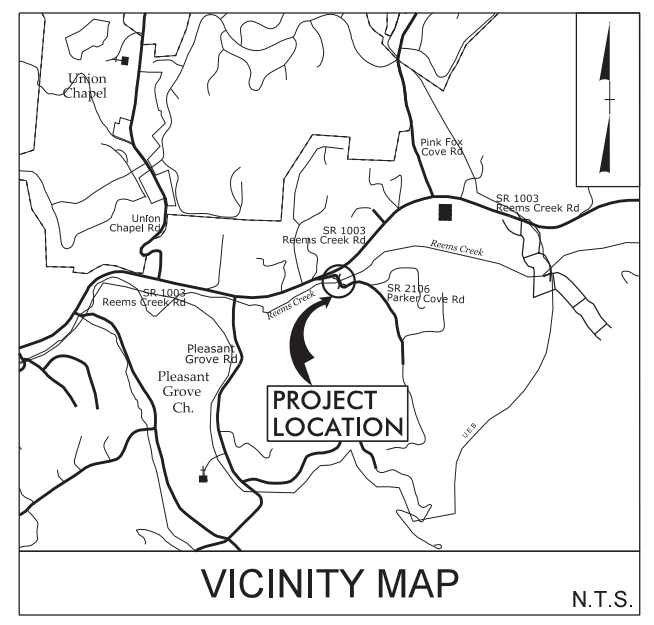


PROJECT: 17BP.13.R.192

CONTRACT:

See Sheet 1-A For Index of Sheets (Not Included)
 See Sheet 1-B For Symbology Sheet



FINAL PLANS

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

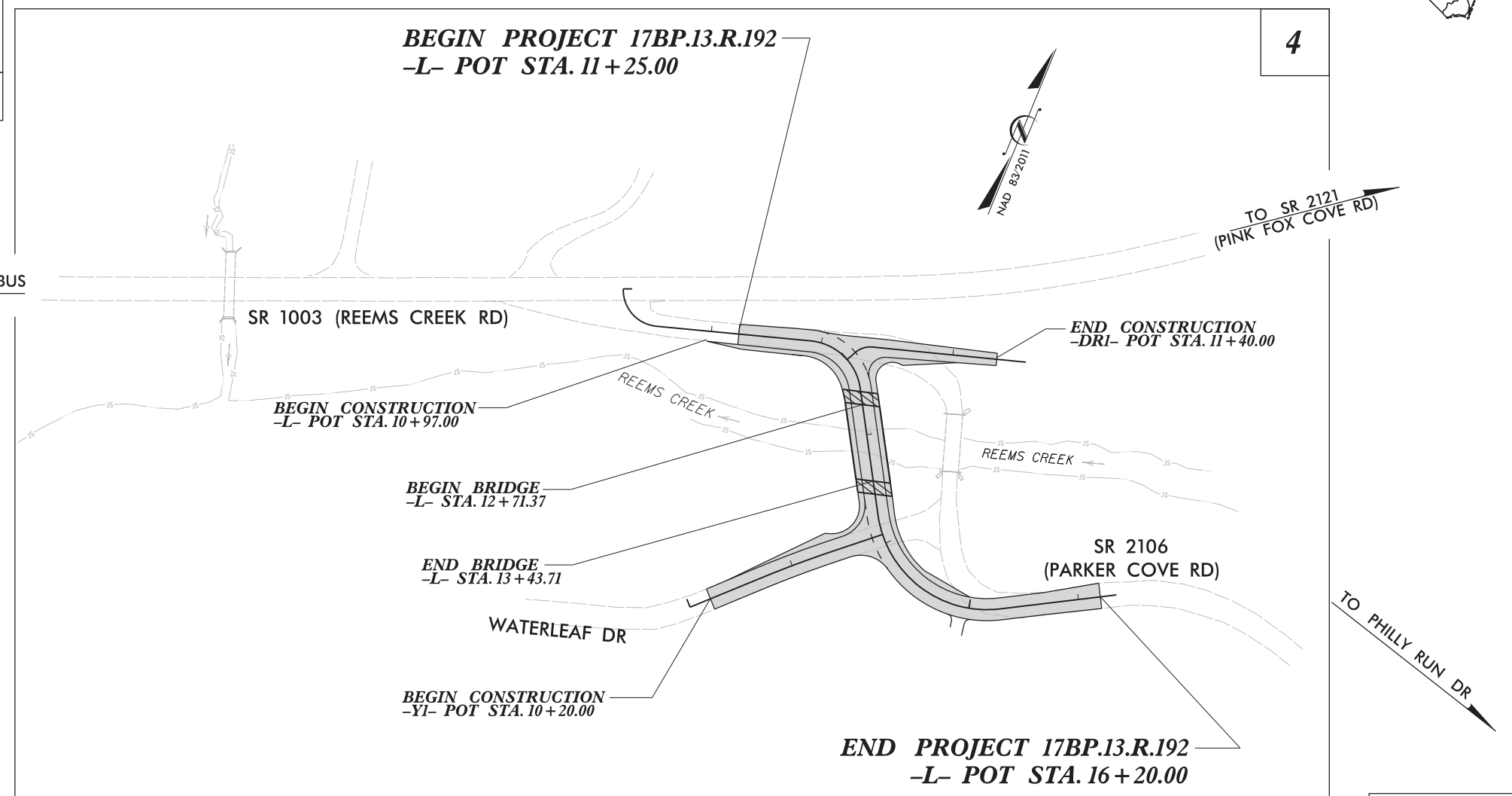
BUNCOMBE COUNTY

**LOCATION: REPLACEMENT OF BRIDGE NO. 231 OVER
 REEMS CREEK ON SR 2106 (PARKER COVE RD)**

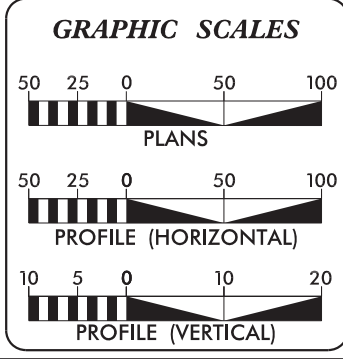
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE,
 TRAFFIC MANAGEMENT AND PAVEMENT MARKINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.192	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.192	N/A	PE	
17BP.13.R.192	N/A	ROW, UTIL.	

DIVISION 13



DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2022 =	95
ADT 2042 =	130
K =	N/A
D =	N/A
T =	N/A
V =	20 MPH
FUNC CLASS = LOCAL SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH ROADWAY PROJECT 17BP.13.R.192	=	0.080 MI
LENGTH STRUCTURES PROJECT 17BP.13.R.192	=	0.014 MI
TOTAL LENGTH PROJECT 17BP.13.R.192	=	0.094 MI

Prepared in the Office of: **Gannett Fleming**
 Excellence Delivered As Promised

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
 JANUARY 2022

LETTING DATE:
 JUNE 15, 2022

RICKY A. TIPTON, PLS, PE
 PROJECT ENGINEER

ANGELA B. PRIDGEN, PE
 PROJECT DESIGN ENGINEER

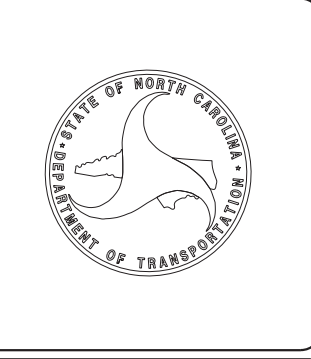
MICHAEL CALLOWAY
 NCDOT DIVISION PROJECT MANAGER

HYDRAULICS ENGINEER

DocuSigned by: Andrew T. Nottingham 4/11/2022 P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by: Ricky A. Tipton 4/11/2022 P.E.



PROJECT REFERENCE NO.	SHEET NO.
17BPJ3R192	1A
ROADWAY DESIGN ENGINEER	

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

SHEET NUMBER	INDEX OF SHEETS SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
3B	EARTHWORK, DRAINAGE, REMOVAL OF ASPHALT PAVEMENT, SHOULDER BERM, GUTTER AND GUARDRAIL SUMMARIES
4	PLAN SHEET
5	PROFILE SHEET
TMP-1 THRU TMP-8	TRAFFIC MANAGEMENT PLANS
PMP-1	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
X-1A	CROSS-SECTION SUMMARY SHEET
X-1 THRU X-14	CROSS-SECTIONS
S-0 THRU S-19	STRUCTURE PLANS

EFF. 01-16-2018

2018 ROADWAY ENGLISH STANDARD DRAWINGS

REV.

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

STD. NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.01	Guide for Paving Shoulders Under Bridges - Method I
DIVISION 8 - INCIDENTALS	
846.01	Concrete Curb, Gutter and Curb & Gutter
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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

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

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

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

SUPERELEVATION:
ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:
ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.01

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

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

RIGHT-OF-WAY MARKERS:
ALL RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

8/17/99
4/6/2022
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STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS
CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

BOUNDARIES AND PROPERTY:

Table listing symbols for boundaries and property: State Line, County Line, Township Line, City Line, Reservation Line, Property Line, Existing Iron Pin (EIP), Computed Property Corner, Existing Concrete Monument (ECM), Parcel/Sequence Number, Existing Fence Line, Proposed Woven Wire Fence, Proposed Chain Link Fence, Proposed Barbed Wire Fence, Existing Wetland Boundary, Proposed Wetland Boundary, Existing Endangered Animal Boundary, Existing Endangered Plant Boundary, Existing Historic Property Boundary, Known Contamination Area: Soil, Potential Contamination Area: Soil, Known Contamination Area: Water, Potential Contamination Area: Water, Contaminated Site: Known or Potential.

BUILDINGS AND OTHER CULTURE:

Table listing symbols for buildings and other culture: Gas Pump Vent or U/G Tank Cap, Sign, Well, Small Mine, Foundation, Area Outline, Cemetery, Building, School, Church, Dam.

HYDROLOGY:

Table listing symbols for hydrology: Stream or Body of Water, Hydro, Pool or Reservoir, Jurisdictional Stream, Buffer Zone 1, Buffer Zone 2, Flow Arrow, Disappearing Stream, Spring, Wetland, Proposed Lateral, Tail, Head Ditch, False Sump.

RAILROADS:

Table listing symbols for railroads: Standard Gauge, RR Signal Milepost, Switch, RR Abandoned, RR Dismantled.

RIGHT OF WAY & PROJECT CONTROL:

Table listing symbols for right of way and project control: Primary Horiz Control Point, Primary Horiz and Vert Control Point, Secondary Horiz and Vert Control Point, Vertical Benchmark, Existing Right of Way Monument, Proposed Right of Way Monument (Rebar and Cap), Proposed Right of Way Monument (Concrete), Existing Permanent Easement Monument, Proposed Permanent Easement Monument (Rebar and Cap), Existing C/A Monument, Proposed C/A Monument (Rebar and Cap), Proposed C/A Monument (Concrete), Existing Right of Way Line, Proposed Right of Way Line, Existing Control of Access Line, Proposed Control of Access Line, Proposed ROW and CA Line, Existing Easement Line, Proposed Temporary Construction Easement, Proposed Temporary Drainage Easement, Proposed Permanent Drainage Easement, Proposed Permanent Drainage/Utility Easement, Proposed Permanent Utility Easement, Proposed Temporary Utility Easement, Proposed Aerial Utility Easement.

ROADS AND RELATED FEATURES:

Table listing symbols for roads and related features: Existing Edge of Pavement, Existing Curb, Proposed Slope Stakes Cut, Proposed Slope Stakes Fill, Proposed Curb Ramp, Existing Metal Guardrail, Proposed Guardrail, Existing Cable Guiderail, Proposed Cable Guiderail, Equality Symbol, Pavement Removal, VEGETATION: Single Tree, Single Shrub, Hedge.

Table listing symbols for existing structures: Woods Line, Orchard, Vineyard.

EXISTING STRUCTURES:

Table listing symbols for existing structures: MAJOR: Bridge, Tunnel or Box Culvert, Bridge Wing Wall, Head Wall and End Wall; MINOR: Head and End Wall, Pipe Culvert, Footbridge, Drainage Box: Catch Basin, DI or JB, Paved Ditch Gutter, Storm Sewer Manhole, Storm Sewer.

UTILITIES:

* SUE - Subsurface Utility Engineering
LOS - Level of Service - A, B, C or D (Accuracy)

Table listing symbols for utilities: POWER: Existing Power Pole, Proposed Power Pole, Existing Joint Use Pole, Proposed Joint Use Pole, Power Manhole, Power Line Tower, Power Transformer, U/G Power Cable Hand Hole, H-Frame Pole, U/G Power Line Test Hole (SUE - LOS A)*, U/G Power Line (SUE - LOS B)*, U/G Power Line (SUE - LOS C)*, U/G Power Line (SUE - LOS D)*; TELEPHONE: Existing Telephone Pole, Proposed Telephone Pole, Telephone Manhole, Telephone Pedestal, Telephone Cell Tower, U/G Telephone Cable Hand Hole, U/G Telephone Test Hole (SUE - LOS A)*, U/G Telephone Cable (SUE - LOS B)*, U/G Telephone Cable (SUE - LOS C)*, U/G Telephone Cable (SUE - LOS D)*, U/G Telephone Conduit (SUE - LOS B)*, U/G Telephone Conduit (SUE - LOS C)*, U/G Telephone Conduit (SUE - LOS D)*, U/G Fiber Optics Cable (SUE - LOS B)*, U/G Fiber Optics Cable (SUE - LOS C)*, U/G Fiber Optics Cable (SUE - LOS D)*.

Table listing symbols for water, TV, gas, sanitary sewer, and miscellaneous: WATER: Water Manhole, Water Meter, Water Valve, Water Hydrant, U/G Water Line Test Hole (SUE - LOS A)*, U/G Water Line (SUE - LOS B)*, U/G Water Line (SUE - LOS C)*, U/G Water Line (SUE - LOS D)*, Above Ground Water Line; TV: TV Pedestal, TV Tower, U/G TV Cable Hand Hole, U/G TV Test Hole (SUE - LOS A)*, U/G TV Cable (SUE - LOS B)*, U/G TV Cable (SUE - LOS C)*, U/G TV Cable (SUE - LOS D)*, U/G Fiber Optic Cable (SUE - LOS B)*, U/G Fiber Optic Cable (SUE - LOS C)*, U/G Fiber Optic Cable (SUE - LOS D)*; GAS: Gas Valve, Gas Meter, U/G Gas Line Test Hole (SUE - LOS A)*, U/G Gas Line (SUE - LOS B)*, U/G Gas Line (SUE - LOS C)*, U/G Gas Line (SUE - LOS D)*, Above Ground Gas Line; SANITARY SEWER: Sanitary Sewer Manhole, Sanitary Sewer Cleanout, U/G Sanitary Sewer Line, Above Ground Sanitary Sewer, SS Force Main Line Test Hole (SUE - LOS A)*, SS Force Main Line (SUE - LOS B)*, SS Force Main Line (SUE - LOS C)*, SS Force Main Line (SUE - LOS D)*; MISCELLANEOUS: Utility Pole, Utility Pole with Base, Utility Located Object, Utility Traffic Signal Box, Utility Unknown U/G Line (SUE - LOS B)*, U/G Tank; Water, Gas, Oil, Underground Storage Tank, Approx. Loc., A/G Tank; Water, Gas, Oil, Geoenvironmental Boring, Abandoned According to Utility Records, End of Information.

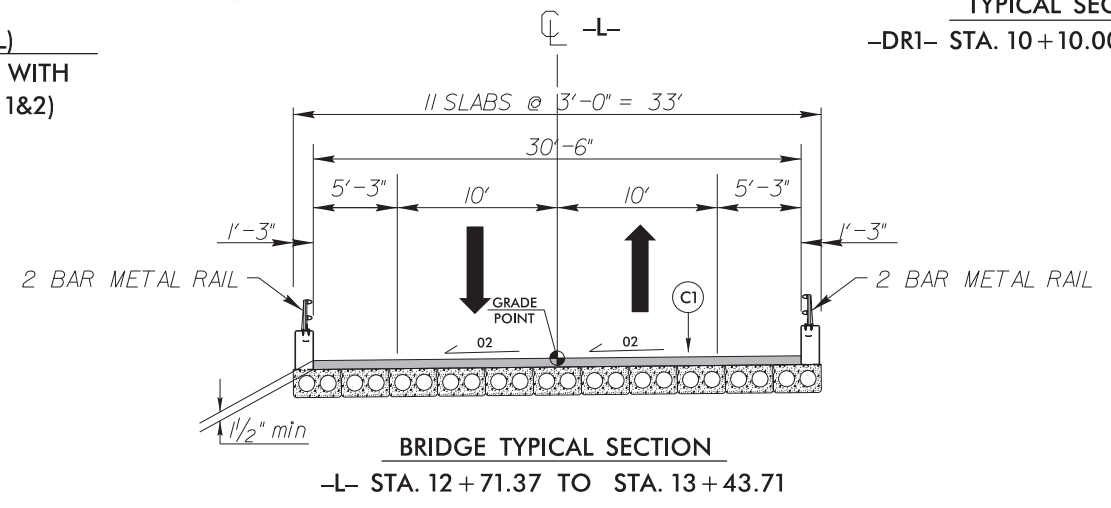
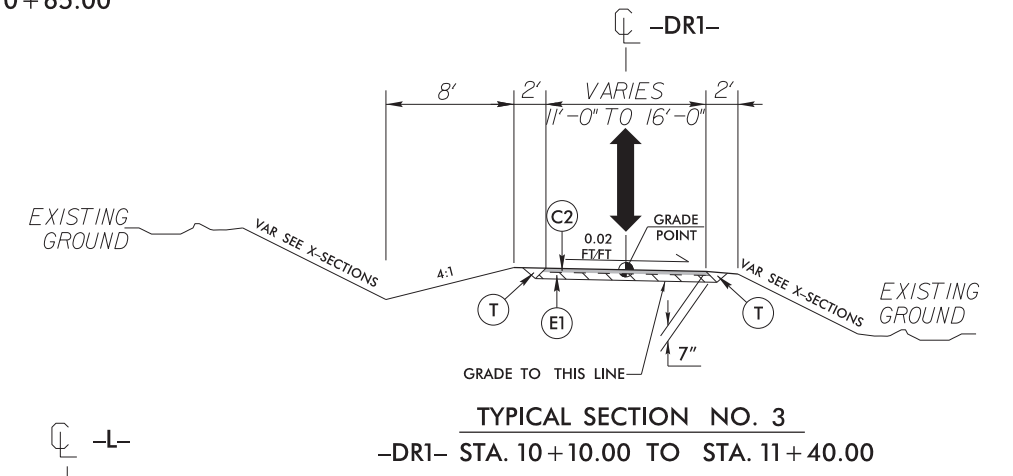
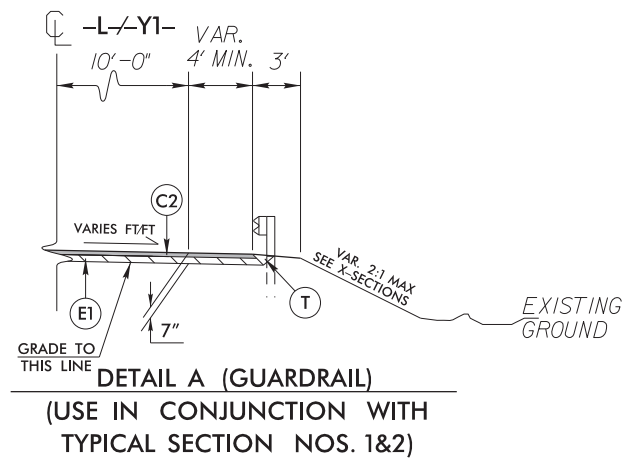
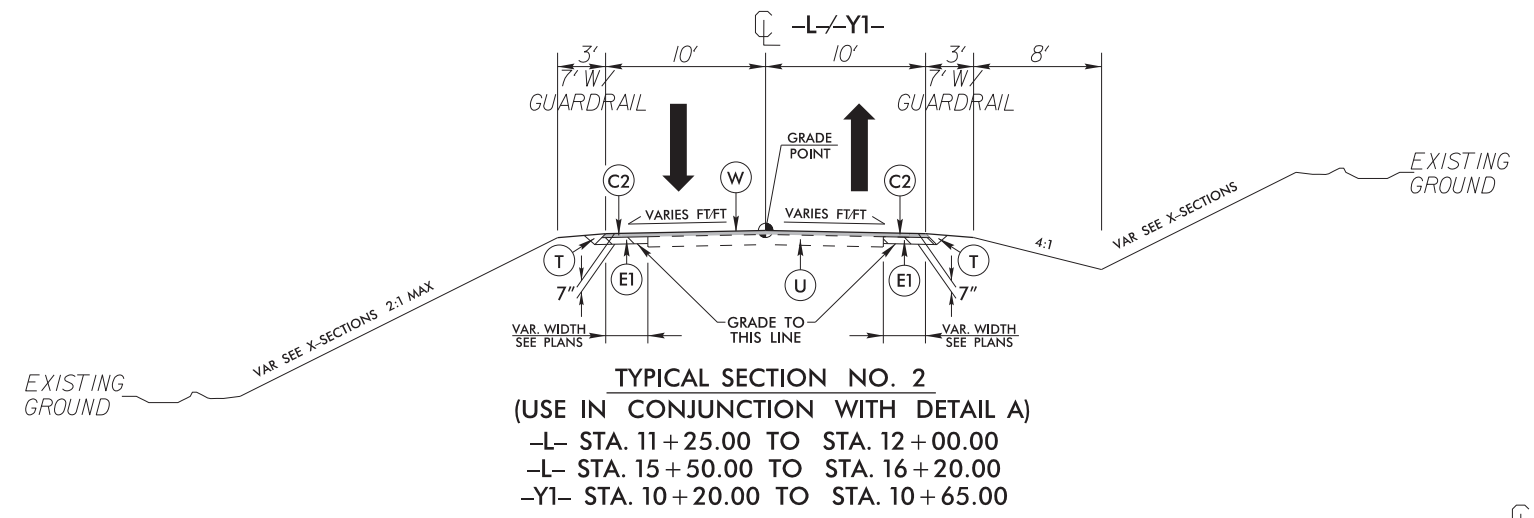
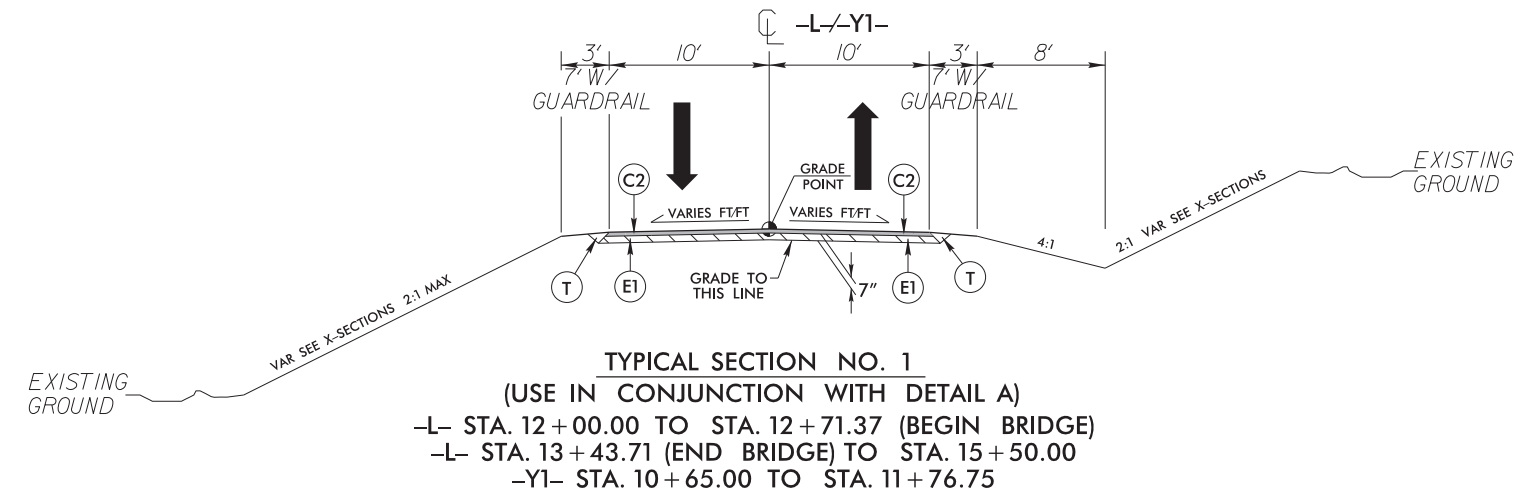
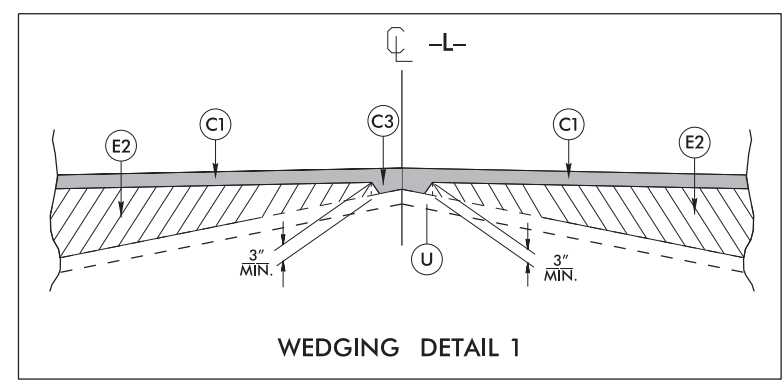
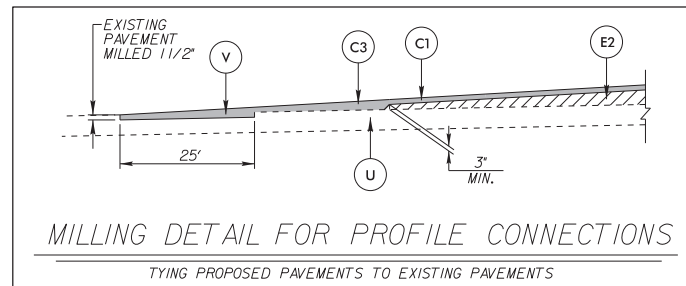
9/10/2021

8/17/99

PAVEMENT SCHEDULE

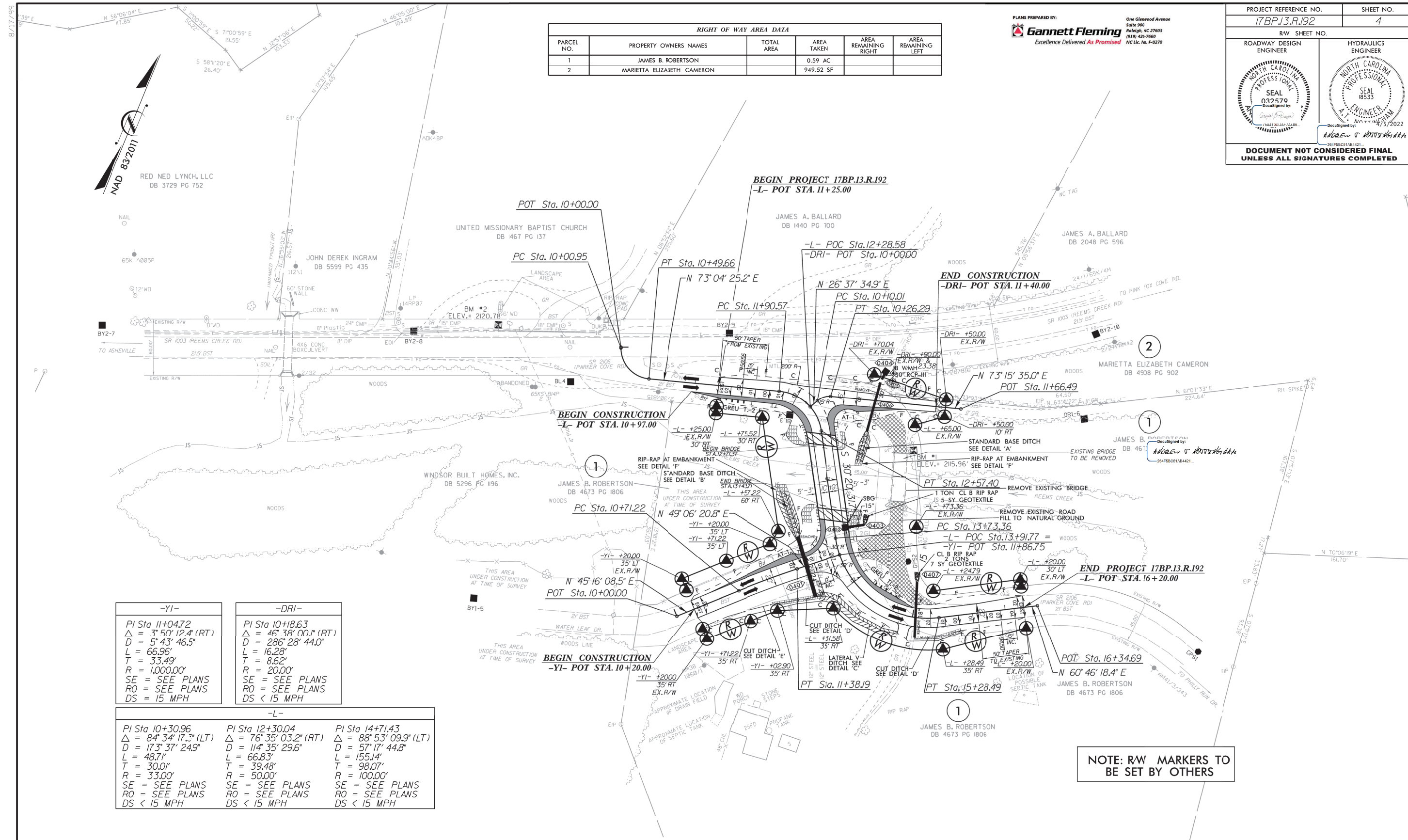
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	1 1/2" MILLING ASPHALT PAVEMENT
W	WEDGING (SEE DETAIL 1 THIS SHEET).

NOTE: ALL SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.



PROJECT REFERENCE NO. 17BP.13.R.192	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
Discussed by: <i>RA</i> 4/1/2022 Drawn by: <i>RA</i> Checked by: <i>RA</i>	
THIS SHEET IS NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

3/9/2022
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istarnes



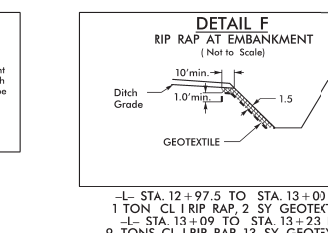
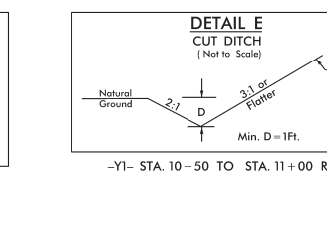
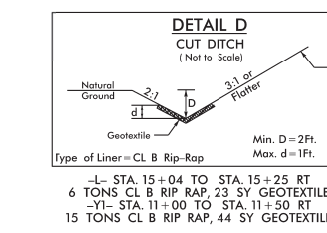
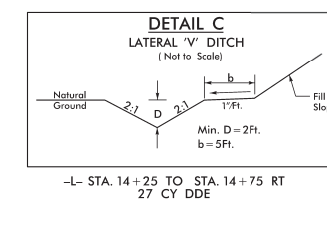
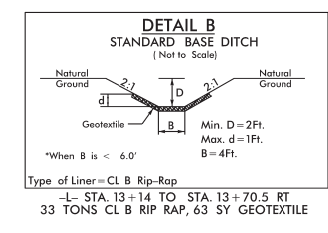
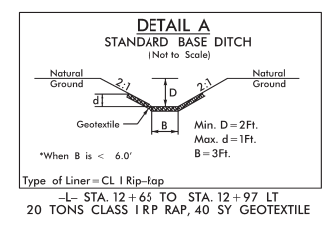
RIGHT OF WAY AREA DATA				
PARCEL NO.	PROPERTY OWNERS NAMES	TOTAL AREA	AREA TAKEN	AREA REMAINING
1	JAMES B. ROBERTSON		0.59 AC	
2	MARIETTA ELIZABETH CAMERON		949.52 SF	

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised
 One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7669
 NC Lic. No. F-6270

PROJECT REFERENCE NO. 17BP.13.R.192	SHEET NO. 4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

-YI-		-DRI-	
PI Sta 11+04.72 $\Delta = 3^{\circ} 50' 12.4" (RT)$ $D = 5^{\circ} 43' 46.5"$ $L = 66.96'$ $T = 33.49'$ $R = 1,000.00'$ SE = SEE PLANS RO = SEE PLANS DS = 15 MPH	PI Sta 10+18.63 $\Delta = 46^{\circ} 38' 00.1" (RT)$ $D = 286^{\circ} 28' 44.0"$ $L = 16.28'$ $T = 8.62'$ $R = 20.00'$ SE = SEE PLANS RO = SEE PLANS DS < 15 MPH	PI Sta 10+30.96 $\Delta = 84^{\circ} 34' 17.3" (LT)$ $D = 173^{\circ} 37' 24.9"$ $L = 48.71'$ $T = 30.01'$ $R = 33.00'$ SE = SEE PLANS RO = SEE PLANS DS < 15 MPH	PI Sta 12+30.04 $\Delta = 76^{\circ} 35' 03.2" (RT)$ $D = 114^{\circ} 35' 29.6"$ $L = 66.83'$ $T = 39.48'$ $R = 50.00'$ SE = SEE PLANS RO = SEE PLANS DS < 15 MPH
-L-			
PI Sta 14+71.43 $\Delta = 88^{\circ} 53' 09.9" (LT)$ $D = 57^{\circ} 17' 44.8"$ $L = 155.14'$ $T = 98.07'$ $R = 100.00'$ SE = SEE PLANS RO = SEE PLANS DS < 15 MPH	PI Sta 10+71.22 $\Delta = 49^{\circ} 06' 20.8" E$ $-YI- +20.00$ $-YI- +71.22$ $35' LT$ $35' LT$ $N 45^{\circ} 16' 08.5" E$ POT Sta. 10+00.00	PI Sta 12+57.40 $\Delta = 30^{\circ} 20' 31.1" E$ $-L- +73.36$ $-L- +24.79$ $35' RT$ $35' RT$ $N 60^{\circ} 46' 18.4" E$ POT Sta. 16+34.69	PI Sta 13+73.36 $\Delta = 173^{\circ} 37' 24.9" (LT)$ $D = 173^{\circ} 37' 24.9"$ $L = 48.71'$ $T = 30.01'$ $R = 33.00'$ SE = SEE PLANS RO = SEE PLANS DS < 15 MPH

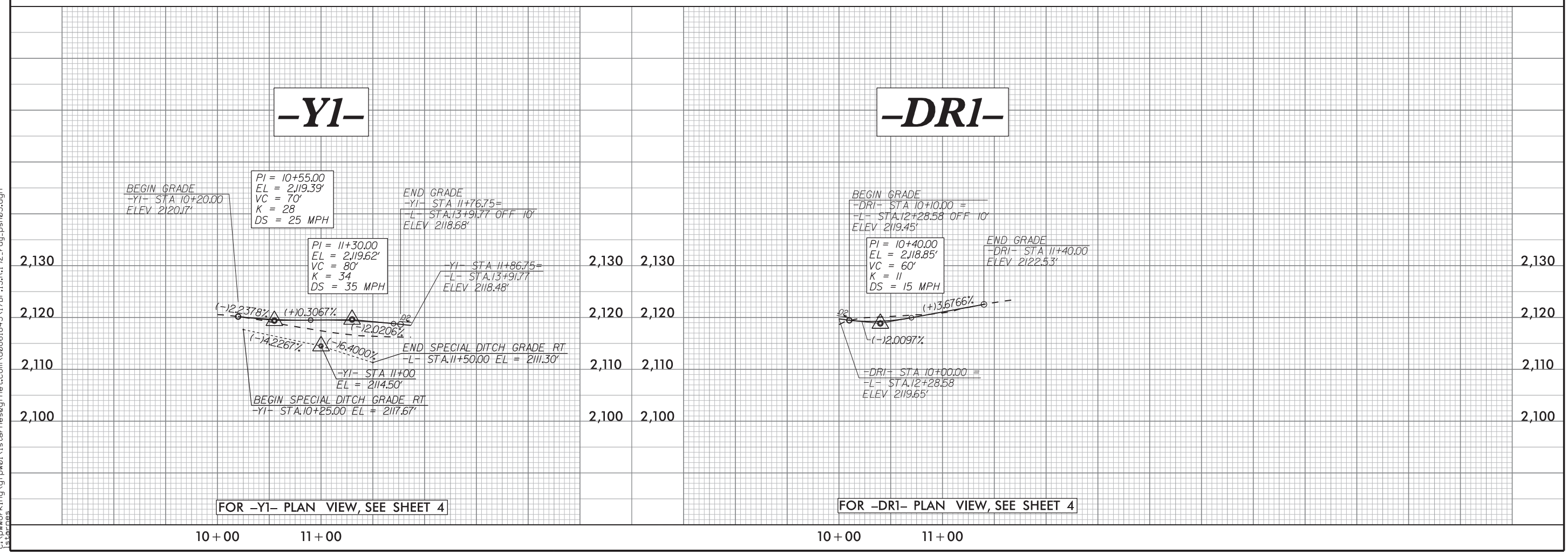
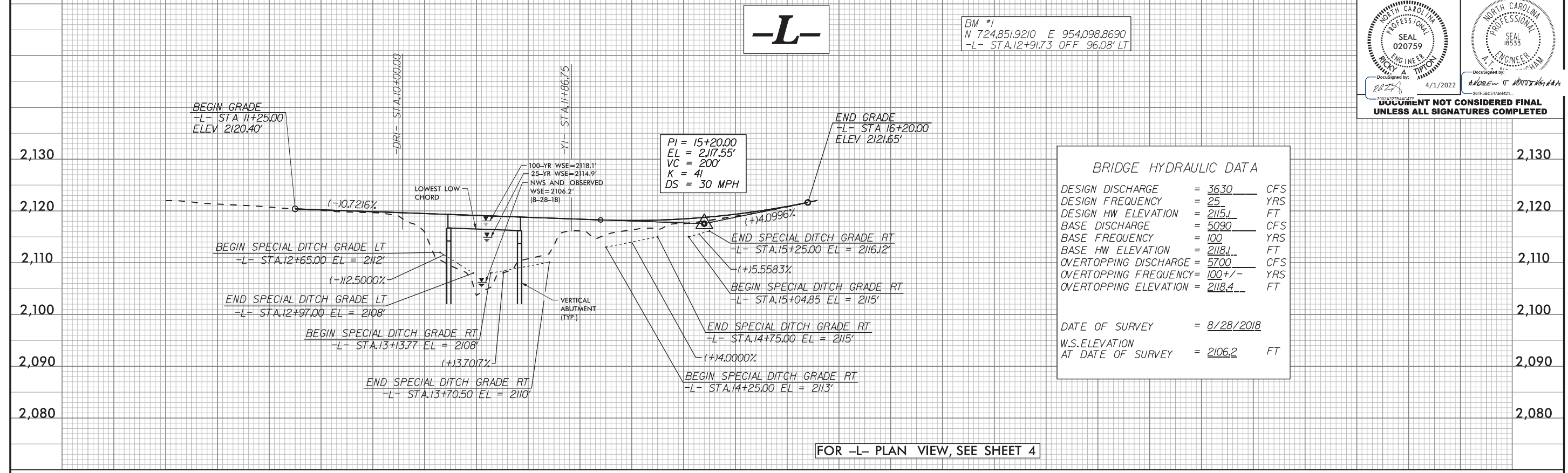
NOTE: RW MARKERS TO BE SET BY OTHERS



FOR -L- PROFILE SEE SHEET 5
FOR -YI- PROFILE SEE SHEET 5
FOR -DRI- PROFILE SEE SHEET 5
FOR BRIDGE PLAN SEE SHEET S-1

5/28/99

PROJECT REFERENCE NO. 17BP.13.R.192	SHEET NO. 5
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 020759 RICKY A. TIPTON	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 18533 A.T. ENGINEER
<p>DocuSigned by: <i>[Signature]</i> 4/1/2022</p> <p>DocuSigned by: <i>[Signature]</i> 284F80C1A8421</p>	
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	



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STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

TRANSPORTATION MANAGEMENT PLAN

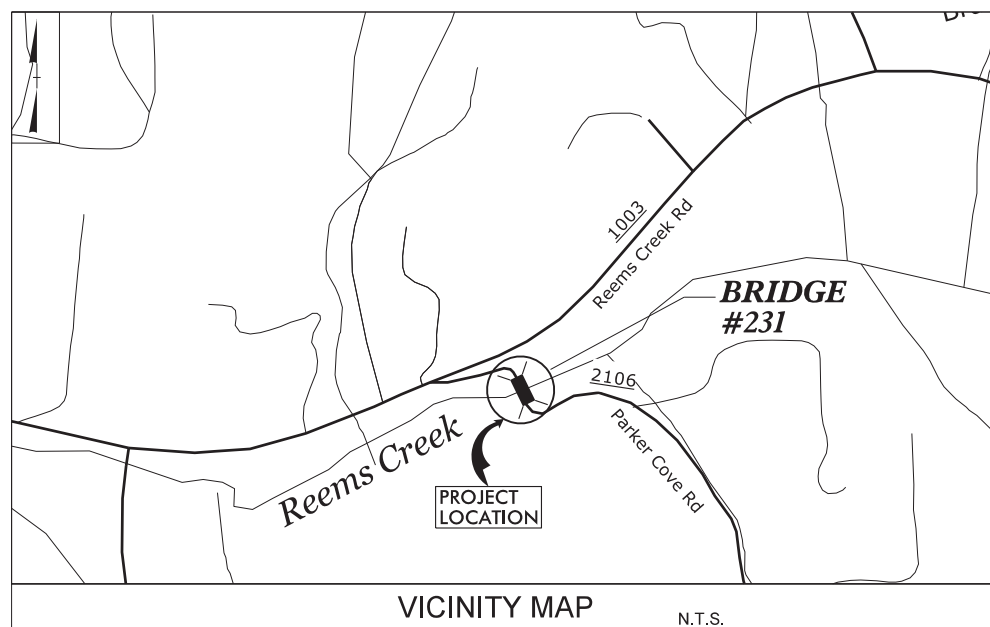
BUNCOMBE COUNTY

DIVISION 13



LOCATION: REPLACEMENT OF BRIDGE NO. 231 OVER REEMS CREEK ON SR 2106 (PARKER COVE ROAD)

TYPE OF WORK: TRAFFIC MANAGEMENT FOR BRIDGE REPLACEMENT



INDEX OF SHEETS

<u>SHEET NO.</u>	<u>TITLE</u>
TMP-1	TITLE SHEET, INDEX OF SHEETS, VICINITY MAPS AND TRAFFIC MANAGEMENT STRATEGY
TMP-2	LIST OF ROADWAY STANDARD DRAWINGS, TRAFFIC CONTROL PHASING AND LEGEND
TMP-3	GENERAL NOTES
TMP-4 THRU TMP-8	PHASING DETAILS

SHEET NO.
TMP-1

TRAFFIC MANAGEMENT STRATEGY

The construction of the proposed bridge and realigned SR 2106 (Parker Cove Road) will be performed using temporary lane closures.

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

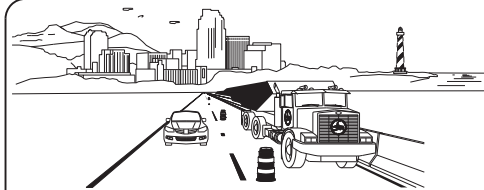
APPROVED: 

DATE: 4/1/2022

PLANS PREPARED BY:



One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 420-7660
NC Lic. No. F-0270



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

N.C.D.O.T. WORK ZONE TRAFFIC CONTROL
1561 MAIL SERVICE CENTER (MSC) RALEIGH, NC 27699-1561
750 N. GREENFIELD PARKWAY, GARNER, NC 27529 (DELIVERY)
PHONE: (919) 814-5000 FAX: (919) 771-2745

J. E. Hummer, PhD, PE STATE TRAFFIC MANAGEMENT ENGINEER

Ricky A. Tipton, PLS, PE TRAFFIC CONTROL PROJECT ENGINEER

Benjamin A. White, PE TRAFFIC CONTROL PROJECT DESIGN ENGINEER

TRAFFIC CONTROL DESIGN ENGINEER



PROJECT: 17BP.13.R.192

3/31/2022
pw:\gfn\pw.bentley.com\gfn\pw-0\Documents\Projects\63639\Task 012 Parker Cove Road\Traffic\TrafficControl\TCP\17BP.13.R.192_TMP 1-3.dgn
User: angillespie

ROADWAY STANDARD DRAWINGS

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

STD. NO.	TITLE
1101.01	WORK ZONE ADVANCE WARNING SIGNS
1101.02	TEMPORARY LANE CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1130.01	DRUMS
1150.01	FLAGGING DEVICES
1205.01	PAVEMENT MARKINGS LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS DIVIDED AND UNDIVIDED ROADWAYS
1205.12	PAVEMENT MARKINGS BRIDGES

LEGEND

GENERAL

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

TRAFFIC CONTROL DEVICES

- DRUMS
- FLAGGER

PAVEMENT MARKINGS

- EXISTING LINES
- TEMPORARY LINES

TEMPORARY SIGNING

- STATIONARY SIGN

PHASING

PROJ. REFERENCE NO.	SHEET NO.
17BP.13.R.192	TMP-2

PHASE 1

USING ROADWAY STANDARD DRAWING NO 1101.01 (SHEET 3 OF 3), PLACE WORK ZONE ADVANCE WARNING SIGNS.

WHILE MAINTAINING THE EXISTING TRAFFIC PATTERNS ON PARKER COVE ROAD AND WATER LEAF DRIVE, GRADE AND CONSTRUCT THE PROPOSED PAVEMENT ALONG THE PROPOSED PARKER COVER ROAD UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM STA 12+45± -L- TO STA 13+75± -L- AND FROM STA 14+15± -L- TO STA 14+65± -L-.

CONSTRUCT THE PROPOSED BRIDGE OVER REEMS CREEK.

SEE SHEET TMP-4.

PHASE 2

USING ROADWAY STANDARD DRAWING 1101.02 (SHEET 1 OF 14), ALTERNATING LANES ON WATER LEAF DRIVE, CLOSE ONE LANE OF WATER LEAF DRIVE AND PLACE ONE-LANE, TWO-WAY TRAFFIC IN THE OTHER LANE. PLACE THE PROPOSED WEDGING AND PAVEMENT UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM STA 10+20 -Y1- TO THE LEFT EDGE OF PAVEMENT OF THE PROPOSED PARKER COVE ROAD AT STA 13+90± -L-.

PLACE TEMPORARY PAVEMENT OVER THE EXISTING WATER LEAF DRIVE PAVEMENT FROM THE LEFT EDGE OF PAVEMENT OF THE PROPOSED PARKER COVE ROAD AT STA 13+90± -L- TO THE EXISTING EDGE AND ELEVATION OF THE EXISTING PARKER COVER ROAD.

SEE SHEET TMP-5.

PHASE 3

ONCE THE CONTRACTOR BEGINS PHASE 3, HE SHALL WORK IN A CONTINUOUS MANNER UNTIL STEPS 1 THRU 3 ARE COMPLETE AND TWO-LANE, TWO-WAY TRAFFIC IS OPEN ON THE PROPOSED PARKER COVE ROAD.

STEP 1.

USING ROADWAY STANDARD DRAWING 1101.02 (SHEET 1 OF 14), PLACE ONE-LANE, TWO-WAY TRAFFIC IN THE EXISTING NORTHBOUND LANE OF PARKER COVE ROAD. GRADE AND CONSTRUCT THE PROPOSED SOUTHBOUND LANE OF PARKER COVE ROAD UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM STA 11+25 -L- TO STA 12+45± -L- AND FROM STA 14+65± -L- TO STA 16+20 -L-.

STEP 2.

USING ROADWAY STANDARD DRAWING 1101.02 (SHEET 1 OF 14), SHIFT ONE-LANE, TWO-WAY TRAFFIC TO THE PROPOSED SOUTHBOUND LANE OF PARKER COVE ROAD. GRADE AND CONSTRUCT THE PROPOSED NORTHBOUND LANE OF PARKER COVE ROAD UP TO BUT NOT INCLUDING THE FINAL LAYER OF SURFACE COURSE FROM STA 11+25 -L- TO STA 12+45± -L- AND FROM STA 14+65± -L- TO STA 16+20 -L-.

STEP 3.

PLACE TEMPORARY PAVEMENT MARKINGS (PAINT) IN THE FINAL PAVEMENT MARKING LOCATIONS AND OPEN THE PROPOSED PARKER COVE ROAD AND WATER LEAF DRIVE TO TWO-LANE, TWO-WAY TRAFFIC.

SEE SHEETS TMP-6 AND TMP-7.

PHASE 4

STEP 1.

USING ROADWAY STANDARD DRAWING 1101.02 (SHEET 1 OF 14), GRADE AND CONSTRUCT THE PROPOSED DRIVEWAY FROM THE PROPOSED PARKER COVE ROAD TO STA 11+40-DR1-.

STEP 2.

REMOVE THE REMAINING EXISTING PARKER COVE ROAD PAVEMENT AND BRIDGE OVER REEMS CREEK.

STEP 3.

USING ROADWAY STANDARD 1101.02. PLACE THE FINAL LAYER OF SURFACE COURSE AND FINAL PAVEMENT MARKINGS ON PARKER COVE ROAD FROM STA 11+25 -L- TO STA 16+20 -L- AND ALONG WATER LEAF DRIVE FROM STA 10+20 -Y1- TO PARKER COVE ROAD.

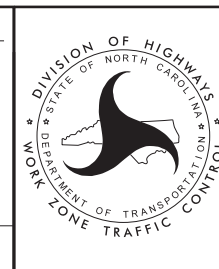
SEE SHEET TMP-8.

PLANS PREPARED BY:

Gannett Fleming
 Excellence Delivered As Promised
 One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 420-7160
 NC Lic. No. 0270

APPROVED:
 DATE: 4/1/2022

**DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED**



ROADWAY STANDARD
 DRAWINGS,
 LEGEND
 &
 TRAFFIC CONTROL
 PHASING

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 DURING HOLIDAYS AND SPECIAL EVENTS AS FOLLOWS:

ROAD NAME

ALL ROADS

HOLIDAY

1. FOR ANY UNEXPECTED OCCURRENCE THAT CREATES UNUSUALLY HIGH TRAFFIC VOLUMES, AS DIRECTED BY THE ENGINEER.
2. FOR NEW YEAR'S, BETWEEN THE HOURS OF 6:00 A.M. DECEMBER 31" TO 9:00 P.M. JANUARY 2ND. IF NEW YEAR'S DAY IS ON A FRIDAY, SATURDAY, SUNDAY, OR MONDAY THEN UNTIL 9:00 P.M. THE FOLLOWING TUESDAY.
3. FOR EASTER, BETWEEN THE HOURS OF 6:00 A.M. THURSDAY AND 9:00 P.M. MONDAY.
4. FOR MEMORIAL DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY TO 9:00 P.M. TUESDAY.
5. FOR INDEPENDENCE DAY, BETWEEN THE HOURS OF 6:00 A.M. THE DAY BEFORE INDEPENDENCE DAY AND 9:00 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 9:00 P.M. THE TUESDAY AFTER INDEPENDENCE DAY.

6. FOR LABOR DAY, BETWEEN THE HOURS OF 6:00 A.M. FRIDAY AND 9:00 P.M. TUESDAY.
7. FOR THANKSGIVING DAY, BETWEEN THE HOURS OF 6:00 A.M. TUESDAY TO 9:00 P.M. MONDAY.
8. FOR CHRISTMAS, BETWEEN THE HOURS OF 6:00 A.M. THE FRIDAY BEFORE THE WEEK OF CHRISTMAS DAY AND 9:00 P.M. THE FOLLOWING TUESDAY AFTER THE WEEK OF CHRISTMAS.

LANE AND SHOULDER CLOSURE REQUIREMENTS

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

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

D) WHEN PERSONNEL AND/OR EQUIPMENT ARE WORKING WITHIN A LANE OF TRAVEL OF AN UNDIVIDED OR DIVIDED FACILITY, CLOSE THE LANE ACCORDING TO THE 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.

PAVEMENT EDGE DROP OFF REQUIREMENTS

E) 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 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.

F) 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

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

SIGNING

H) 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.

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

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

TRAFFIC CONTROL DEVICES

K) 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.


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

PAVEMENT MARKINGS AND MARKERS

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

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

3/31/2022
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User:angillespie

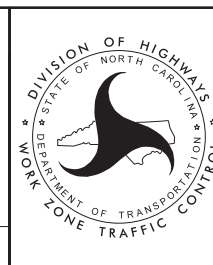
APPROVED: 
 DATE: 4/1/2022

SEAL

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SEAL 020759
 ENGINEER
 RICKY A. TIPTON

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GENERAL NOTES

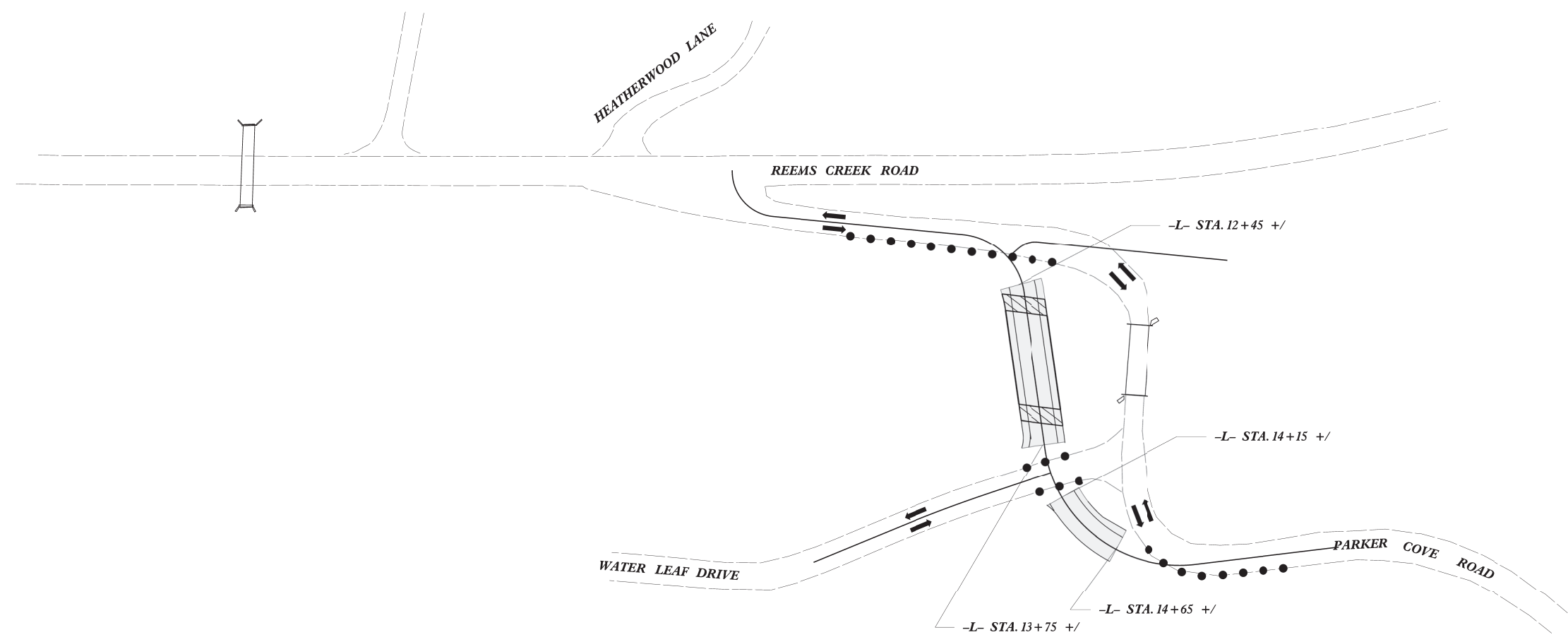
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PLANS PREPARED BY:
 **Gannett Fleming**
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7660
 NC Lic. No. F-6270



PROJECT REFERENCE NO. 17BP13.R.192	SHEET NO. TMP-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
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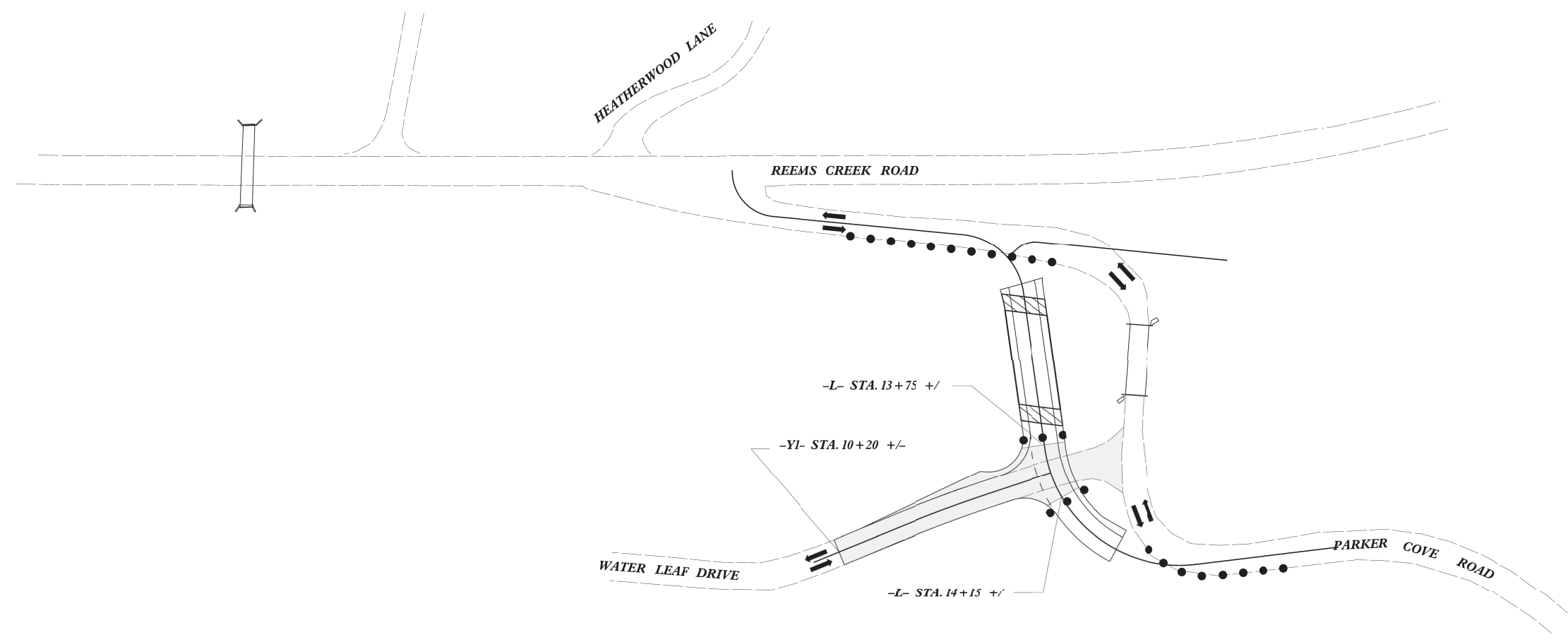


PHASE 1

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PLANS PREPARED BY:
Gannett Fleming
Excellence Delivered As Promised
One Glenwood Avenue
Suite 900
Raleigh, NC 27603
(919) 426-7660
NC Lic. No. F-6270

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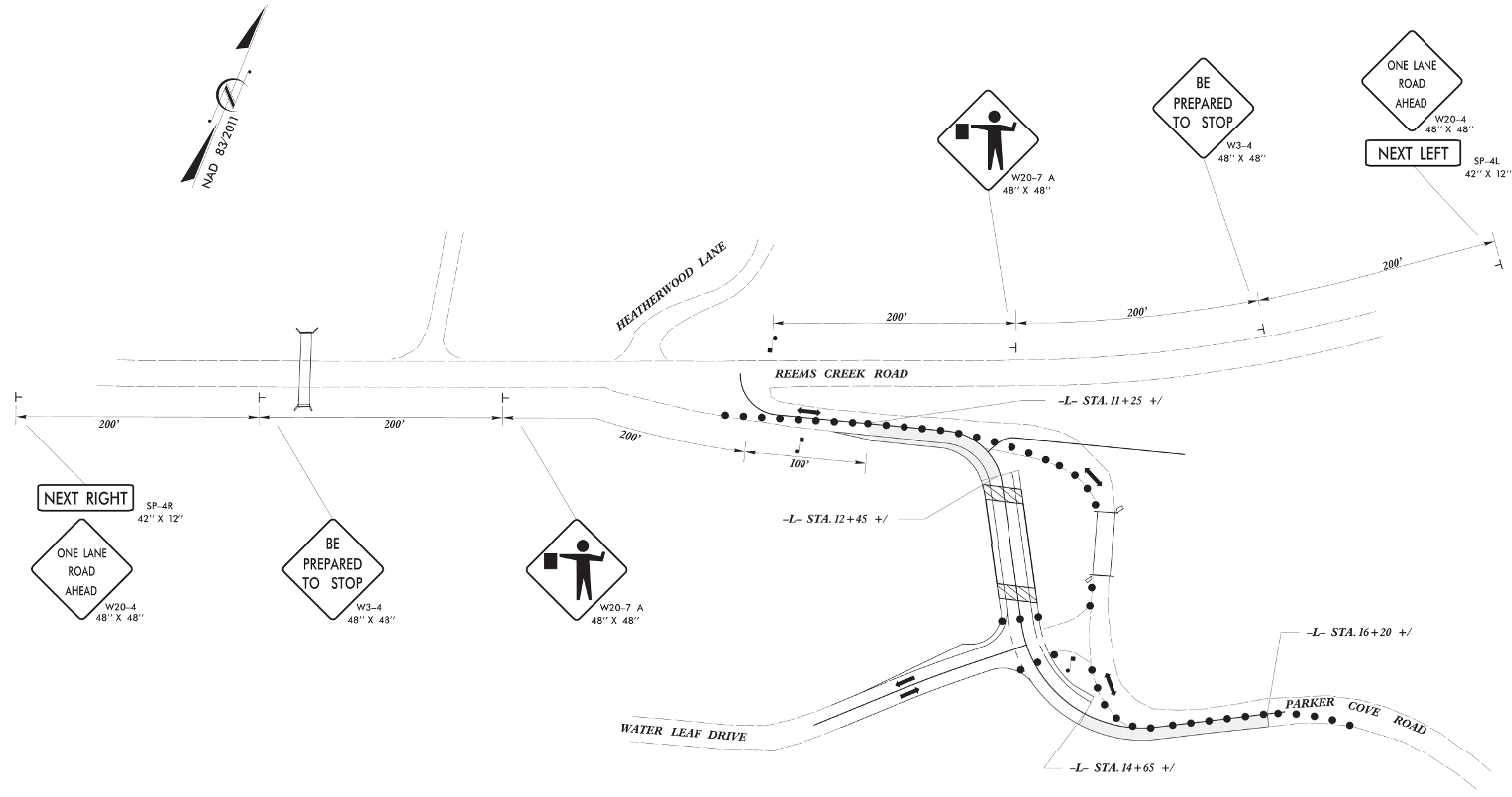
PHASE 2

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PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7660
 NC Lic. No. F-6270

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RW SHEET NO.	
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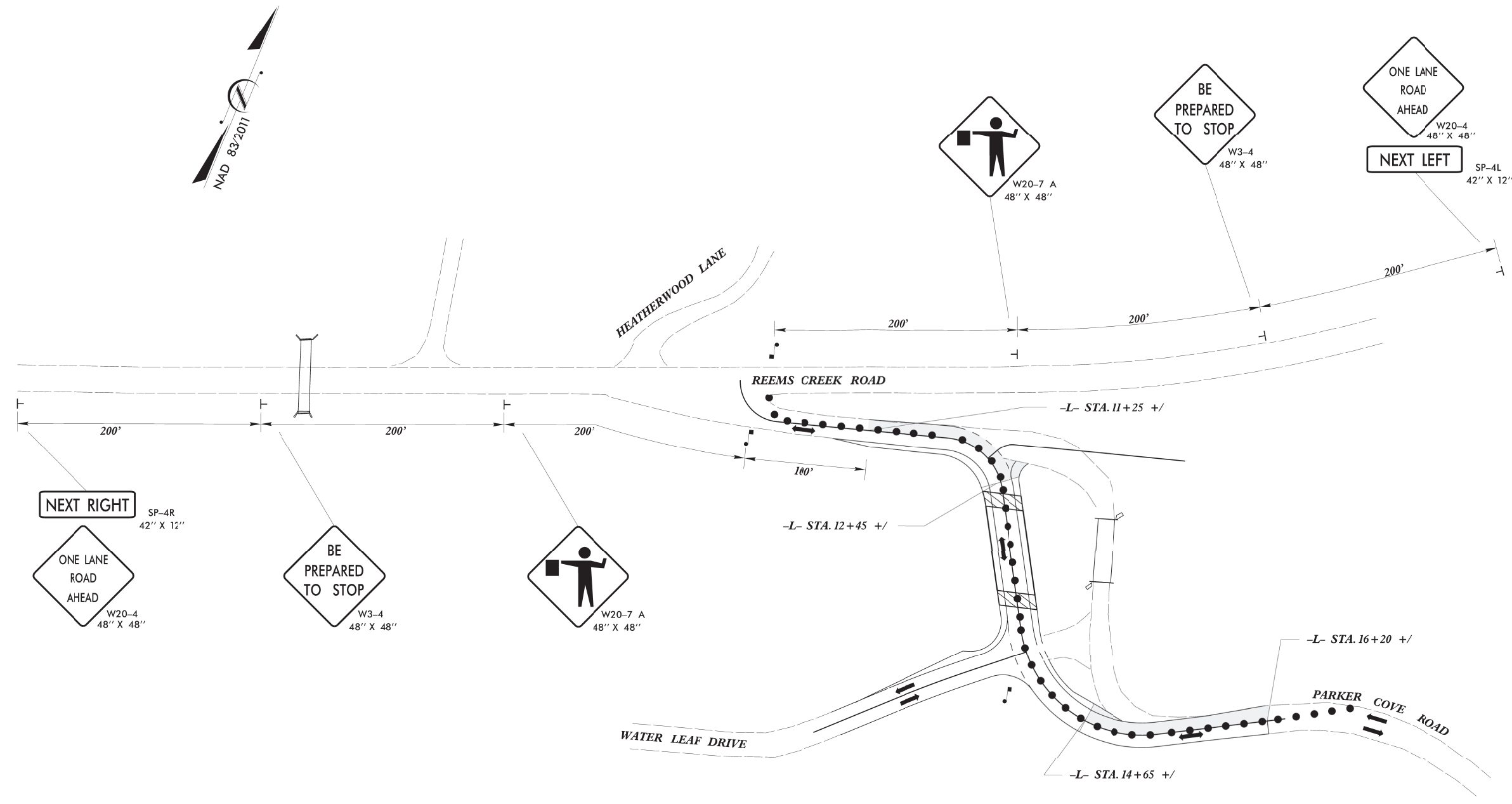
PHASE 3A

8/17/99

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered *As Promised*

One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7660
 NC Lic. No. F-6270

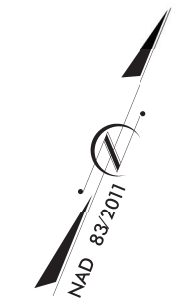
PROJECT REFERENCE NO. 17BP13.R.192	SHEET NO. TMP-7
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
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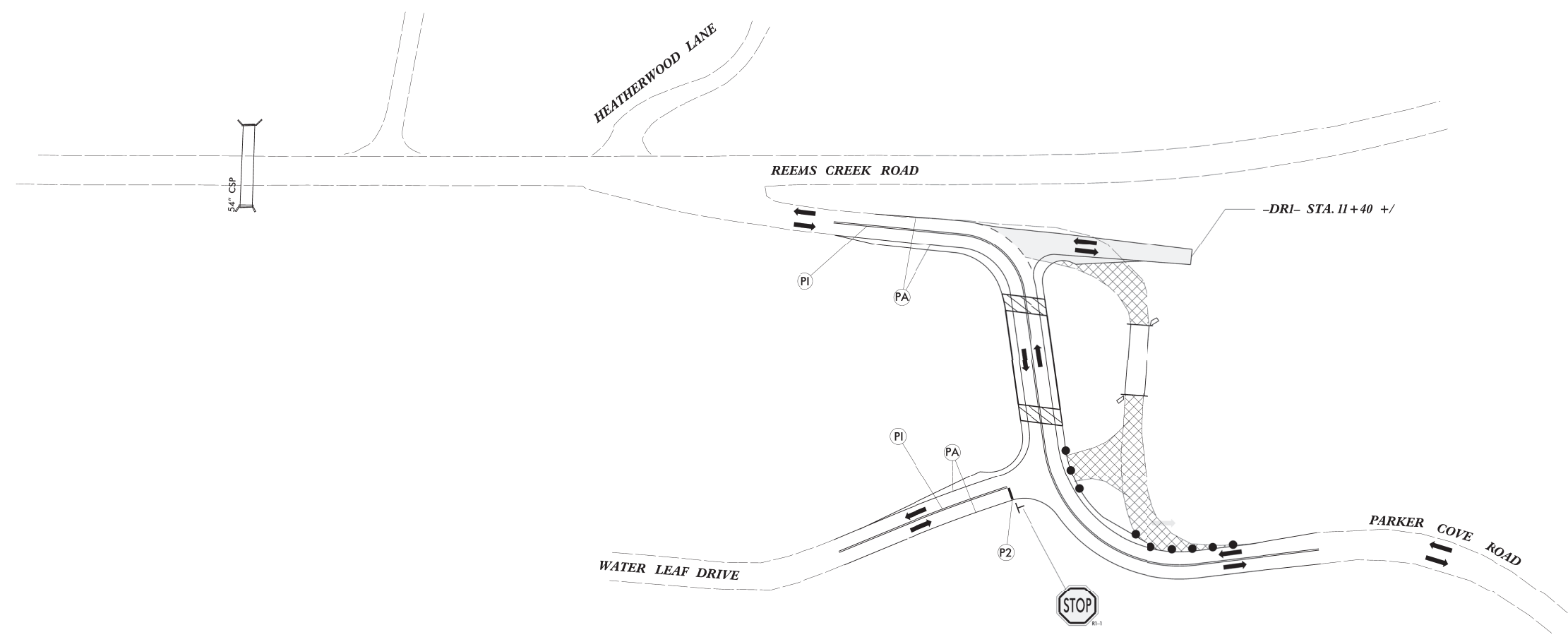
PHASE 3B

8/17/99

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised
 One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7660
 NC Lic. No. F-6270



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RW SHEET NO.	
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TEMPORARY PAVEMENT MARKING PLAN

SYMBOL	WIDTH	COLOR	MATERIAL	DESCRIPTION
P2	24"	WHITE	PAINT	STOPBAR
P1	4"	YELLOW	PAINT	DOUBLE CENTER
PA	4"	WHITE	PAINT	EDGE LINE

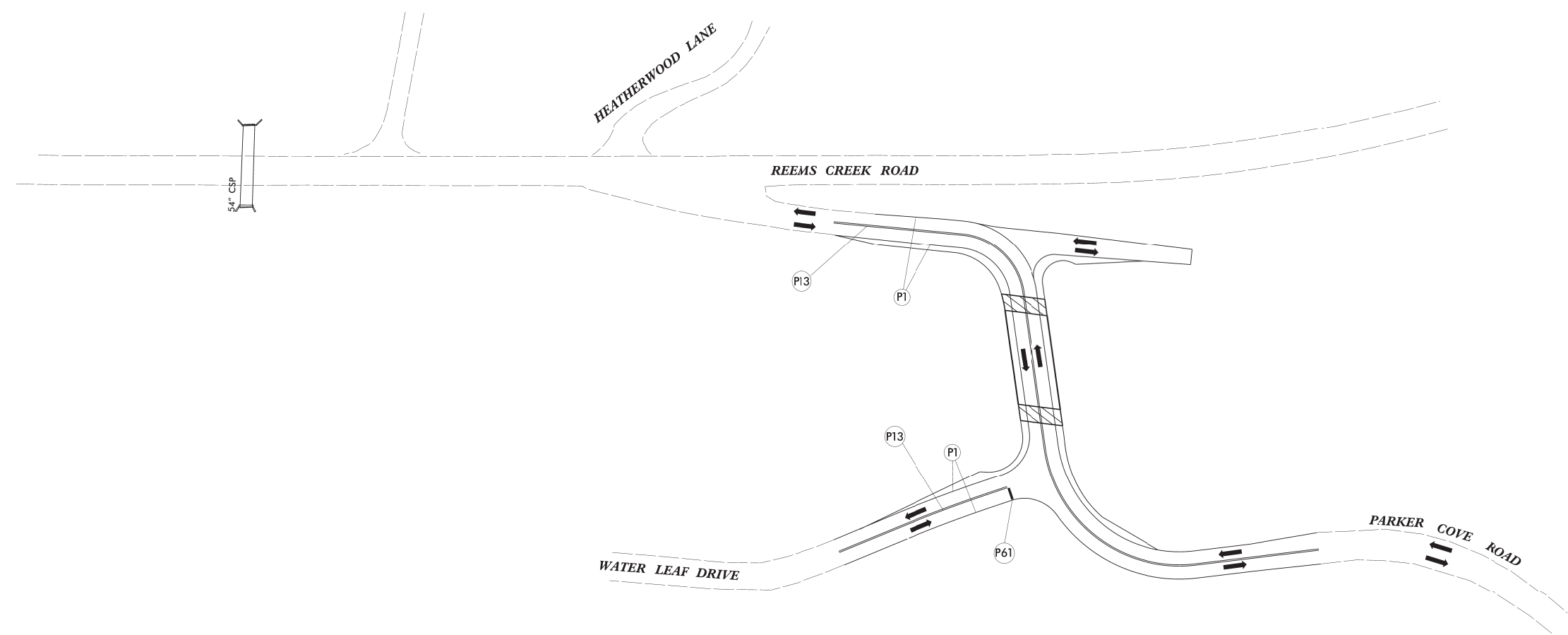
PHASE 4

8/17/99

PLANS PREPARED BY:
Gannett Fleming
 Excellence Delivered As Promised

One Glenwood Avenue
 Suite 900
 Raleigh, NC 27603
 (919) 426-7660
 NC Lic. No. F-6270

PROJECT REFERENCE NO. 17BP13.R.192	SHEET NO. PMP-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
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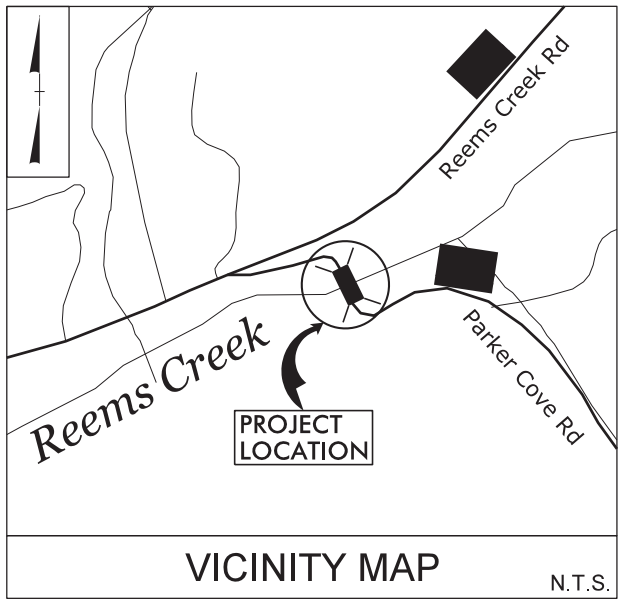


PAVEMENT MARKING PLAN

SYMBOL	WIDTH	COLOR	MATERIAL	DESCRIPTION	QUANTITIES
P1	4"	WHITE	PAINT	EDGE LINE	1300 LF
P13	4"	YELLOW	PAINT	DOUBLE CENTER	1320 LF
P61	24"	WHITE	PAINT	STOPBAR	10 LF

TIP PROJECT: 17BP.13.R.192

See Sheet 1-A For Index of Sheets (Not Included)
See Sheet 1-B For Symbology Sheet



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
PLAN FOR PROPOSED
HIGHWAY EROSION CONTROL
BUNCOMBE COUNTY

**LOCATION: REPLACEMENT OF BRIDGE NO. 231 OVER
REEMS CREEK ON SR 2106 (PARKER COVE RD)**
**TYPE OF WORK: GRADING, DRAINAGE, PAVING, BRIDGE
AND PAVEMENT MARKINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.192	EC-01	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

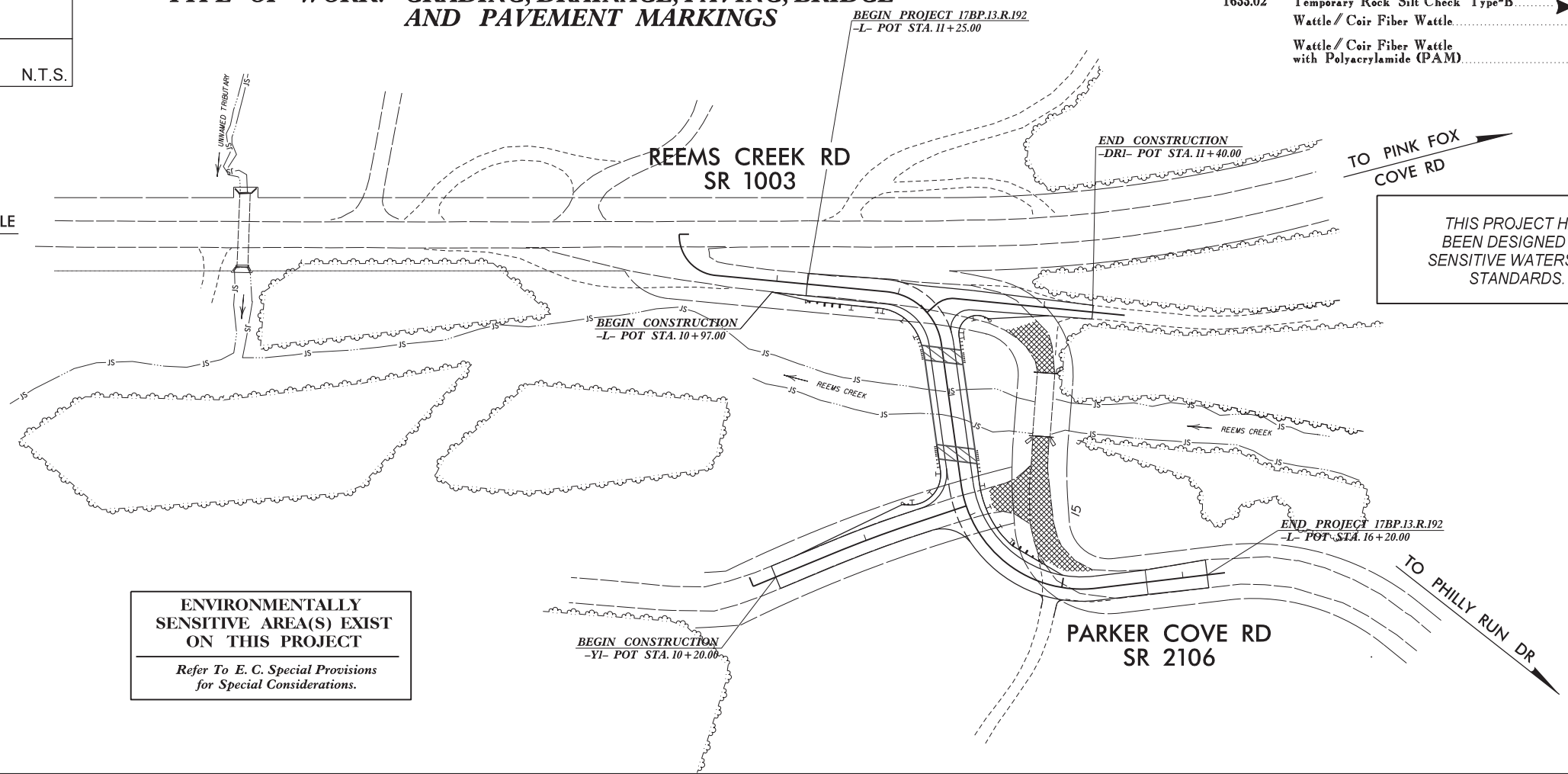
EROSION AND SEDIMENT CONTROL MEASURES

Std. #	Description	Symbol
1650.03	Temporary Silt Ditch	TD
1650.05	Temporary Diversion	TD
1605.01	Temporary Silt Fence	III III III
1606.01	Special Sediment Control Fence	△△△△△
1622.01	Temporary Berms and Slope Drains	→
1650.02	Silt Basin Type B	▨
1633.01	Temporary Rock Silt Check Type-A	⊗
	Temporary Rock Silt Check Type-A with Matting and Polyacrylamide (PAM)	⊗
1633.02	Temporary Rock Silt Check Type-B	⊗
	Wattle / Coir Fiber Wattle	→
	Wattle / Coir Fiber Wattle with Polyacrylamide (PAM)	⊗

- 1634.01 Temporary Rock Sediment Dam Type-A
- 1634.02 Temporary Rock Sediment Dam Type-B
- 1635.01 Rock Pipe Inlet Sediment Trap Type-A
- 1635.02 Rock Pipe Inlet Sediment Trap Type-B
- 1630.04 Stilling Basin
- 1630.06 Special Stilling Basin
- Rock Inlet Sediment Trap:
 - 1632.01 Type A
 - 1632.02 Type B
 - 1632.03 Type C
- Skimmer Basin
- Tiered Skimmer Basin
- Infiltration Basin

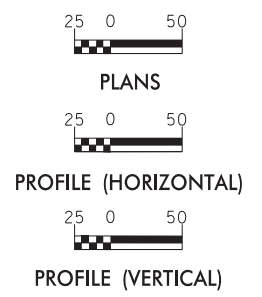
THIS PROJECT CONTAINS EROSION CONTROL PLANS FOR CLEARING AND GRUBBING PHASE OF CONSTRUCTION.

ENVIRONMENTALLY SENSITIVE AREA(S) EXIST ON THIS PROJECT
Refer To E. C. Special Provisions for Special Considerations.



THIS PROJECT HAS BEEN DESIGNED TO SENSITIVE WATERSHED STANDARDS.

GRAPHIC SCALE



THESE EROSION AND SEDIMENT CONTROL PLANS COMPLY WITH THE REGULATIONS SET FORTH BY THE NCG-010000 GENERAL CONSTRUCTION PERMIT EFFECTIVE AUGUST 1, 2016 AND ISSUED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES DIVISION OF WATER RESOURCES.

Prepared in the Office of:
MI ENGINEERING, PLLC
1011 SCHAUB DRIVE, SUITE 100
RALEIGH, NC 27606

Designed by:
KAREN HEFNER, PE 3824
NAME LEVEL III CERTIFICATION NO.

Reviewed in the Office of:
ROADSIDE ENVIRONMENTAL UNIT
1 South Wilmington St.
Raleigh, NC 27611

2018 STANDARD SPECIFICATIONS
Reviewed by:
REID WHITEHEAD, PE, CPESC

Roadway Standard Drawings

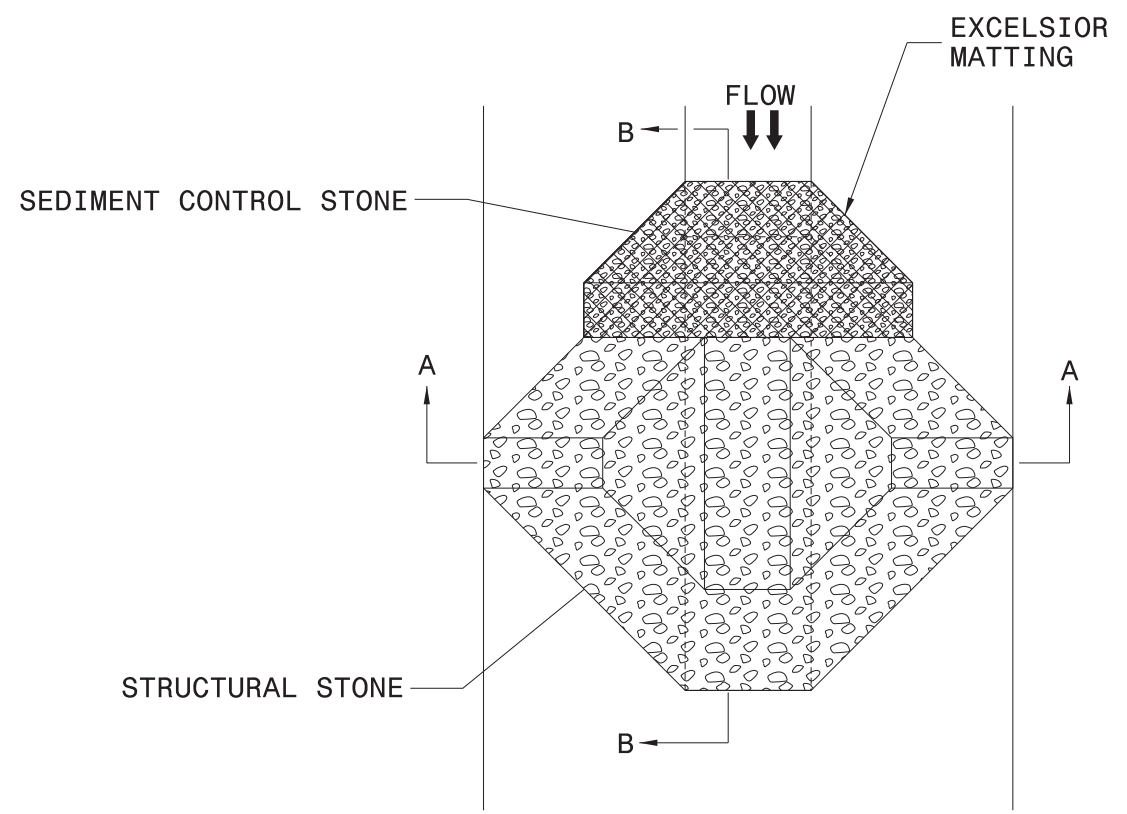
The following roadway english standards as appear in "Roadway Standard Drawings"- Roadway Design Unit - N. C. Department of Transportation - Raleigh, N. C., dated January 2018 and the latest revision thereto are applicable to this project and by reference hereby are considered a part of these plans.

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

21-MAR-2023 10:57 AM C:\ADD\17BP.13.R.192_EC.tsh.dgn

PROJECT REFERENCE NO. 17BP13.R.192	SHEET NO. EC-02
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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



PLAN

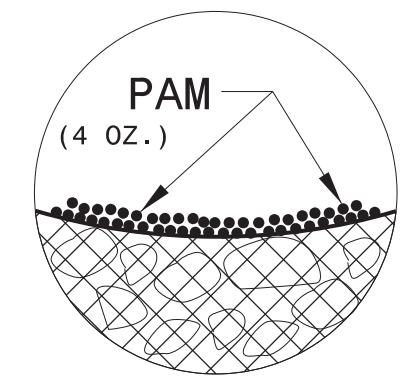
NOTES:

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

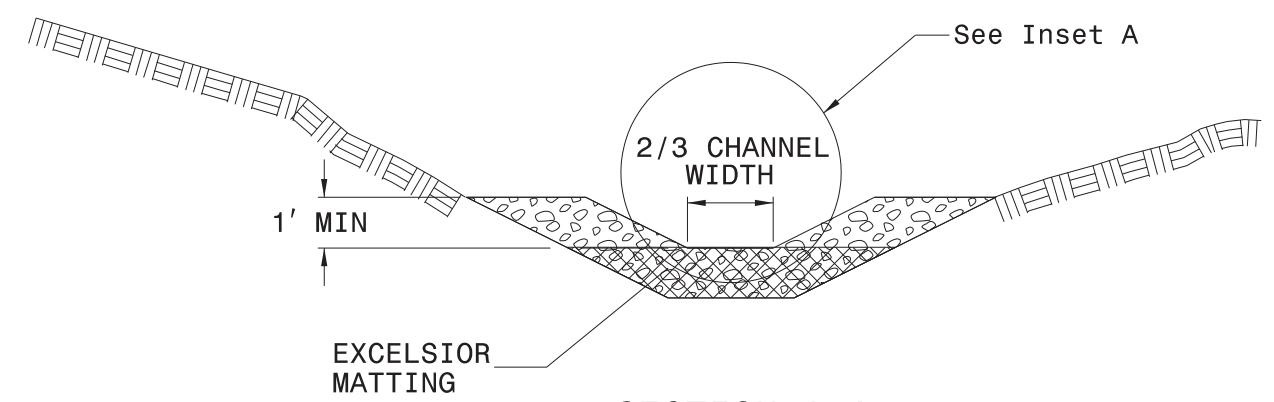
USE EXCELSIOR FOR MATTING MATERIAL AND ANCHOR MATTING SECTION AT TOP AND BOTTOM WITH CLASS B STONE.

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

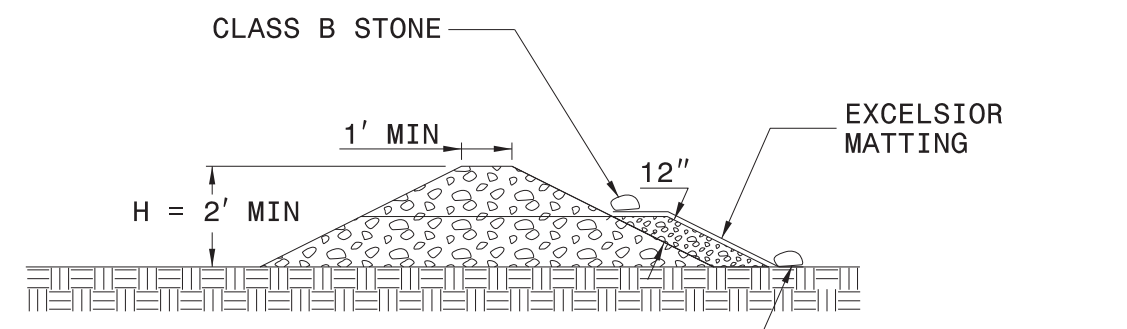
INITIALLY APPLY 4 OUNCES OF POLYACRYLAMIDE (PAM) TO TOP OF MATTING SECTION AND AFTER EVERY RAINFALL EVENT THAT EQUALS OR EXCEEDS 0.50 INCHES.



INSET A



SECTION A-A



SECTION B-B

NOT TO SCALE

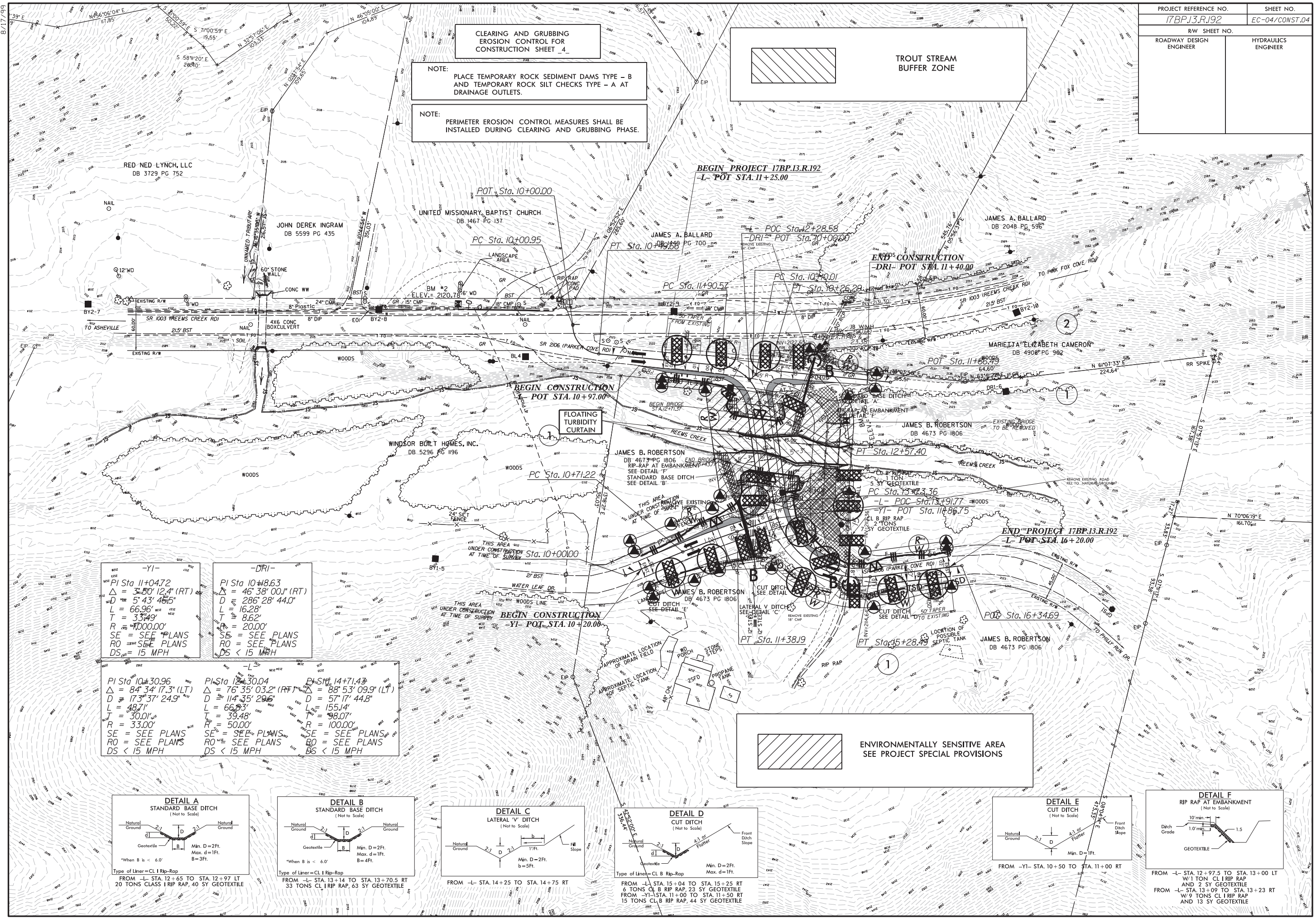
DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

PROJECT REFERENCE NO. 17BP.13.R.192	SHEET NO. EC-03
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

SOIL STABILIZATION TIMEFRAMES

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

PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.192	EC-04/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



CLEARING AND GRUBBING
EROSION CONTROL FOR
CONSTRUCTION SHEET 4

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

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

TROUT STREAM
BUFFER ZONE

BEGIN PROJECT 17BP.13.R.192
-L- POT STA. 11+25.00

JAMES A. BALLARD
DB 2048 PG 596

RED NED LYNCH, LLC
DB 3729 PG 752

JOHN DEREK INGRAM
DB 5599 PG 435

UNITED MISSIONARY BAPTIST CHURCH
DB 1467 PG 137

JAMES A. BALLARD
DB 700 PG 100

END CONSTRUCTION
-DRI- POT STA. 11+40.00

MARILETA ELIZABETH CAMERON
DB 4908 PG 982

BY2-7

CONC WW

POT Sta. 10+00.00
PC Sta. 10+00.95

PC Sta. 11+90.52

PC Sta. 10+10.01

BY2-10

EXISTING R/W

WOODS

SR 1003 (REEMS CREEK RD)

SR 2006 (PARKER COVE RD)

SR 1003 (REEMS CREEK RD)

WOODS

EXISTING R/W

WOODS

BEGIN CONSTRUCTION
-L- POT STA. 10+97.00

BEGIN BRIDGE
STA. 12+71.31

PC Sta. 10+10.01

WOODS

WOODS

WOODS

WINDSOR BUILT HOMES, INC.
DB 5296 PG 1196

JAMES B. ROBERTSON
DB 4673 PG 1806

PC Sta. 10+10.01

JAMES B. ROBERTSON
DB 4673 PG 1806

WOODS

WOODS

PC Sta. 10+71.22

JAMES B. ROBERTSON
DB 4673 PG 1806

PC Sta. 10+10.01

WOODS

WOODS

WOODS

BEGIN CONSTRUCTION
-YI- POT STA. 10+20.00

JAMES B. ROBERTSON
DB 4673 PG 1806

PC Sta. 10+10.01

END PROJECT 17BP.13.R.192
-L- POT STA. 16+20.00

-YI-
PI Sta 11+04.72

-DRI-
PI Sta 10+18.63

$\Delta = 3^{\circ} 50' 12.4" (RT)$
 $D = 5^{\circ} 43' 46.5"$
 $L = 66.96'$
 $T = 33.49'$
 $R = 1000.00'$
SE = SEE PLANS
RO = SEE PLANS
DS = 15 MPH

$\Delta = 46^{\circ} 38' 00.1" (RT)$
 $D = 286^{\circ} 28' 44.0"$
 $L = 16.28'$
 $T = 8.62'$
 $R = 20.00'$
SE = SEE PLANS
RO = SEE PLANS
DS < 15 MPH

-L-
PI Sta 10+30.96

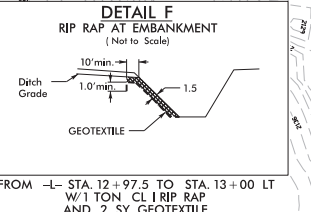
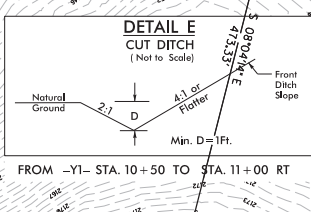
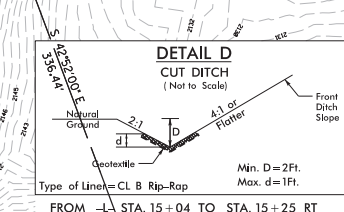
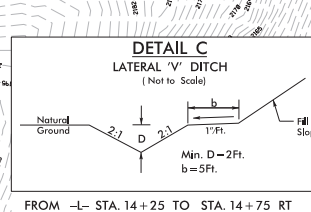
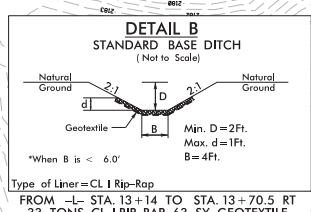
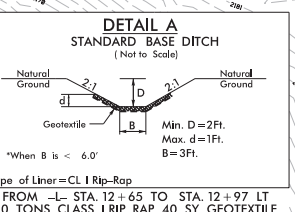
-L-
PI Sta 12+30.04

-L-
PI Sta 14+71.43

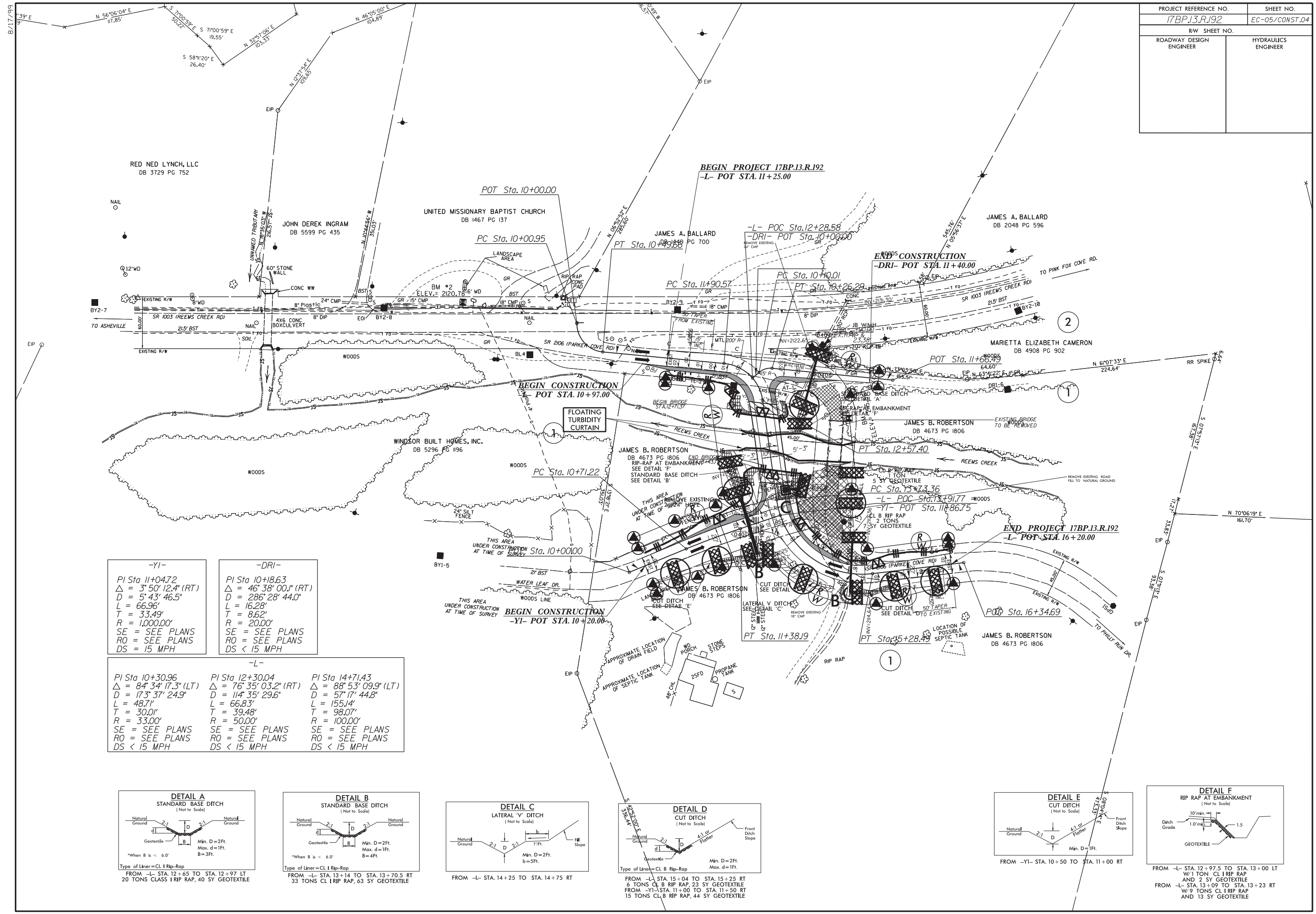
$\Delta = 84^{\circ} 34' 17.3" (LT)$
 $D = 173^{\circ} 37' 24.9"$
 $L = 48.71'$
 $T = 30.01'$
 $R = 33.00'$
SE = SEE PLANS
RO = SEE PLANS
DS < 15 MPH

$\Delta = 76^{\circ} 35' 03.2" (RT)$
 $D = 114^{\circ} 35' 29.6"$
 $L = 66.83'$
 $T = 39.48'$
 $R = 50.00'$
SE = SEE PLANS
RO = SEE PLANS
DS < 15 MPH

$\Delta = 88^{\circ} 53' 09.9" (LT)$
 $D = 57^{\circ} 17' 44.8"$
 $L = 155.14'$
 $T = 98.07'$
 $R = 100.00'$
SE = SEE PLANS
RO = SEE PLANS
DS < 15 MPH

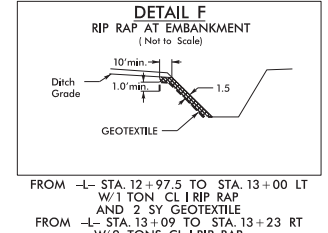
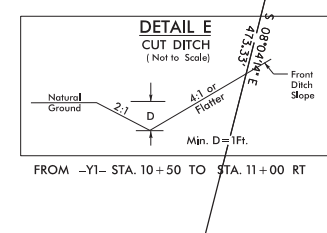
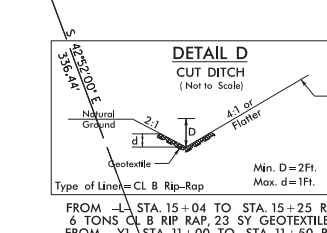
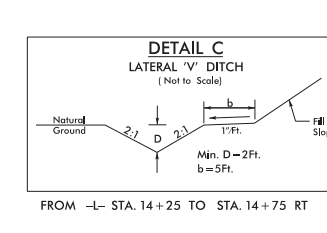
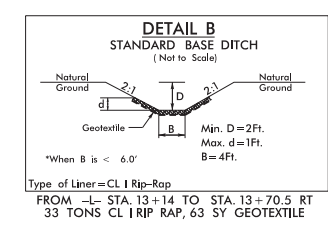
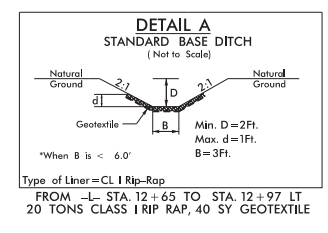


PROJECT REFERENCE NO.	SHEET NO.
17BP.13.R.192	EC-05/CONST.04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER



<p>-YI-</p> <p>PI Sta 11+04.72 $\Delta = 3' 50'' 12.4''$ (RT) D = 5' 43' 46.5" L = 66.96' T = 33.49' R = 1,000.00' SE = SEE PLANS RO = SEE PLANS DS = 15 MPH</p>	<p>-DRI-</p> <p>PI Sta 10+18.63 $\Delta = 46' 38'' 00.1''$ (RT) D = 286' 28' 44.0" L = 16.28' T = 8.62' R = 20.00' SE = SEE PLANS RO = SEE PLANS DS < 15 MPH</p>
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<p>-L-</p> <p>PI Sta 10+30.96 $\Delta = 84' 34'' 17.3''$ (LT) D = 173' 37' 24.9" L = 48.71' T = 30.01' R = 33.00' SE = SEE PLANS RO = SEE PLANS DS < 15 MPH</p>	<p>PI Sta 12+30.04 $\Delta = 76' 35'' 03.2''$ (RT) D = 114' 35' 29.6" L = 66.83' T = 39.48' R = 50.00' SE = SEE PLANS RO = SEE PLANS DS < 15 MPH</p>	<p>PI Sta 14+71.43 $\Delta = 88' 53'' 09.9''$ (LT) D = 57' 17' 44.8" L = 155.14' T = 98.07' R = 100.00' SE = SEE PLANS RO = SEE PLANS DS < 15 MPH</p>
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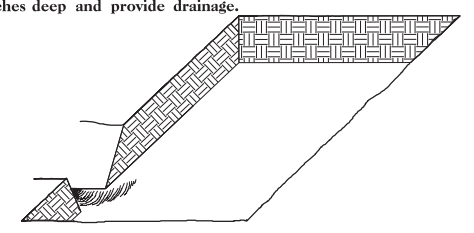
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	173P.13.R.192	RF-1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	

PLANTING DETAILS

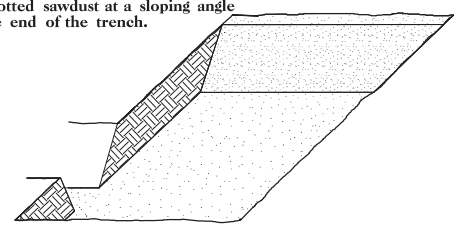
SEEDLING / LINER BAREROOT PLANTING DETAIL

HEALING IN

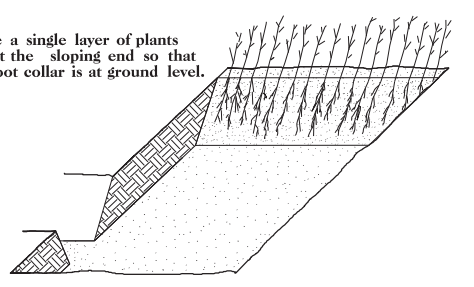
1. Locate a healing-in site in a shady, well protected area.
2. Excavate a flat bottom trench 12 inches deep and provide drainage.



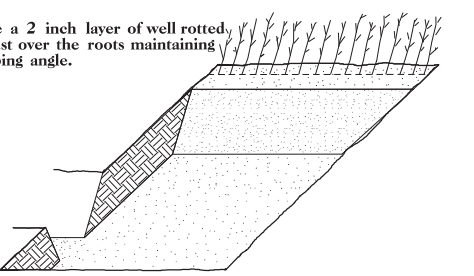
3. Jackfill the trench with 2 inches well rotted sawdust. Place a 2 inch layer of well rotted sawdust at a sloping angle at one end of the trench.



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

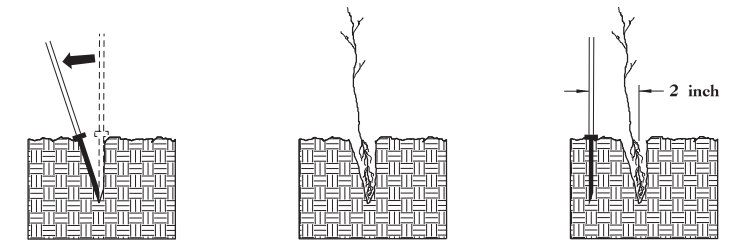


5. Place a 2 inch layer of well rotted sawdust over the roots maintaining a sloping angle.

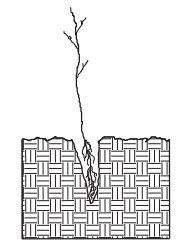


6. Repeat layers of plants and sawdust as necessary and water thoroughly.

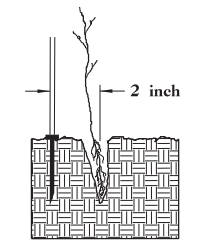
DOUBLE PLANTING METHOD USING THE K3C PLANTING BAR



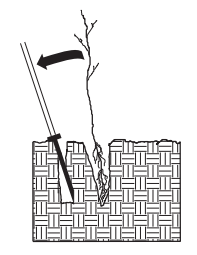
1. Insert planting bar as shown and pull handle toward planter.



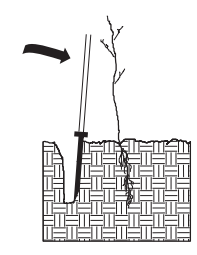
2. Remove planting bar and place seedling at correct depth.



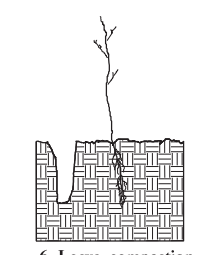
3. Insert planting bar 2 inches toward planter from seedling.



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



5. Push handle forward firming soil at top.



6. Leave compaction hole open. Water thoroughly.

PLANTING NOTES:

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



K3C PLANTING BAR
Planting bar shall have a blade with a triangular cross section, and shall be 12 inches long, 4 inches wide and 1 inch thick at center.



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

REFORESTATION

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

REFORESTATION

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

25% LIRIODENDRON TULIPIFERA	TULIP POPLAR	12 in - 18 in 3R
25% PLATANUS OCCIDENTALIS	AMERICAN SYCAMORE	12 in - 18 in 3R
25% FRAXINUS PENNSYLVANICA	GREEN ASH	12 in - 18 in 3R
25% BETULA NIGRA	RIVER BIRCH	12 in - 18 in 3R

REFORESTATION DETAIL SHEET

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

5/28/99

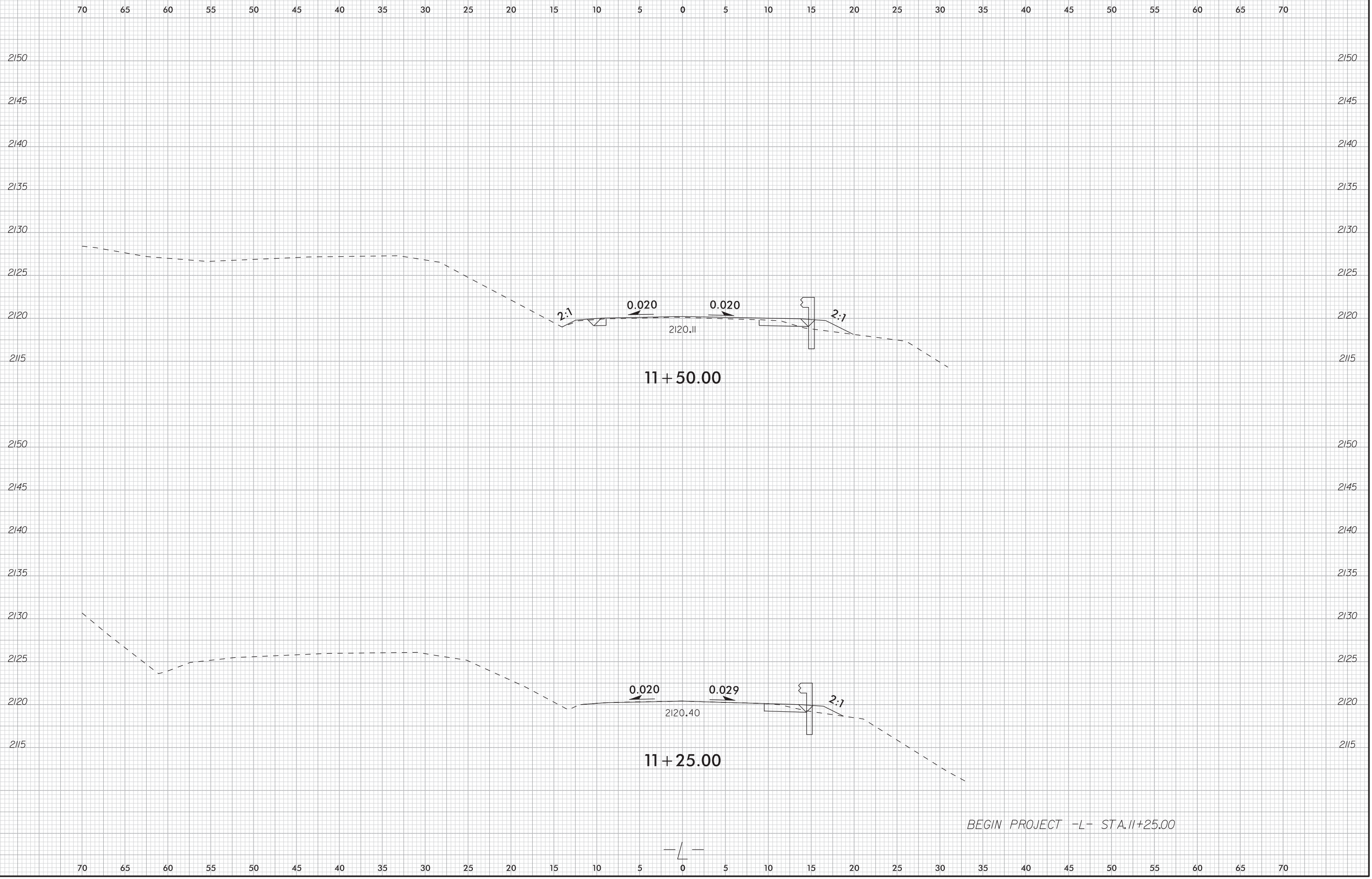
CROSS SECTION INDEX

<u>ROADWAY</u>	<u>STATION</u>	<u>TO</u>	<u>STATION</u>	<u>SHEET NO.</u>
CROSS SECTION INDEX				X-A
CROSS SECTION SUMMARY				X-1A
-L- PARKER COVE RD	11 + 50.00		16 + 20.00	X-1 X-8
-Y1- WATER LEAF DR	10 + 20.00		11 + 50.00	X-9 X-11
-DR1-	10 + 50.00		11 + 40.00	X-12 X-14

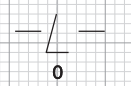
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6/23/16

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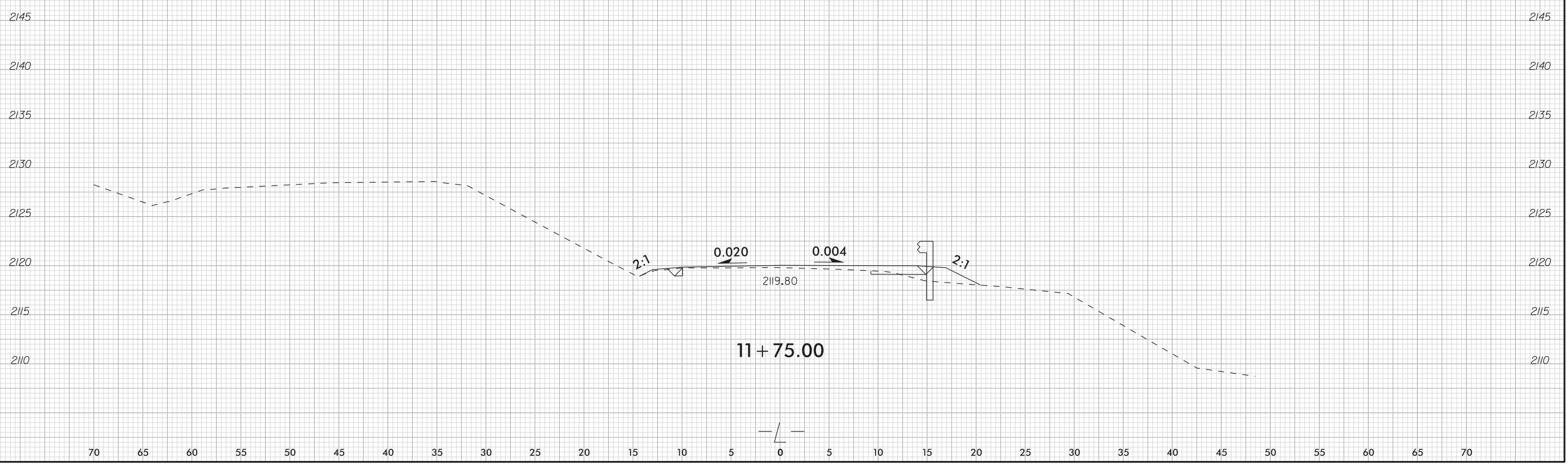
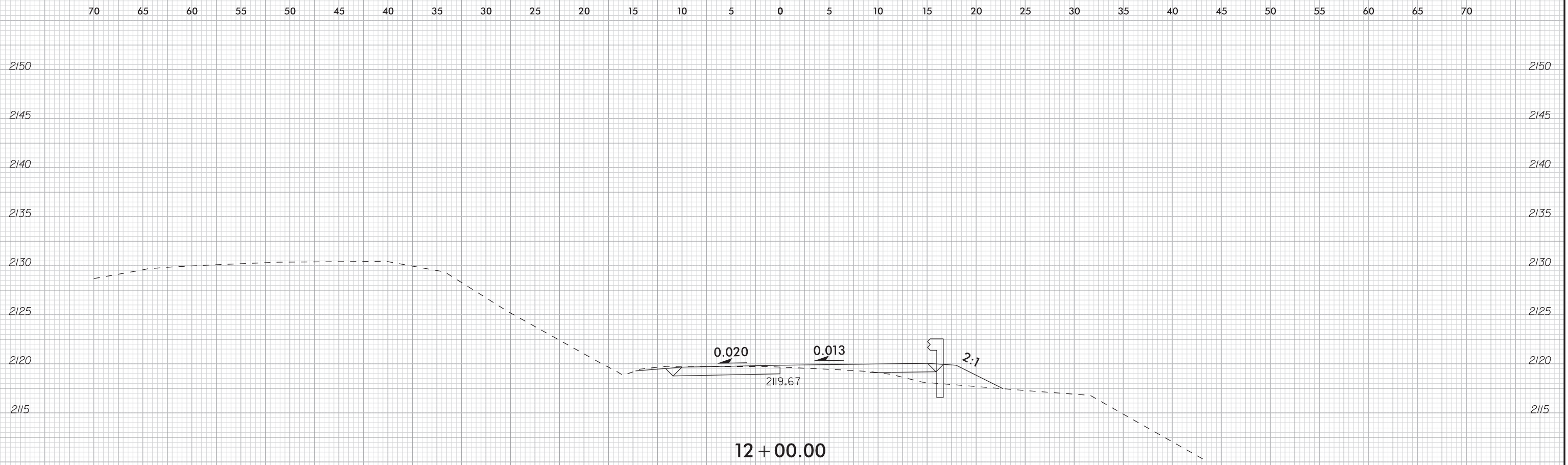


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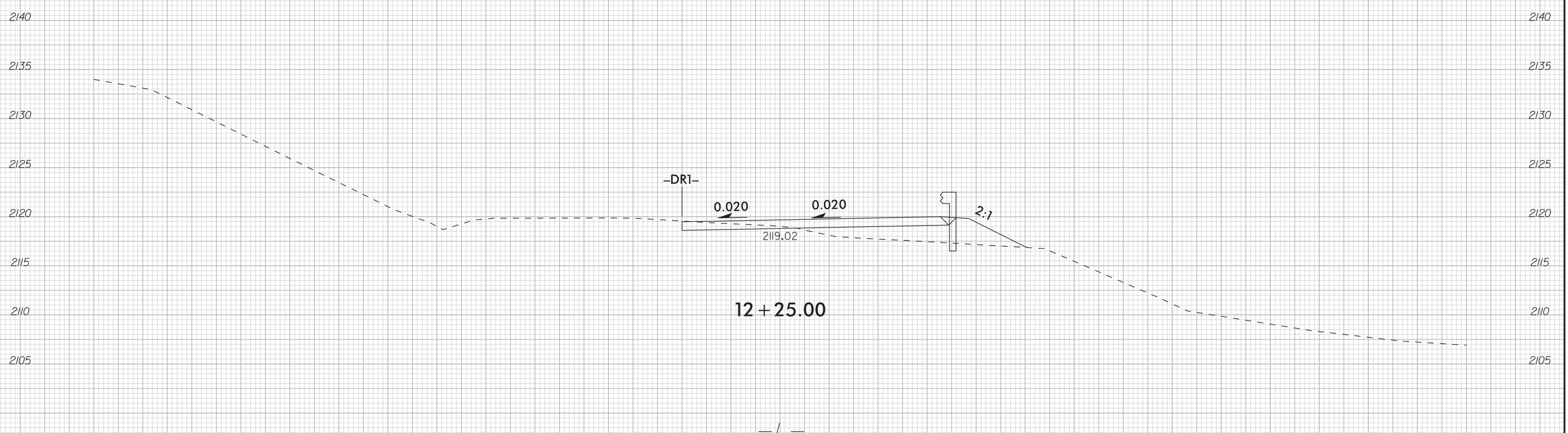
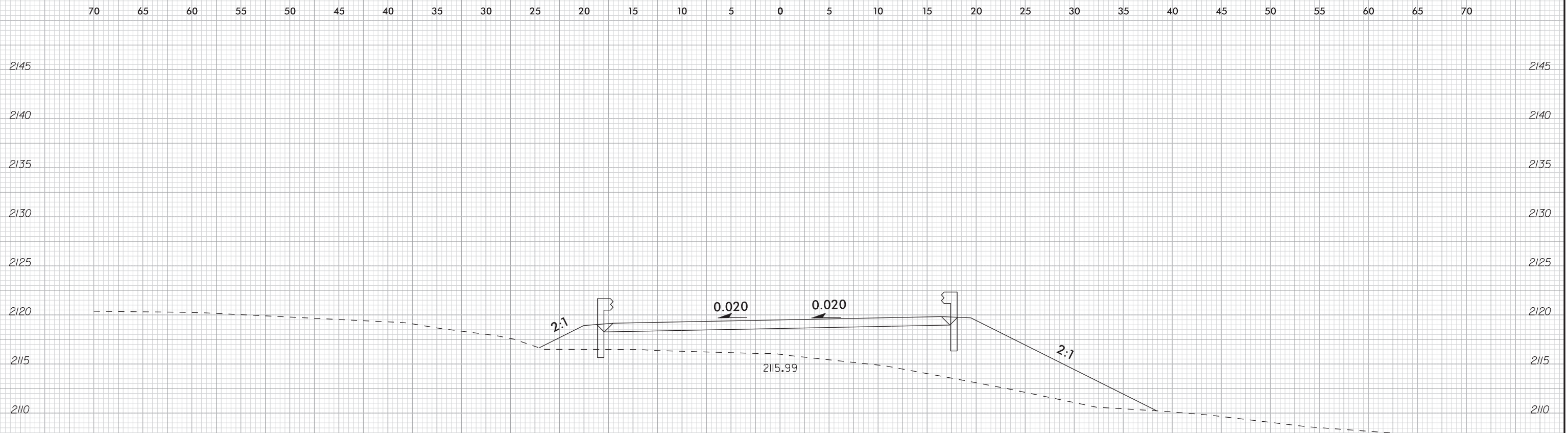
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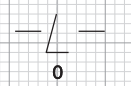
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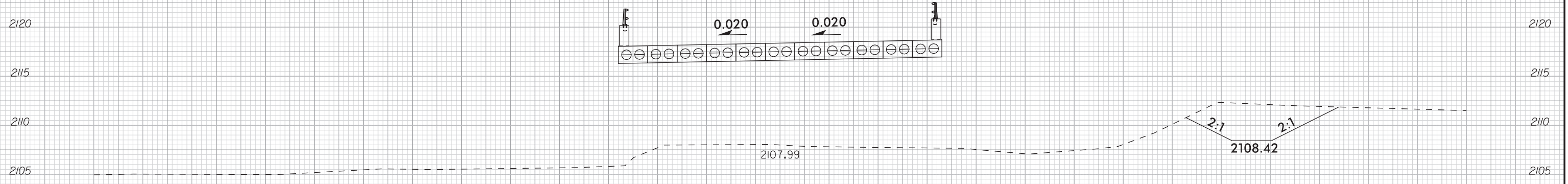
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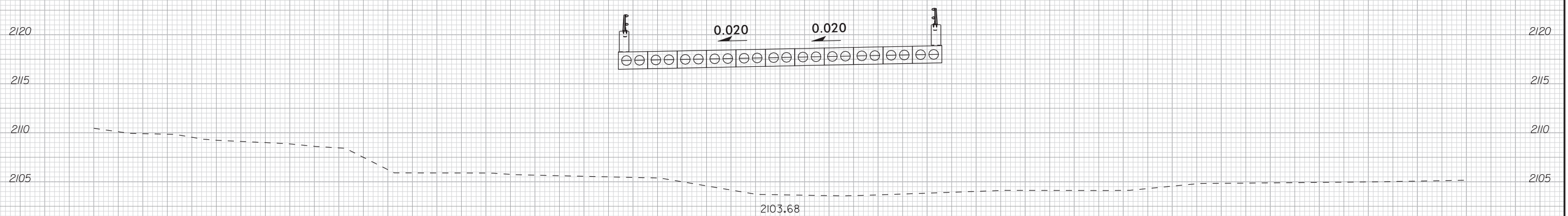
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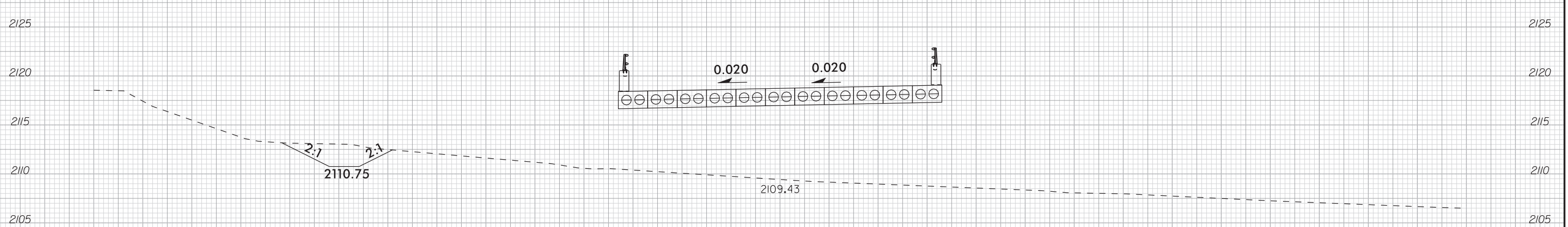
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13+25.00



13+00.00



12+75.00

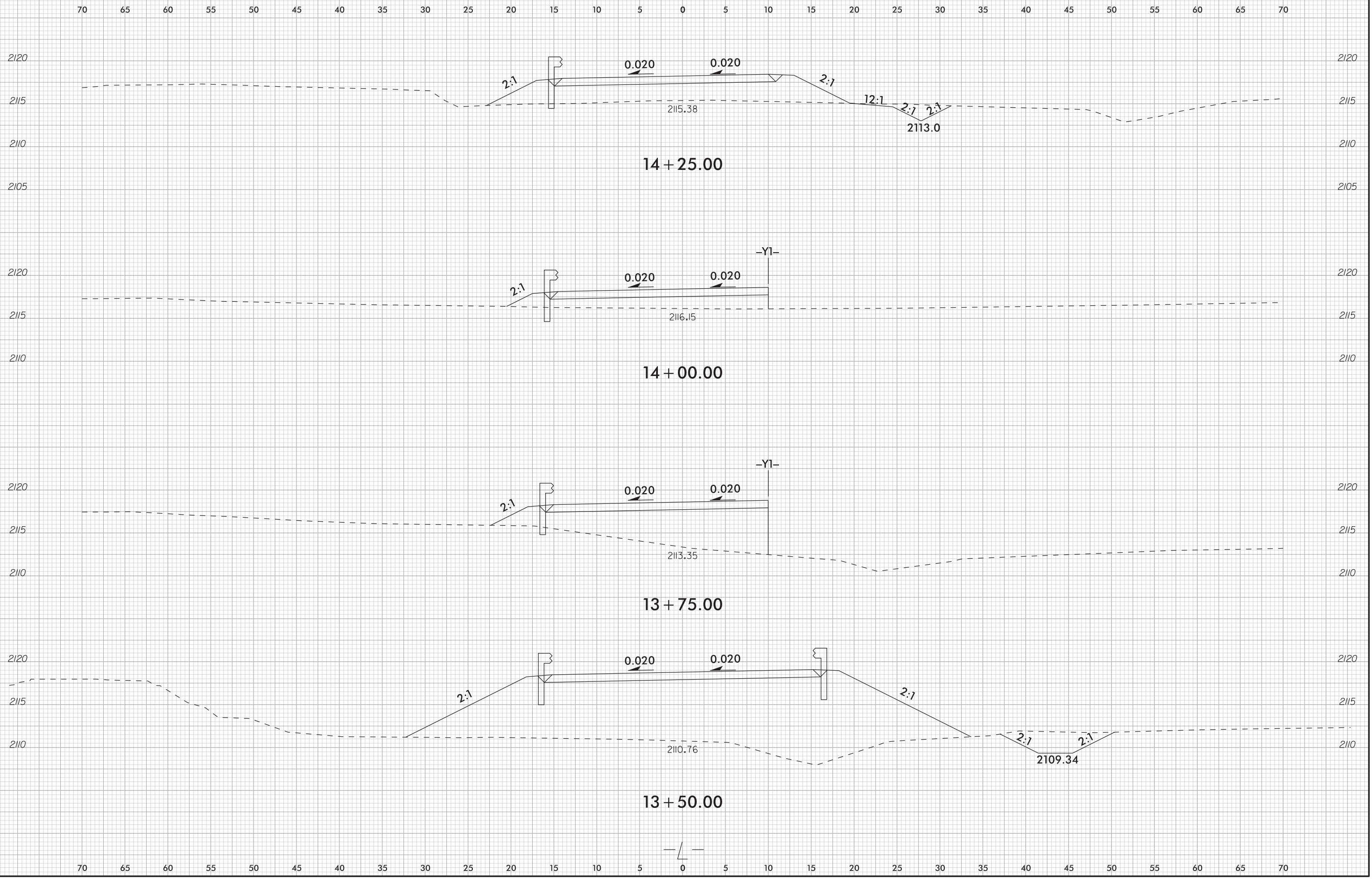
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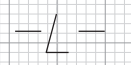
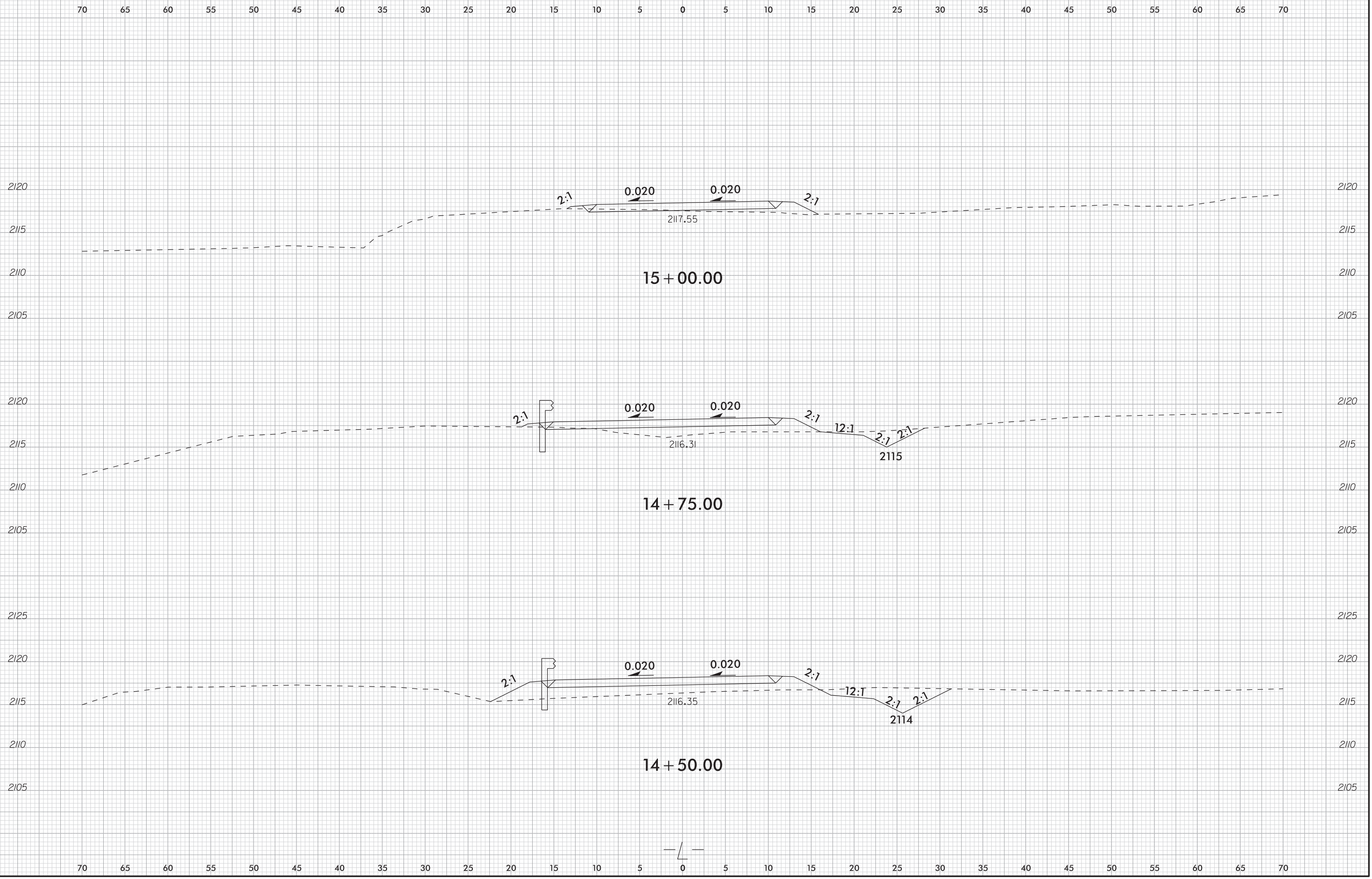
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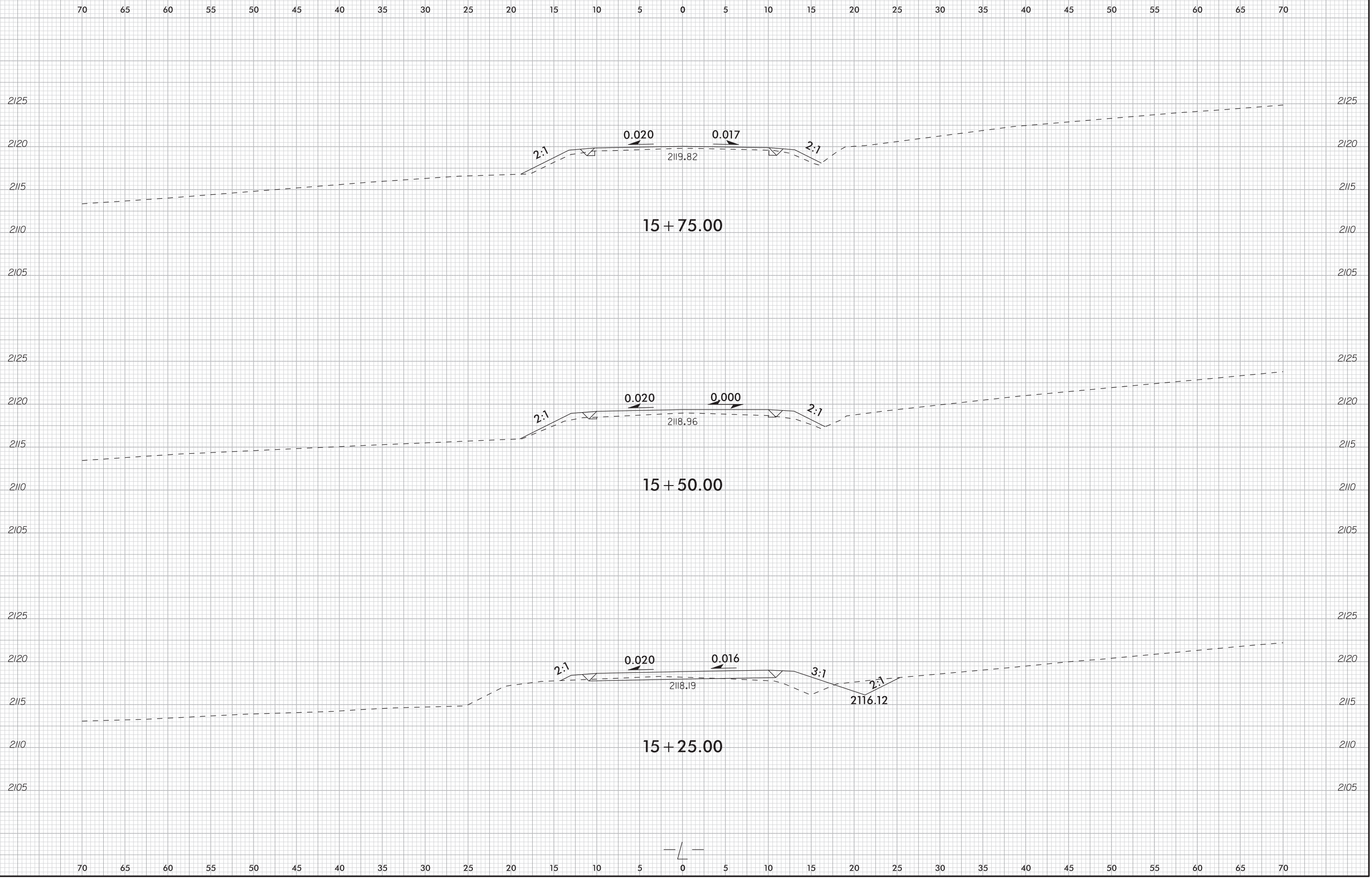


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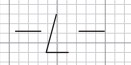


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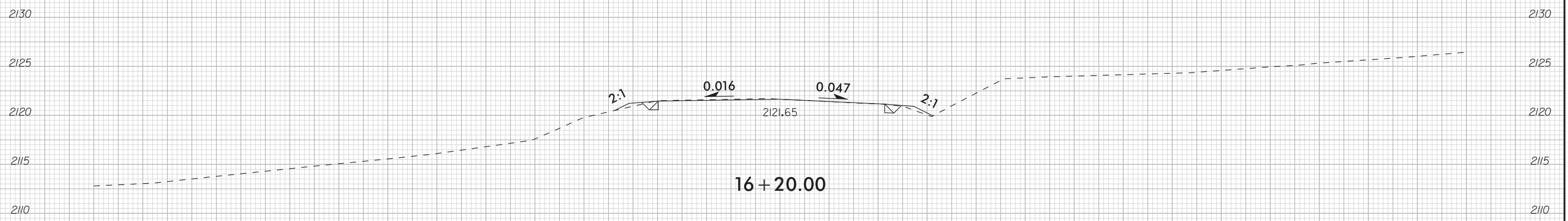
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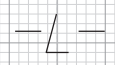
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16 + 20.00



16 + 00.00



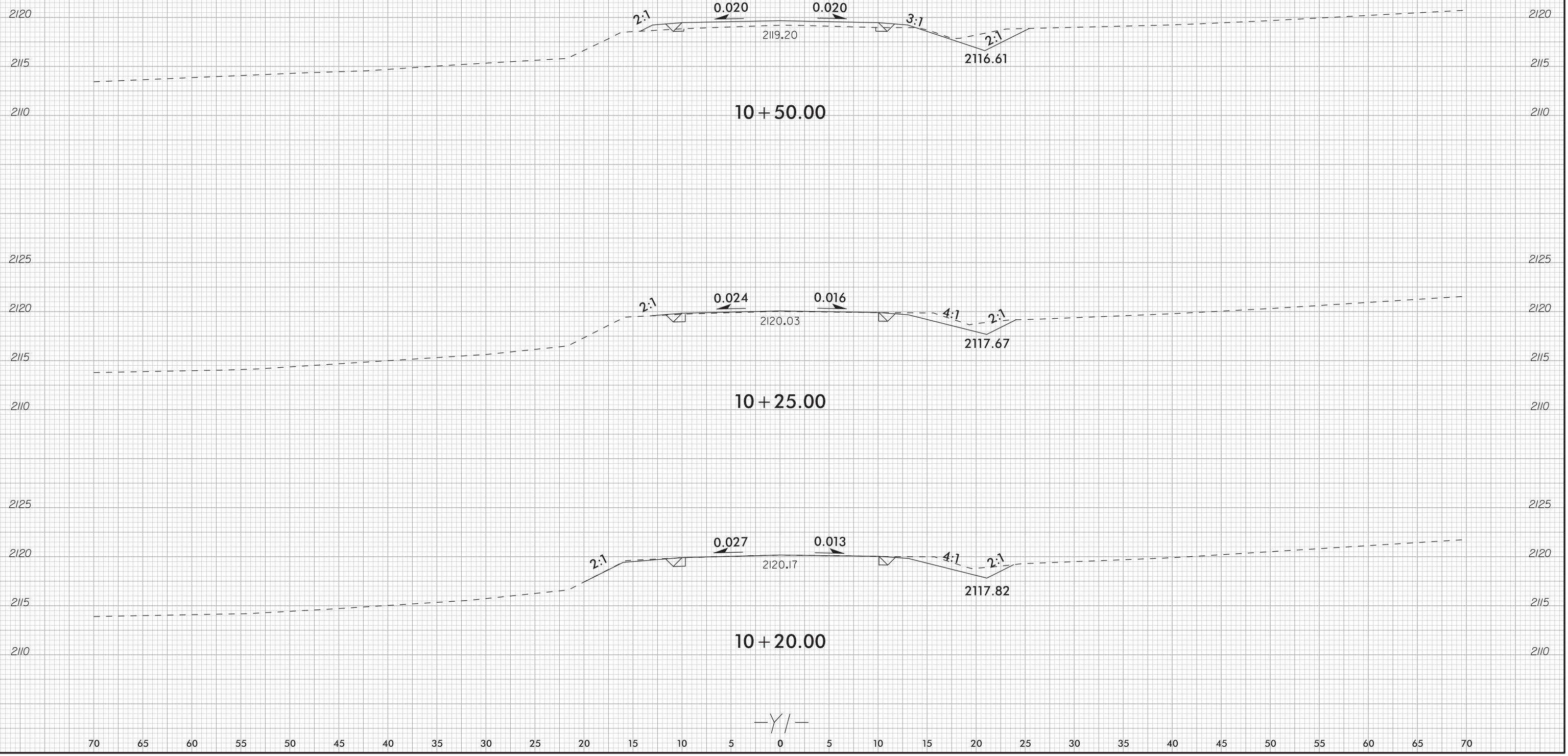
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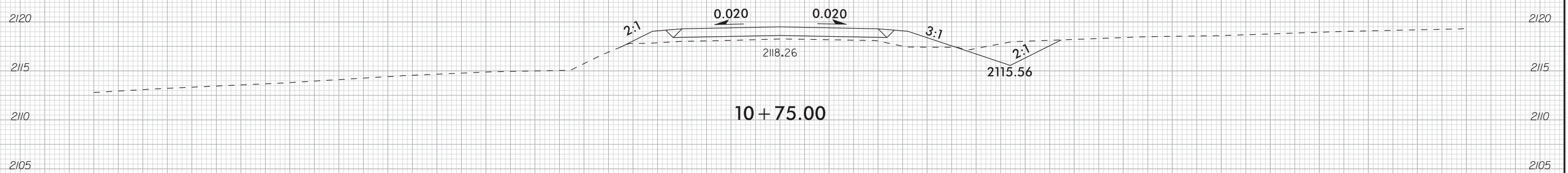
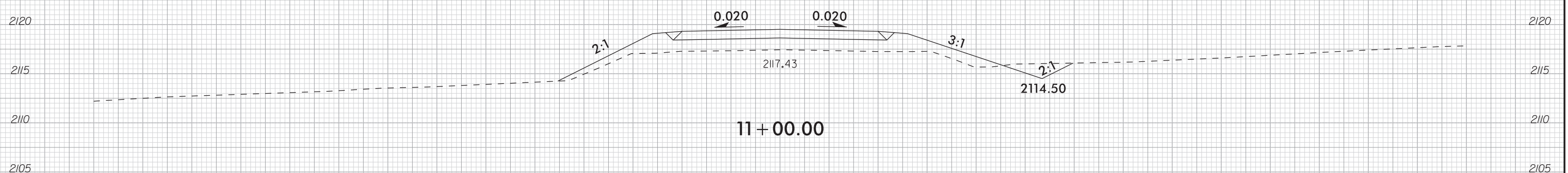
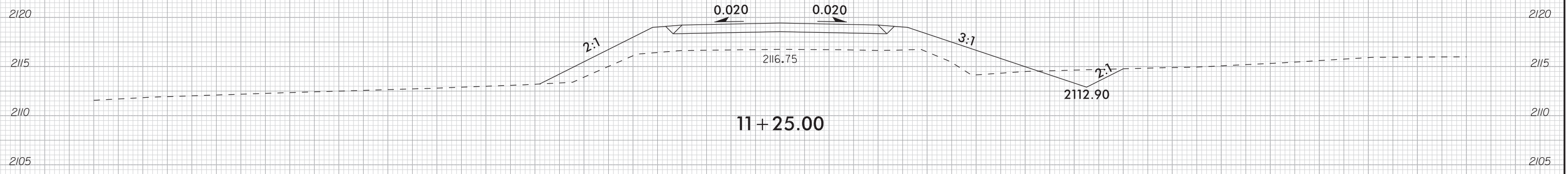
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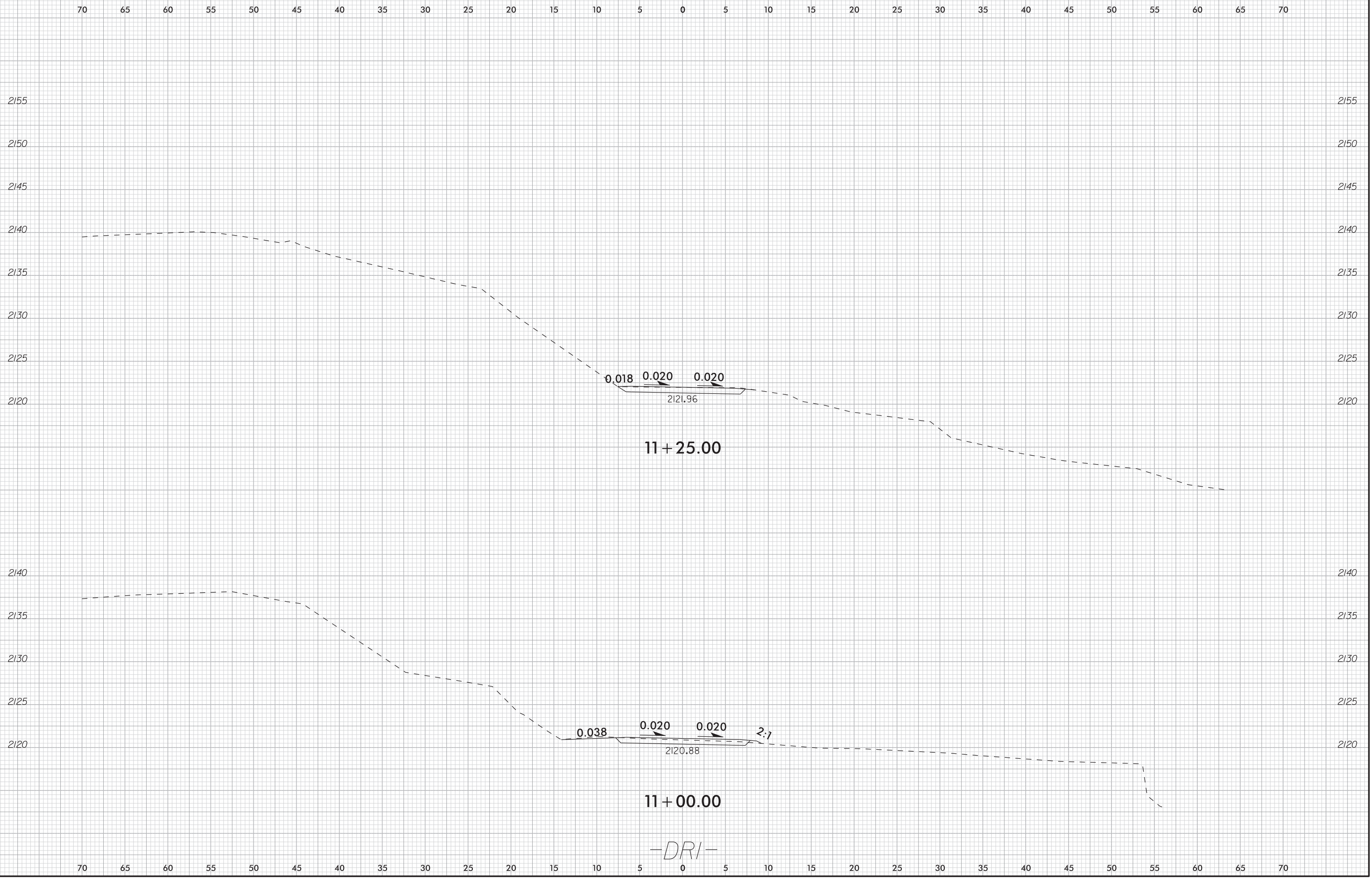
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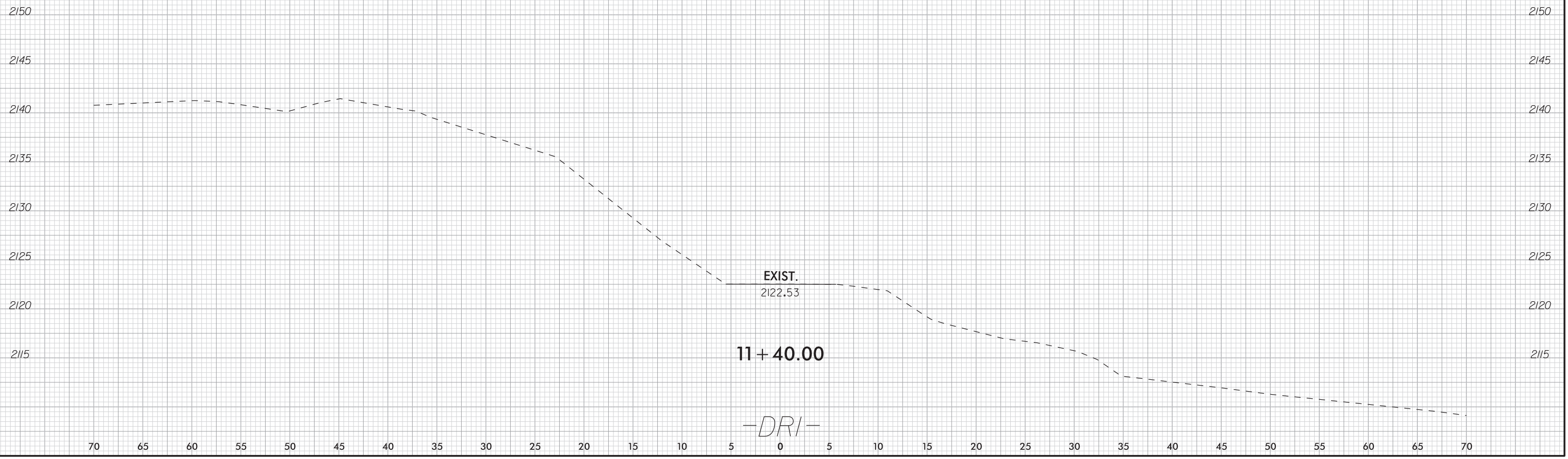
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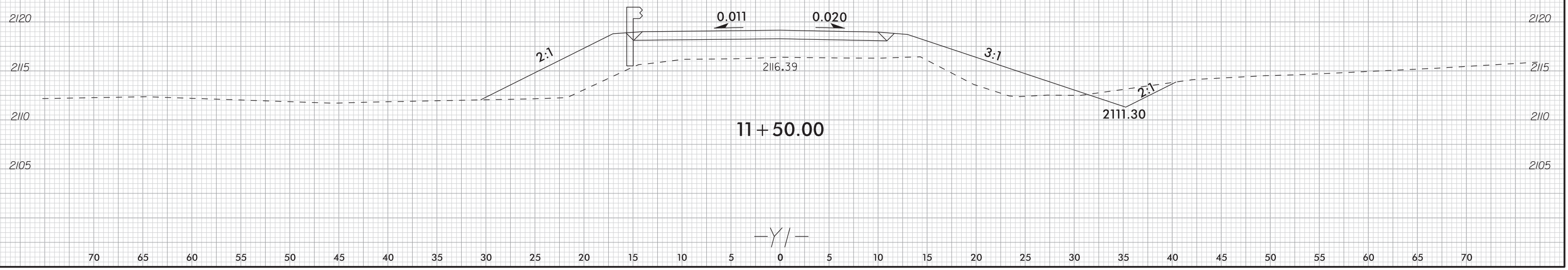


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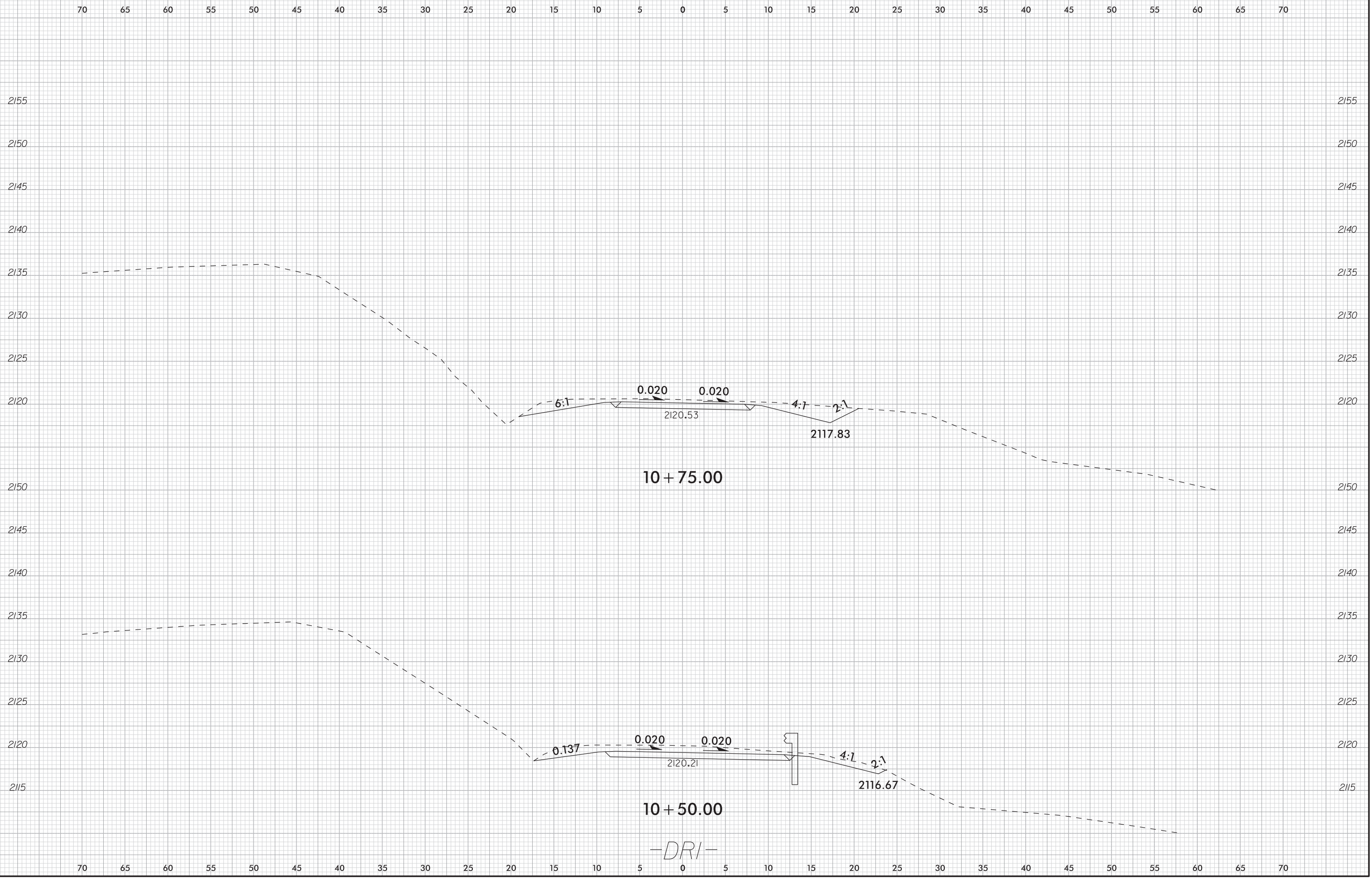
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3/9/2022
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 starnes

6/23/16

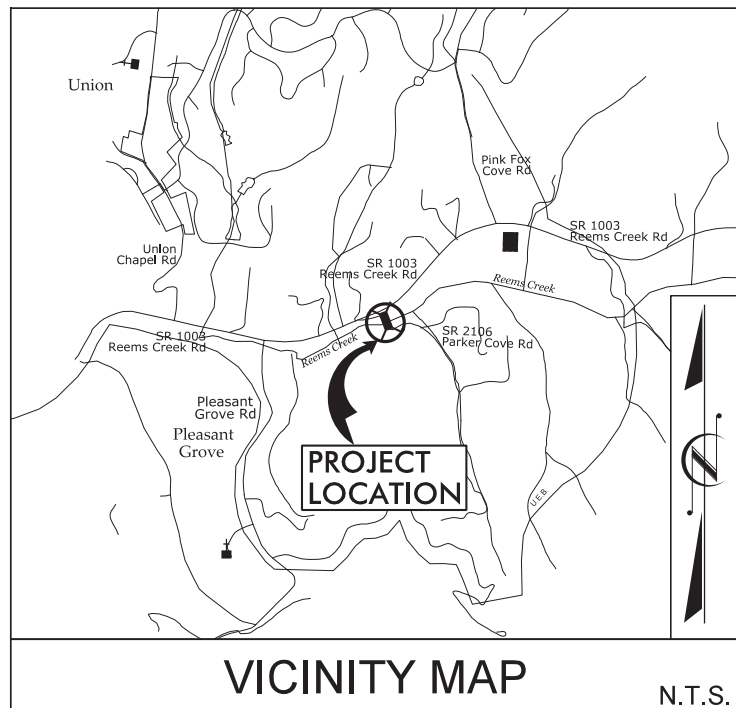
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	17BP.13.R.192	X-12



3/9/2022
c:\pwworking\gfpw01\sternes@fnet.com\d0862010\17BP.13.R.192_rdy_xp1_DRI.dgn
1:sternes

PROJECT: 17BP.13.R.192

CONTRACT NO: DM00365



VICINITY MAP

N.T.S.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

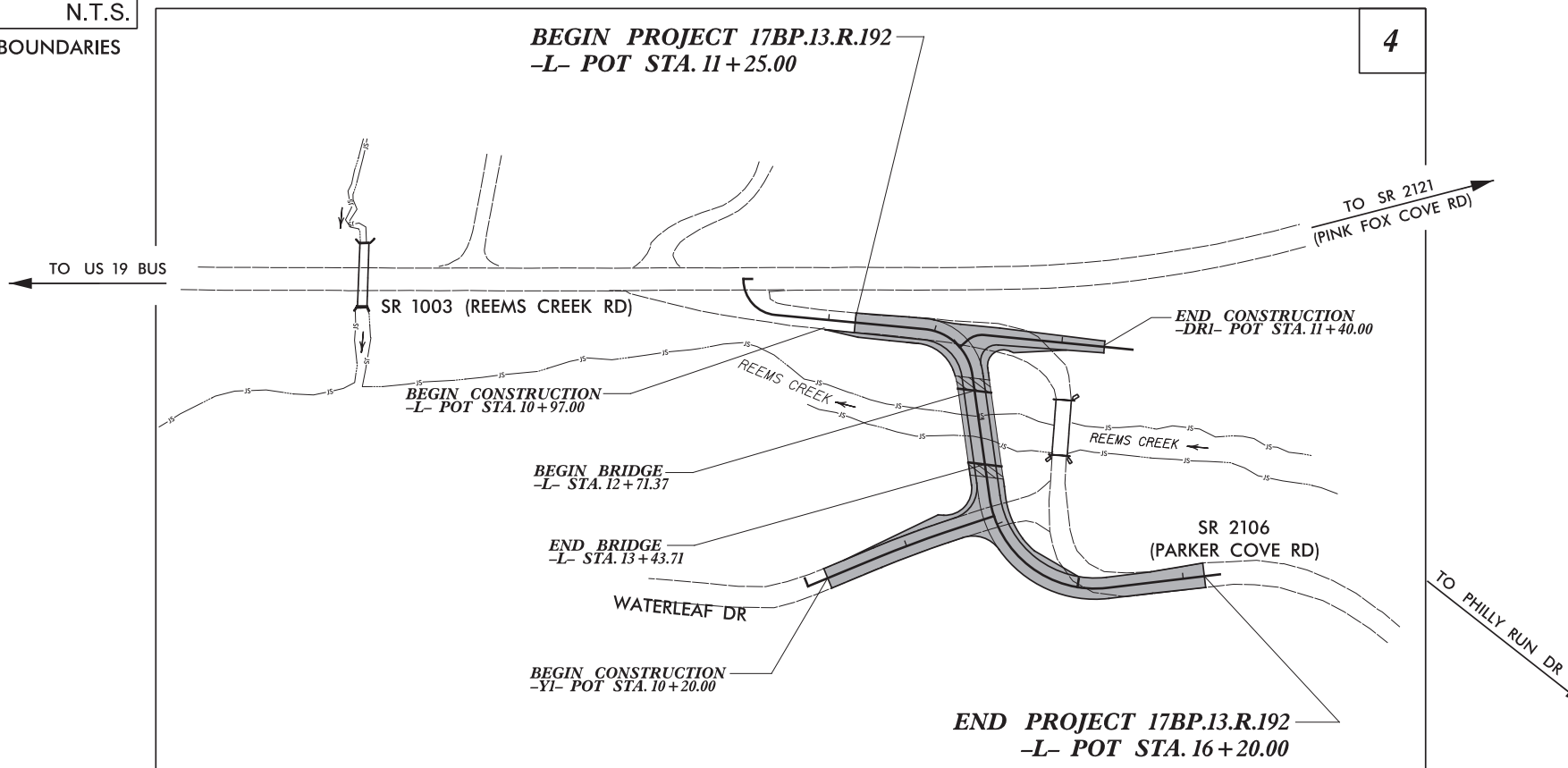
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUNCOMBE COUNTY

STRUCTURES

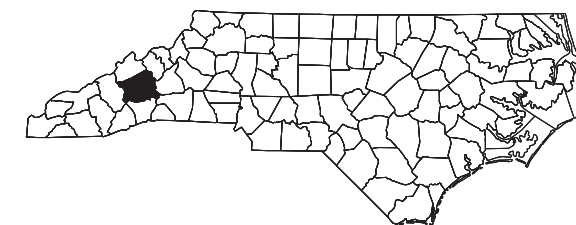
LOCATION: REPLACEMENT OF BRIDGE NO. 231 OVER REEMS CREEK ON SR 2106 (PARKER COVE RD)

TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, TRAFFIC MANAGEMENT AND PAVEMENT MARKINGS

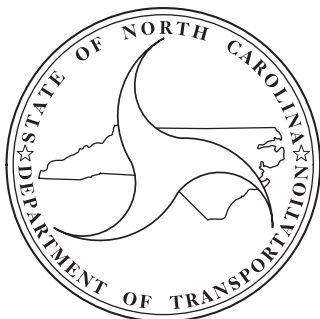


* DESIGN EXCEPTION NEEDED FOR HORIZONTAL ALIGNMENT AND SUPERELEVATION

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	17BP.13.R.192		
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
17BP.13.R.192	N/A	P.E.	
17BP.13.R.192	N/A	ROW, UTIL.	



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

BUNCOMBE COUNTY

ADT 2018 = 800
ADT 2038 = 980
T = 5%*
V = 30 MPH

*TTST = 1% DUAL 4%

FUNC CLASS = LOCAL SUB-REGIONAL TIER

PROJECT LENGTH

BUNCOMBE COUNTY

LENGTH ROADWAY PROJECT 17BP.13.R.192 = 0.080 MILES
LENGTH STRUCTURES PROJECT 17BP.13.R.192 = 0.014 MILES
TOTAL LENGTH PROJECT 17BP.13.R.192 = 0.094 MILES

NCDOT CONTACT: MICHAEL CALLOWAY
DIVISION 13 CONTACT



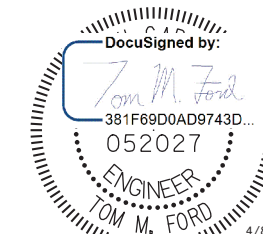
GANNETT FLEMING

One Glenwood Avenue
Suite 900
Raleigh, NC 27603
919-420-7660
NC Lic. No. F-0270

TOM FORD, P.E.
STRUCTURES DESIGN ENGINEER

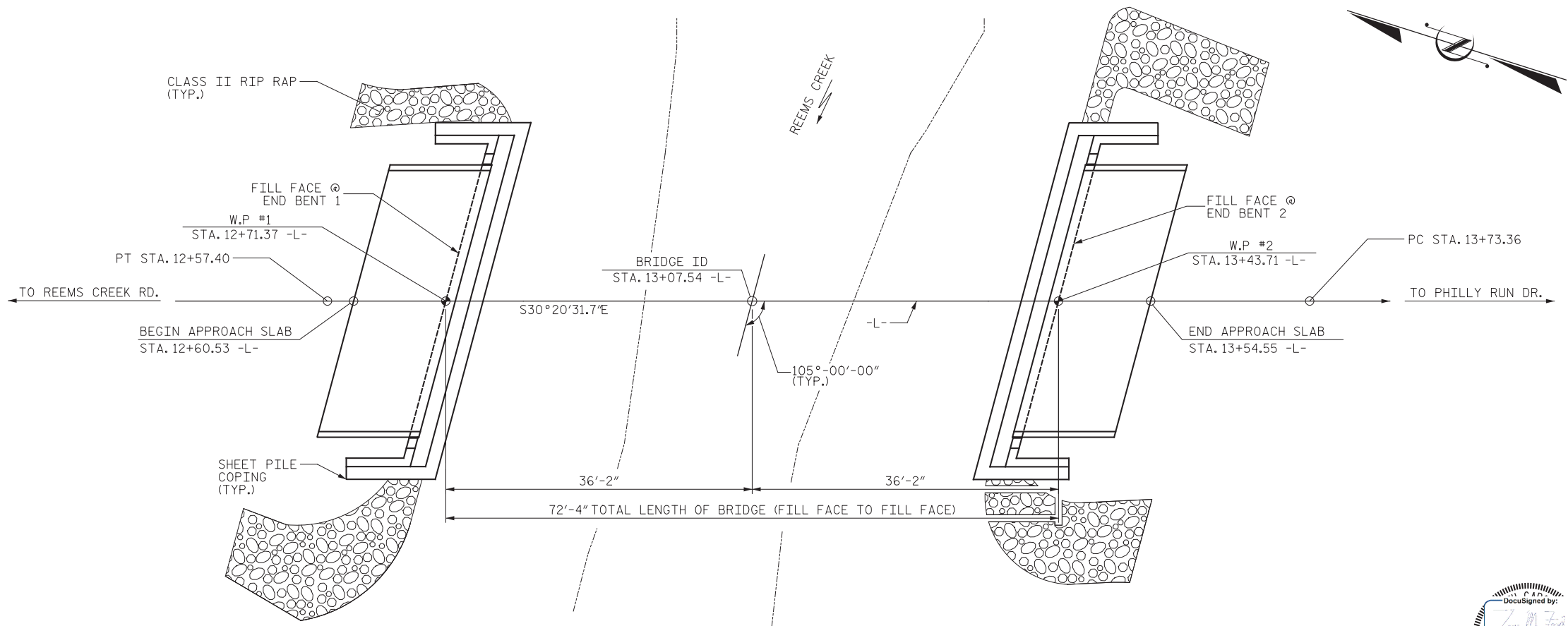
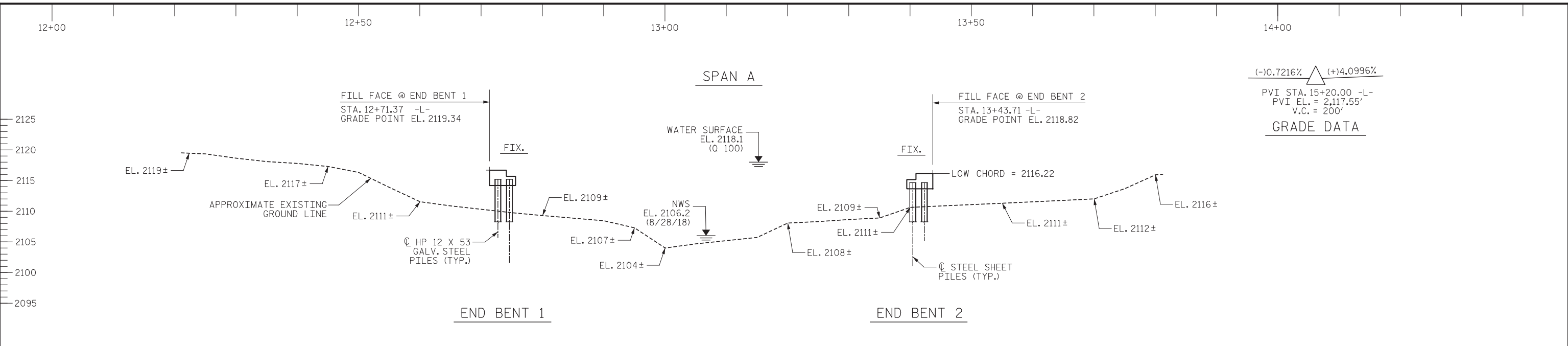
2021 STANDARD SPECIFICATIONS

LETTING DATE: JUNE 15, 2022



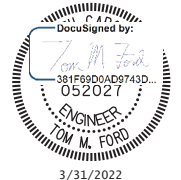
TOM FORD, P.E.
STRUCTURES DESIGN ENGINEER

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PLAN
 (PILES AND SHEET PILES NOT SHOWN FOR CLARITY)
 (EXISTING STRUCTURE NOT SHOWN, DUE TO UPSTREAM LOCATION RELATIVE TO PROPOSED STRUCTURE)

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 1 OF 3 REPLACES BRIDGE #231



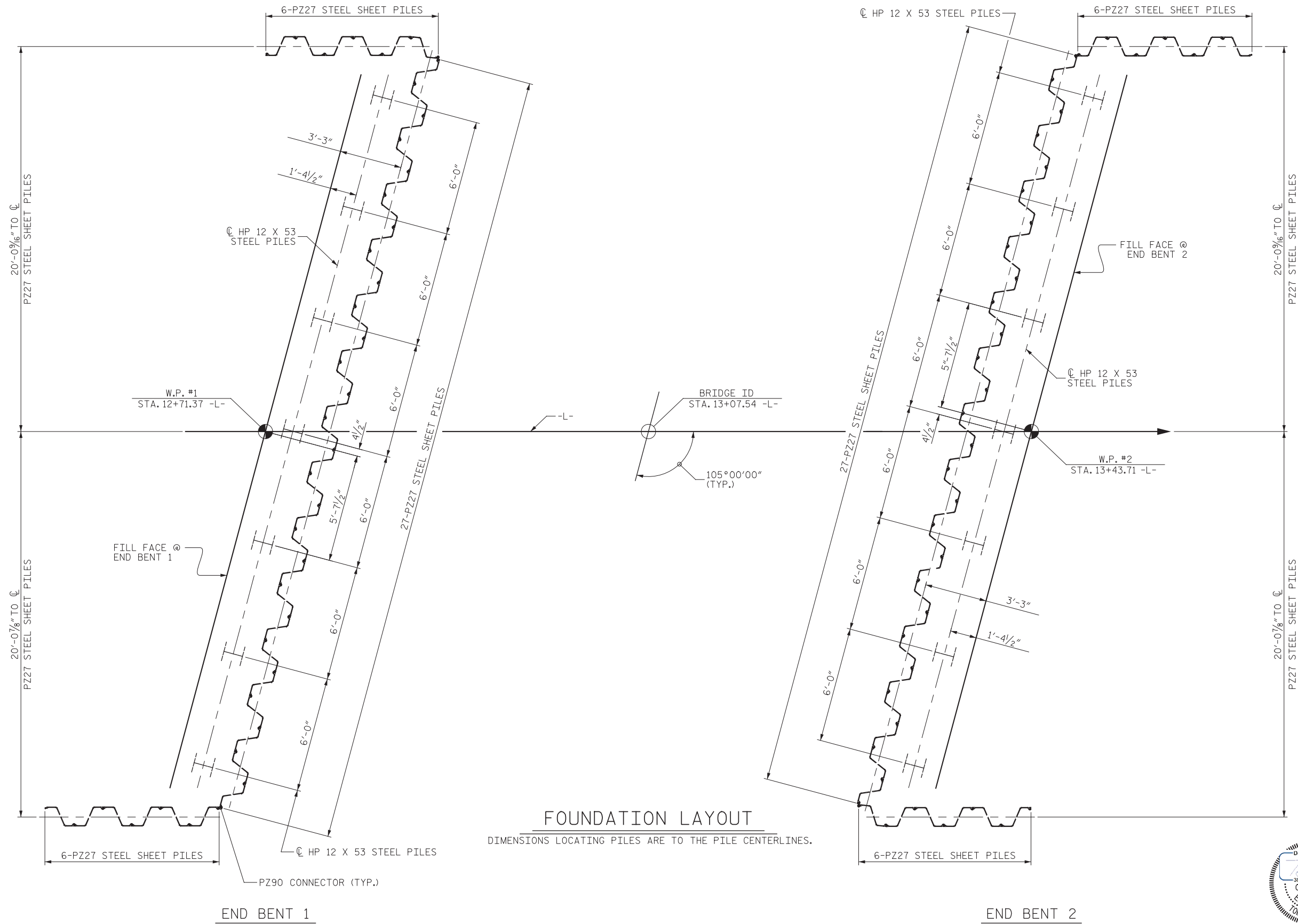
DRAWN BY : T. FORD DATE : 1/2019
 CHECKED BY : J. FARNHAM DATE : 1/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
GENERAL DRAWING FOR BRIDGE OVER REEMS CREEK ON SR 2106 (PARKER COVE RD.)					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		
SHEET NO. S-1					TOTAL SHEETS 18

p:\gfn\pw.bentley.com\gnet-pw-01\Documents\Projects\63639\Task 012 Parker Cove Road\Structures\Working Scratch\Struct\401_005_17BP_13.R.192_SMU_G002_002
 3/31/2022 4:26:49 PM pdf_color_gfclt_FS.plt Wade Ave.tbl



FOUNDATION LAYOUT
 DIMENSIONS LOCATING PILES ARE TO THE PILE CENTERLINES.

NOTES:

FOR H-PILES, SEE SECTION 450 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

H-PILES AT END BENTS NO.1 AND 2 ARE DESIGNED FOR A FACTORED RESISTANCE OF 85 TONS PER PILE.

DRIVE H-PILES AT END BENTS NO.1 AND 2 TO A REQUIRED DRIVING RESISTANCE OF 145 TONS PER PILE.

STEEL H-PILE POINTS ARE REQUIRED FOR STEEL H-PILES AT END BENTS NO.1 AND 2. FOR STEEL PILE POINTS, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

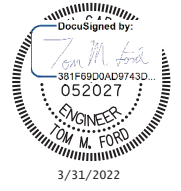
INSTALL H-PILES AT END BENT NO.2 TO A TIP ELEVATION NO HIGHER THAN 2104.0 FT.

TESTING PILES WITH THE PDA DURING DRIVING, RESTRIKING OR REDRIVING MAY BE REQUIRED. THE ENGINEER WILL DETERMINE THE NEED FOR PDA TESTING. FOR PDA TESTING, SEE SECTION 450 OF THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.

IF NECESSARY, PREDRILL H-PILE LOCATIONS AT END BENT NO.2 TO AN ELEVATION NO LOWER THAN 2104.0 FT WITH EQUIPMENT THAT WILL RESULT IN A MAXIMUM PREDRILLING DIAMETER OF 12". FOR PREDRILLING FOR H-PILES, SEE SECTION 450 OF THE STANDARD SPECIFICATIONS.

INSTALL PZ-27 OR EQUIVALENT SHEETING TO A TIP ELEVATION NO HIGHER THAN 2098.0 FEET AT END BENT NO.1 AND NO HIGHER THAN 2106.0 FEET AT END BENT NO.2.

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 2 OF 3 REPLACES BRIDGE #231



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER REEMS
 CREEK ON SR 2106
 (PARKER COVE RD.)

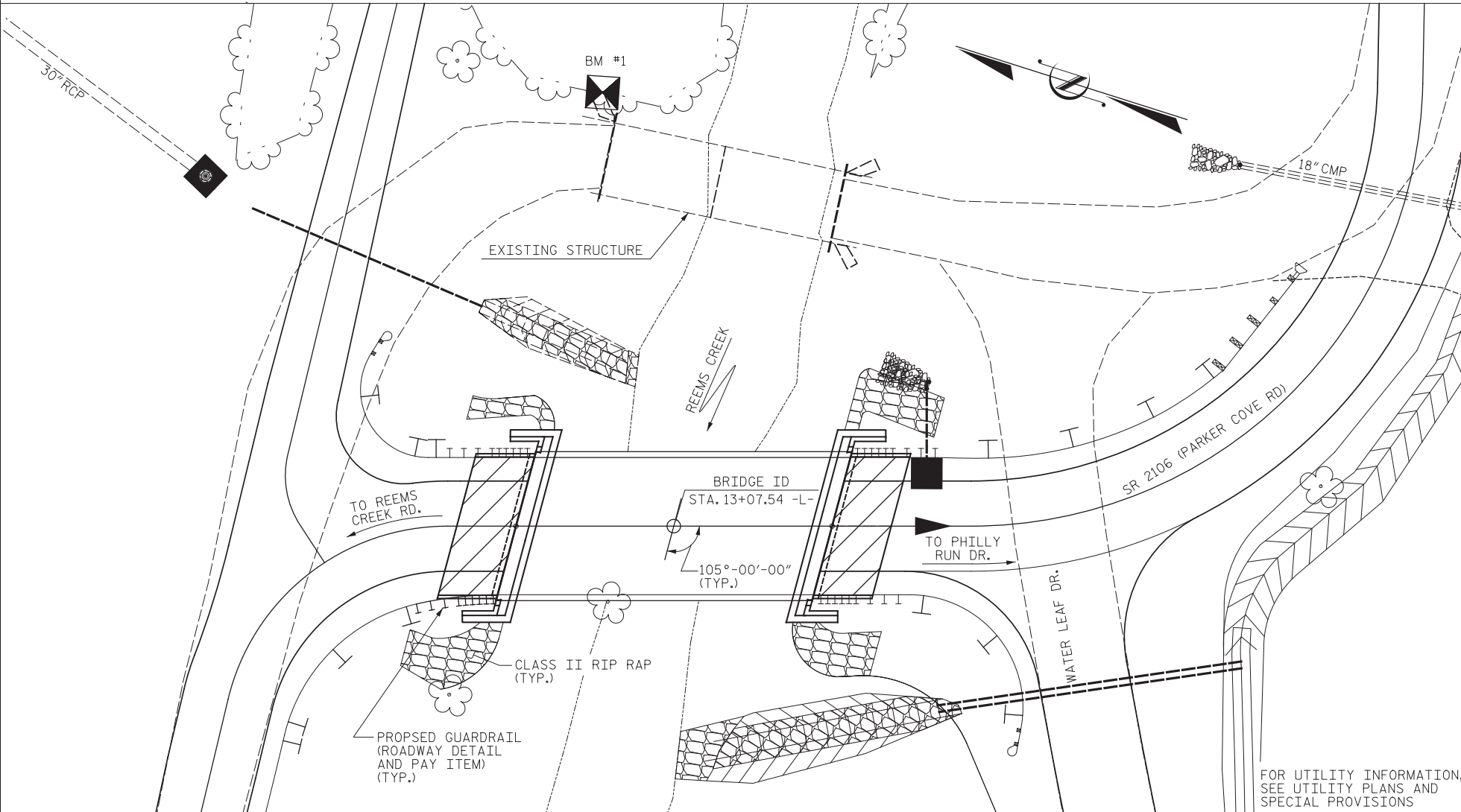
DRAWN BY : T. HARTLEY DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



DOCUMENT NOT CONSIDERED
 FINAL UNLESS ALL
 SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-2
1			3			TOTAL SHEETS
2			4			18

B.M. #1: PAINTED CORNER OF NORTH EASTERN STONE WING WALL, STA. 12+91.73, 96.08' LT. -L-, EL. 2115.96



LOCATION SKETCH

NOTES:

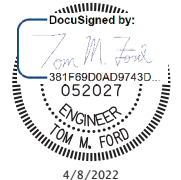
- THIS BRIDGE HAS BEEN DESIGNED IN ACCORDANCE WITH THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS.
- ASSUMED LIVE LOAD = HL-93 OR ALTERNATE LOADING.
- FOR OTHER DESIGN DATA AND GENERAL NOTES, SEE SHEET SN.
- FOR EROSION CONTROL MEASURES, SEE EROSION CONTROL PLANS.
- THE EXISTING STRUCTURE LOCATED UPSTREAM AND SHOWN IN THE LOCATION SKETCH SHALL BE REMOVED.
- AFTER SERVING AS A TEMPORARY STRUCTURE THE EXISTING STRUCTURE CONSISTING OF 2 SPANS (1 @ 25'-2 1/2" & 1 @ 27'-3 1/2") OF A TIMBER DECK WITH AN ASPHALT WEARING SURFACE AND A CLEAR ROADWAY OF 14'-8" ON REINFORCED CONCRETE CAPS WITH STEEL RISERS AND RUBBLE MASONRY PIER WALLS AND LOCATED APPROXIMATELY 50 FEET UPSTREAM SHALL BE REMOVED. THE EXISTING BRIDGE IS PRESENTLY NOT POSTED FOR LOAD LIMIT. SHOULD THE STRUCTURAL INTEGRITY OF THE BRIDGE DETERIORATE DURING CONSTRUCTION OF THE PROPOSED BRIDGE, A LOAD LIMIT MAY BE POSTED AND MAY BE REDUCED AS FOUND NECESSARY DURING THE LIFE OF THE PROJECT.
- REMOVAL OF THE EXISTING BRIDGE SHALL BE PERFORMED IN A MANNER THAT PREVENTS DEBRIS FROM FALLING INTO THE WATER. THE CONTRACTOR SHALL SUBMIT DEMOLITION PLANS FOR REVIEW AND REMOVE THE BRIDGE IN ACCORDANCE WITH ARTICLE 402-2 OF THE STANDARD SPECIFICATIONS.
- ASPHALT WEARING SURFACE IS INCLUDED IN ROADWAY QUANTITY ON ROADWAY PLANS.
- THIS STRUCTURE IS DESIGNED IN ACCORDANCE WITH HEC 18. "EVALUATING SCOUR AT BRIDGES".
- THIS BRIDGE IS LOCATED IN SEISMIC ZONE 1.
- INASMUCH AS THE PAINT SYSTEM ON THE EXISTING STRUCTURAL STEEL CONTAINS LEAD, THE CONTRACTOR'S ATTENTION IS DIRECTED TO ARTICLE 107-1 OF THE STANDARD SPECIFICATIONS. ANY COSTS RESULTING FROM COMPLIANCE WITH APPLICABLE STATE OR FEDERAL REGULATIONS PERTAINING TO HANDLING OF MATERIALS CONTAINING LEAD BASED PAINT SHALL BE INCLUDED IN THE BID PRICE FOR "REMOVAL OF EXISTING STRUCTURE".
- FOR SUBMITTAL OF WORKING DRAWINGS, SEE SPECIAL PROVISIONS.
- FOR FALSEWORK AND FORMWORK, SEE SPECIAL PROVISIONS.
- FOR CRANE SAFETY, SEE SPECIAL PROVISIONS.
- FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.
- FOR ASBESTOS ASSESSMENT FOR BRIDGE DEMOLITION AND RENOVATION ACTIVITIES, SEE SPECIAL PROVISIONS.
- FOR 18" GALVANIZED STEEL SHEET PILES, SEE SPECIAL PROVISIONS.
- AT THE CONTRACTOR'S OPTION, PRESTRESSED CONCRETE END BENT CAPS MAY BE SUBSTITUTED IN PLACE OF THE CAST-IN-PLACE CAPS. THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER TO RECEIVE REVISED PLANS AND DETAILS FROM THE STRUCTURES MANAGEMENT UNIT. THE REDESIGN AND ANY ADDITIONAL MATERIALS NEEDED WILL BE AT NO ADDITIONAL COST TO THE CONTRACTOR.

TOTAL BILL OF MATERIAL

	REMOVAL OF EXISTING STRUCTURE	PDA TESTING	CLASS A CONCRETE	BRIDGE APPROACH SLABS	REINFORCING STEEL	HP 12 x 53 STEEL PILES		STEEL PILE POINTS	TWO BAR METAL RAIL	1'-2" X 2'-9 1/2" CONCRETE PARAPET	RIP RAP CLASS II (1'-6" THICK)	GEOTEXTILE FOR DRAINAGE	ELASTOMERIC BEARINGS	3'-0" x 2'-0" PRESTRESSED CONCRETE CORED SLABS	ASBESTOS ASSESSMENT	PREDRILLING FOR PILES	18" GALVANIZED STEEL SHEET PILES	PILE DRIVING EQUIPMENT SETUP FOR HP12X53 STEEL PILES	
	LUMP SUM	EA.	CU. YDS.	LUMP SUM	LBS.	NO.	LIN. FT.	EA.	LIN. FT.	LIN. FT.	TON	SQ. YDS.	LUMP SUM	NO.	LIN. FT.	LUMP SUM	LIN. FT.	SQ. FT.	EA.
SUPERSTRUCTURE				LUMP SUM					125.0	140.0				11	770				
END BENT 1		1	20.0		2756	7	140	7			43	35						846	7
END BENT 2		1	20.0		2756	7	105	7			52	43				50		468	7
TOTAL	LUMP SUM	2	40.0	LUMP SUM	5512	14	245	14	125.0	140.0	95	78	LUMP SUM	11	770	LUMP SUM	50	1314	14

PROJECT NO. 17BP.13.R.192
 BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-

SHEET 3 OF 3 REPLACES BRIDGE #231



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

GENERAL DRAWING
 FOR BRIDGE OVER REEMS
 CREEK ON SR 2106
 (PARKER COVE RD.)

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-3
1			3			TOTAL SHEETS
2			4			18

DRAWN BY : T. FORD DATE : 1/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD: T. FORD DATE : 3/2022



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LOAD AND RESISTANCE FACTOR RATING (LRFD) SUMMARY FOR PRESTRESSED CONCRETE GIRDERS

LEVEL	VEHICLE	WEIGHT (W) (TONS)	CONTROLLING LOAD RATING	MINIMUM RATING FACTORS (RF)	TONS = W X RF	STRENGTH I LIMIT STATE										SERVICE III LIMIT STATE					COMMENT NUMBER			
						MOMENT					SHEAR					MOMENT								
						LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN	GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	LIVELOAD FACTORS	DISTRIBUTION FACTORS (DF)	RATING FACTOR	SPAN		GIRDER LOCATION	DISTANCE FROM LEFT END OF SPAN (ft)	
DESIGN LOAD RATING	HL-93(Inv)	N/A	1	1.014	--	1.75	0.269	1.04	70'	EL	34.482	0.608	1.1	70'	EL	3.448	0.80	0.269	1.01	70'	EL	34.482		
	HL-93(OPr)	N/A	--	1.355	--	1.35	0.269	1.35	70'	EL	34.482	0.608	1.43	70'	EL	3.448	N/A	--	--	--	--	--		
	HS-20(Inv)	36.000	2	1.315	47.356	1.75	0.269	1.36	70'	EL	34.482	0.608	1.38	70'	EL	3.448	0.80	0.269	1.32	70'	EL	34.482		
	HS-20(OPr)	36.000	--	1.757	63.236	1.35	0.269	1.76	70'	EL	34.482	0.608	1.79	70'	EL	3.448	N/A	--	--	--	--	--		
LEGAL LOAD RATING	SV	SNSH	13.500	--	2.938	39.656	1.4	0.269	3.78	70'	EL	34.482	0.608	4.12	70'	EL	3.448	0.80	0.269	2.94	70'	EL	34.482	
		SNGARBS2	20.000	--	2.203	44.052	1.4	0.269	2.84	70'	EL	34.482	0.608	2.93	70'	EL	3.448	0.80	0.269	2.20	70'	EL	34.482	
		SNAGRIS2	22.000	--	2.092	46.016	1.4	0.269	2.69	70'	EL	34.482	0.608	2.72	70'	EL	3.448	0.80	0.269	2.09	70'	EL	34.482	
		SNCOTTS3	27.250	--	1.462	39.844	1.4	0.269	1.88	70'	EL	34.482	0.608	2.06	70'	EL	3.448	0.80	0.269	1.46	70'	EL	34.482	
		SNAGGRS4	34.925	--	1.227	42.856	1.4	0.269	1.58	70'	EL	34.482	0.608	1.71	70'	EL	3.448	0.80	0.269	1.23	70'	EL	34.482	
		SNS5A	35.550	--	1.2	42.646	1.4	0.269	1.54	70'	EL	34.482	0.608	1.73	70'	EL	3.448	0.80	0.269	1.20	70'	EL	34.482	
		SNS6A	39.950	--	1.103	44.058	1.4	0.269	1.42	70'	EL	34.482	0.608	1.58	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482	
	SNS7B	42.000	--	1.05	44.113	1.4	0.269	1.35	70'	EL	34.482	0.608	1.55	70'	EL	3.448	0.80	0.269	1.05	70'	EL	34.482		
	TTST	TNAGRIT3	33.000	--	1.345	44.401	1.4	0.269	1.73	70'	EL	34.482	0.608	1.88	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT4A	33.075	--	1.352	44.717	1.4	0.269	1.74	70'	EL	34.482	0.608	1.83	70'	EL	3.448	0.80	0.269	1.35	70'	EL	34.482	
		TNT6A	41.600	--	1.108	46.073	1.4	0.269	1.43	70'	EL	34.482	0.608	1.65	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7A	42.000	--	1.114	46.794	1.4	0.269	1.43	70'	EL	34.482	0.608	1.62	70'	EL	3.448	0.80	0.269	1.11	70'	EL	34.482	
		TNT7B	42.000	--	1.155	48.526	1.4	0.269	1.49	70'	EL	34.482	0.608	1.51	70'	EL	3.448	0.80	0.269	1.16	70'	EL	34.482	
TNAGRIT4		43.000	--	1.097	47.174	1.4	0.269	1.41	70'	EL	34.482	0.608	1.46	70'	EL	3.448	0.80	0.269	1.10	70'	EL	34.482		
TTST	TNAGT5A	45.000	--	1.033	46.505	1.4	0.269	1.33	70'	EL	34.482	0.608	1.45	70'	EL	3.448	0.80	0.269	1.03	70'	EL	34.482		
TTST	TNAGT5B	45.000	3	1.02	45.905	1.4	0.269	1.31	70'	EL	34.482	0.608	1.39	70'	EL	3.448	0.80	0.269	1.02	70'	EL	34.482		

LOAD FACTORS:

DESIGN LOAD RATING FACTORS	LIMIT STATE	γ_{DC}	γ_{DW}
	STRENGTH I	1.25	1.50
	SERVICE III	1.00	1.00

NOTES:

MINIMUM RATING FACTORS ARE BASED ON THE STRENGTH I AND SERVICE III LIMIT STATES.
ALLOWABLE STRESSES FOR SERVICE III LIMIT STATE ARE AS REQUIRED FOR DESIGN.

COMMENTS:

- 1.
- 2.
- 3.
- 4.

CONTROLLING LOAD RATING

1 DESIGN LOAD RATING (HL-93)

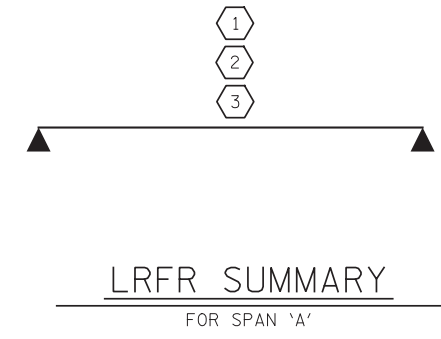
2 DESIGN LOAD RATING (HS-20)

3 LEGAL LOAD RATING **

** SEE CHART FOR VEHICLE TYPE

GIRDER LOCATION

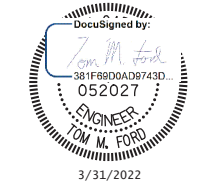
I - INTERIOR GIRDER
EL - EXTERIOR LEFT GIRDER
ER - EXTERIOR RIGHT GIRDER



PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
BRIDGE NO. 13+07.54 -L-

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

STANDARD
LRFR SUMMARY FOR
70' CORED SLAB UNIT
75° SKEW & 105° SKEW
(NON-INTERSTATE TRAFFIC)



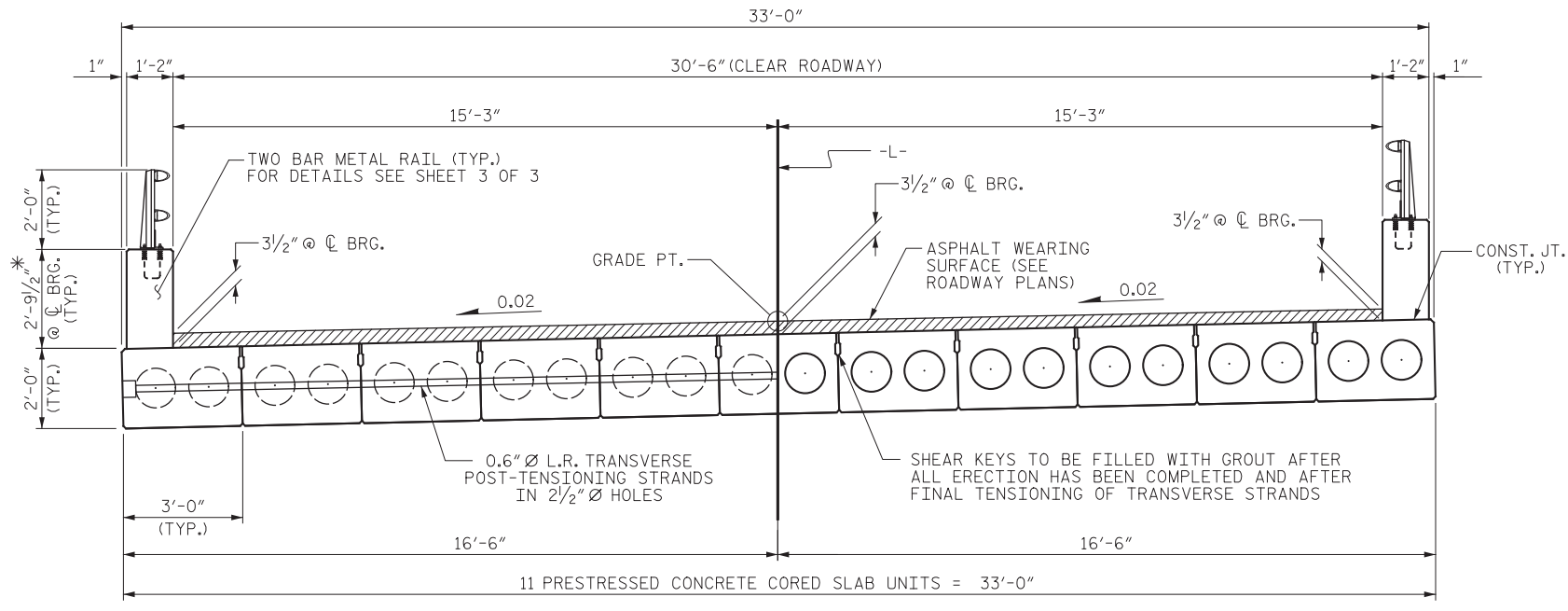
DRAWN BY: T. FORD DATE: 1/2019
CHECKED BY: J. FARNHAM DATE: 6/2019
DESIGN ENGINEER OF RECORD: T. FORD DATE: 3/2022



REVISIONS						SHEET NO.	
NO.	BY:	DATE:	NO.	BY:	DATE:	S-4	
1			3			TOTAL SHEETS	
2			4			18	

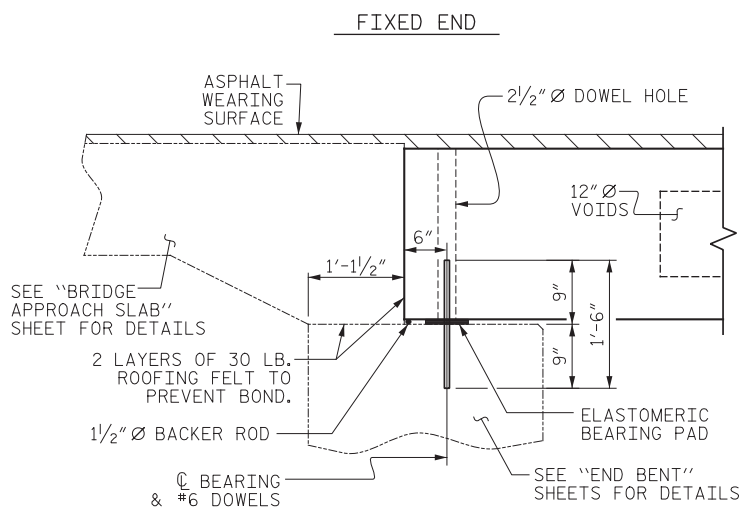
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 3/31/2022 4:27:32 PM pdf_color_gfclt_FS.plt Wade Ave.tbl

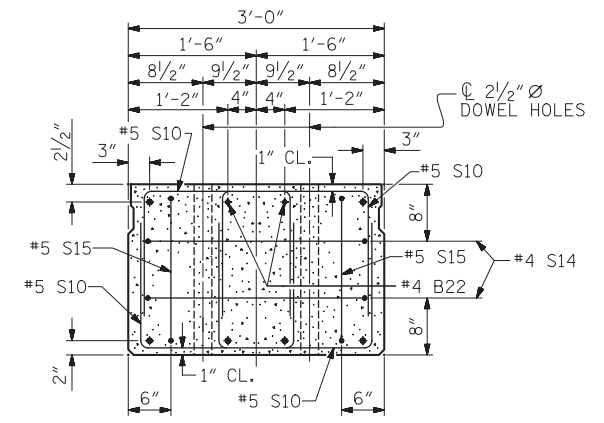


HALF SECTION AT INTERMEDIATE DIAPHRAGMS
 TYPICAL SECTION
 HALF SECTION THROUGH VOIDS

* - THE MAXIMUM BARRIER RAIL HEIGHT AND ASPHALT THICKNESS IS SHOWN. THE HEIGHT OF THE BARRIER RAIL AND ASPHALT THICKNESS VARIES WHILE THE TOP OF THE BARRIER RAIL FOLLOWS THE PROFILE OF THE GUTTERLINE. FOR RAIL HEIGHT DETAILS AND ASPHALT THICKNESS, SEE SHEET 3 OF 3.

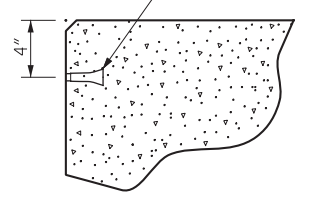


SECTION AT END BENT

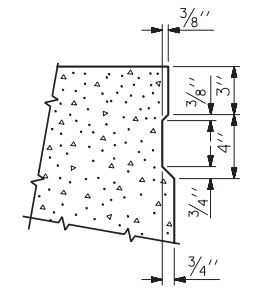


END ELEVATION
 SHOWING PLACEMENT OF DOUBLE STIRRUPS AND LOCATION OF DOWEL HOLES. (STRAND LAYOUT NOT SHOWN.) INTERIOR SLAB UNIT SHOWN-EXTERIOR SLAB UNIT SIMILAR EXCEPT SHEAR KEY LOCATION.

PERMITTED THREADED INSERT CAST IN OUTSIDE FACE OF EXTERIOR UNIT AND RECESSED 3/8" SIZE TO BE DETERMINED BY CONTRACTOR.

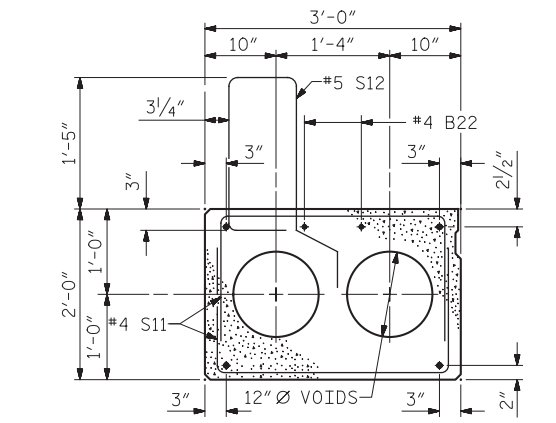


THREADED INSERT DETAIL

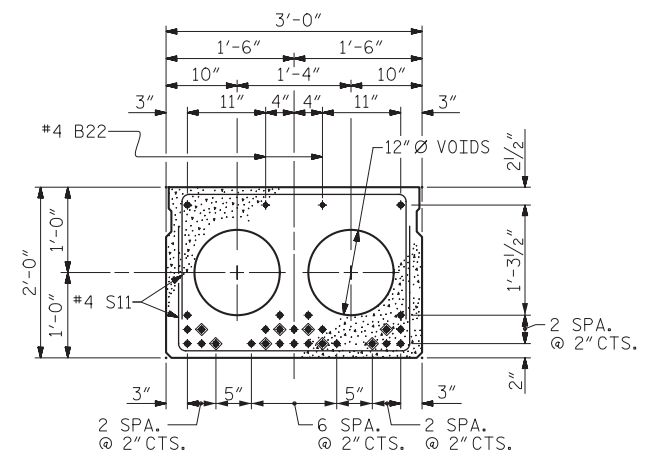


SHEAR KEY DETAIL

NOTE: OMIT SHEAR KEY ON OUTSIDE FACE OF EXTERIOR CORED SLABS.



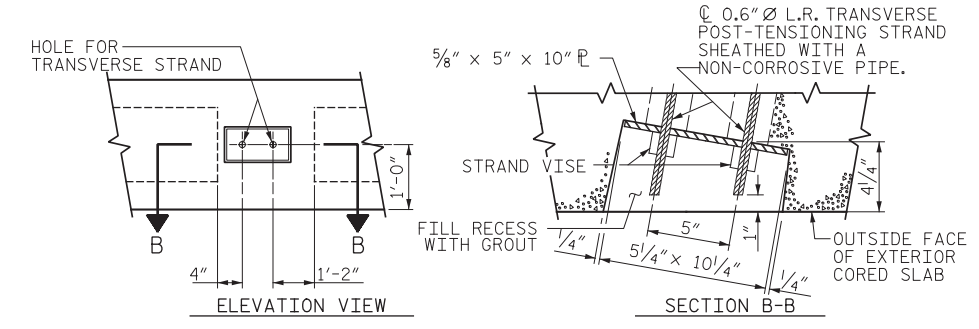
EXTERIOR SLAB SECTION
 (FOR PRESTRESSED STRAND LAYOUT, SEE INTERIOR SLAB SECTION.)



INTERIOR SLAB SECTION (70' UNIT)
 (28 STRANDS REQUIRED)
 0.6" Ø LOW RELAXATION STRAND LAYOUT

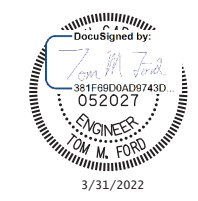
- ◆ BOND SHALL BE BROKEN ON THESE STRANDS FOR A DISTANCE OF 12'-0" FROM END OF CORED SLAB UNIT. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.
- OPTIONAL FULL LENGTH DEBONDED STRANDS. THESE STRANDS ARE NOT REQUIRED, IF THE FABRICATOR CHOOSES TO INCLUDE THESE STRANDS IN THE CORED SLAB UNIT, THE STRANDS SHALL BE DEBONDED FOR THE FULL LENGTH OF THE UNIT AT NO ADDITIONAL COST. SEE STANDARD SPECIFICATIONS, ARTICLE 1078-7.

DEBONDING LEGEND



GROUDED RECESS AT END OF POST-TENSIONED STRAND-CORED SLABS

PROJECT NO. 17BP.13.R.192
 BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 1 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

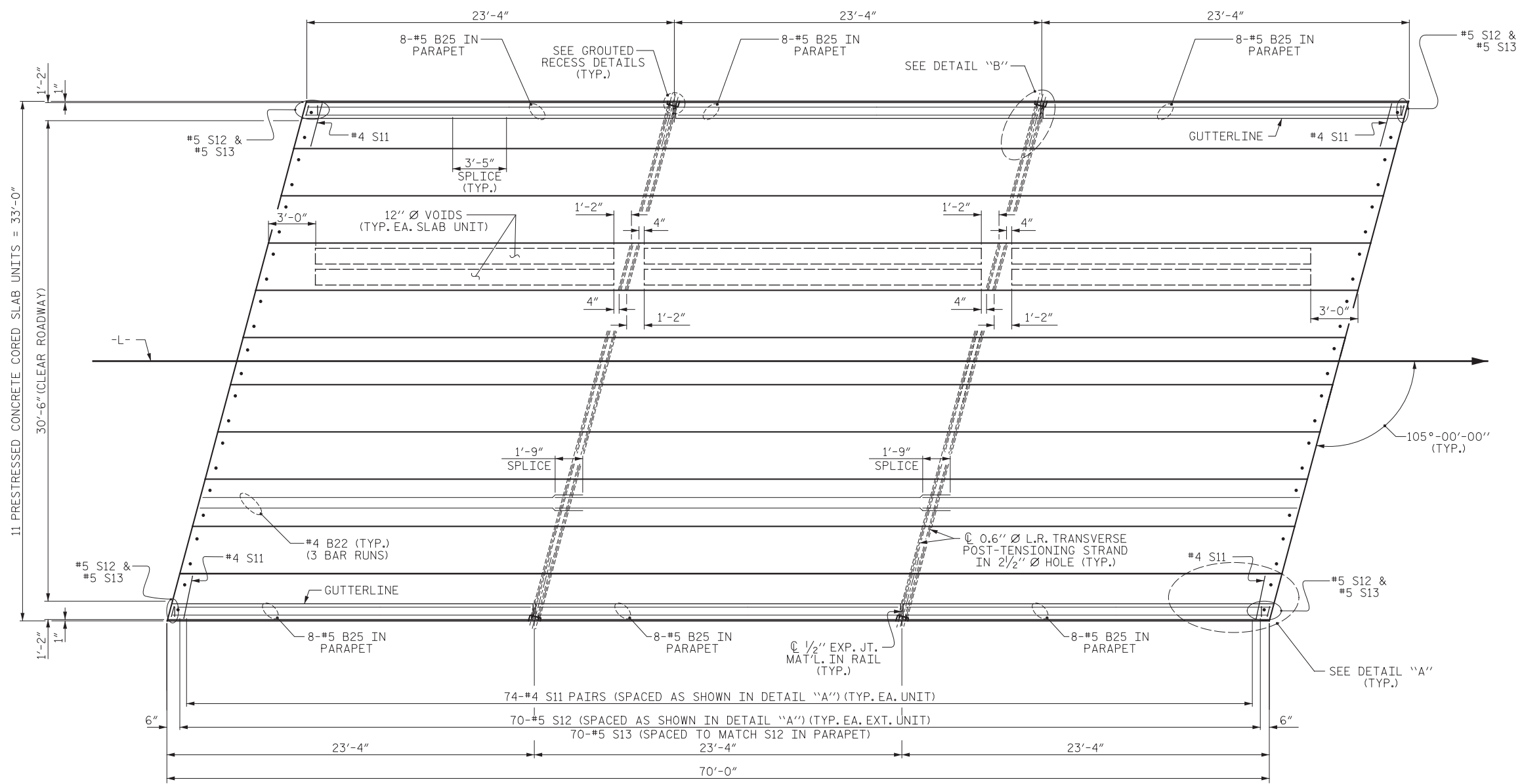
ASSEMBLED BY : T.FORD	DATE : 1/19
CHECKED BY : J. FARNHAM	DATE : 6/19
DRAWN BY : MAA 6/10	REV. 9/14 MAA/TMG
CHECKED BY : MKT 7/10	



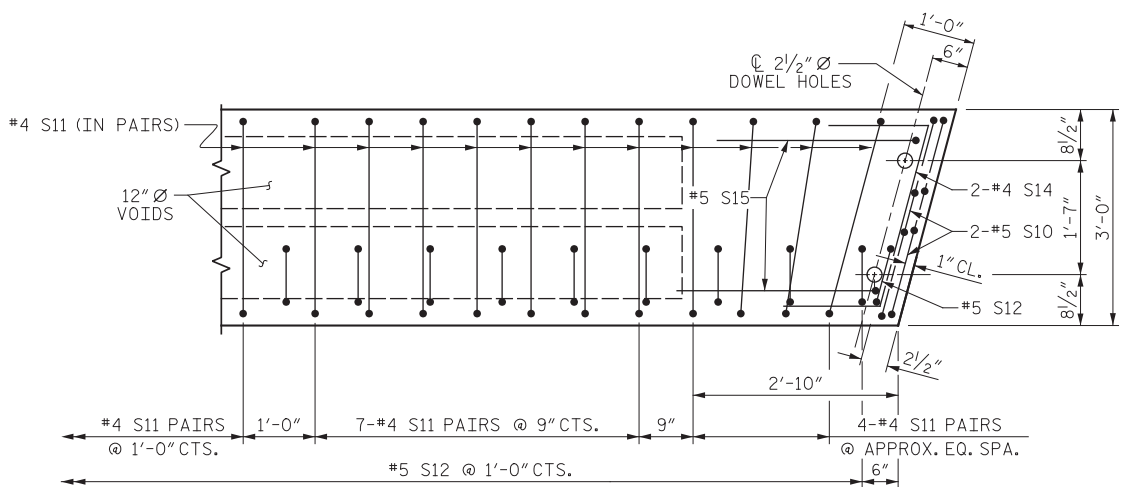
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-5
1			3			TOTAL SHEETS
2			4			18

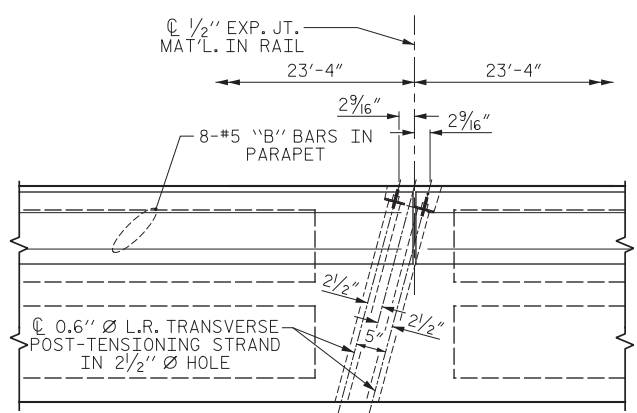
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PLAN OF UNIT



DETAIL "A"



DETAIL "B"

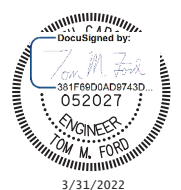
#4 S11 BARS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO GROUDED RECESS AND 2 1/2" Ø TRANSVERSE POST-TENSIONING STRAND HOLES

DRAWN BY : T. FORD DATE : 6/2019
CHECKED BY : J. FARNHAM DATE : 6/2019
DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022

(SIMILAR EACH END OF UNIT)
NOTE: EXTERIOR UNIT SHOWN - INTERIOR UNIT SIMILAR EXCEPT OMIT #5 S12 BARS.



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



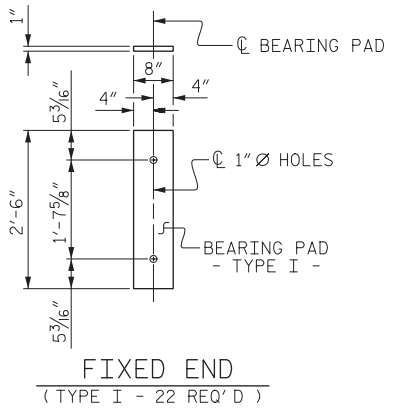
PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
BRIDGE NO. 13+07.54 -L-

SHEET 2 OF 3

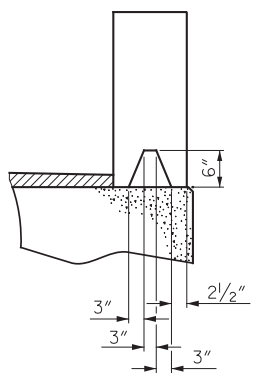
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH
PLAN OF .70' UNIT
30'-6" CLEAR ROADWAY
105° SKEW

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-6
1			3			TOTAL SHEETS
2			4			18

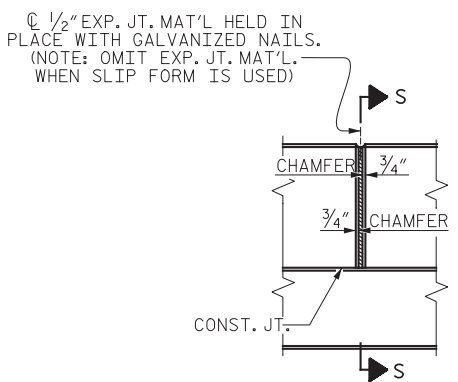
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ELASTOMERIC BEARING DETAILS
 ELASTOMER IN ALL BEARINGS SHALL BE 60 DUROMETER HARDNESS.



SECTION S-S
 AT DAM IN OPEN JOINT
 (THIS IS TO BE USED ONLY WHEN SLIP FORM IS USED)



ELEVATION AT EXPANSION JOINTS

PARAPET FOR TWO BAR METAL RAIL ON CORED SLABS

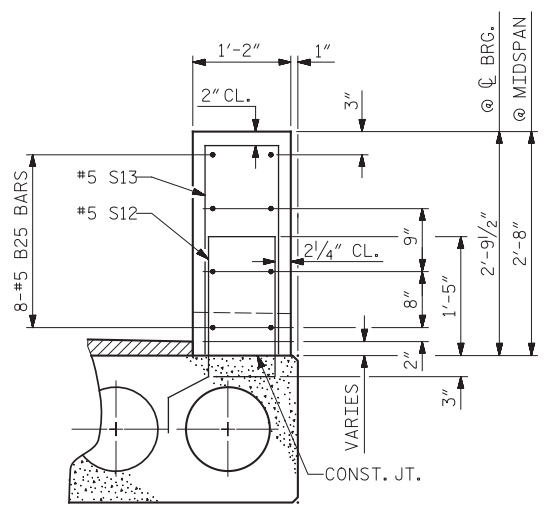
BILL OF MATERIAL FOR ONE 70' CORED SLAB UNIT

				EXTERIOR UNIT		INTERIOR UNIT	
BAR	NUMBER	SIZE	TYPE	LENGTH	WEIGHT	LENGTH	WEIGHT
B22	6	#4	STR	24'-6"	98	24'-6"	98
S10	8	#5	3	4'-10"	40	4'-10"	40
S11	148	#4	3	5'-10"	577	5'-10"	577
*S12	72	#5	1	5'-9"	432		
S14	4	#4	4	5'-8"	15	5'-8"	15
S15	4	#5	3	7'-1"	30	7'-1"	30
REINFORCING STEEL				LBS.	760		760
*EPOXY COATED REINFORCING STEEL				LBS.	432		
7000 P.S.I. CONCRETE				CU. YDS.	12.0		12.0
0.6" Ø L.R. STRANDS				No.	28		28

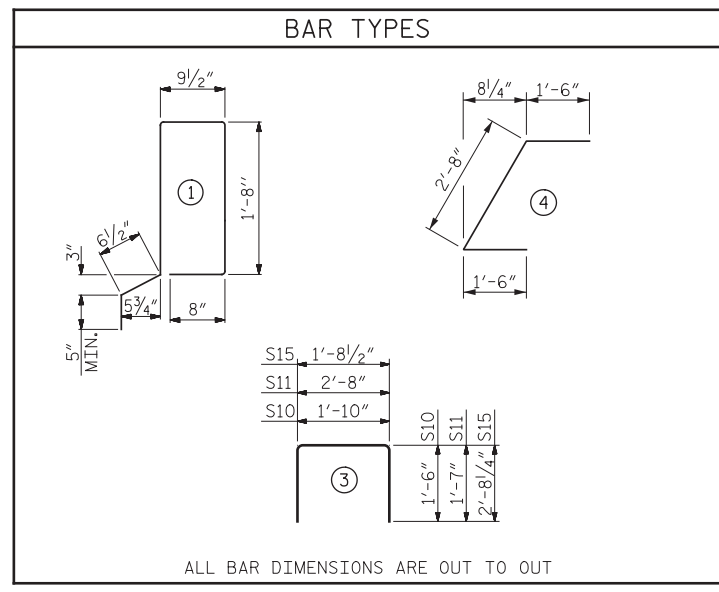
DEAD LOAD DEFLECTION AND CAMBER

70' CORED SLAB UNIT		3'-0" x 2'-0"
CAMBER (SLAB ALONE IN PLACE)		0.6" Ø L.R. STRAND 2 1/4" ↑
DEFLECTION DUE TO SUPERIMPOSED DEAD LOAD**		3/4" ↓
FINAL CAMBER		1 1/2" ↑

** INCLUDES FUTURE WEARING SURFACE



SECTION THRU RAIL



GUTTERLINE ASPHALT THICKNESS & PARAPET HEIGHT

	ASPHALT OVERLAY THICKNESS @ MID-SPAN	RAIL HEIGHT @ MID-SPAN
70' UNITS	2"	2'-8"

CONCRETE RELEASE STRENGTH

UNIT	PSI
70' UNITS	5500

CORED SLABS REQUIRED

70' UNIT	NUMBER	LENGTH	TOTAL LENGTH
EXTERIOR C.S.	2	70'-0"	140'-0"
INTERIOR C.S.	9	70'-0"	630'-0"
TOTAL	11		770'-0"

GRADE 270 STRANDS

	0.6" Ø L.R.
AREA (SQUARE INCHES)	0.217
ULTIMATE STRENGTH (LBS. PER STRAND)	58,600
APPLIED PRESTRESS (LBS. PER STRAND)	43,950

PARAPET HEIGHT

	PARAPET HEIGHT @ Ø BEARING	PARAPET HEIGHT @ MID-SPAN
SPAN A (70')	2'-9 1/2"	2'-8"

NOTES

ALL PRESTRESSING STRANDS SHALL BE 7-WIRE LOW RELAXATION GRADE 270 STRANDS AND SHALL CONFORM TO AASHTO M203 EXCEPT FOR SAMPLING REQUIREMENTS WHICH SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.

ALL REINFORCING STEEL CAST WITH THE CORED SLAB SECTIONS SHALL BE GRADE 60 AND SHALL BE INCLUDED IN THE UNIT PRICE BID FOR PRESTRESSED CONCRETE CORED SLABS.

RECESSES FOR TRANSVERSE STRANDS SHALL BE GROUTED AFTER THE TENSIONING OF THE STRANDS.

THE 2 1/2" Ø DOWEL HOLES AT FIXED ENDS OF SLAB SECTIONS SHALL BE FILLED WITH NON-SHRINK GROUT.

THE BACKER RODS SHALL CONFORM TO THE REQUIREMENTS OF TYPE M BOND BREAKER. SEE SECTION 1028 OF THE STANDARD SPECIFICATIONS.

WHEN CORED SLABS ARE CAST, AN INTERNAL HOLD-DOWN SYSTEM SHALL BE EMPLOYED TO PREVENT VOIDS FROM RISING OR MOVING SIDEWAYS. AT LEAST SIX WEEKS PRIOR TO CASTING CORED SLABS, THE CONTRACTOR SHALL SUBMIT TO THE ENGINEER FOR REVIEW AND COMMENT, DETAILED DRAWINGS OF THE PROPOSED HOLD-DOWN SYSTEM. IN ADDITION TO STRUCTURAL DETAILS, LOCATION AND SPACING OF THE HOLD-DOWNS SHALL BE INDICATED.

THE TRANSFER OF LOAD FROM THE ANCHORAGES TO THE CORED SLAB UNIT SHALL BE DONE WHEN THE CONCRETE HAS REACHED A COMPRESSIVE STRENGTH OF NOT LESS THAN THE REQUIRED STRENGTH SHOWN IN THE "CONCRETE RELEASE STRENGTH" TABLE.

ALL REINFORCING STEEL IN PARAPET SHALL BE EPOXY COATED.

PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH THE CORED SLAB UNIT ENDS.

APPLY EPOXY PROTECTIVE COATING TO CORED SLAB UNIT ENDS.

GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

FLAME CUTTING OF THE TRANSVERSE POST-TENSIONING STRAND IS NOT ALLOWED.

MAINTAIN A SYMMETRIC TENSION FORCE BETWEEN EACH PAIR OF TRANSVERSE POST TENSIONING STRANDS IN THE DIAPHRAGM.

THE #4 S11 STIRRUPS MAY BE SHIFTED AS NECESSARY TO MAINTAIN 1" CLEAR TO THE GROUTED RECESS.

FOR GROUT FOR STRUCTURES, SEE SPECIAL PROVISIONS.

THE PERMITTED THREADED INSERTS ARE DETAILED AS AN OPTION FOR THE CONTRACTOR TO ATTACH FALSEWORK AND FORMWORK DURING CONSTRUCTION.

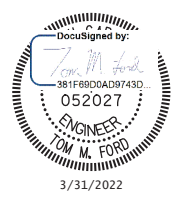
THE PERMITTED THREADED INSERTS IN THE EXTERIOR UNITS SHALL BE SIZED BY THE CONTRACTOR, SPACED AT 4'-0" CENTERS AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF THE STANDARD SPECIFICATIONS. STAINLESS STEEL THREADED INSERTS MAY BE USED AS AN ALTERNATE.

THE PERMITTED THREADED INSERTS SHALL BE GROUTED BY THE CONTRACTOR IMMEDIATELY FOLLOWING REMOVAL OF THE FALSEWORK.

THE COST OF THE PERMITTED THREADED INSERTS SHALL BE INCLUDED IN THE PRICE BID FOR THE PRECAST UNITS.

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-

SHEET 3 OF 3



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

3'-0" X 2'-0"
 PRESTRESSED CONCRETE
 CORED SLAB UNIT

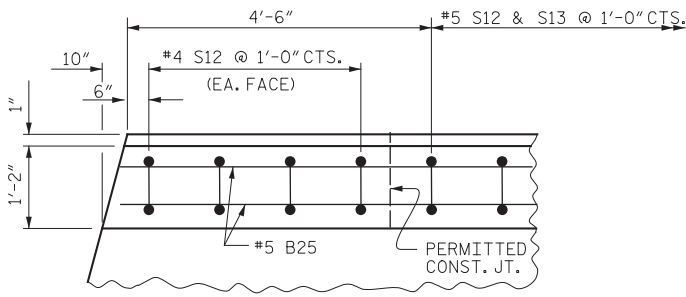
DRAWN BY : T. FORD DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



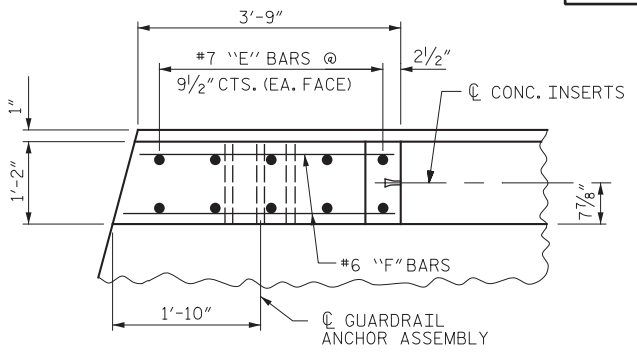
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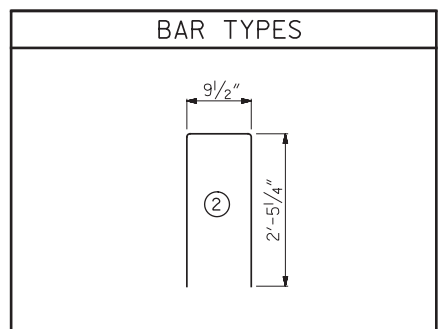
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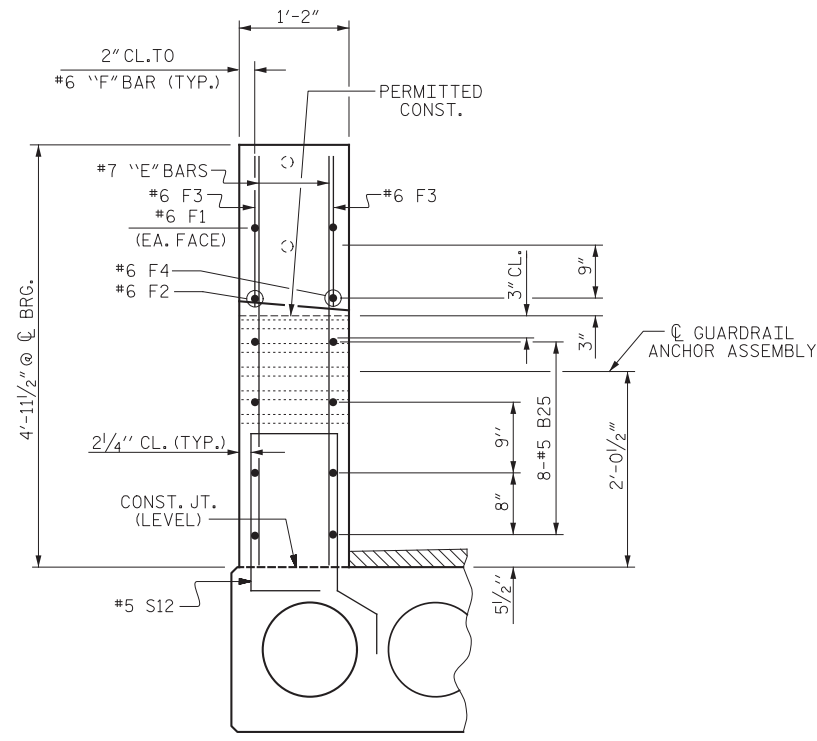
PLAN OF PARAPET



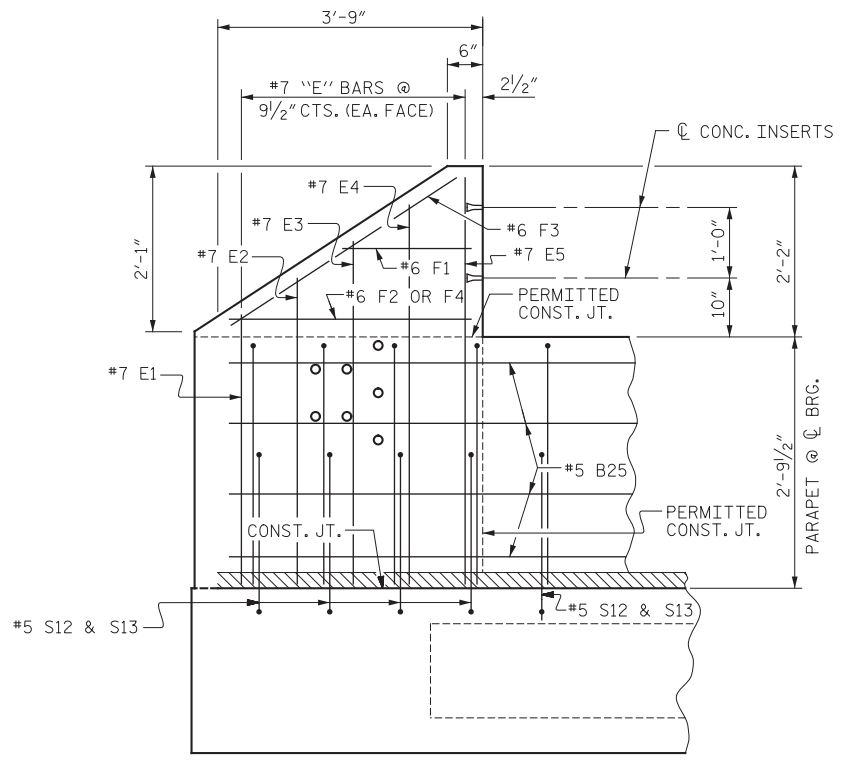
PLAN OF END POST



BAR TYPES



END VIEW



ELEVATION

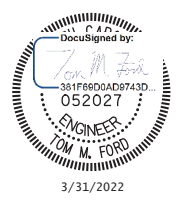
PARAPET AND END POST FOR TWO BAR RAIL

NOTES

ALL REINFORCING STEEL IN CONCRETE PARAPET SHALL BE EPOXY COATED.
 GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.
 FOR DETAILS OF CONCRETE INSERT AND GUARDRAIL ANCHOR ASSEMBLY, SEE "RAIL POST SPACINGS AND END OF RAIL DETAILS" SHEET.
 THE REINFORCING STEEL & CONCRETE IN THE END POSTS IS INCLUDED IN THE UNIT PRICE BID FOR THE CONCRETE PARAPET.

BILL OF MATERIAL FOR PARAPET & END POSTS					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
* B25	48	# 5	STR	22'-10"	1143
* E1	8	# 7	STR	2'-10"	46
* E2	8	# 7	STR	3'-4"	54
* E3	8	# 7	STR	3'-10"	63
* E4	8	# 7	STR	4'-5"	73
* E5	8	# 7	STR	4'-9"	78
* F1	8	# 6	STR	1'-9"	21
* F2	4	# 6	STR	3'-3"	20
* F3	8	# 6	STR	3'-6"	42
* F4	4	# 6	STR	3'-7"	22
* S13	144	# 5	2	5'-8"	851
* EPOXY COATED REINFORCING STEEL				LBS.	2413
CLASS AA CONCRETE				CU.YDS.	17.7
TOTAL LIN. FT. OF CONCRETE PARAPET					140.00

PROJECT NO. 17BP.13.R.192
 BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 CONCRETE PARAPET AND END POST DETAIL

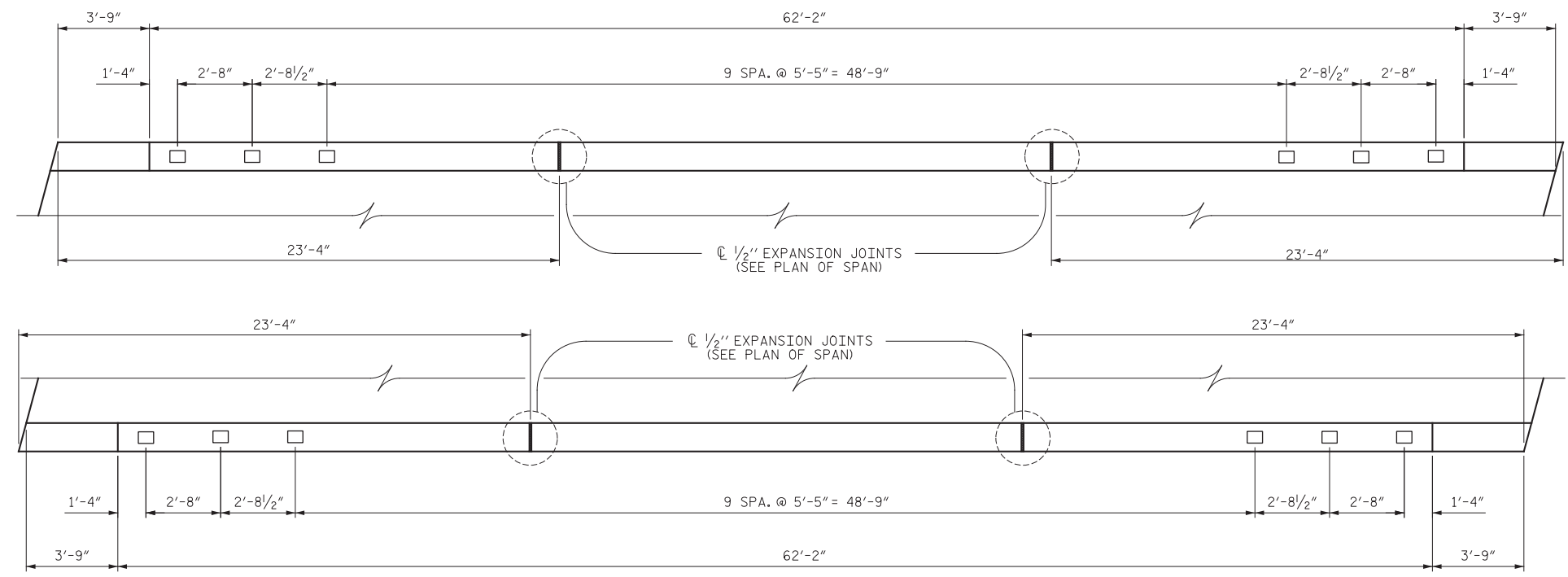
DRAWN BY : T. FORD DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD: T. FORD DATE : 3/2022



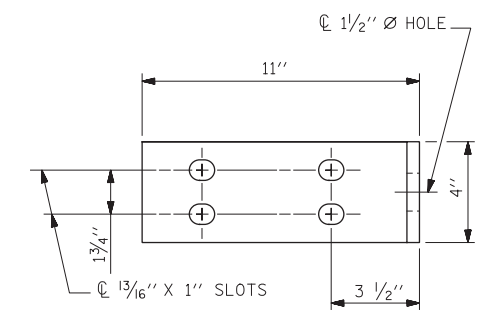
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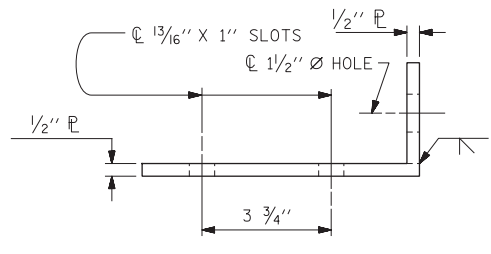
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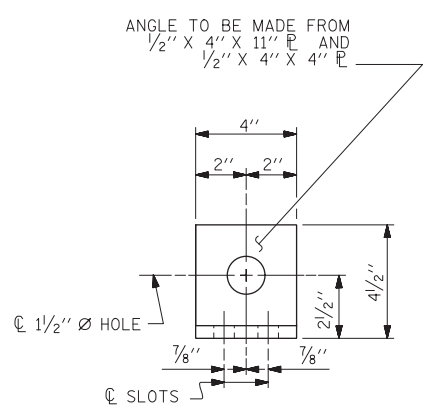
PLAN OF RAIL POST SPACINGS
TOTAL NUMBER OF POST = 28



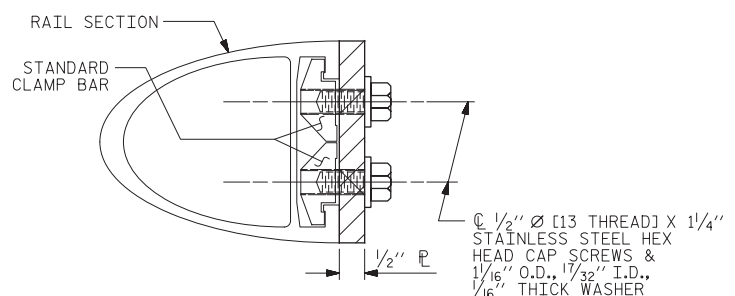
ELEVATION



TOP VIEW

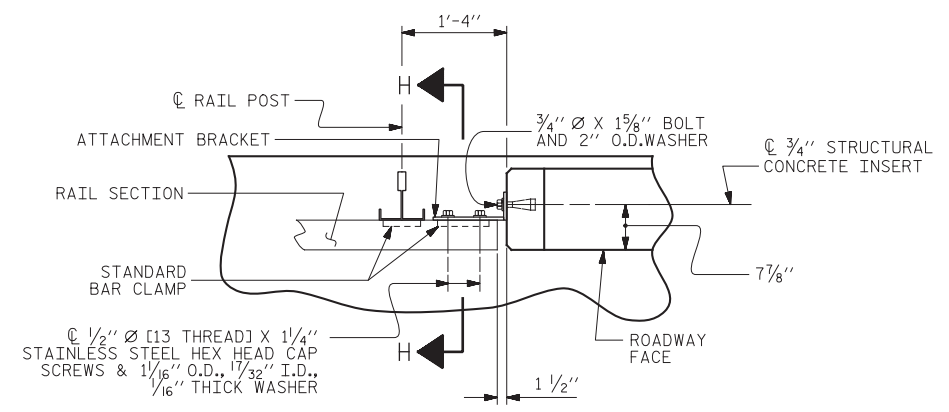


END VIEW (FIX AND EXP.)

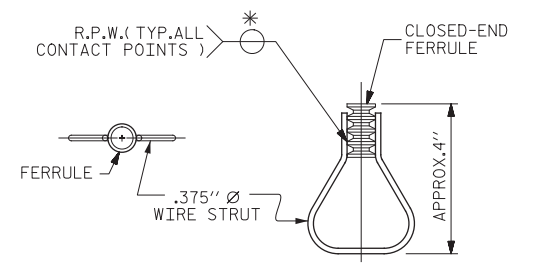


SECTION H-H (FIX)

FIXED



PLAN - RAIL AND END POST

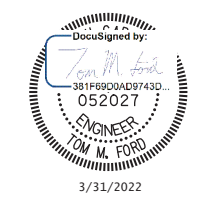


PLAN ELEVATION

STRUCTURAL CONCRETE INSERT

* EACH WELDED ATTACHMENT OF WIRE TO FERRULE SHALL DEVELOP THE TENSILE STRENGTH OF THE WIRE.

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
STANDARD RAIL POST SPACINGS AND END OF RAIL DETAILS FOR TWO BAR METAL RAILS

ASSEMBLED BY : T. FORD	DATE : 1/19
CHECKED BY : J. FARNHAM	DATE : 6/19
DRAWN BY : FCJ 1/88	REV. 5/1/06 TLA/GM
CHECKED BY : CRK 3/89	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC

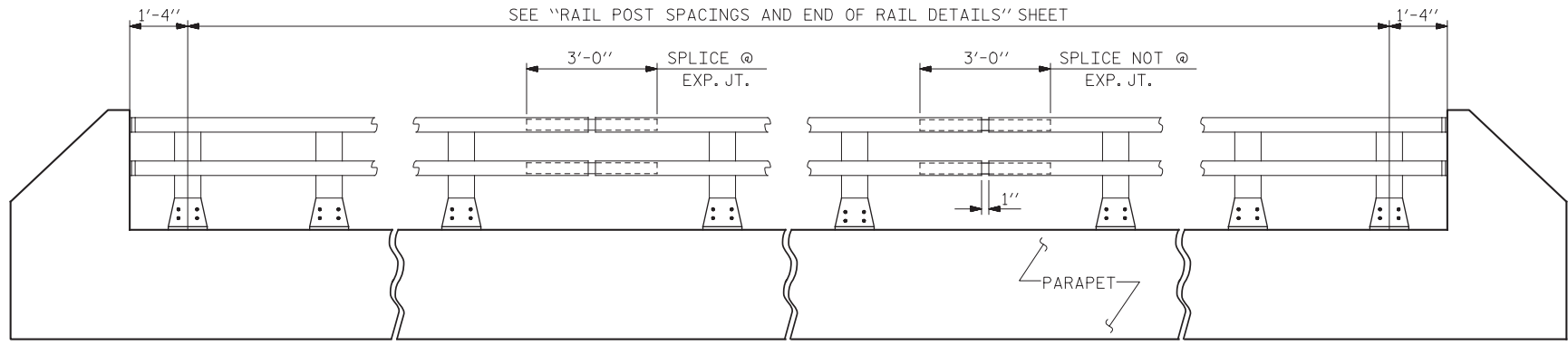


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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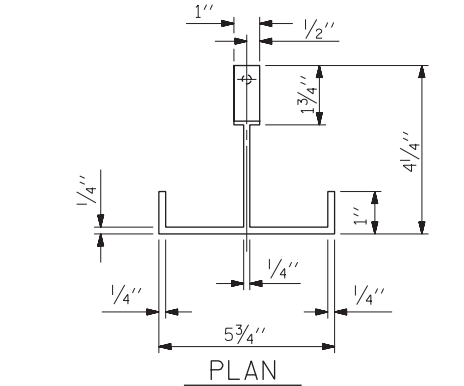
- NOTES**
STRUCTURAL CONCRETE INSERT
- THE STRUCTURAL CONCRETE INSERT ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF 1 1/2".
 - 1 - 3/4" Ø X 1 1/8" BOLT WITH WASHER, BOLT SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLT AND WASHER SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLT AND WASHER MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 1 1/8" GALVANIZED BOLT AND WASHER, THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)
 - WIRE STRUT SHOWN IN THE CONCRETE INSERT ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 3/16" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- NOTES**
METAL RAIL TO END POST CONNECTION
- THE METAL RAIL TO END POST CONNECTION SHALL CONSIST OF THE FOLLOWING COMPONENTS:
- 1/2" PLATES SHALL CONFORM TO AASHTO M270 GRADE 36 AND SHALL BE GALVANIZED AFTER FABRICATION.
 - 3/4" STRUCTURAL CONCRETE INSERT SHALL HAVE A WORKING LOAD SHEAR CAPACITY OF 4800 LBS. THE FERRULES SHALL ENGAGE A 3/4" Ø X 1 1/8" BOLT WITH 2" O.D. WASHER IN PLACE. THE 3/4" Ø X 1 1/8" BOLT SHALL HAVE N. C. THREADS.
 - CAP SCREWS FOR RAIL ATTACHMENT TO ANGLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM F593 ALLOY 305 STAINLESS STEEL. CAP SCREWS TO BE CENTERED IN SLOTS AT 60° F.
 - STANDARD CLAMP BARS (SEE METAL RAIL SHEET).
 - 1/2" Ø PIPE SLEEVES (IF REQUIRED) TO BE GALVANIZED.
- THE COST OF THE STANDARD CLAMP BARS AND CAP SCREWS USED IN THE METAL RAIL TO END POST CONNECTION SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR LINEAR FEET OF 1 OR 2 BAR METAL RAILS.
- THE 3/4" STRUCTURAL CONCRETE INSERT WITH BOLT SHALL BE ASSEMBLED IN THE SHOP.
- THE COST OF THE 3/4" STRUCTURAL CONCRETE INSERT ASSEMBLY, AND THE 1/2" PLATES COMPLETE IN PLACE SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.
- THE CONTRACTOR, AT HIS OPTION, MAY USE AN ADHESIVE BONDING SYSTEM IN LIEU OF THE STRUCTURAL CONCRETE INSERT EMBEDDED IN THE END POST. IF THE ADHESIVE BONDING SYSTEM IS USED, THE 3/4" Ø X 1 1/8" BOLT WITH WASHER SHALL BE REPLACED WITH A 3/4" Ø X 6 1/2" BOLT AND 2" O.D. WASHER. ALL SPECIFICATIONS THAT APPLY TO THE 3/4" Ø X 1 1/8" BOLT SHALL APPLY TO THE 3/4" Ø X 6 1/2" BOLT. FIELD TESTING OF THE ADHESIVE BONDING SYSTEM IS NOT REQUIRED.

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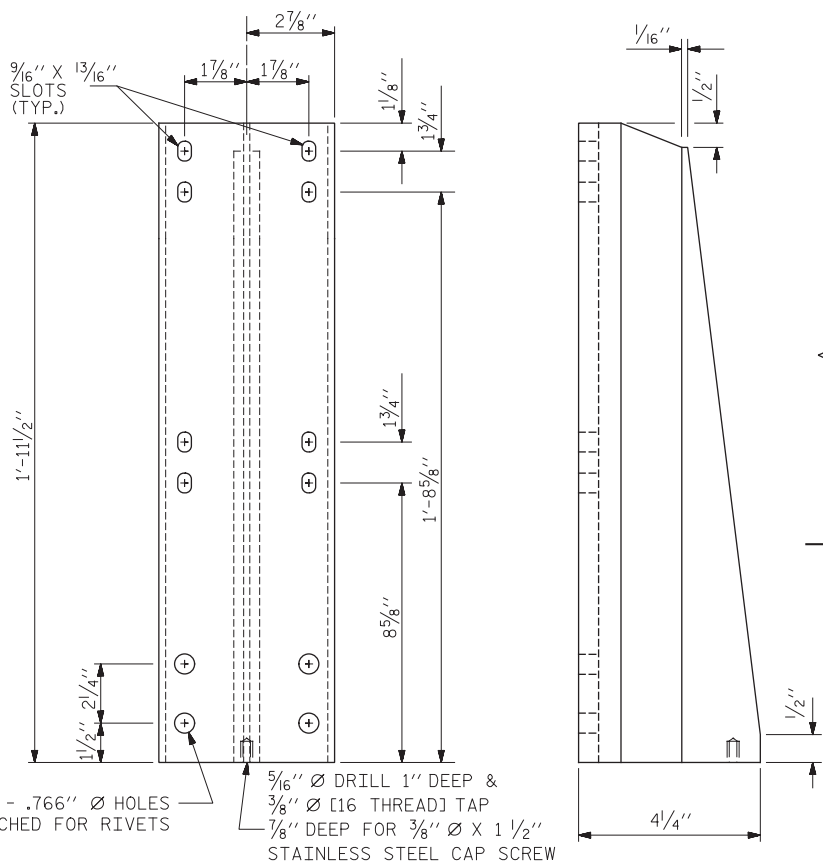


ELEVATION

NOTE : FOR ATTACHMENT OF METAL RAIL TO END POST, SEE STANDARD NO. BMR2.

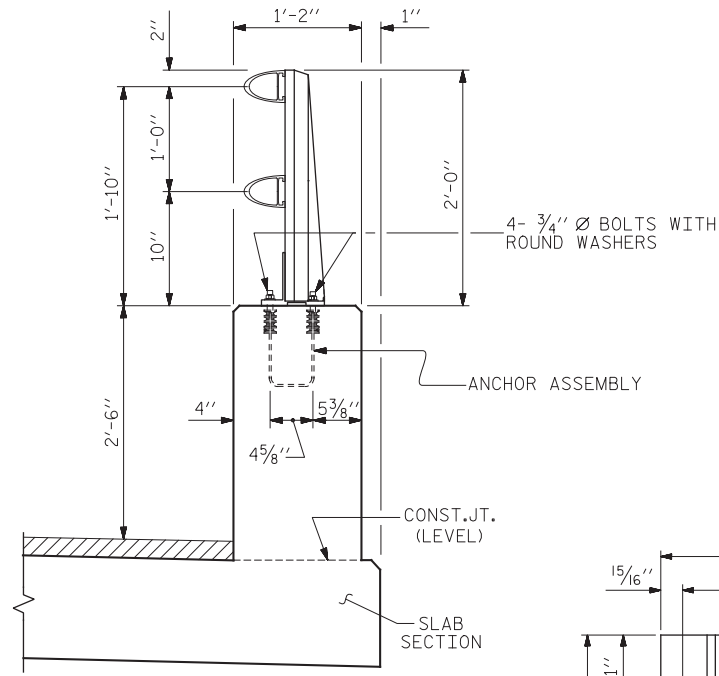


PLAN

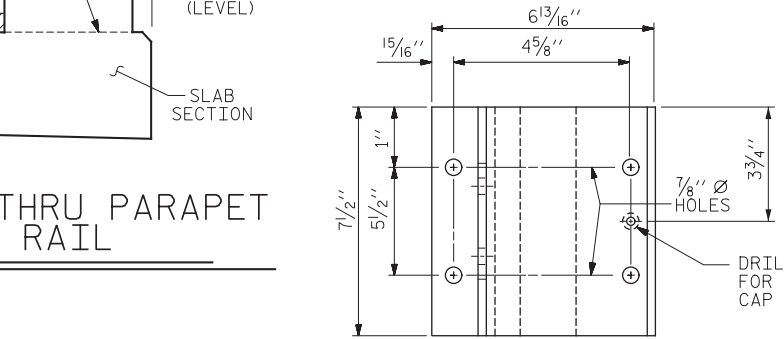


FRONT ELEVATION SIDE ELEVATION
DETAILS OF POST

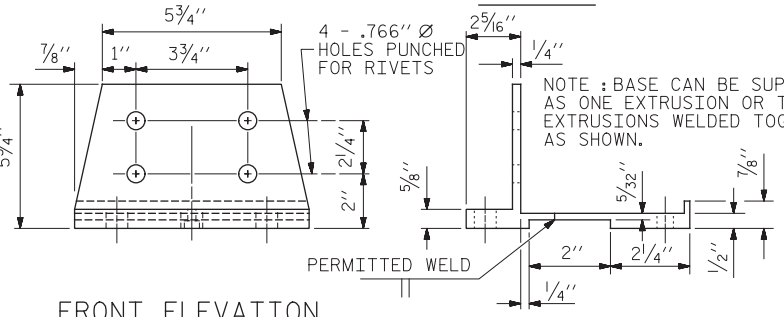
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CHECKED BY : J.FARNHAM	DATE : 6/19
DRAWN BY : EEM 6/94	REV. 10/1/11 MAA/GM
CHECKED BY : RGW 6/94	REV. 6/13 MAA/GM
	REV. 12/17 MAA/THC



SECTION THRU PARAPET AND RAIL



PLAN



FRONT ELEVATION SIDE ELEVATION
POST BASE DETAILS

NOTES

AT THE CONTRACTOR'S OPTION, METAL RAIL MAY BE EITHER ALUMINUM OR GALVANIZED STEEL IN ACCORDANCE WITH THE REQUIREMENTS OF THE GENERAL NOTES AND THE FOLLOWING SPECIFICATIONS FOR THE ALTERNATE MATERIALS; HOWEVER, THE CONTRACTOR WILL BE REQUIRED TO USE THE SAME RAIL MATERIAL ON ALL STRUCTURES ON THE PROJECT FOR WHICH METAL RAIL IS DESIGNATED.

UNLESS OTHERWISE REQUIRED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR HAS THE OPTION TO USE AN ALTERNATE TO THE 2 BAR METAL RAIL. THE ALTERNATE RAIL SHALL MEET THE REQUIREMENTS OF THE AASHTO LRFBIDGE DESIGN SPECIFICATIONS AND MUST BE LISTED ON THE DEPARTMENT'S APPROVED PRODUCTS LIST (APL) UNDER "2 BAR METAL RAIL ALTERNATE". ADJUSTMENTS TO THE CONCRETE PARAPET WILL NOT BE ALLOWED.

ALUMINUM RAILS

MATERIAL FOR POSTS, BASES AND RAILS, EXPANSION BARS AND CLAMP BARS SHALL BE ASTM B-221 ALLOY 6061-T6. MATERIAL FOR RIVETS SHALL BE ASTM B316 ALLOY 6061-T6. RIVETS SHALL BE STANDARD BUTTON HEAD AND CONE POINT COLD DRIVEN AS PER DRAWING.

THE BASE OF RAIL POSTS, OR ANY OTHER ALUMINUM SURFACE IN CONTACT WITH CONCRETE SHALL BE THOROUGHLY COATED WITH AN ALUMINUM IMPREGNATED CAULKING COMPOUND OF APPROVED QUALITY.

MATERIAL FOR SHIMS TO BE ASTM B209 ALLOY 6061-T6.

GALVANIZED STEEL RAILS

MATERIAL AND GALVANIZING ARE TO CONFORM TO THE FOLLOWING SPECIFICATIONS:

POST, POST BASES, RAILS, EXPANSION BARS AND CLAMP BARS: AASHTO M270 GRADE 36 STRUCTURAL STEEL - GALVANIZED TO AASHTO M111.

RIVETS: RIVETS SHALL MEET THE REQUIREMENTS OF ASTM A502 FOR GRADE 1 RIVETS.

THE CUT ENDS OF GALVANIZED STEEL RAILING, AFTER GRINDING SMOOTH SHALL BE GIVEN TWO COATS OF ZINC RICH PAINT MEETING THE REQUIREMENTS OF FEDERAL SPECIFICATION MIL-P-26915 USAF TYPE 1, OR OF FEDERAL SPECIFICATIONS TT-P-641.

SHIMS: SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

RAIL CAPS: RAIL CAPS SHALL MEET THE REQUIREMENTS OF ASTM A570 FOR GRADE 33 OR A611 FOR GRADE C AND SHALL BE GALVANIZED IN ACCORDANCE WITH AASHTO M111.

GENERAL NOTES

RAILING SHALL BE CONTINUOUS FROM END POST TO END POST OF BRIDGE. EACH JOINT IN RAIL LENGTH SHALL BE SPLICED AS DETAILED. PANEL LENGTHS OF RAIL SHALL BE ATTACHED TO A MINIMUM OF THREE POSTS.

FOR END OF RAIL TO CLEAR FACE OF CONCRETE END POST DIMENSION, SEE STANDARD NO. BMR2.

CAP SCREWS SHALL BE ASTM F593 ALLOY 305 STAINLESS STEEL. WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

CERTIFIED MILL REPORTS ARE REQUIRED FOR RAILS AND POSTS. SHOP INSPECTION IS NOT REQUIRED.

METAL RAIL POSTS SHALL BE SET NORMAL TO CURB GRADE.

METHOD OF MEASUREMENT FOR METAL RAILS: FOR LENGTH OF METAL RAILS TO BE PAID FOR, SEE THE STANDARD SPECIFICATIONS.

CURVED RAIL USAGE: WHERE RAILS ARE TO BE USED ON BRIDGES ON HORIZONTAL AND/OR VERTICAL CURVATURE THE CONTRACTOR MAY, AT HIS OPTION, HAVE THE REQUIRED CURVATURE IN THE RAIL FORMED IN THE SHOP OR IN THE FIELD. IN EITHER EVENT, THE RAIL SHALL CONFORM WITHOUT BUCKLING OR KINKING TO THE REQUIRED CURVATURE IN A UNIFORM MANNER ACCEPTABLE TO THE ENGINEER.

TO INSURE FUTURE IDENTIFICATION OF THE FABRICATOR, A PERMANENT IDENTIFYING MARK SHALL BE PLACED ON EACH POST. THE METHOD OF MARKING AND LOCATION SHALL BE SUCH THAT IT DOES NOT DETRACT FROM THE APPEARANCE OF THE POST, BUT REMAINS VISIBLE AFTER RAIL PLACEMENT.

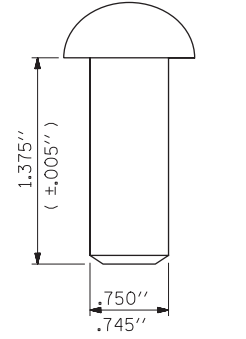
SHIMS SHALL BE USED AS NECESSARY FOR POST ALIGNMENT.

ALLOY 6351-T5 MAY BE SUBSTITUTED FOR ALLOY 6061-T6 WHERE APPLICABLE.

MINOR VARIATIONS IN DETAILS OF METAL RAIL WILL BE CONSIDERED. DETAILS OF SUCH VARIATIONS, IF DESIRED, SHALL BE SUBMITTED FOR APPROVAL.

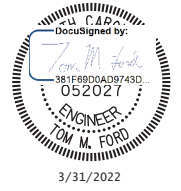
GROOVED CONTRACTION JOINTS, 1/2" IN DEPTH, SHALL BE TOOLED IN ALL EXPOSED FACES OF THE PARAPET AND IN ACCORDANCE WITH ARTICLE 825-10(B) OF THE STANDARD SPECIFICATIONS. A CONTRACTION JOINT SHALL BE LOCATED AT EACH THIRD POINT BETWEEN PARAPET EXPANSION JOINTS. ONLY ONE CONTRACTION JOINT IS REQUIRED AT MIDPOINT OF PARAPET SEGMENTS LESS THAN 20 FEET IN LENGTH AND NO CONTRACTION JOINTS ARE REQUIRED FOR THOSE SEGMENTS LESS THAN 10 FEET IN LENGTH.

PAY LENGTH = 125.0 LIN. FT.



RIVET DETAIL

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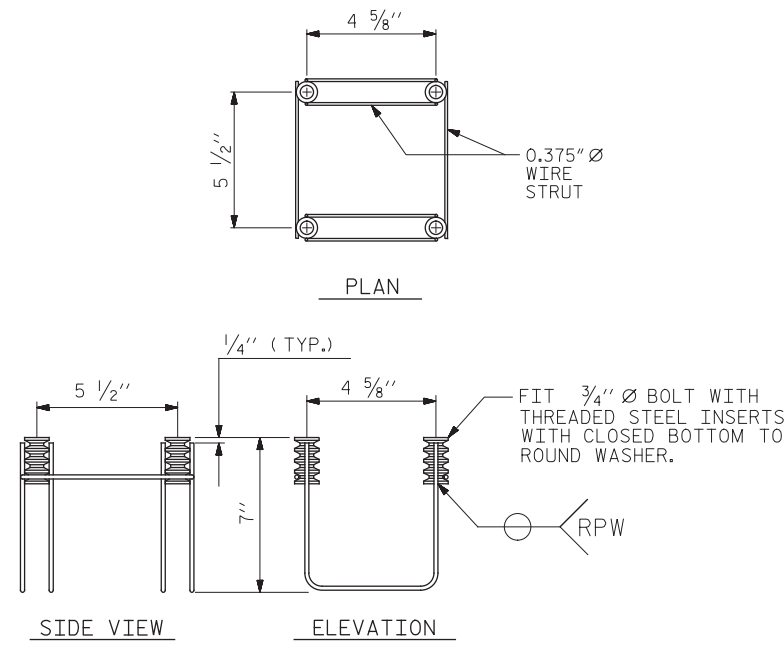
STANDARD
 2 BAR METAL RAIL

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2			4			18



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4-BOLT METAL RAIL ANCHOR ASSEMBLY
(28 ASSEMBLIES REQUIRED)

NOTES

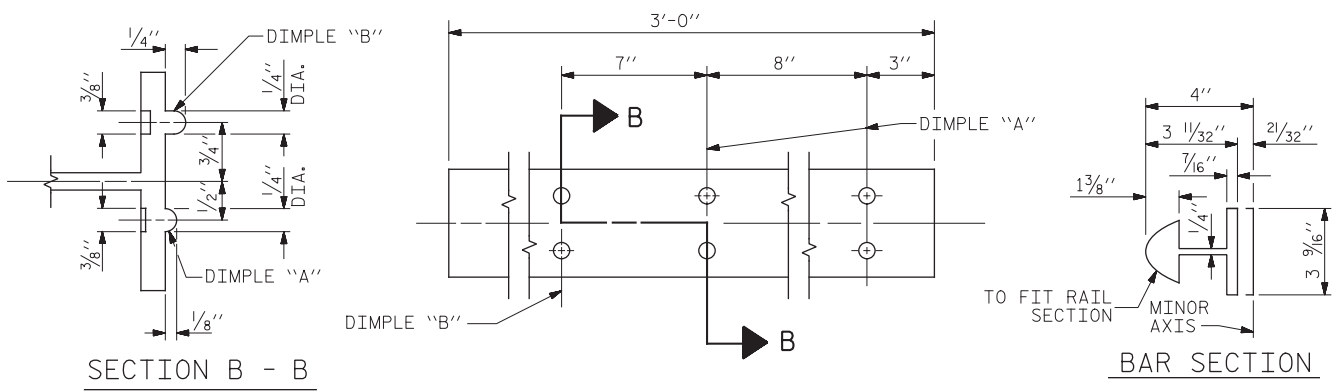
STRUCTURAL CONCRETE ANCHOR ASSEMBLY

THE STRUCTURAL CONCRETE ANCHOR ASSEMBLY SHALL CONSIST OF THE FOLLOWING COMPONENTS :

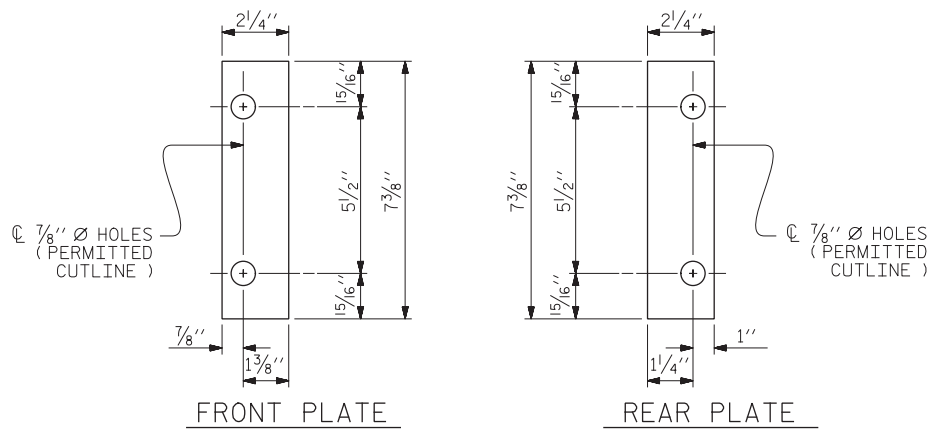
- FERRULES SHALL BE MADE FROM STEEL MEETING THE REQUIREMENTS OF AASHTO M169, GRADE 12L14 AND SHALL HAVE A MINIMUM LENGTH OF THREADS OF 2" FOR 3/4" FERRULES.
- 4 - 3/4" Ø X 2 1/2" BOLTS WITH WASHERS. BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307. BOLTS AND WASHERS SHALL BE GALVANIZED. AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 3/4" Ø X 2 1/2" GALVANIZED BOLTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- WIRE STRUT SHOWN IN THE CONCRETE ANCHOR ASSEMBLY DETAIL IS THE MINIMUM ALLOWABLE SIZE AND SHALL HAVE A MINIMUM TENSILE STRENGTH OF 100,000 PSI. AS AN OPTION, A 1/6" Ø WIRE STRUT WITH A MINIMUM TENSILE STRENGTH OF 90,000 PSI IS ACCEPTABLE.
- THE METAL RAIL ANCHOR ASSEMBLIES TO BE HOT DIPPED GALVANIZED TO CONFORM TO REQUIREMENTS OF AASHTO M111.
- THE COST OF THE METAL RAIL ANCHOR ASSEMBLY WITH BOLTS AND WASHERS COMPLETE IN PLACE SHALL BE INCLUDED IN THE PRICE BID FOR LINEAR FEET OF METAL RAIL.
- BOLTS TO BE TIGHTENED ONE-HALF TURN WITH A WRENCH FROM A FINGER-TIGHT POSITION.

THE CONTRACTOR MAY USE ADHESIVELY ANCHORED ANCHOR BOLTS IN PLACE OF THE METAL RAIL ANCHOR ASSEMBLY. LEVEL ONE FIELD TESTING IS REQUIRED, AND THE YIELD LOAD OF THE 3/4" Ø BOLT IS 10 KIPS. FOR ADHESIVELY ANCHORED ANCHOR BOLTS OR DOWELS, SEE THE STANDARD SPECIFICATIONS.

WHEN ADHESIVELY ANCHORED ANCHOR BOLTS ARE USED, BOLTS SHALL MEET THE REQUIREMENTS OF ASTM F593 ALLOY 304 STAINLESS STEEL WITH MINIMUM 75,000 PSI ULTIMATE STRENGTH. NUTS SHALL MEET THE REQUIREMENTS OF ASTM F594 ALLOY 304 STAINLESS STEEL AND WASHERS SHALL MEET THE REQUIREMENTS OF ASTM F844 EXCEPT THEY SHALL BE MADE FROM ALLOY 304 STAINLESS STEEL.

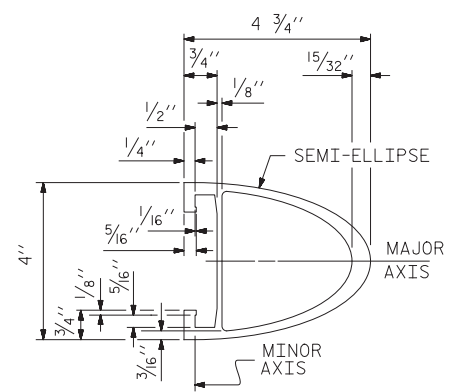


EXPANSION BAR DETAILS

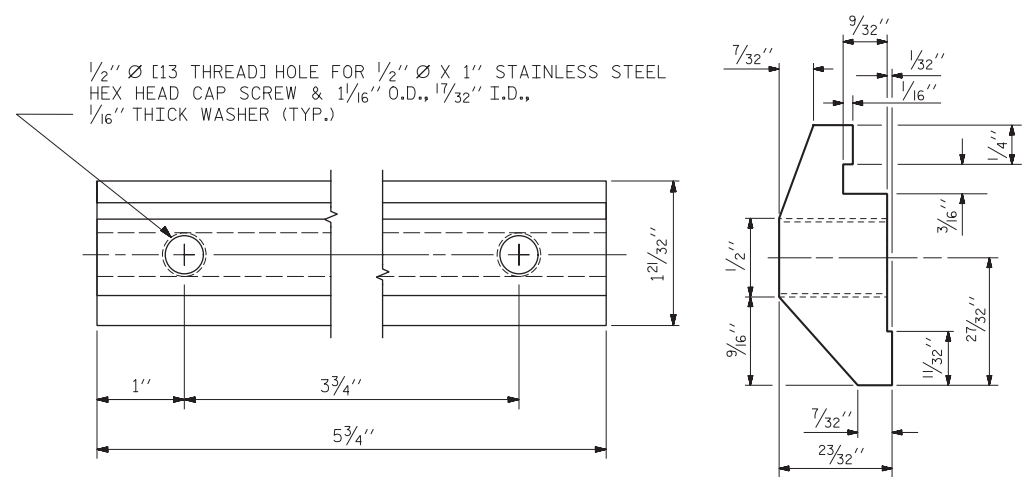


SHIM DETAILS

NOTE : SHIMS MAY BE CUT ALONG PERMITTED CUTLINE OR SLOTTED TO EDGE OF PLATE TO FACILITATE PLACEMENT.

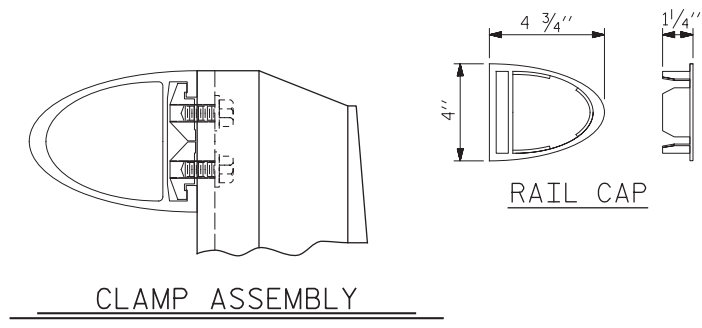


RAIL SECTION



CLAMP BAR DETAIL

(4 REQUIRED PER POST)

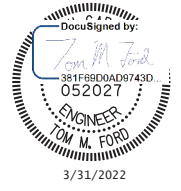


CLAMP ASSEMBLY

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 BRIDGE NO. 13+07.54 -L-

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STANDARD
 2 BAR METAL RAIL



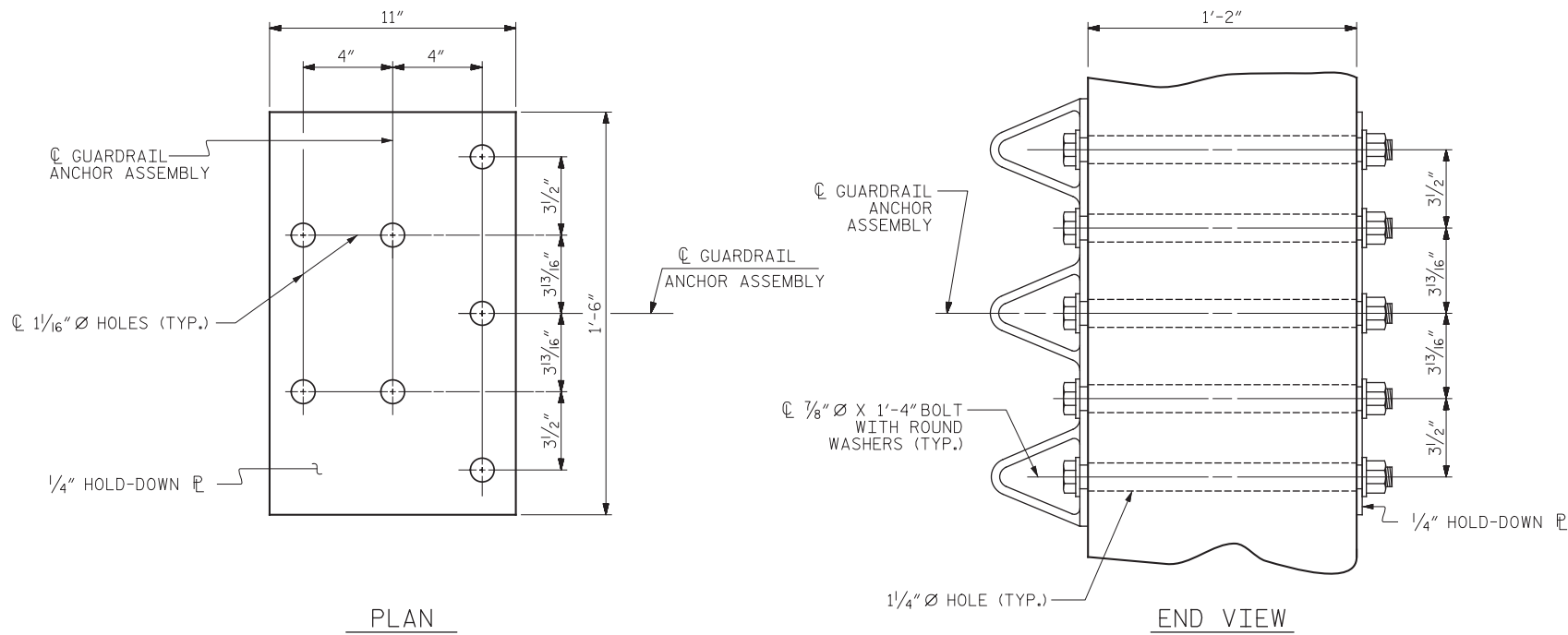
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CHECKED BY : J. FARNHAM	DATE : 6/19
DRAWN BY : EEM 6/94	REV. 5/1/06R KMM/GM
CHECKED BY : RGW 6/94	REV. 10/1/11 MAA/GM
	REV. 12/17 MAA/THC



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GUARDRAIL ANCHOR ASSEMBLY DETAILS

NOTES

THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 7 - 7/8" Ø BOLTS WITH NUTS AND WASHERS.

THE HOLD-DOWN PLATE SHALL CONFORM TO AASHTO M270 GRADE 36. AFTER FABRICATION, THE HOLD-DOWN PLATE SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH AASHTO M111.

BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M291. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. (AT THE CONTRACTOR'S OPTION, STAINLESS STEEL BOLTS, NUTS AND WASHERS MAY BE USED AS AN ALTERNATE FOR THE 7/8" Ø GALVANIZED BOLTS, NUTS AND WASHERS. THEY SHALL CONFORM TO OR EXCEED THE MECHANICAL REQUIREMENTS OF ASTM A307. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.)

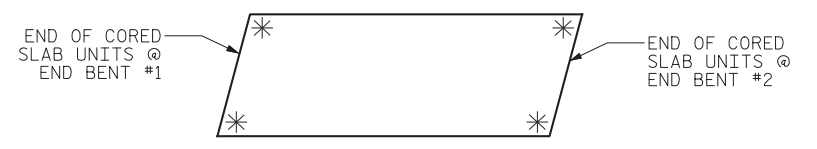
THE GUARDRAIL ANCHOR ASSEMBLY IS REQUIRED AT ALL POINTS WHERE APPROACH GUARDRAIL IS TO BE ATTACHED TO THE END OF PARAPET. FOR POINTS OF ATTACHMENT, SEE SKETCH.

AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL.

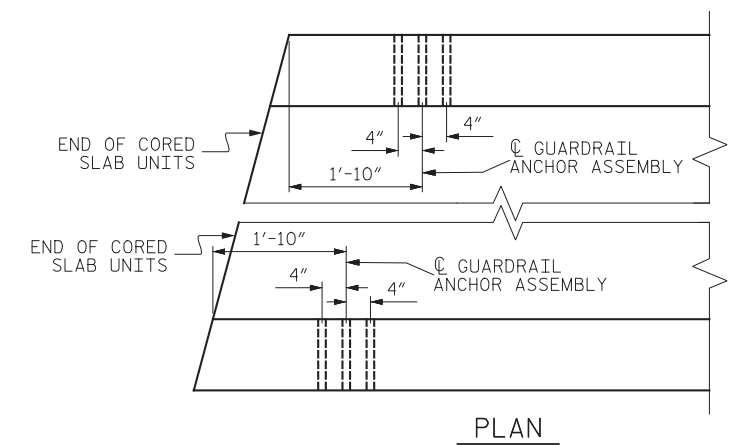
THE COST OF THE GUARDRAIL ANCHOR ASSEMBLIES WITH BOLTS, NUTS, AND WASHERS COMPLETE IN PLACE, SHALL BE INCLUDED IN THE VARIOUS PAY ITEMS.

THE VERTICAL REINFORCING BARS MAY BE SHIFTED SLIGHTLY IN THE END POST TO CLEAR ASSEMBLY BOLTS.

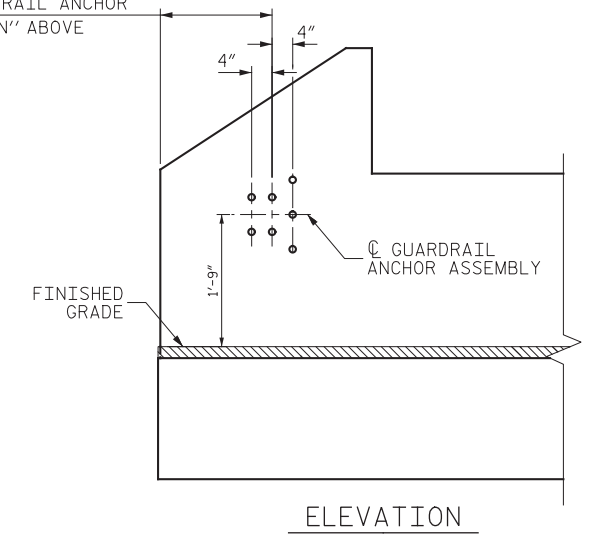
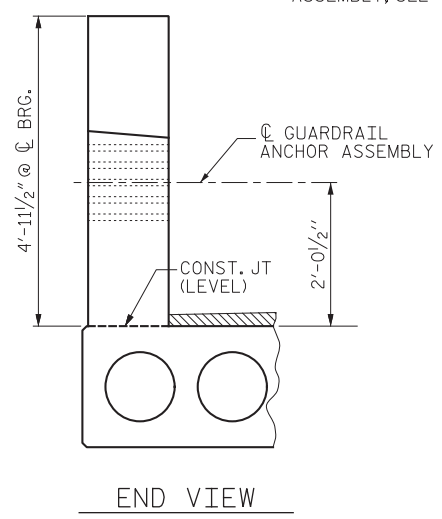
THE 1 1/4" Ø HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



SKETCH SHOWING POINTS OF ATTACHMENT
*LOCATION OF GUARDRAIL ATTACHMENT

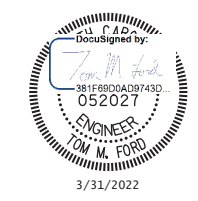


FOR LOCATION OF GUARDRAIL ANCHOR ASSEMBLY, SEE "PLAN" ABOVE



LOCATION OF GUARDRAIL ANCHOR AT END POST

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STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH
 STANDARD
 GUARDRAIL ANCHORAGE
 DETAILS FOR METAL
 RAILS & VERTICAL
 CONCRETE BARRIER RAIL

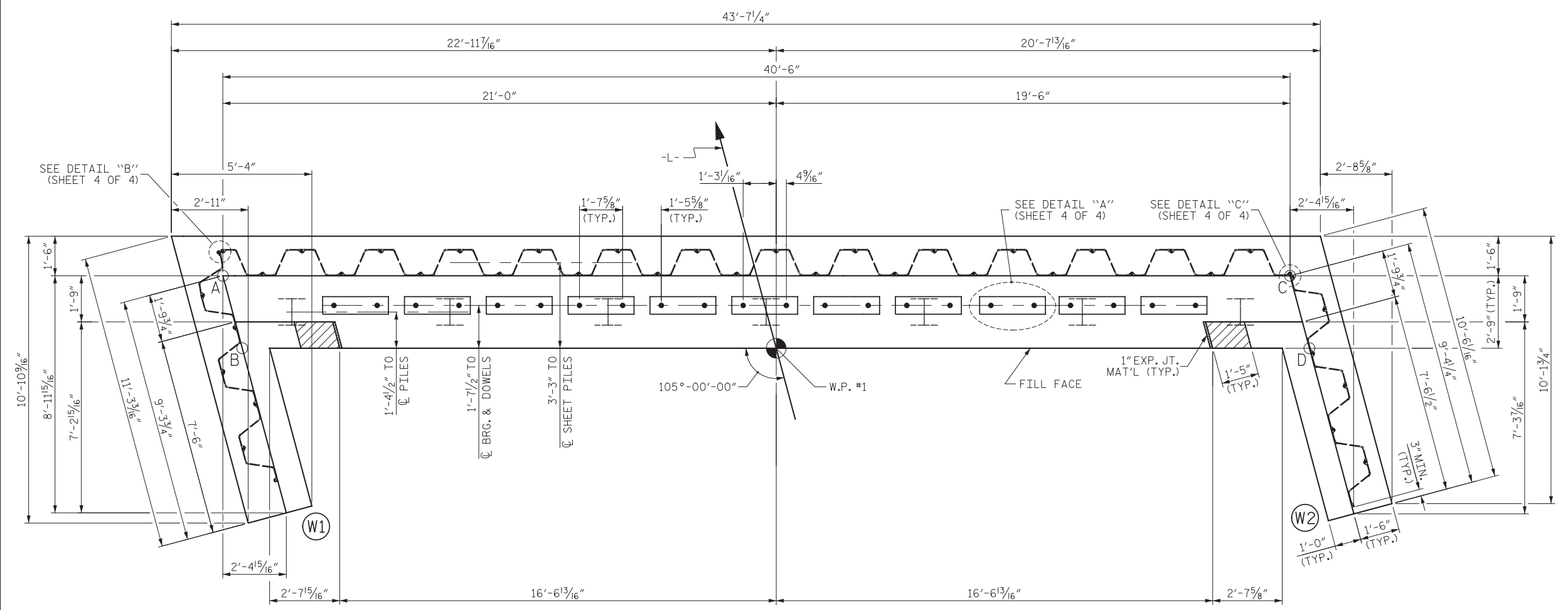
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CHECKED BY : J.FARNHAM	DATE : 6/19
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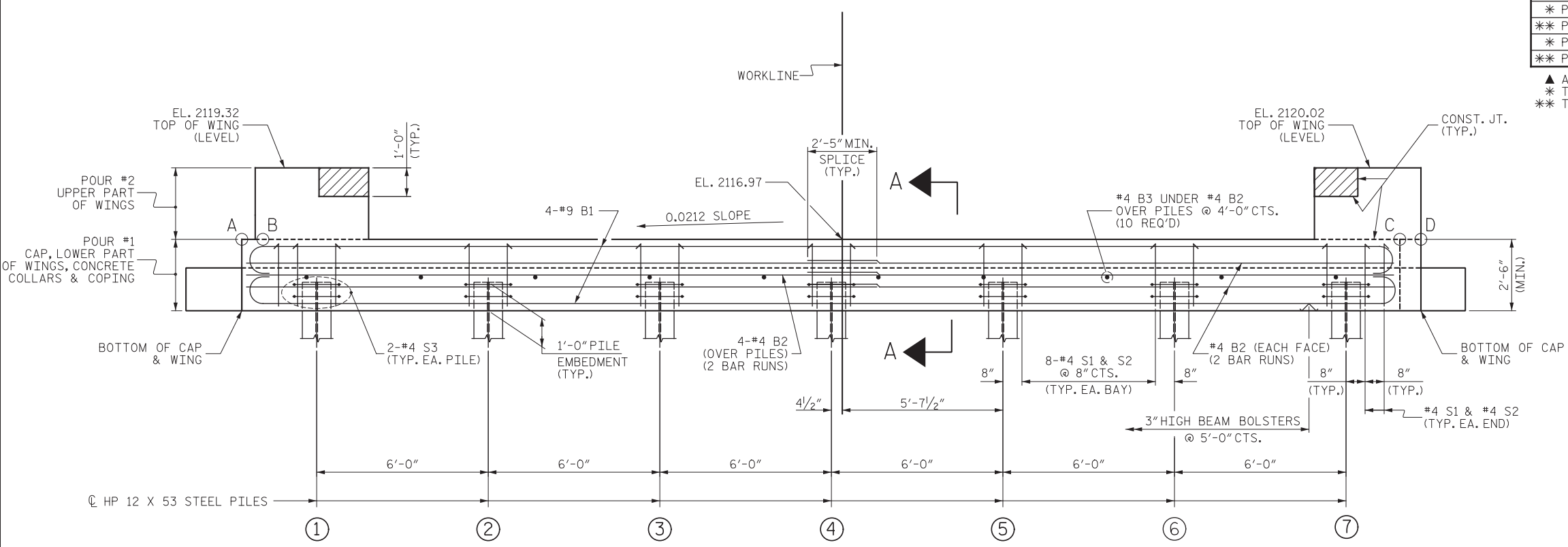
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PLAN



ELEVATION

WINGS AND SHEET PILES NOT SHOWN FOR CLARITY.
 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.

NOTES

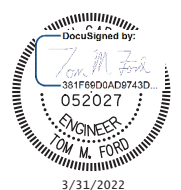
- STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.
- THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.
- FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.
- FOR WING DETAILS, SEE SHEET 3 OF 4.

CAP ELEVATIONS		
	TOP OF CAP	▲ BOTTOM OF CAP
* POINT A	2116.52	2114.02
** POINT B	2116.54	2114.04
* POINT C	2117.38	2114.88
** POINT D	2117.40	2114.90

▲ ASSUMES MIN. CAP DEPTH
 * TAKEN ALONG FACE OF CAP
 ** TAKEN IN ALIGNMENT WITH FILL FACE

TOP OF PILE ELEVATIONS	
①	2115.08
②	2115.21
③	2115.33
④	2115.46
⑤	2115.59
⑥	2115.71
⑦	2115.84

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 BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 1 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

SUBSTRUCTURE
 END BENT 1

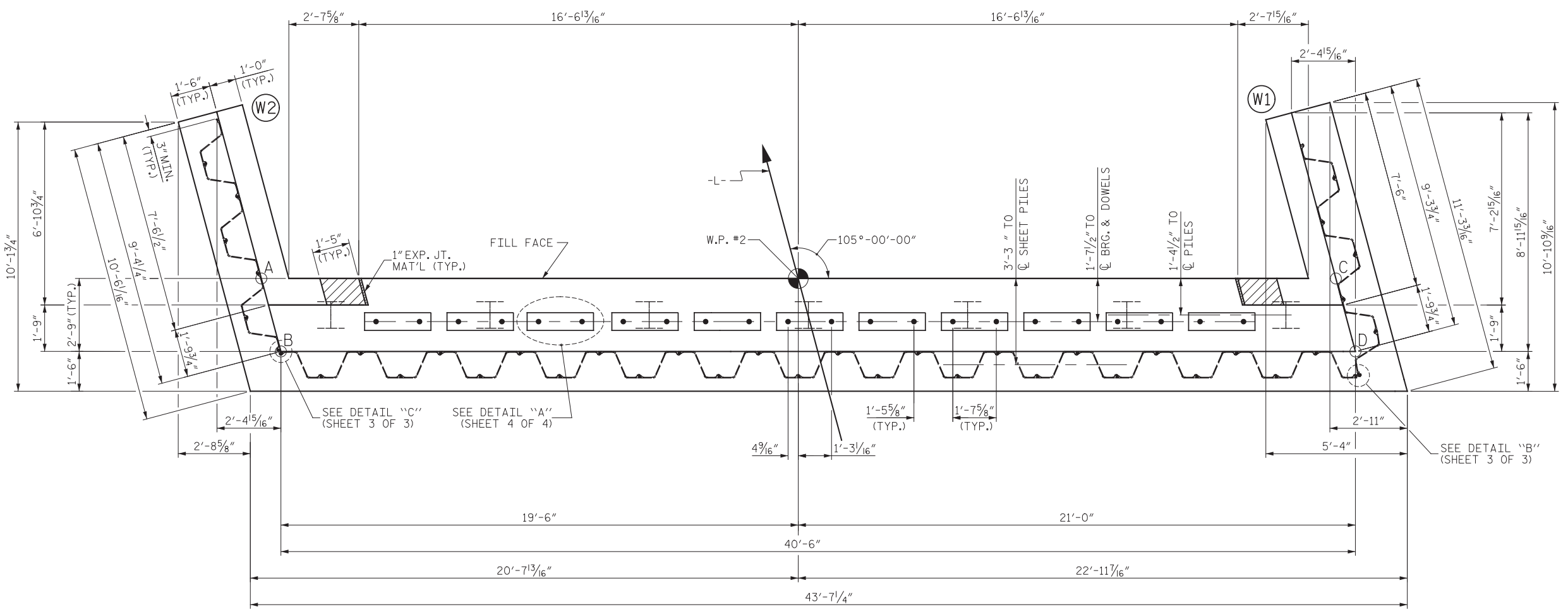
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 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



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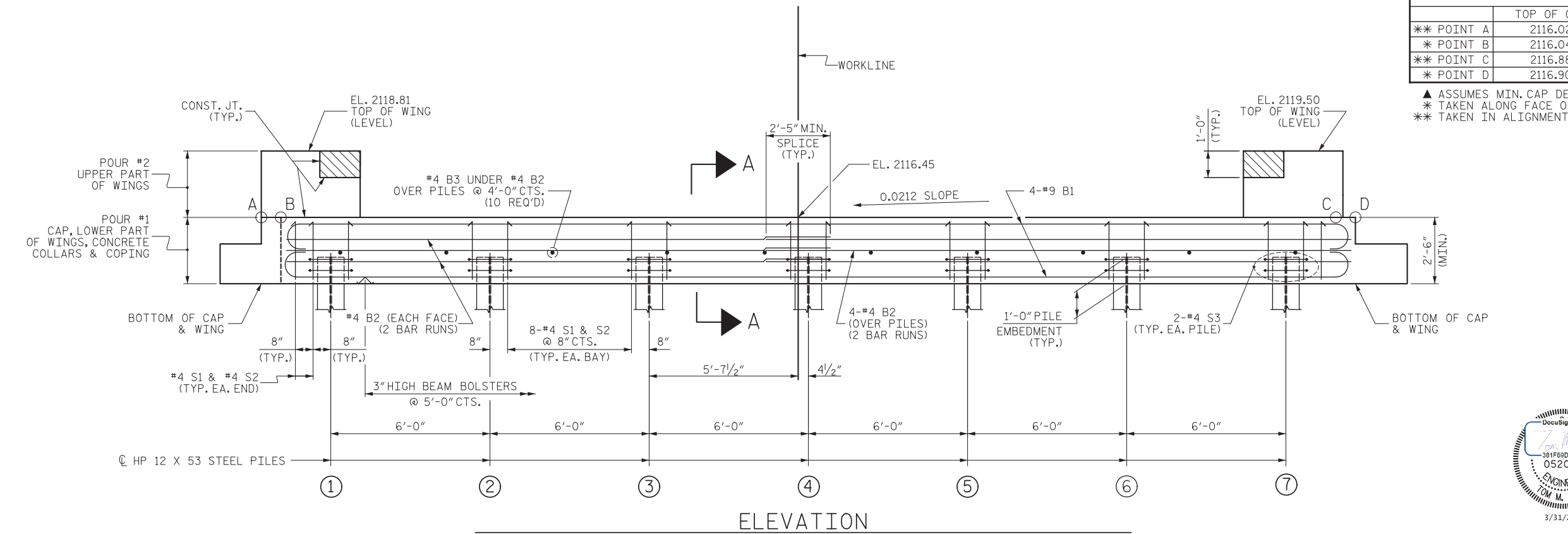
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STIRRUPS IN CAP MAY BE SHIFTED AS NECESSARY TO CLEAR DOWELS.

THE CONCRETE IN THE SHADED AREA OF THE WING SHALL BE POURED AFTER THE VERTICAL CONCRETE BARRIER RAIL IS CAST IF SLIP FORMING IS USED.

FOR PILE SPLICE DETAILS, SEE SHEET 4 OF 4.

FOR WING DETAILS, SEE SHEET 3 OF 4.



CAP ELEVATIONS		
	TOP OF CAP	▲ BOTTOM OF CAP
** POINT A	2116.02	2113.52
** POINT B	2116.04	2113.54
** POINT C	2116.88	2114.38
* POINT D	2116.90	2114.40

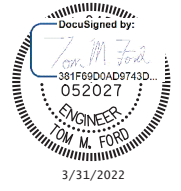
▲ ASSUMES MIN. CAP DEPTH
 * TAKEN ALONG FACE OF CAP
 ** TAKEN IN ALIGNMENT WITH FILL FACE

TOP OF PILE ELEVATIONS	
①	2114.58
②	2114.71
③	2114.83
④	2114.96
⑤	2115.09
⑥	2115.21
⑦	2115.34

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 2 OF 4

STATE OF NORTH CAROLINA
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SUBSTRUCTURE
 END BENT 2



DRAWN BY : M. SPENCER DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022

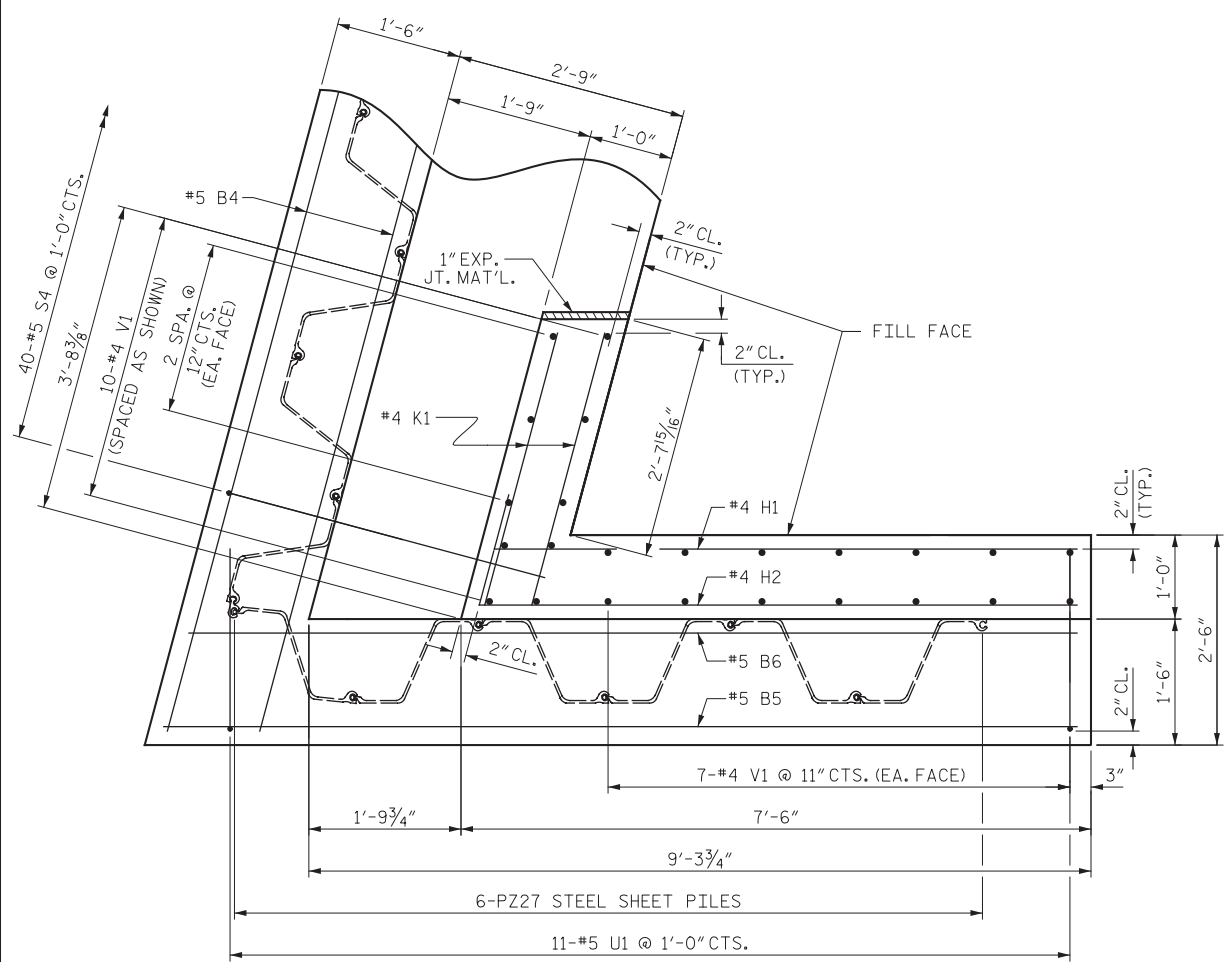
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 FOR SECTION A-A, SEE SHEET 4 OF 4.
 CONCRETE COLLARS FOR STEEL PILES NOT SHOWN IN PLAN AND ELEVATION VIEWS FOR CLARITY.
 SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL", SHEET 4 OF 4.



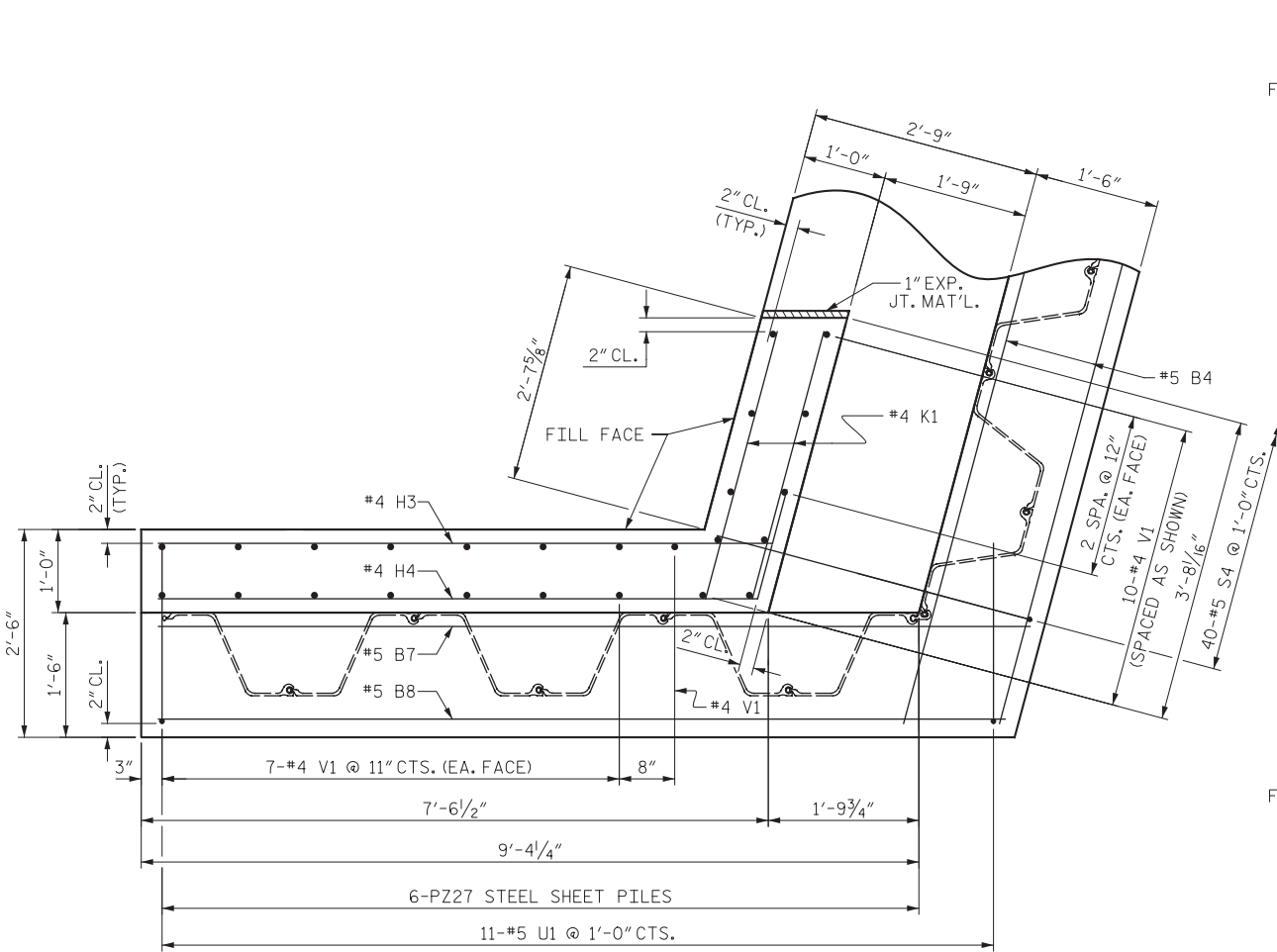
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2			4			18

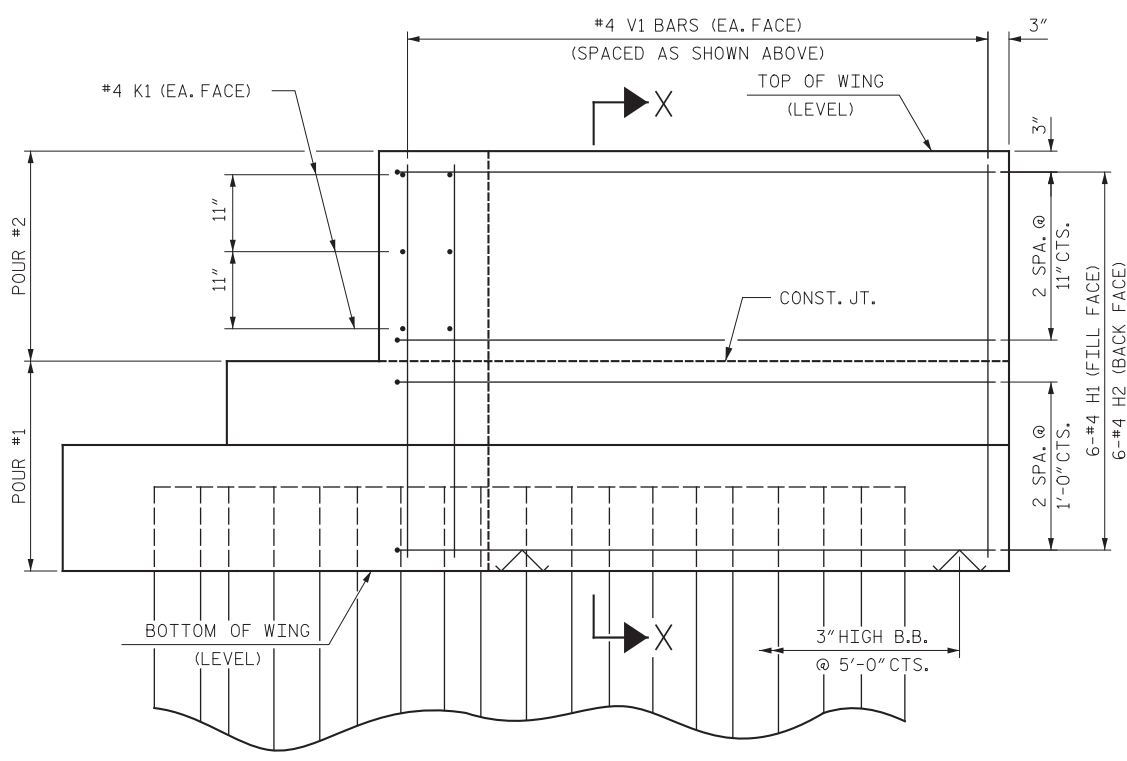
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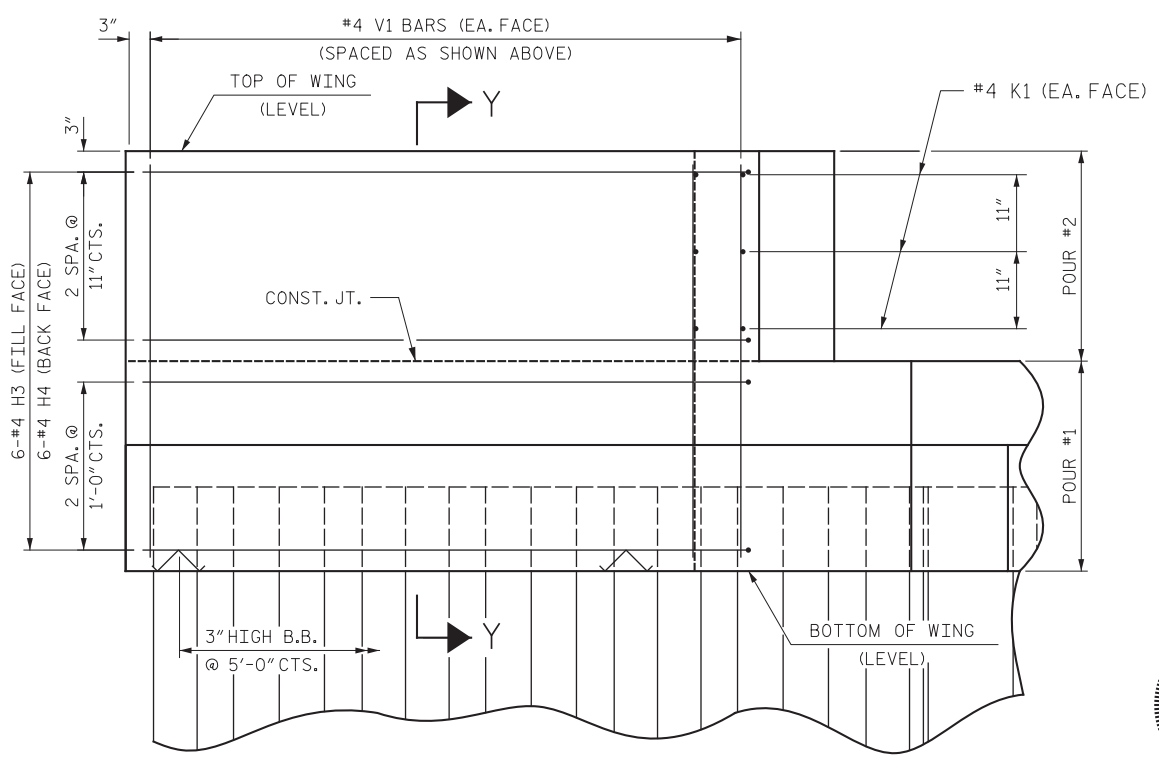
PLAN OF WING (W1)



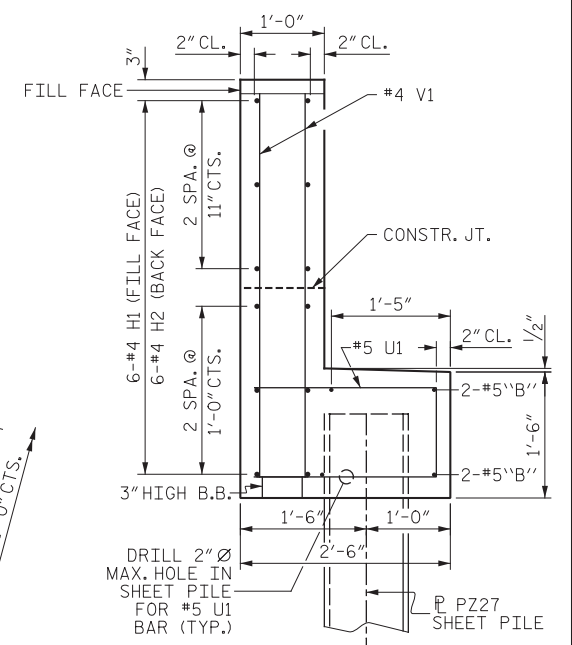
PLAN OF WING (W2)



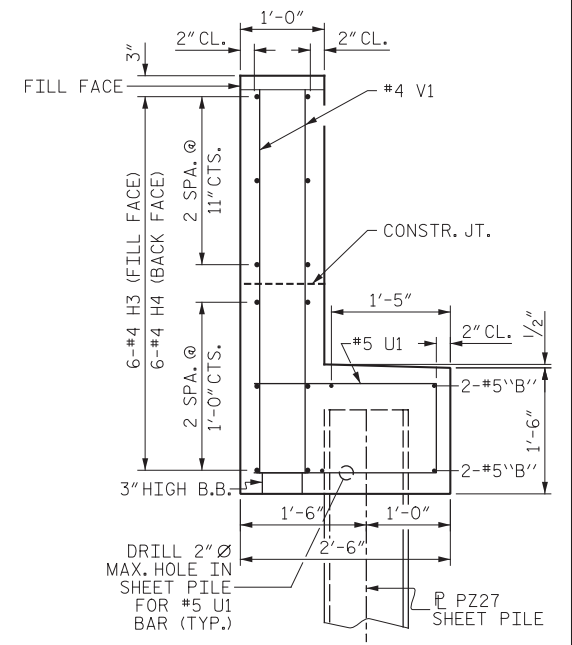
ELEVATION OF WING (W1)



ELEVATION OF WING (W2)

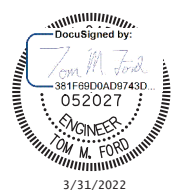


SECTION X-X



SECTION Y-Y

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
BRIDGE NO. 13+07.54 -L-
SHEET 3 OF 4



DRAWN BY : M. SPENCER DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022

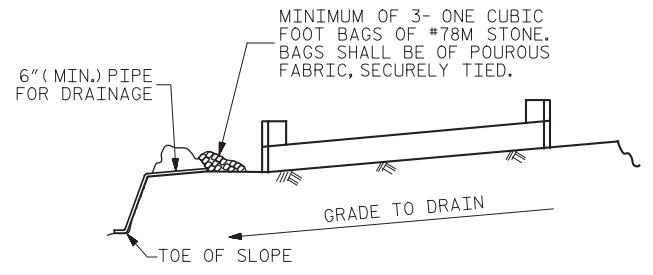


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
SUBSTRUCTURE END BENT WING DETAILS					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-15
TOTAL SHEETS 18

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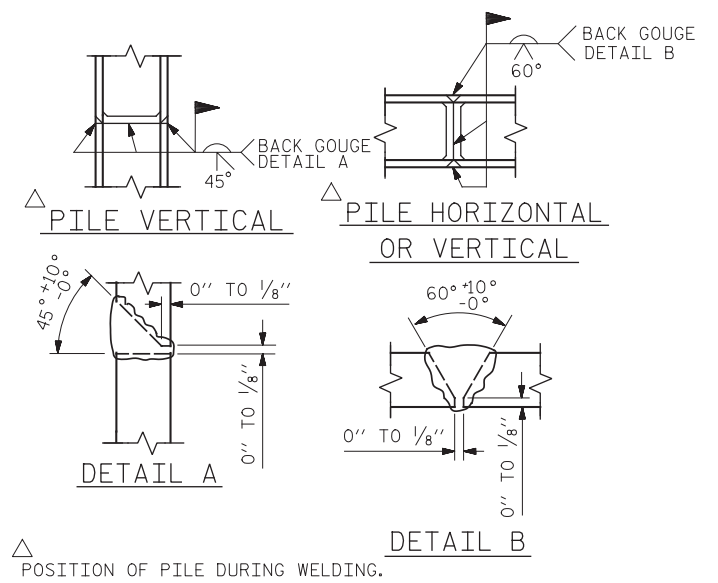


BAGGED STONE AND PIPE SHALL BE PLACED IMMEDIATELY AFTER COMPLETION OF END BENT EXCAVATION. PIPE MAY BE EITHER CONCRETE, CORRUGATED STEEL, CORRUGATED ALUMINUM ALLOY, OR CORRUGATED PLASTIC. PERFORATED PIPE WILL NOT BE ALLOWED.

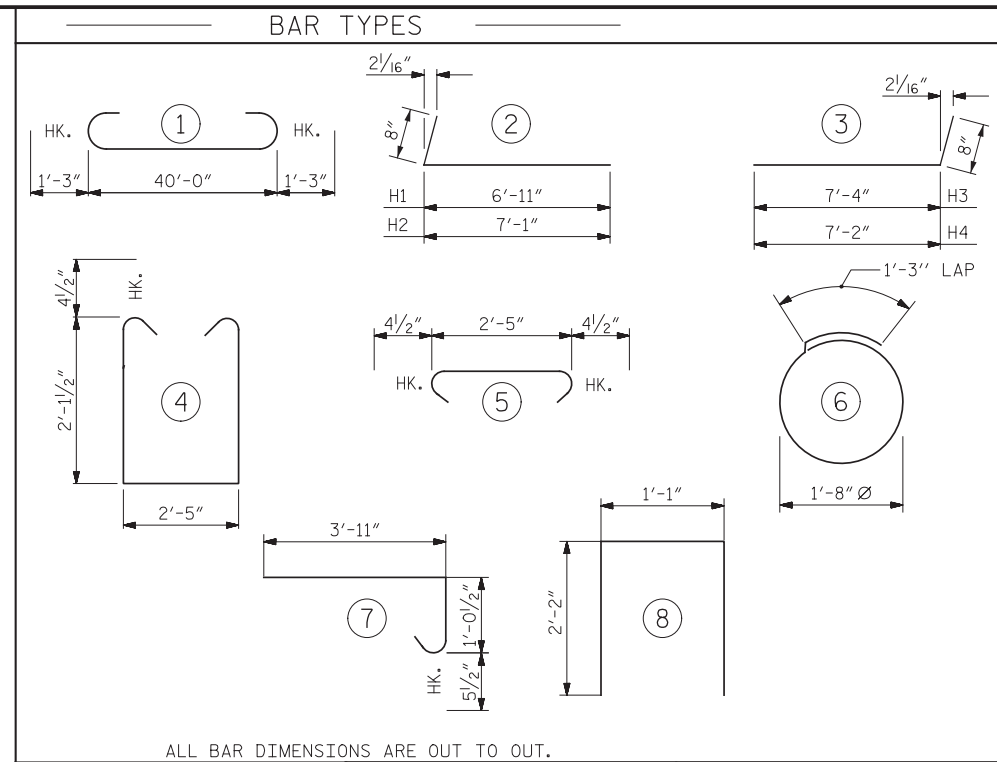
BAGGED STONE SHALL REMAIN IN PLACE UNTIL THE ENGINEER DIRECTS THAT IT BE REMOVED. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF SILT ACCUMULATIONS AT BAGGED STONE WHEN SO DIRECTED BY THE ENGINEER. BAGS SHALL BE REMOVED AND REPLACED WHENEVER THE ENGINEER DETERMINES THAT THEY HAVE DETERIORATED AND LOST THEIR EFFECTIVENESS.

NO SEPARATE PAYMENT WILL BE MADE FOR THIS WORK AND THE ENTIRE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT CONTRACT PRICE BID FOR THE SEVERAL PAY ITEMS.

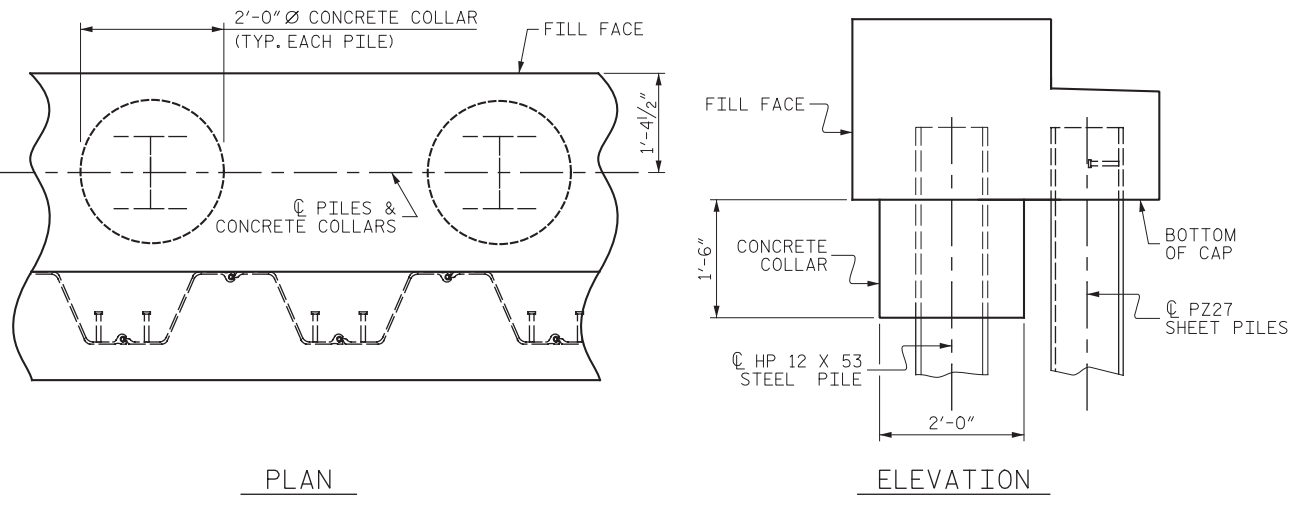
TEMPORARY DRAINAGE AT END BENT



PILE SPLICE DETAILS

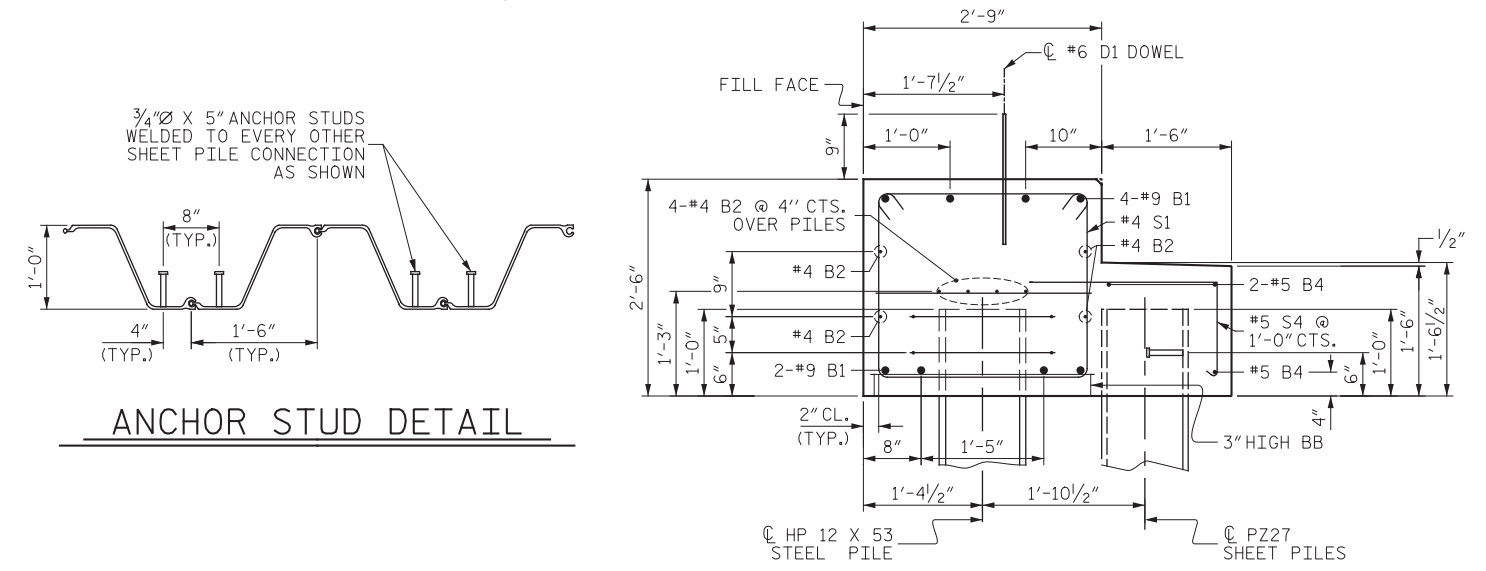


BILL OF MATERIAL FOR ONE END BENT					
BAR	NO.	SIZE	TYPE	LENGTH	WEIGHT
B1	8	#9	1	42'-6"	1156
B2	16	#4	STR	21'-4"	228
B3	10	#4	STR	2'-5"	16
B4	3	#5	STR	43'-2"	135
B5	2	#5	STR	10'-10"	23
B6	2	#5	STR	10'-6"	22
B7	2	#5	STR	10'-5"	22
B8	2	#5	STR	10'-2"	21
D1	22	#6	STR	1'-6"	50
H1	6	#4	2	7'-7"	30
H2	6	#4	2	7'-9"	31
H3	6	#4	3	8'-0"	32
H4	6	#4	3	7'-10"	31
K1	12	#4	STR	3'-3"	26
S1	52	#4	4	7'-5"	258
S2	52	#4	5	3'-2"	110
S3	14	#4	6	6'-6"	61
S4	40	#5	7	5'-5"	226
U1	22	#5	8	5'-5"	125
V1	49	#4	STR	4'-8"	153



CORROSION PROTECTION FOR STEEL PILES DETAIL

(END BENT No. 1 SHOWN, END BENT No. 2 SIMILAR BY ROTATION)



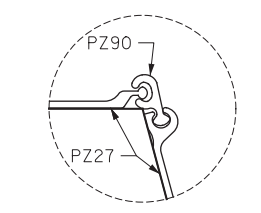
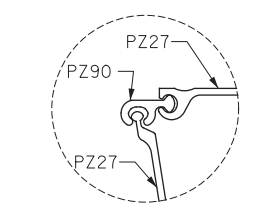
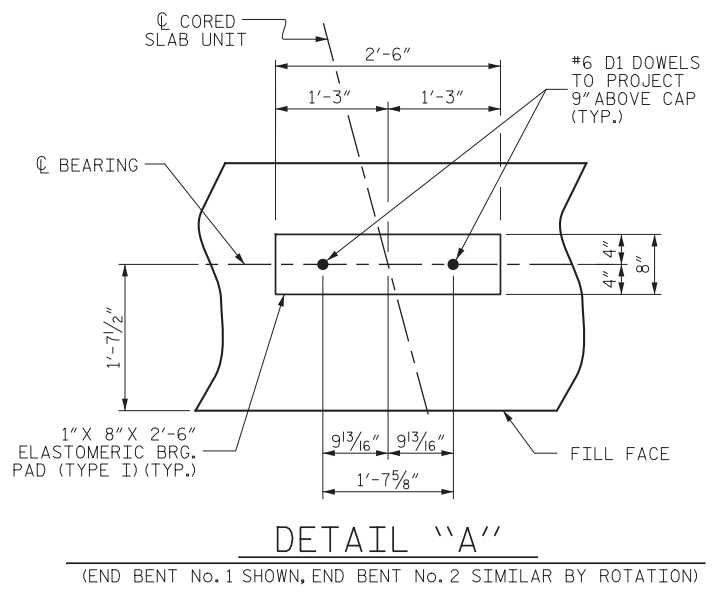
SECTION A-A

(CONCRETE COLLAR NOT SHOWN FOR CLARITY. SEE "CORROSION PROTECTION FOR STEEL PILES DETAIL.")

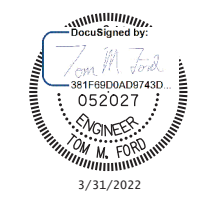
DRAWN BY : M. SPENCER DATE : 6/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022

END BENT No. 1	END BENT No. 2
HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 140	HP 12 X 53 STEEL PILES NO: 7 LIN. FT.= 105
18" GALVANIZED STEEL SHEET PILES PZ27 NO: 39 PZ90 NO: 2 TOTAL AREA: 846 SQ. FT.	18" GALVANIZED STEEL SHEET PILES PZ27 NO: 39 PZ90 NO: 2 TOTAL AREA: 468 SQ. FT.

REINFORCING STEEL (FOR ONE END BENT)		2756 LBS.
CLASS A CONCRETE BREAKDOWN (FOR ONE END BENT)		
POUR #1 CAP, LOWER PART OF WINGS, COLLARS & COPING		18.0 C.Y.
POUR #2 UPPER PART OF WINGS		2.0 C.Y.
TOTAL CLASS A CONCRETE		20.0 C.Y.



PROJECT NO. 17BP.13.R.192
 BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-
 SHEET 4 OF 4



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

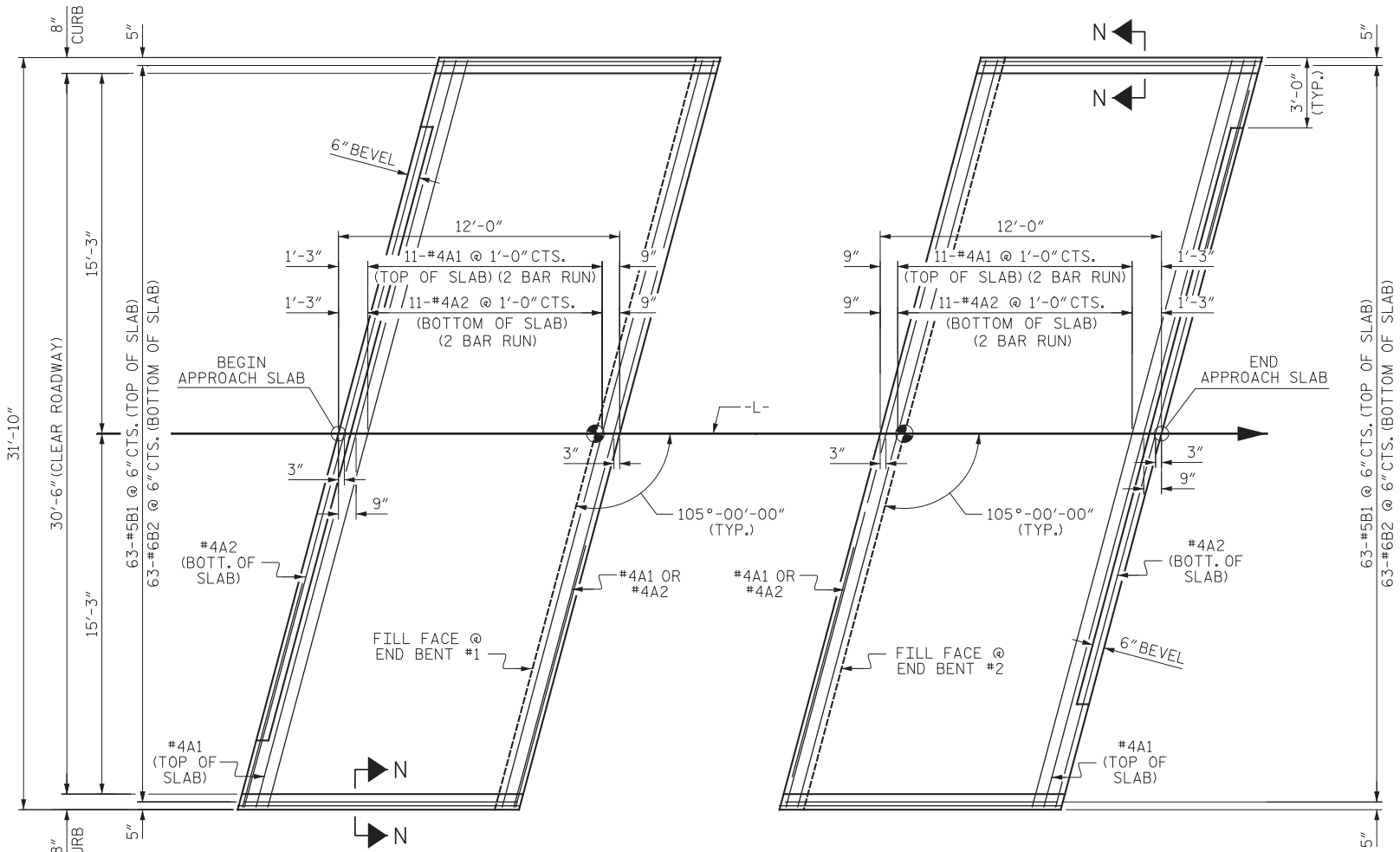
SUBSTRUCTURE
 END BENT
 DETAILS



DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-16
1			3			TOTAL SHEETS
2			4			18

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PLAN @ END BENT #1 **PLAN @ END BENT #2**
 DIMENSIONS SHOWN ARE TYPICAL FOR BOTH APPROACH SLABS

NOTES

FOR BRIDGE APPROACH FILL INCLUDING GEOTEXTILE, 4" Ø DRAINAGE PIPE, AND SELECT MATERIAL BACKFILL, SEE ROADWAY PLANS.

GEOTEXTILE SHALL BE TYPE 1 IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS SECTION 1056.

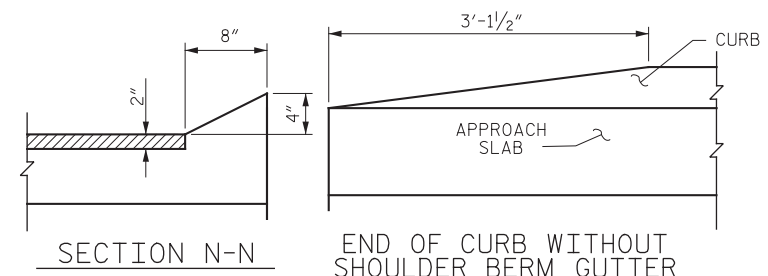
SELECT MATERIAL BACKFILL (CLASS V OR CLASS VI) SHALL BE IN ACCORDANCE WITH STANDARD SPECIFICATIONS SECTION 1016.

SELECT MATERIAL BACKFILL IS TO BE CONTINUOUS ALONG FILL FACE OF BACKWALL FROM OUTSIDE EDGE TO OUTSIDE EDGE OF APPROACH SLAB.

AREA BETWEEN THE WINGWALL AND APPROACH SLAB SHALL BE GRADED TO DRAIN THE WATER AWAY FROM THE FILL FACE OF THE BRIDGE AND SHALL BE PAVED. SEE ROADWAY PLANS.

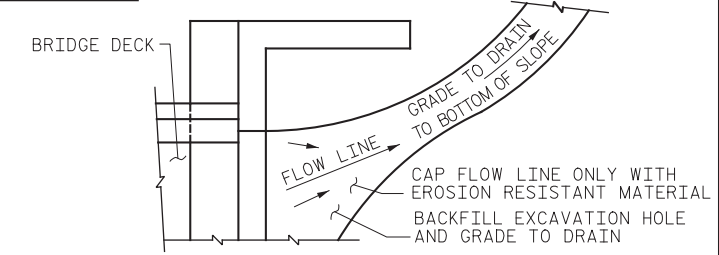
FOR THE 4" Ø DRAINAGE PIPE OUTLET(S), SEE ROADWAY STANDARD DRAWINGS.

APPROACH SLAB GROOVING IS NOT REQUIRED.



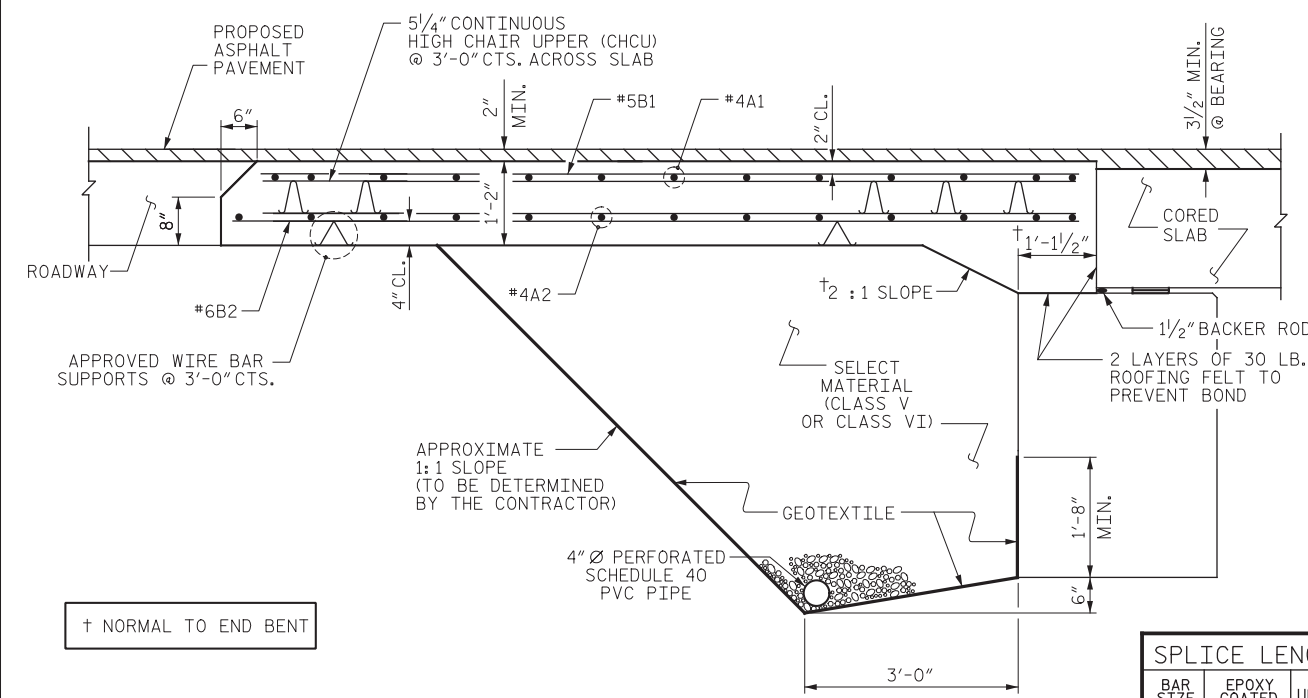
SECTION N-N **END OF CURB WITHOUT SHOULDER BERM GUTTER**

CURB DETAILS



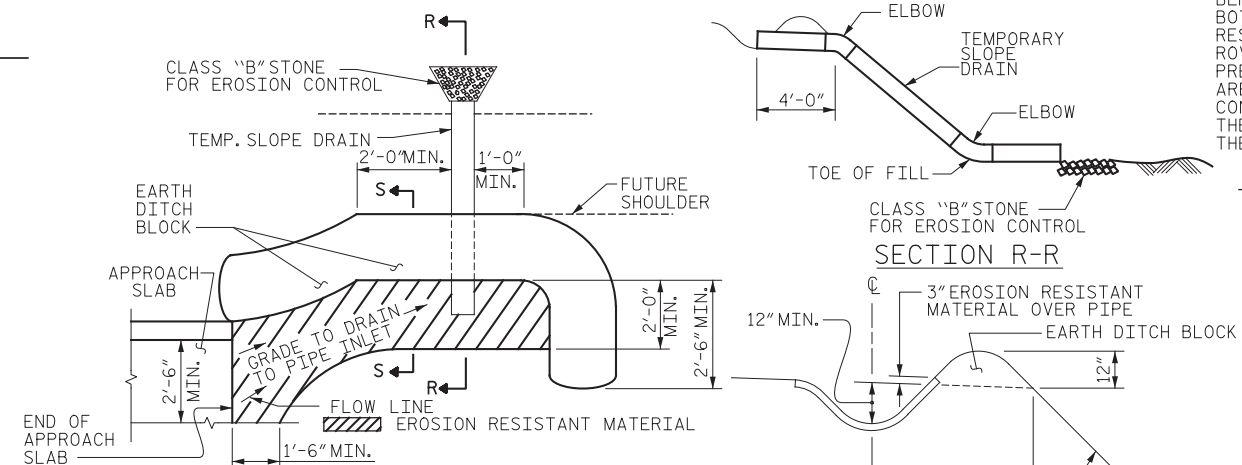
NOTE: IF THE APPROACH SLAB IS NOT CONSTRUCTED IMMEDIATELY AFTER THE BACKFILLING OF THE END BENT EXCAVATION, GRADE TO DRAIN TO THE BOTTOM OF THE SLOPE AND PROVIDE EROSION RESISTANT MATERIAL, SUCH AS FIBERGLASS ROVING OR AS DIRECTED BY THE ENGINEER TO PREVENT SOIL EROSION AND TO PROTECT THE AREA ADJACENT TO THE STRUCTURE. THE CONTRACTOR WILL BE REQUIRED TO REMOVE THESE MATERIALS PRIOR TO CONSTRUCTION OF THE APPROACH SLAB.

TEMPORARY DRAINAGE DETAIL



SECTION THRU SLAB
 (TYPE II - MODIFIED APPROACH FILL)

SPLICE LENGTHS		
BAR SIZE	EPOXY COATED	UNCOATED
#4	2'-0"	1'-9"
#5	2'-6"	2'-2"
#6	3'-10"	2'-7"

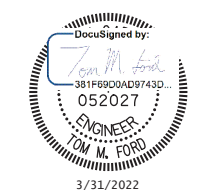


PLAN VIEW
TEMPORARY BERM AND SLOPE DRAIN DETAILS
 (TO BE USED WHEN SHOULDER BERM GUTTER IS REQUIRED)

DRAWN BY : T. FORD DATE : 1/2019
 CHECKED BY : J. FARNHAM DATE : 1/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



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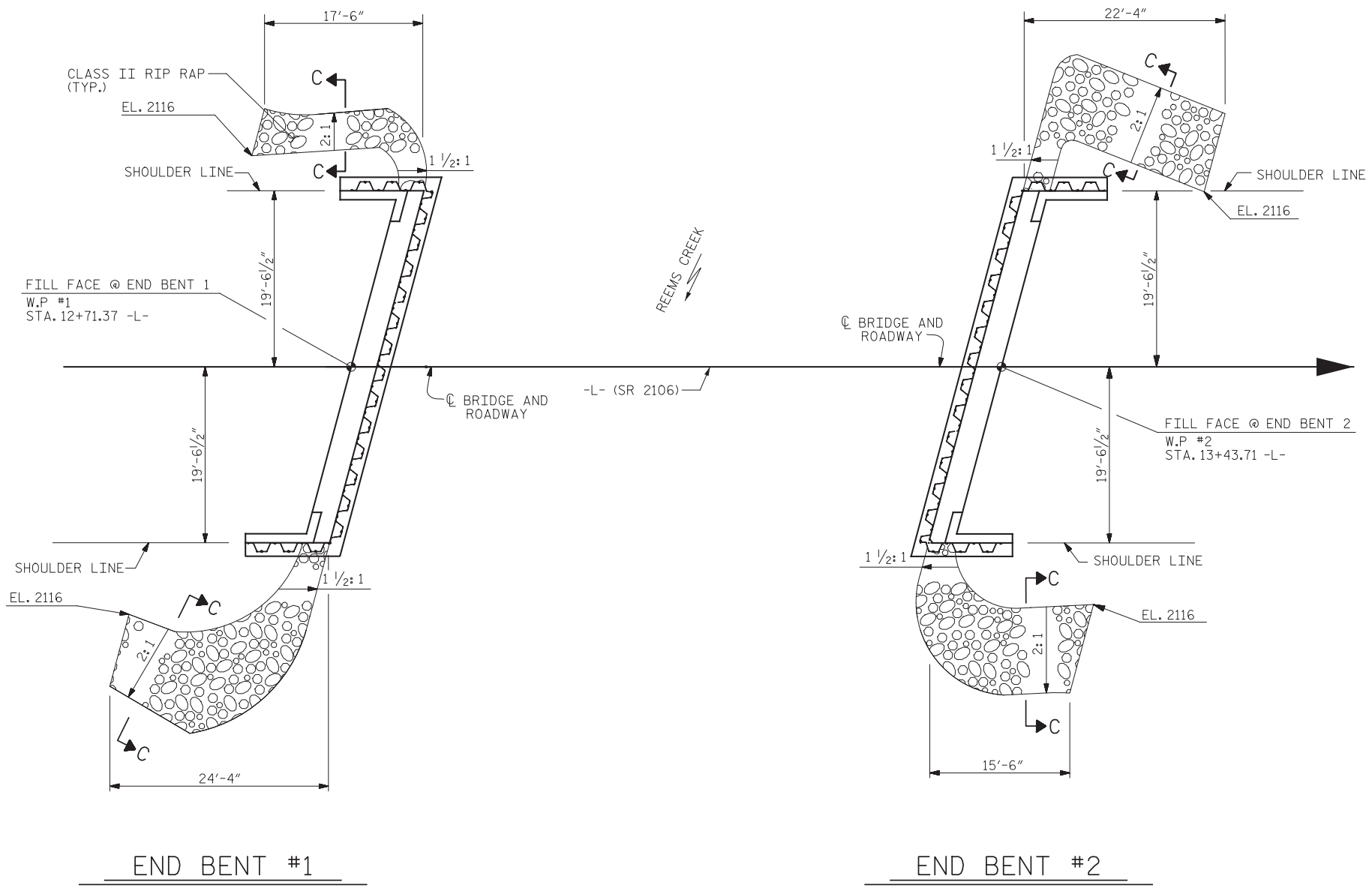
BILL OF MATERIAL					
APPROACH SLAB AT EB #1					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	17'-4"	301
A2	26	#4	STR	17'-3"	300
*B1	63	#5	STR	11'-1"	728
B2	63	#6	STR	11'-7"	1095
REINFORCING STEEL				LBS.	1395
*EPOXY COATED REINFORCING STEEL				LBS.	1029
CLASS AA CONCRETE				C. Y.	19.4
APPROACH SLAB AT EB #2					
BAR NO.	SIZE	TYPE	LENGTH	WEIGHT	
*A1	26	#4	STR	17'-4"	301
A2	26	#4	STR	17'-3"	300
*B1	63	#5	STR	11'-1"	728
B2	63	#6	STR	11'-7"	1095
REINFORCING STEEL				LBS.	1395
*EPOXY COATED REINFORCING STEEL				LBS.	1029
CLASS AA CONCRETE				C. Y.	19.4

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-

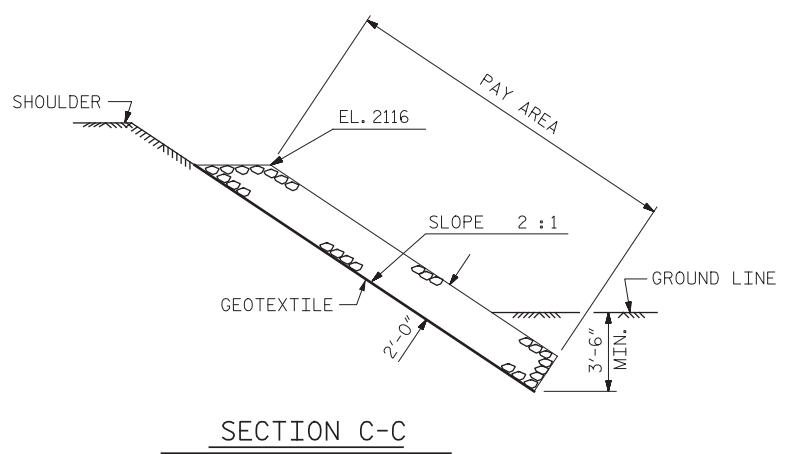
STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION RALEIGH					
BRIDGE APPROACH SLAB FOR PRESTRESSED CONCRETE CORED SLAB UNIT (SUB-REGIONAL TIER) 105° SKEW					
REVISIONS					
NO.	BY:	DATE:	NO.	BY:	DATE:
1			3		
2			4		

SHEET NO. S-17
 TOTAL SHEETS 18

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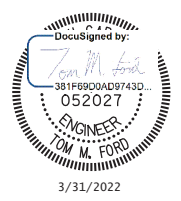
PLAN OF RIPRAP



SECTION C-C

ESTIMATED QUANTITIES		
BRIDGE @ STA. 13+07.54 -L-	RIP RAP CLASS II (2'-0" THICK)	GEOTEXTILE FOR DRAINAGE
	TONS	SQUARE YARDS
END BENT 1	43	35
END BENT 2	52	43

PROJECT NO. 17BP.13.R.192
BUNCOMBE COUNTY
 BRIDGE NO. 13+07.54 -L-



STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

RIP RAP DETAILS

DRAWN BY : T. FORD DATE : 1/2019
 CHECKED BY : J. FARNHAM DATE : 6/2019
 DESIGN ENGINEER OF RECORD : T. FORD DATE : 3/2022



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REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-18
1			3			TOTAL SHEETS
2			4			18