE B

SHEET 1 OF 1
1635.02

PROJECT REFERENCE NO.	SHEET NO.
BL-0007	31

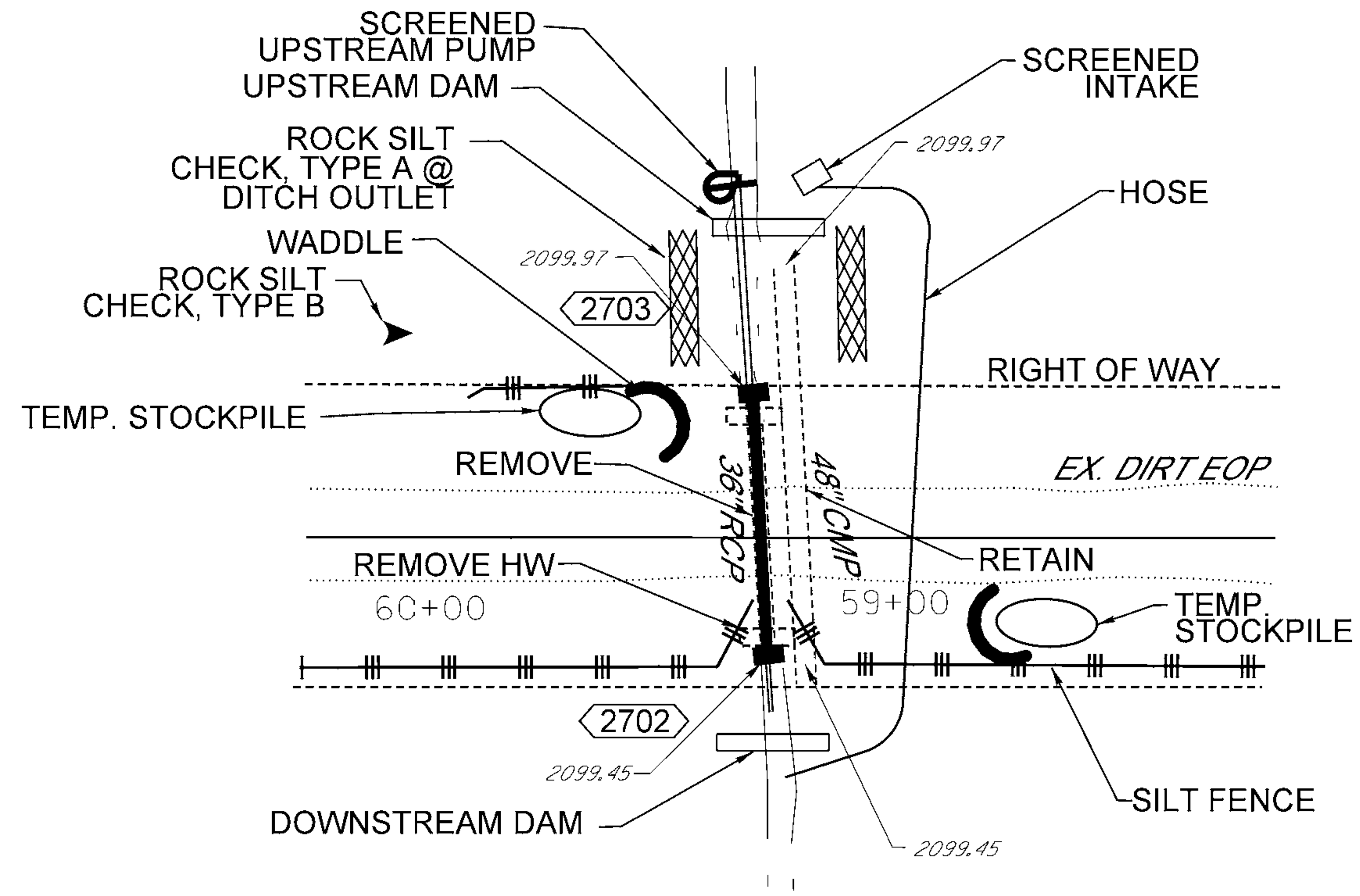
R/W SHEET NO.

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-



DAM AND PUMP STREAM DIVERSION CULVERT 2702 – 2703

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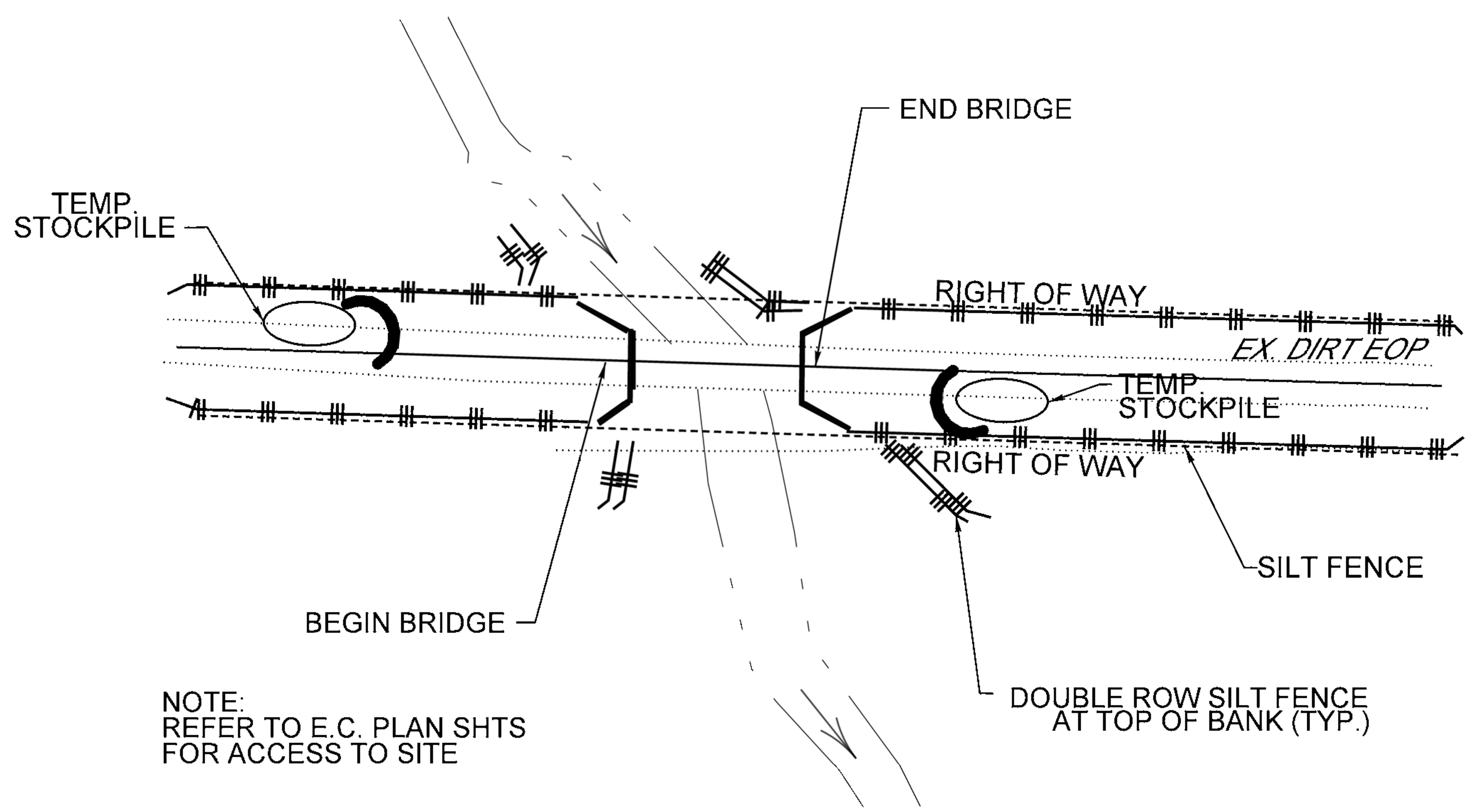

NOTE:
REFER TO E.C. PLAN SHTS FOR ACCESS TO SITE

TYPICAL EROSION CONTROL PLAN AT SINGLE SPAN BRIDGE CONSTRUCTION

NO SCALE

REVISIONS

8/17/99

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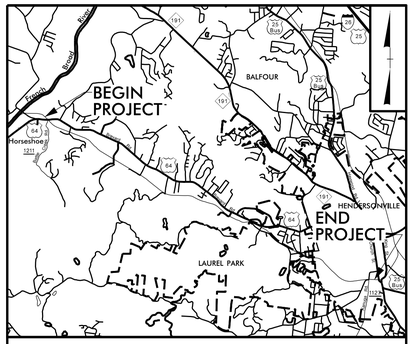
See Sheet 1A For Index of Sheets



VICINITY MAP (N.T.S.)

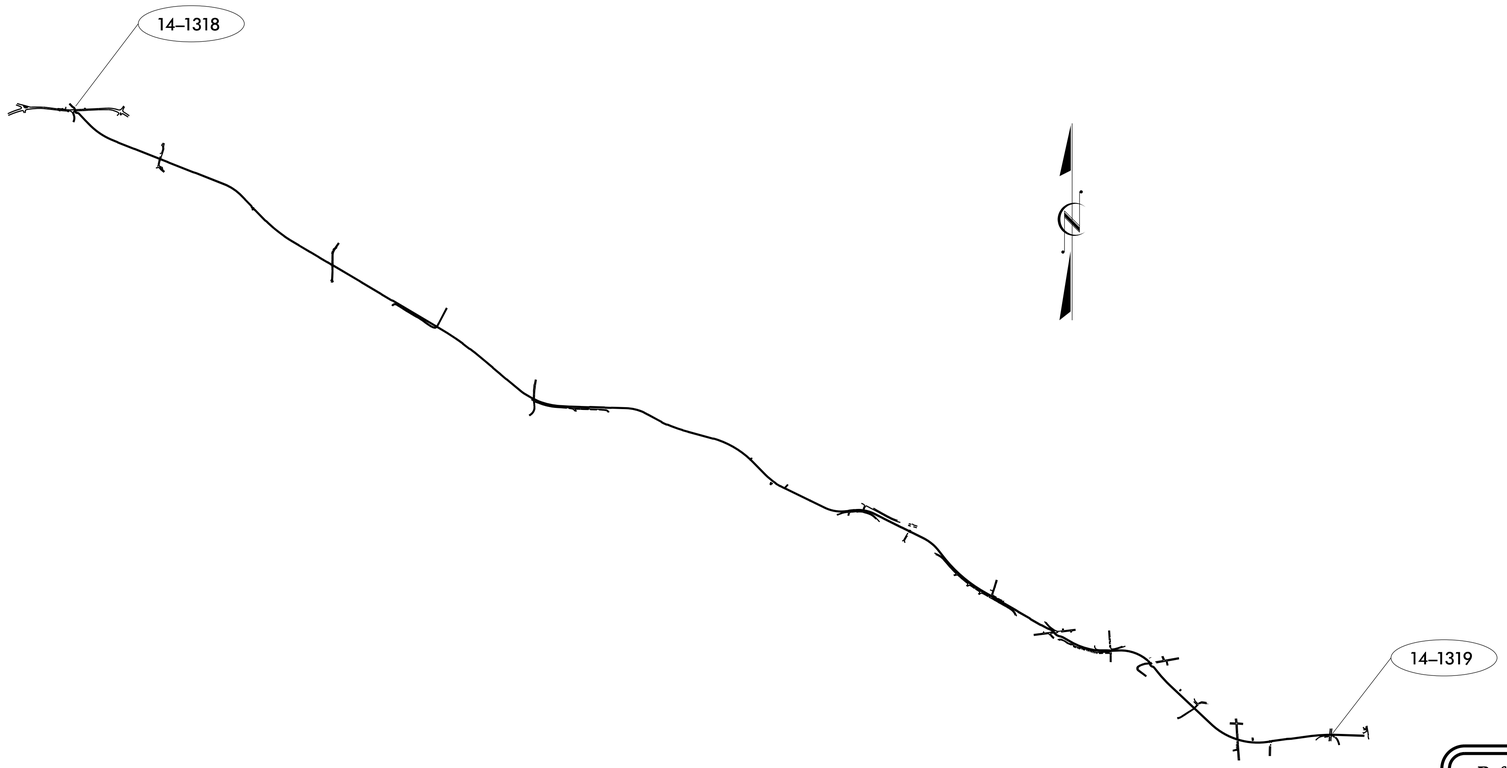
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

Project No.	Sheet No.
EB–6037B	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

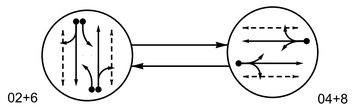
Contacts:

Timothy J. Williams, 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
ITS and Signals Unit
750 N. Greenfield Parkway, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	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

Y - STEADY YELLOW
~~Y~~ - YELLOW ARROW
F Y - FLASHING YELLOW ARROW
R - STEADY RED
~~R~~ - RED ARROW
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

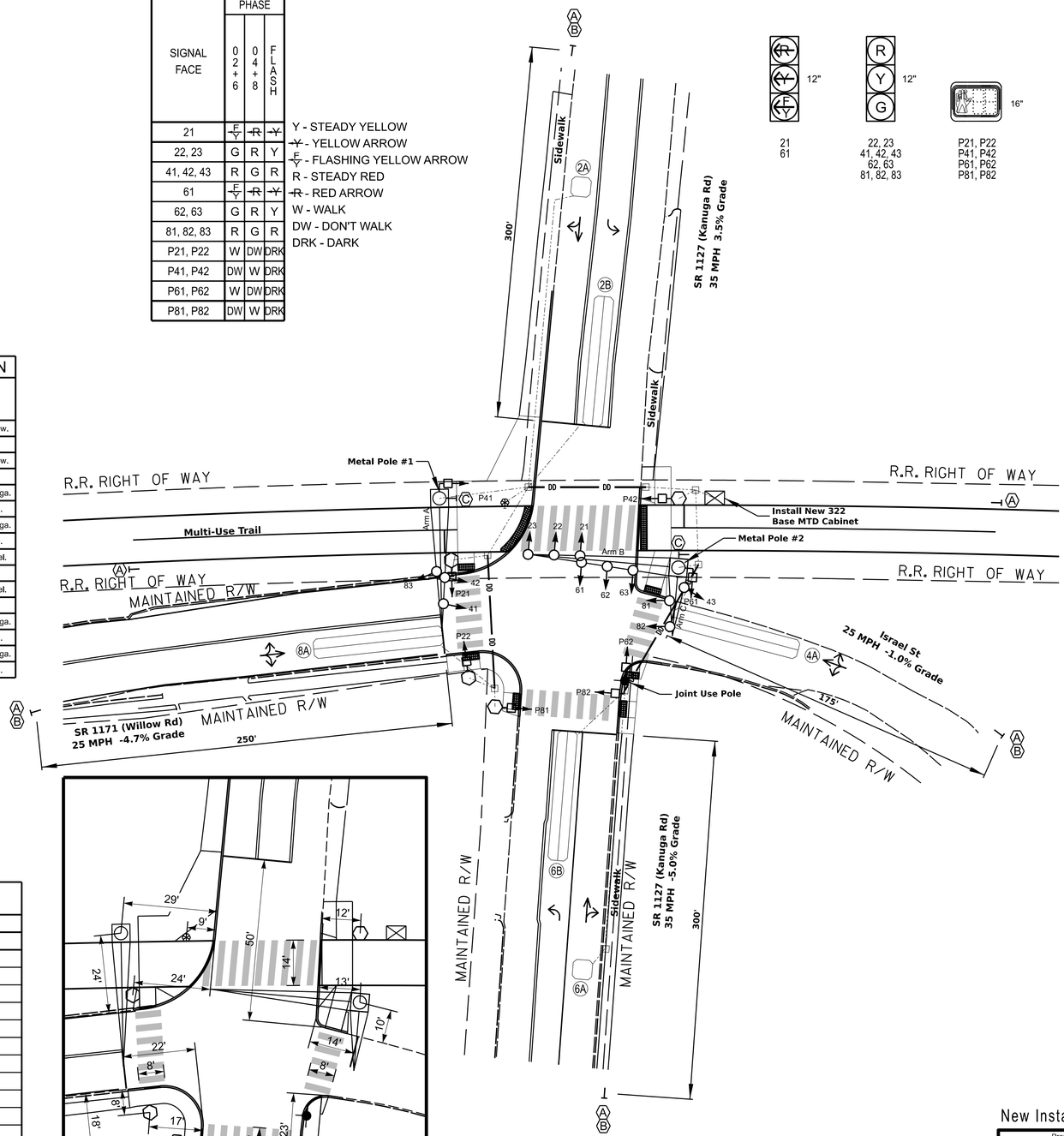
2 Phase
Fully Actuated

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

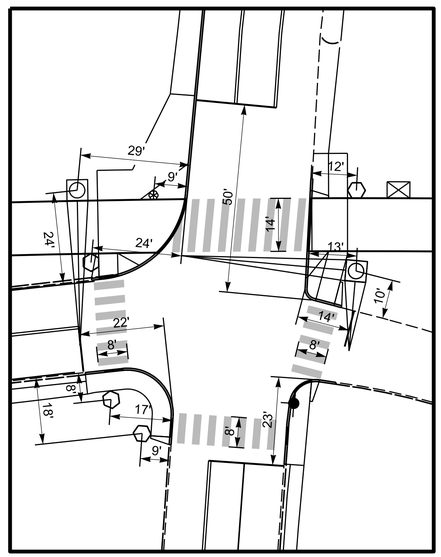
SIGNAL FACE	VOICE	TONES	INTERVAL	SPEECH MESSAGE
P21	-	X	Walk	Walk signal on to cross Willow.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Willow.
P22	-	X	Walk	Walk signal on to cross Willow.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Willow.
P41	-	X	Walk	Walk signal on to cross Kanuga.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.
P42	-	X	Walk	Walk signal on to cross Kanuga.
	X	-	Flashing Don't Walk / Don't Walk	Wait. Wait to cross Kanuga.
P61	-	X	Walk	Walk signal on to cross Israel.
	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	Walk signal on to cross Kanuga.
	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 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
Passage 2 *	0.0	0.0	0.0	0.0
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

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	QUEUE	CALL	PASSAGE 2	SYSTEM LOOP	NEW CARD
2A	6X6	70	4	X	2	-	-	X	-	-	X	-	-	-
2B	6X40	0	2-4-2	X	2	-	-	X	-	-	X	-	-	-
4A	6X40	0	2-4-2	X	4	10	-	X	-	-	X	-	-	-
6A	6X6	70	4	X	6	-	-	X	-	-	X	-	-	-
6B	6X40	0	2-4-2	X	6	-	-	X	-	-	X	-	-	-
8A	6X40	0	2-4-2	X	8	10	-	X	-	-	X	-	-	-

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	New Plaque (W16-15P)	B
C	No Motor Vehicles Sign (R5-3)	C
	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

SR 1127 (Kanuga Rd) at
SR 1171 (Willow Rd) &
Israel St

DIVISION 14 HENDERSON COUNTY HENDERSONVILLE

PLAN DATE: December, 2022 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 SCOTT LINKINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1319

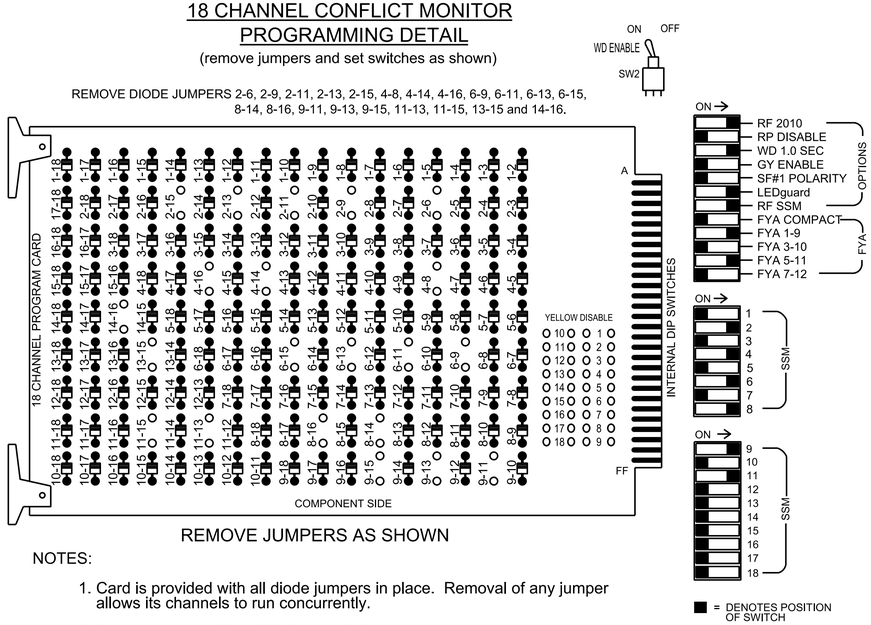
Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
www.TrafficPD.com | 828.575.0133 | TPD@TrafficPD.com

Traffic Planning and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	Sig. 2.1

18 CHANNEL CONFLICT MONITOR PROGRAMMING DETAIL

(remove jumpers and set switches as shown)



■ = DENOTES POSITION OF SWITCH

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	1O	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	Ø2 PED DC ISOLATOR	Ø6 PED DC ISOLATOR	FS DC ISOLATOR
	L		Ø 2 2B				NOT USED						Ø4 PED DC ISOLATOR	Ø8 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	QUEUE	CALL	PASSAGE 2
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. 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: December 2022
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)

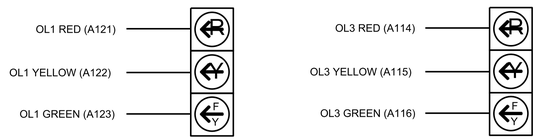
SIGNAL HEAD HOOK-UP CHART

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: December 2022	REVIEWED BY: E. Sirgany
PREPARED BY: J. Smith	REVIEWED BY:

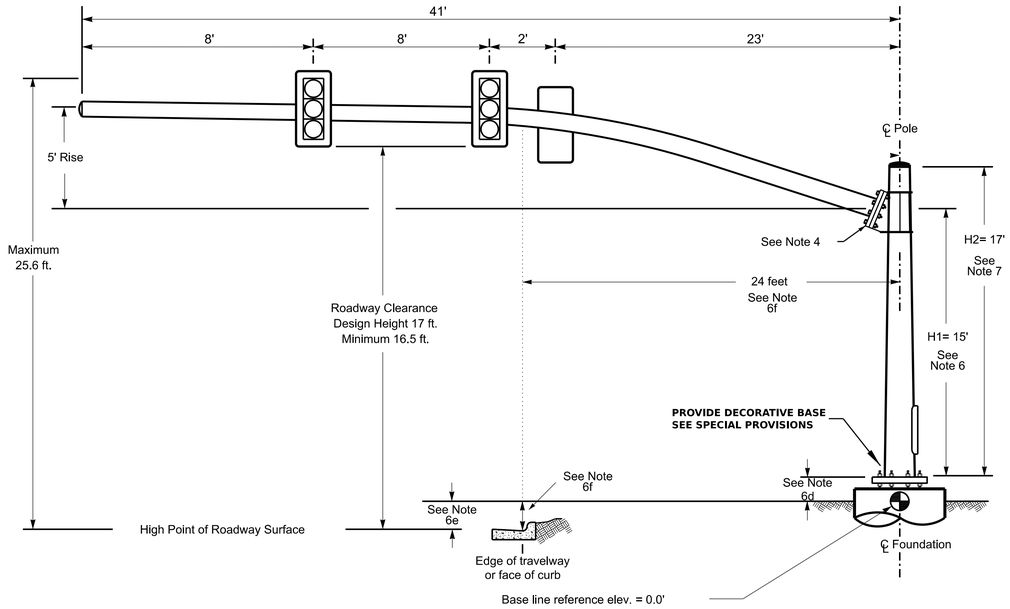
REVISIONS	INIT.	DATE

SEAL
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
DATE

SIG. INVENTORY NO. 14-1319

Prepared for:
North Carolina Department of Transportation
Traffic Engineering Branch
Traffic Signals Management Section
750 N. Greenfield Pkwy, Garner, NC 27529

Design Loading for METAL POLE NO. 1



Westbound Elevation View

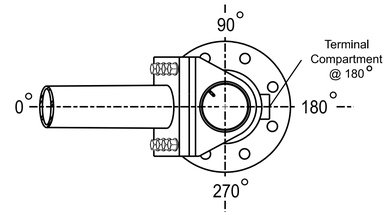
NOTE: This space intentionally left blank.

SPECIAL NOTE

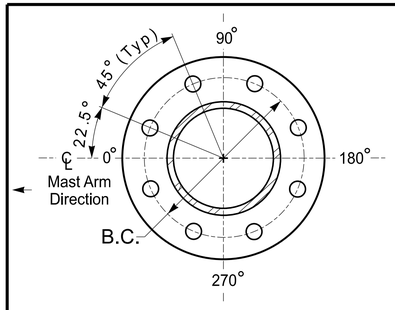
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

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.

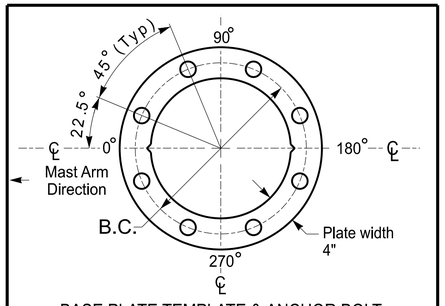


POLE RADIAL ORIENTATION



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.
EB-6037B	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

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.

Est. 1989
TRAFFIC PLANNING AND DESIGN, INC.
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, NORTH CAROLINA DEPARTMENT OF TRANSPORTATION, 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: December, 2022 | REVIEWED BY: C. Kinton

PREPARED BY: R. Woutersz | REVIEWED BY:

REVISIONS	INIT.	DATE

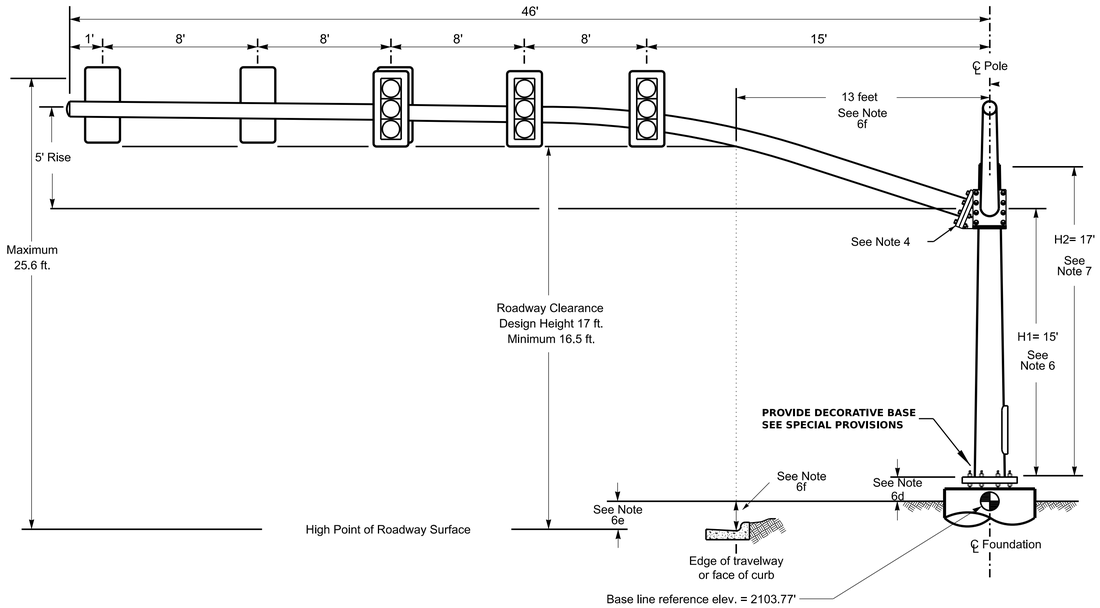
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1319

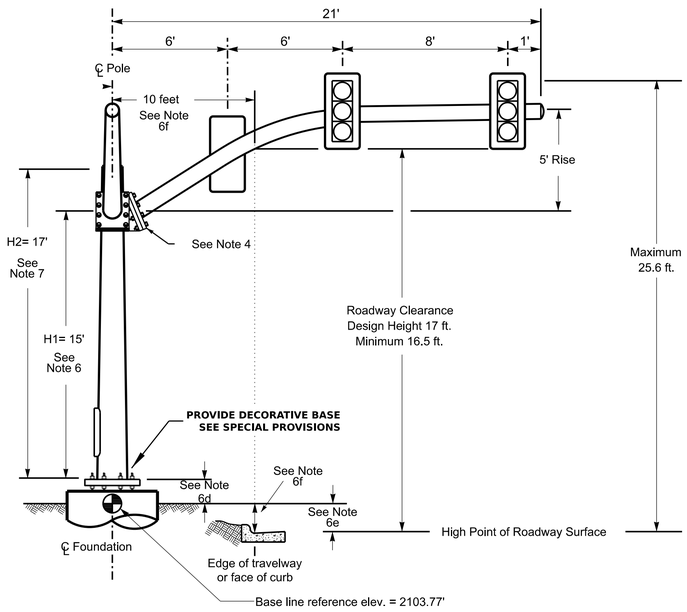
Traffic Planning and Design, Inc.

Design Loading for METAL POLE NO. 2, MAST ARM B



Northbound Elevation View

Design Loading for METAL POLE NO. 2, MAST ARM C



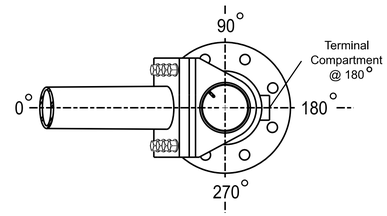
Eastbound Elevation View

SPECIAL NOTE

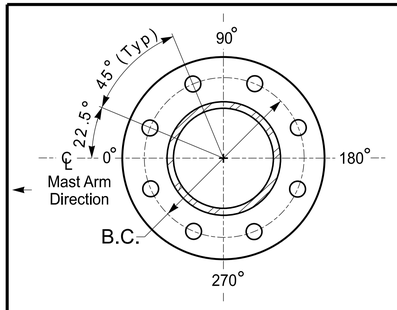
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

Elevation Data for Mast Arm Attachment (H1)

Elevation Differences for:	Arm B	Arm C
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.

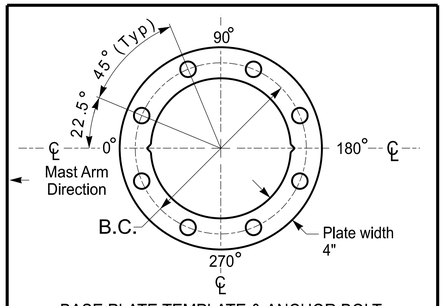


POLE RADIAL ORIENTATION



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.
EB-6037B	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

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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NCDOT Wind Zone 4 (90 MPH)

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Prepared for:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
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:	December, 2022	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

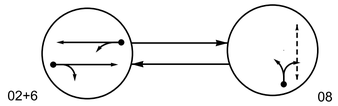
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1319

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	Sig. 3.0

PHASING DIAGRAM



PHASING DIAGRAM DETECTION LEGEND

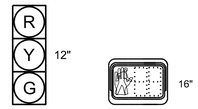
- DETECTED MOVEMENT
- UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- PEDESTRIAN MOVEMENT

TABLE OF OPERATION			
SIGNAL FACE	PHASE 02+6	PHASE 08	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

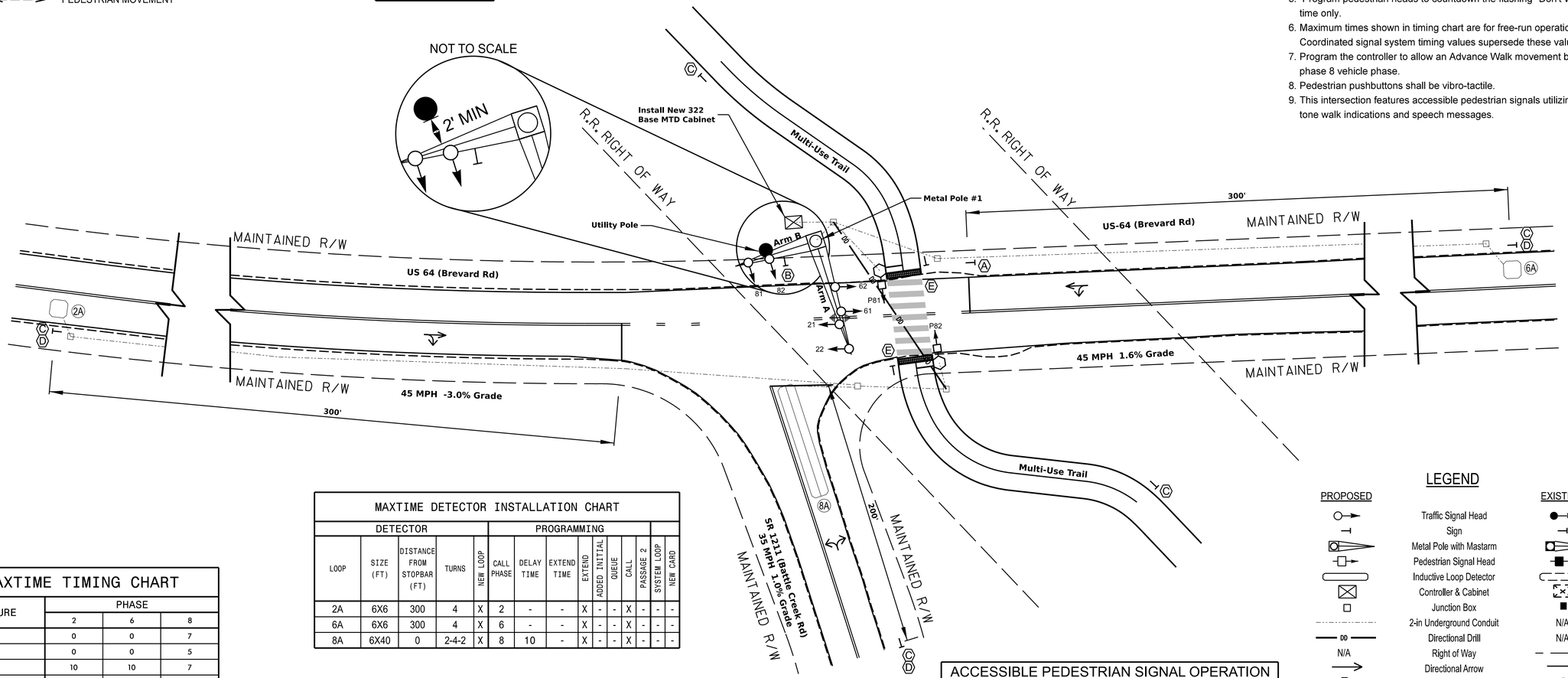
P81, P82

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



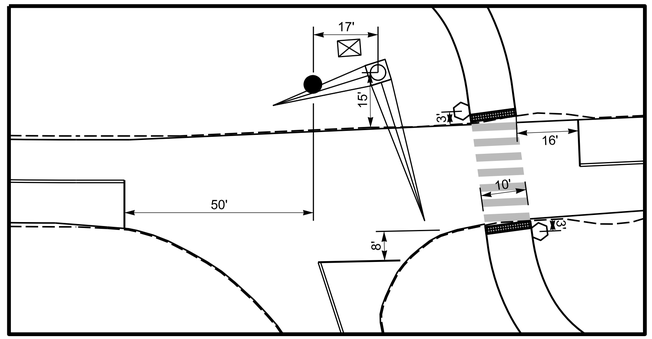
MAXTIME DETECTOR INSTALLATION CHART

DETECTOR					PROGRAMMING									
LOOP	SIZE (FT)	DISTANCE FROM STOPBAR (FT)	TURNS	NEW LOOP	CALL PHASE	DELAY TIME	EXTEND TIME	EXTEND	ADDED INITIAL	QUEUE	CALL	PASSAGE 2	SYSTEM LOOP	NEW CARD
2A	6X6	300	4	X	2	-	-	X	-	-	X	-	-	-
6A	6X6	300	4	X	6	-	-	X	-	-	X	-	-	-
8A	6X40	0	2-4-2	X	8	10	-	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 *	3.0	3.0	2.0
Passage 2 *	0.0	0.0	0.0
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 *	18	18	–
Time Before Reduction *	15	15	–
Time To Reduce *	20	20	–
Minimum Gap	2.0	2.0	–
Advance Walk	–	–	4
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	New Plaque (W16-15P)	D
E	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:
Transportation Mobility and Safety Division
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section
750 N. Greenfield Pkwy, Garner, NC 27529

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SCALE
0 20
1" = 20"

US 64 (Brevard Rd) at
SR 1211 (Battle Creek Rd)

DIVISION 14 HENDERSON COUNTY

PLAN DATE:	December, 2022	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048897 SCOLIN KINTON

SIGNATURE DATE

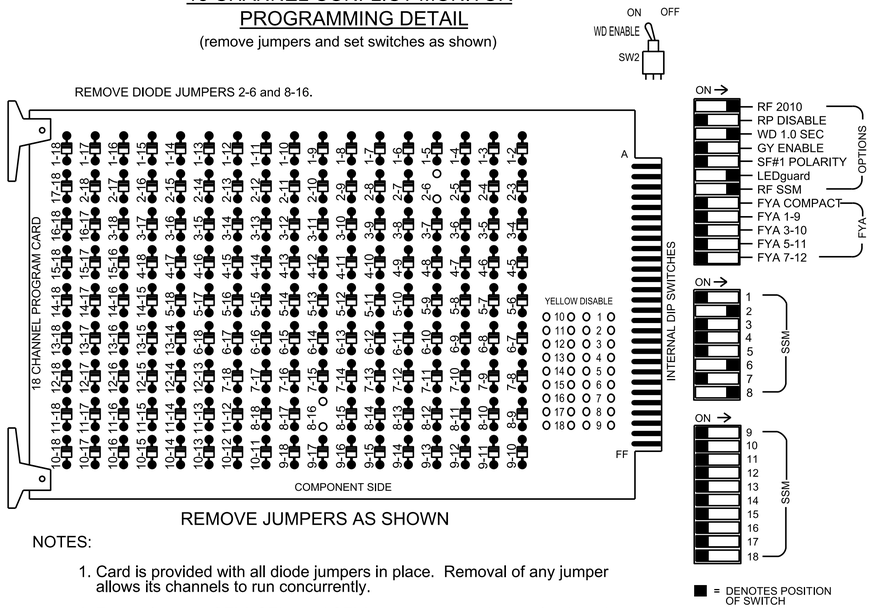
SIG. INVENTORY NO. 14-1318

Traffic Planning and Design, Inc.

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	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	61,62	·	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	·	·	·	·	·	·

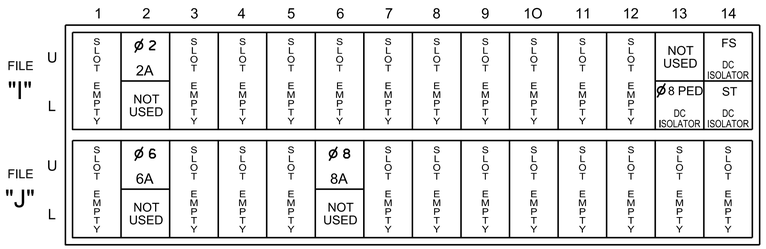
NU = Not Used

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)



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	QUEUE	CALL	PASSAGE 2
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 ISOLATORS 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: December 2022
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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

US 64 (Brevard Rd) at
SR 1211 (Battle Creek Rd)

Division 14 | Henderson County | Hendersonville

PLAN DATE:	December 2022	REVIEWED BY:	E. Sirgany
PREPARED BY:	J. Smith	REVIEWED BY:	

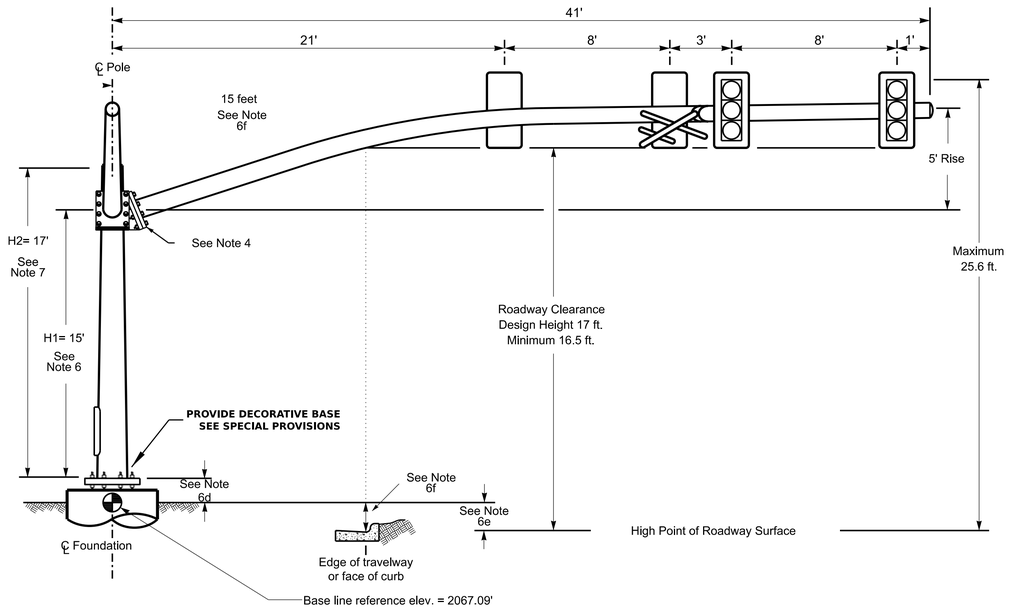
REVISIONS	INIT.	DATE

SEAL
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE

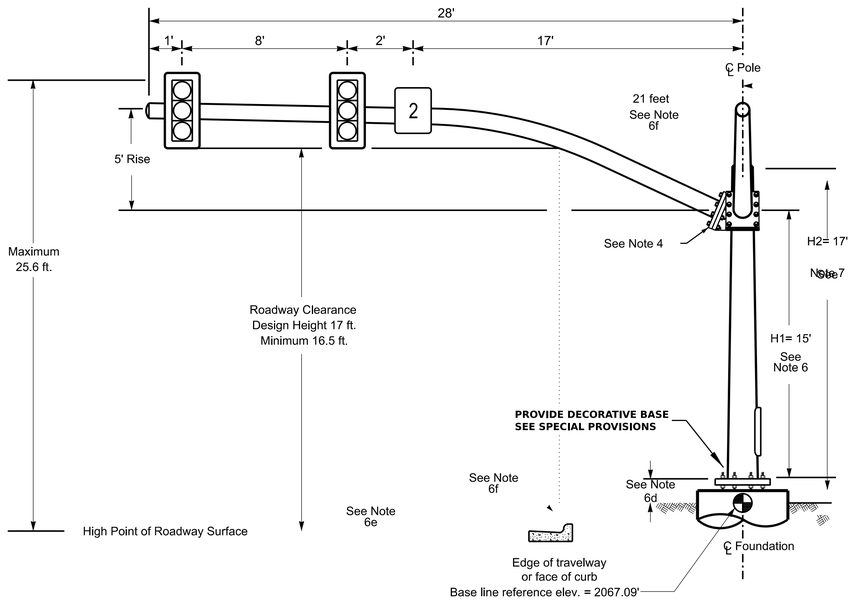
SIG. INVENTORY NO. 14-1318

Design Loading for METAL POLE NO. 1, MAST ARM A



Eastbound Elevation View

Design Loading for METAL POLE NO. 1, MAST ARM B



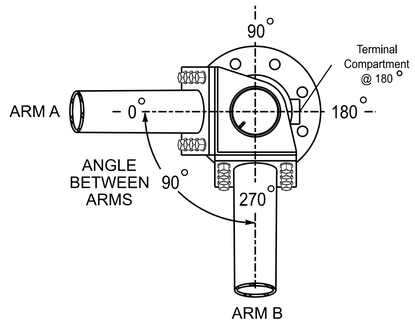
Northbound Elevation View

SPECIAL NOTE

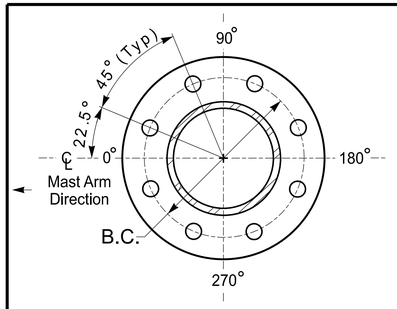
The contractor is responsible for verifying that the mast arm attachment height (H1) will provide the "Design Height" clearance from the roadway before submitting final shop drawings for approval. Verify elevation data below which was obtained by field measurement or from available project survey data.

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.

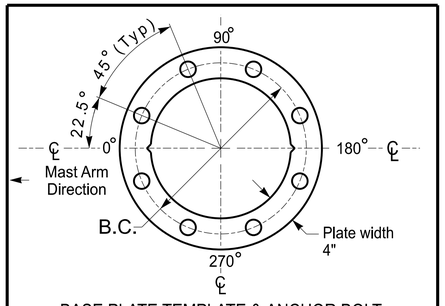


POLE RADIAL ORIENTATION



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.
EB-6037B	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.
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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.
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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, Traffic Engineering Branch, Signal Design Section

750 N. Greenfield Pkwy, Garner, NC 27529

SCALE 0 20 1" = 20'

US 64 (Brevard Rd) at SR 1211 (Battle Creek Rd)

DIVISION 14 HENDERSON COUNTY

PLAN DATE:	December, 2022	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

REVISIONS	INIT.	DATE

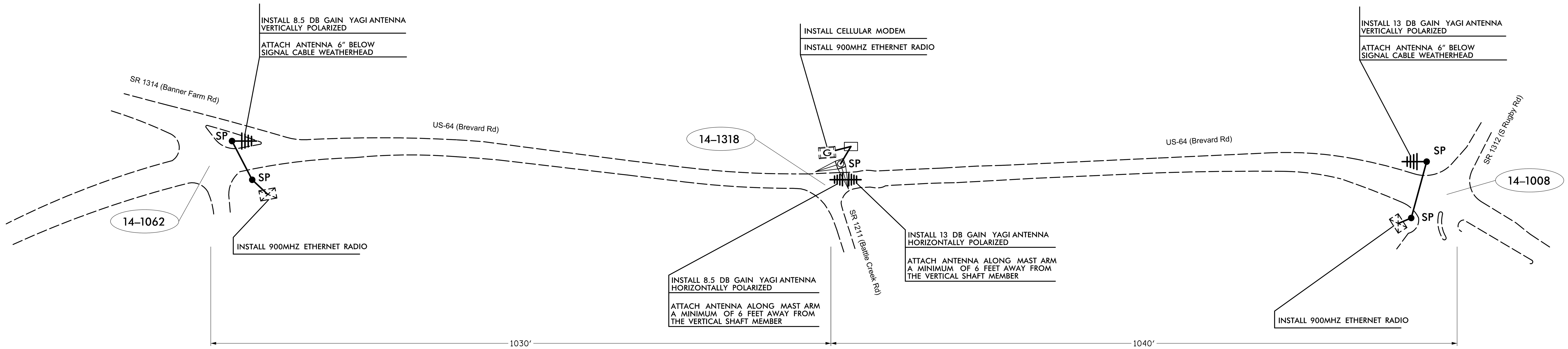
SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER COLIN KINTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

Traffic Planning and Design, Inc.



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
- EXI EXISTING COMMUNICATIONS CABLE
- NEW COMMUNICATIONS CABLE

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Wireless Communication Plan

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:	December, 2022	REVIEWED BY:	C. Kinton
PREPARED BY:	R. Woutersz	REVIEWED BY:	

SCALE 0 100 1" = 100'

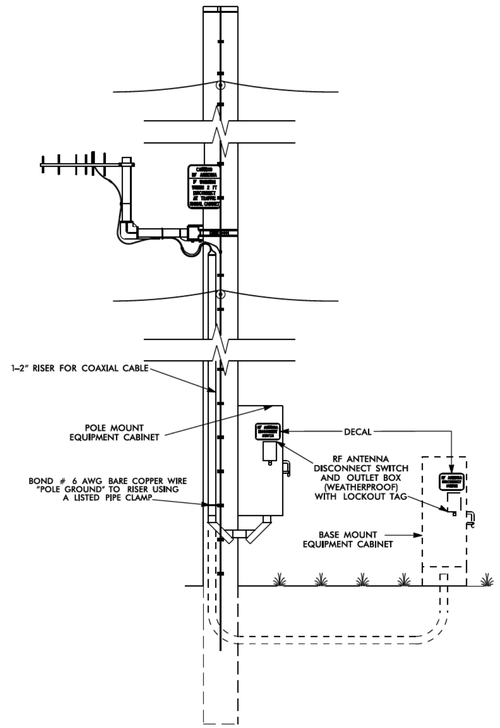
REVISIONS	INIT.	DATE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048897 COLIN KINTON

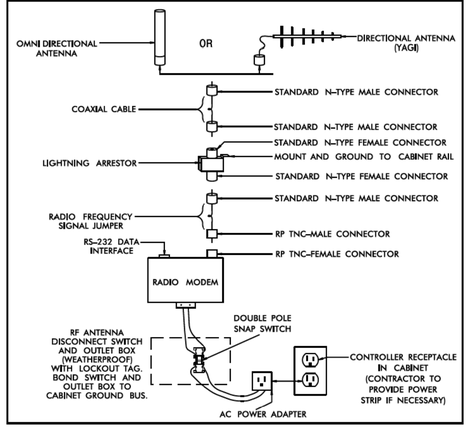
SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	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.

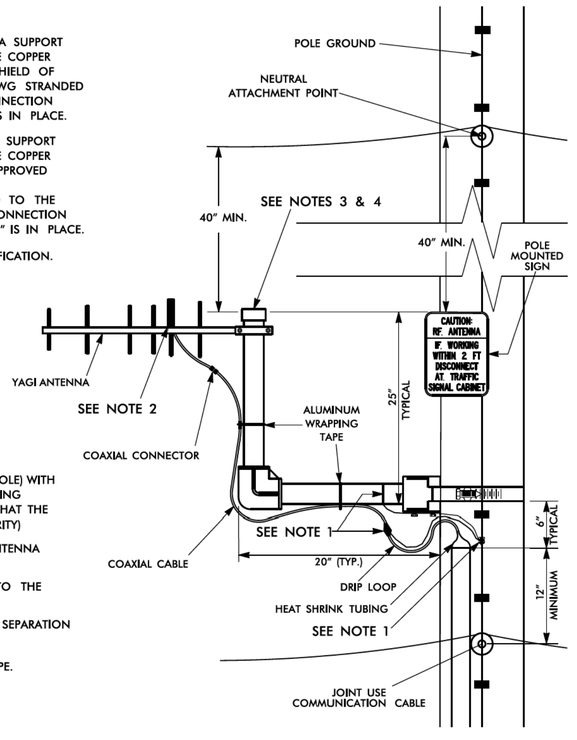
3. TO CONSERVE VERTICAL SPACING ON THE POLE (JOINT-USE OR SIGNAL POLE) WITH REGARDS TO THE SURROUNDING UTILITIES, INSTALL THE ANTENNA MOUNTING HARDWARE USING ONE OF THE TWO METHODS LISTED BELOW: (ENSURE THAT THE MOUNTING METHOD DOES NOT DEGRADE THE ANTENNA'S SIGNAL INTEGRITY)

   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

Traffic Planning and Design, Inc.

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SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 048897 JOHN K. NORTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1318

Prepared for:
Transportation Mobility and Safety Division
Signal Design Section

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750 N. Greenfield Pkwy, Garner, NC 27529

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	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

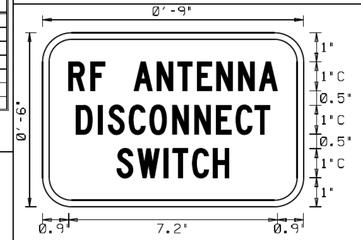
SYMBOL	X	Y	WID	HT

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		C1
0.9	0.8	0.5	1	0.8	0.7	0.7	0.7	0.8	0.7	0.6	0.9	7.2
	D	I	S	C	O	N	N	E	C	T		C1
1.2	0.8	0.3	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.5	1.2	6.7
	S	W	I	T	C	H						C1
2.6	0.7	0.9	0.3	0.7	0.7	0.5	2.6					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

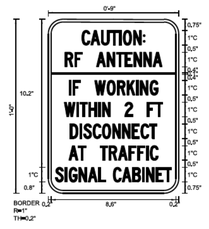
SYMBOL	X	Y	WID	HT
BAR	0.2	8.2	8.6	1.0

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																					C
2.3	0.6	0.7	0.6	0.6	0.3	0.7	0.7	0.1	2.3																				4.4
	R	F		A	N	T	E	N	N	A																				C
1.1	0.7	0.5	1	0.7	0.6	0.6	0.6	0.7	0.6	0.6	1.1																			6.7
	I	F		W	O	R	K	I	N	G																				C
1.4	0.3	0.5	1	0.8	0.7	0.7	0.6	0.3	0.7	0.5	1.4																			6.1
	W	I	T	H	I	N		2		F	T																			C
1.1	0.9	0.2	0.6	0.7	0.3	0.5	1	0.5	1	0.6	0.5	1.1																		6.8
	D	I	S	C	O	N	N	E	C	T																				C
1.5	0.7	0.3	0.6	0.6	0.7	0.7	0.7	0.6	0.6	0.5	1.5																			6
	A	T		T	R	A	F	F	I	C																				C
1.4	0.7	0.5	1	0.6	0.6	0.7	0.6	0.6	0.3	0.6	1.4																			6.2
	S	I	G	N	A	L		C	A	B	I	N	E	T																C
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															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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Prepared for:
Transportation Mobility and Safety Division
Signal Design Section
750 N. Greenfield Pkwy. Garner, NC 27529

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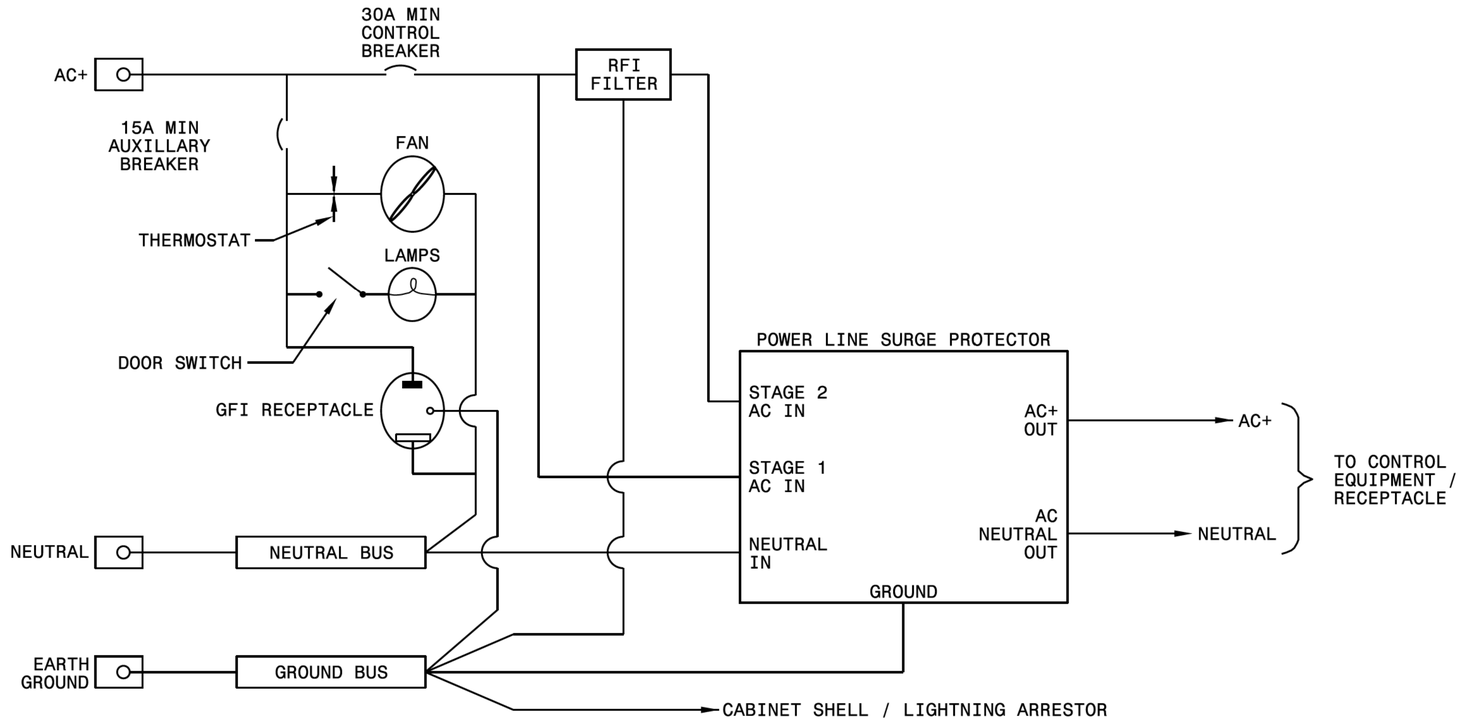
SEAL
NORTH CAROLINA PROFESSIONAL SEAL 048897 ENGINEER SCOTT K. NORTON

SIGNATURE DATE

SIG. INVENTORY NO. 14-1318

PROJECT REFERENCE NO.	SHEET NO.
EB-6037B	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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Prepared for:
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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
Signal Design Section

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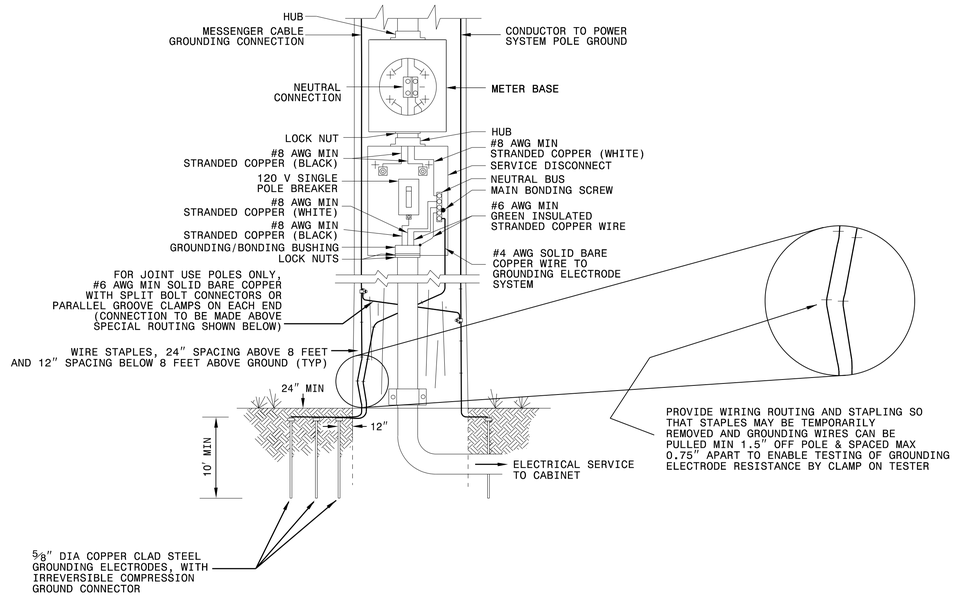
NORTH CAROLINA
PROFESSIONAL
SEAL
048897
ENGINEER
SCOTT KINTON

SIGNATURE | DATE

SIG. INVENTORY NO. 14-1318

PROJECT NO.	SHEET NO.
EB-6037B	Sig. 5.0



1-18 STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH STANDARD DRAWING FOR

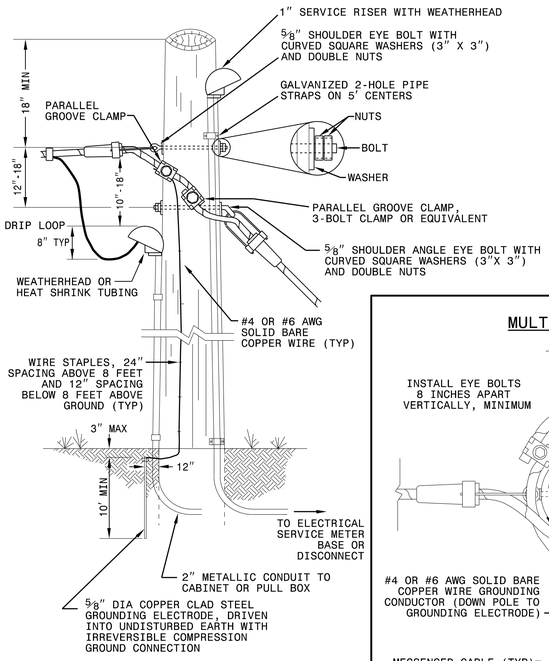
ELECTRICAL SERVICE GROUNDING

GROUNDING AND BONDING

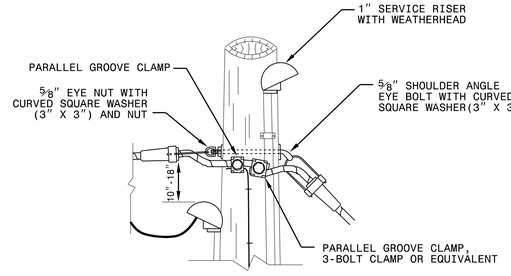
SHEET 1 OF 1

1700D01

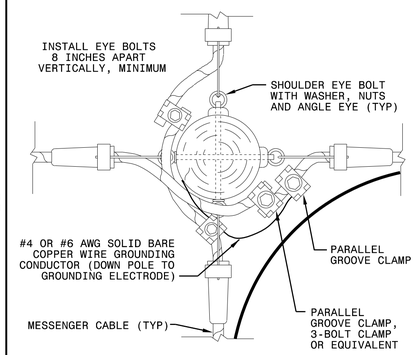
TWO-BOLT METHOD (PREFERRED)



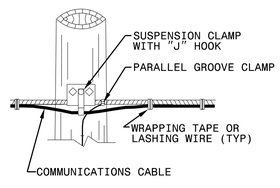
ONE-BOLT METHOD



MULTIPLE SPANS



COMMUNICATIONS CABLE AT INTERMEDIATE POLE



NOTE

FOR CONNECTING MESSENGER TO MESSENGER, USE PARALLEL GROOVE CLAMP, 3-BOLT CLAMP OR EQUIVALENT. FOR CONNECTING COPPER WIRE TO MESSENGER, USE PARALLEL GROOVE CLAMP.

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

Prepared in the Offices of:

Transportation Mobility and Safety Division
DEPARTMENT OF TRANSPORTATION • STATE OF NORTH CAROLINA •
ITS & Signals Unit

750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL 032108
ENGINEER
MOHD A. ASLAMI

DocuSigned by: Mohd Aslami
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10/11/2017
DATE

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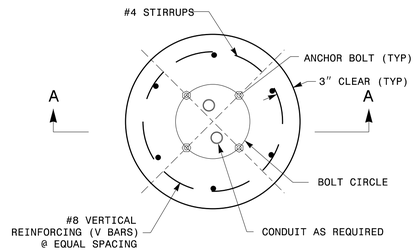
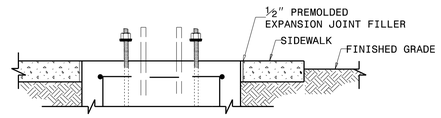
PROJECT NO.	SHEET NO.
EB-6037B	Sig. 5.1



PEDESTAL FOUNDATION - PLAN VIEW

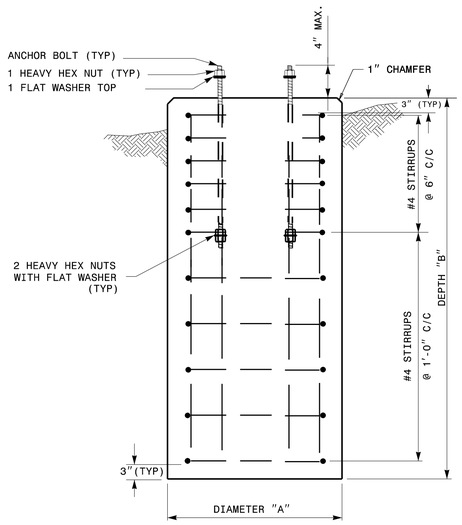


PEDESTAL FOUNDATION DETAILS FOR SIDEWALK

NOTES:

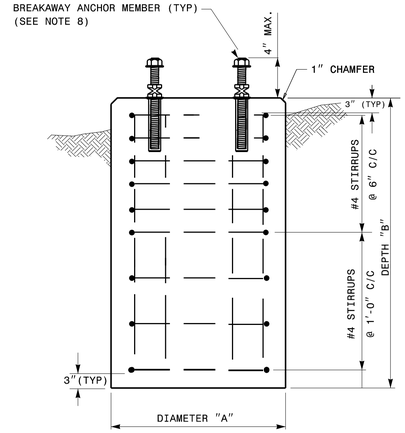
1. CAST FOUNDATION AGAINST UNDISTURBED SOIL WHEREVER CONDITIONS PERMIT. IN UNSTABLE SOIL, CAST-IN-PLACE TUBE FORMS ARE ALLOWED WITH APPROVAL.
2. COMPLY WITH APPLICABLE PROVISIONS OF SECTION 825 FOR CONCRETE CONSTRUCTION.
3. USE CLASS "A" CONCRETE THAT MEETS THE REQUIREMENTS OF SECTION 1000 WITH A COMPRESSION 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.



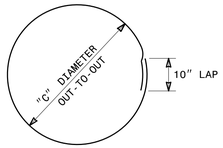
TYPES I, II & III

SECTION A-A

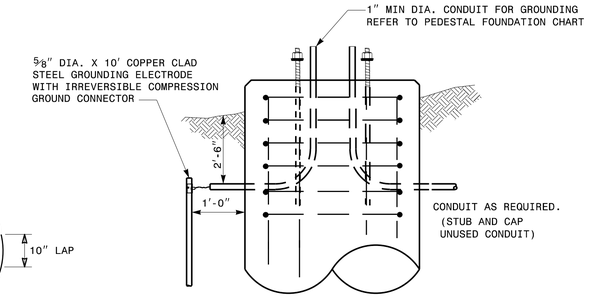


TYPES I & II ONLY

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

Prepared in the Offices of:

Transportation Mobility and Safety Division
ITS & Signals Unit
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

750 N. Greenfield Parkway
Garner, NC 27529

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
028094
ENGINEER
DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 44E8E32E147E4C4...
10/11/2017
DATE

DOCUMENT NOT CONSIDERED
FINAL UNLESS ALL
SIGNATURES COMPLETED

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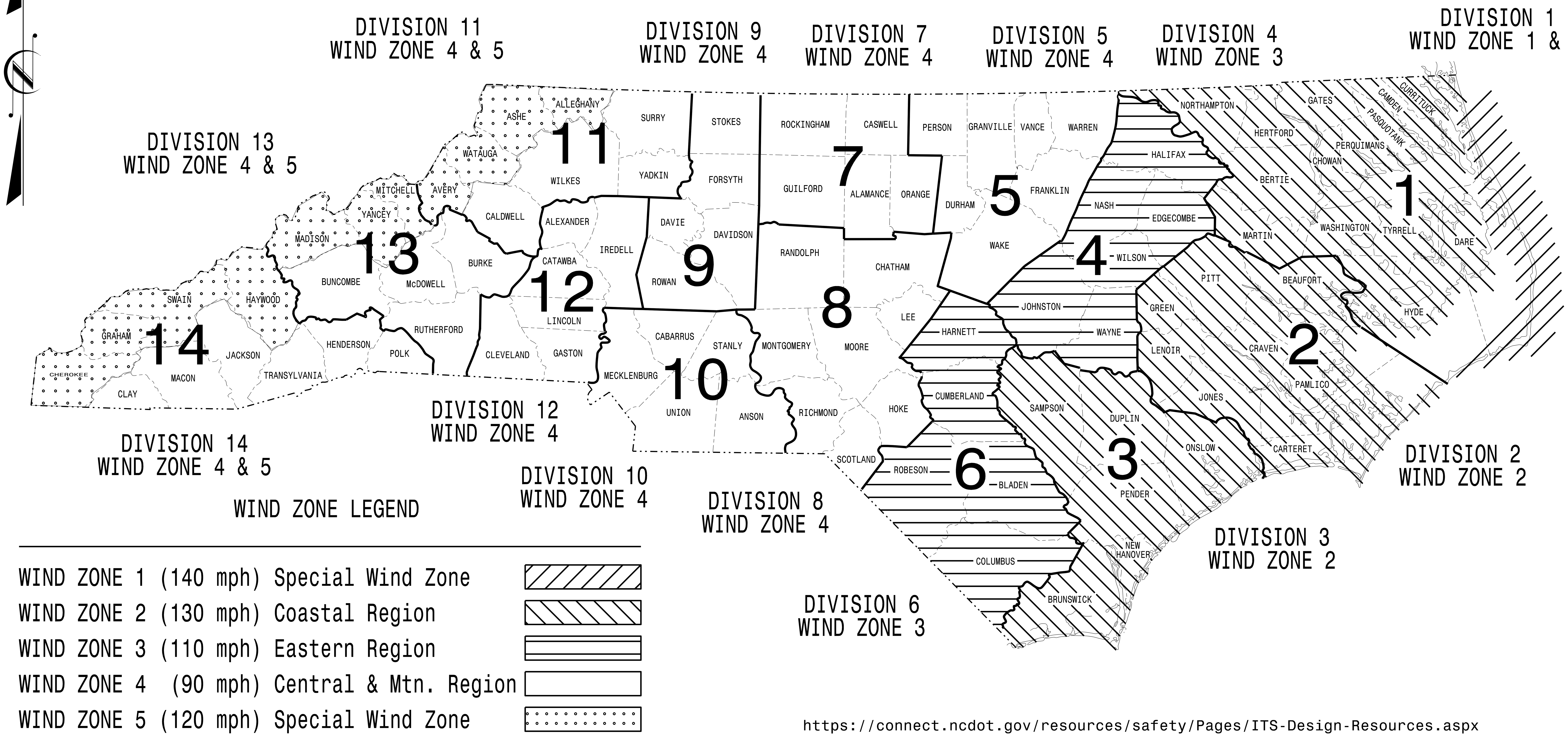
PROJECT I.D. NO.	SHEET NO.
	Sig.M1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANDARD DRAWINGS FOR ALL METAL POLES



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

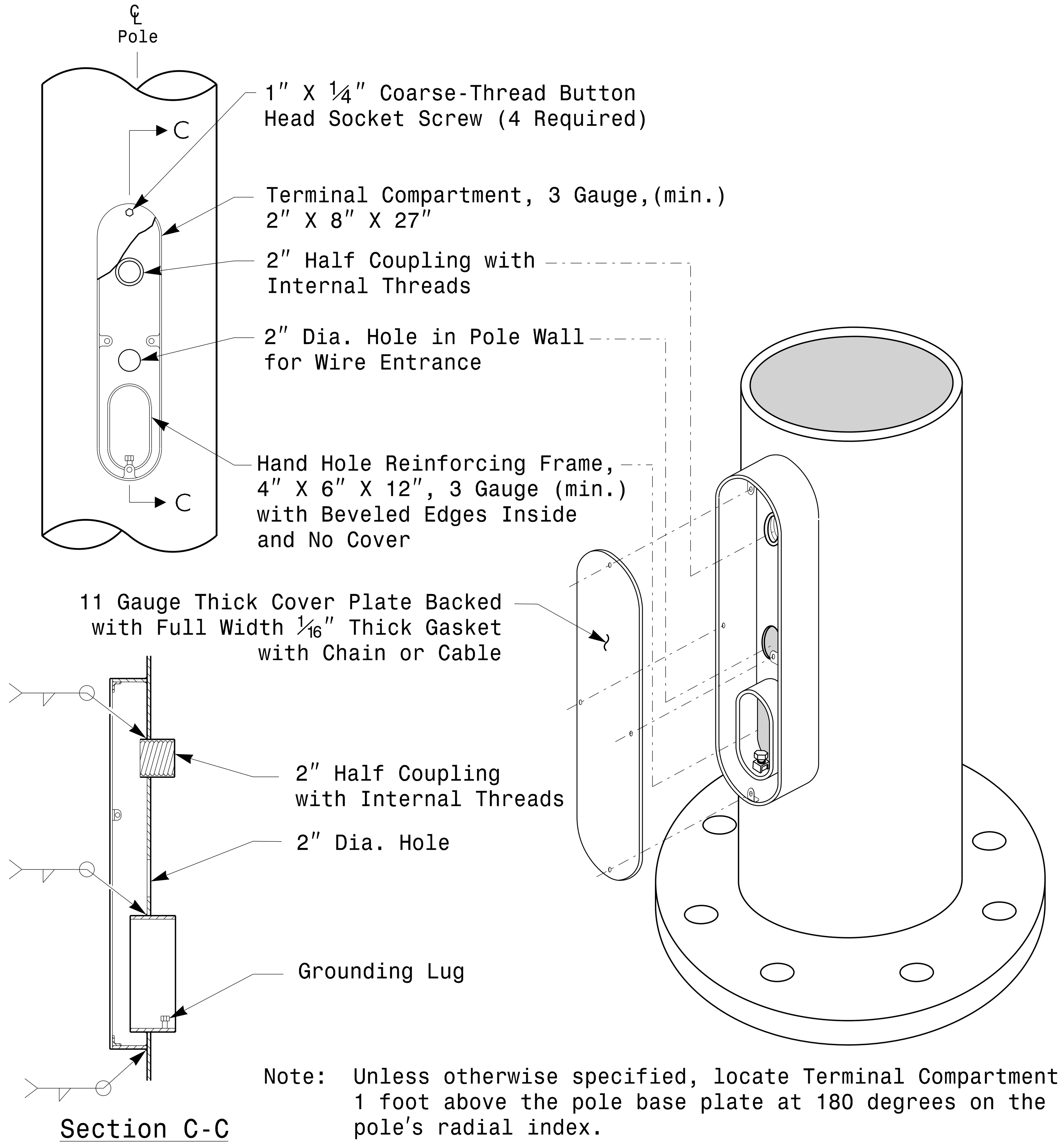
M.M. MCDIARMID, P.E. – STATE ITS AND SIGNALS ENGINEER
J. P. GALLOWAY, P.E. – STATE SIGNALS ENGINEER
D.C. SARKAR, P.E. – ITS AND SIGNALS SENIOR STRUCTURAL ENGINEER

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

Debesh C. Sarkar 10/11/2017
SIGNATURE DATE

PROJECT ID. NO.	SHEET NO.
	Sig.M2

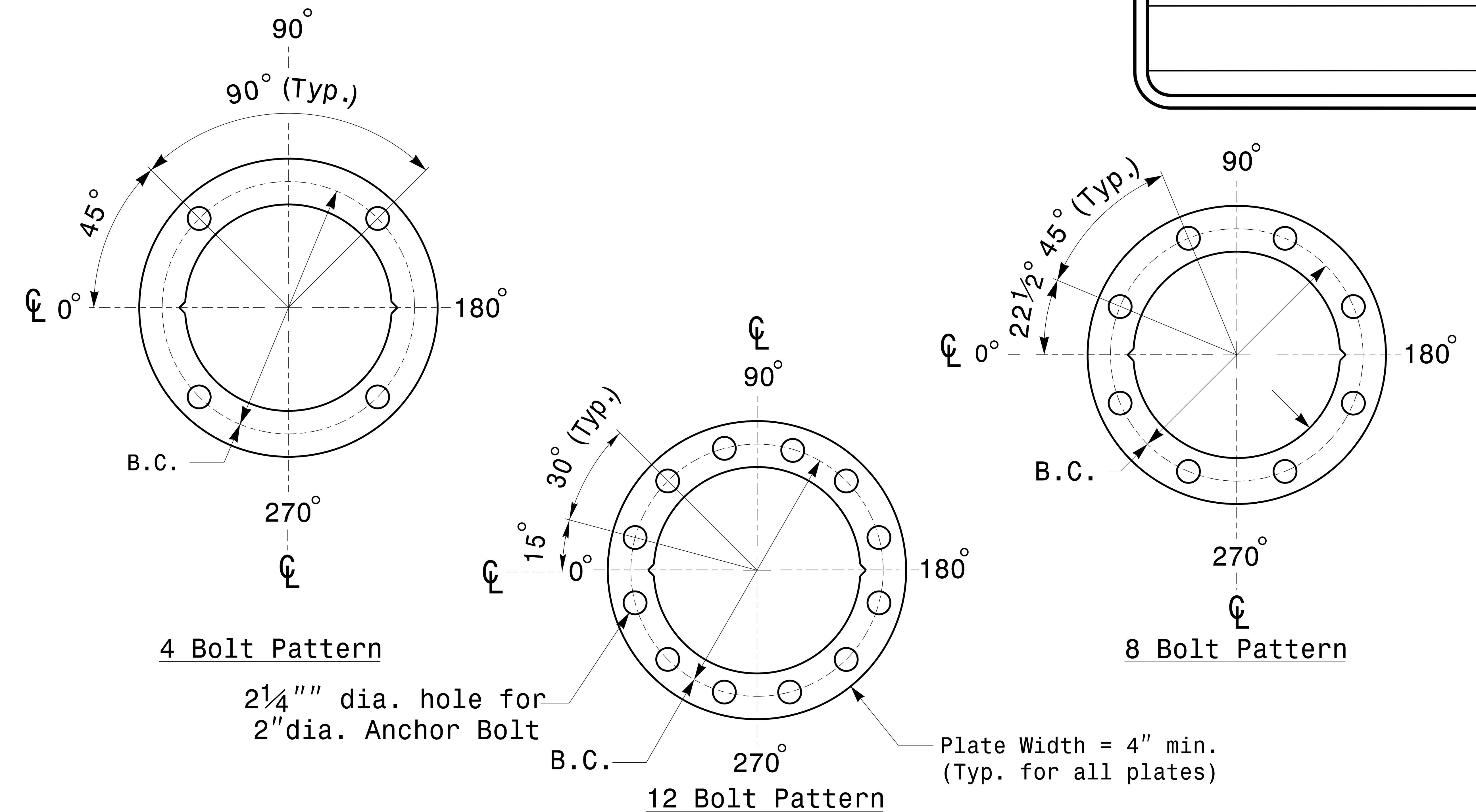
Fabrication Details – All Metal Poles



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.	________

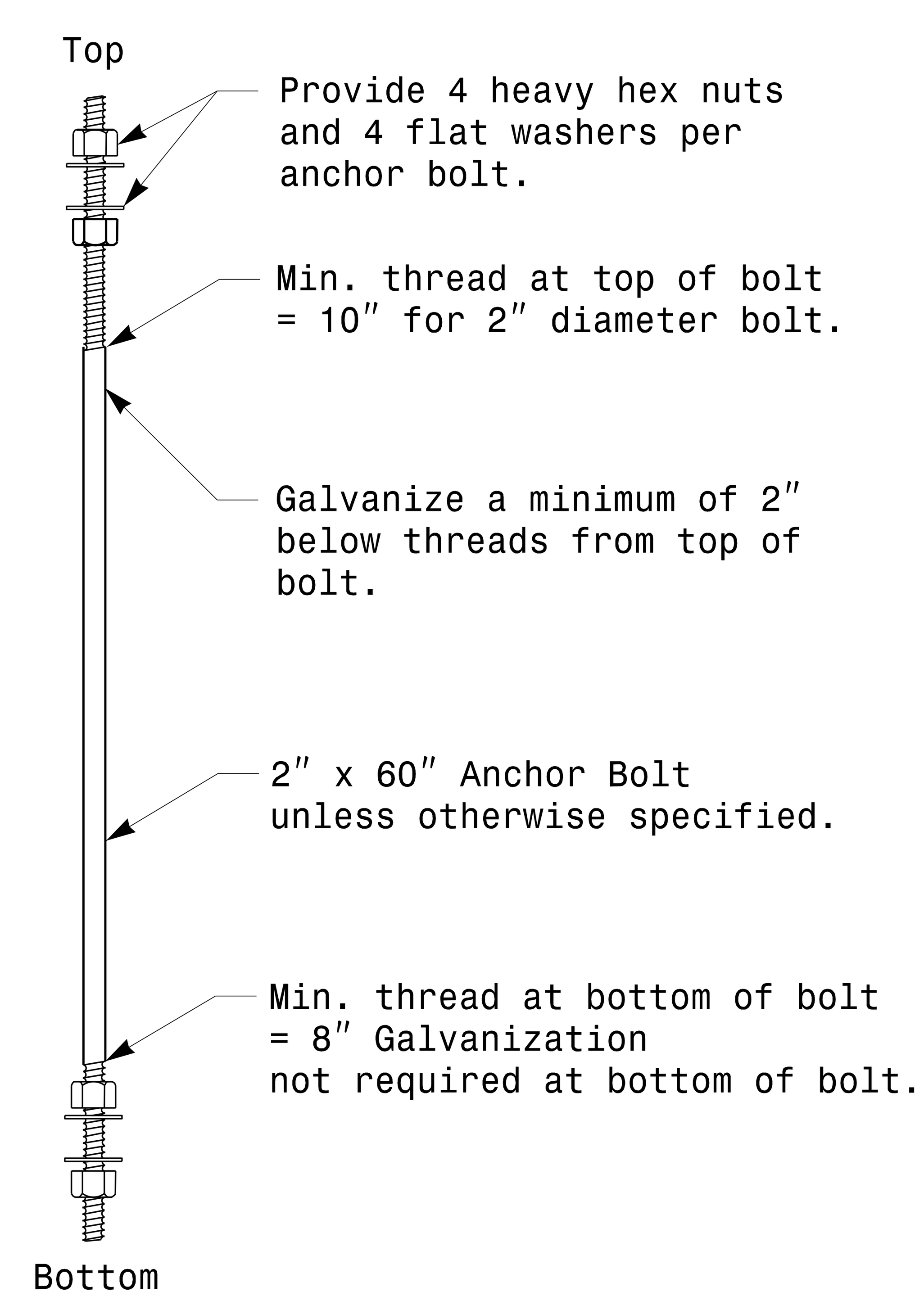
Shaft I.D. Tag
(Provide on Shaft of Strain Poles and Mast Arm Poles Shaft)

MFG ________ MFG. DATE:MM/YY	
SECTION D/T/L/Y	----/----/----/----
NCDOT SIG. INV. NO.	________
NCDOT POLE NO.	________

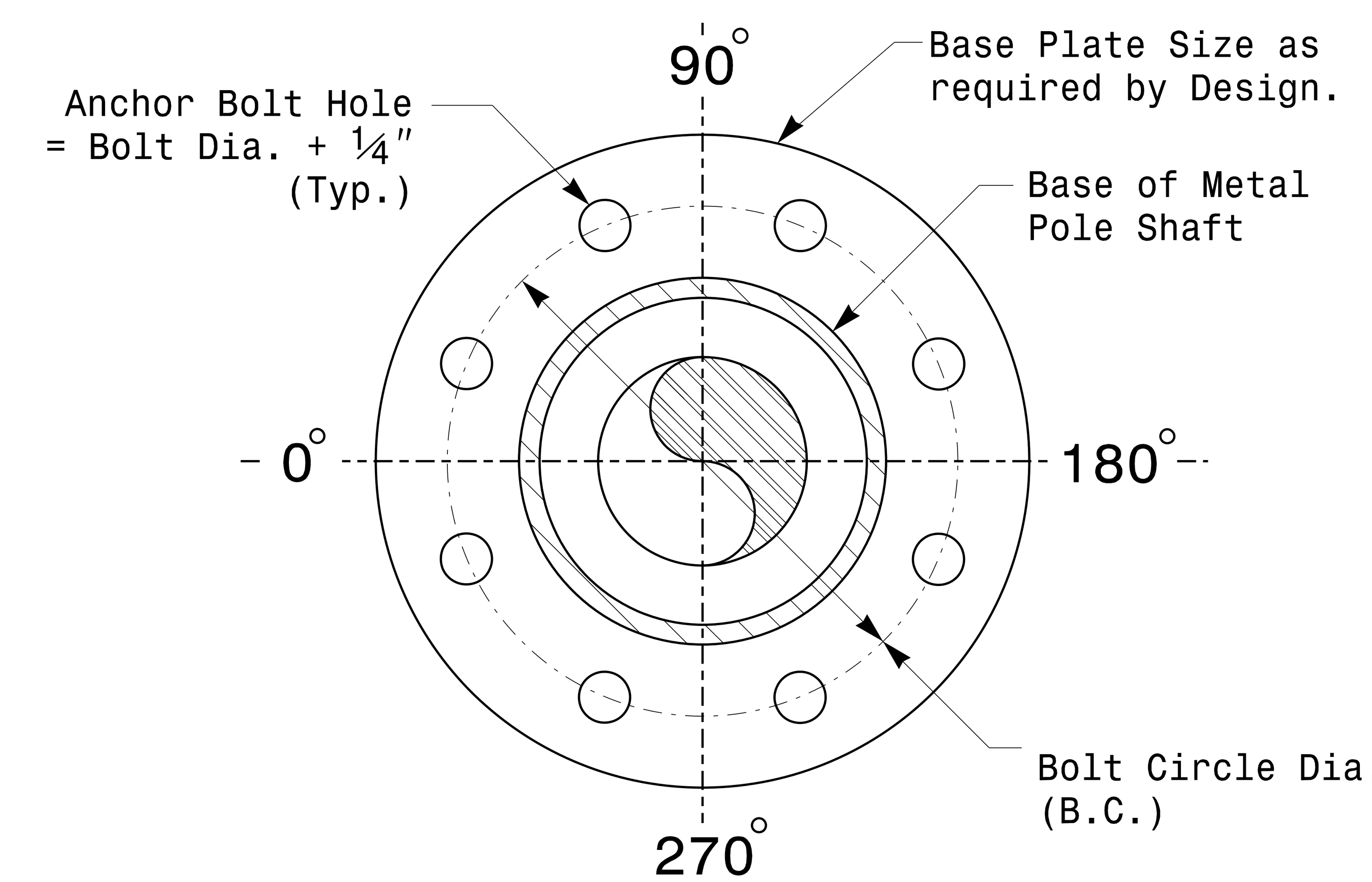
Arm I.D. Tag
(Provide on each section of a multi-section mast arm.)

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

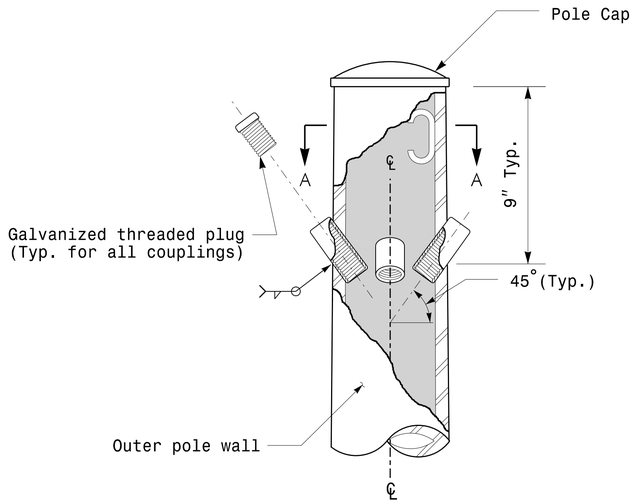
SEAL
North Carolina Professional Engineer Seal 028094 Debesh C. Sarkar

DocuSigned by: Debesh C. Sarkar
SIGNATURE
10/11/2017
DATE

11-OCT-2017 08:30
S:*ITS&SU*ITS Signals*Signal Design Section*Eastern Region*M Sheets*2016*2014 Sig.M2 Std. Fabrication Details-All Poles..dgn

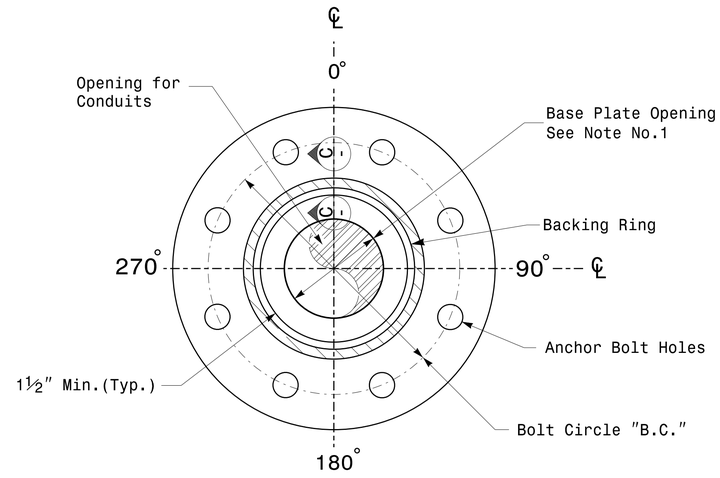
PROJECT ID. NO.	SHEET NO.
	Sig.M3

Details – Strain Poles



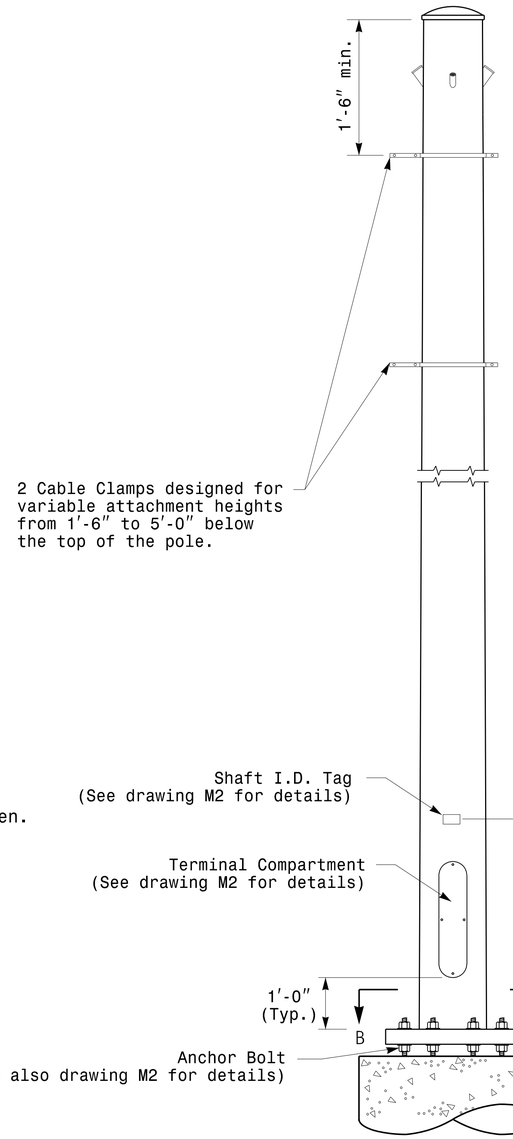
Cable Entrances at Top of Pole

Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3½" but shall not be less than 8½".

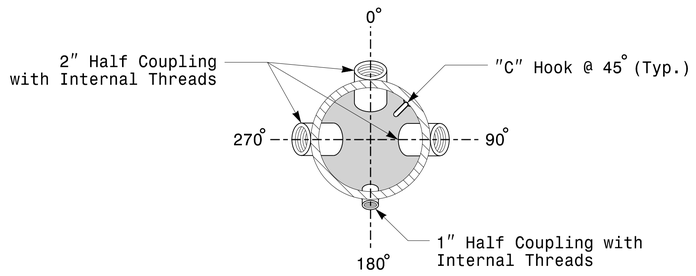


Section B-B

Pole Base Plate Details
(8 and 12 Bolt Pattern)

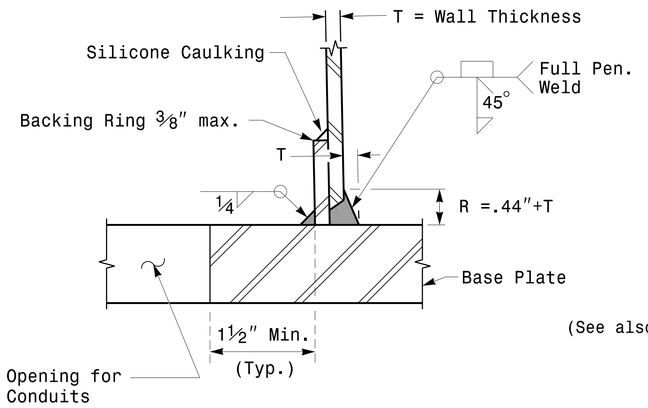


Monotube Strain Pole



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:
Traffic Engineering Branch
Traffic Engineering Branch
Signal Design Section
750 N.Greenfield Pkwy,Garner,NC 27529

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

SCALE
0 NA
NONE

SEAL
NORTH CAROLINA
PROFESSIONAL
SEAL
028094
ENGINEER
DEBESH C. SARKAR

DocuSigned by:
Debesh C. Sarkar
SIGNATURE

10/11/2017
DATE

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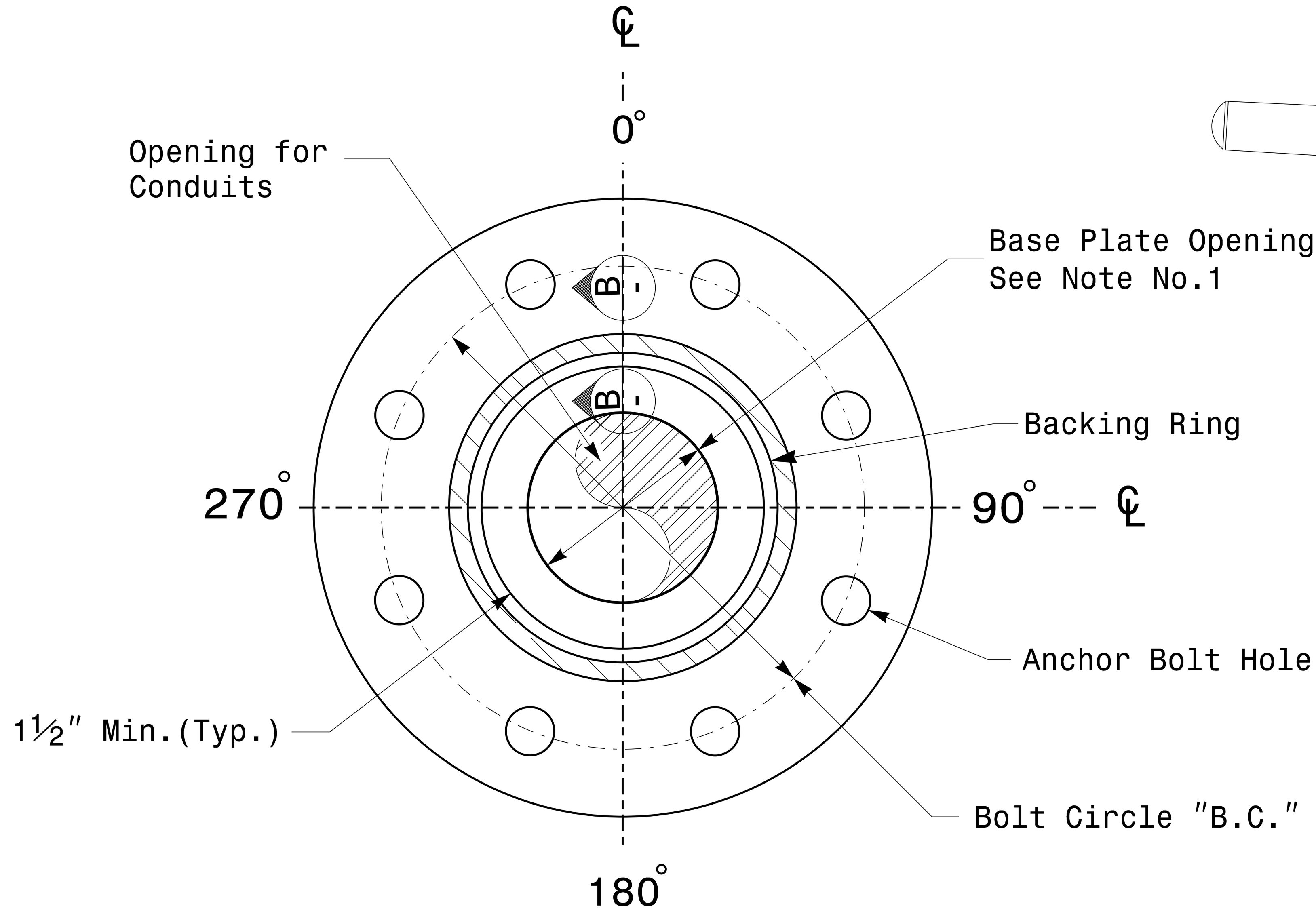
PROJECT ID. NO.	SHEET NO.
	Sig.M4

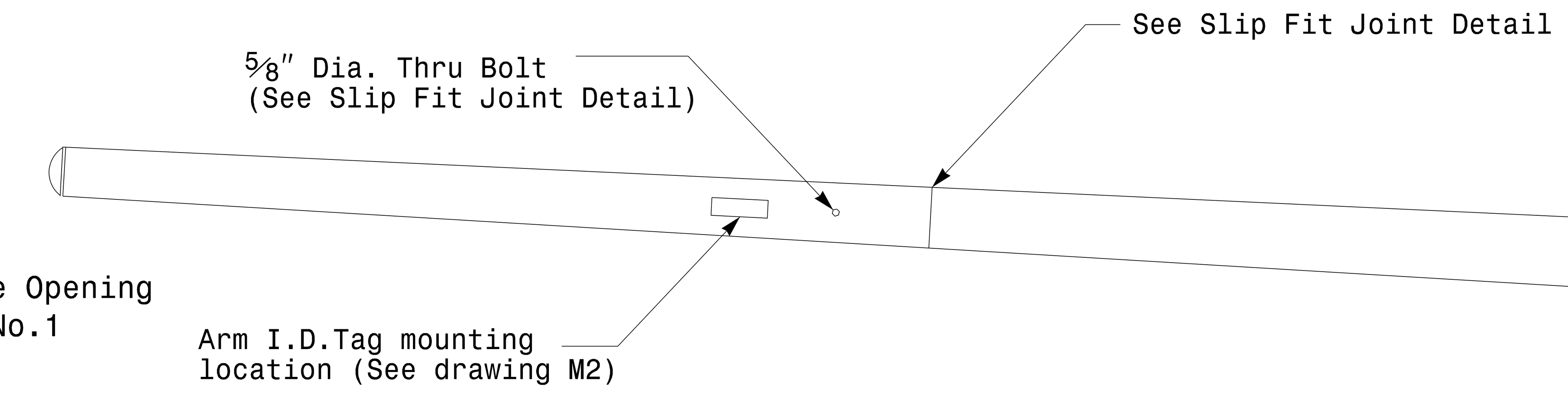
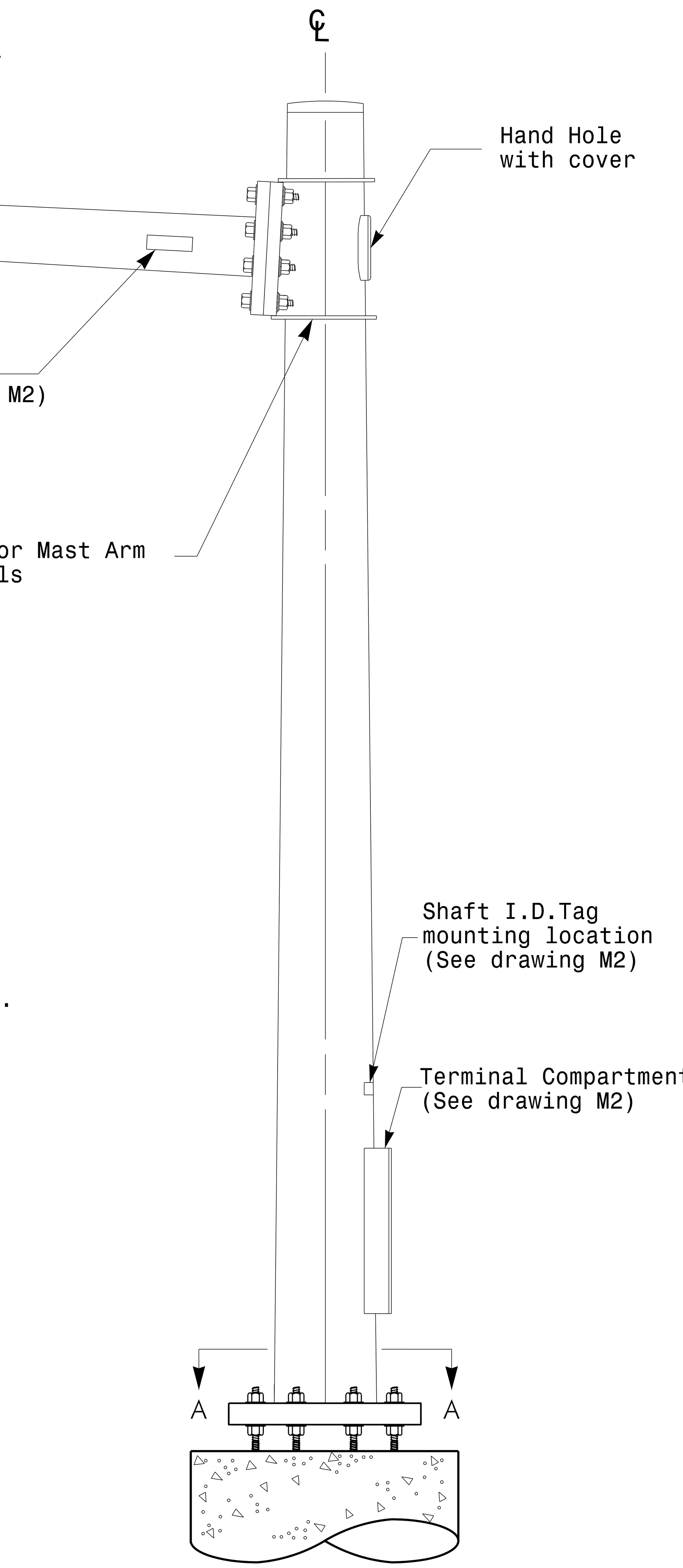
Fabrication Details – Mast Arm Poles

Note:
1. Opening in pole base plate shall be equal to pole base inside diameter minus 3½″ but shall not be less than 8½″.

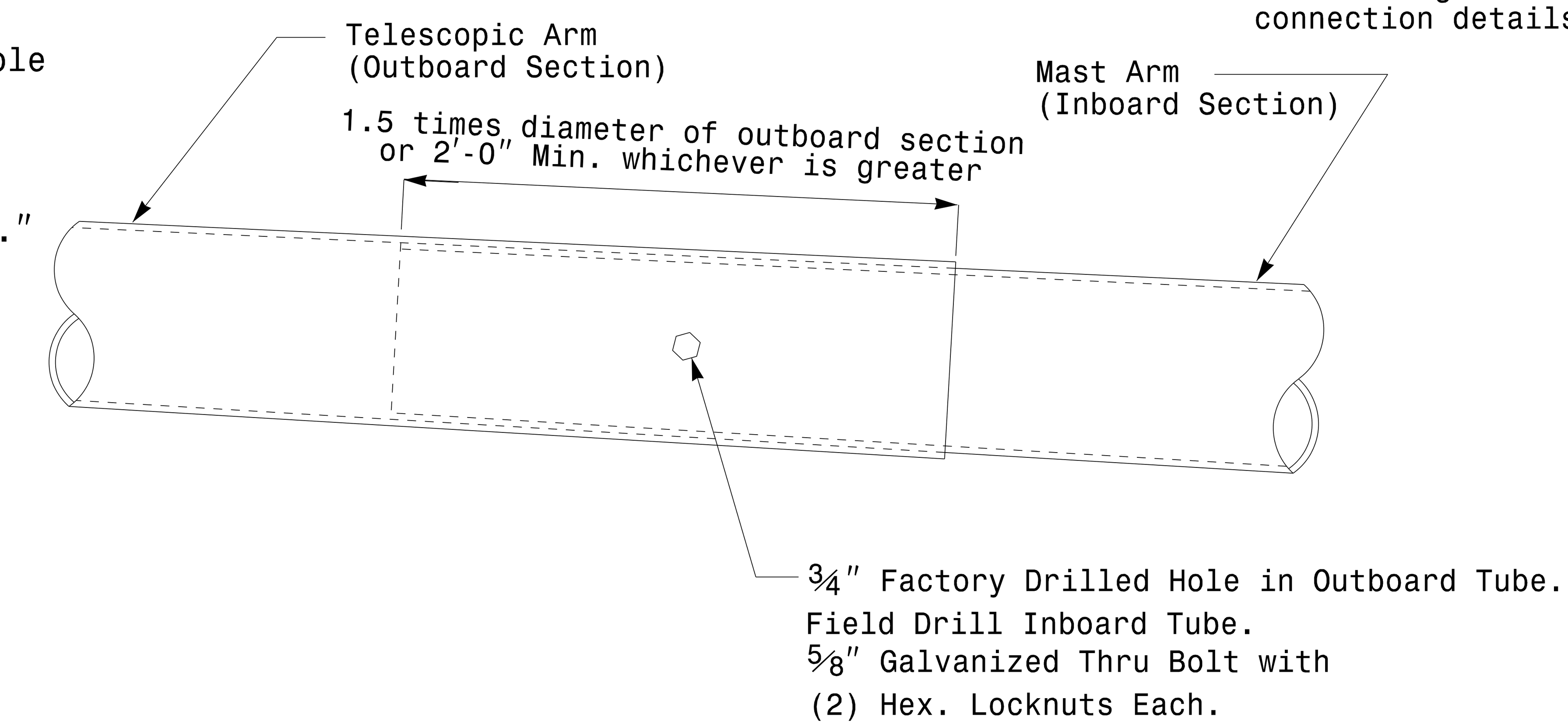


Section A-A

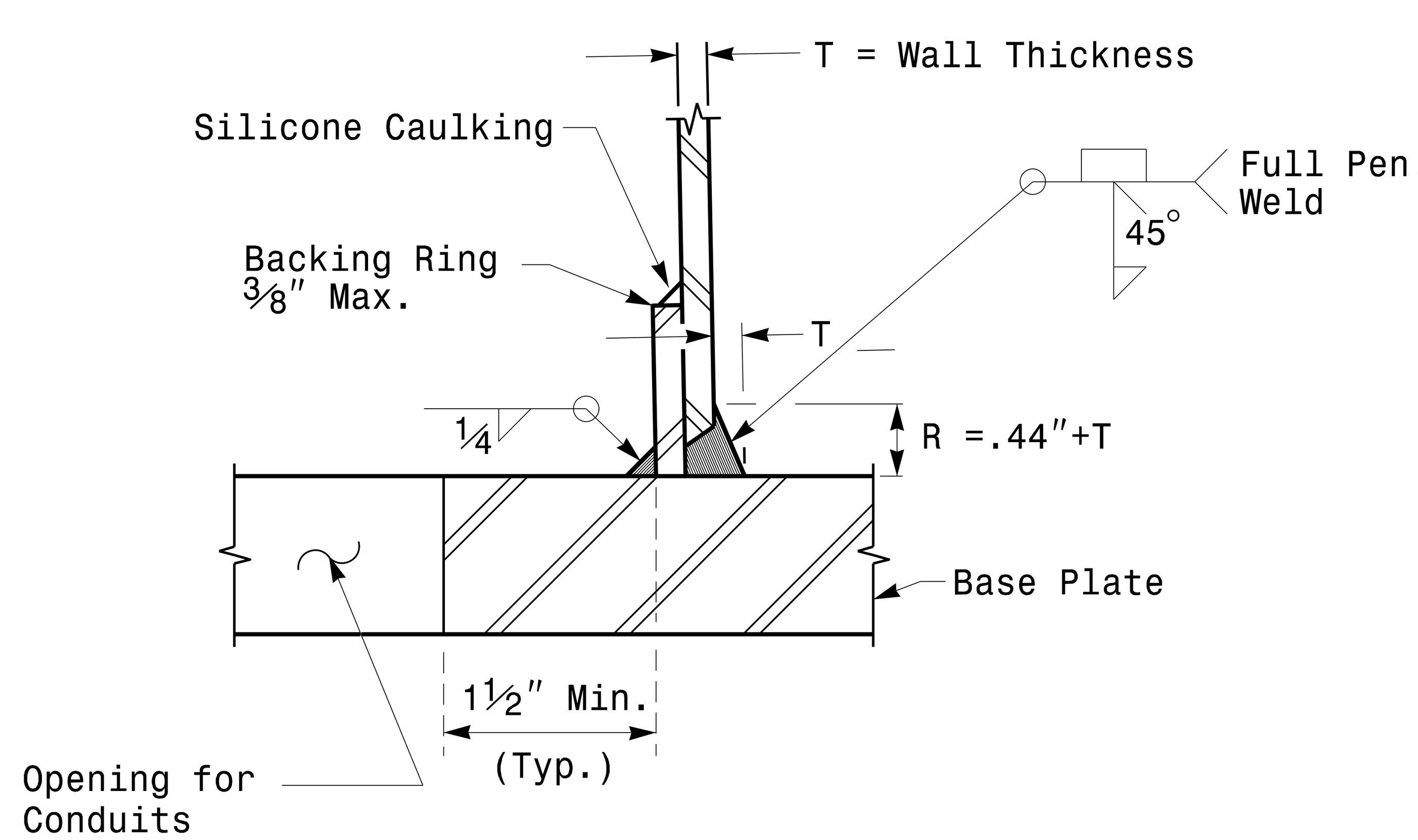
Pole Base Plate Details

Mast Arm Pole



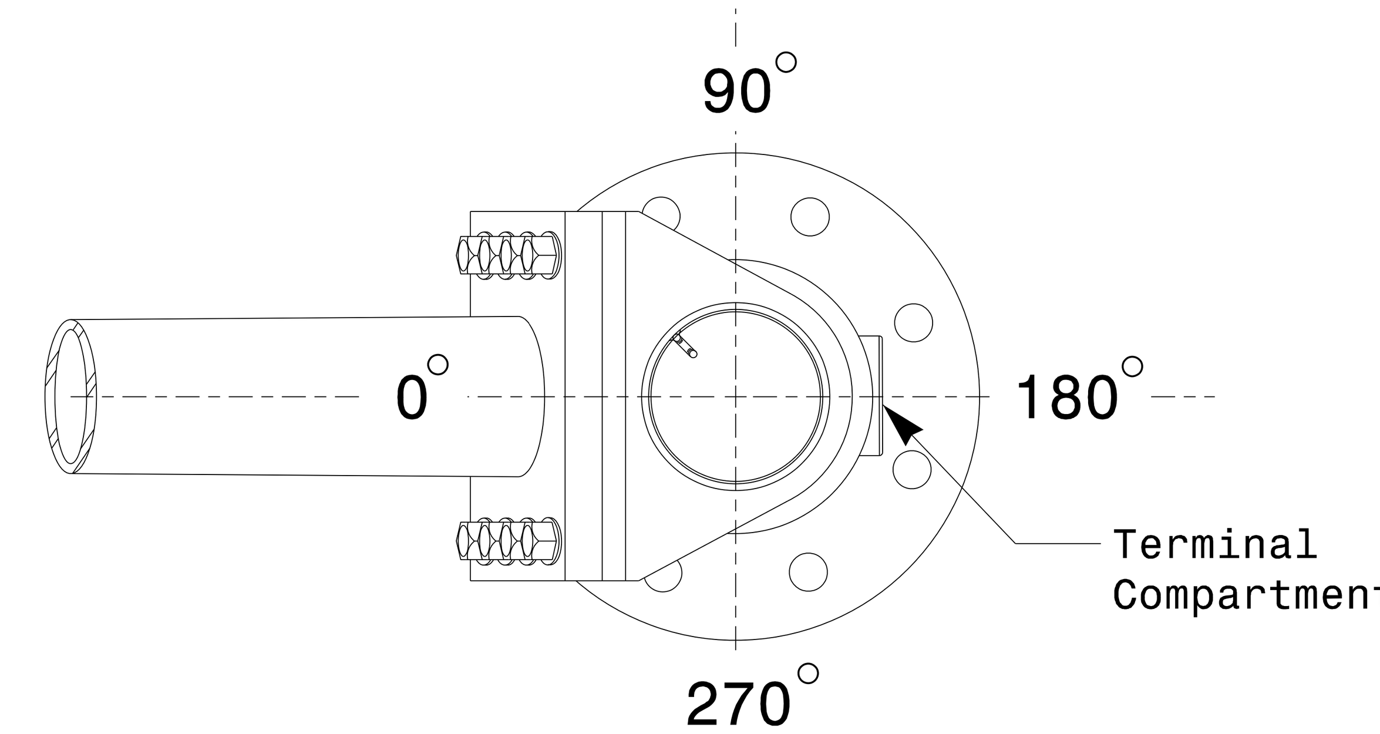
Slip Fit Joint Detail for Mast Arm



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

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

SCALE
0 NA
NONE

SEAL
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028094 DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
SIGNATURE
10/11/2017
DATE

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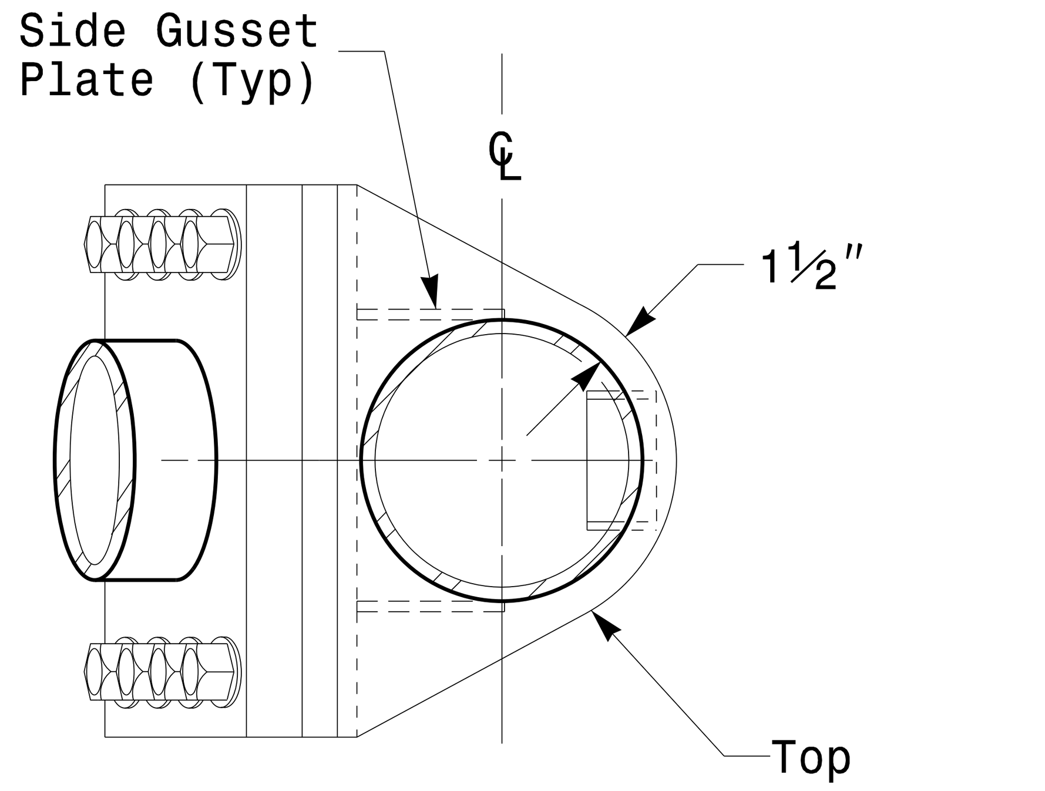
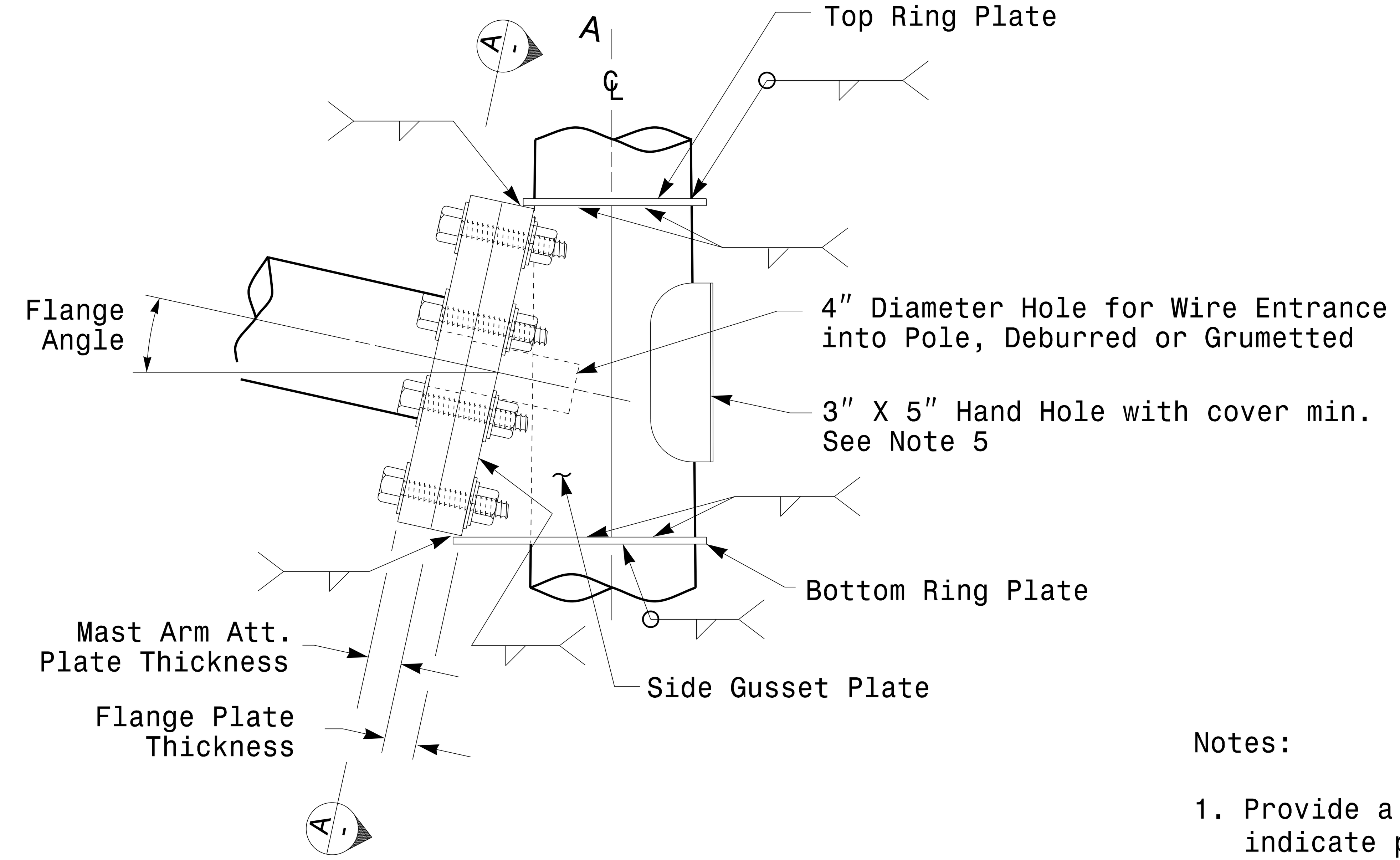
PROJECT ID. NO.	SHEET NO.
	Sig.M5

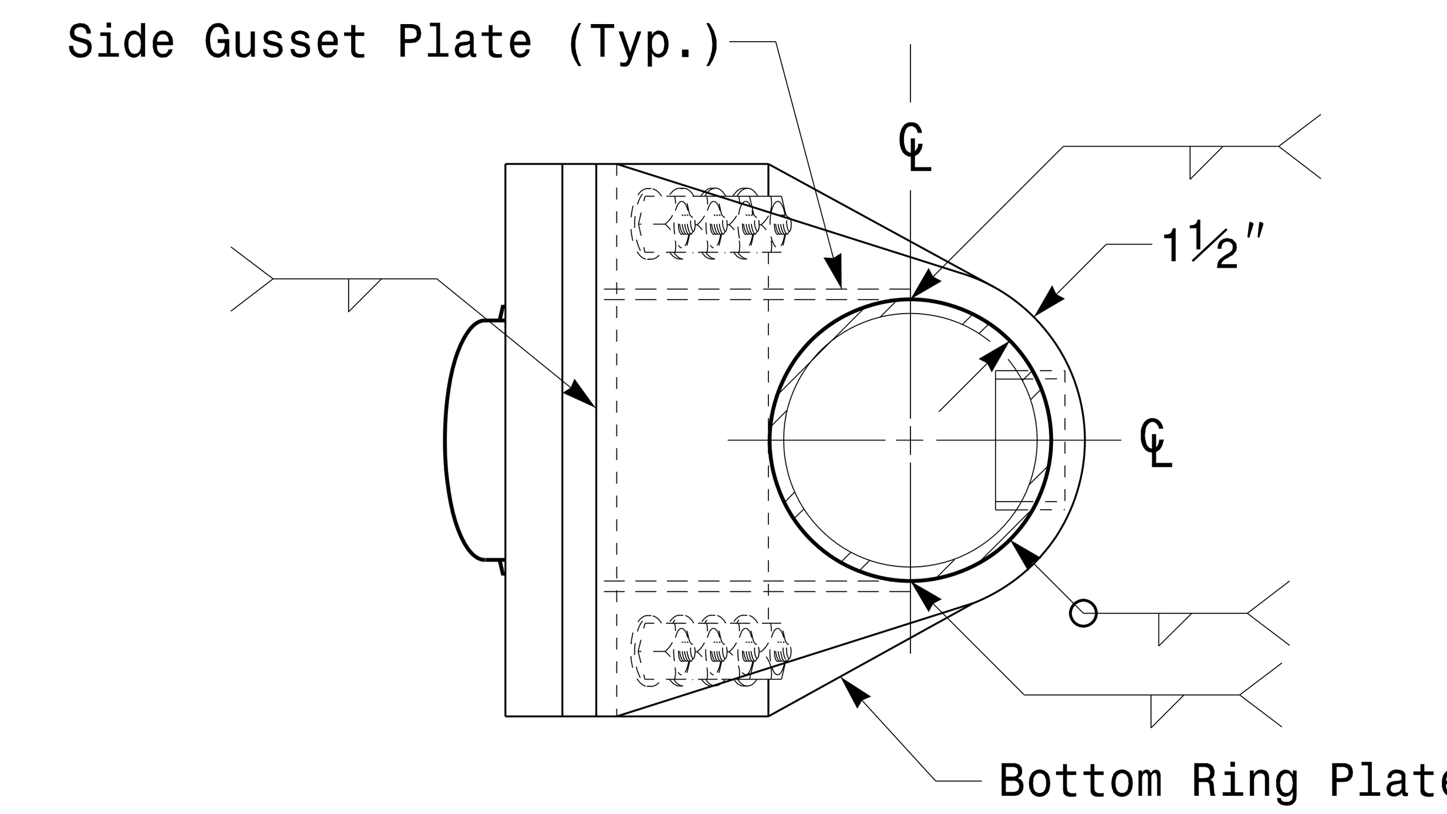
Welded Ring Stiffened Mast Arm Connection



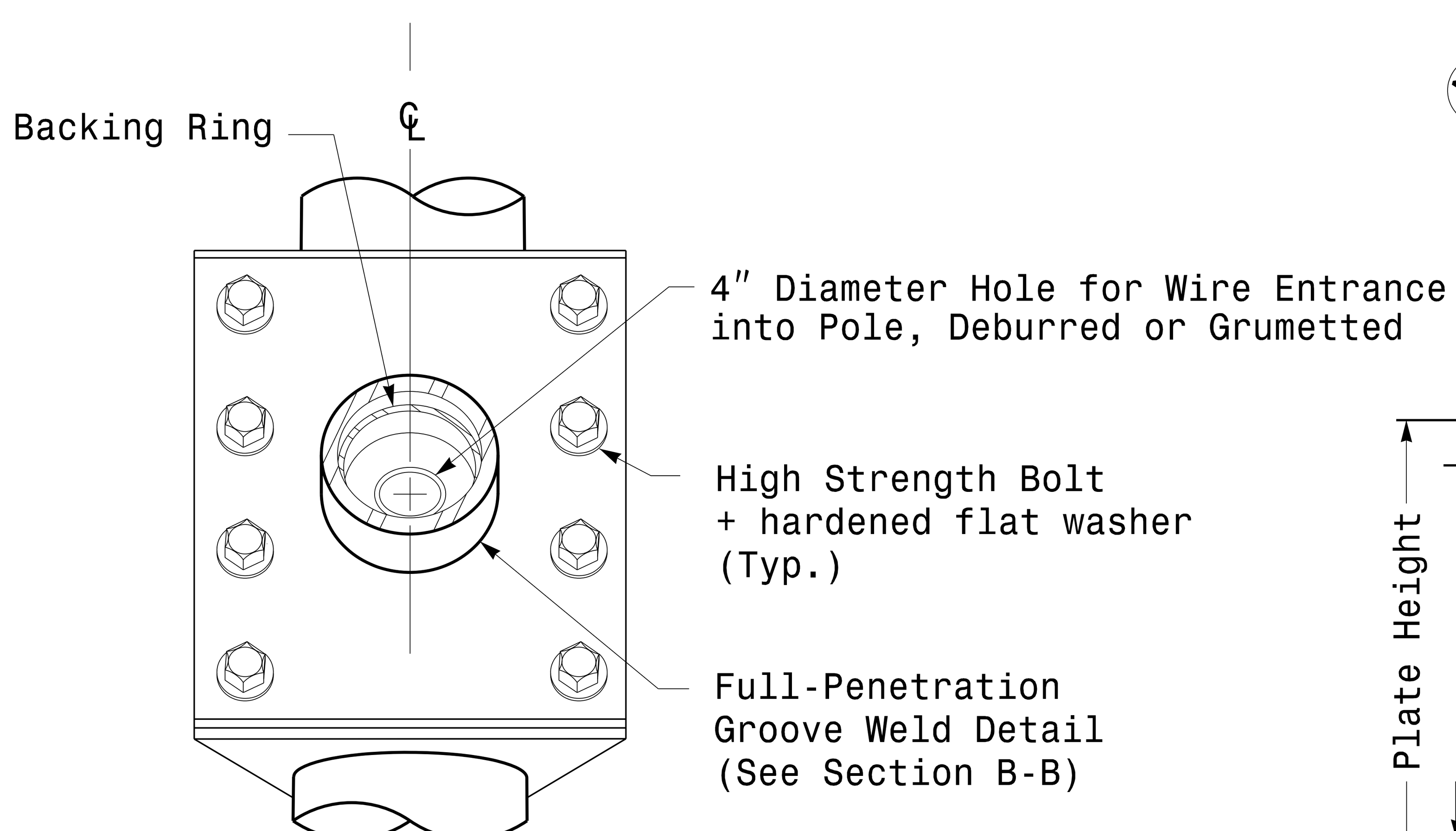
Plan View



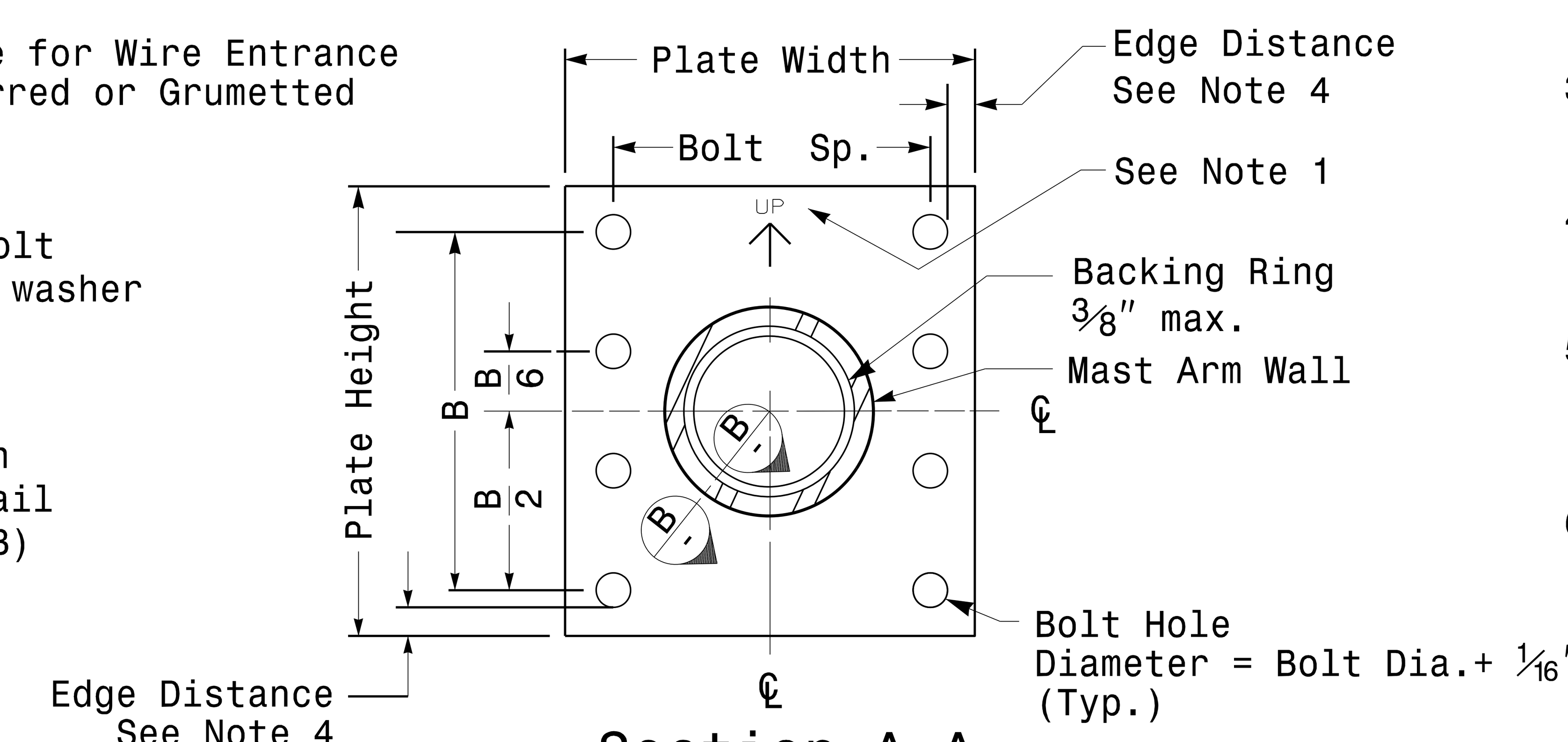
Side Elevation View



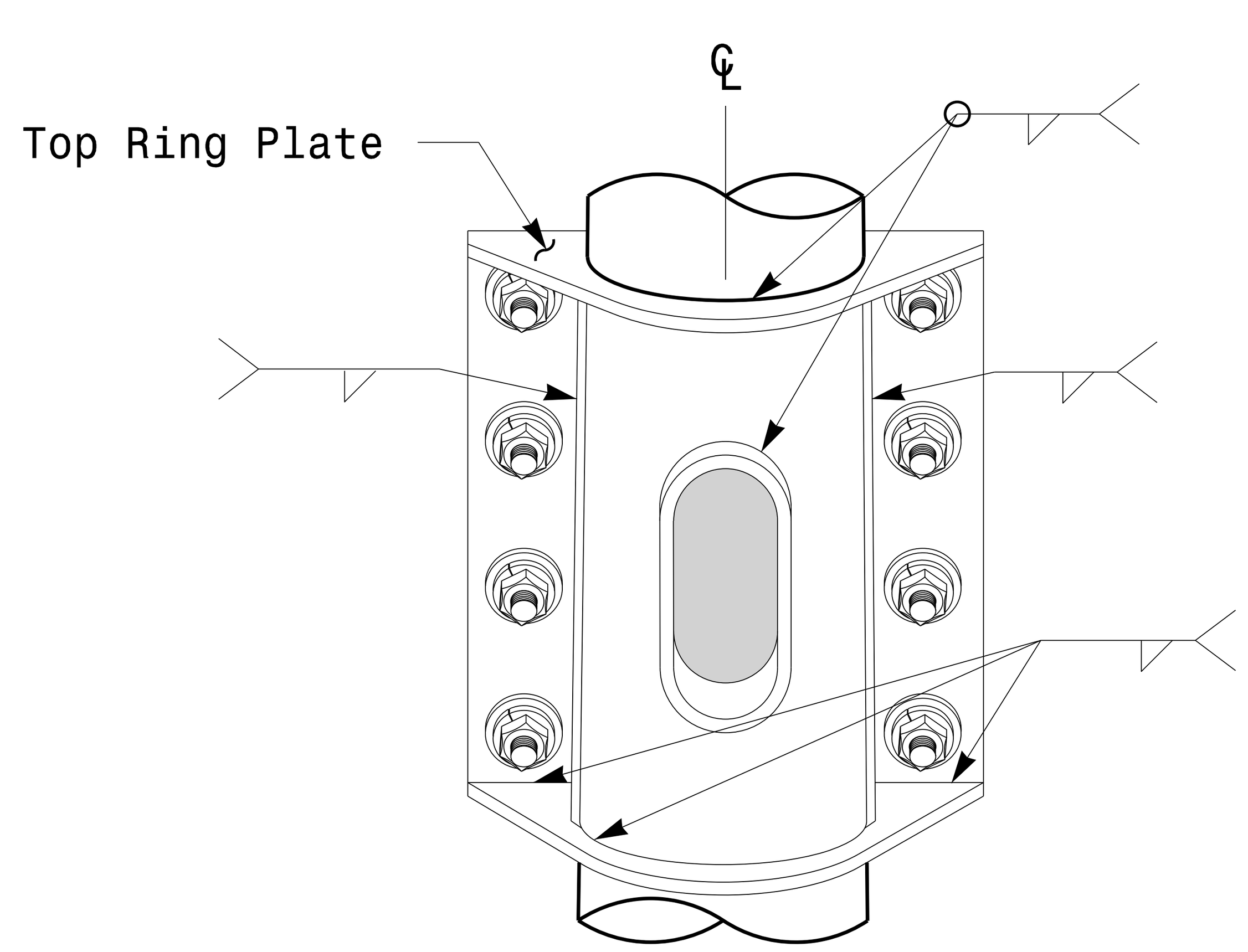
Bottom View



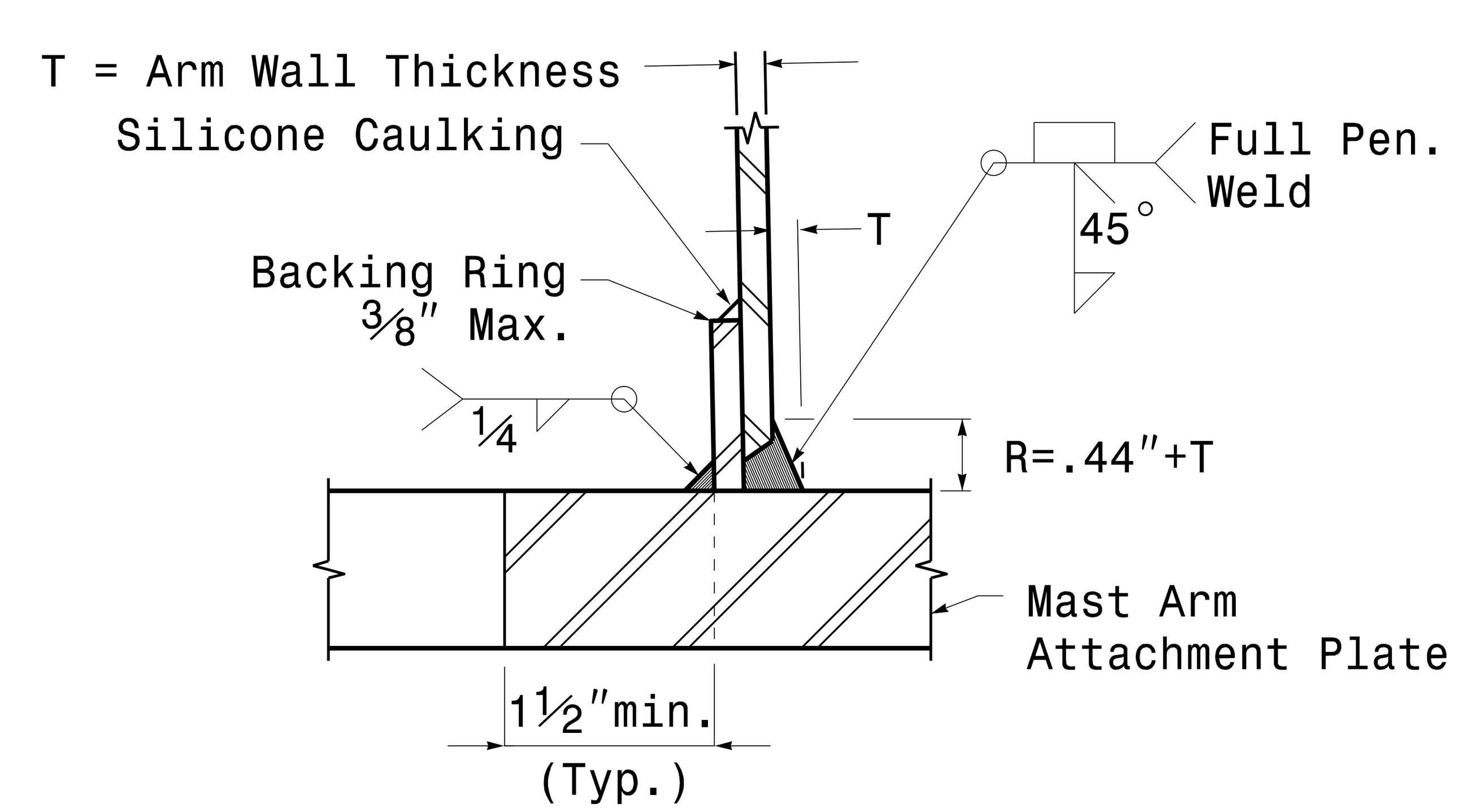
Front Elevation View



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 ENGINEER SEAL 028094 DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar
SIGNATURE 10/11/2017 DATE

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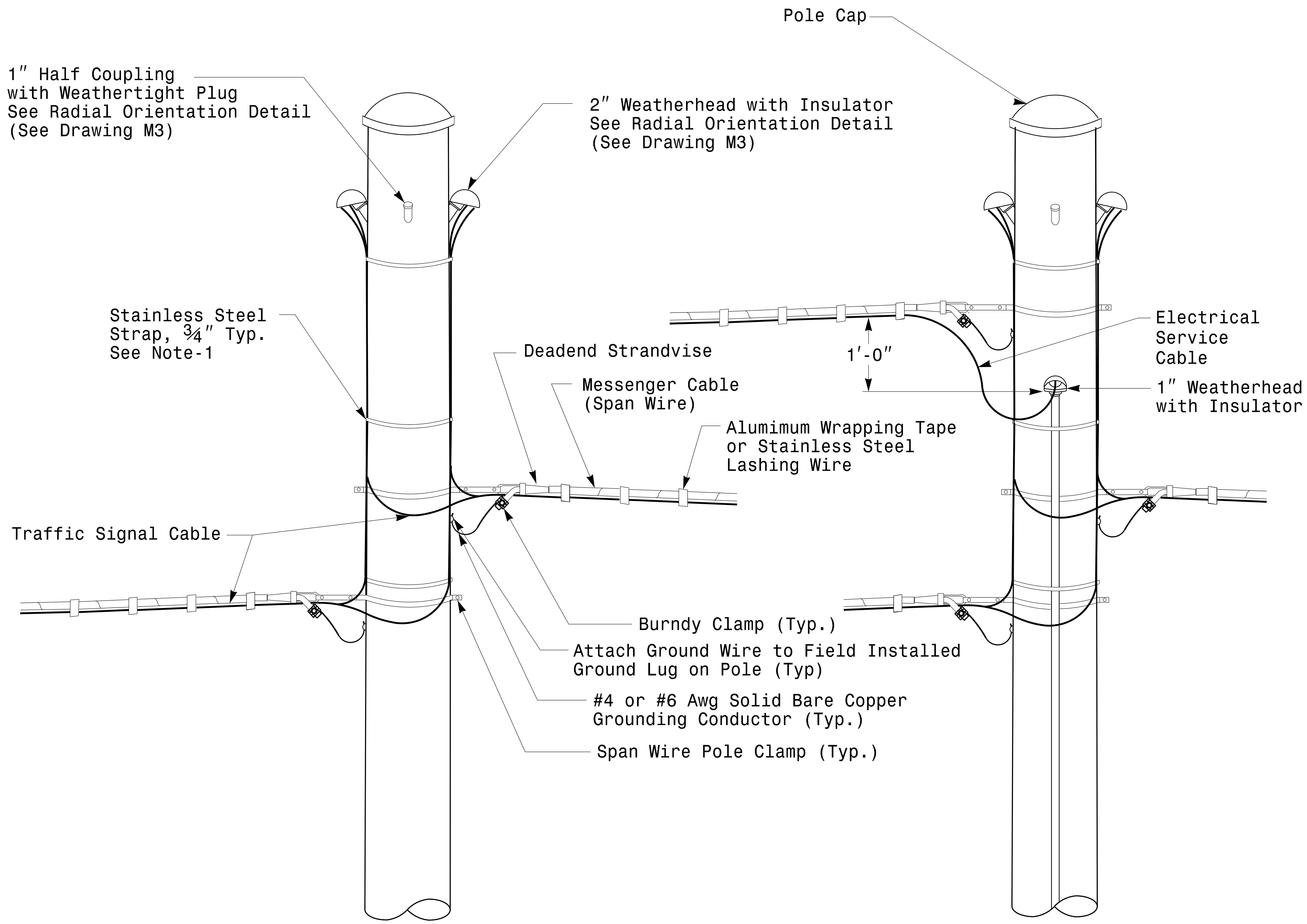
PROJECT ID. NO.	SHEET NO.
	Sig.M6

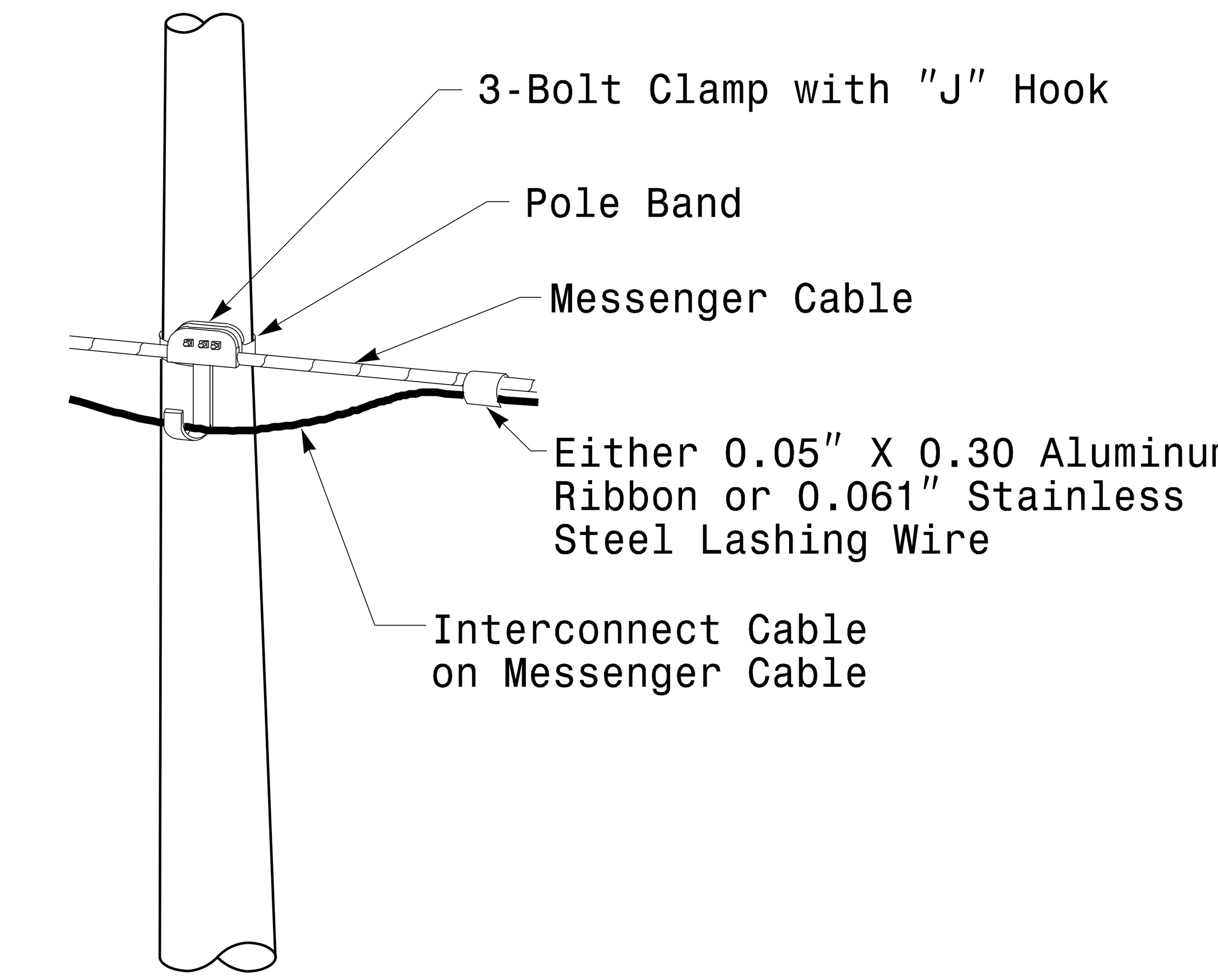
Fabrication Details – Strain Pole Attachments



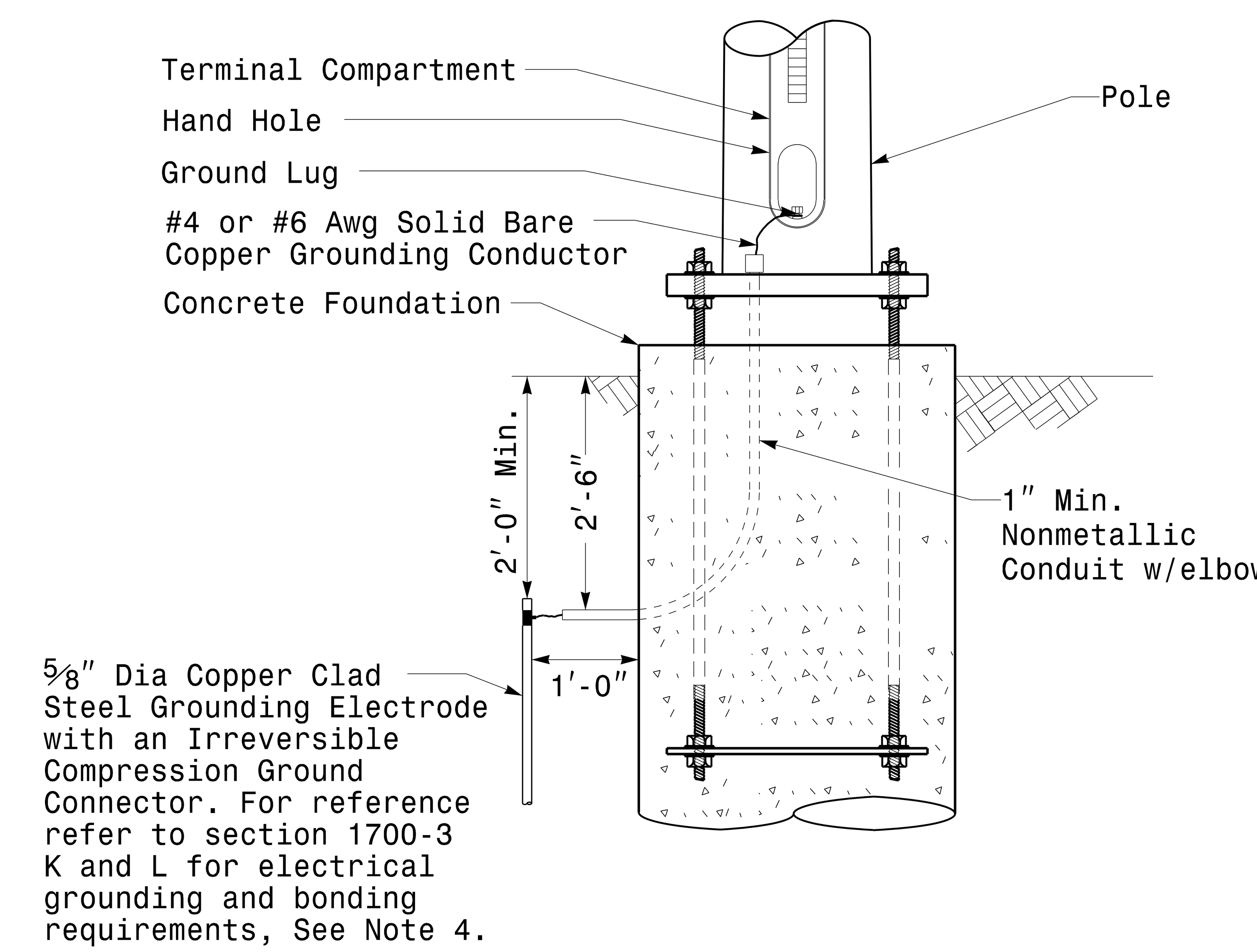
Strain Pole Attachments

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
State of North Carolina · Department of Transportation
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 DEBESH C. SARKAR

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10/11/2017
DATE

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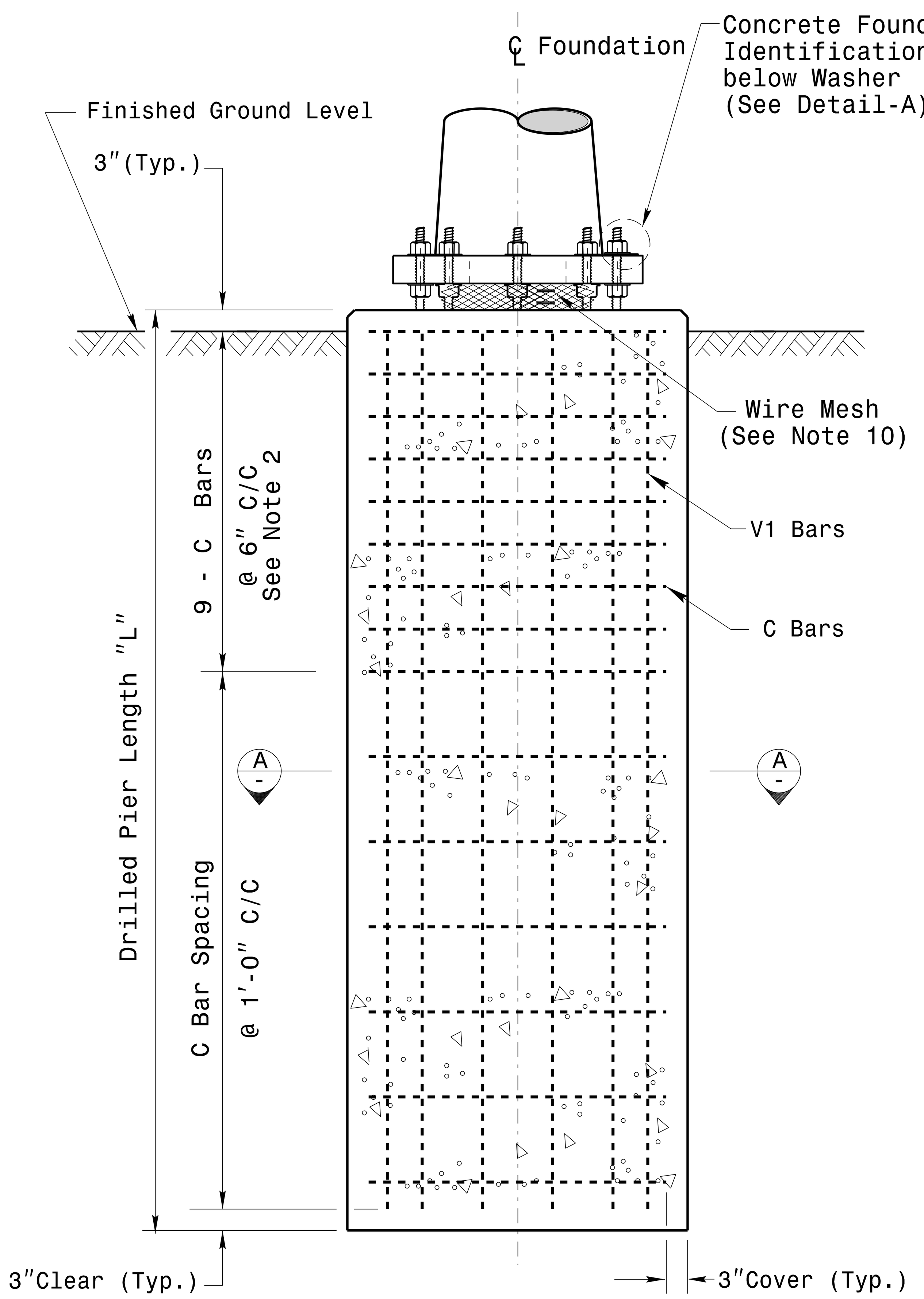
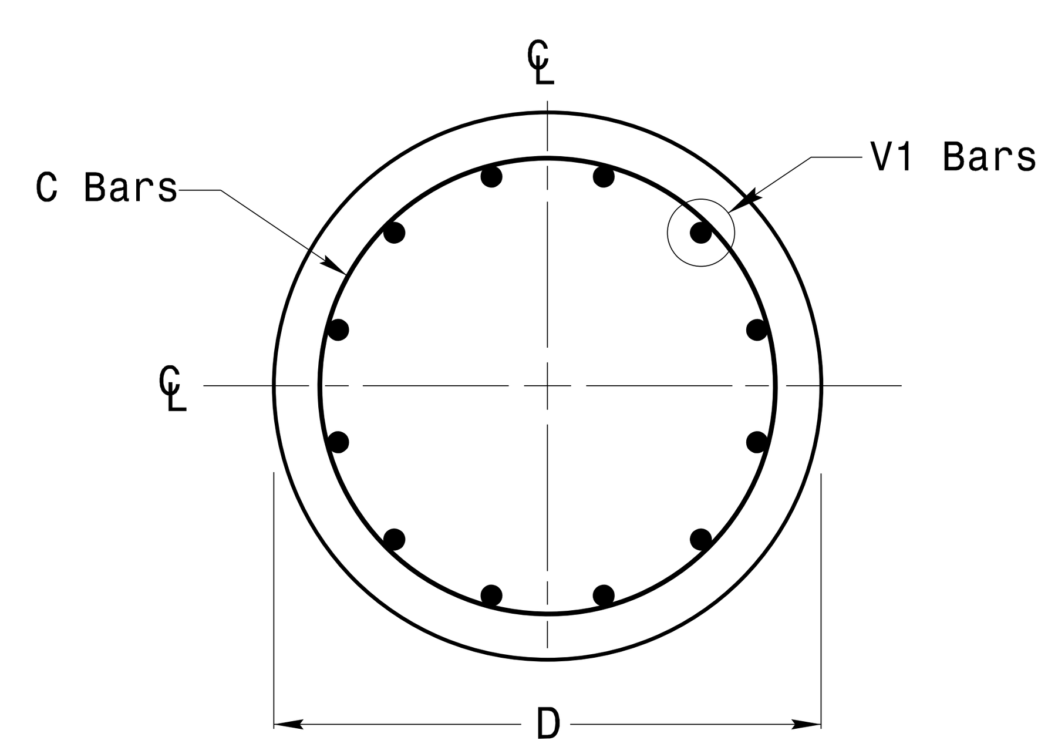
PROJECT ID. NO.	SHEET NO.
	Sig.M7

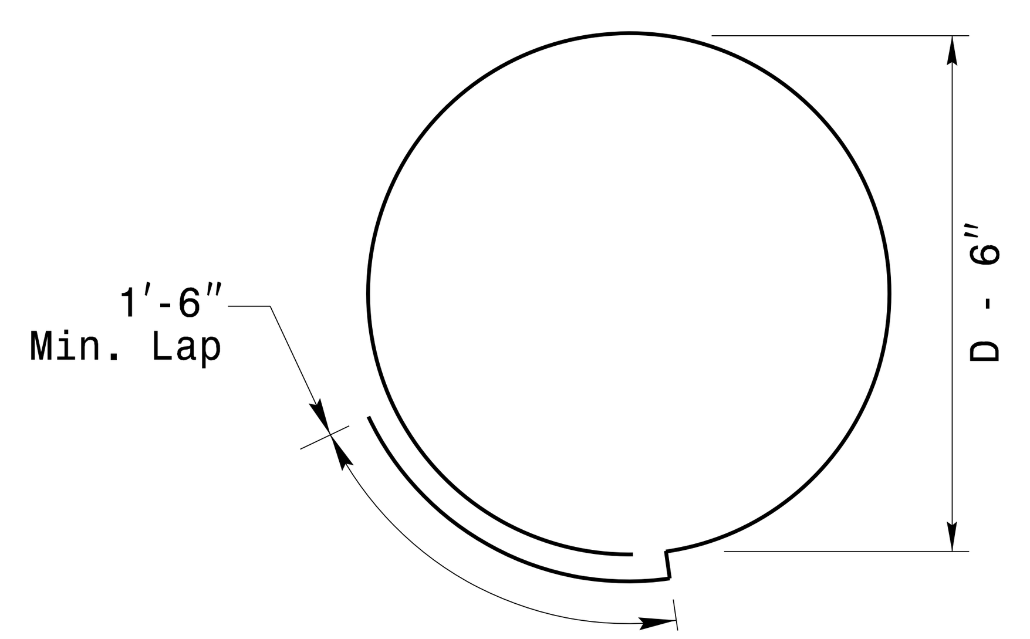
Construction Details – Foundations



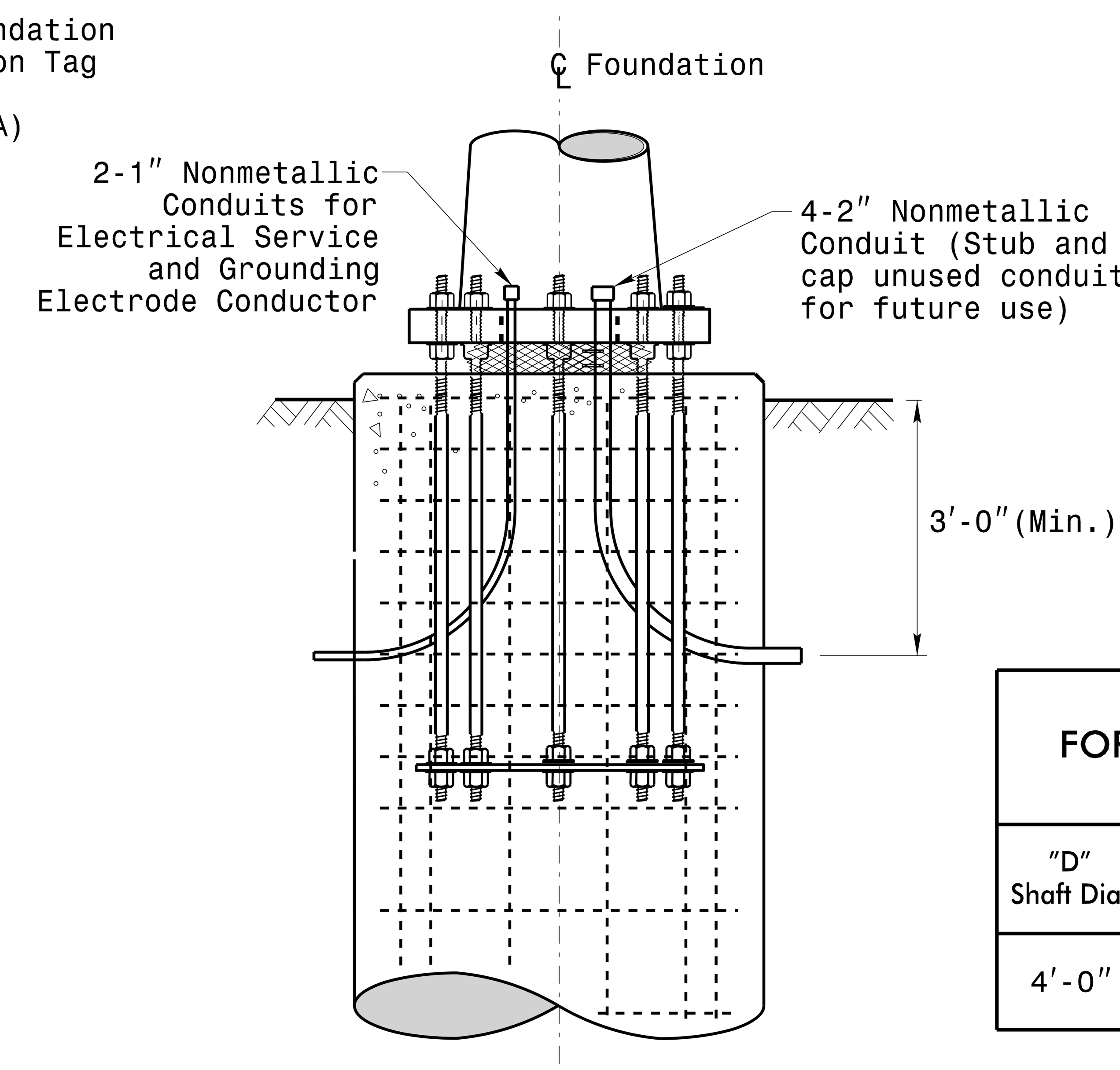
Concrete Shaft Elevation



Section A-A



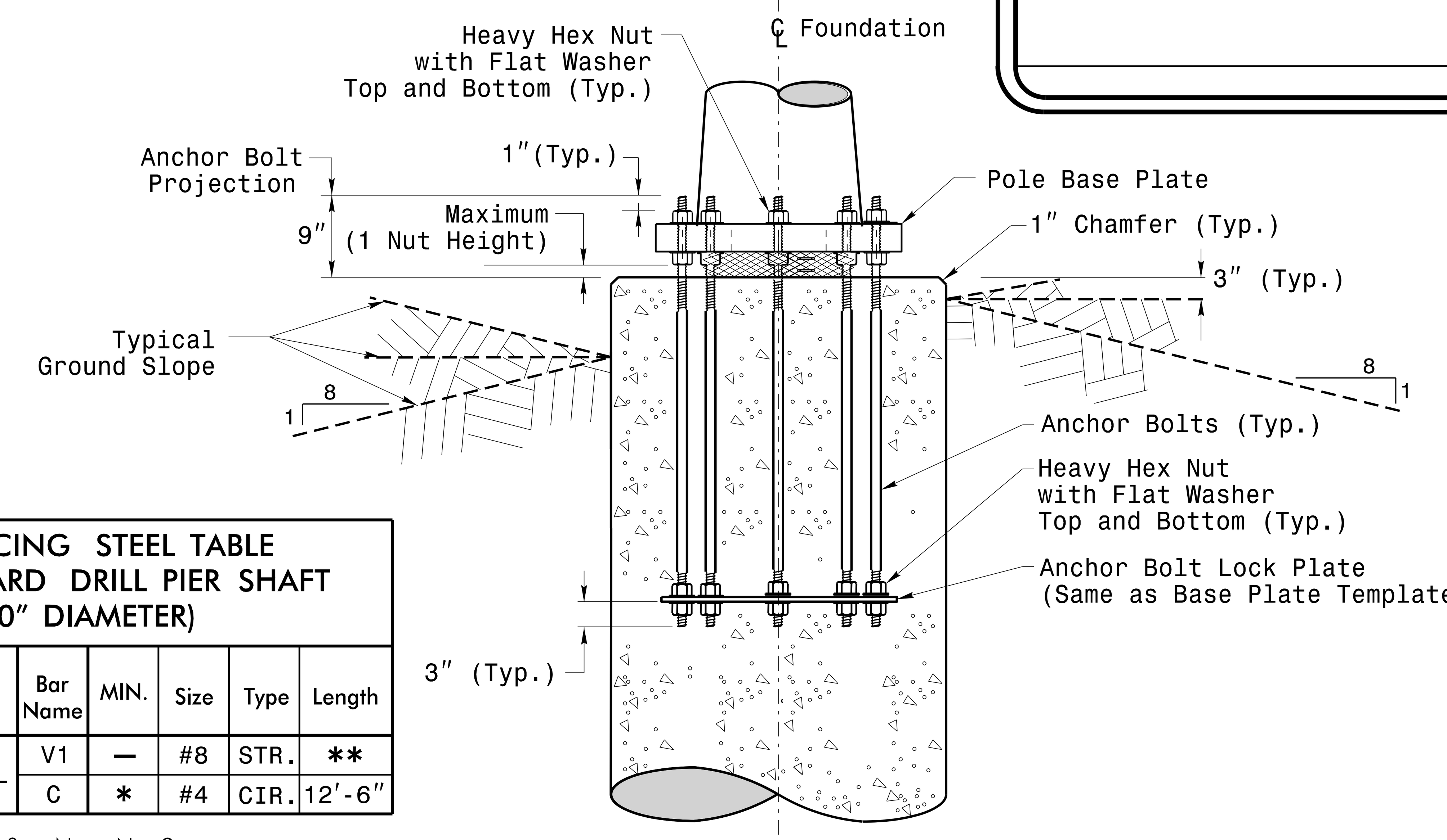
Typical "C" Bar Detail



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



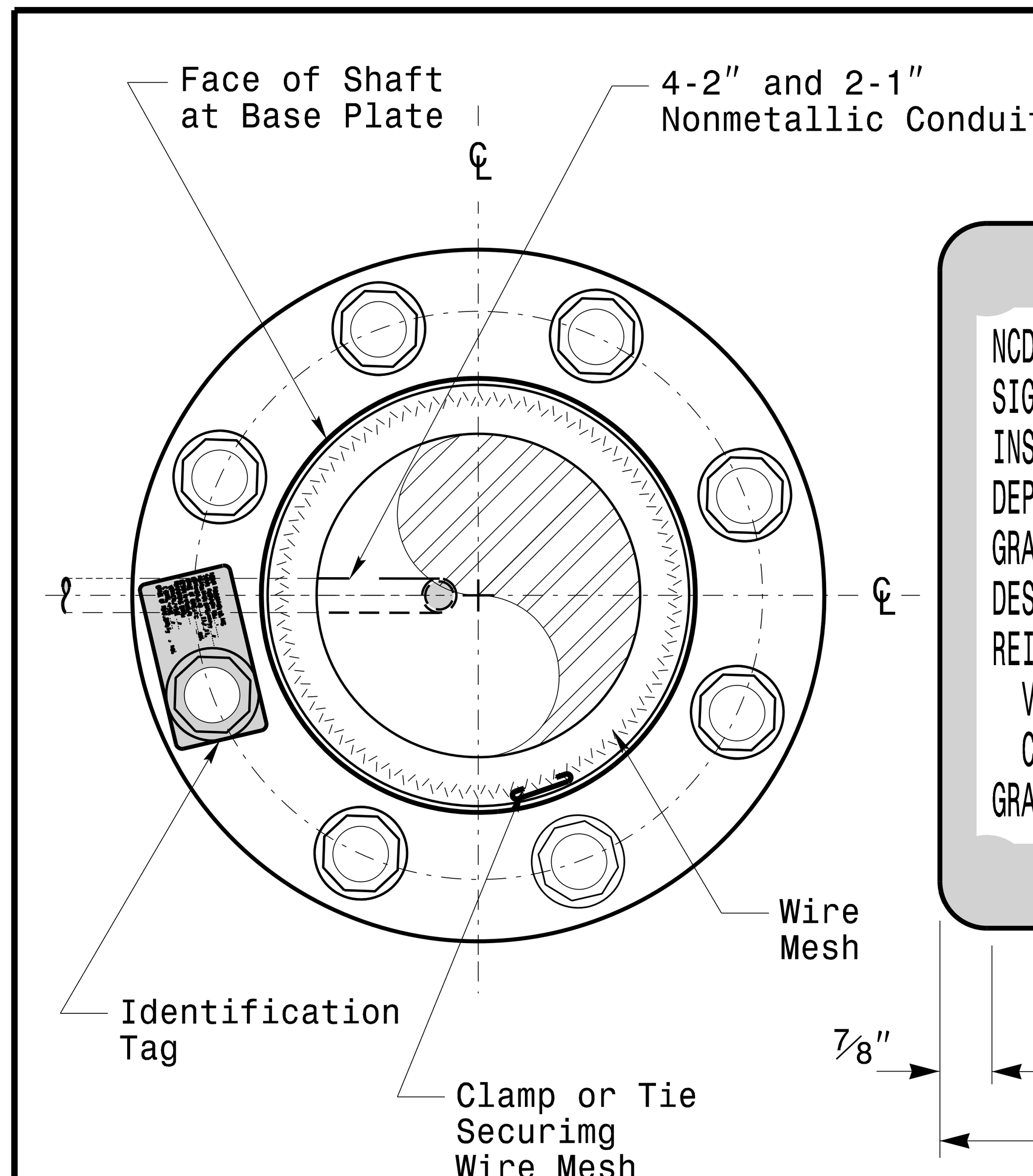
Typical Foundation Anchor Bolt Details

(Reinforcing Cage Not Shown for Clarity)

General Notes:

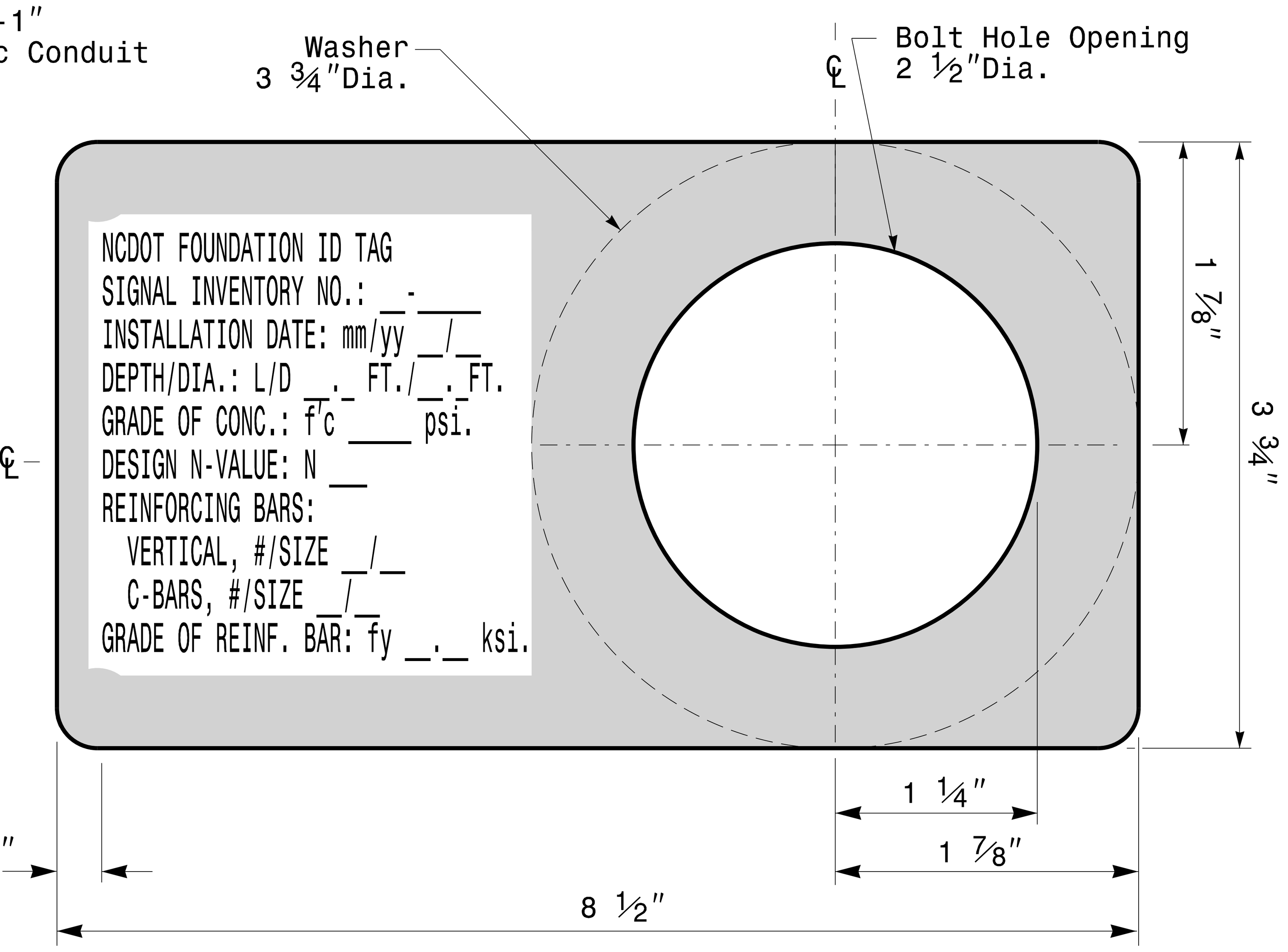
1. If actual subsurface conditions differ significantly from boring data contact the Engineer before excavating or placing concrete.
2. Circular tie reinforcing rings may be vertically adjusted by +/-3″ at a depth between 2′-0″ and 3′-0″ to facilitate the installation of electrical conduit entering in 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, 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

SCALE: 0 NA — NONE

REV. NO.	COMMENTS	INIT.	DATE
1	Revised Foundation Tag Details	N.B.	5/11/2015

SEAL
NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR
DocuSigned by: Debesh C. Sarkar
SIGNATURE 10/11/2017 DATE

SOIL CONDITION

		Case No.	Pole Height (Ft.)	Base Plate BC (In.)	Reactions at the Pole Base: Axial (kip)	Reactions at the Pole Base: Shear (kip)	Reactions at the Pole Base: Moment (ft-kip)	Clay: Medium N-Value 4–8	Clay: Stiff N-Value 9–15	Clay: Very Stiff N-Value 16–30	Clay: Hard N-Value >30	Sand: Loose N-Value 4–10	Sand: Medium N-Value 11–30	Sand: Dense N-Value >30	Reinforcement: Longitudinal Bar Size (#)	Reinforcement: Longitudinal Quantity (ea.)	Reinforcement: Stirrups Bar Size (#)	Reinforcement: Stirrups Spacing (in.)
		STANDARD STRAIN POLES						STANDARD FOUNDATIONS 48″ Diameter Drilled Pier Length (L) – Feet							Reinforcement			
								Clay				Sand			Longitudinal		Stirrups	
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.

PROJECT ID. NO.

SHEET NO. Sig.M8

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

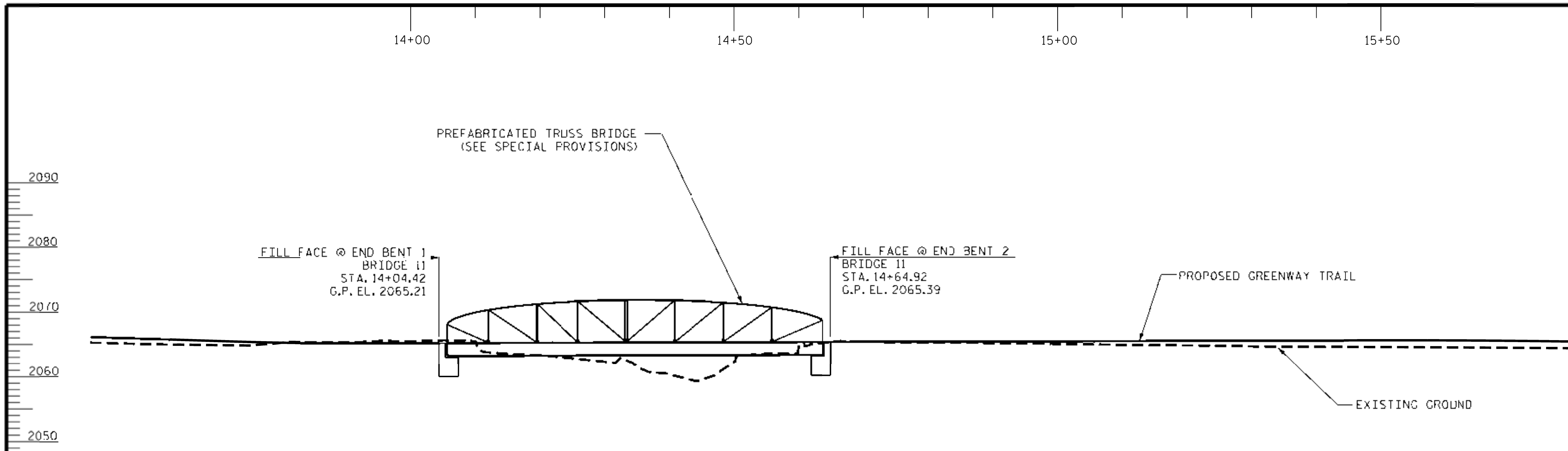
REVISIONS	INIT.	DATE
Changed "Foundation Depth" to "Drilled Pier Length"in Conc. Eqn.	N.B.	7/12/2015

SCALE: 0 NA NONE

SEAL: NORTH CAROLINA PROFESSIONAL SEAL 028094 ENGINEER DEBESH C. SARKAR

DocuSigned by: Debesh C. Sarkar 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

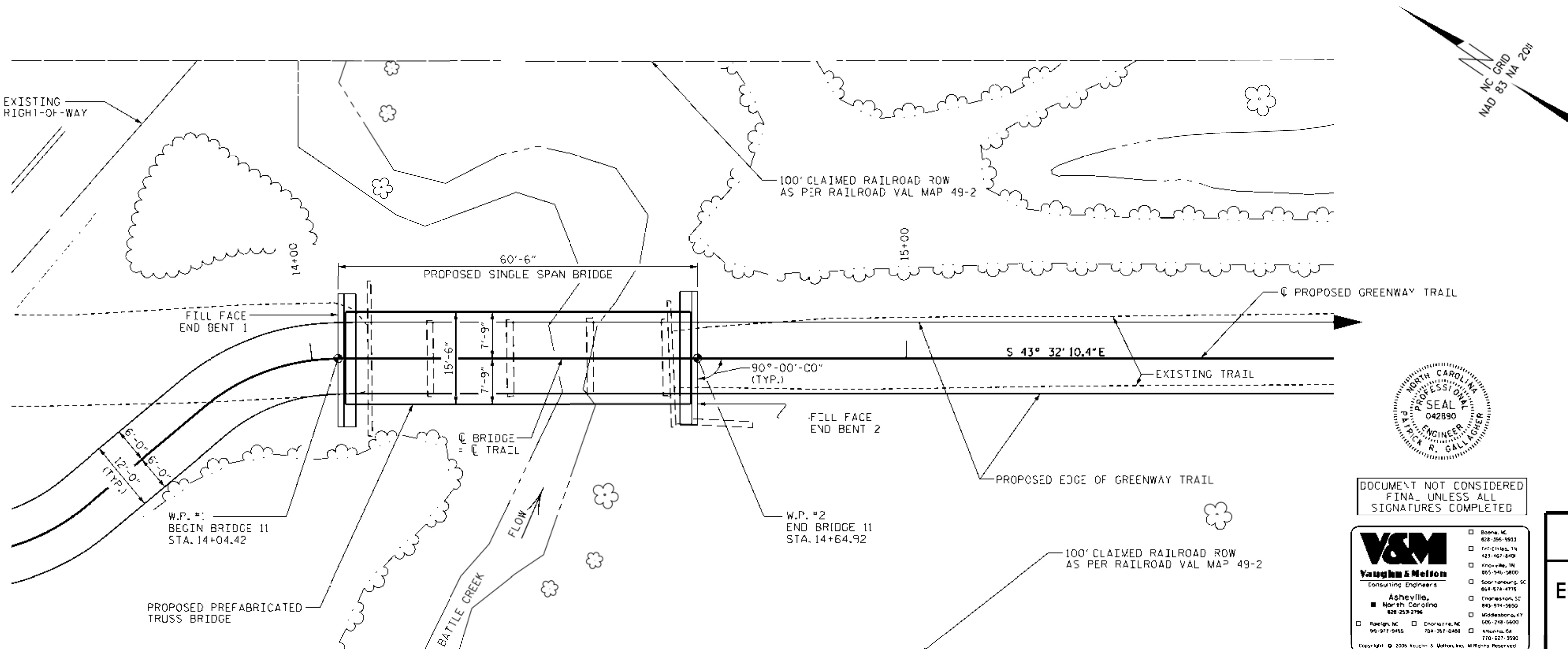


ELEVATION

(-)3.1223% (+)0.3006%

PI = 13+82.68
EL = 2,065.14
VC = 20'

GRADE DATA



PLAN

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers Asheville, North Carolina

ENGINEERING DEPARTMENT
HENDERSON COUNTY

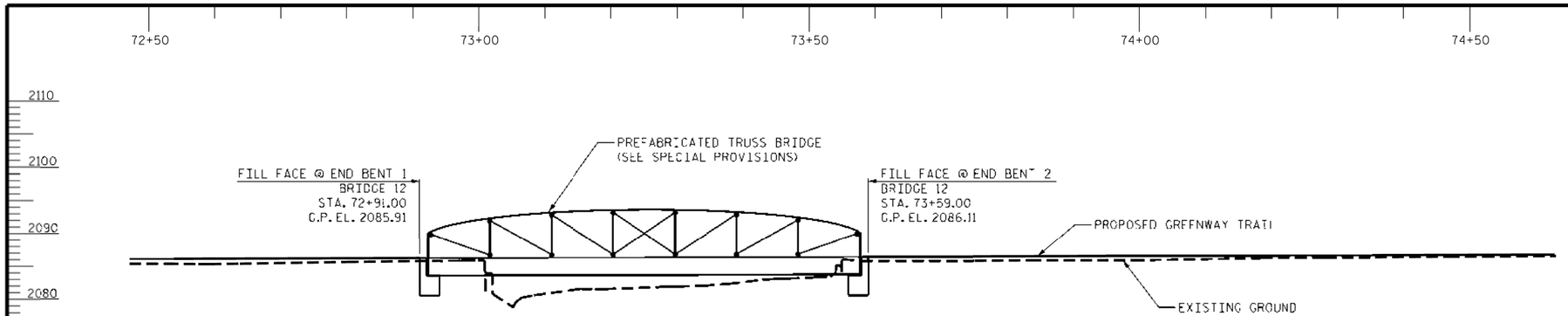
ECUSTA GREENWAY TRAIL BRIDGE 11 LAYOUT

DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS

NO.	BY	DATE	NO.	BY	DATE

SHEET NO. S-1
TOTAL SHEETS S-9

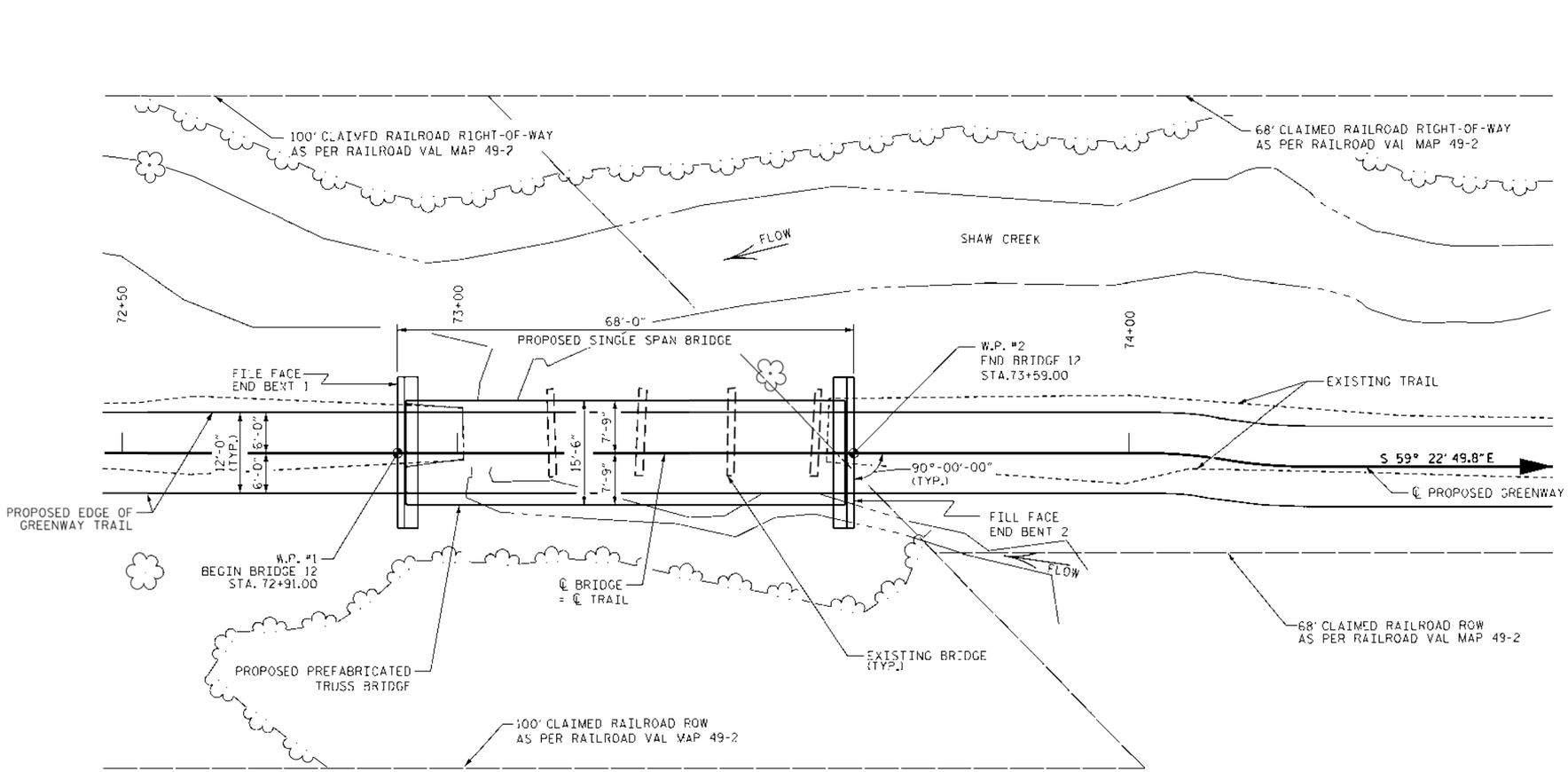


ELEVATION

(+)0.3000% (+).0.5500%

PI= 73+98.00
EL = 2,086.23
VC = 50'

GRADE DATA



PLAN

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Charleston, SC 843-974-5660
Middlesboro, KY 606-248-5600
Atlanta, GA 770-627-3550

ENGINEERING DEPARTMENT
HENDERSON COUNTY

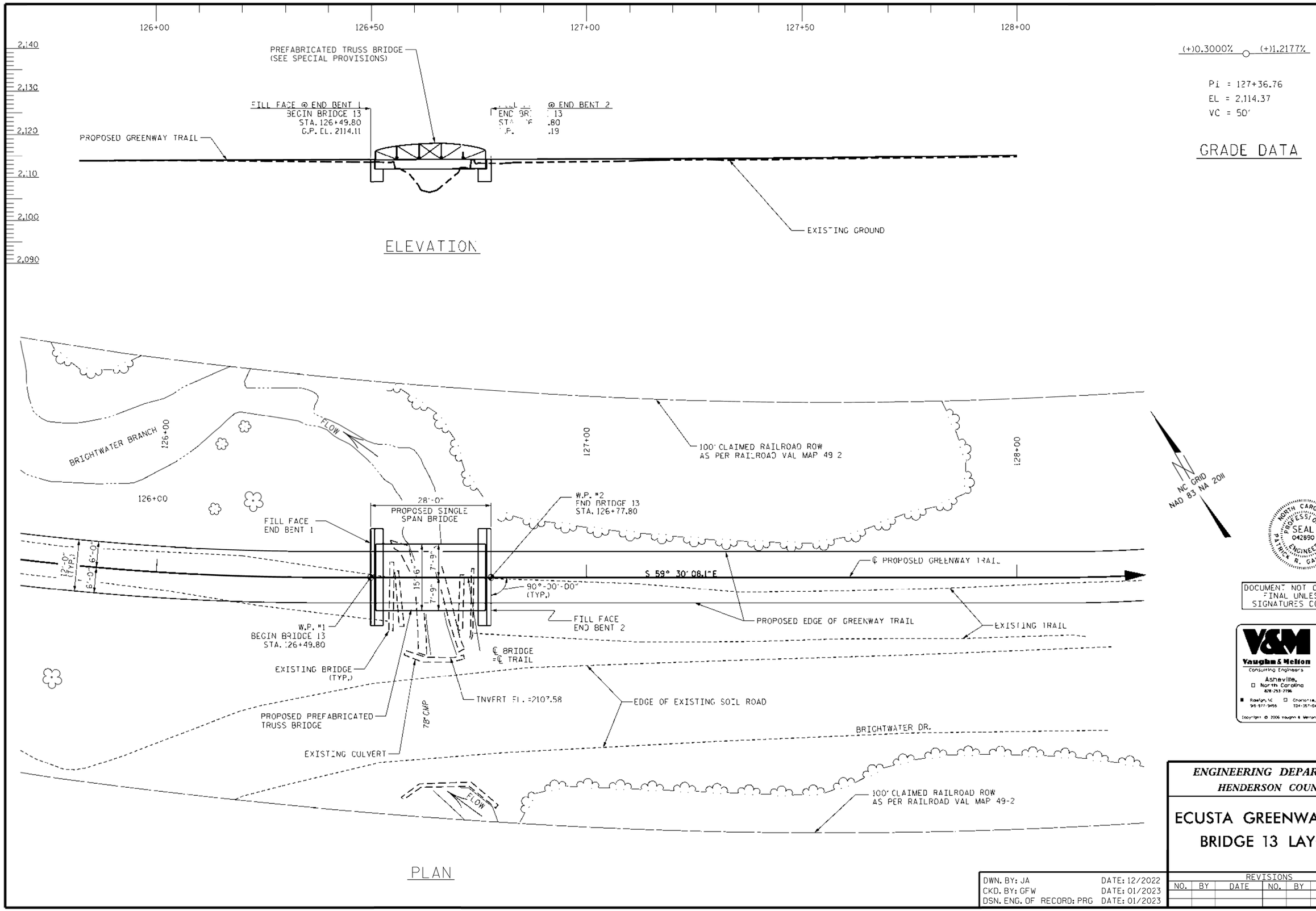
ECUSTA GREENWAY TRAIL
BRIDGE 12 LAYOUT

DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS

NO.	BY	DATE	NO.	BY	DATE

SHEET NO. S-2
TOTAL SHEETS S-9



NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

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ENGINEERING DEPARTMENT
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-9

250+00 250+50 251+00 251+50

(-)1.8655% (-)0.3000%

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

GRADE DATA

2,190
2,180
2,170
2,160
2,150
2,140
2,130

PREFABRICATED TRUSS BRIDGE
(SEE SPECIAL PROVISIONS)

FILL FACE @ END BENT 1
BRIDGE 14
STA. 250+23.29
G.P. EL. 2159.08

FILL FACE @ END BENT 2
BRIDGE 14
STA. 250+46.29
G.P. EL. 2159.02

PROPOSED GREENWAY TRAIL

EXISTING GROUND

ELEVATION

NC GRID
NAD 83 NA 2011

100' CLAIMED RAILROAD ROW
AS PER RAILROAD VAL MAP 49-1

EDGE OF EXISTING SOIL ROAD

250+00

EXISTING BRIDGE
(TYP.)

23'-0"
PROPOSED SINGLE
SPAN BRIDGE

W.P. #2
END BRIDGE 14
STA. 250+46.29

EXISTING TRAIL

251+00

PROPOSED EDGE OF GREENWAY TRAIL

12'-0"
(TYP.)

6'-0"

FILL FACE
END BENT 1

FILL FACE
END BENT 2

17'-6"

8'-9"

8'-9"

90°-00'-00"
(TYP.)

S 67° 47' 15.1"E

W.P. #1
BEGIN BRIDGE 14
STA. 250+23.29

PROPOSED PREFABRICATED
TRUSS BRIDGE

℄ BRIDGE
= ℄ TRAIL

FLOW

WASH CREEK

℄ PROPOSED GREENWAY TRAIL

100' CLAIMED RAILROAD ROW
AS PER RAILROAD VAL MAP 49-1

PLAN

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

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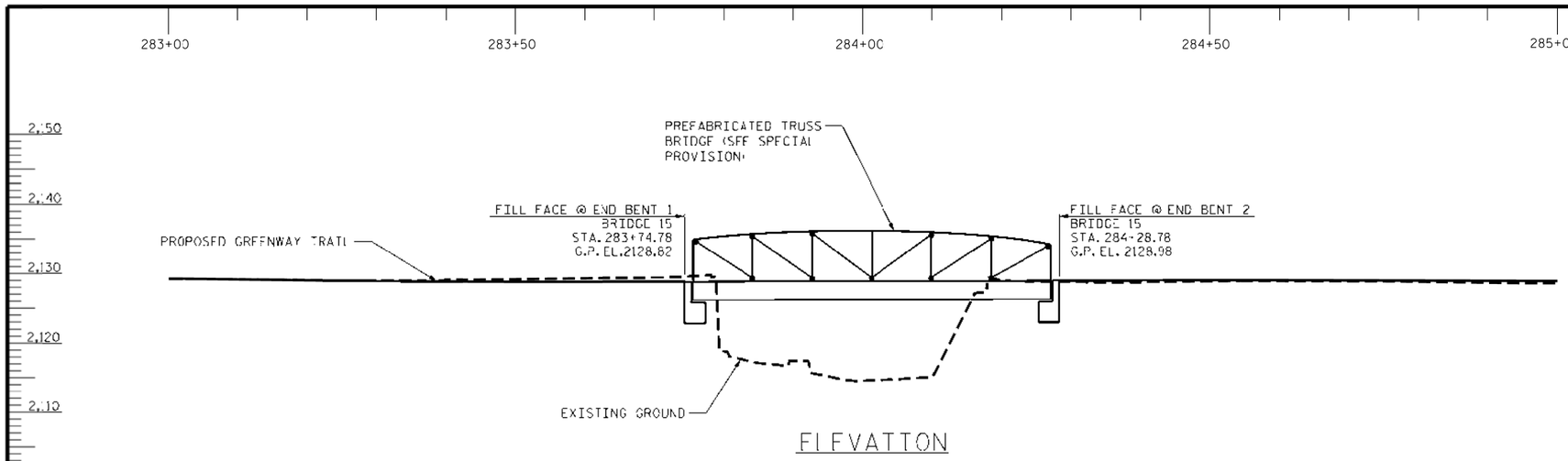
ENGINEERING DEPARTMENT
HENDERSON COUNTY

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-9

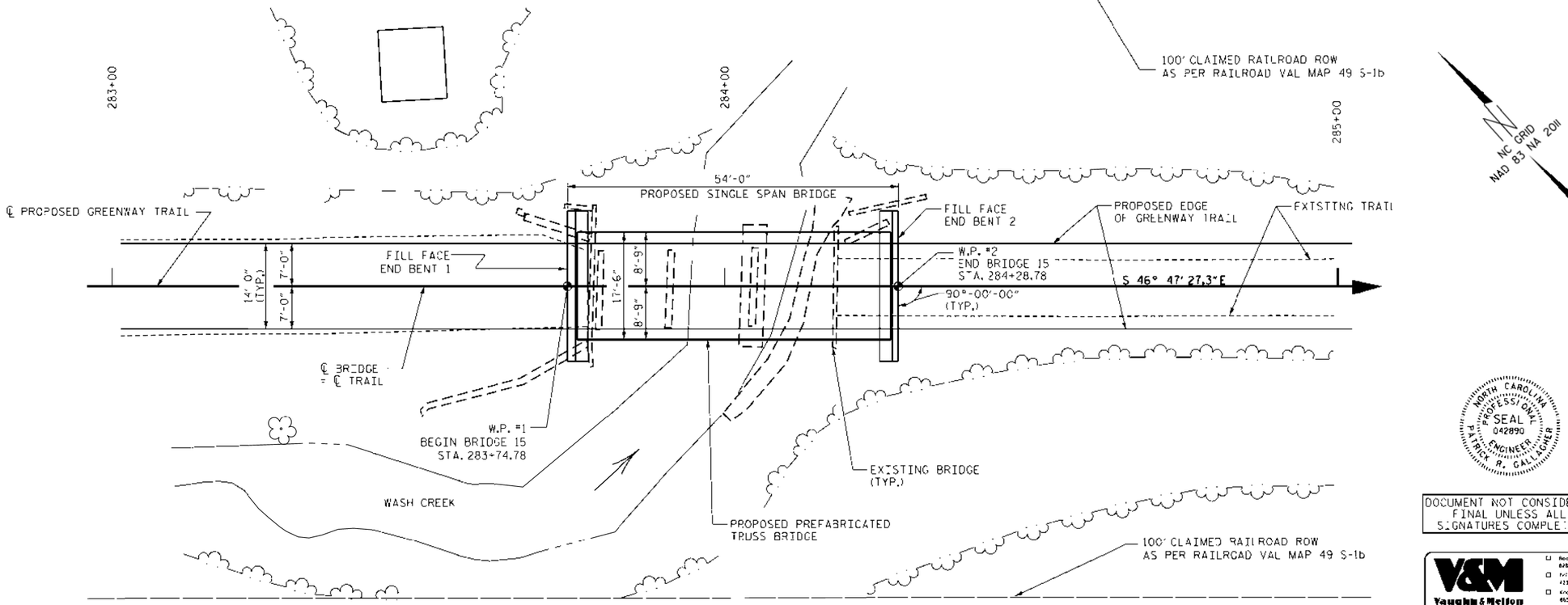


ELEVATION

(-)1.2760% (+)0.3000%

PI = 283+42.52
EL = 2,128.72
VC = 50'

GRADE DATA



PLAN

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

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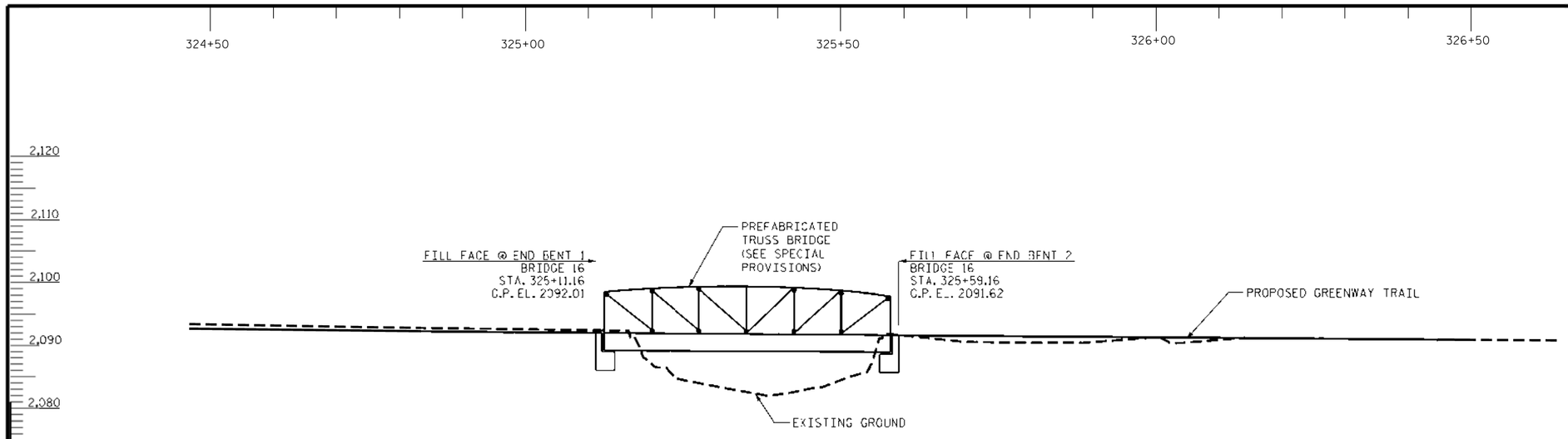
ENGINEERING DEPARTMENT
HENDERSON COUNTY

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-9

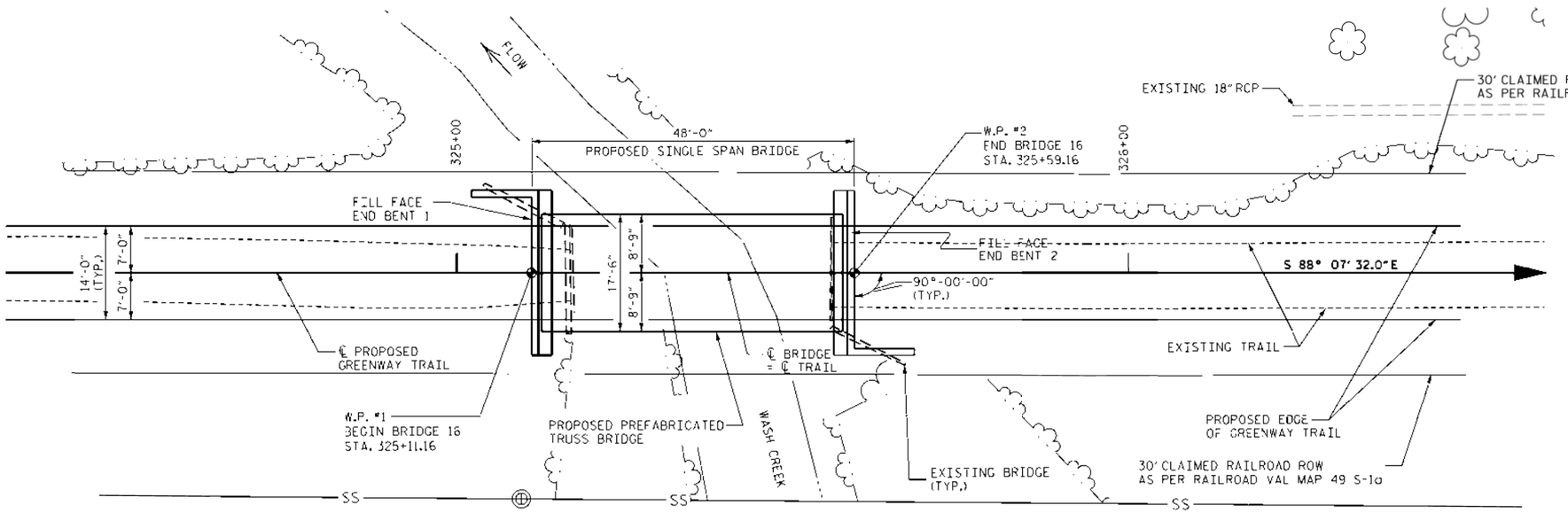


ELEVATION

(-)1.0769% (-)0.7984%

PI = 324+99.06
EL = 2,092.10
VC = 20'

GRADE DATA



PLAN

NC GRID
NAD 83 NA 2011

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

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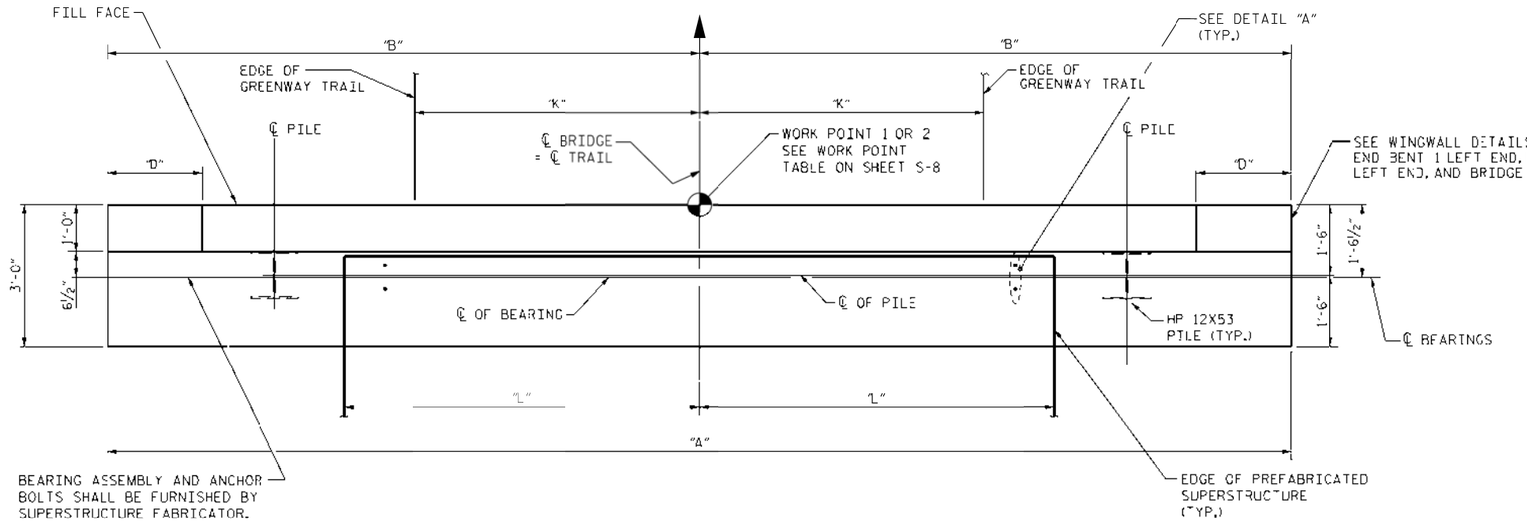
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL
BRIDGE 16 LAYOUT

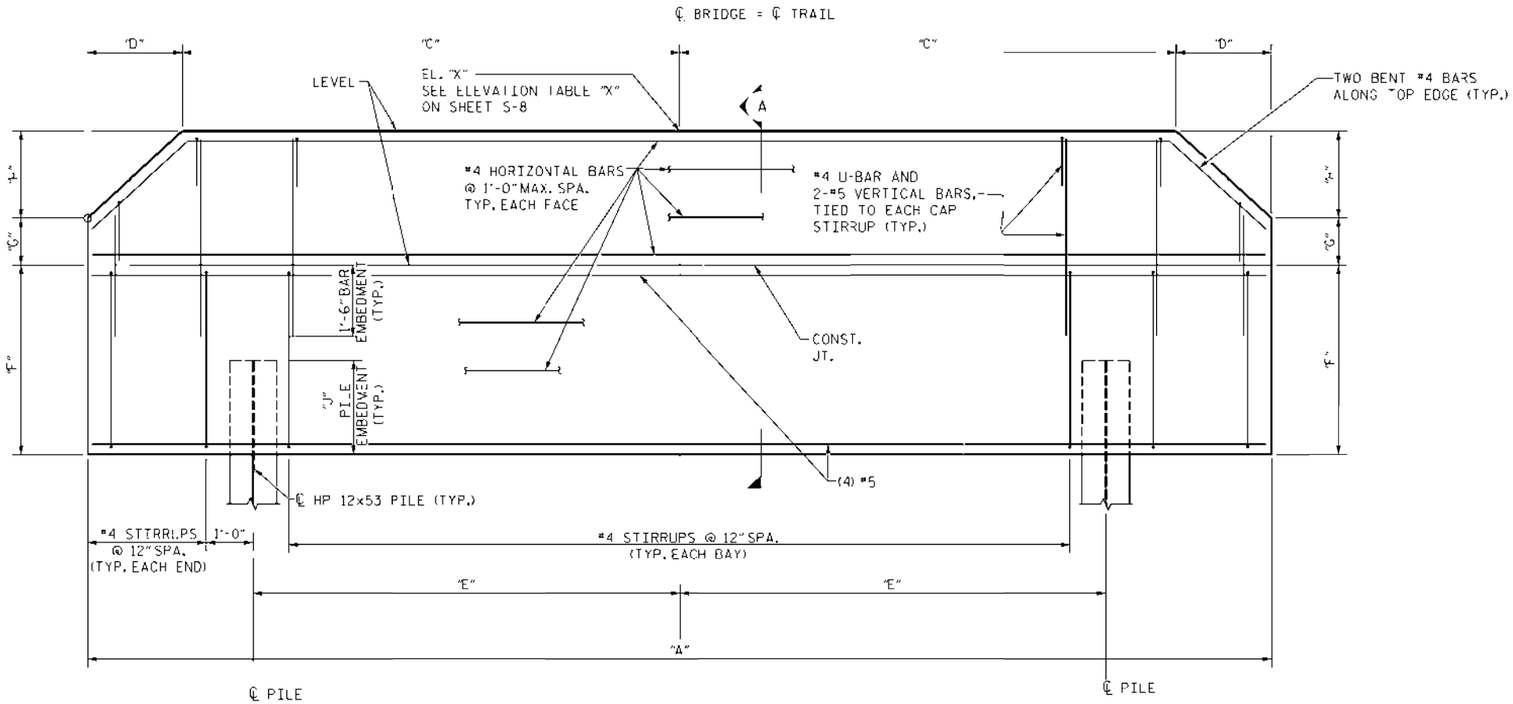
DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-6
						TOTAL SHEETS
						S-9



PLAN VIEW

END BENT 2 SHOWN. END BENT 1 SIMILAR BY ROTATION.



ELEVATION VIEW

GENERAL NOTES

MATERIALS DESIGN SPECIFICATIONS:
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.

PILES:
DRIVE HP 12X53 PILES TO REFUSAL. PRE-DRILLING OF PILES MAY BE NECESSARY AT END BENT 1 AND 2.

FOR DRIVEN PILES:
HP12X53 STEEL PILES SHALL HAVE REINFORCED PILE TIPS, DUE TO THE PRESENCE OF COBBLES AND SMALL BOULDERS.

THE PILE-DRIVING HAMMER SHOULD HAVE AN ENERGY CAPACITY OF APPROXIMATELY 30,000 TO 40,000 FOOT-POUNDS.

FOR PRE-DRILLED PILES:
IF SOLID ROCK IS ENCOUNTERED LESS THAN 10 FEET BELOW BOTTOM OF CAP ELEVATION, PILES SHALL BE INSTALLED USING PRE-DRILLING, CONSULT WITH THE ENGINEER.

IF PRE-DRILLING IS USED, PILE TIPS WILL NOT BE REQUIRED.

EXPANSION JOINT:
PROVIDE 1" EXPANSION JOINT MATERIAL BETWEEN END OF BRIDGE AND FACE OF BACKWALL AT EACH END BENT.

MISCELLANEOUS:
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.

SEE SPECIAL PROVISIONS FOR HANDRAIL DETAILS ON PREFABRICATED STRUCTURES.

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. CALLAGHAN

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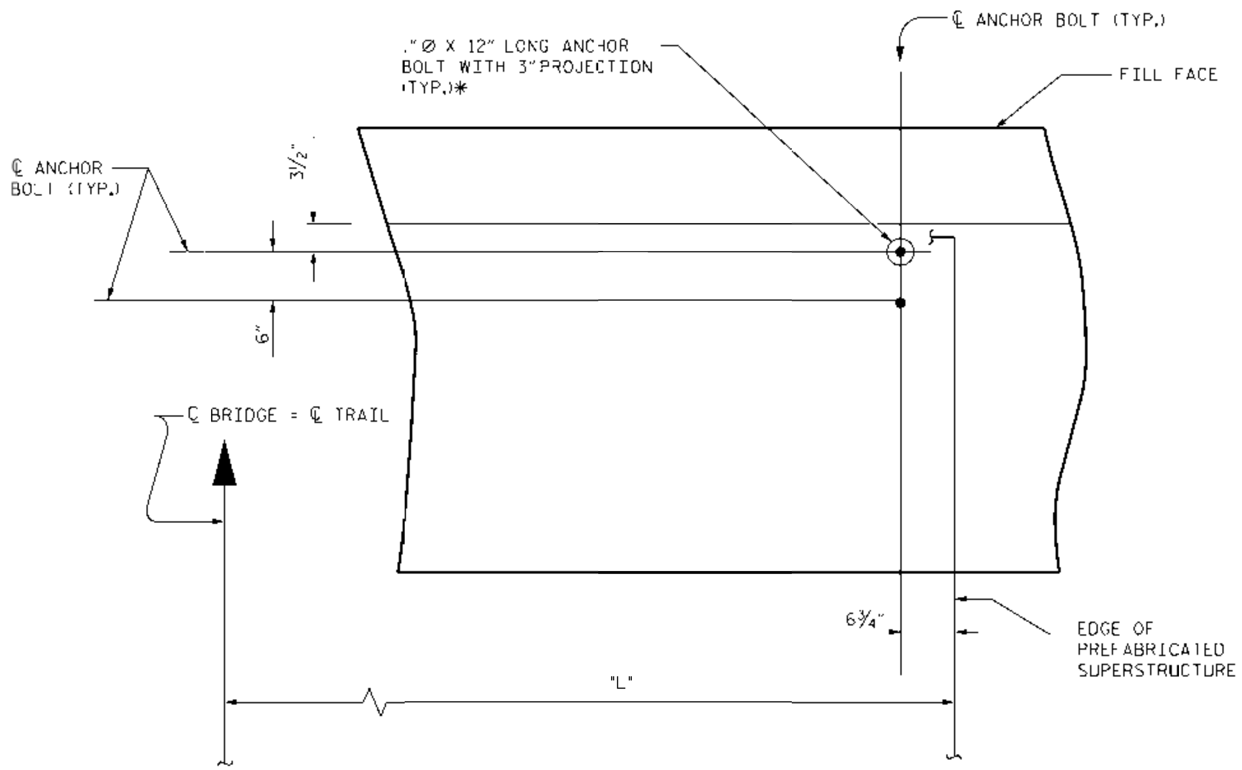
ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL END BENT DETAIL

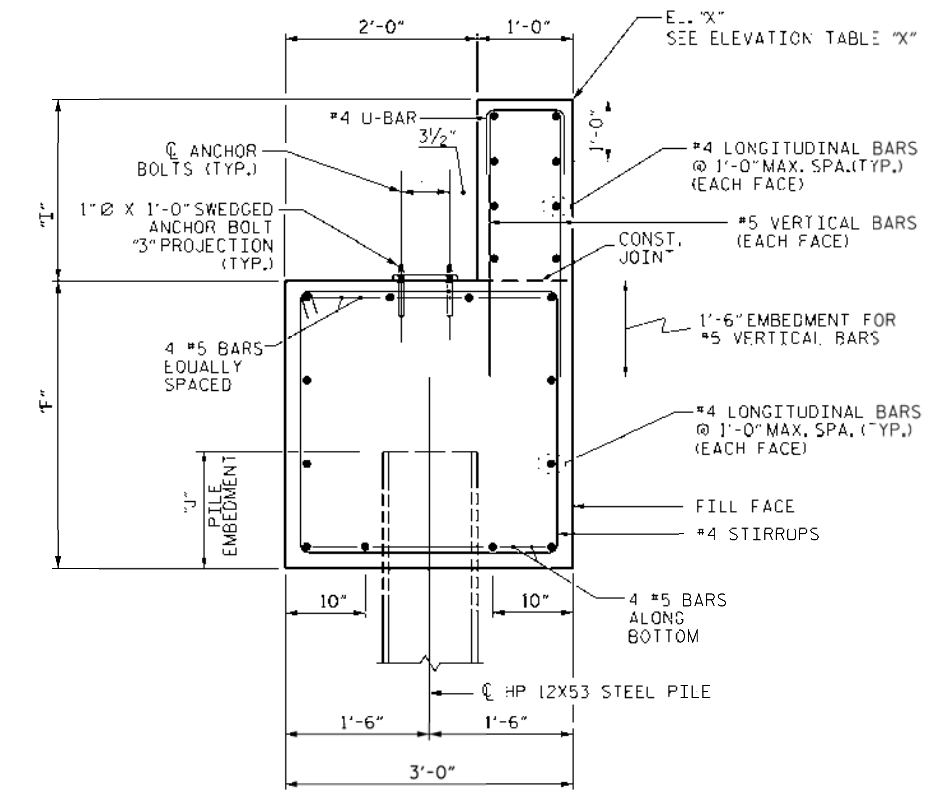
DWN. BY: JA	DATE: 12/2022
CKD. BY: GFW	DATE: 01/2023
DSN. ENG. OF RECORD: PRG	DATE: 01/2023

REVISIONS						SHEET NO.
NO.	BY	DATE	NO.	BY	DATE	S-7
						TOTAL SHEETS
						S-9



DETAIL "A"

* VERIFY BOLT DIAMETER AND LOCATION WITH FINAL FABRICATION DRAWINGS PRIOR TO POURING END BENT CONCRETE.



1 END BENT

ELEVATION TABLE "X"

BRIDGE	END BENT 1 ELEV. (FT.)	END BENT 2 ELEV. (FT.)
11	2065.21	2065.39
12	2089.91	2086.11
13	2114.11	2114.19
14	2159.08	2159.02
15	2128.82	2128.98
16	2092.01	2091.62

DIMENSION TABLE

LABEL	BRIDGE 11	BRIDGE 12	BRIDGE 13	BRIDGE 14	BRIDGE 15	BRIDGE 16
A	22'-6"	22'-6"	22'-6"	24'-6"	24'-6"	24'-6"
B	11'-3"	11'-3"	11'-3"	12'-3"	12'-3"	12'-3"
C	9'-3"	9'-3"	9'-3"	10'-3"	10'-3"	10'-3"
D	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"
E	7'-3"	7'-3"	7'-3"	8'-3"	8'-3"	8'-3"
F	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"	3'-0"
G	2'-4 ¼"	2'-4 ¼"	1'-9 ¾"	1'-9 ¾"	2'-4 ¼"	2'-4 ¼"
H	8"	8"	8"	8"	8"	8"
I	3'-0 ¼"	3'-0 ¼"	2'-5 ¾"	2'-5 ¾"	3'-0 ¼"	3'-0 ¼"
J	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"	1'-6"
K	6'-0"	6'-0"	6'-0"	6'-0"	7'-0"	7'-0"
L	7'-9"	7'-9"	7'-9"	8'-9"	8'-9"	8'-9"
M	N/A	N/A	N/A	16'-0"	N/A	13'-0"

WORKING POINT TABLE

BRIDGE	END BENT 1 (W.P. #1)	END BENT 2 (W.P. #2)
11	14+04.42	14+64.92
12	72+91.00	73+59.00
13	126+49.80	126+77.80
14	250+23.29	250+46.29
15	283+74.78	284+28.78
16	325+11.16	325+59.16

NORTH CAROLINA PROFESSIONAL SEAL 042890 ENGINEER PATRICK R. GALLAGHER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina

ENGINEERING DEPARTMENT
HENDERSON COUNTY

ECUSTA GREENWAY TRAIL END BENT DETAILS

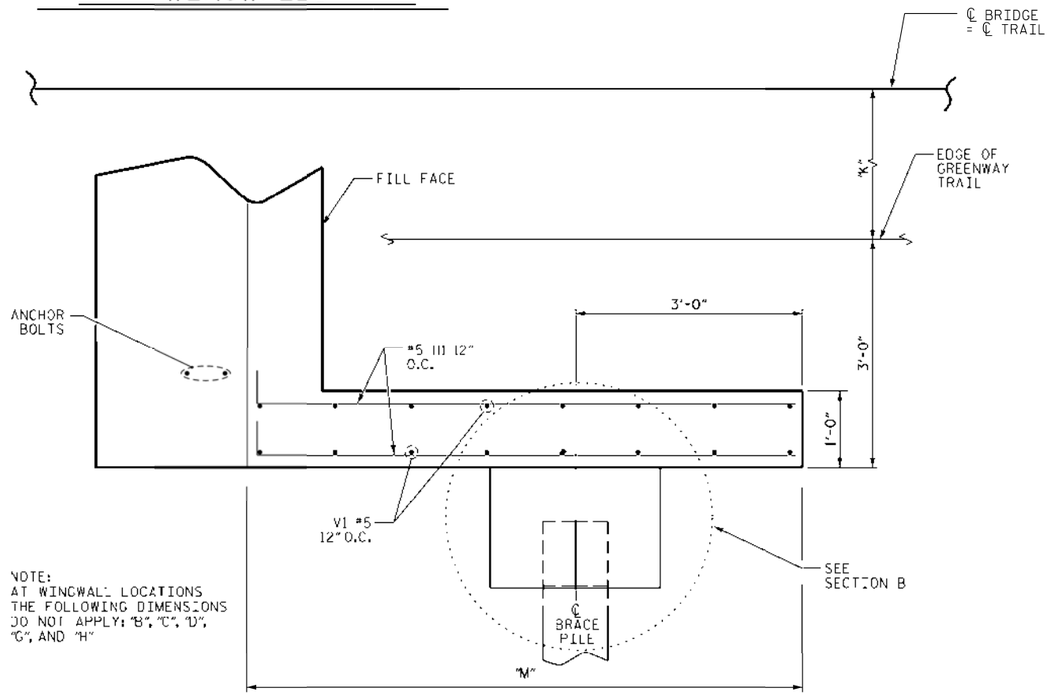
DWN. BY: JA DATE: 12/2022
CKD. BY: GFW DATE: 01/2023
DSN. ENG. OF RECORD: PRG DATE: 01/2023

REVISIONS

NO.	BY	DATE	NO.	BY	DATE

SHEET NO. S-8
TOTAL SHEETS S-9

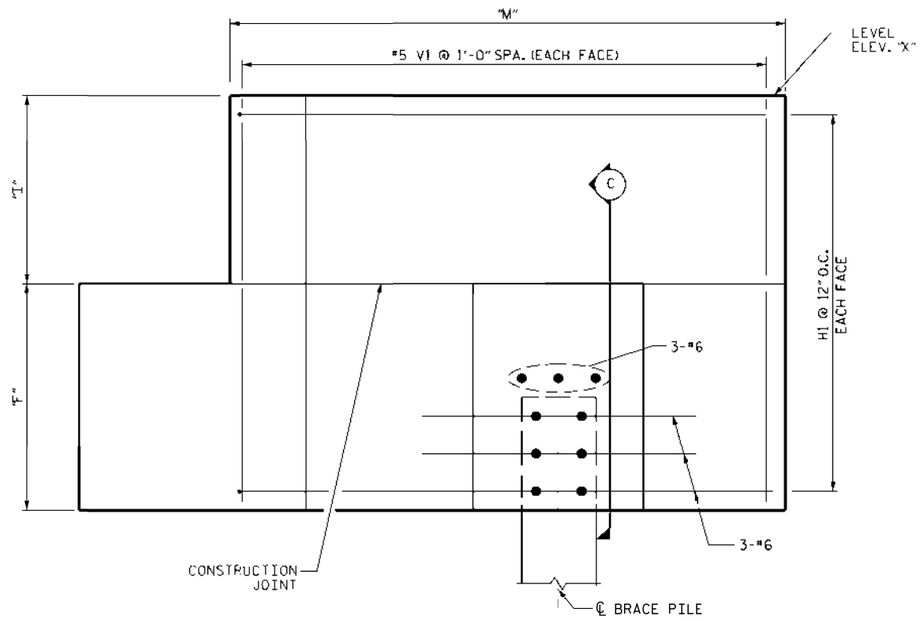
WINGWALLS



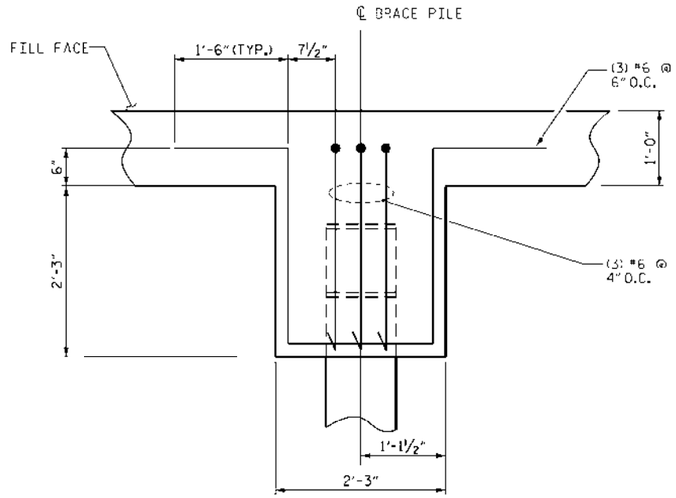
NOTE:
AT WINGWALL LOCATIONS
THE FOLLOWING DIMENSIONS
DO NOT APPLY: "B", "C", "D",
"G", AND "H"

WINGWALL DETAIL

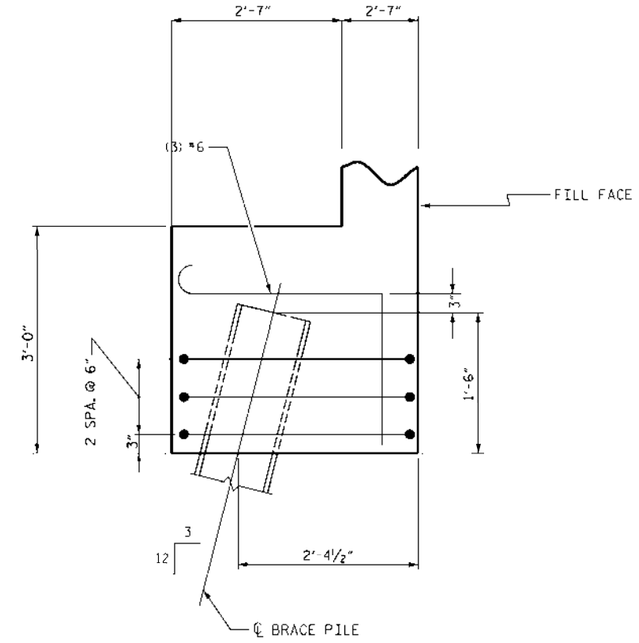
PLAN VIEW



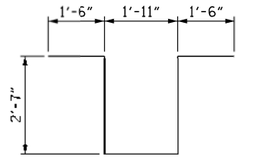
WINGWALL ELEVATION

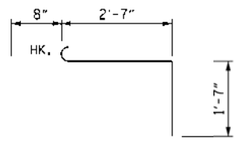


SECTION B



SECTION C





REBAR DETAILS

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 042890 PATRICK R. GALLAGHER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Vaughn & Melton
Consulting Engineers
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Raleigh, NC 919-977-9455 · Charlotte, NC 704-357-0458 · Boone, NC 828-355-9933 · Fort Oglethorpe, TN 423-467-8409 · Knoxville, TN 865-546-5800 · Spartanburg, SC 864-574-4775 · Charleston, SC 843-974-5660 · Middlesboro, KY 606-248-5600 · Atlanta, GA 770-627-3590

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

NO.	BY	DATE	NO.	BY	DATE

SHEET NO. S-9
TOTAL SHEETS S-9