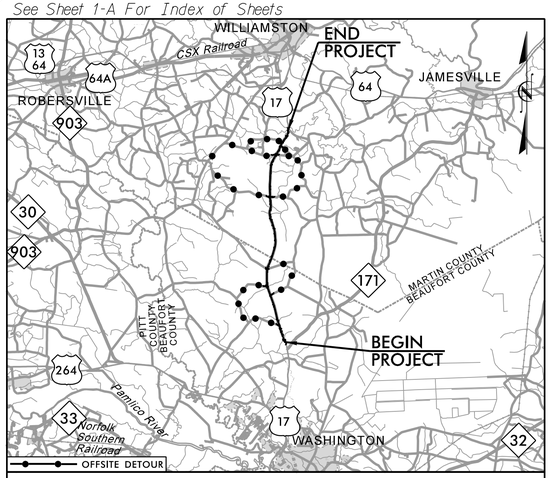
09/08/49

TIP PROJECT: R–2511

CONTRACT: C204498

See Sheet 1-A For Index of Sheets



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT & MARTIN COUNTIES

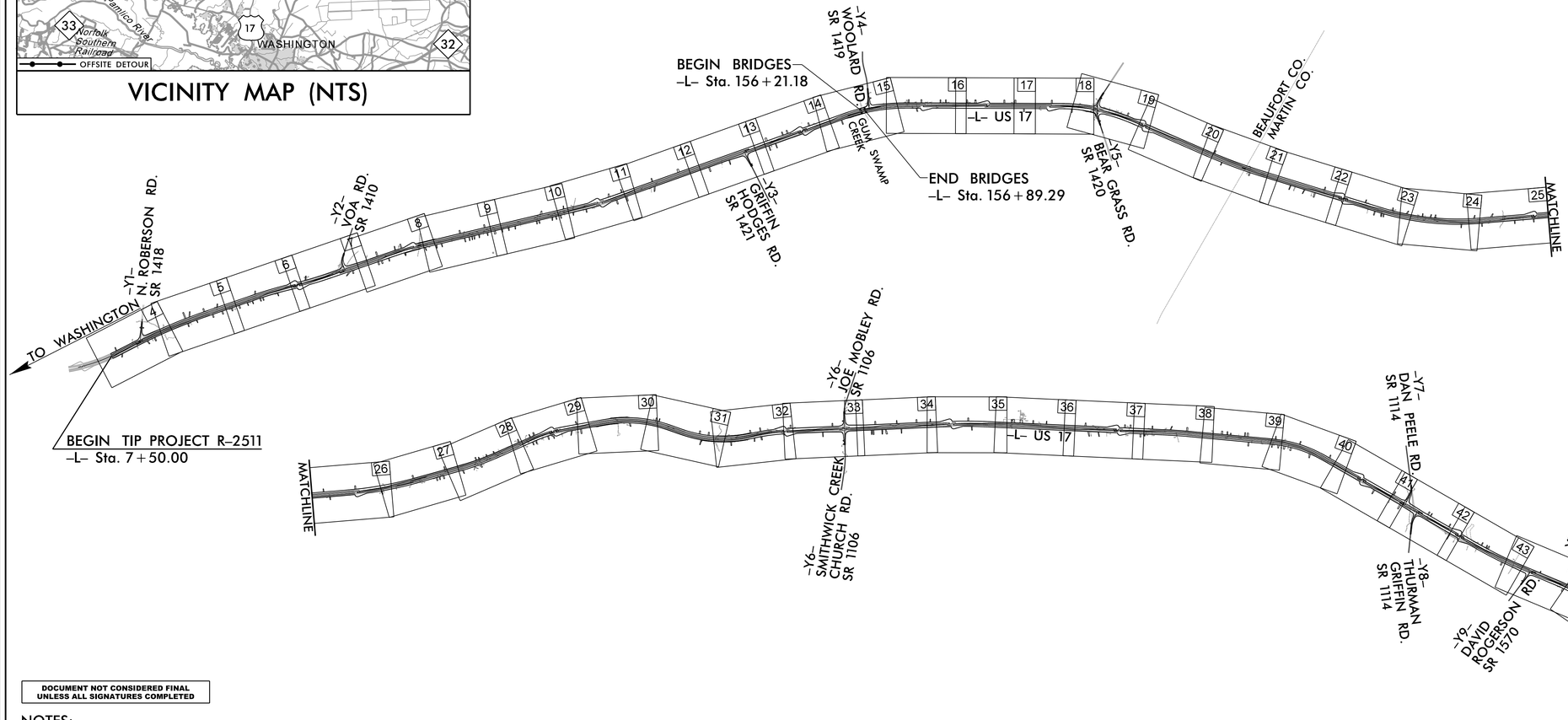
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2511	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35494.1.1	N/A	PE
35494.2.1		R/W
35494.3.1		CONST.

LOCATION: US 17 FROM NORTH OF NC 171 TO EXISTING MULTI–LANES SOUTH OF WILLIAMSTON

TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURES

NAD 83/2011



RFC
PLANS SUBMITTAL
DATE: 08/10/2021

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NOTES:
1. THIS IS A PARTIALLY CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2020 = 9,164
ADT 2040 = 14,284
K = 5%
D = 60%
T = 13% *
V = 60 MPH
* TTST = 8% DUAL 5%
FUNC CLASS = RURAL ARTERIAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2511..... 10.612 miles
LENGTH STRUCTURE TIP PROJECT R–2511..... 0.013 miles
TOTAL LENGTH OF TIP PROJECT R–2511..... 10.625 miles

PLANS PREPARED BY:

RK&K

RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615–3960
1–888–521–4455 OR 919–878–9560

FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: DECEMBER 20, 2018

LETTING DATE: April 19, 2022

MICHAEL T. MERRITT, P.E.
PROJECT ENGINEER

SCOTT D. BLEVINS, P.E.
PROJECT DESIGN ENGINEER

NCDOT CONTACT: JOHN ABEL, JR.
PROJECT ENGINEER – DIVISION 1

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY

DocuSigned by: Robert B. Huskey
SIGNATURE: P.E. 1/19/2022

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 16725 ENGINEER SCOTT D. BLEVINS

DocuSigned by: Scott D. Blevins
SIGNATURE: P.E. 1/18/2022

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

1/17/2022
R:\Roadway\Proj\r2511_rdy_tsh.dgn
dhefler

PROJECT REFERENCE NO.	SHEET NO.
R-2511	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL ENGINEER SCOTT D. BLEVINS
2/9/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

INDEX of SHEETS, GENERAL NOTES, and LIST of STANDARDS

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-4	PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAILS,
2B-1 THRU 2B-9	INTERSECTION DETAILS
2B-10 THRU 2B-30	TEMPORARY CROSSOVER DETAILS
2C-1, 2C-2, 2C-4 THRU 2C-6	DOT SPECIAL DETAILS
2D-1 THRU 2D-2	DRAINAGE DETAILS
2G-1THRU 2G-5	ROCK EMBANKMENTS DETAIL AND NOTES, TEMPORARY SHORING,TEMPORARY WALL
3B-1 THRU 3B-4	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL SUMMARY, FENCE, BARRIER, SHOULDER BERM SUMMARY, AND GUARDRAIL SUMMARY
3D-1 THRU 3D-23	DRAINAGE SUMMARIES
3G-1	SUMMARY OF SUBSURFACE DRAINAGE
3P-1 THRU 3P-3	PARCEL INDEX SHEET
4 THRU 47	PLAN SHEETS
48 THRU 71	PROFILE SHEETS
RW02C-1 THRU RW02C-15	SURVEY CONTROL SHEETS W/EXISTING CENTERLINE ALIGNMENTS PRIOR TO CONSTRUCTION
TMP-1 THRU TMP-104	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-33	PAVEMENT MARKING PLANS
EC-1 THRU EC-91	EROSION CONTROL PLANS
RF-1	REFORESTATION PLANS
SIGN-1 THRU SIGN-25	SIGNING PLANS
ITS-1 THRU ITS-5	ITS PLANS
UC-1 THRU UC-69	UTILITY CONSTRUCTION PLANS
UO-1 THRU UO-45	UTILITY BY OTHERS PLANS
X-0 THRU X-294	CROSS SECTIONS
SL-1 THRU SL-26	SITE 1 LEFT STRUCTURE PLANS
SR-1 THRU SR-26	SITE 1 RIGHT STRUCTURE PLANS
CU_47-1 THRU CU_47-8	CULVERT PLANS
CU_48-1 THRU CU_48-8	CULVERT PLANS
CU_49-1 THRU CU_49-10	CULVERT PLANS

LIST OF STANDARD DRAWINGS

EFF. 01-16-2018
REV.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.02	Method of Clearing - Method II
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
225.05	Method of Obtaining Superelevation - Divided Highways
235.01	Embankment Monitoring
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
310.10	Driveway Pipe Construction
DIVISION 4 - MAJOR STRUCTURES	
422.01	Bridge Approach Fills - Type I Standard Approach Fill
422.03	Reinforced Bridge Approach Fills - Type A Alternate Approach Fill for Integral Abutment
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.01	Method of Shoulder Construction - High Side of Superelevated Curve - Method I
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
654.01	Pavement Repairs
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
816.02	Aggregate Shoulder Drain
838.01	Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11	Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.21	Reinforced Concrete Endwall - for Single 54" Pipe 90 Skew
838.27	Reinforced Concrete Endwall - for Single 60" Pipe 90 Skew
838.33	Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.45	Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.51	Reinforced Brick Endwall - for Single 54" Pipe 90 Skew
838.57	Reinforced Brick Endwall - for Single 60" Pipe 90 Skew
838.63	Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.75	Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80	Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.14	Concrete Drop Inlet - 12" thru 30" Pipe
840.15	Brick Drop Inlet - 12" thru 30" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.45	Precast Drainage Structure
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.71	Concrete and Brick Pipe Plug
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
852.01	Concrete Islands
852.06	Method for Placement of Drop Inlets in Concrete Islands
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
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets
876.03	Drainage Ditches with Class 'A' Rip Rap
876.04	Drainage Ditches with Class 'B' Rip Rap

LIST OF GENERAL NOTES

2018 SPECIFICATIONS
EFFECTIVE: 01-16-2018
REVISED:

GRADING AND SURFACING OR RESURFACING AND WIDENING:

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

CLEARING:

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

SUBSURFACE DRAINS:

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

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

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

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE CITY OF WASHINGTON POWER,

CENTURYLINK, MCNC COMMUNICATIONS, SUDDENLINK, DOMINION POWER,

MARTIN COUNTY WATER DEPT., EDGECOMBE MARTIN COUNTY EMC, BEAUFORT

COUNTY WATER

RIGHT-OF-WAY MARKERS:

RIGHT-OF-WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS AND BY CONTRACT IN ACCORDANCE WITH DESIGNATED SYMBOLS.

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

9/10/2021

PROJECT REFERENCE NO.	SHEET NO.
R-2511	1-B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale

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:

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

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:

- Standard Gauge
- RR Signal Milepost
- Switch
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & 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:

- 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
- Woods Line
- Orchard
- Vineyard

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)

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)*

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:

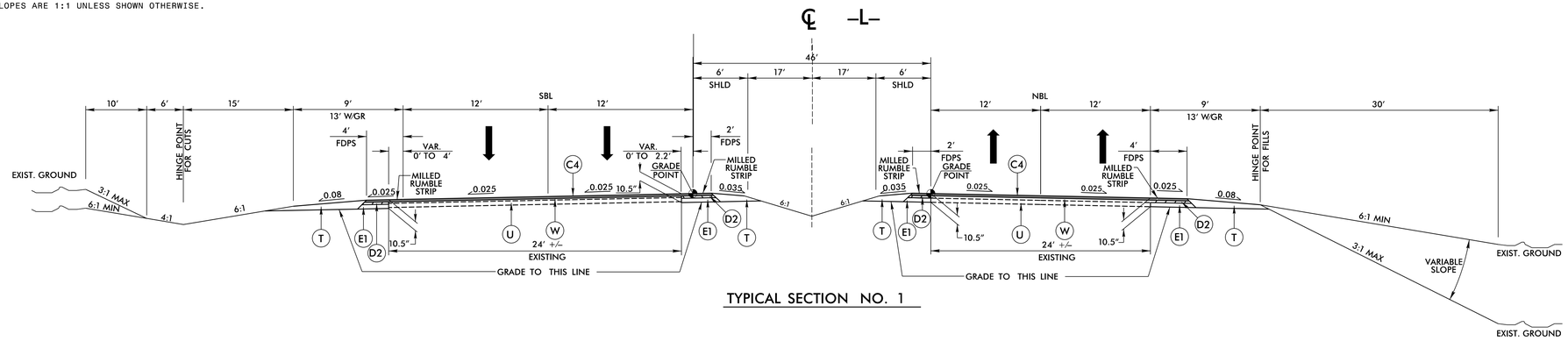
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box
- Utility Unknown U/G Line (SUE – LOS B)*
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- Abandoned According to Utility Records —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

8/17/99

PAVEMENT SCHEDULE

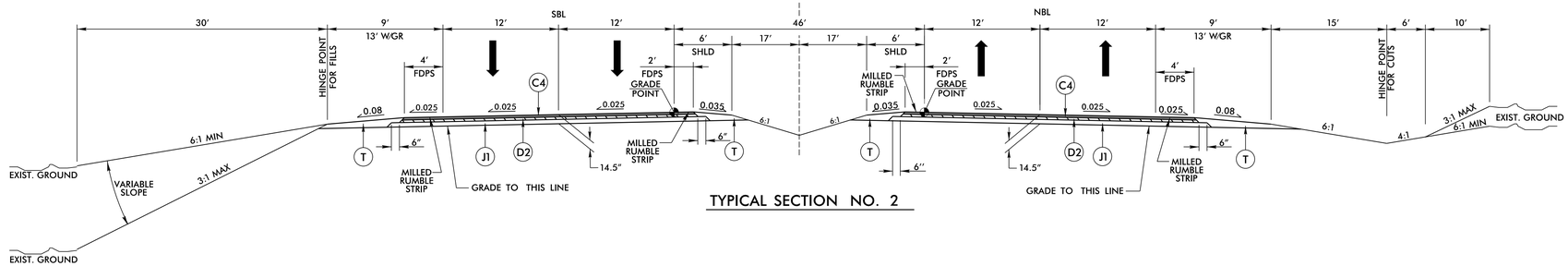
C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
C2	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 TO EXCEED 1.5 " IN DEPTH.	D2	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	L1	CLASS IV SUBGRADE STABILIZATION	W	WEDGING
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER	D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N1	GEOTEXTILE FOR SOIL STABILIZATION		
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT.		
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2 " IN DEPTH.	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 5.5" IN DEPTH.	T	EARTH MATERIAL.		

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



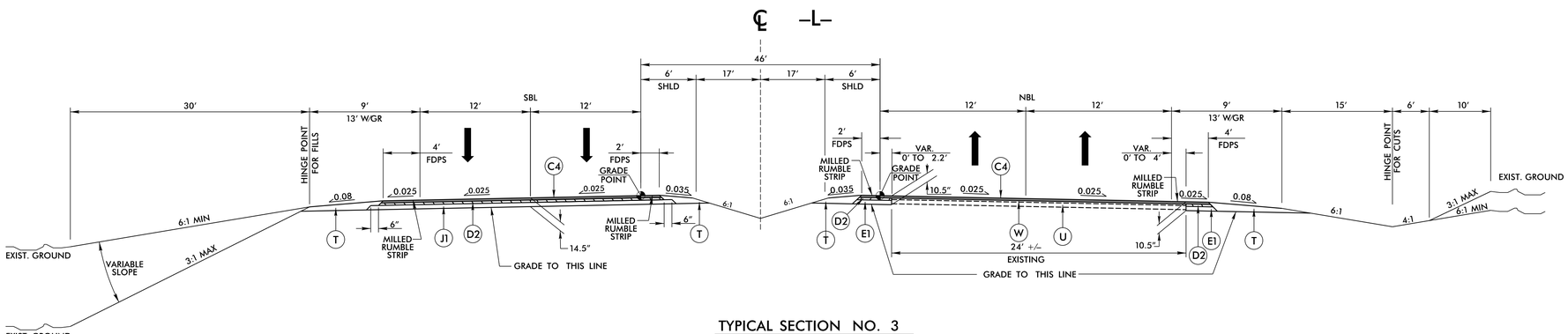
TYPICAL SECTION NO. 1

TYPICAL SECTION NO. 1
–L– STA. 7+75.00 TO STA. 16+50.00



TYPICAL SECTION NO. 2

TYPICAL SECTION NO. 2
–L– STA. 16+50.00 TO STA. 119+00.00
–L– STA. 121+50.00 TO STA. 151+50.00
–L– STA. 154+50.00 TO STA. 156+21.18 (BEG. BRIDGE)
–L– STA. 156+89.29 (END BRIDGE) TO STA. 197+50.00
–L– STA. 201+50.00 TO STA. 317+00.00
–L– STA. 320+50.00 TO STA. 385+00.00
–L– STA. 386+00.00 TO STA. 453+00.00
–L– STA. 455+50.00 TO STA. 482+50.00
–L– STA. 483+50.00 TO STA. 557+00.00



TYPICAL SECTION NO. 3

TYPICAL SECTION NO. 3
–L– STA. 119+00.00 TO STA. 121+50.00
–L– STA. 151+50.00 TO STA. 154+50.00
–L– STA. 385+00.00 TO STA. 386+00.00
–L– STA. 482+50.00 TO STA. 483+50.00

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2A-1
RW SHEET NO.	

ROADWAY DESIGN ENGINEER
SEAL
SCOTT D. BLEVINS
ENGINEER
1/18/2022

PAVEMENT ENGINEER
SEAL 22896
CLARK S. MORRISON
ENGINEER
1/21/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2A-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL, SCOTT D. BLEVINS — 1/18/2022

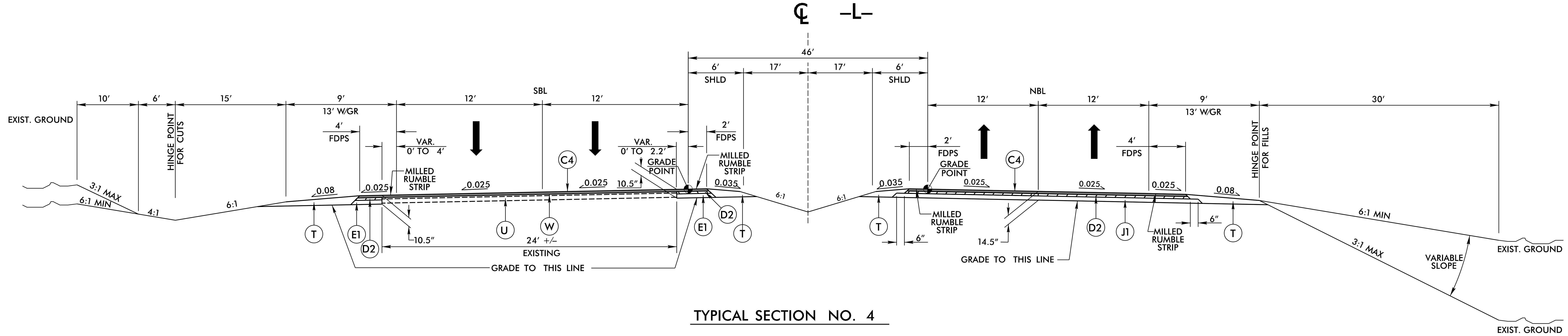
PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22896, CLARK S. MORRISON — 1/21/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

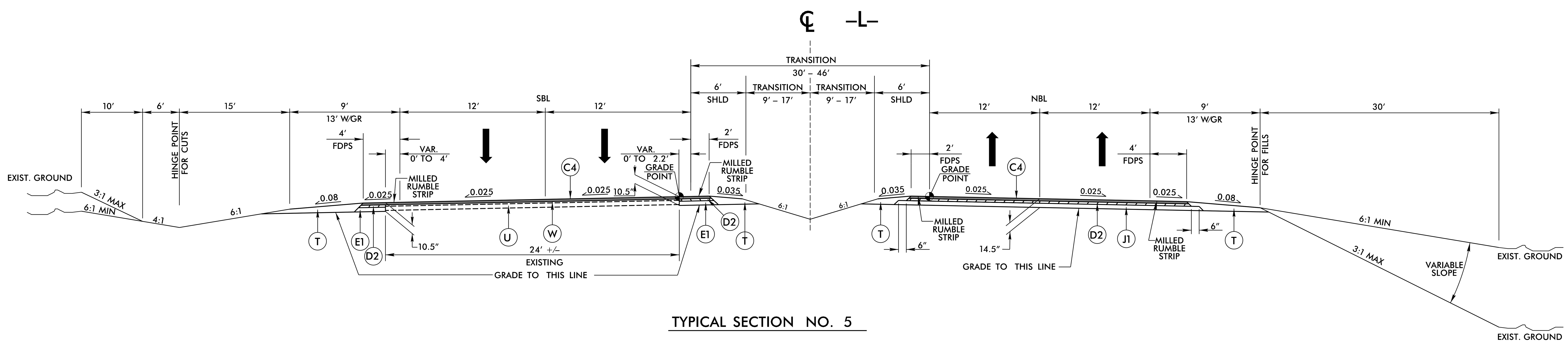
PAVEMENT SCHEDULE

C1	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.	D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
C2	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 TO EXCEED 1.5 " IN DEPTH.	D2	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	L1	CLASS IV SUBGRADE STABILIZATION	W	WEDGING
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER	D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N1	GEOTEXTILE FOR SOIL STABILIZATION		
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT.		
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2 " IN DEPTH.	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 5.5" IN DEPTH.	T	EARTH MATERIAL.		

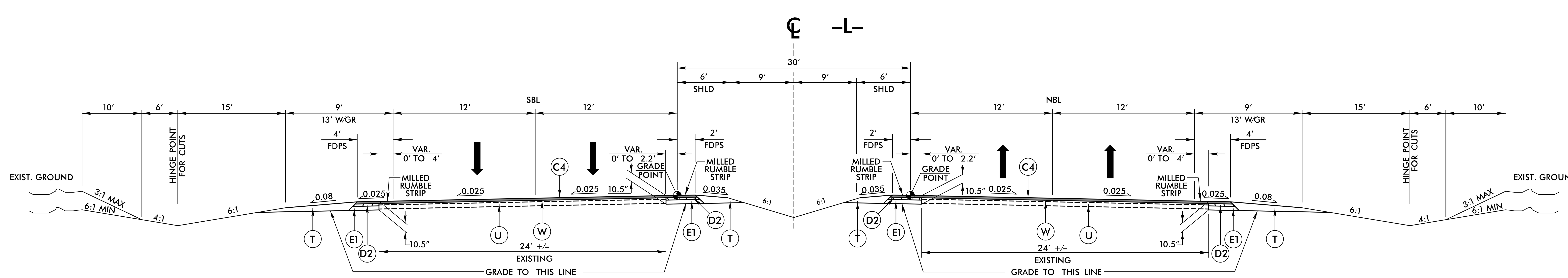
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



TYPICAL SECTION NO. 4



TYPICAL SECTION NO. 5



TYPICAL SECTION NO. 6

TYPICAL SECTION NO. 4
-L- STA. 197+50.00 TO STA. 201+50.00
-L- STA. 317+00.00 TO STA. 320+50.00
-L- STA. 453+00.00 TO STA. 455+50.00

TYPICAL SECTION NO. 5
-L- STA. 557+00.00 TO STA. 562+00.00

TYPICAL SECTION NO. 6
-L- STA. 562+00.00 TO STA. 568+50.00

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

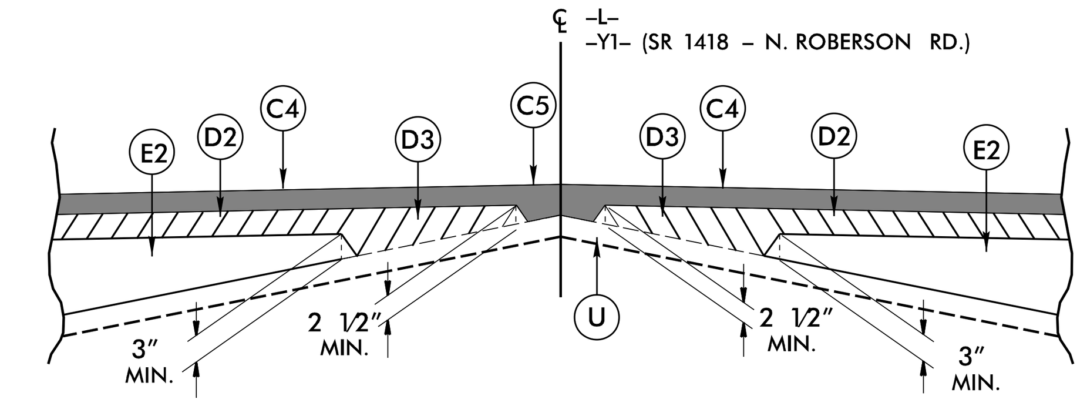
8/17/99
1/17/2022
R:\Roadway\Proj\R2511_Rdy_typ.dgn
gheffler

8/17/99

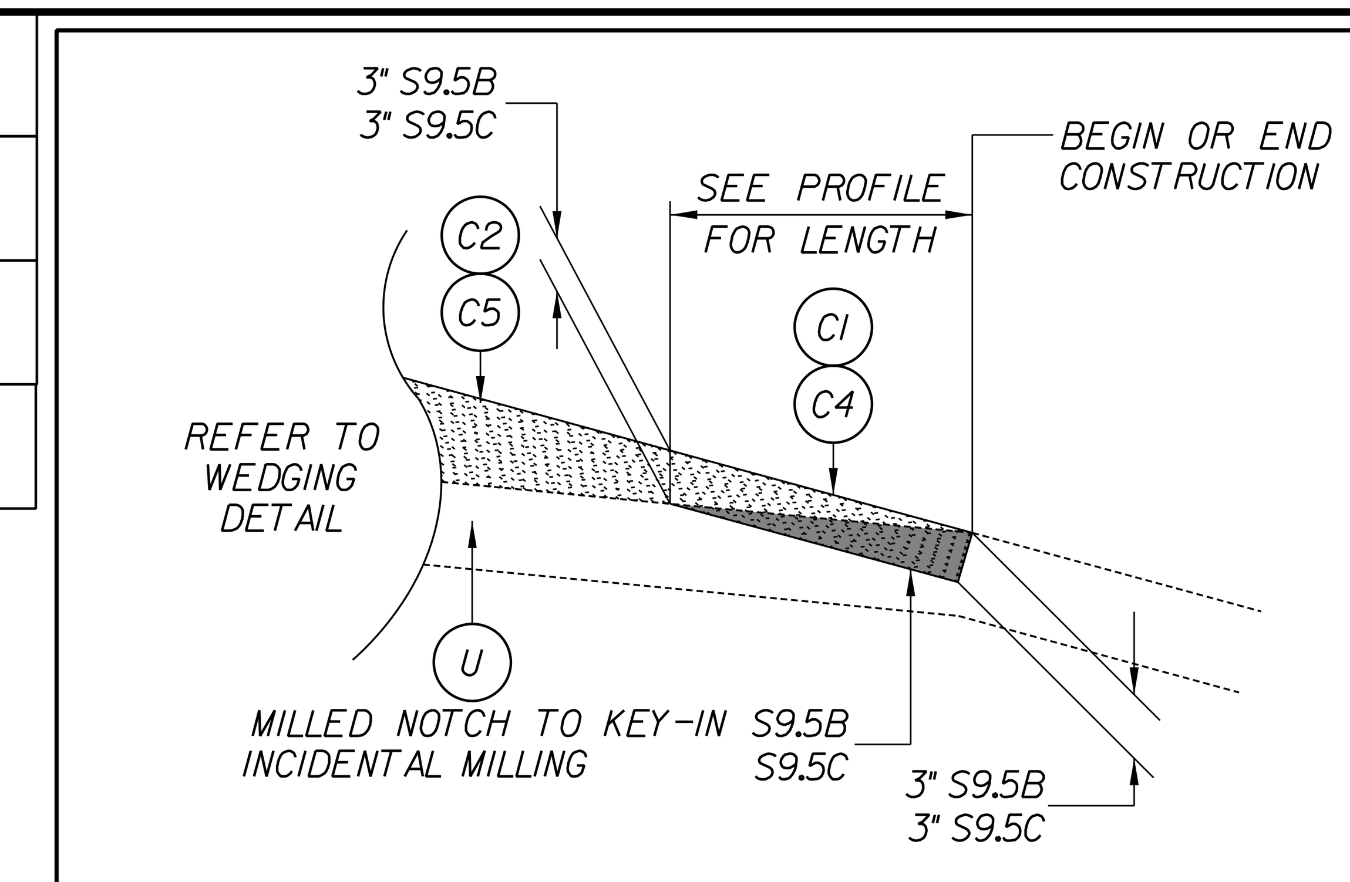
PAVEMENT SCHEDULE

C1	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.	D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	T	EARTH MATERIAL.
C2	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 TO EXCEED 1.5 " IN DEPTH.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER	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 5.5" IN DEPTH.	W	WEDGING
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	J1	PROP. 8" AGGREGATE BASE COURSE.		
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2 " IN DEPTH.	L1	CLASS IV SUBGRADE STABILIZATION		
D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	N1	GEOTEXTILE FOR SOIL STABILIZATION		
D2	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	P	PRIME COAT.		

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



Detail Showing Method of Wedging No. 1



DETAIL SHOWING GRADE TIE-INS (Blend to Existing)

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2A-3

R/W SHEET NO.

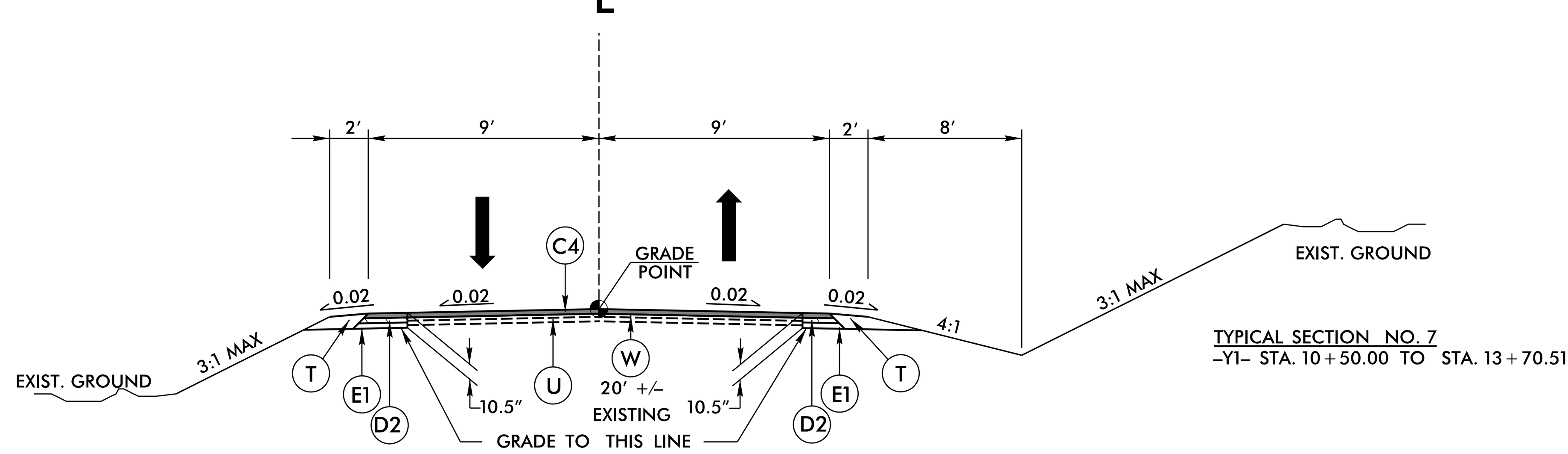
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — SCOTT D. BLEVINS — 1/18/2022

PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22896 — CLARK S. MORRISON — 1/21/2022

TEMPORARY PAVEMENT ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 041709 — GREGORY K. GOINS — 1/18/2022

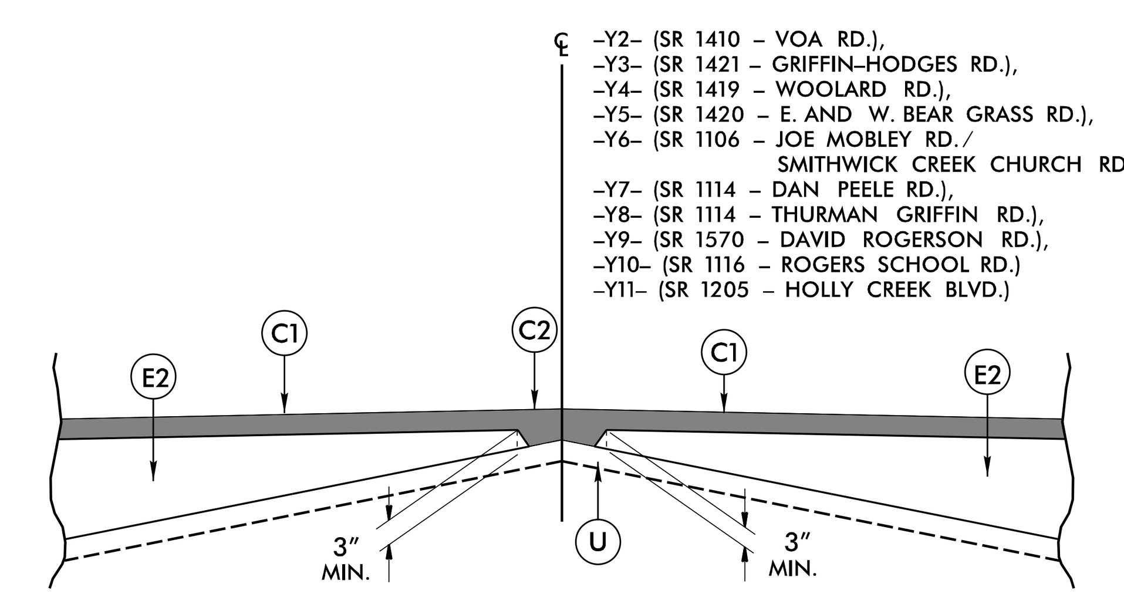
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

℄ -Y1- (SR 1418 - N. ROBERSON RD.)



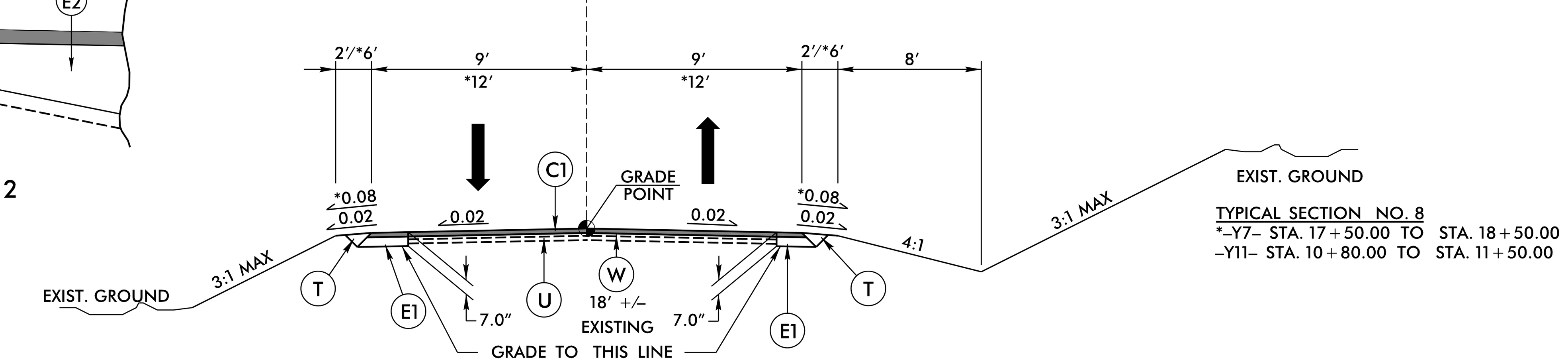
TYPICAL SECTION NO. 7

TYPICAL SECTION NO. 7
-Y1- STA. 10+50.00 TO STA. 13+70.51



Detail Showing Method of Wedging No. 2

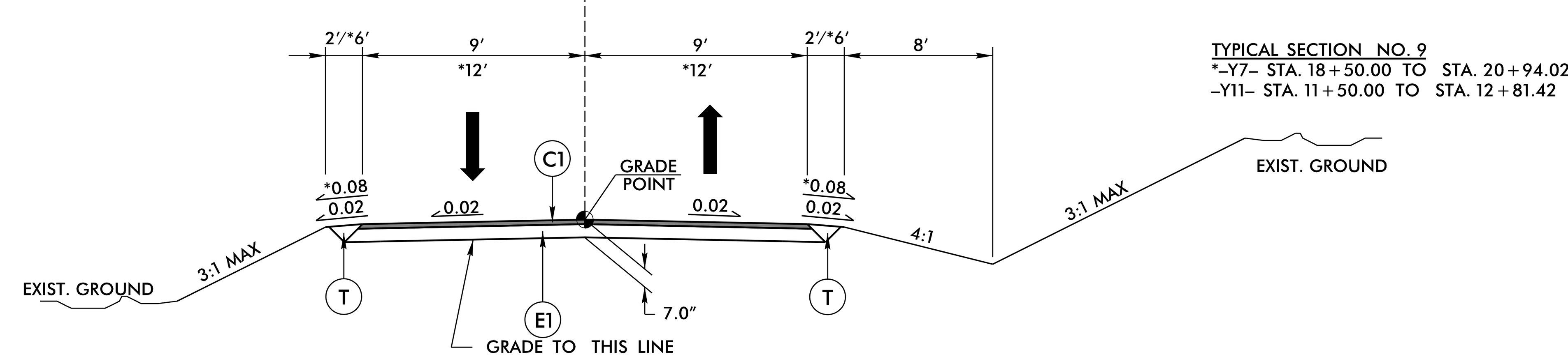
℄ *-Y7- (SR 1114 - DAN PEELE RD.),
-Y11- (SR 1205 - HOLLY CREEK BLVD.)



TYPICAL SECTION NO. 8

TYPICAL SECTION NO. 8
*-Y7- STA. 17+50.00 TO STA. 18+50.00
-Y11- STA. 10+80.00 TO STA. 11+50.00

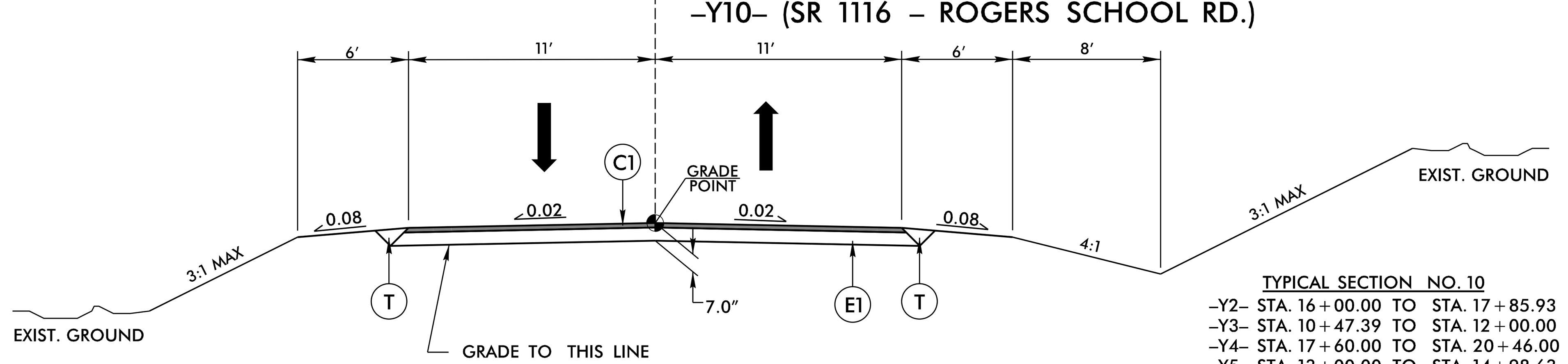
℄ *-Y7- (SR 1114 - DAN PEELE RD.),
-Y11- (SR 1205 - HOLLY CREEK BLVD.)



TYPICAL SECTION NO. 9

TYPICAL SECTION NO. 9
*-Y7- STA. 18+50.00 TO STA. 20+94.02
-Y11- STA. 11+50.00 TO STA. 12+81.42

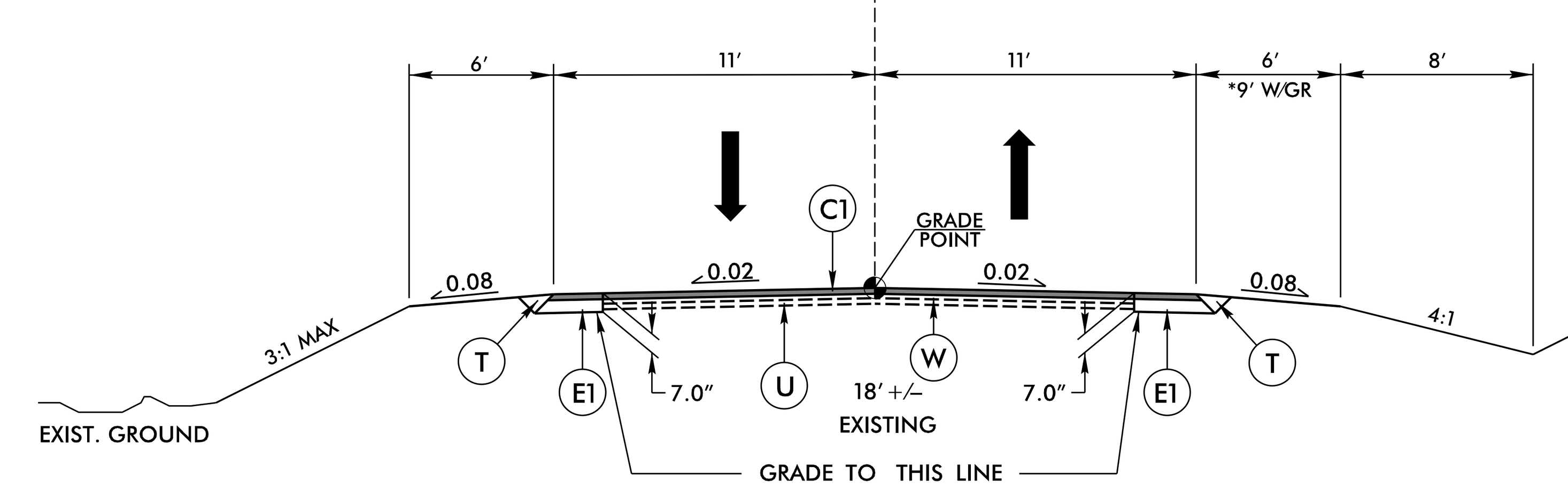
℄ -Y2- (SR 1410 - VOA RD.),
-Y3- (SR 1421 - GRIFFIN-HODGES RD.),
-Y4- (SR 1419 - WOOLARD RD.),
-Y5- (SR 1420 - E. AND W. BEAR GRASS RD.),
-Y6- (SR 1106 - JOE MOBLEY RD./
SMITHWICK CREEK CHURCH RD.),
-Y8- (SR 1114 - THURMAN GRIFFIN RD.),
-Y9- (SR 1570 - DAVID ROGERSON RD.),
-Y10- (SR 1116 - ROGERS SCHOOL RD.)



TYPICAL SECTION NO. 10

TYPICAL SECTION NO. 10
-Y2- STA. 16+00.00 TO STA. 17+85.93
-Y3- STA. 10+47.39 TO STA. 12+00.00
-Y4- STA. 17+60.00 TO STA. 20+46.00
-Y5- STA. 13+00.00 TO STA. 14+98.63
-Y6- STA. 19+00.00 TO STA. 20+43.72
-Y6- STA. 21+37.73 TO STA. 22+50.00
-Y8- STA. 10+47.00 TO STA. 12+50.00
-Y9- STA. 10+48.46 TO STA. 12+00.00
-Y10- STA. 13+50.00 TO STA. 14+80.06

℄ -Y2- (SR 1410 - VOA RD.),
-Y3- (SR 1421 - GRIFFIN-HODGES RD.),
-Y4- (SR 1419 - WOOLARD RD.),
-Y5- (SR 1420 - E. AND W. BEAR GRASS RD.),
-Y6- (SR 1106 - JOE MOBLEY RD./
SMITHWICK CREEK CHURCH RD.),
-Y8- (SR 1114 - THURMAN GRIFFIN RD.),
-Y9- (SR 1570 - DAVID ROGERSON RD.),
-Y10- (SR 1116 - ROGERS SCHOOL RD.)



TYPICAL SECTION NO. 11

TYPICAL SECTION NO. 11
-Y2- STA. 15+00.00 TO STA. 16+00.00
-Y3- STA. 12+00.00 TO STA. 13+10.00
-Y4- STA. 17+00.00 TO STA. 17+60.00
-Y5- STA. 12+00.00 TO STA. 13+00.00
*-Y5- STA. 15+93.99 TO STA. 18+45.00
-Y6- STA. 17+70.00 TO STA. 19+00.00
-Y6- STA. 22+50.00 TO STA. 23+95.00
-Y8- STA. 12+50.00 TO STA. 14+50.00
-Y9- STA. 12+00.00 TO STA. 13+05.00
-Y10- STA. 12+20.00 TO STA. 13+50.00

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022
R:\Roadway\Proj\R2511_Rdy_typ.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2A-4

R/W SHEET NO.

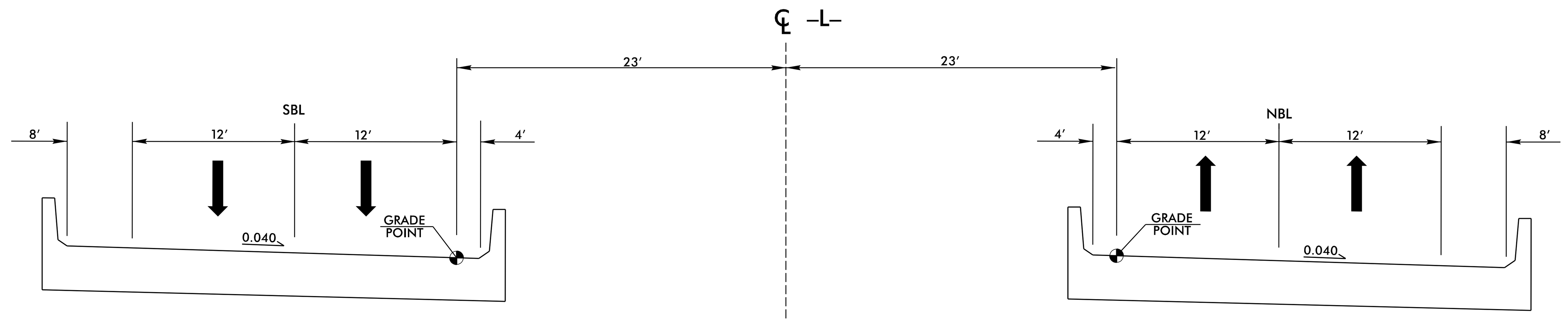
ROADWAY DESIGN ENGINEER	PAVEMENT ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER SCOTT D. BLEVINS DocuSigned by: 476C9C504EEF4A1... 3/22/2022	NORTH CAROLINA PROFESSIONAL SEAL 22896 ENGINEER CLARK S. MORRISON DocuSigned by: B0A110DD1E004C4... 3/22/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

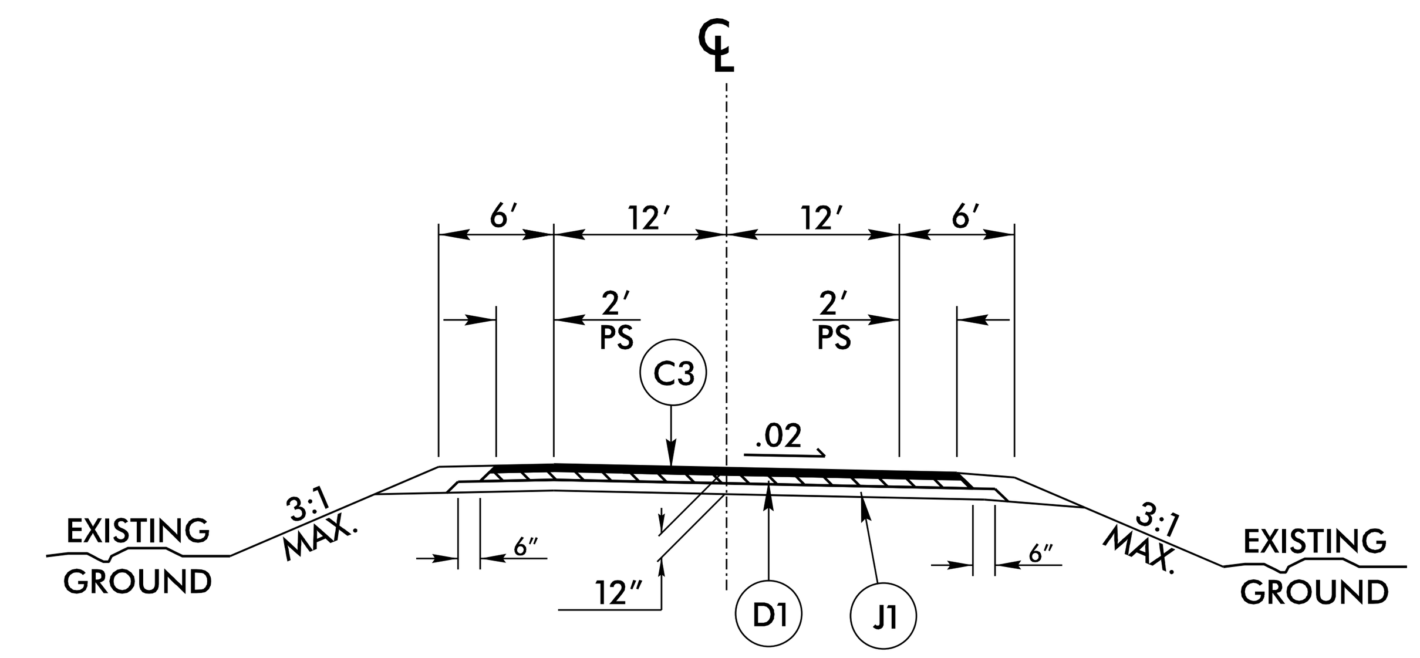
PAVEMENT SCHEDULE

C1	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.	D1	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	J1	PROP. 8" AGGREGATE BASE COURSE.	U	EXISTING PAVEMENT.
C2	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 TO EXCEED 1.5 " IN DEPTH.	D2	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	L1	CLASS IV SUBGRADE STABILIZATION	W	WEDGING
C3	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN ONE LAYER	D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	N1	GEOTEXTILE FOR SOIL STABILIZATION		
C4	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	P	PRIME COAT.		
C5	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2 " IN DEPTH.	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 5.5" IN DEPTH.	T	EARTH MATERIAL.		

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

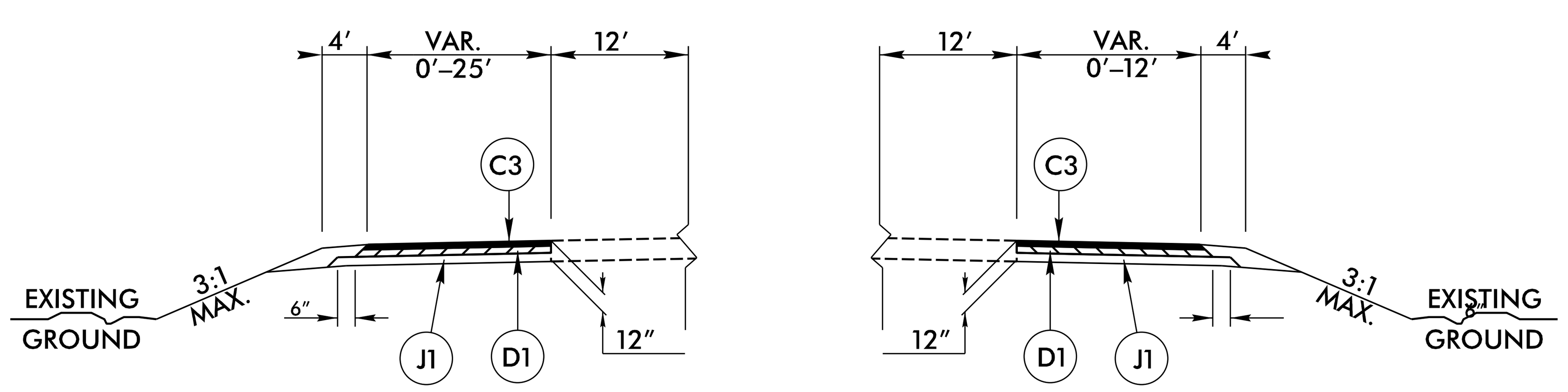


STRUCTURE TYPICAL SECTION NO.12
AT THE FOLLOWING LOCATIONS:
-L- STA. 156+21.18 to STA. 156+89.29

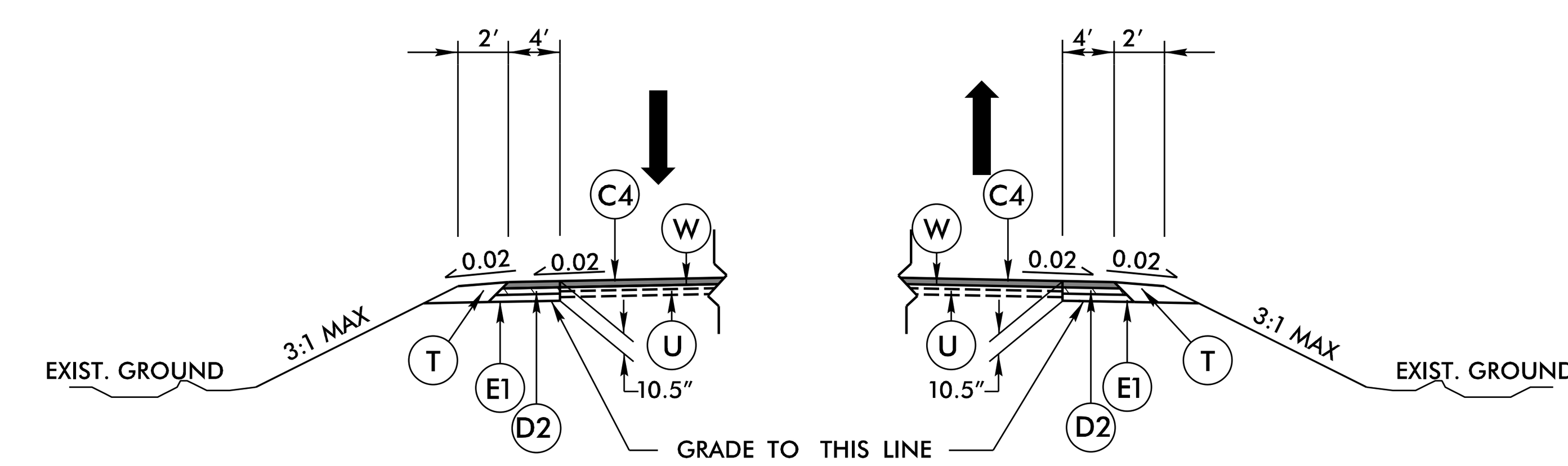


TYPICAL SECTION NO. 13

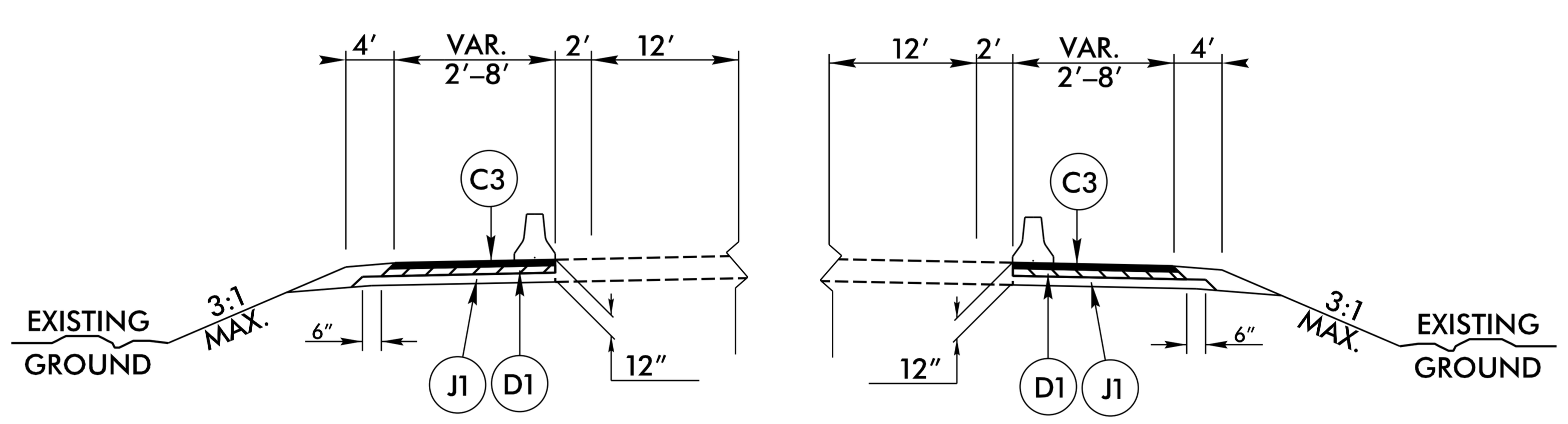
TYPICAL SECTION NO. 13
-TEMP1- STA. 10+00.00 TO STA. 20+91.99
-TEMP2- STA. 10+00.00 TO STA. 18+24.83
-TEMP3- STA. 10+00.00 TO STA. 25+78.32
-TEMP4- STA. 10+00.00 TO STA. 17+14.15
-TEMP5- STA. 10+00.00 TO STA. 21+65.63
-TEMP6- STA. 10+00.00 TO STA. 18+12.64
-TEMP7- STA. 10+00.00 TO STA. 19+57.57
-TEMP8- STA. 10+00.00 TO STA. 20+21.42
-TEMP9- STA. 10+00.00 TO STA. 19+29.69
-TEMP10- STA. 10+00.00 TO STA. 32+88.87
-TEMP12- STA. 10+00.00 TO STA. 20+88.42
-TEMP14- STA. 10+00.00 TO STA. 21+69.07
-TEMP15- STA. 10+00.00 TO STA. 19+44.83
-TEMP16- STA. 10+00.00 TO STA. 19+55.12
-TEMP17- STA. 10+00.00 TO STA. 21+47.93
-TEMP18- STA. 10+00.00 TO STA. 21+42.11
-TEMP19- STA. 10+00.00 TO STA. 21+98.64
-TEMP20- STA. 10+00.00 TO STA. 17+52.81



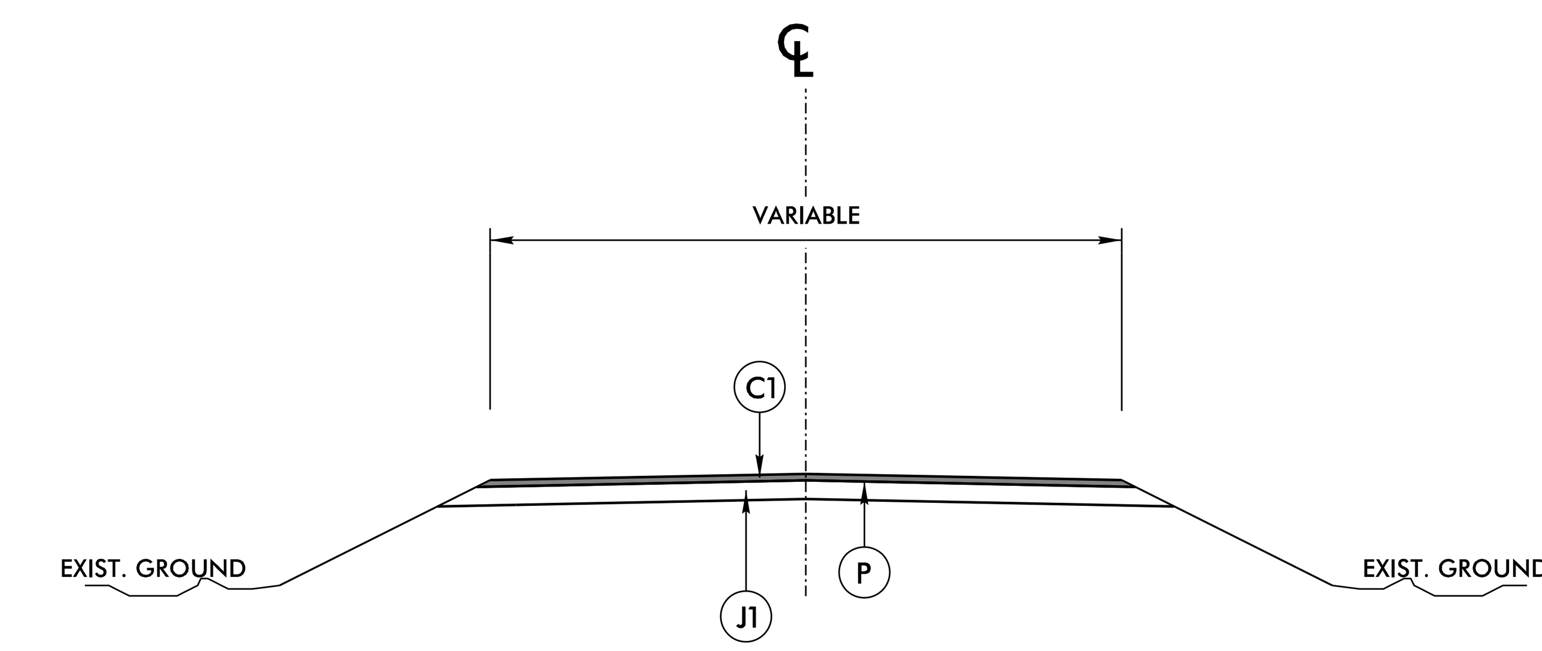
TEMPORARY WIDENING DETAIL
-L- RT STA. 36+60 TO STA. 52+26
-L- LT STA. 466+35 TO STA. 478+27



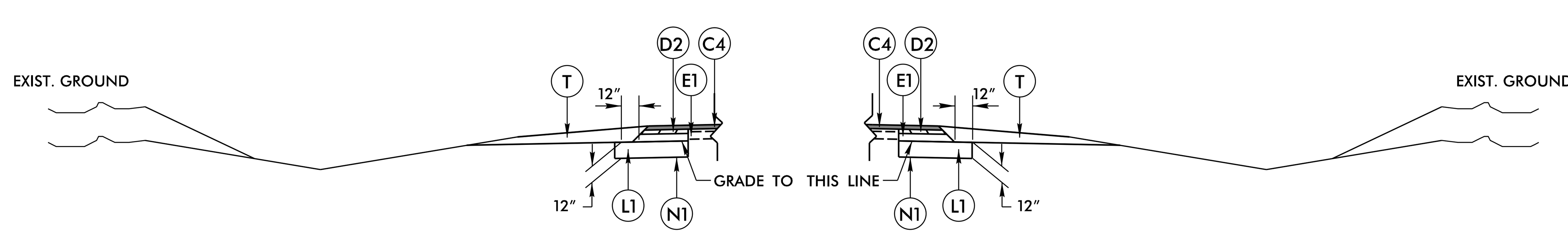
NARROW WIDENING DETAIL
TO BE USED IN CONJUNCTION WITH TYPICAL SECTION 13



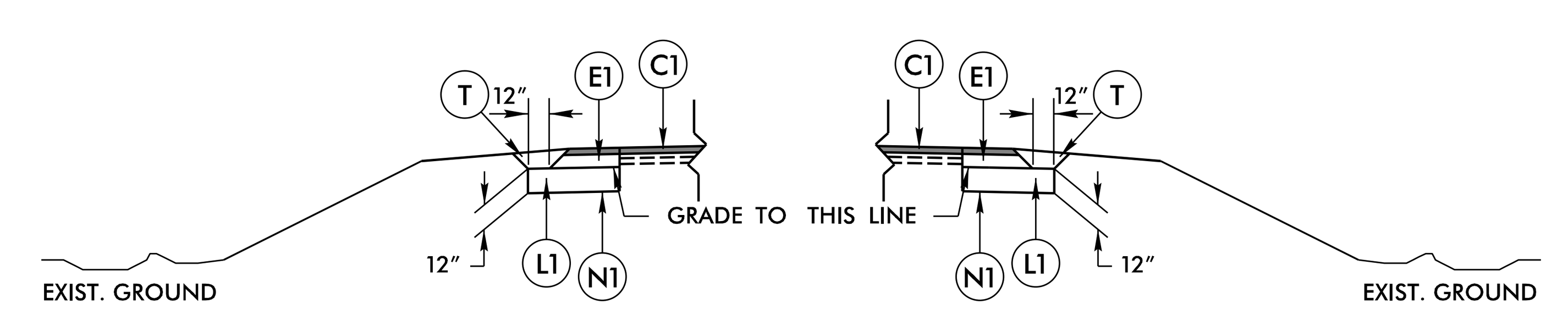
TEMPORARY WIDENING FOR BARRIER WALL DETAIL
-L- LT STA. 66+58 TO STA. 72+46
-L- RT STA. 226+74 TO STA. 232+31
-L- LT STA. 508+75 TO STA. 514+06



DETAIL FOR PAVED DRIVEWAYS
-L- STA. 23+17 RT
-L- STA. 33+67 RT
-L- STA. 97+13 LT
-L- STA. 177+58 LT
-L- STA. 421+00 LT
-L- STA. 423+00 LT
-L- STA. 507+96 RT



AGGREGATE SUBGRADE DETAIL 1
TO BE USED IN CONJUNCTION WITH TYPICAL SECTIONS
AS DIRECTED BY THE RESIDENT ENGINEER AND AT STATIONS:
-L- STA. 7+75 TO STA. 13+00
-L- STA. 198+75 TO STA. 201+75
-L- STA. 334+25 TO STA. 335+25
-Y1- STA. 10+75 TO STA. 13+25



AGGREGATE SUBGRADE DETAIL 2
TO BE USED IN CONJUNCTION WITH TYPICAL SECTIONS
AS DIRECTED BY THE RESIDENT ENGINEER AND AT STATIONS:
-Y3- STA. 10+75 TO STA. 13+25
-Y4- STA. 17+00 TO STA. 18+25
-Y5- STA. 12+00 TO STA. 13+25
-Y5- STA. 13+75 TO STA. 14+50
-Y5- STA. 16+50 TO STA. 18+40

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

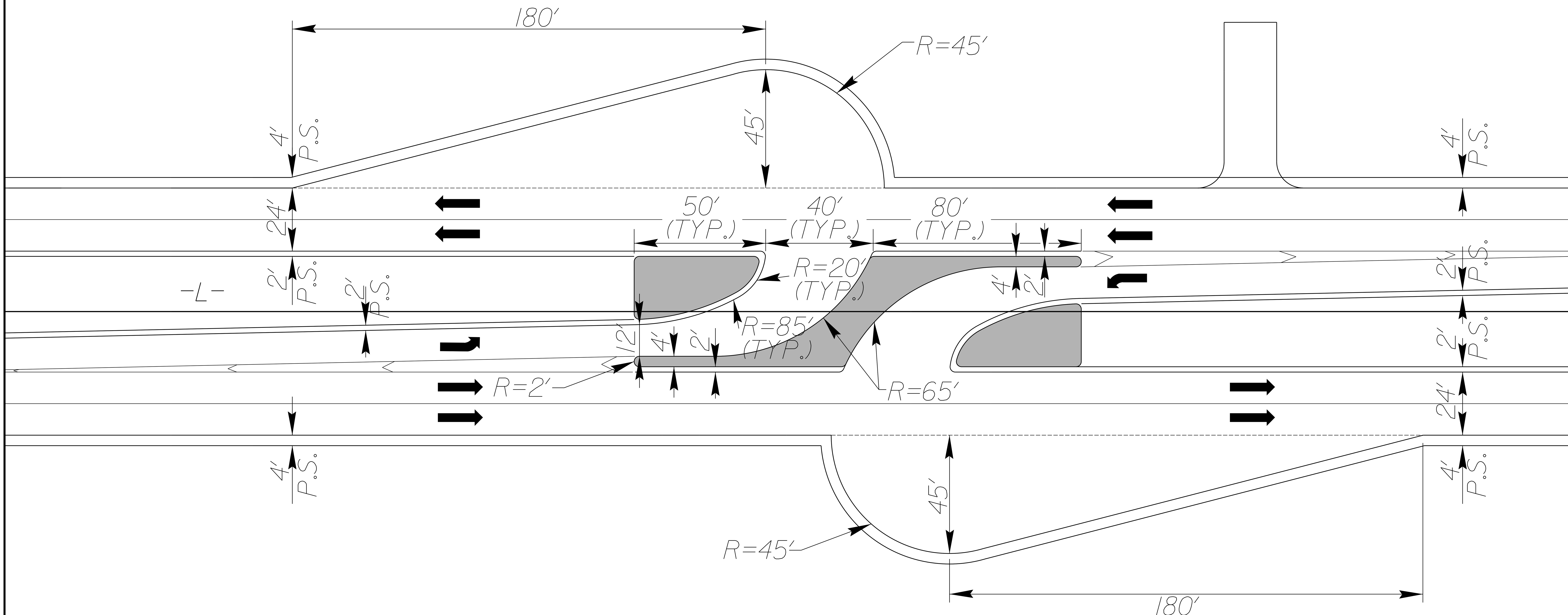
8/17/99
3/22/2022
R:\Roadway\Proj\R2511_Rdy_typ.dgn
bhaftler

DETAIL OF TYPICAL BACK-TO-BACK MEDIAN U-TURN BULBS

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-1
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER SCOTT D. BLEVINS — DocuSigned by: Scott D. Blevins 476C9C504EEF4A1... 1/18/2022	NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY — DocuSigned by: Robert B. Huskey 466E3FA91ED64CD... 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022
R:\Roadway\Proj\R2511_Rdy_psh02B-1.dgn
ahefler

DETAIL OF TYPICAL MEDIAN U-TURN BULB

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-2
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040267 ENGINEER SCOTT D. BLEVINS

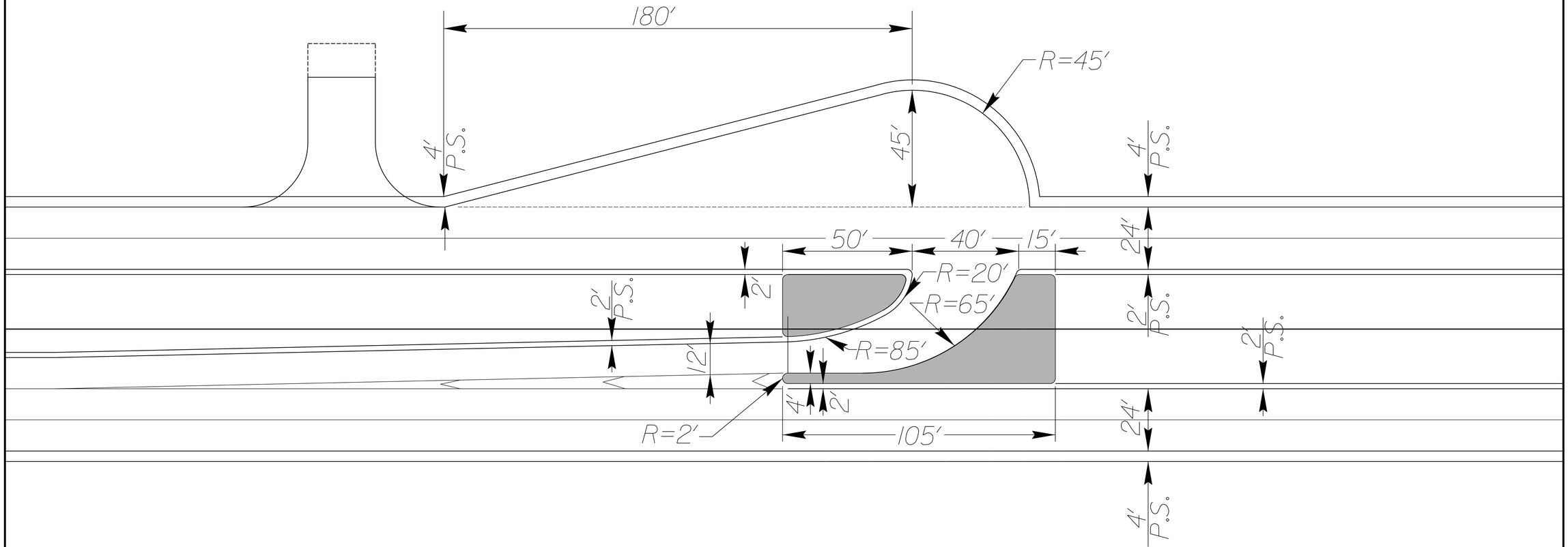
1/18/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY

1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



RK&K

P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112

Engineers | Construction Managers | Planners | Scientists

www.rkk.com

Responsive People | Creative Solutions

–Y1– INTERSECTION DETAIL

SCALE 1" = 30'

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-3
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040807 ENGINEER SCOTT D. BLEVINS

1/18/2022

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 040807 ENGINEER ROBERT B. HUSKEY

1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/2011

–L– ST Sta. 10+00.00

10+00

N 27° 16' 35.0" W

–L–

S 84° 51' 36.0" E

15+00

5" CONC. MONOLITHIC ISLAND KEYED-IN

5" CONC. MONOLITHIC ISLAND KEYED-IN

5" CONC. MONOLITHIC ISLAND KEYED-IN

100' TAPER

150' TAPER

R=100'

+33.70

+27.10

18'

20'

+59.00

R=50'

+17.07
21.20' LT

+15.03
24.37' LT

R=77'

+21.77

+40.34
55.63' LT

+68.74
56.40' LT

R=2' (TYP.)

+42.23
53.00' LT

+67.32
53.00' LT

12'

+73.34
16.61' LT

90'

+89

+11.03
20.25' LT

R=2'
(TYP.)

+08.88
4.94' RT

R=20'

R=2' (TYP.)

R=100'

R=100'

+34.07
16.91' RT

4'

2'

130'

+19

12'

12'

12'

12'

12'

–L– TS Sta. 12+08.88

–L– SC Sta. 13+08.88

–Y1– POT Sta. 14+25.74=
–L– POC Sta. 13+74.26

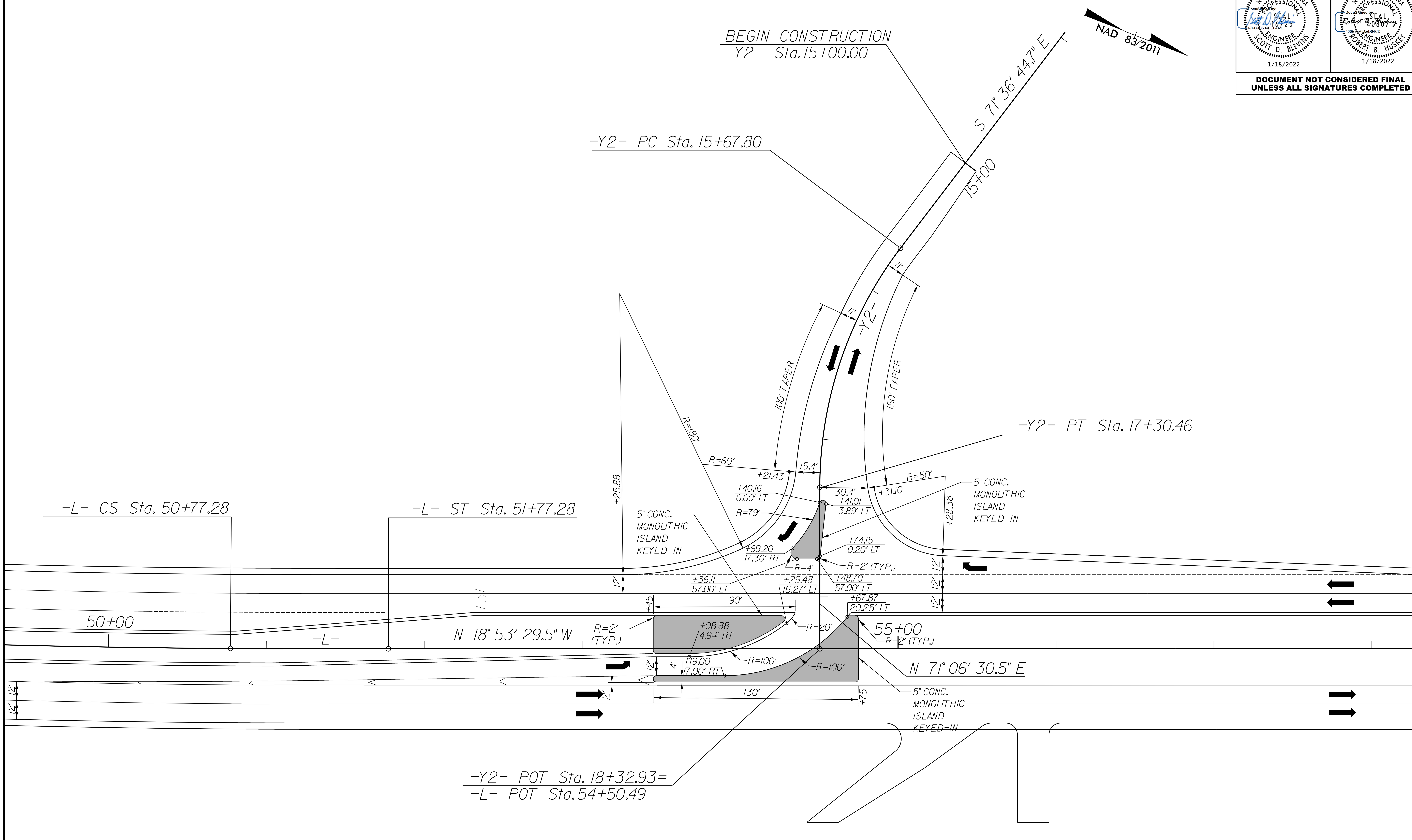
RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL ENGINEER SCOTT D. BLEVINS 1/18/2022	NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y2– INTERSECTION DETAIL

SCALE 1" = 30'

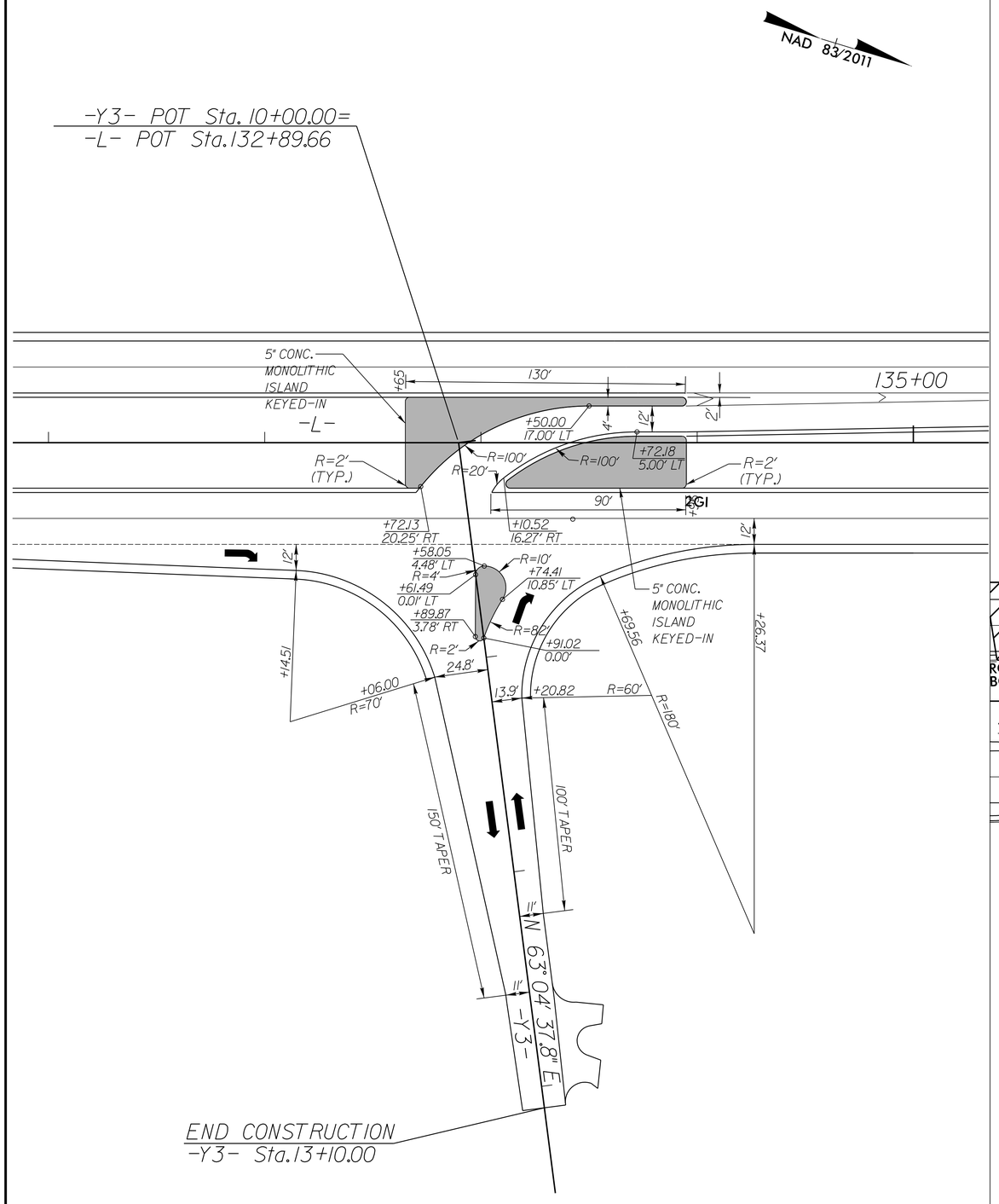


RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022
R:\Roadway\Proj\R2511_Rdy_psh02B-4.dgn

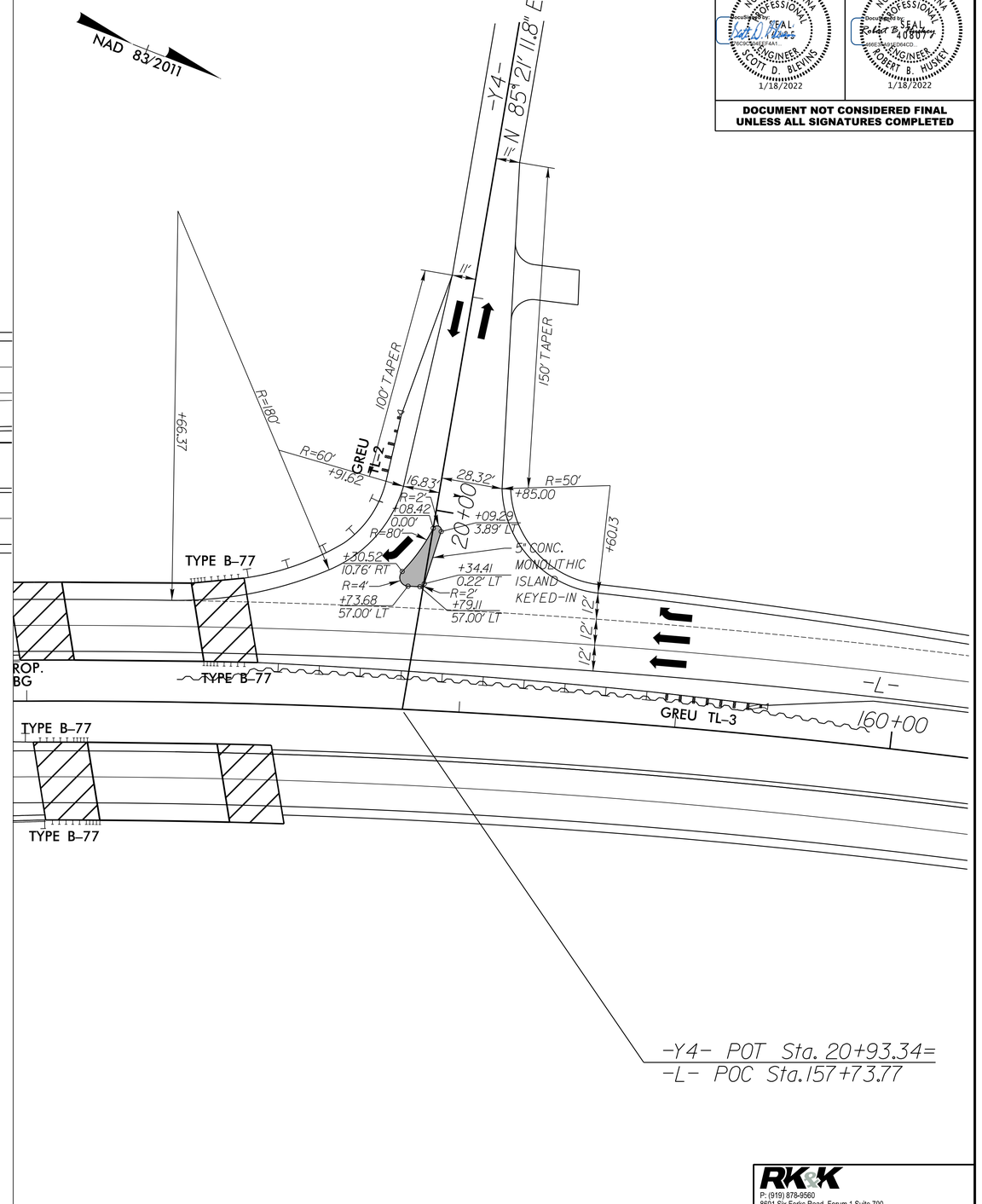
–Y3– INTERSECTION DETAIL

SCALE 1" = 30'



–Y4– INTERSECTION DETAIL

SCALE 1" = 30'



PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040077 ENGINEER SCOTT D. BLEVINS
1/18/2022

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040077 ENGINEER ROBERT B. HUSKEY
1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

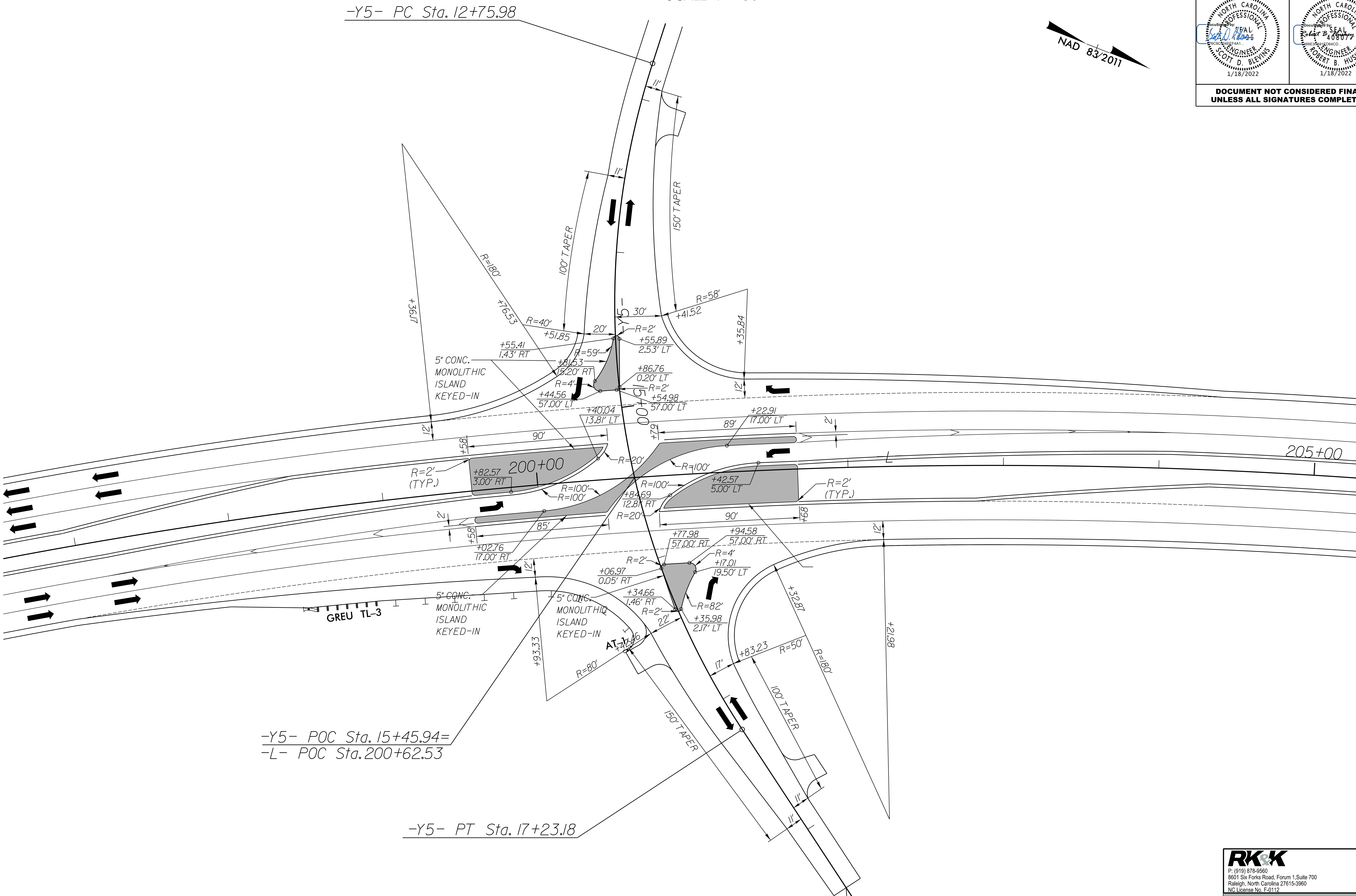
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL, SCOTT D. BLEVINS, 1/18/2022

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40877, ROBERT B. HUSKEY, 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y5– INTERSECTION DETAIL

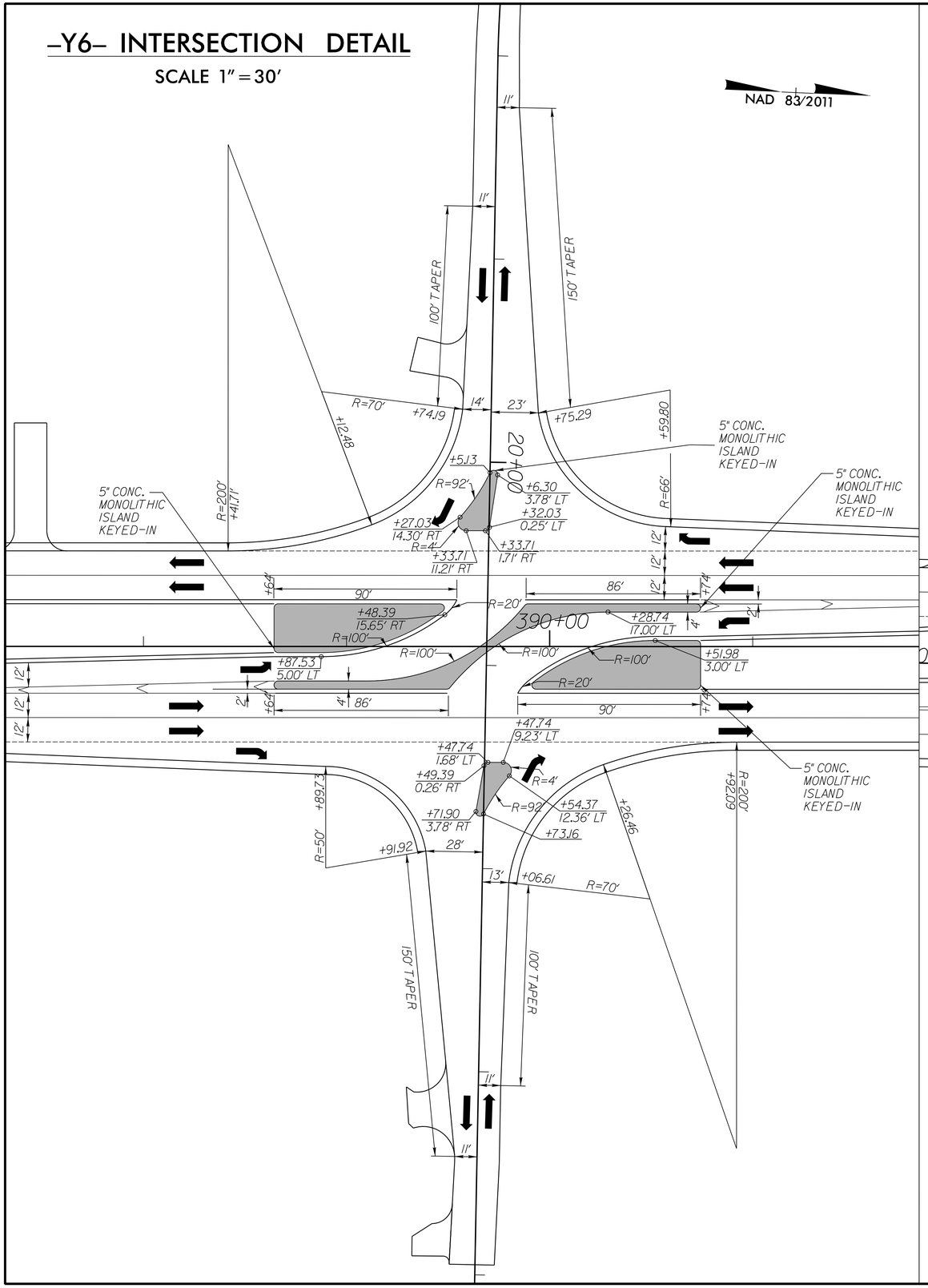
SCALE 1" = 30'



RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

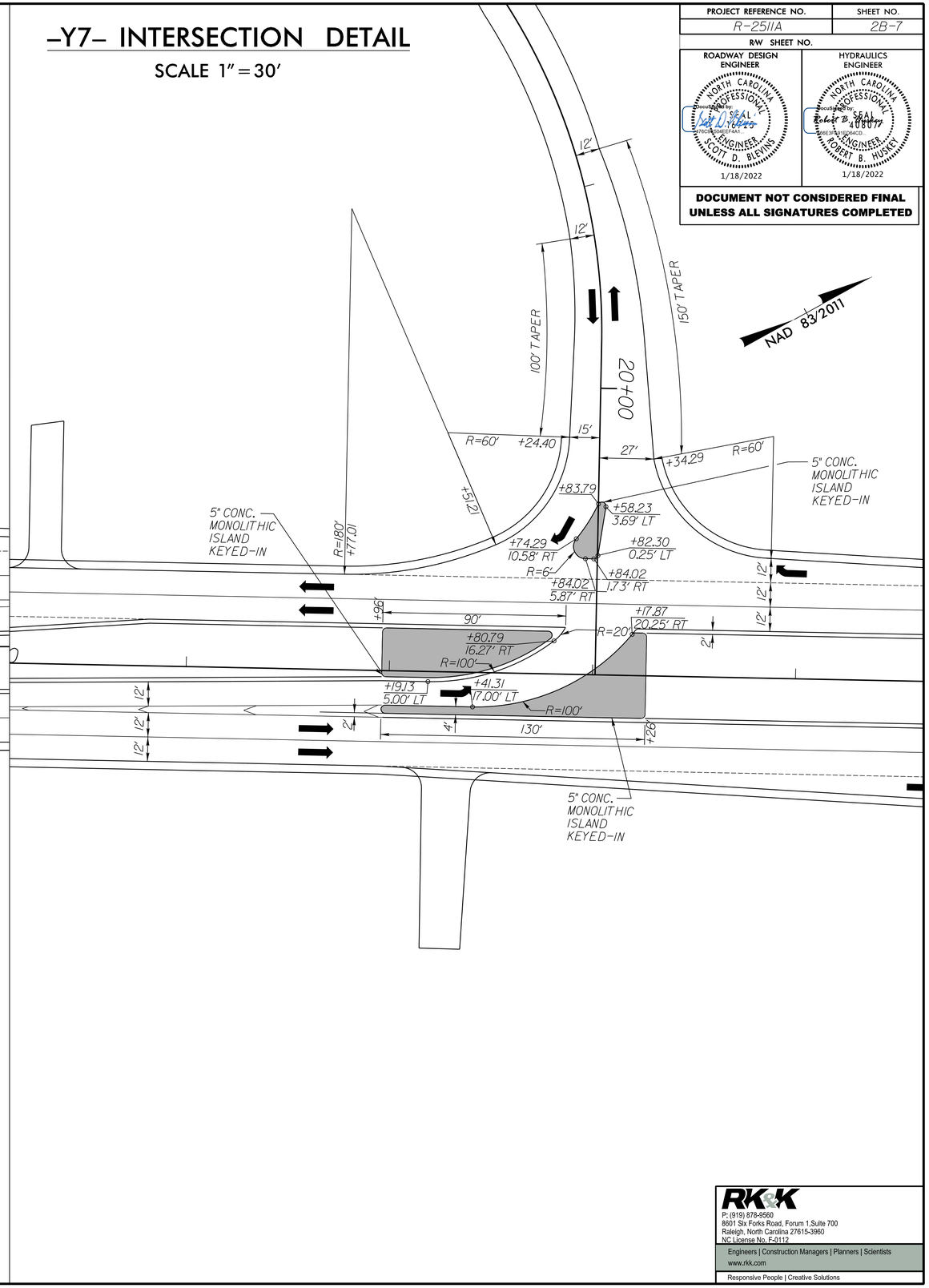
–Y6– INTERSECTION DETAIL

SCALE 1" = 30'



–Y7– INTERSECTION DETAIL

SCALE 1" = 30'



PROJECT REFERENCE NO.	SHEET NO.
R-2511A	2B-7
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040177 ENGINEER SCOTT D. BLEVINS	NORTH CAROLINA PROFESSIONAL SEAL 040077 ENGINEER ROBERT B. HUSKEY
1/18/2022	1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511A	2B-8
RW SHEET NO.	

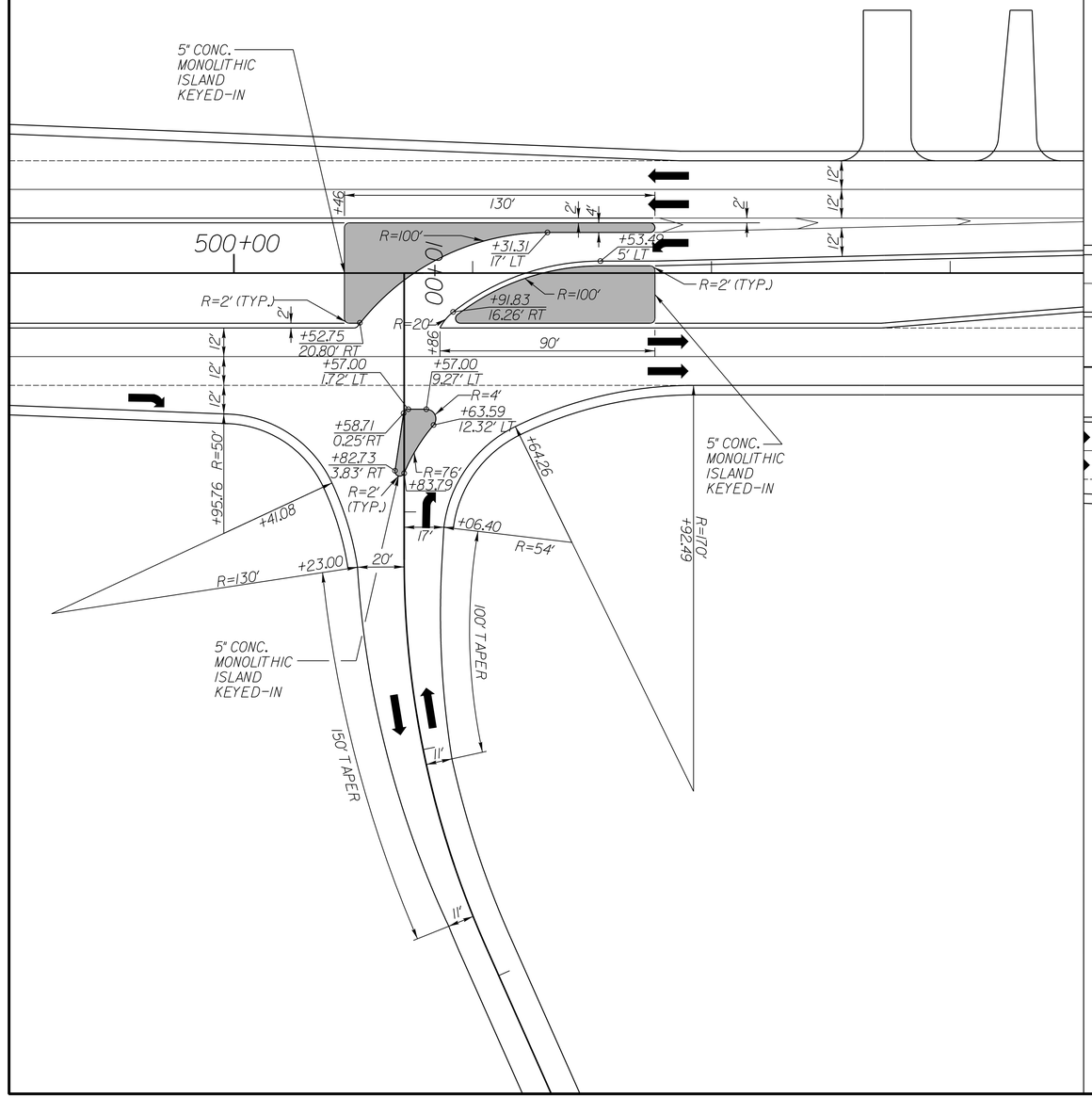
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 040077 ENGINEER SCOTT D. BLEVINS Registered 1/18/2022	NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY Registered 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–Y8– INTERSECTION DETAIL

SCALE 1" = 30'

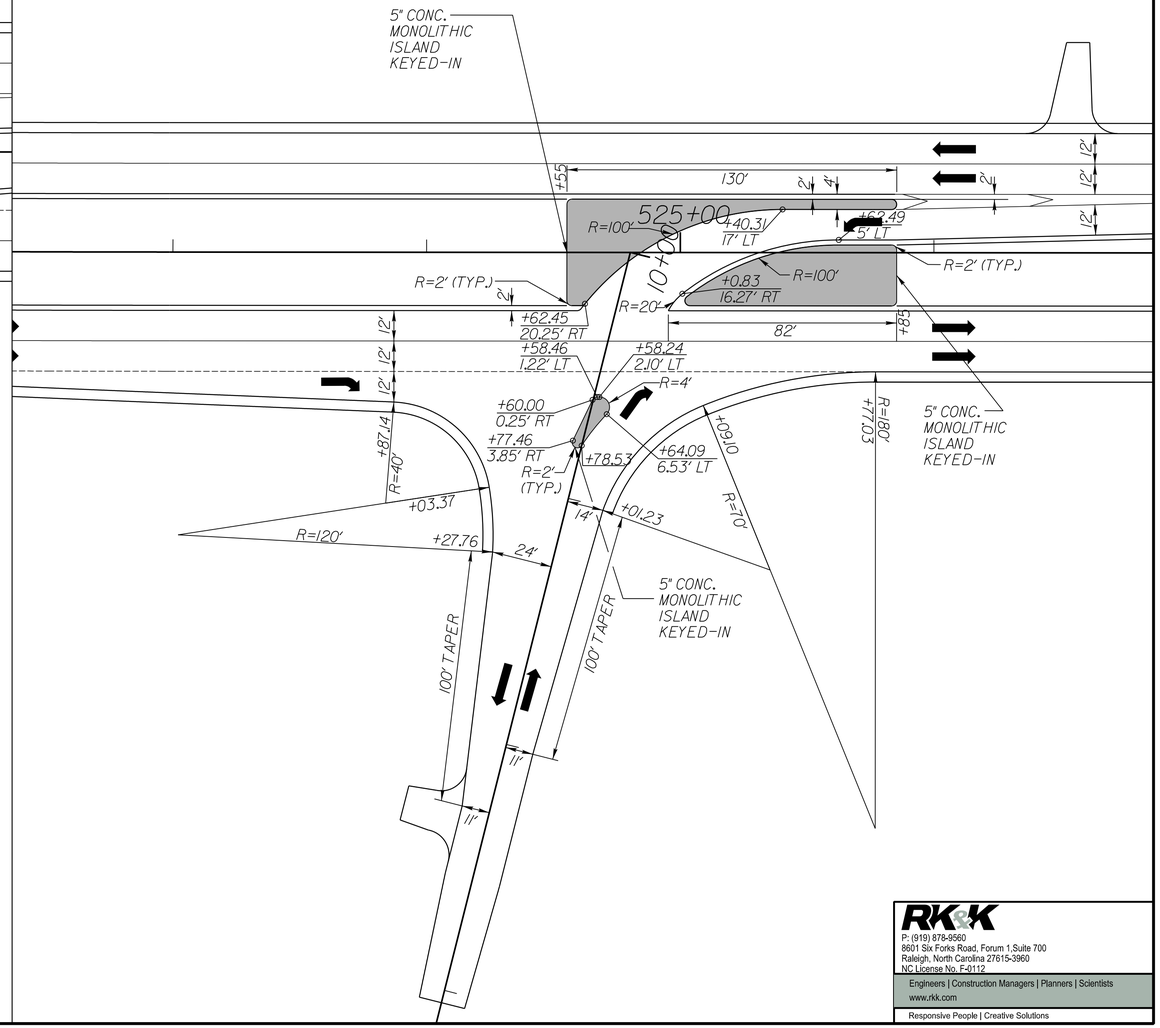
NAD 83/2011



–Y9– INTERSECTION DETAIL

SCALE 1" = 30'

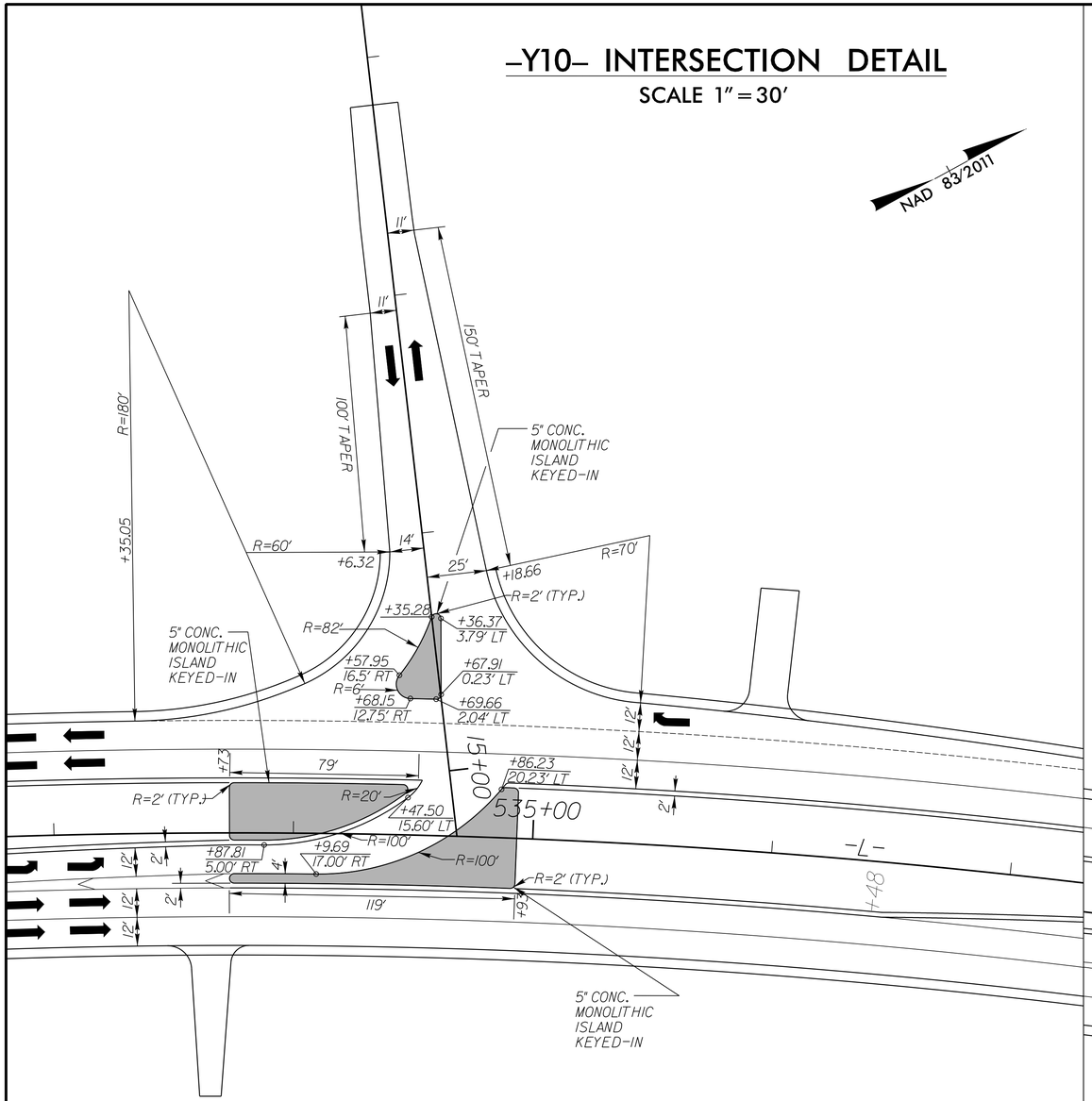
NAD 83/2011



RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

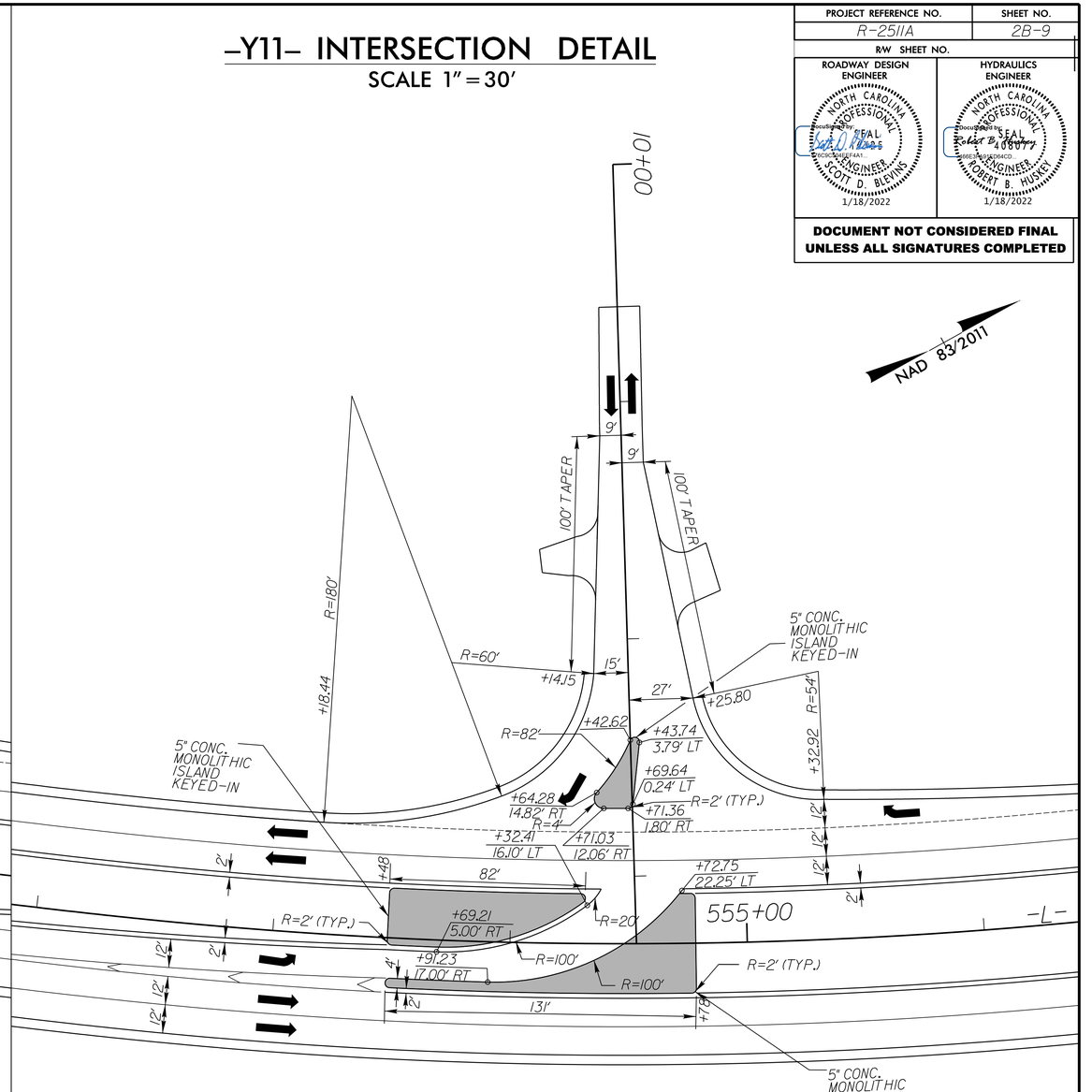
–Y10– INTERSECTION DETAIL

SCALE 1" = 30'



–Y11– INTERSECTION DETAIL

SCALE 1" = 30'



PROJECT REFERENCE NO.	SHEET NO.
R-2511A	2B-9
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 038225 ENGINEER SCOTT D. BLEVINS	NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY
1/18/2022	1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-10
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18723 ENGINEER SCOTT D. BLEVINS 1/18/2022

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 72 FEET OF PROPOSED PIPE 0605.

– REMOVE 9 FEET OF THE DOWNSTREAM END OF THE TWO EXISTING 15" RCP PIPES AND EXTEND THE UPSTREAM SIDE OF EXISTING PIPES WITH PROPOSED TEMPORARY 15" RCP, X137.

– CONNECT EXISTING 15" RCP PIPES TO PROPOSED 36" RCP-III PIPES WITH (2) 2GI AND TEMPORARY 15" PIPES.

– REMAINING 36" PIPES TO BE INSTALLED IN PLACE.

– REMOVE REMAINING 15" PIPES AFTER PROPOSED PIPES ARE ONLINE.

NAD 83/2011

19 DON W. NOBLES, et ux DB 1226 PG 513 DRAWN BY TAX MAPPING

BEGIN CONSTRUCTION
-TEMP2- PC Sta. 10+00.00
-L- PC Sta. 42+50.00

-TEMP2- PC Sta. 12+08.88

END CONSTRUCTION
-TEMP2- PT Sta. 18+24.83
-L- CS Sta. 50+77.28

BMI BL STA 27+25 150' LT ELEV=45.13'

(X101) (2) TEMP 2GI – TEMPORARY 15" PIPE

(X102) COLLARS – TEMPORARY 15" PIPE

-TEMP2- PT Sta. 10+93.41

PROP. 47" WW FENCE

CHORD

18 JAMES ALBERT WARREN DB 1542 PG 855

17 ARNOLD LAND HOLDINGS, LLC DB 1924 PG 858

END FENCE +15.00

-TEMP2-

PI Sta 10+46.71	PI Sta 15+17.03
△ = 0° 42' 37.1" (RT)	△ = 4° 43' 39.1" (LT)
D = 0° 45' 37.4"	D = 0° 46' 03.1"
L = 93.41'	L = 615.94'
T = 46.71'	T = 308.15'
R = 7,535.00'	R = 7,465.00'
Se = 0.025	Se = 0.025

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 6 AND 7.

-TEMP2-

BEGIN GRADE -TEMP2-
-TEMP2- STA 10+00.00=
ELEV.= 48.62'

PI = 11+40.00
EL = 49.32'
VC = 260'
K = 116

PI = 14+20.00
EL = 44.47'
VC = 240'
K = 118

PI = 15+80.00
EL = 44.95'
VC = 70'
K = 114

END GRADE -TEMP2-
-TEMP2- STA 18+24.83=
ELEV.= 44.18'

PROPOSED GRADE

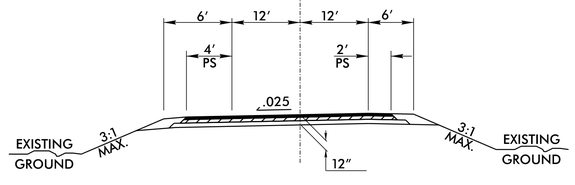
(+)0.5000% (−)11.7345% (−)11.7345% (+)0.3000% (+)0.3000% (−)0.3116%

EXISTING GROUND

60 50 40 30 — 10 11 12 13 14 15 16 17 18 19

TEMPORARY CROSSOVER ON –L– (US 17)

℄ –TEMP2–



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022
K:\Raleigh\Proj\r2511_Rdy_det_psh2B-10.dgn
abeller

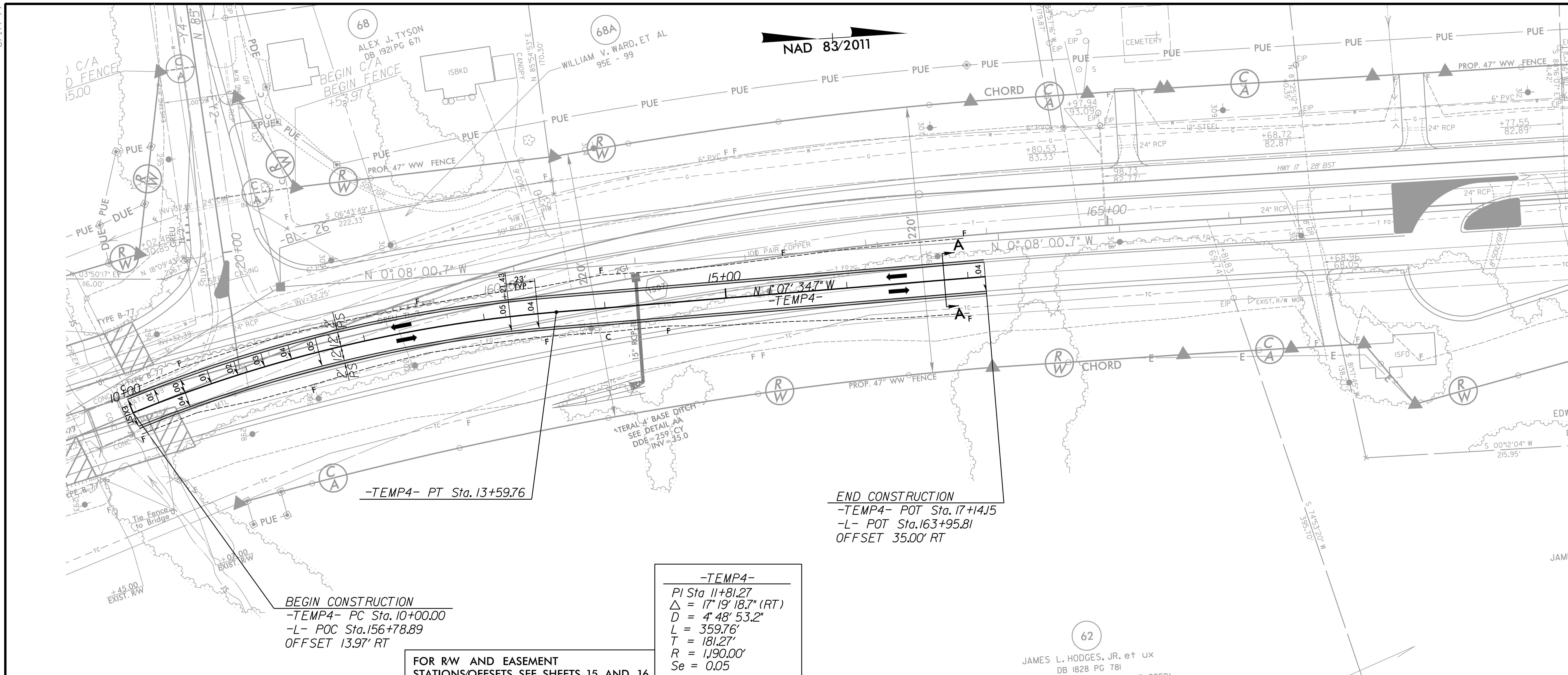
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL SCOTT D. BLEVINS 1/18/2022

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40807 ROBERT B. HUSKEY 1/18/2022

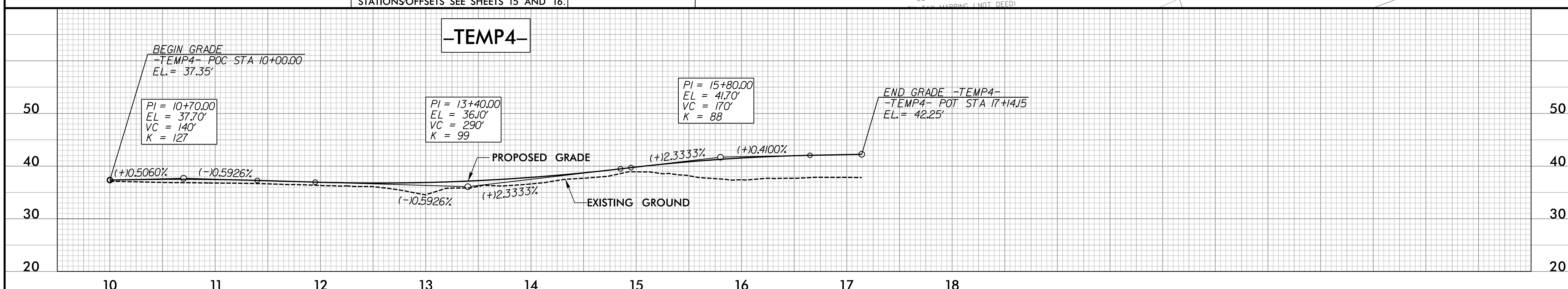
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.

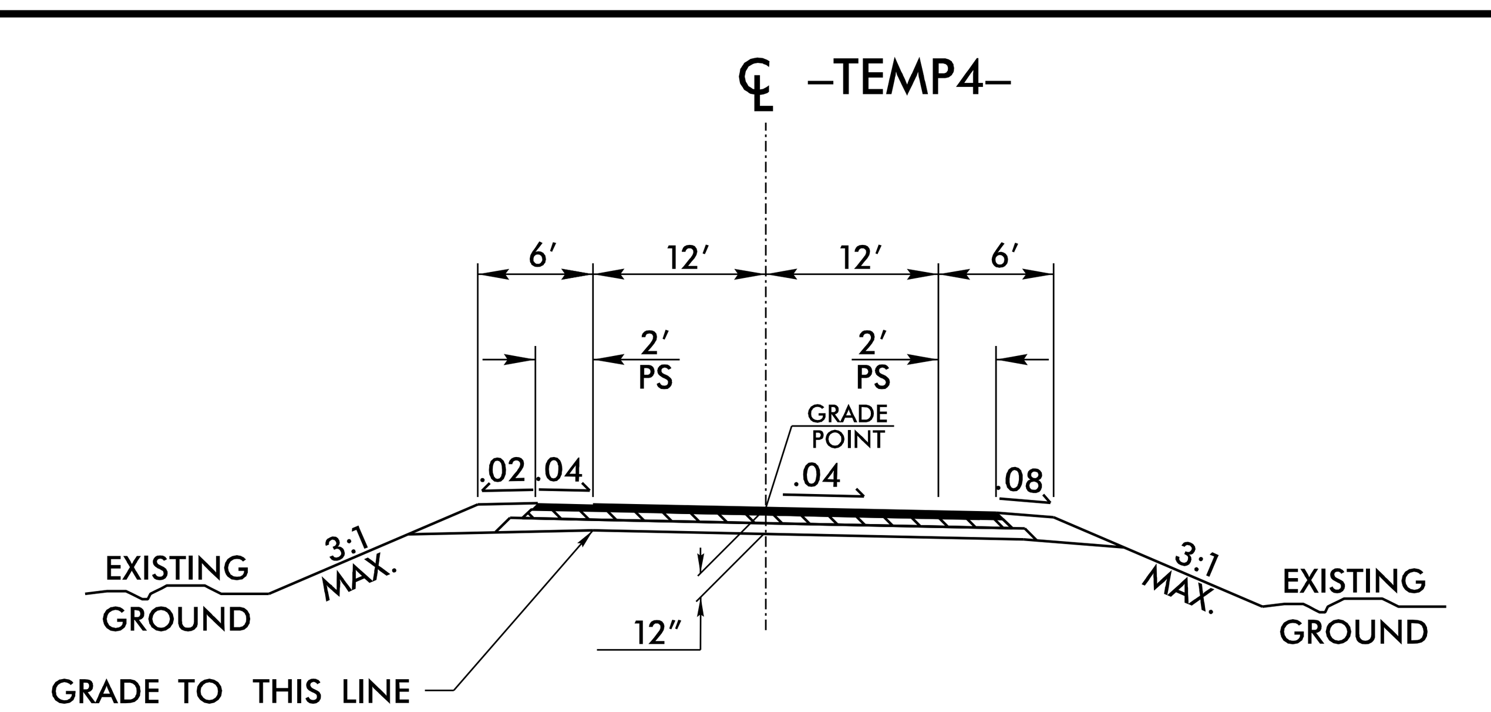


-TEMP4-
PI Sta 11+81.27
Δ = 17° 19' 18.7" (RT)
D = 4° 48' 53.2"
L = 359.76'
T = 181.27'
R = 1,190.00'
Se = 0.05

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 15 AND 16.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-11.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 16725 ENGINEER SCOTT D. BLEVINS — 3/18/2022

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 40807 ENGINEER ROBERT B. HUSKEY — 3/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.

NAD 83/2011

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 74 FEET OF PROPOSED PIPE 2101.

– REMOVE 6 FEET OF EXISTING 48" RCP.

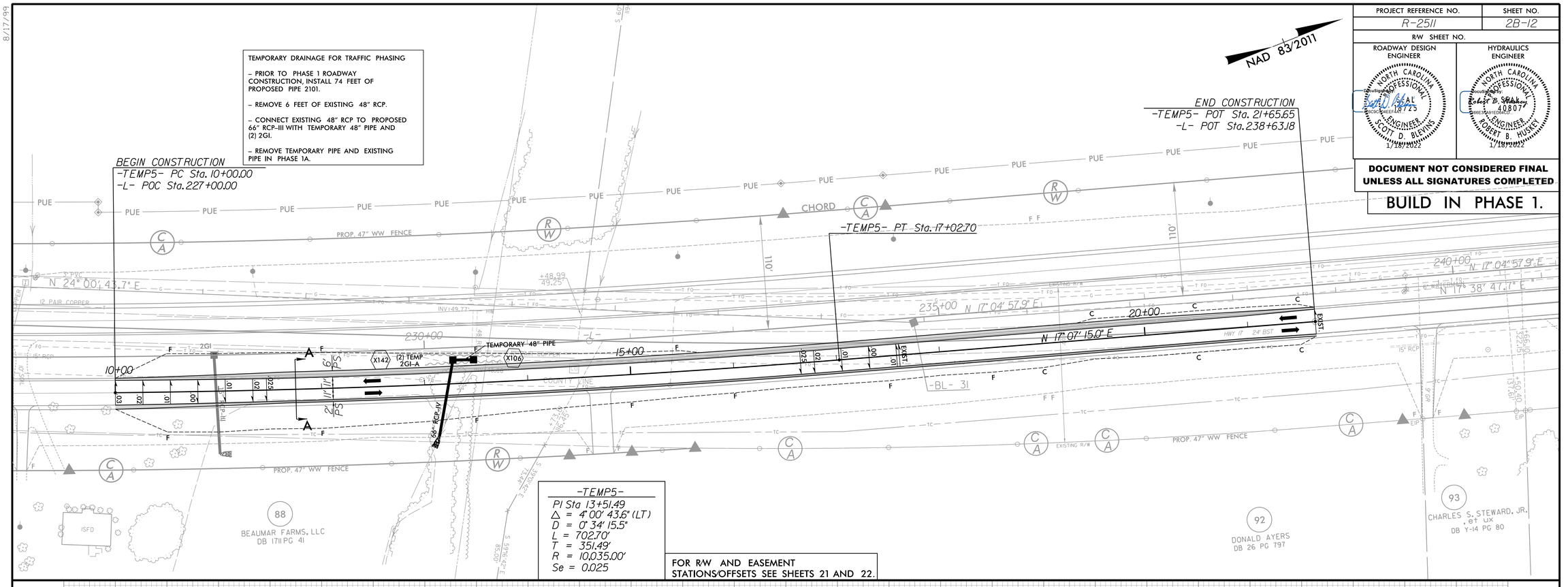
– CONNECT EXISTING 48" RCP TO PROPOSED 66" RCP-III WITH TEMPORARY 48" PIPE AND (2) 2GI.

– REMOVE TEMPORARY PIPE AND EXISTING PIPE IN PHASE 1A.

BEGIN CONSTRUCTION
-TEMP5- PC Sta. 10+00.00
-L- POC Sta. 227+00.00

END CONSTRUCTION
-TEMP5- POT Sta. 21+65.65
-L- POT Sta. 238+63.18

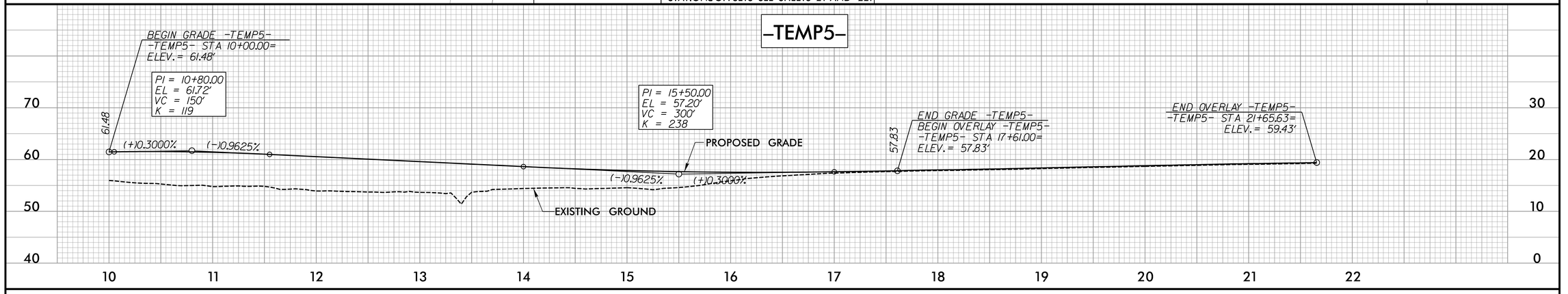
CHORD
-TEMP5- PT Sta. 17+02.70

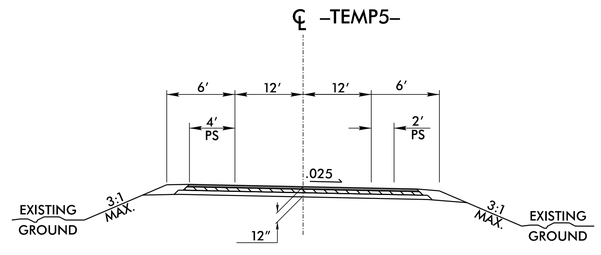


-TEMP5-
PI Sta 13+51.49
△ = 4° 00' 43.6" (LT)
D = 0° 34' 15.5"
L = 702.70'
T = 351.49'
R = 10,035.00'
Se = 0.025

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 21 AND 22.

-TEMP5-





SECTION A–A

TEMPORARY CROSSOVER ON -L- (US 17)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

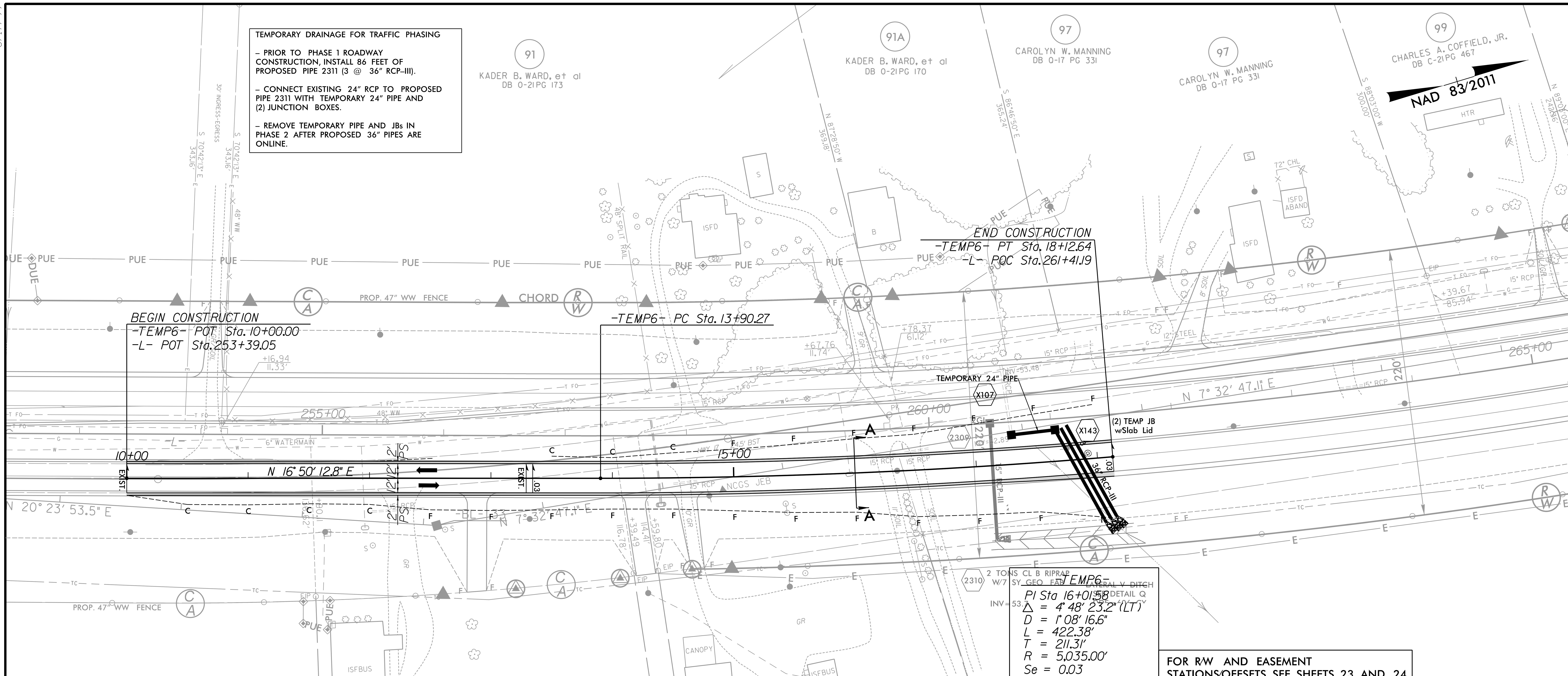
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-13
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SCOTT D. BLEVINS — 1/18/2022

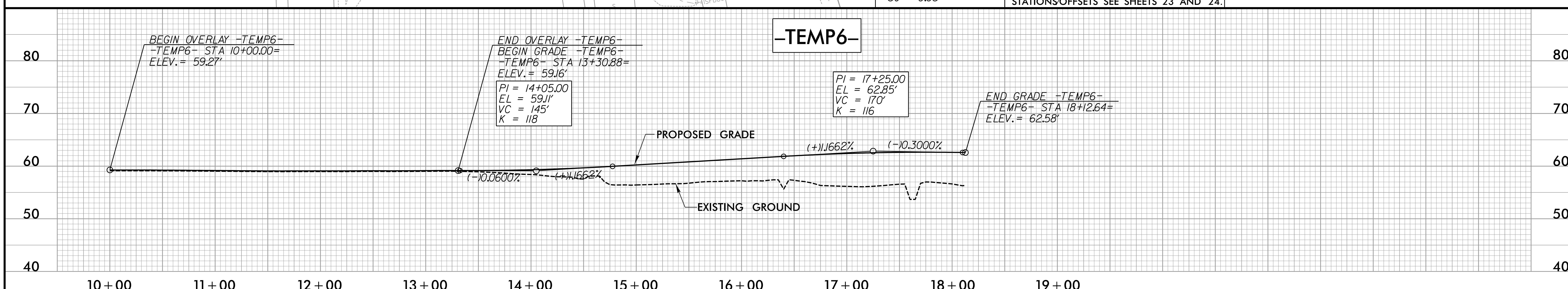
HYDRAULICS ENGINEER — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.

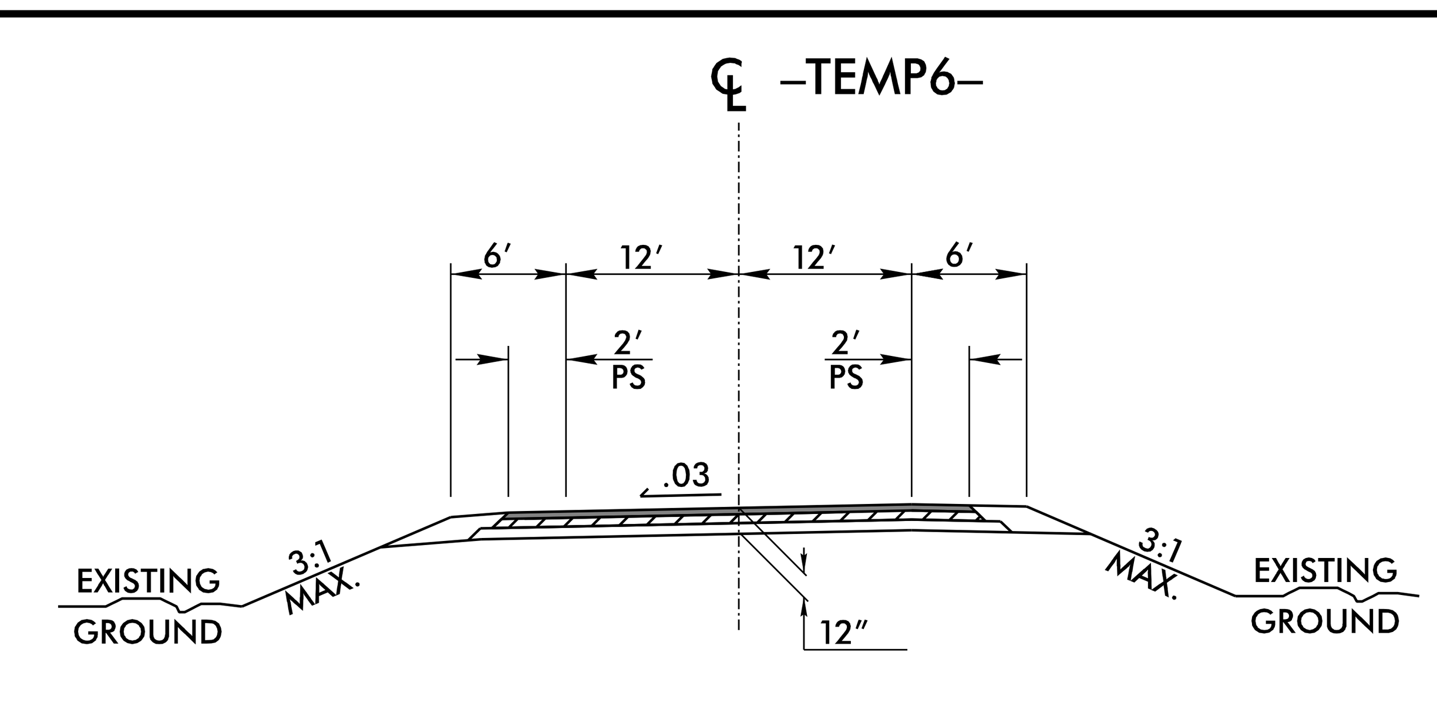


TEMPORARY DRAINAGE FOR TRAFFIC PHASING
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 86 FEET OF PROPOSED PIPE 2311 (3 @ 36" RCP-III).
– CONNECT EXISTING 24" RCP TO PROPOSED PIPE 2311 WITH TEMPORARY 24" PIPE AND (2) JUNCTION BOXES.
– REMOVE TEMPORARY PIPE AND JBs IN PHASE 2 AFTER PROPOSED 36" PIPES ARE ONLINE.
KADER B. WARD, et al DB 0-21 PG 173
KADER B. WARD, et al DB 0-21 PG 170
CAROLYN W. MANNING DB 0-17 PG 331
CHARLES A. COFFIELD, JR. DB C-21 PG 467
NAD 83/2011
BEGIN CONSTRUCTION
-TEMP6- POT Sta. 10+00.00
-L- POT Sta. 253+39.05
-TEMP6- PC Sta. 13+90.27
END CONSTRUCTION
-TEMP6- PT Sta. 18+12.64
-L- POC Sta. 261+41.19
TEMPORARY 24" PIPE
(2) TEMP JB w/Slab Lid
N 16° 50' 12.8" E
N 20° 23' 53.5" E
N 7° 32' 47.1" E
PROP. 47" WW FENCE
CHORD
2 TONS CL B RIPRAP W/ 7 SY GEO FAB
-TEMP6-
PI Sta 16+01.58
Δ = 4° 48' 23.2" (LT)
D = 1° 08' 16.6"
L = 422.38'
T = 211.31'
R = 5,035.00'
Se = 0.03
FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 23 AND 24.



-TEMP6-
BEGIN OVERLAY -TEMP6-
-TEMP6- STA 10+00.00=
ELEV.= 59.27'
END OVERLAY -TEMP6-
BEGIN GRADE -TEMP6-
-TEMP6- STA 13+30.88=
ELEV.= 59.16'
PI = 14+05.00
EL = 59.11'
VC = 145'
K = 118
PI = 17+25.00
EL = 62.85'
VC = 170'
K = 116
END GRADE -TEMP6-
-TEMP6- STA 18+12.64=
ELEV.= 62.58'
PROPOSED GRADE
EXISTING GROUND
(-)0.0600%
(+)1.1662%
(+)1.1662%
(-)0.3000%
80
70
60
50
40
10+00
11+00
12+00
13+00
14+00
15+00
16+00
17+00
18+00
19+00

TEMPORARY CROSSOVER ON –L– (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

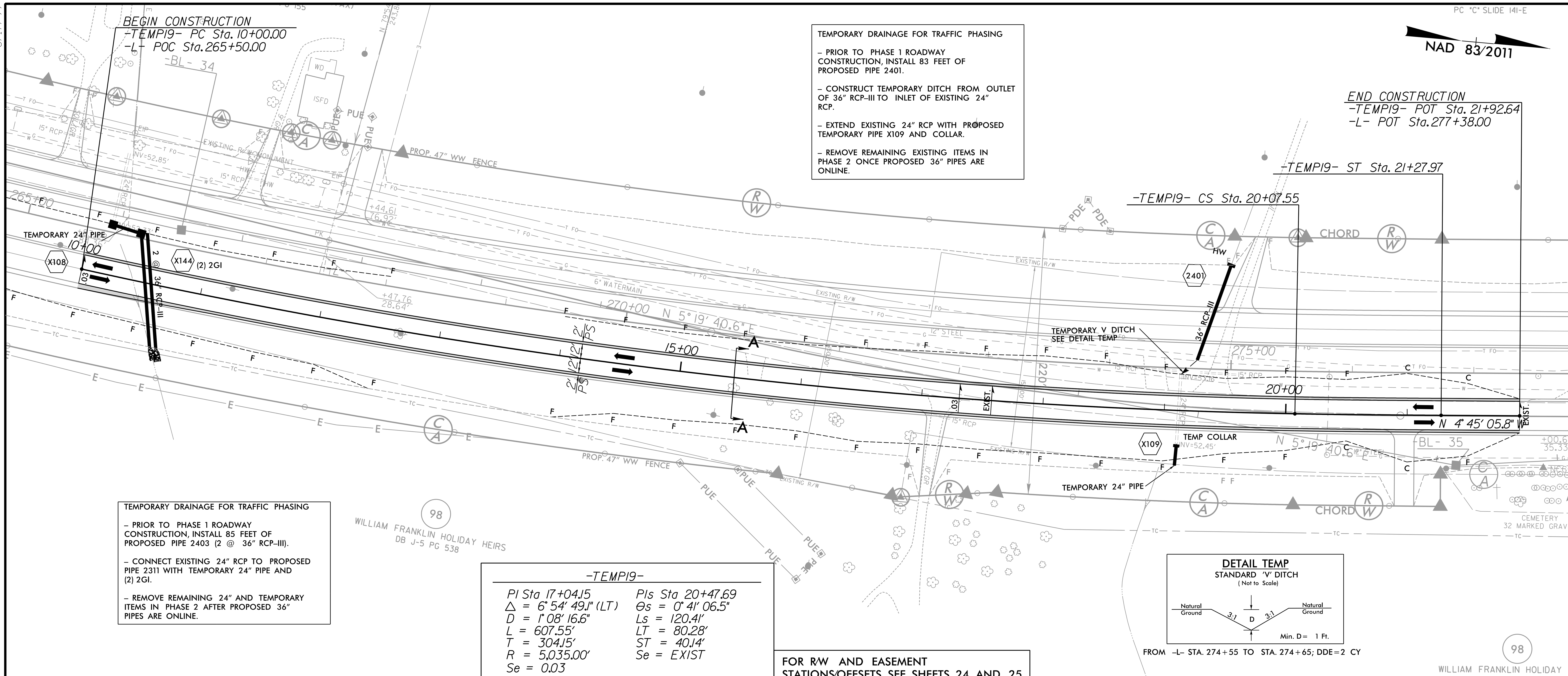
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-14
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL, SCOTT D. BLEVINS — 1/18/2022

HYDRAULICS ENGINEER — SEAL, ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 83 FEET OF PROPOSED PIPE 2401.
- CONSTRUCT TEMPORARY DITCH FROM OUTLET OF 36" RCP-III TO INLET OF EXISTING 24" RCP.
- EXTEND EXISTING 24" RCP WITH PROPOSED TEMPORARY PIPE X109 AND COLLAR.
- REMOVE REMAINING EXISTING ITEMS IN PHASE 2 ONCE PROPOSED 36" PIPES ARE ONLINE.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

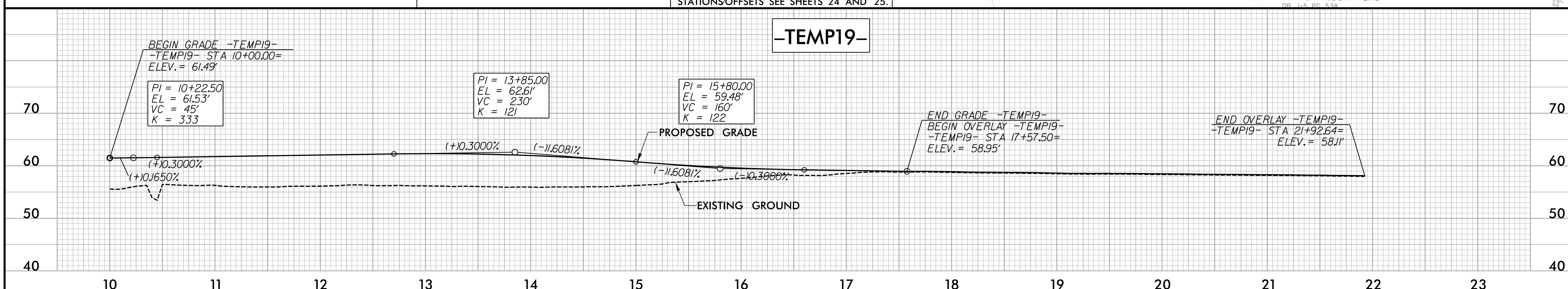
- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 85 FEET OF PROPOSED PIPE 2403 (2 @ 36" RCP-III).
- CONNECT EXISTING 24" RCP TO PROPOSED PIPE 2311 WITH TEMPORARY 24" PIPE AND (2) 2GI.
- REMOVE REMAINING 24" AND TEMPORARY ITEMS IN PHASE 2 AFTER PROPOSED 36" PIPES ARE ONLINE.

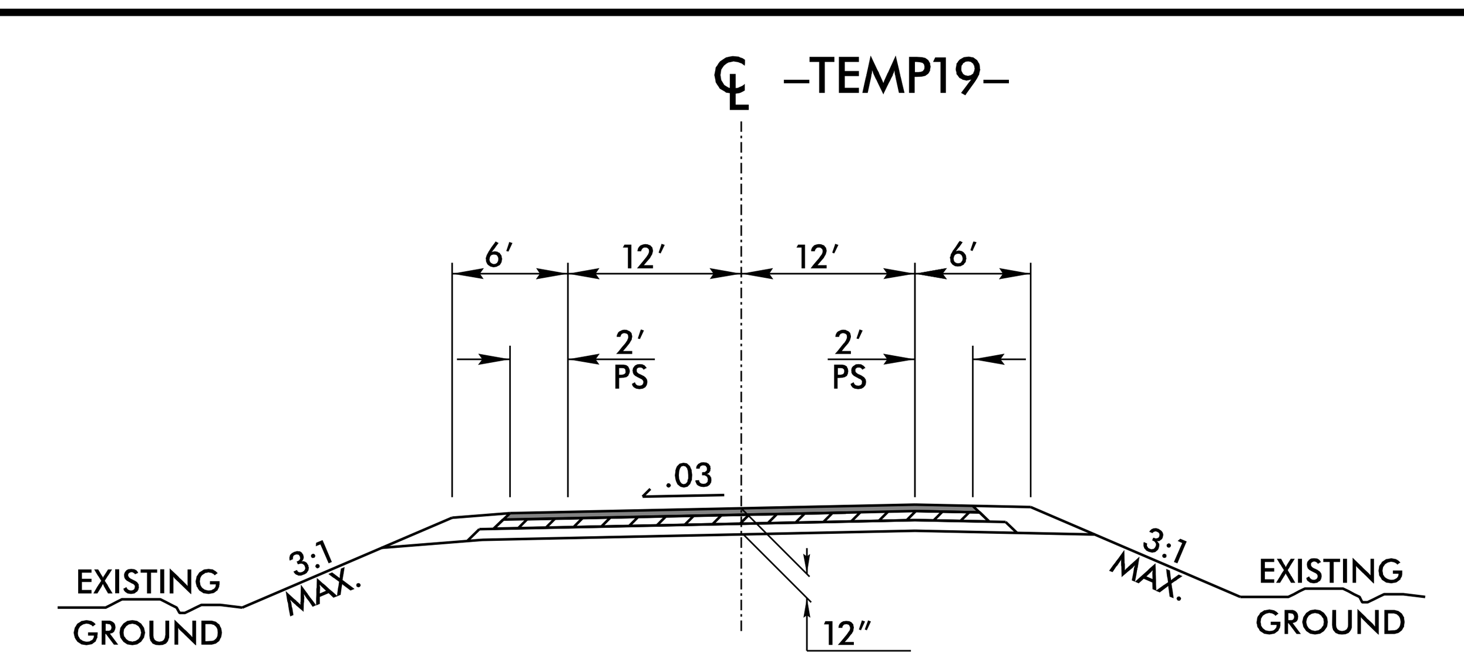
-TEMP19-

PI Sta 17+04.15	PIs Sta 20+47.69
Δ = 6° 54' 49.1" (LT)	Θs = 0° 41' 06.5"
D = 1° 08' 16.6"	Ls = 120.41'
L = 607.55'	LT = 80.28'
T = 304.15'	ST = 40.14'
R = 5,035.00'	Se = EXIST
Se = 0.03	

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 24 AND 25.

DETAIL TEMP
STANDARD 'V' DITCH (Not to Scale)
Natural Ground — 3:1 — D — 3:1 — Natural Ground
Min. D = 1 Ft.
FROM -L- STA. 274+55 TO STA. 274+65; DDE=2 CY





SECTION A–A

TEMPORARY CROSSOVER ON –L– (US 17)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-14.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-15

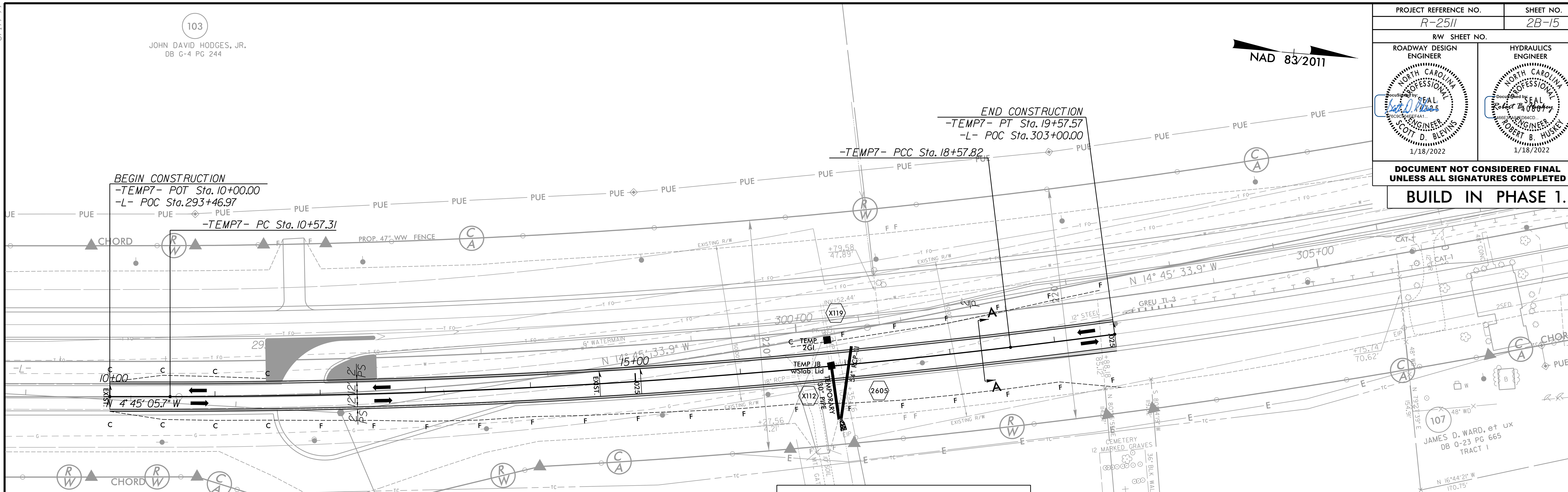
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL 025785 — SCOTT D. BLEVINS — 1/18/2022

HYDRAULICS ENGINEER — SEAL 038840 — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

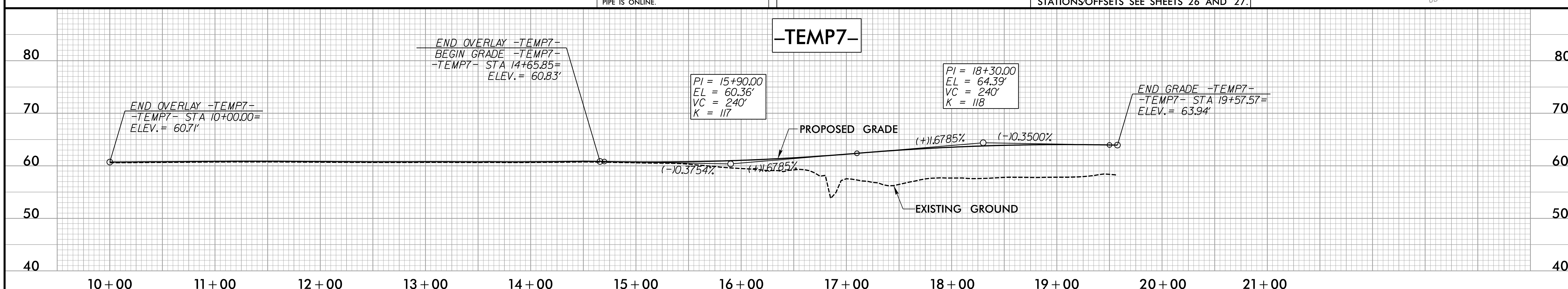
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL TEMPORARY 30" RCP-III TO OUTLET END OF EXISTING 30" CMP WITH JB, INSTALL TEMPORARY 2GI AND INSTALL 70' OF PROPOSED PIPE 2605.

– PLUG & FILL EXISTING AND TEMPORARY 30" PIPES IN PHASE 2 ONCE PROPOSED 54" PIPE IS ONLINE.

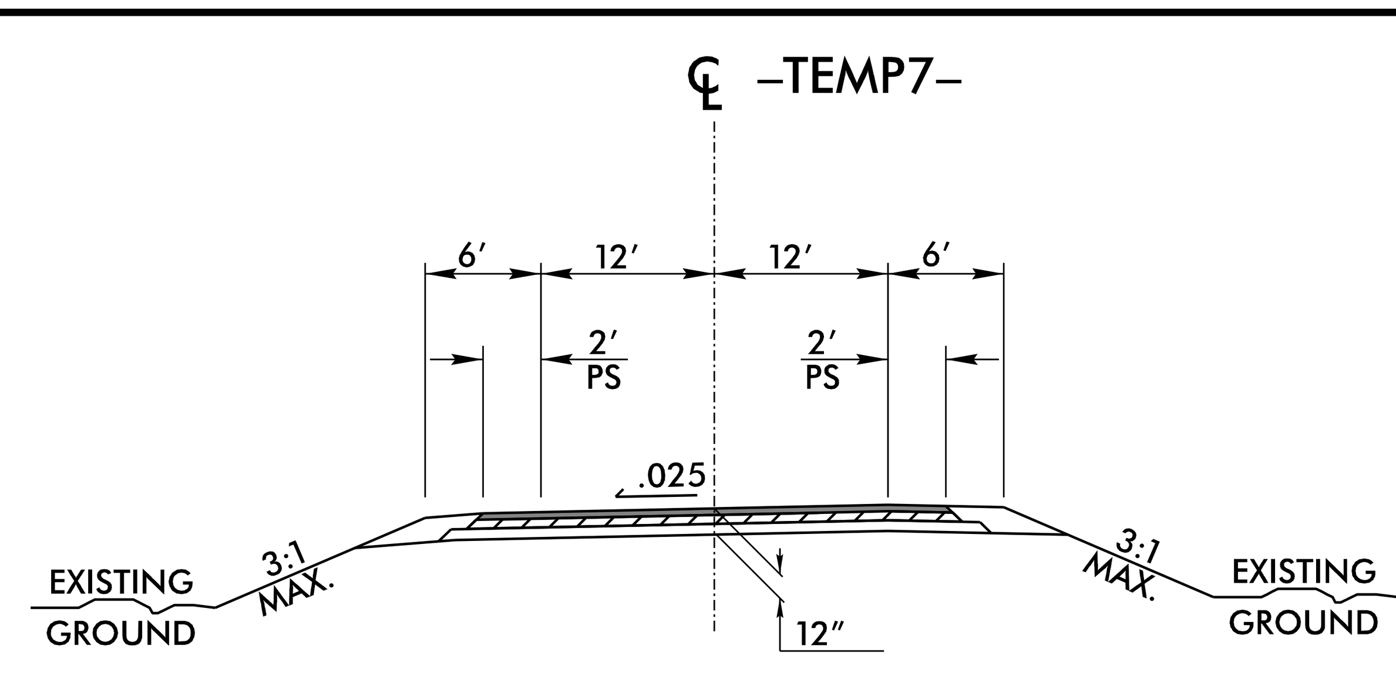
-TEMP7-

PI Sta 14+58.03	PI Sta 19+07.70
Δ = 6° 43' 30.5" (LT)	Δ = 0° 48' 44.7" (LT)
D = 0° 50' 24.4"	D = 0° 48' 52.0"
L = 800.50'	L = 99.75'
T = 400.71'	T = 49.88'
R = 6,820.00'	R = 7,035.00'
Se = 0.025	Se = 0.025

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 26 AND 27.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-15.dgn
ahefler

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-16

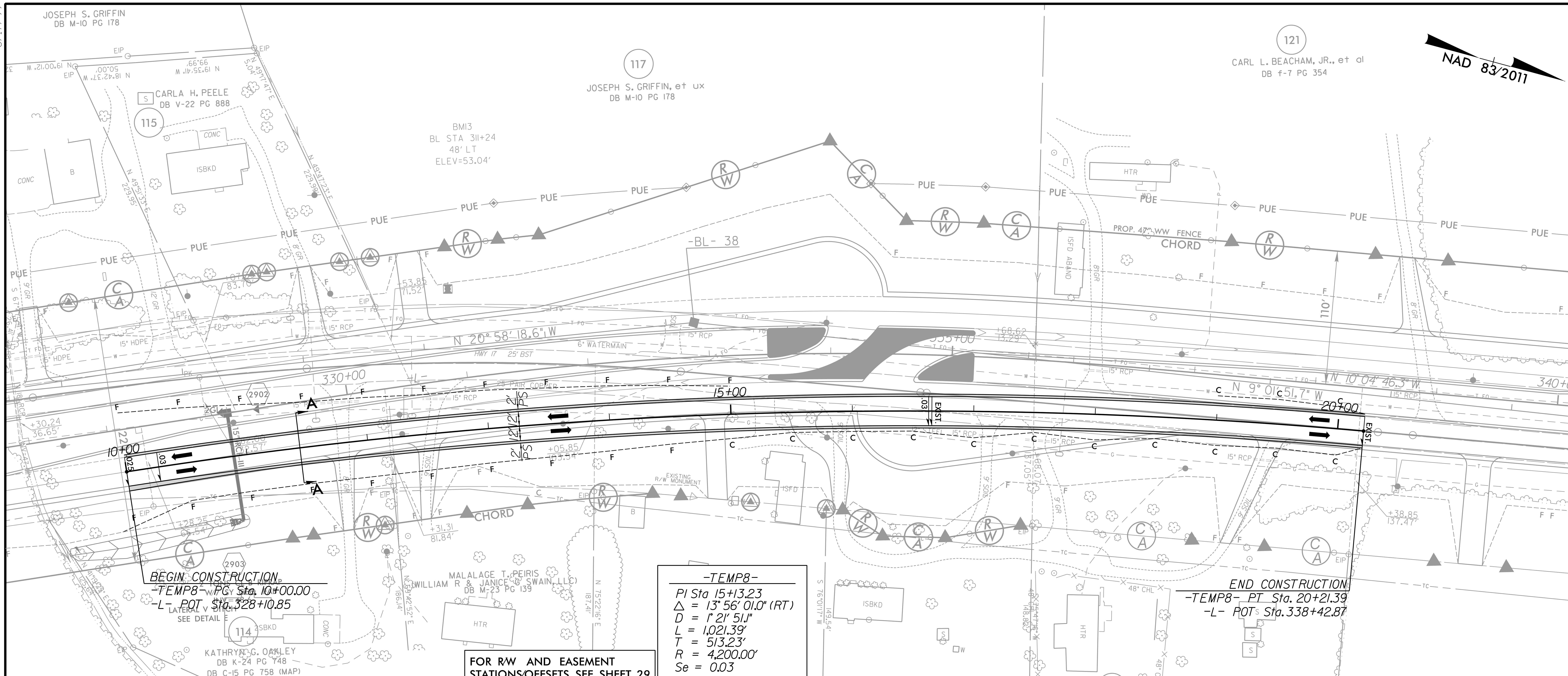
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL, SCOTT D. BLEVINS, 1/18/2022

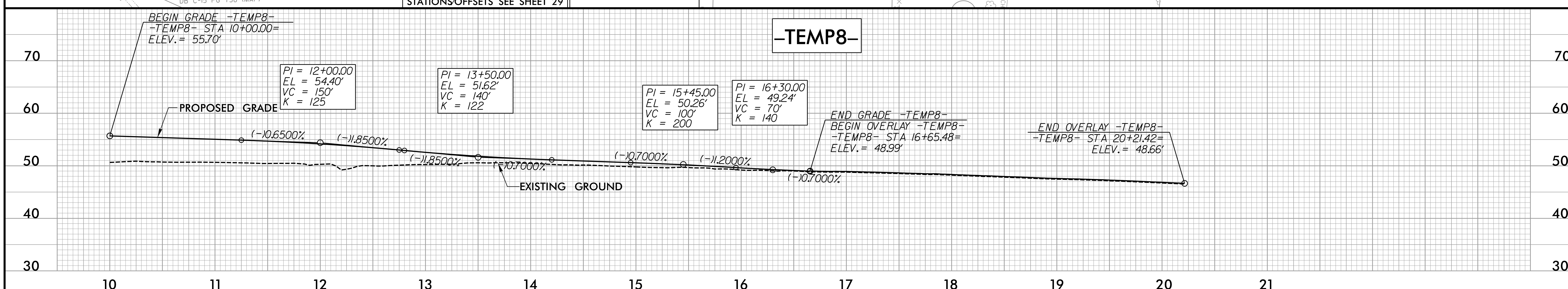
HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL, ROBERT B. HUSKEY, 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.

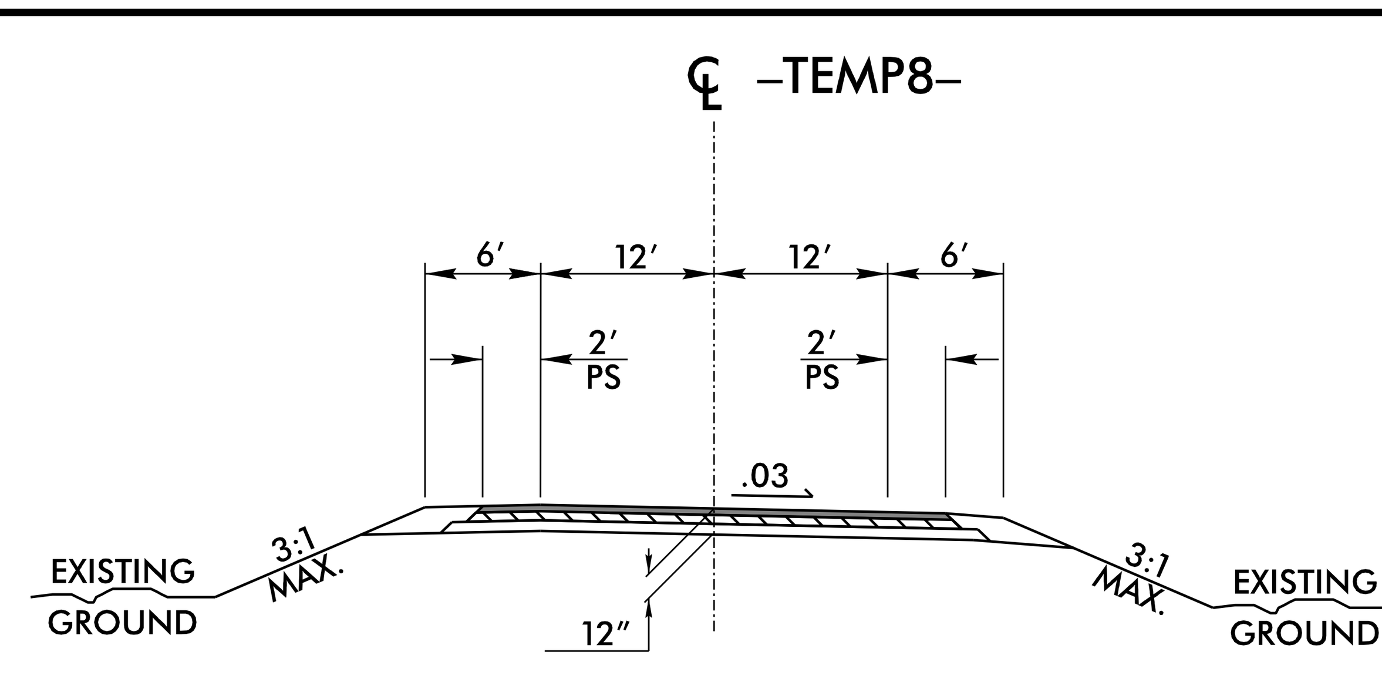


NAD 83/2011
JOSEPH S. GRIFFIN
DB M-10 PG 178
JOSEPH S. GRIFFIN, et ux
DB M-10 PG 178
CARLA H. PEELE
DB V-22 PG 888
CARL L. BEACHAM, JR., et al
DB F-7 PG 354
BM13
BL STA 311+24
48' LT
ELEV=53.04'
-BL- 38
N 20° 58' 18.6" W
N 9° 01' 51.7" W
N 10° 04' 46.3" W
330+00
340+00
10+00
15+00
20+00
BEGIN CONSTRUCTION
-TEMP8- PC Sta. 10+00.00
-L- POT Sta. 328+10.85
END CONSTRUCTION
-TEMP8- PT Sta. 20+21.39
-L- POT Sta. 338+42.87
-TEMP8-
PI Sta 15+13.23
Δ = 13° 56' 01.0" (RT)
D = 1° 21' 51.1"
L = 1,021.39'
T = 513.23'
R = 4,200.00'
Se = 0.03
FOR R/W AND EASEMENT
STATIONS/OFFSETS SEE SHEET 29
MALALAGE T. PEIRIS
WILLIAM R & JANICE G SWAIN, LLC
DB M-23 PG 139
KATHRYN G. OAKLEY
DB K-24 PG 748
DB C-15 PG 758 (MAP)
CHORD
PROP. 4' WW FENCE
PUE



-TEMP8-
BEGIN GRADE -TEMP8-
-TEMP8- STA 10+00.00=
ELEV.= 55.70'
PI = 12+00.00
EL = 54.40'
VC = 150'
K = 125
PI = 13+50.00
EL = 51.62'
VC = 140'
K = 122
PI = 15+45.00
EL = 50.26'
VC = 100'
K = 200
PI = 16+30.00
EL = 49.24'
VC = 70'
K = 140
END GRADE -TEMP8-
BEGIN OVERLAY -TEMP8-
-TEMP8- STA 16+65.48=
ELEV.= 48.99'
END OVERLAY -TEMP8-
-TEMP8- STA 20+21.42=
ELEV.= 48.66'
PROPOSED GRADE
EXISTING GROUND
(-)0.6500%
(-)1.8500%
(-)1.8500%
(-)0.7000%
(-)0.7000%
(-)1.2000%
(-)0.7000%
70
60
50
40
30
10
11
12
13
14
15
16
17
18
19
20
21

TEMPORARY CROSSOVER ON –L– (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-16.dgn

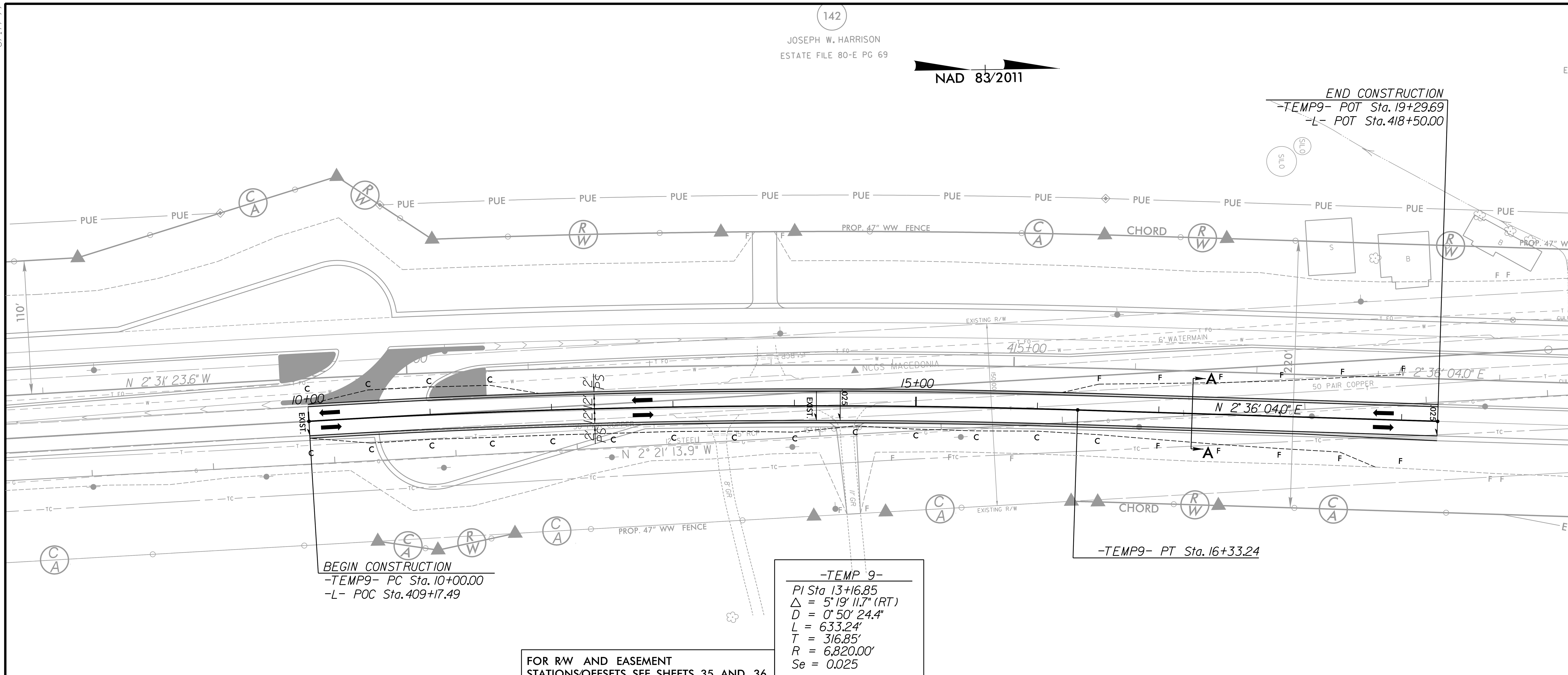
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-17
R/W SHEET NO.	

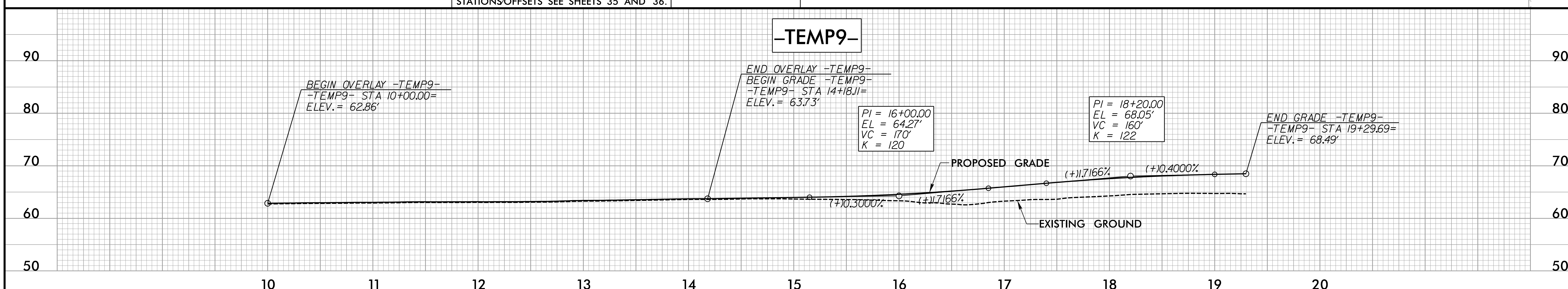
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16725, SCOTT D. BLEVINS — DocuSigned by: 476C9C504EEF4A1... — 1/18/2022

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 40801, ROBERT B. HUSKEY — DocuSigned by: 466E3FA91ED64CD... — 1/18/2022

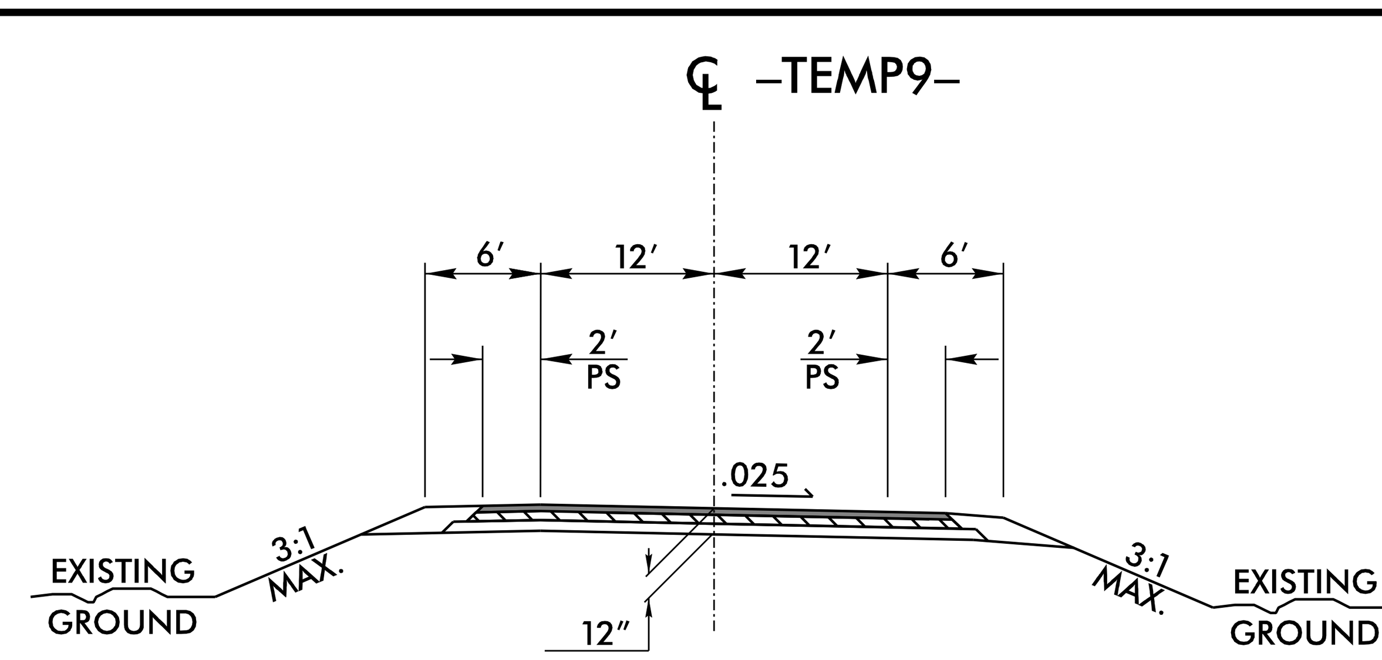
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.





TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-17.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-18

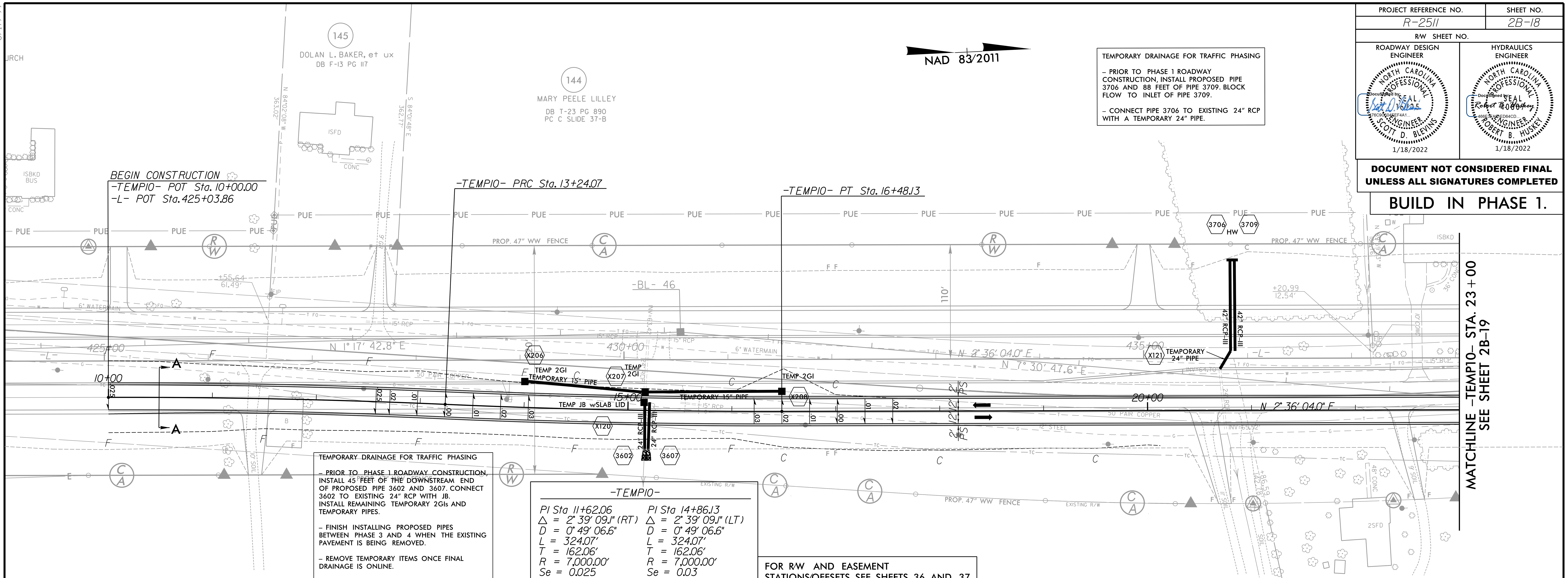
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, SCOTT D. BLEVINS, 1/18/2022

HYDRAULICS ENGINEER — SEAL: NORTH CAROLINA PROFESSIONAL ENGINEER, ROBERT B. HUSKEY, 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL PROPOSED PIPE 3706 AND 88 FEET OF PIPE 3709. BLOCK FLOW TO INLET OF PIPE 3709.
- CONNECT PIPE 3706 TO EXISTING 24" RCP WITH A TEMPORARY 24" PIPE.

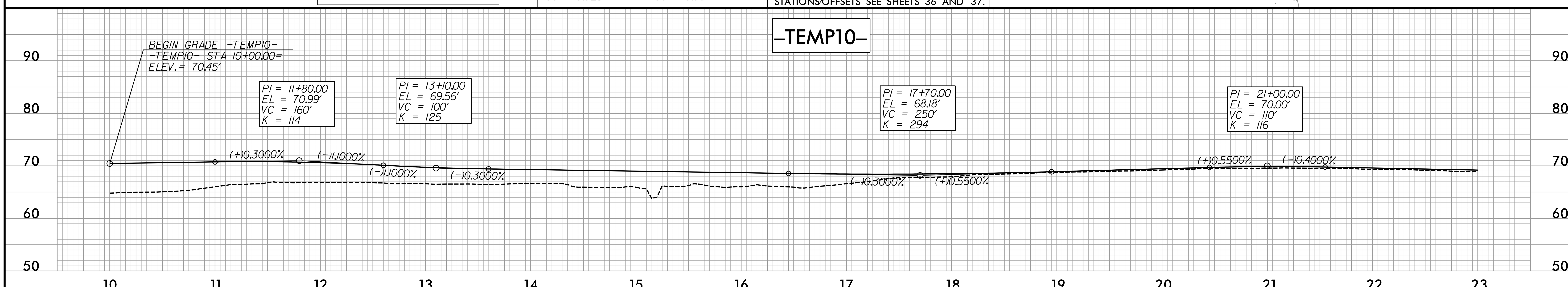
TEMPORARY DRAINAGE FOR TRAFFIC PHASING

- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 45 FEET OF THE DOWNSTREAM END OF PROPOSED PIPE 3602 AND 3607. CONNECT 3602 TO EXISTING 24" RCP WITH JB. INSTALL REMAINING TEMPORARY 2GIs AND TEMPORARY PIPES.
- FINISH INSTALLING PROPOSED PIPES BETWEEN PHASE 3 AND 4 WHEN THE EXISTING PAVEMENT IS BEING REMOVED.
- REMOVE TEMPORARY ITEMS ONCE FINAL DRAINAGE IS ONLINE.

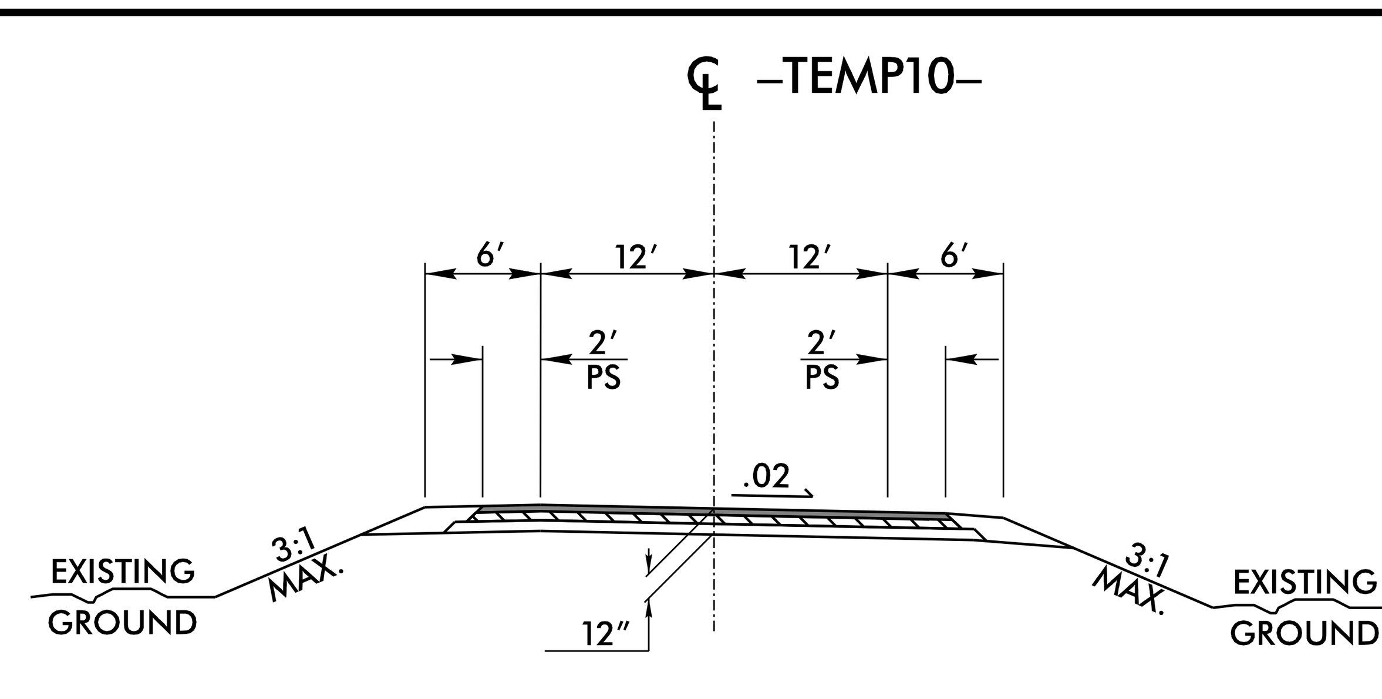
-TEMP10-

PI Sta 11+62.06	PI Sta 14+86.13
Δ = 2° 39' 09.1" (RT)	Δ = 2° 39' 09.1" (LT)
D = 0° 49' 06.6"	D = 0° 49' 06.6"
L = 324.07'	L = 324.07'
T = 162.06'	T = 162.06'
R = 7,000.00'	R = 7,000.00'
Se = 0.025	Se = 0.03

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 36 AND 37.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-18.dgn

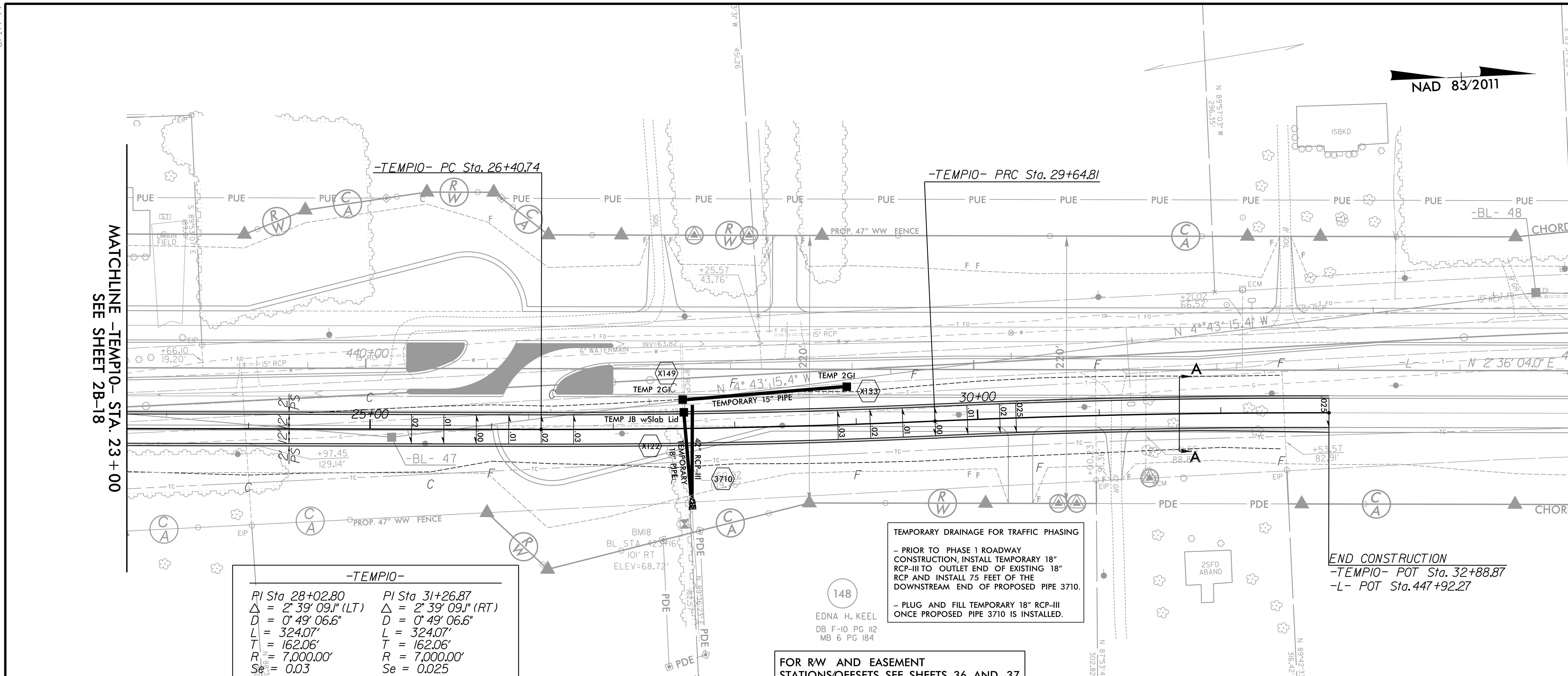
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL — SCOTT D. BLEVINS — 1/18/2022

HYDRAULICS ENGINEER — SEAL — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.



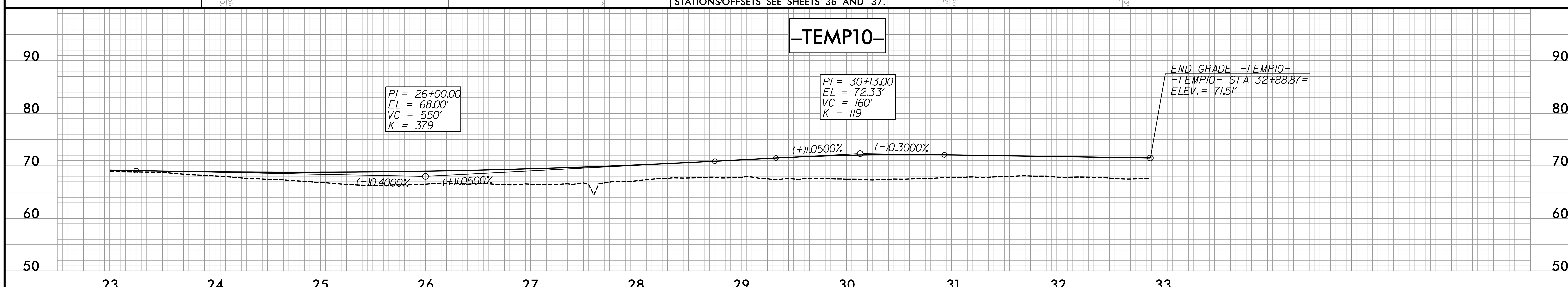
-TEMP10-	
PI Sta 28+02.80	PI Sta 31+26.87
Δ = 2° 39' 09.1" (LT)	Δ = 2° 39' 09.1" (RT)
D = 0° 49' 06.6"	D = 0° 49' 06.6"
L = 324.07'	L = 324.07'
T = 162.06'	T = 162.06'
R = 7,000.00'	R = 7,000.00'
Se = 0.03	Se = 0.025

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

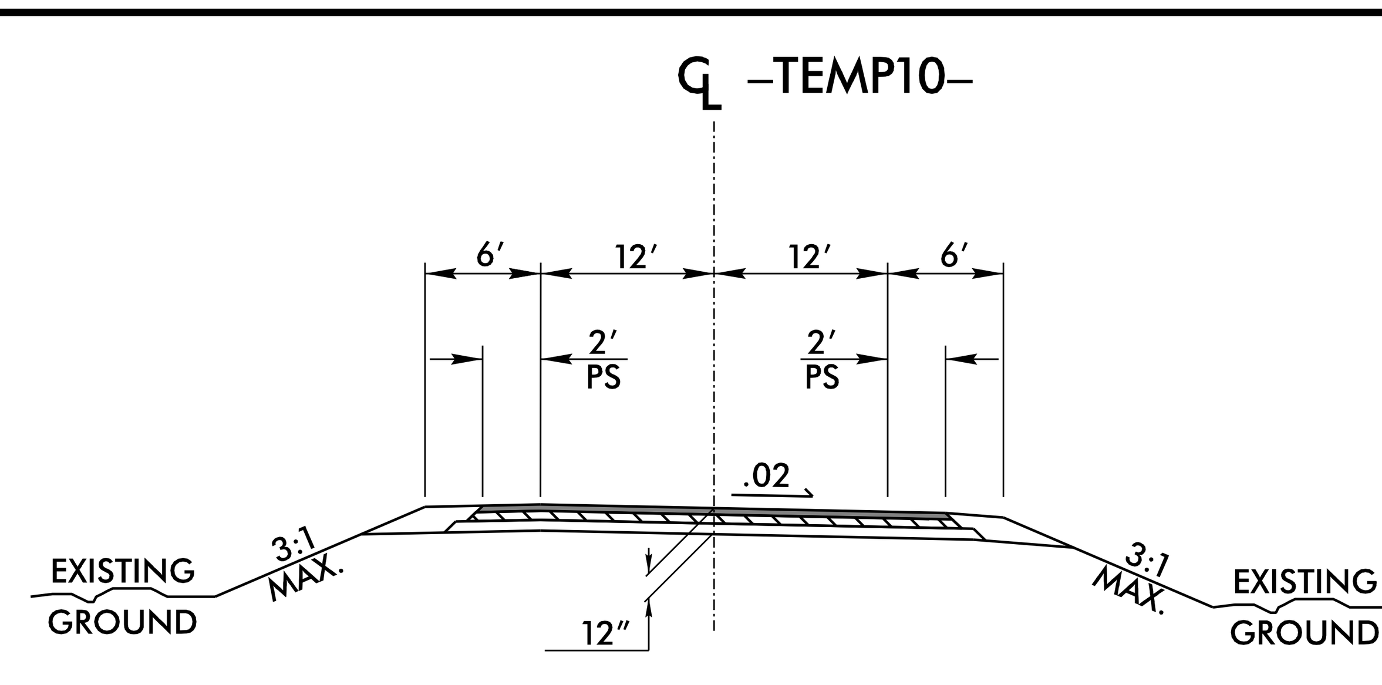
- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL TEMPORARY 18" RCP-III TO OUTLET END OF EXISTING 18" RCP AND INSTALL 75 FEET OF THE DOWNSTREAM END OF PROPOSED PIPE 3710.
- PLUG AND FILL TEMPORARY 18" RCP-III ONCE PROPOSED PIPE 3710 IS INSTALLED.

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 36 AND 37.

-TEMP10-



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-19.dgn

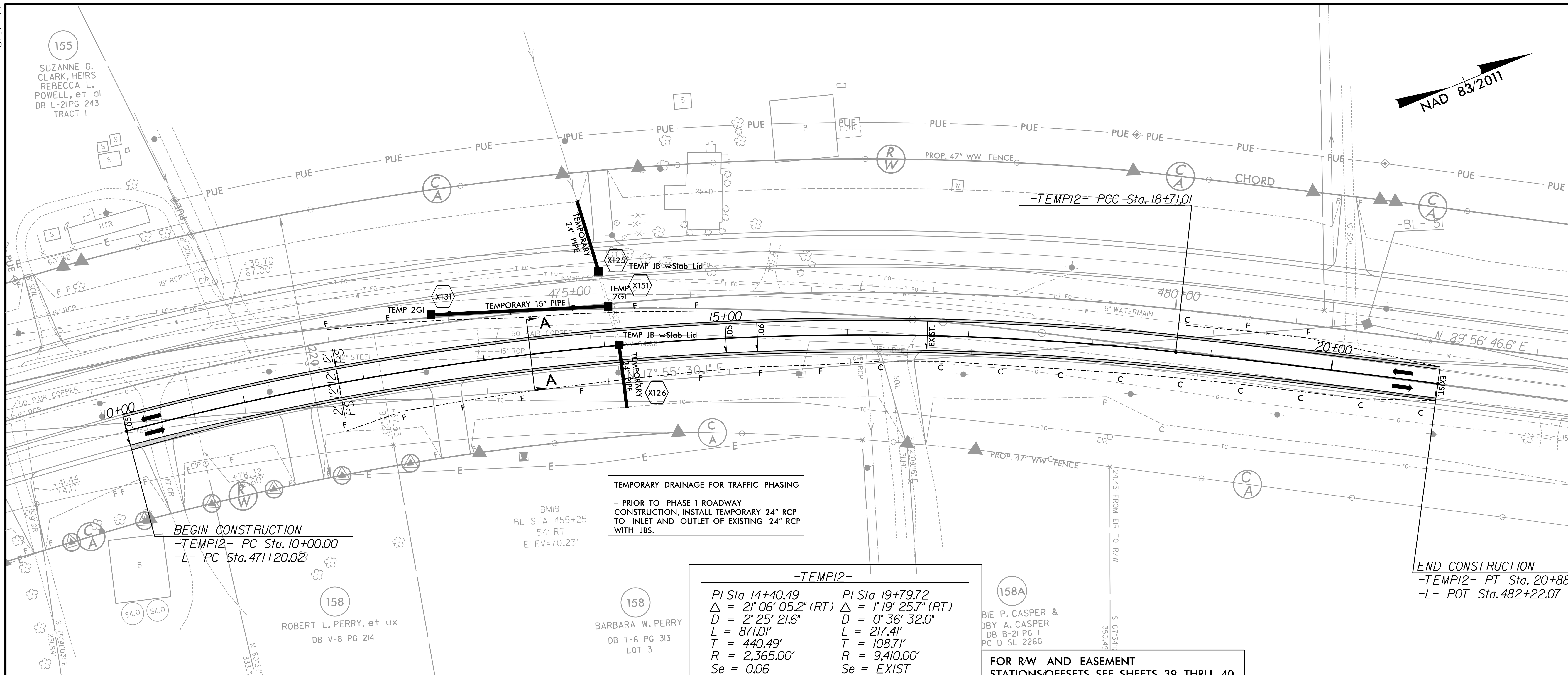
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-20
R/W SHEET NO.	

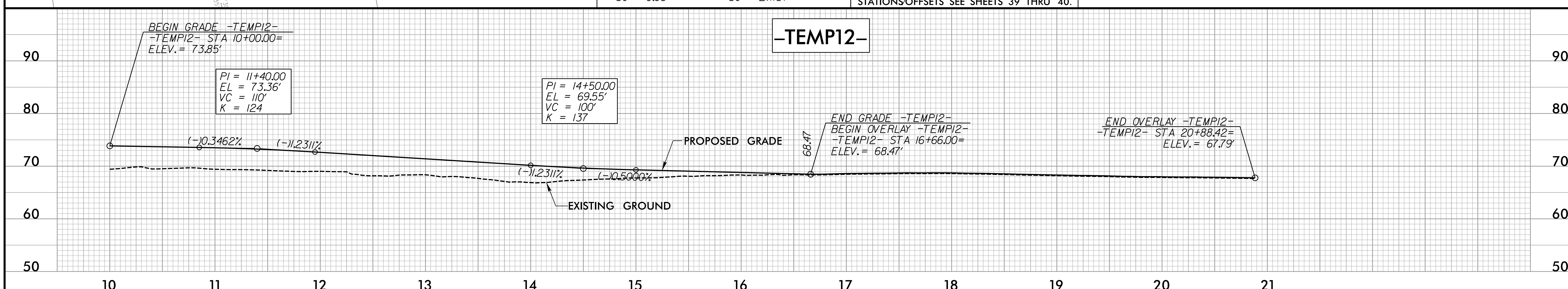
ROADWAY DESIGN ENGINEER — SEAL — SCOTT D. BLEVINS — 1/18/2022

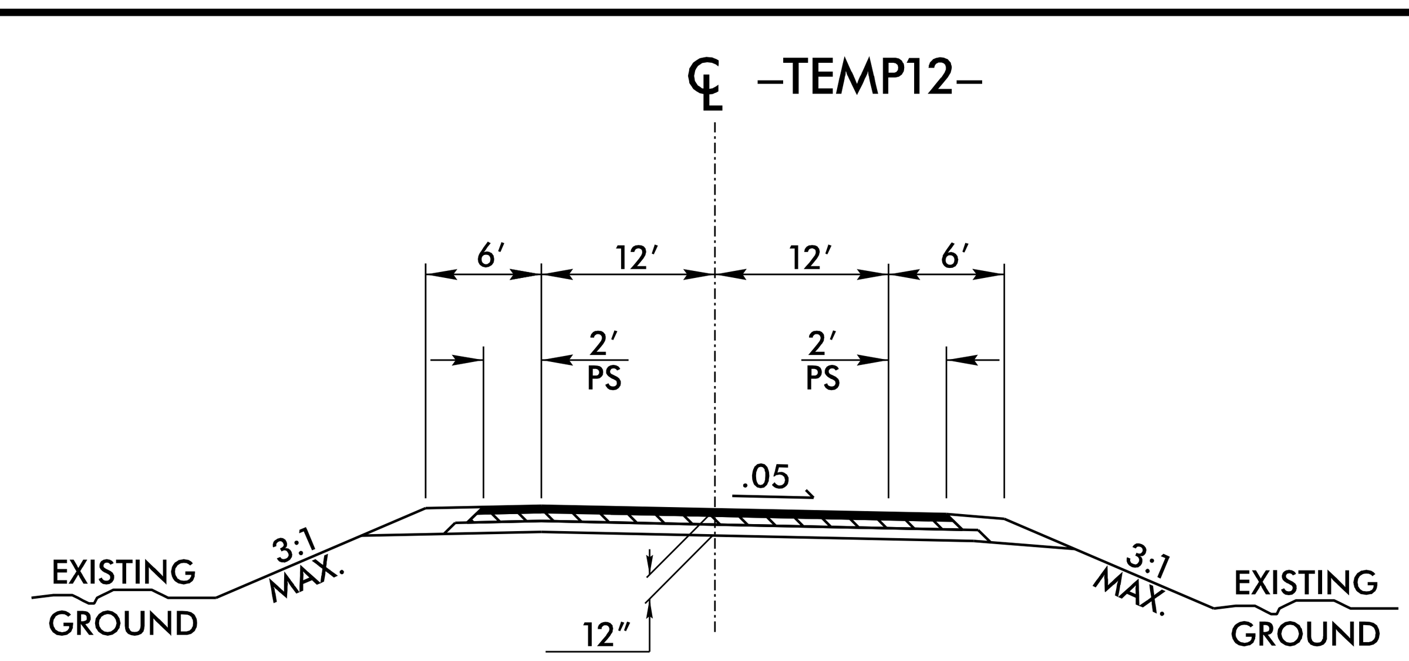
HYDRAULICS ENGINEER — SEAL 40807 — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1.







SECTION A–A

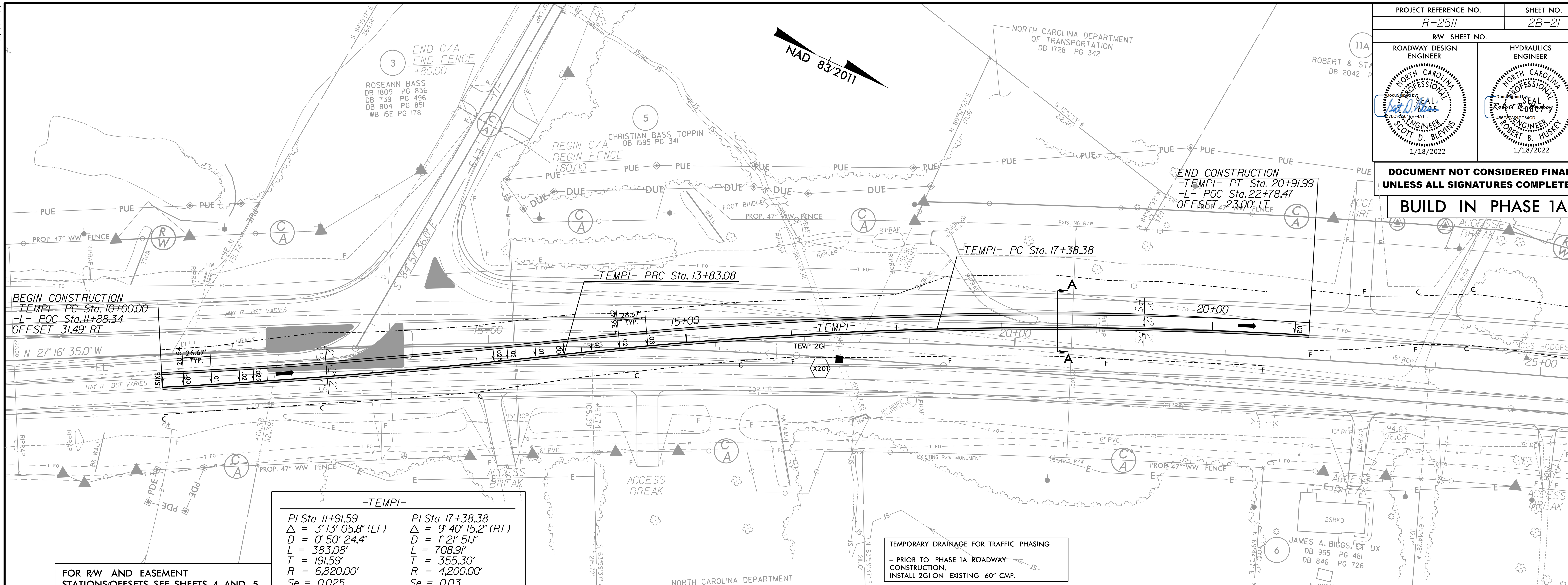
TEMPORARY CROSSOVER ON –L– (US 17)

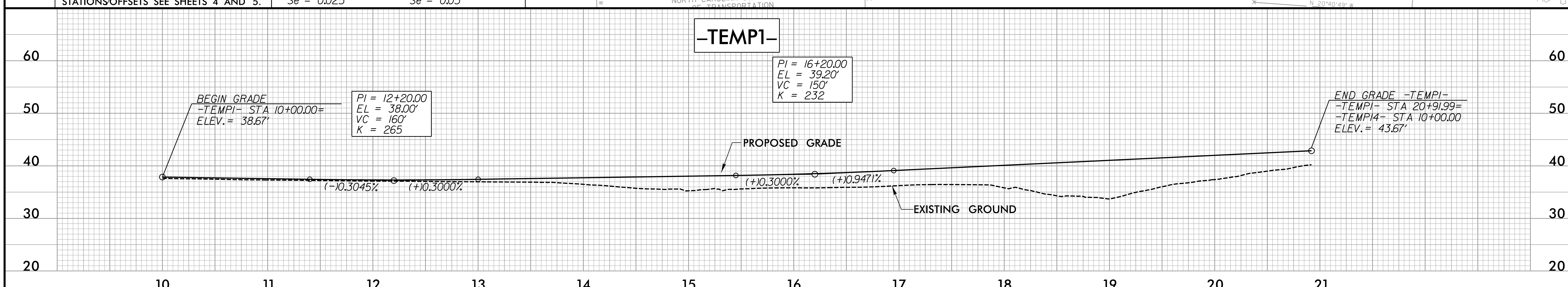
RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SCOTT D. BLEVINS 1/18/2022	ROBERT B. HUSKEY 1/18/2022

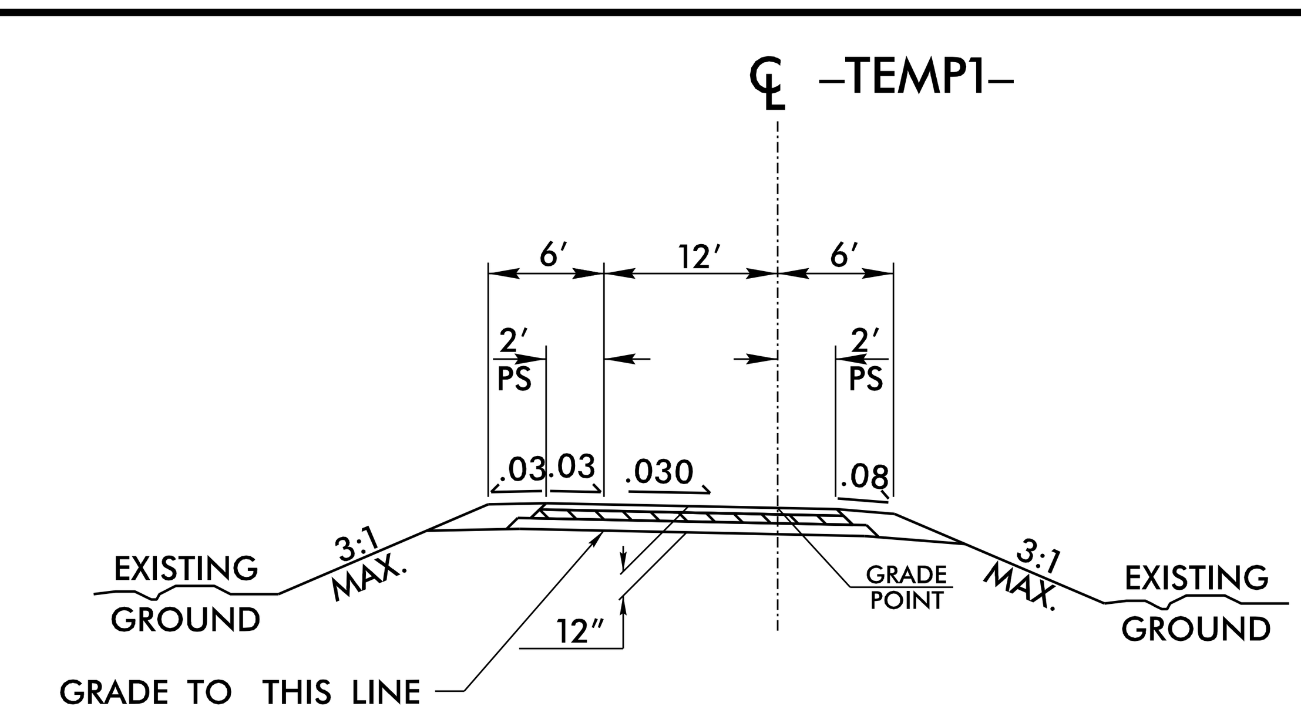
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 1A.





TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

ROADWAY DESIGN ENGINEER — SEAL 044074 — SCOTT D. BLEVINS — 1/18/2022

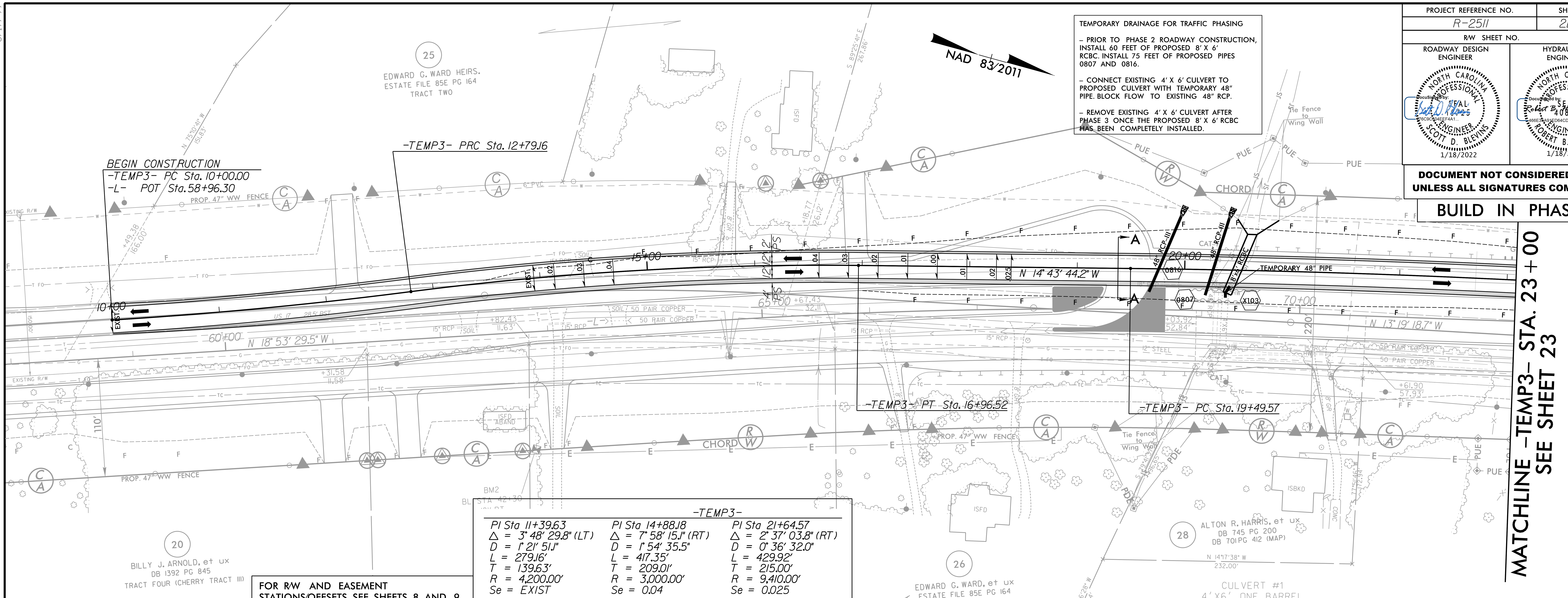
HYDRAULICS ENGINEER — SEAL 040077 — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 2.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

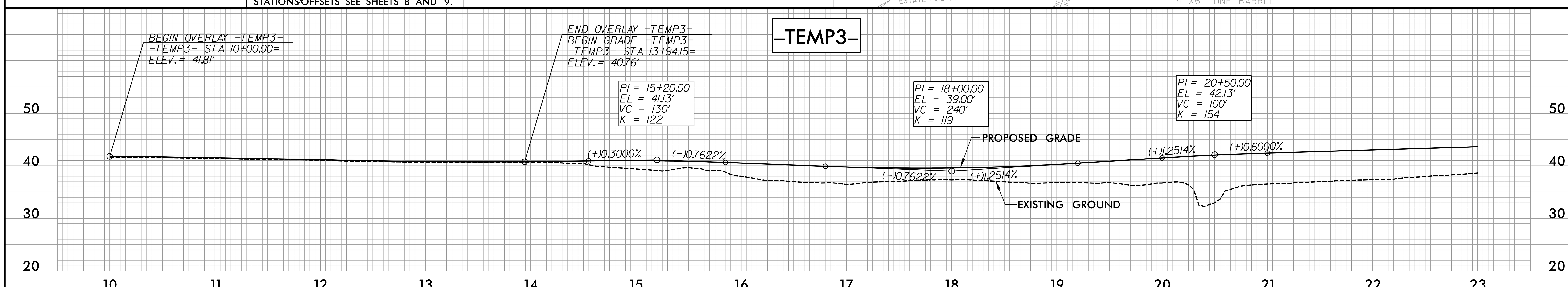
- PRIOR TO PHASE 2 ROADWAY CONSTRUCTION, INSTALL 60 FEET OF PROPOSED 8′ X 6′ RCBC. INSTALL 75 FEET OF PROPOSED PIPES 0807 AND 0816.
- CONNECT EXISTING 4′ X 6′ CULVERT TO PROPOSED CULVERT WITH TEMPORARY 48″ PIPE. BLOCK FLOW TO EXISTING 48″ RCP.
- REMOVE EXISTING 4′ X 6′ CULVERT AFTER PHASE 3 ONCE THE PROPOSED 8′ X 6′ RCBC HAS BEEN COMPLETELY INSTALLED.



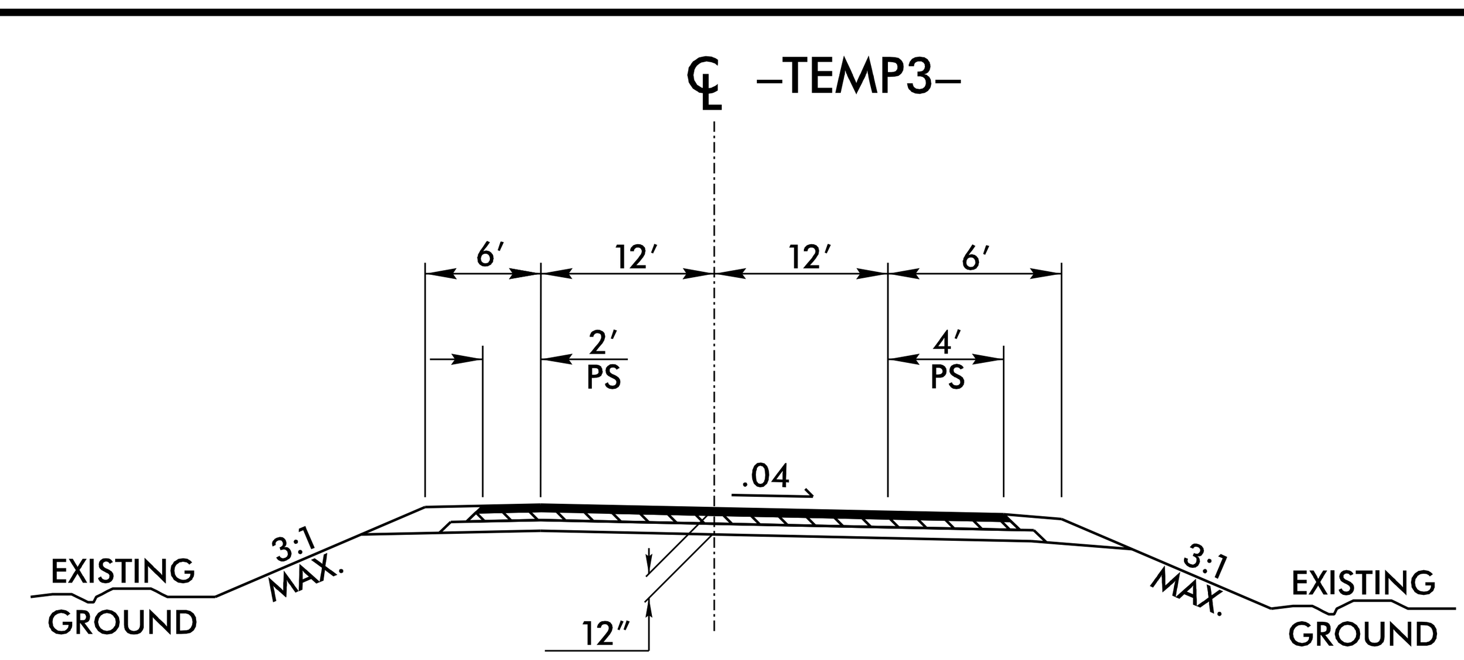
FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 8 AND 9.

-TEMP3-

PI Sta 11+39.63	PI Sta 14+88.18	PI Sta 21+64.57
Δ = 3° 48′ 29.8″ (LT)	Δ = 7° 58′ 15.1″ (RT)	Δ = 2° 37′ 03.8″ (RT)
D = 1° 21′ 51.1″	D = 1° 54′ 35.5″	D = 0° 36′ 32.0″
L = 279.16′	L = 417.35′	L = 429.92′
T = 139.63′	T = 209.01′	T = 215.00′
R = 4,200.00′	R = 3,000.00′	R = 9,410.00′
Se = EXIST	Se = 0.04	Se = 0.025



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

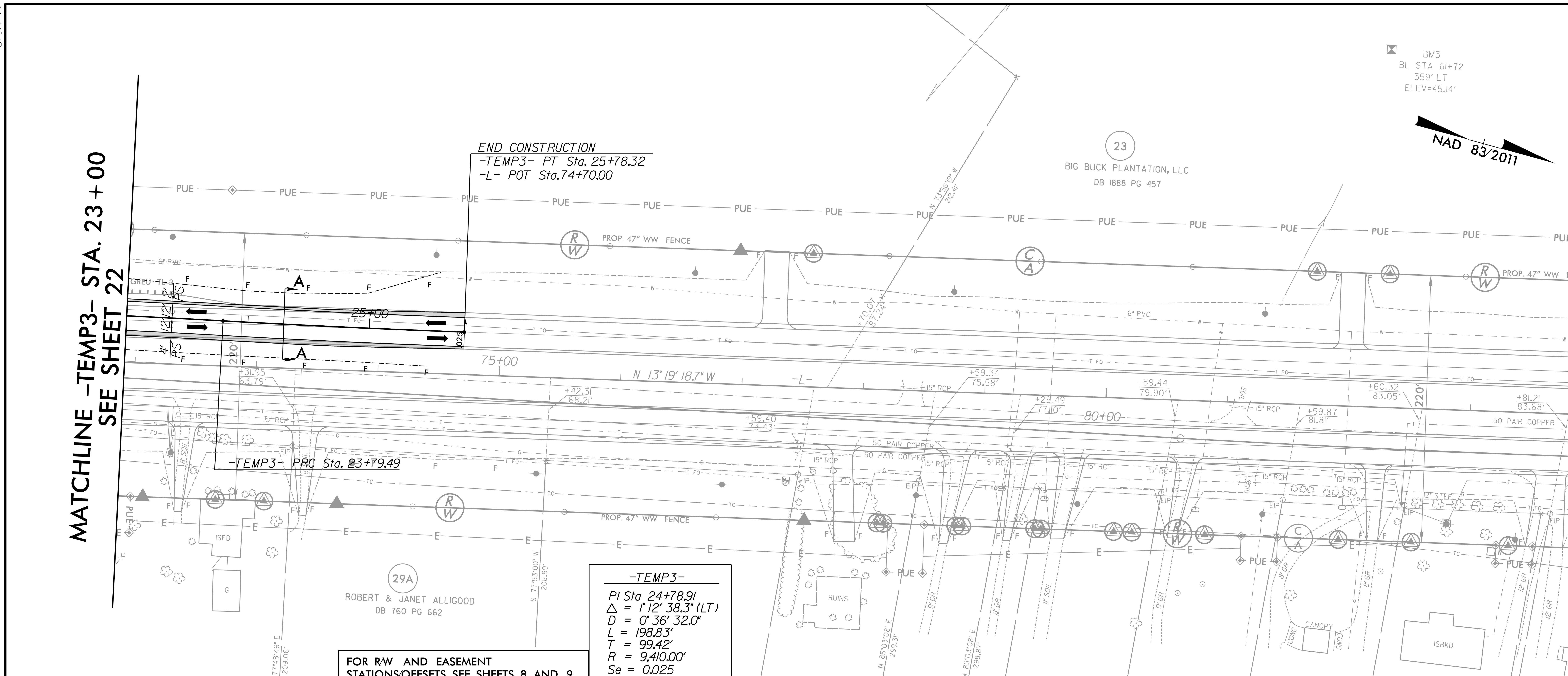
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

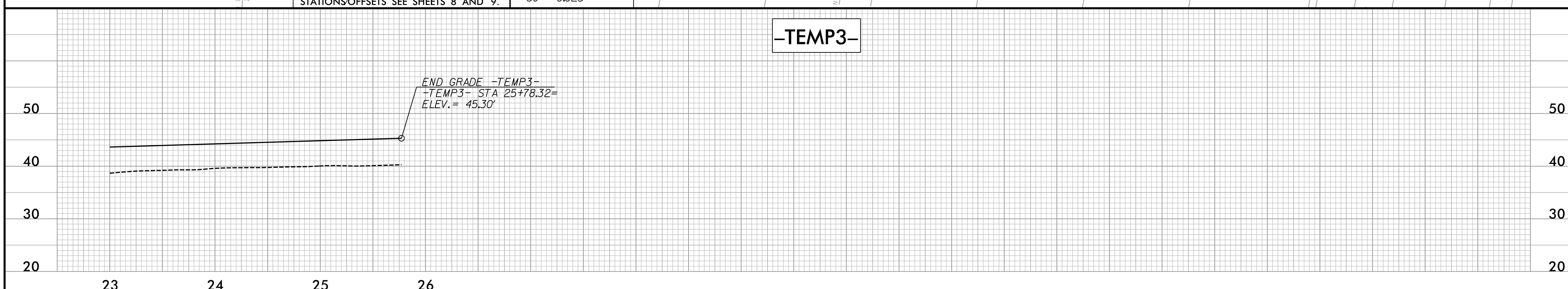
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — SCOTT D. BLEVINS — 1/18/2022

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — ROBERT B. HUSKEY — 1/18/2022

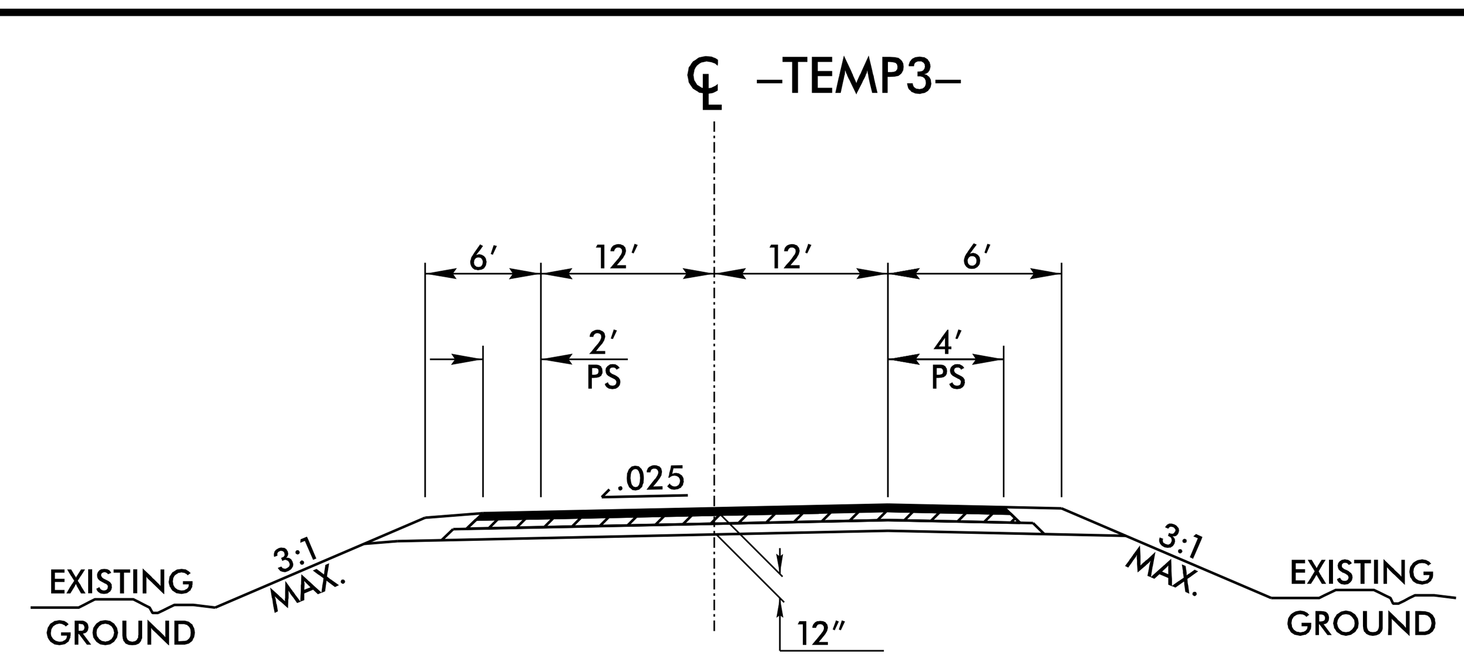
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 2.





TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-23.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-24
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 042641 ENGINEER SCOTT D. BLEVINS
1/18/2022

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 026640 ENGINEER ROBERT B. HUSKEY
1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

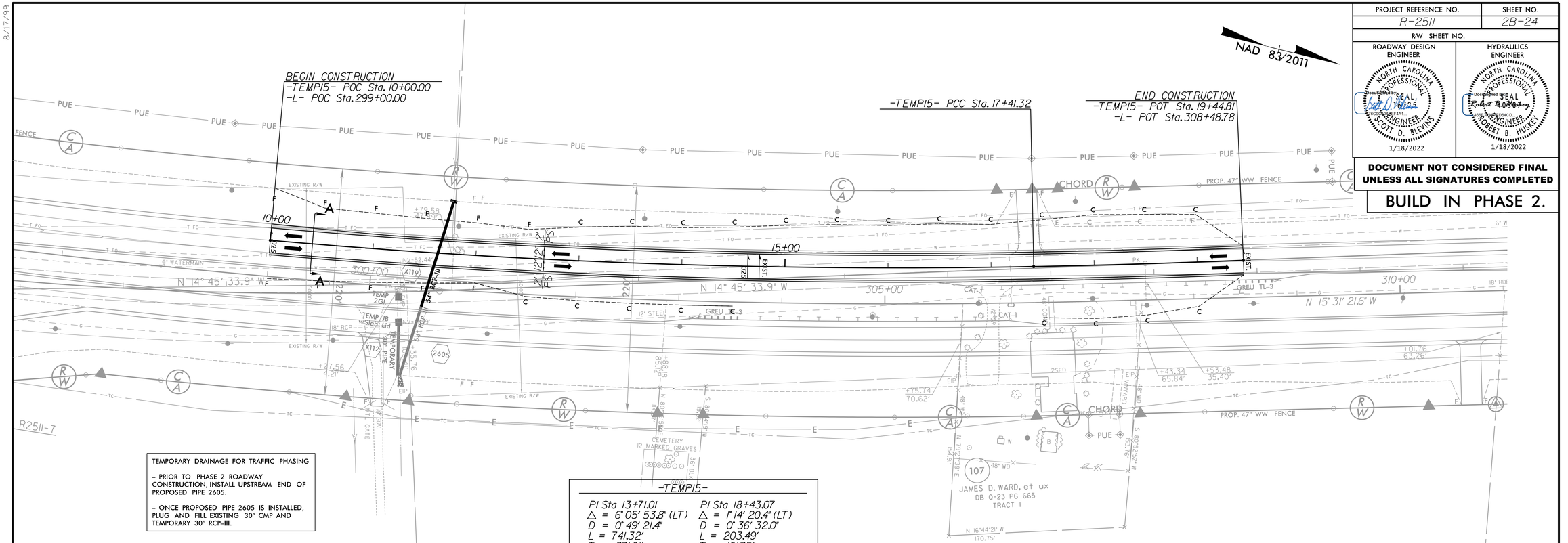
BUILD IN PHASE 2.

NAD 83/2011

BEGIN CONSTRUCTION
-TEMP15- POC Sta. 10+00.00
-L- POC Sta.299+00.00

-TEMP15- PCC Sta. 17+41.32

END CONSTRUCTION
-TEMP15- POT Sta. 19+44.81
-L- POT Sta. 308+48.78



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

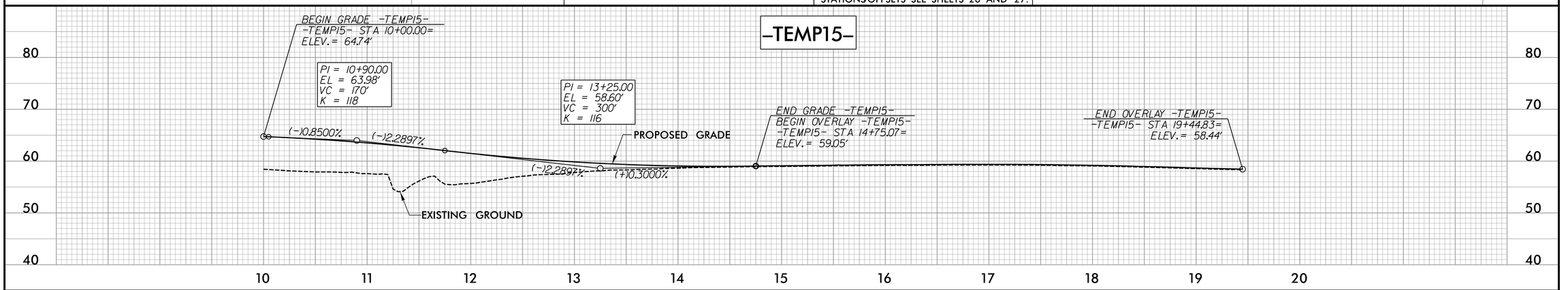
– PRIOR TO PHASE 2 ROADWAY CONSTRUCTION, INSTALL UPSTREAM END OF PROPOSED PIPE 2605.

– ONCE PROPOSED PIPE 2605 IS INSTALLED, PLUG AND FILL EXISTING 30" CMP AND TEMPORARY 30" RCP-III.

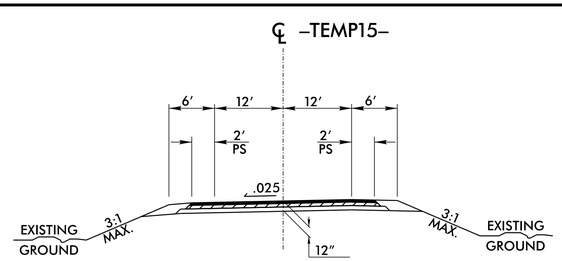
-TEMP15-

PI Sta 13+71.01	PI Sta 18+43.07
△ = 6° 05' 53.8" (LT)	△ = 1° 14' 20.4" (LT)
D = 0° 49' 21.4"	D = 0° 36' 32.0"
L = 741.32'	L = 203.49'
T = 371.01'	T = 101.75'
R = 6,965.00'	R = 9,410.00'
Se = 0.025	Se = EXIST

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 26 AND 27.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A–A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-25

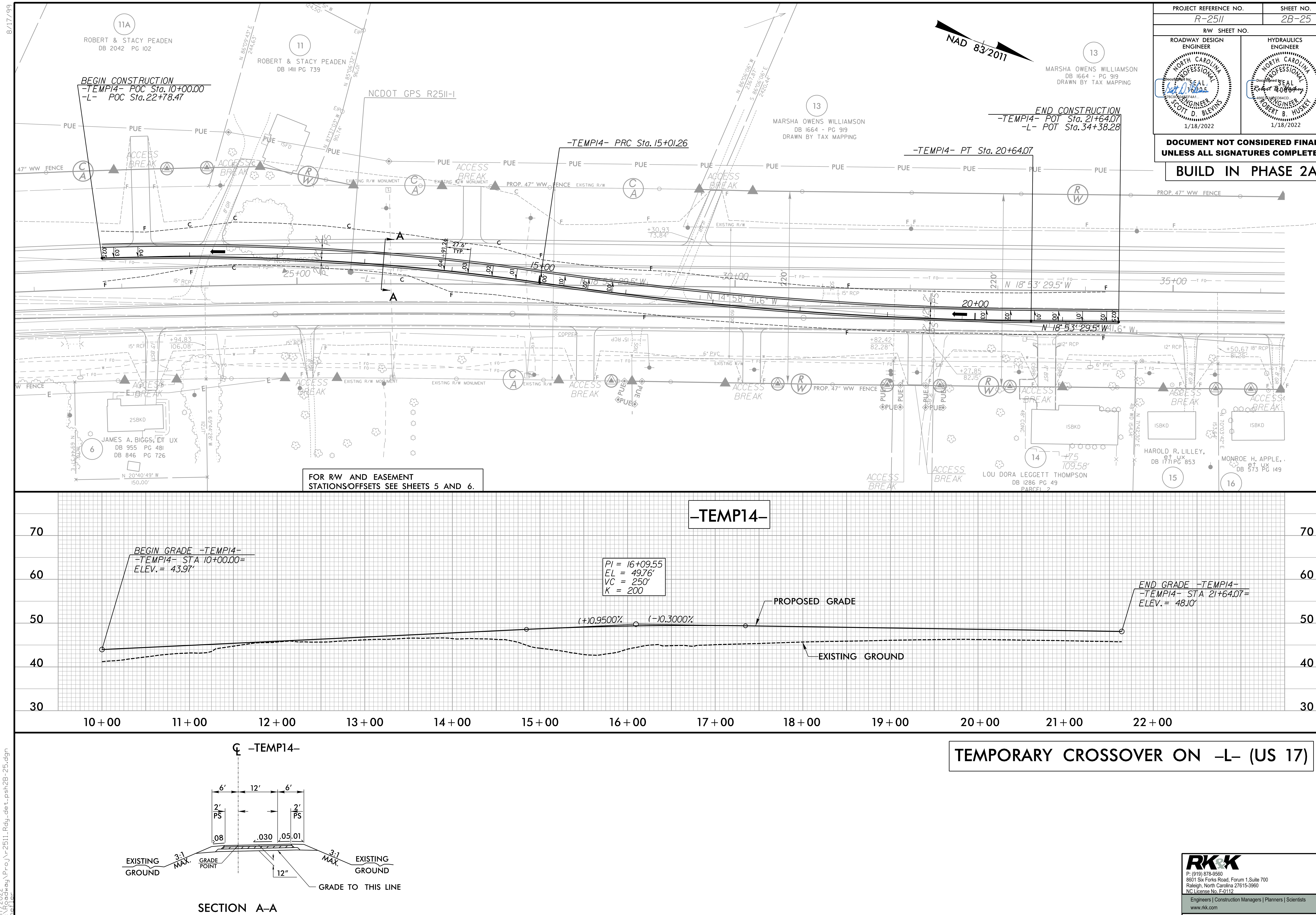
R/W SHEET NO.

ROADWAY DESIGN ENGINEER — SCOTT D. BLEVINS — 1/18/2022

HYDRAULICS ENGINEER — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 2A.



TEMPORARY CROSSOVER ON -L- (US 17)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-26
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL — SCOTT D. BLEVINS — 1/18/2022

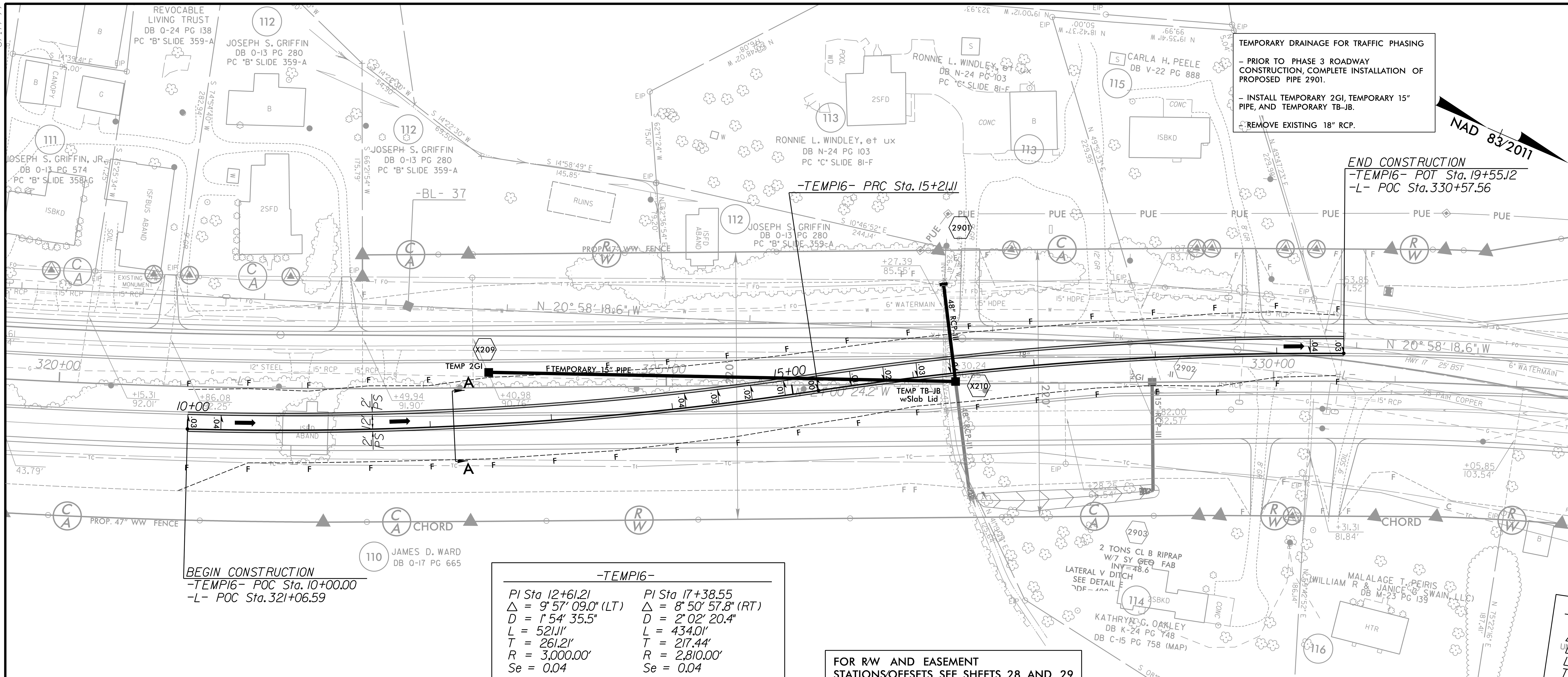
HYDRAULICS ENGINEER — SEAL — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 3.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

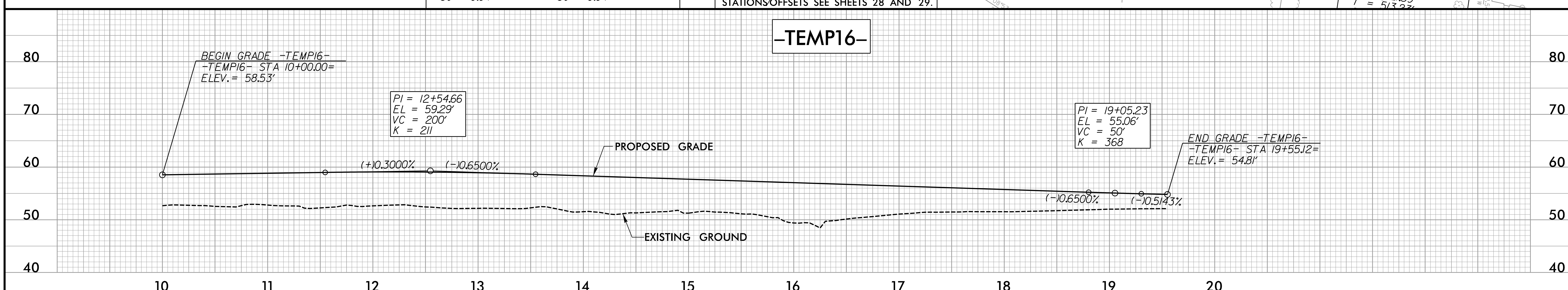
- PRIOR TO PHASE 3 ROADWAY CONSTRUCTION, COMPLETE INSTALLATION OF PROPOSED PIPE 2901.
- INSTALL TEMPORARY 2GI, TEMPORARY 15" PIPE, AND TEMPORARY TB-JB.
- REMOVE EXISTING 18" RCP.



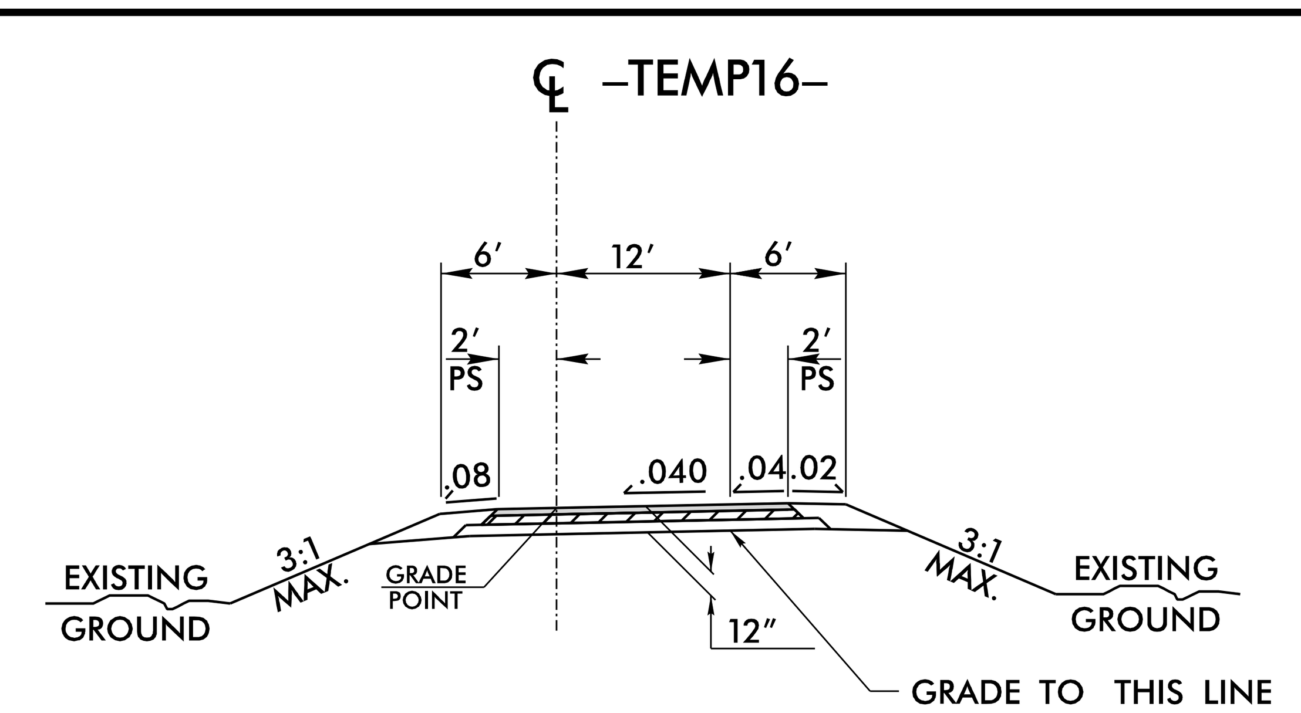
-TEMP16-

PI Sta 12+61.21	PI Sta 17+38.55
Δ = 9° 57' 09.0" (LT)	Δ = 8° 50' 57.8" (RT)
D = 1° 54' 35.5"	D = 2° 02' 20.4"
L = 521.11'	L = 434.01'
T = 261.21'	T = 217.44'
R = 3,000.00'	R = 2,810.00'
Se = 0.04	Se = 0.04

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 28 AND 29.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/17/2022

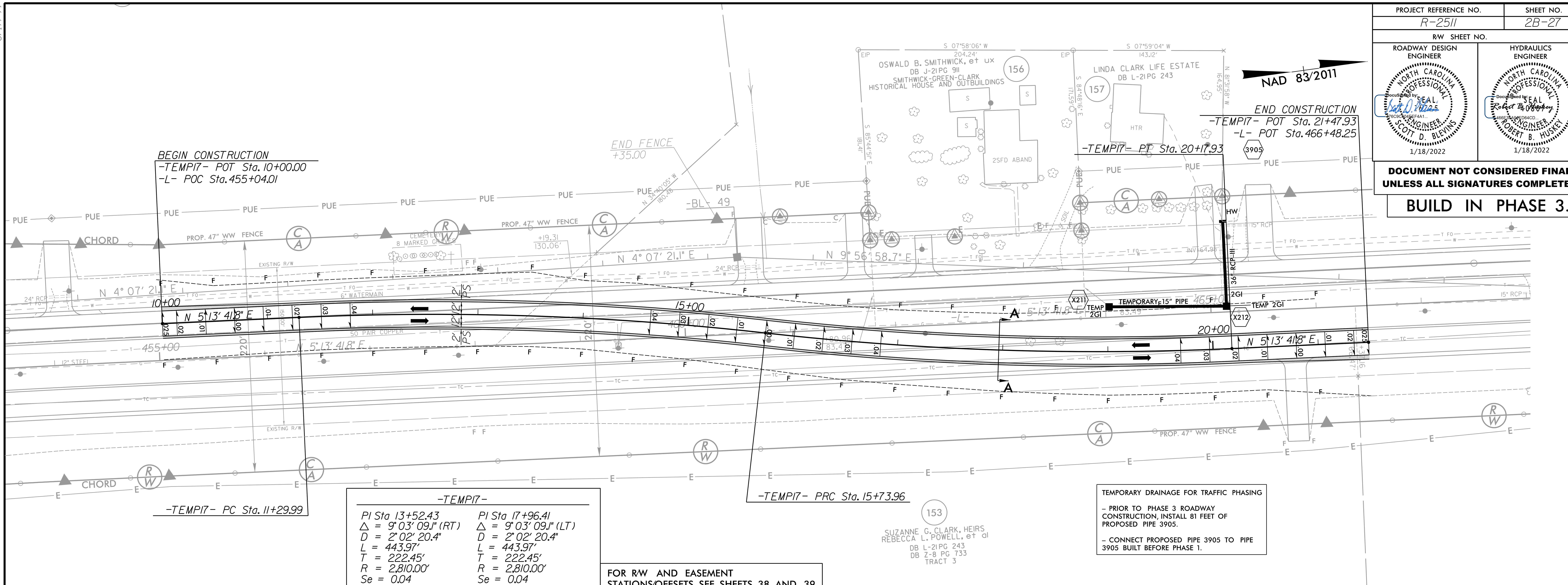
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL, NORTH CAROLINA PROFESSIONAL ENGINEER, SCOTT D. BLEVINS, 1/18/2022

HYDRAULICS ENGINEER — SEAL, NORTH CAROLINA PROFESSIONAL ENGINEER, ROBERT B. HUSKEY, 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 3.

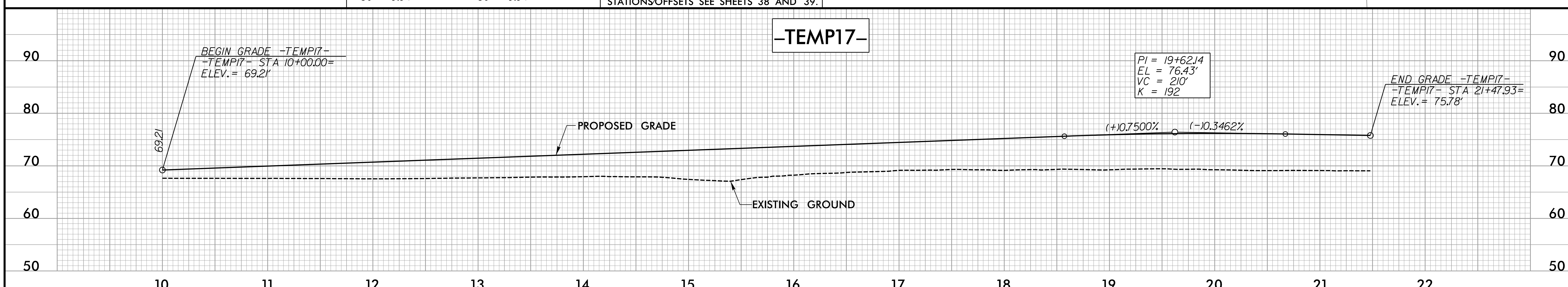


-TEMP17-	
PI Sta 13+52.43	PI Sta 17+96.41
△ = 9° 03' 09.1" (RT)	△ = 9° 03' 09.1" (LT)
D = 2° 02' 20.4"	D = 2° 02' 20.4"
L = 443.97'	L = 443.97'
T = 222.45'	T = 222.45'
R = 2,810.00'	R = 2,810.00'
Se = 0.04	Se = 0.04

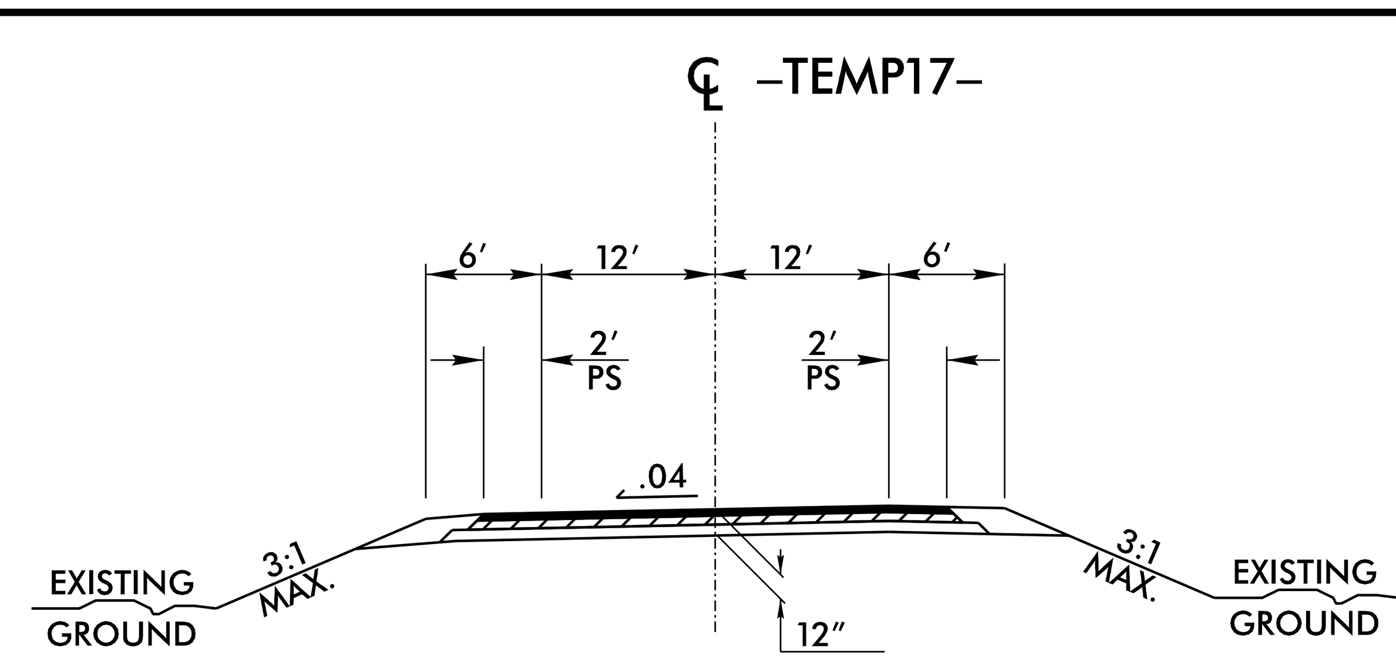
FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 38 AND 39.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

- PRIOR TO PHASE 3 ROADWAY CONSTRUCTION, INSTALL 81 FEET OF PROPOSED PIPE 3905.
- CONNECT PROPOSED PIPE 3905 TO PIPE 3905 BUILT BEFORE PHASE 1.



TEMPORARY CROSSOVER ON -L- (US 17)



SECTION A-A

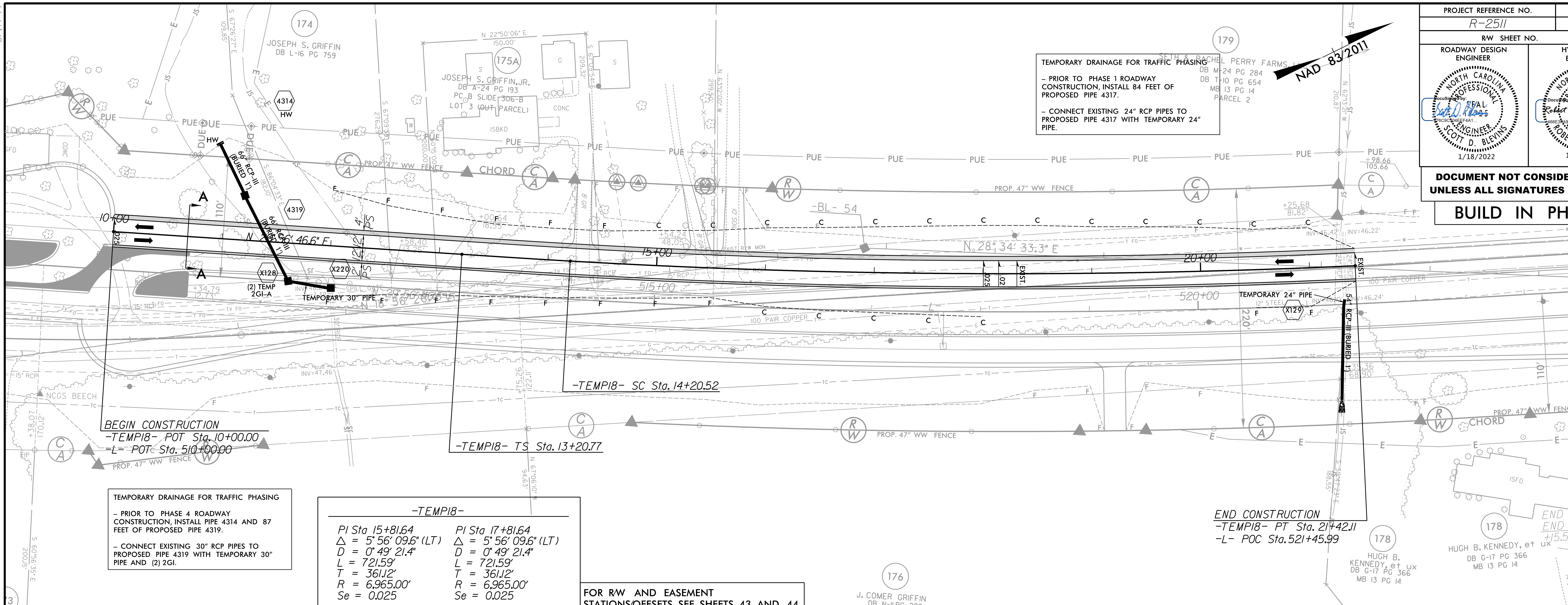
RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-27.dgn

ROADWAY DESIGN ENGINEER — SEAL — SCOTT D. BLEVINS — 1/18/2022
HYDRAULICS ENGINEER — SEAL 40807 — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 4.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

- PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 84 FEET OF PROPOSED PIPE 4317.
- CONNECT EXISTING 24" RCP PIPES TO PROPOSED PIPE 4317 WITH TEMPORARY 24" PIPE.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

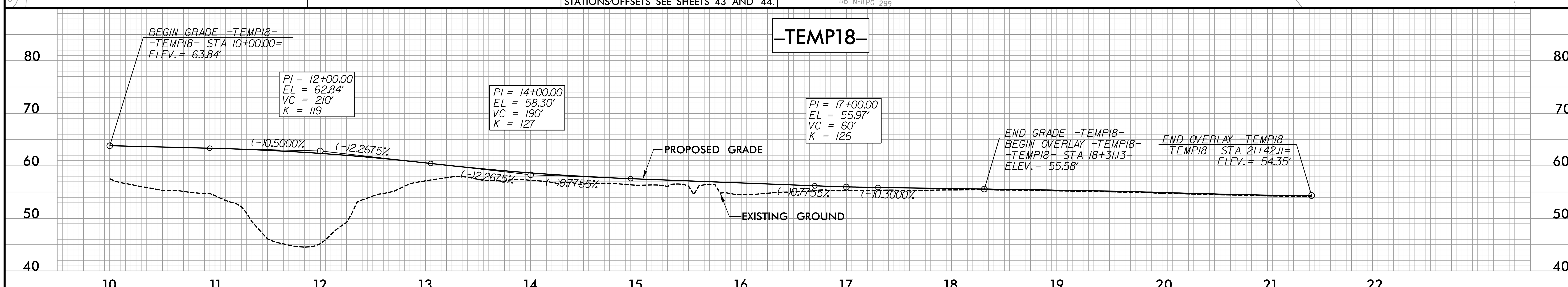
- PRIOR TO PHASE 4 ROADWAY CONSTRUCTION, INSTALL PIPE 4314 AND 87 FEET OF PROPOSED PIPE 4319.
- CONNECT EXISTING 30" RCP PIPES TO PROPOSED PIPE 4319 WITH TEMPORARY 30" PIPE AND (2) 2GI.

-TEMP18-

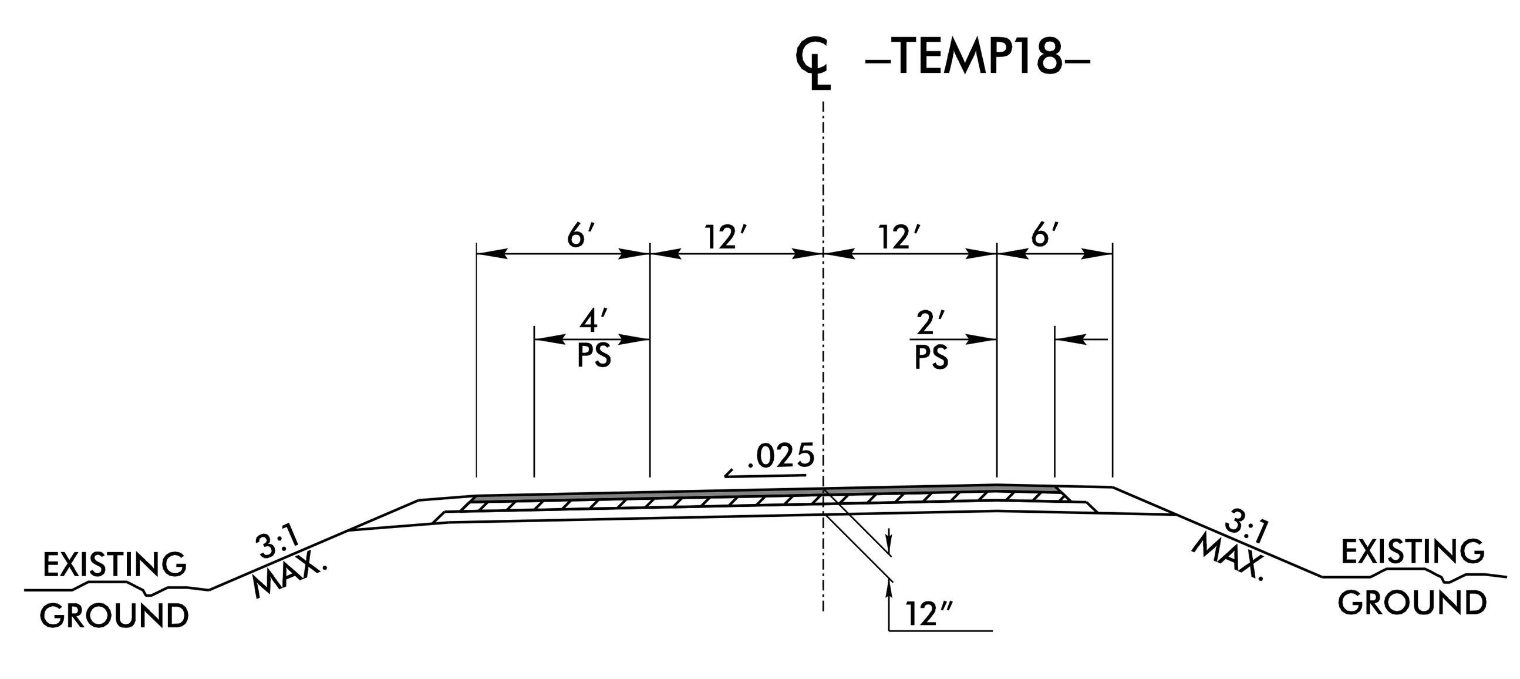
PI Sta 15+81.64	PI Sta 17+81.64
Δ = 5° 56' 09.6" (LT)	Δ = 5° 56' 09.6" (LT)
D = 0° 49' 21.4"	D = 0° 49' 21.4"
L = 721.59'	L = 721.59'
T = 361.12'	T = 361.12'
R = 6,965.00'	R = 6,965.00'
Se = 0.025	Se = 0.025

FOR R/W AND EASEMENT STATIONS/OFFSETS SEE SHEETS 43 AND 44.

-TEMP18-



TEMPORARY CROSSOVER ON -L- (US 17)



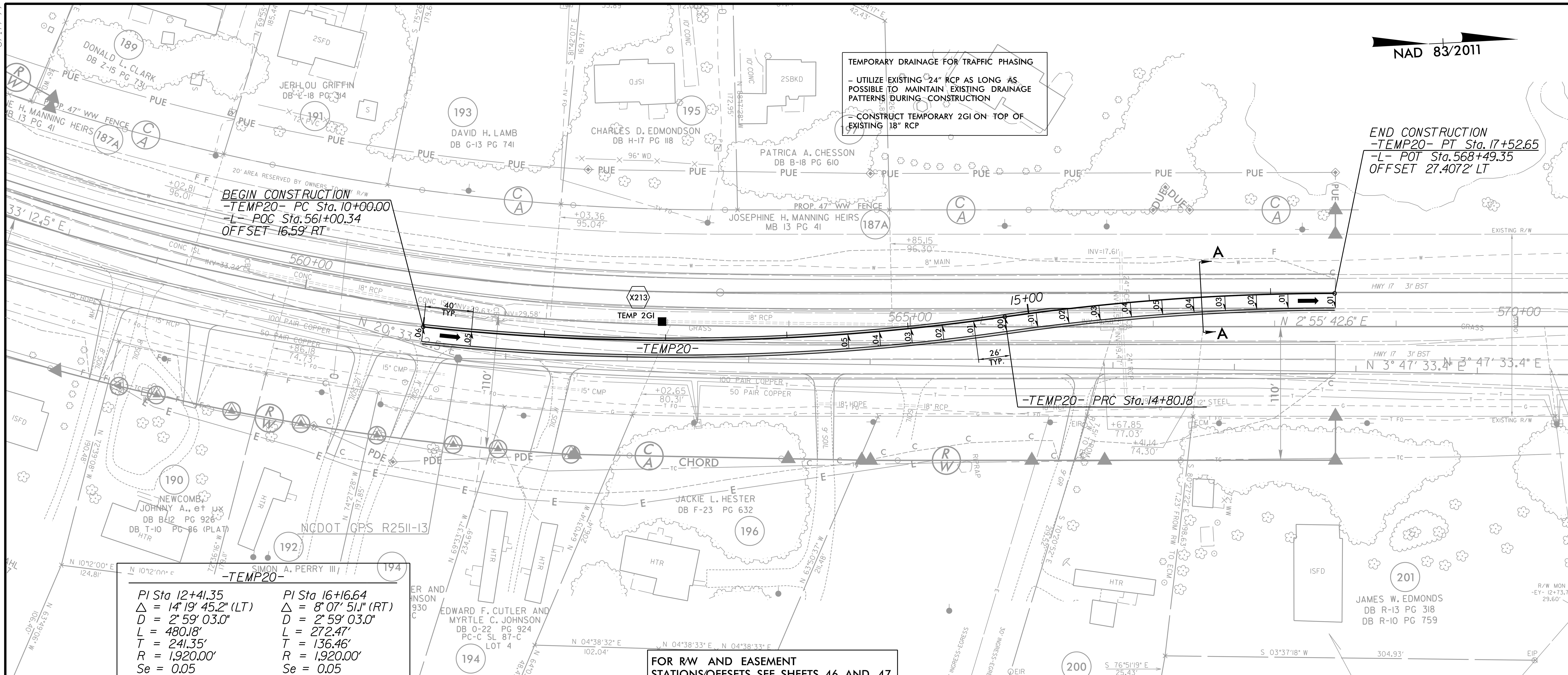
SECTION A–A

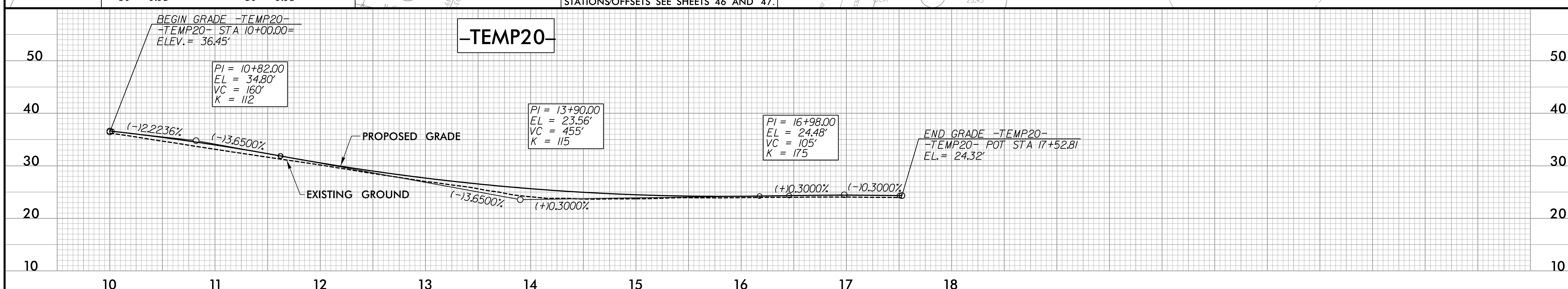
RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

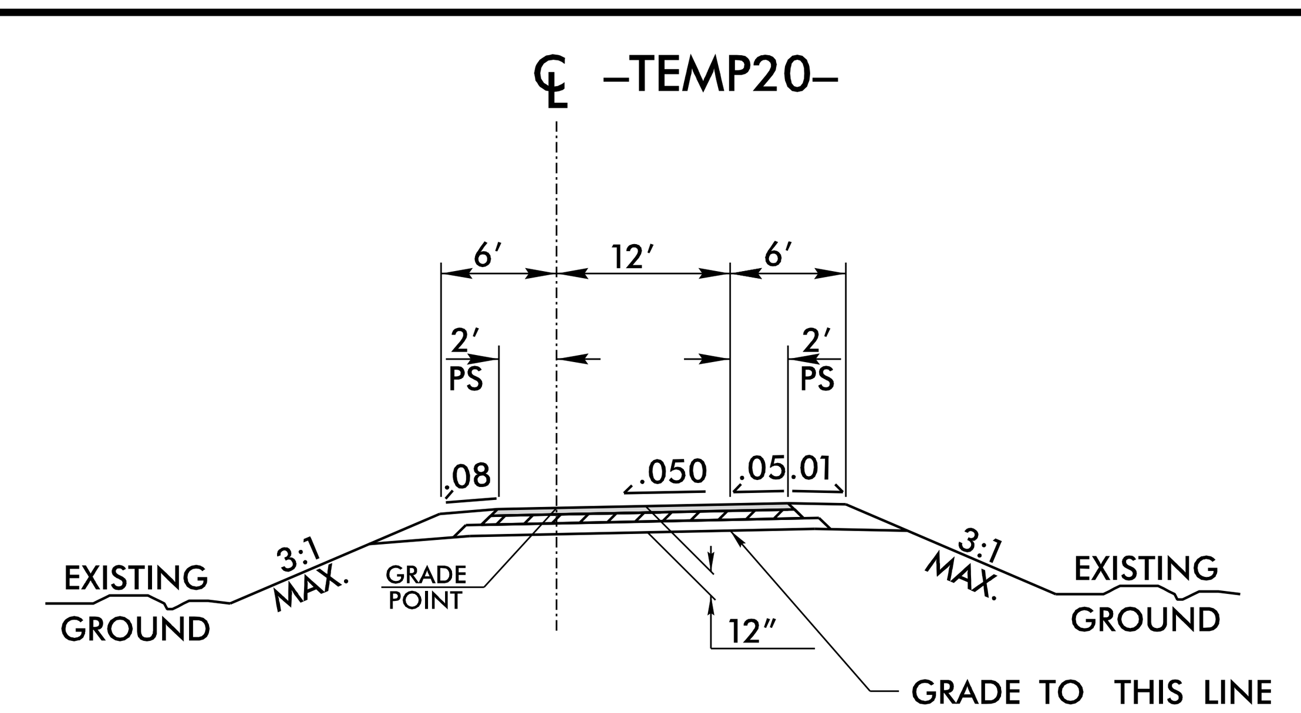
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL — SCOTT D. BLEVINS — 1/18/2022	SEAL — ROBERT B. HUSKEY — 1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUILD IN PHASE 4.







SECTION A-A

TEMPORARY CROSSOVER ON -L- (US 17)

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99
1/17/2022
R:\Roadway\Proj\r2511_Rdy_det_psh2B-29.dgn

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2B-30
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 042725 ENGINEER SCOTT D. BLEVINS

1/18/2022

HYDRAULICS ENGINEER

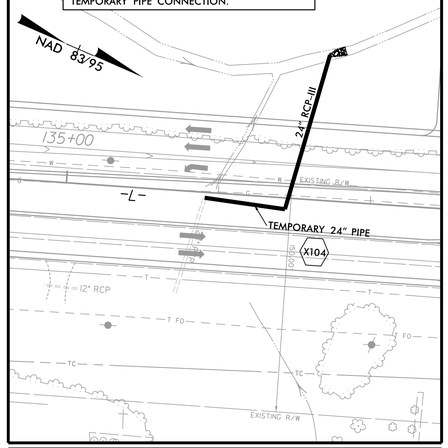
NORTH CAROLINA PROFESSIONAL SEAL 042660 ENGINEER ROBERT B. HUSKEY

1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

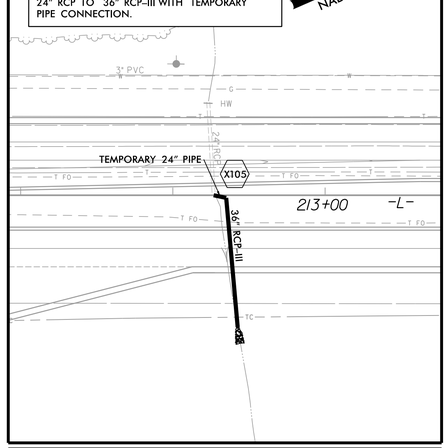
TEMPORARY DRAINAGE FOR TRAFFIC PHASING

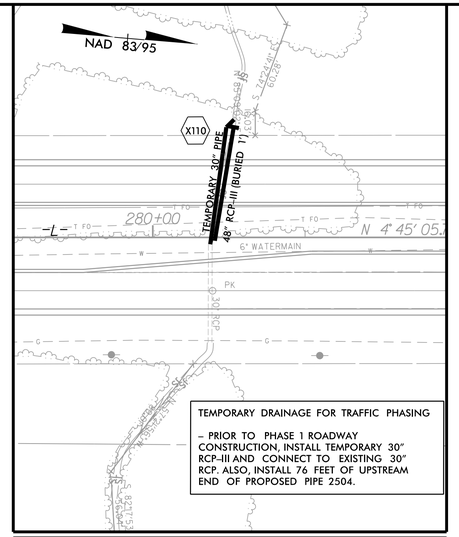
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 106 FEET OF PROPOSED PIPE 1401. CONNECT EXISTING 24" RCP TO PROPOSED 24" RCP-III WITH TEMPORARY PIPE CONNECTION.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

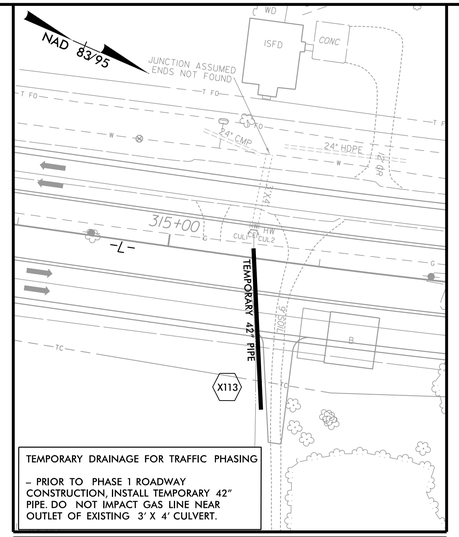
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 82 FEET OF PROPOSED PIPE 2001. CONNECT EXISTING 24" RCP TO 36" RCP-III WITH TEMPORARY PIPE CONNECTION.





TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL TEMPORARY 30" RCP-III AND CONNECT TO EXISTING 30" RCP. ALSO, INSTALL 76 FEET OF UPSTREAM END OF PROPOSED PIPE 2504.

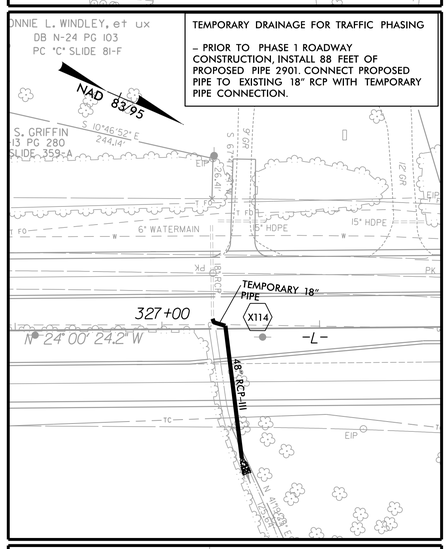


TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL TEMPORARY 42" PIPE. DO NOT IMPACT GAS LINE NEAR OUTLET OF EXISTING 3' X 4' CULVERT.

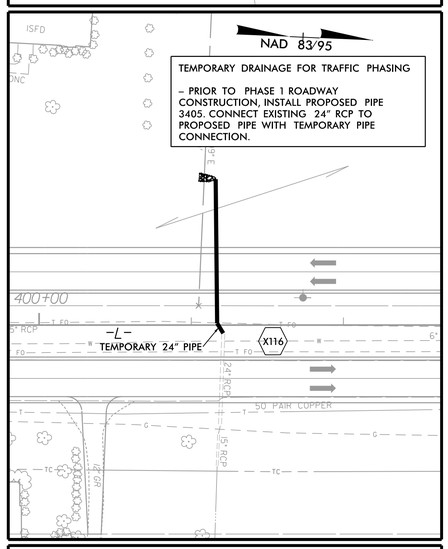
TEMPORARY DRAINAGE FOR TRAFFIC PHASING

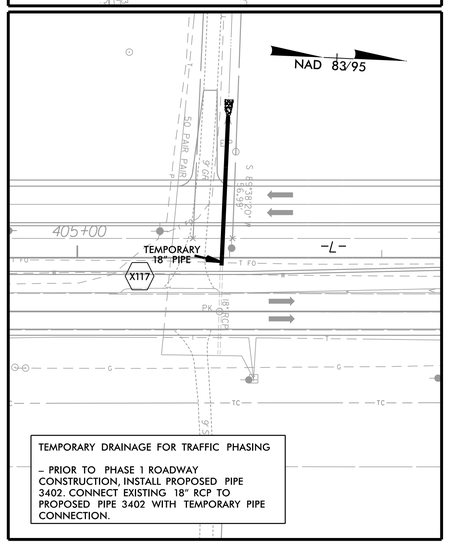
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 88 FEET OF PROPOSED PIPE 2901. CONNECT PROPOSED PIPE TO EXISTING 18" RCP WITH TEMPORARY PIPE CONNECTION.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

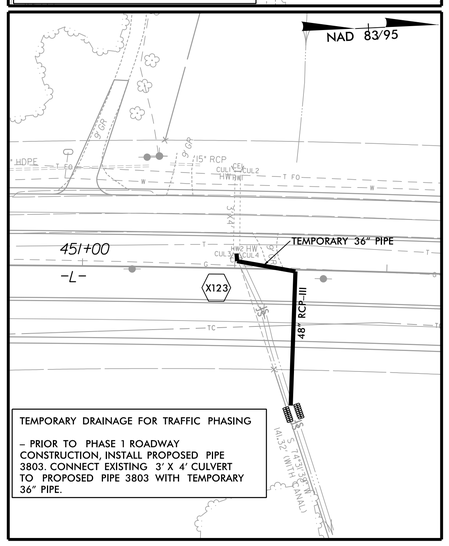
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL PROPOSED PIPE 3405. CONNECT EXISTING 24" RCP TO PROPOSED PIPE WITH TEMPORARY PIPE CONNECTION.





TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL PROPOSED PIPE 3402. CONNECT EXISTING 18" RCP TO PROPOSED PIPE 3402 WITH TEMPORARY PIPE CONNECTION.

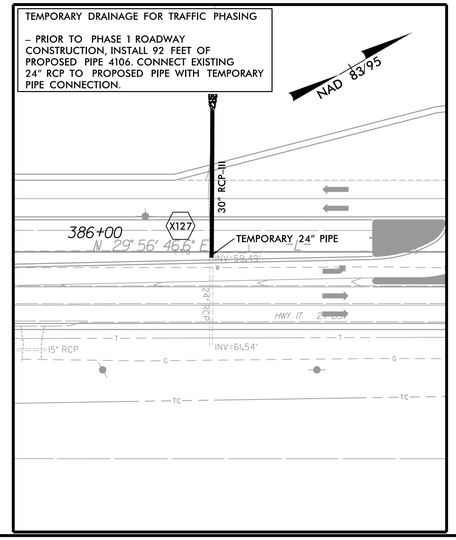


TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL PROPOSED PIPE 3803. CONNECT EXISTING 3' X 4' CULVERT TO PROPOSED PIPE 3803 WITH TEMPORARY 36" PIPE.

TEMPORARY DRAINAGE FOR TRAFFIC PHASING

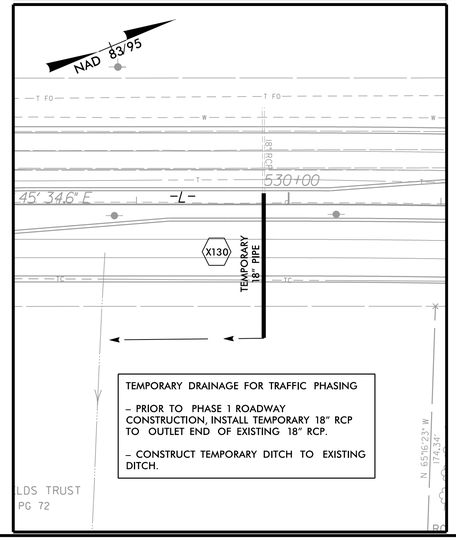
– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL 92 FEET OF PROPOSED PIPE 4106. CONNECT EXISTING 24" RCP TO PROPOSED PIPE WITH TEMPORARY PIPE CONNECTION.



TEMPORARY DRAINAGE FOR TRAFFIC PHASING

– PRIOR TO PHASE 1 ROADWAY CONSTRUCTION, INSTALL TEMPORARY 18" RCP TO OUTLET END OF EXISTING 18" RCP.

– CONSTRUCT TEMPORARY DITCH TO EXISTING DITCH.



TEMPORARY DRAINAGE PIPE LOCATION DETAILS FOR INFORMATION USE

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

1/14/2022
N:\Roadway\Proj\R2511_Rdy_det_psh2B-30.dgn
dlefler

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2C-1

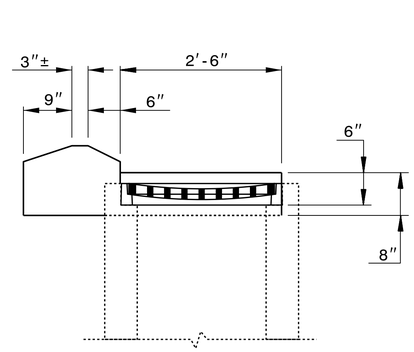
STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06



SECTION 'A-A'

NOTES:
-REFER TO STD. NO. 840.17, 840.18, OR 840.19 FOR DRAINAGE STRUCTURE.
-REFER TO STD. NO. 840.20 OR 840.29 FOR GRATE AND FRAME.

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

ENGLISH DETAIL DRAWING FOR

METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS

SHEET 1 OF 1

852D06

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by:
Joel S. Howerton
873F3D17DCDC45F...
1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT STANDARDS
AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE PLATE

ORIGINAL BY: KKEMPF DATE: 8/2/10
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: KKEMPF\ENGLISH\852D0601.DGN

06-MAR-2018 10:58
S:\Contracts\Contracts\Special Details\kkempf\english\852D0601.dgn
jhowerton AT CSD-292595

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2C-2

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

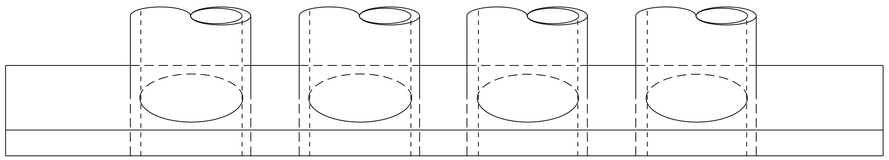
ENGLISH DETAIL DRAWING FOR

CONCRETE ENDWALL FOR TRIPLE AND QUADRUPLE PIPE CULVERTS

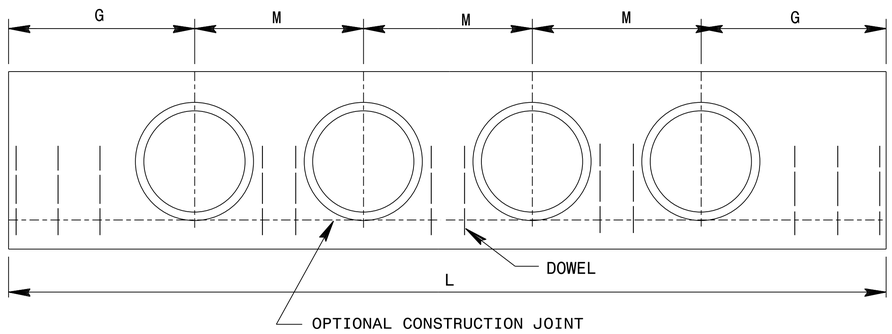
15″ THRU 48″ PIPE - 90° SKEW

SHEET 1 OF 3

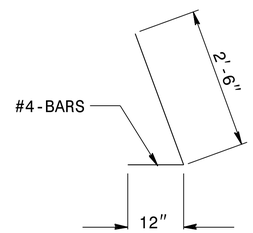
838D01



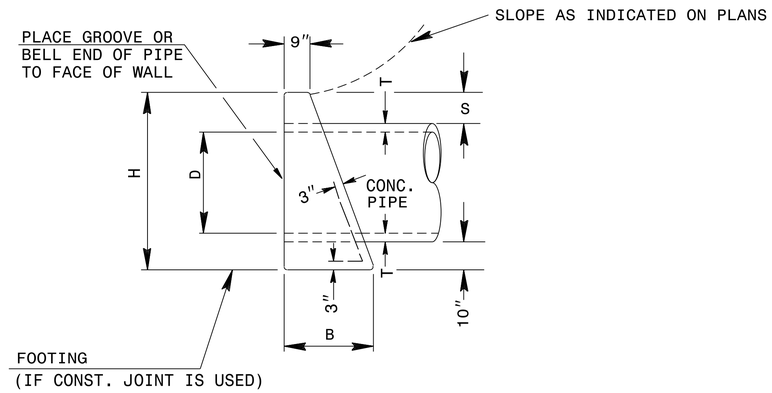
PLAN



ELEVATION



DOWEL
BAR-"X"



END ELEVATION

DIMENSIONS AND CONCRETE QUANTITIES USING CONCRETE PIPE										
	COMMON DIMENSIONS					TRIPLE PIPE		QUADRUPLE PIPE		
D	H	B	G	T	S	L	YD³	L	YD³	M
15″	3′-3″	1′-8″	2′-9″	2¼″	9½″	9′-10″	1.3	12′-0″	1.6	2′-2″
18″	3′-7″	1′-10″	3′-2″	2½″	10″	11′-6″	1.6	14′-1″	1.9	2′-7″
24″	4′-2″	2′-1″	4′-0″	3″	10″	14′-10″	2.5	18′-3″	3.0	3′-5″
30″	5′-0″	2′-6″	4′-7″	4¼″	11½″	17′-8″	3.9	21′-11″	4.7	4′-3″
36″	5′-8″	2′-8″	5′-6″	4¾″	12½″	21′-0″	5.6	26′-0″	6.7	5′-0″
42″	6′-2″	3′-1″	6′-4″	5¼″	11½″	24′-4″	7.5	30′-2″	9.0	5′-10″
48″	6′-9″	3′-5″	7′-2″	5¾″	11½″	27′-8″	10.0	34′-4″	12.0	6′-8″

* NOTE: SEE ROADWAY STANDARD DRAWING 838.01 SHEET 3 OF 3 FOR GENERAL NOTES

DOWELS IN ENDWALL WITH REINFORCED CONCRETE PIPE																	
	PIPE	TRIPLE PIPE									QUADRUPLE PIPE								
LOC.	DIA.	15″	18″	24″	30″	36″	42″		48″		15″	18″	24″	30″	36″	42″		48″	
	BARS	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*	"X"	"X"	"X"	"X"	"X"	"X"	Y*	"X"	Y*
G	QTY.	2	2	3	3	4	4	2	5	2	2	2	3	3	4	4	2	5	2
M(s)	QTY.	2	2	4	4	4	4		6		3	3	6	6	6	6		9	
G	QTY.	2	2	3	3	4	4		5		2	2	3	3	4	4		5	
TOTAL LBS.		14	14	23	23	28	100		119		17	17	28	28	33	122		147	

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

ENGLISH DETAIL DRAWING FOR

CONCRETE ENDWALL FOR TRIPLE AND QUADRUPLE PIPE CULVERTS

15″ THRU 48″ PIPE - 90° SKEW

SHEET 1 OF 3

838D01

03-MAY-2018 11:22
S:\Contracts\Contracts\Special Details\kkempf\english\838d0101 triple and quad pipes.dgn
jhowerton AT CSD-292595

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by:
Joel S. Howerton
873F3D17DCDC45F...
1/18/2022

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE PLATE FOR TITLE

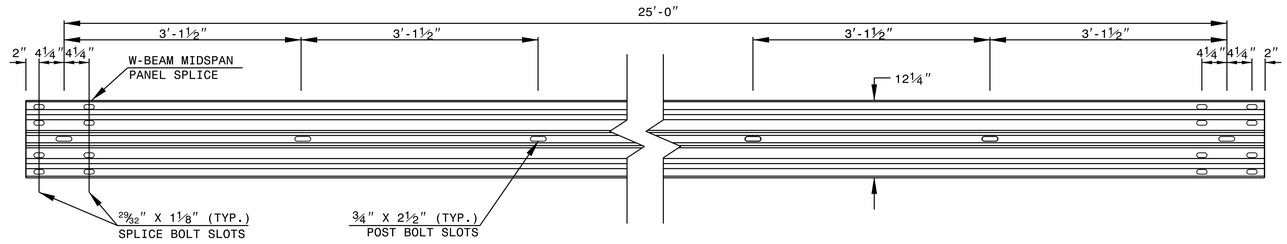
ORIGINAL BY: E.E. WARD DATE:
MODIFIED BY: K.A. Kempf DATE:
CHECKED BY: DATE:
FILE SPEC.: details/kkempf/english/838d0101.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2C-4

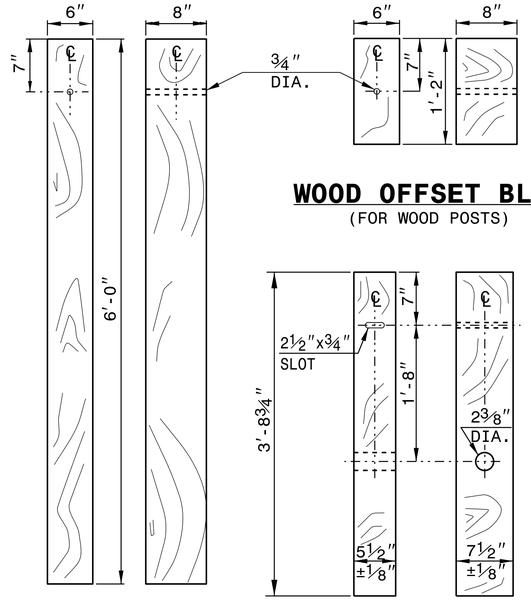
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION



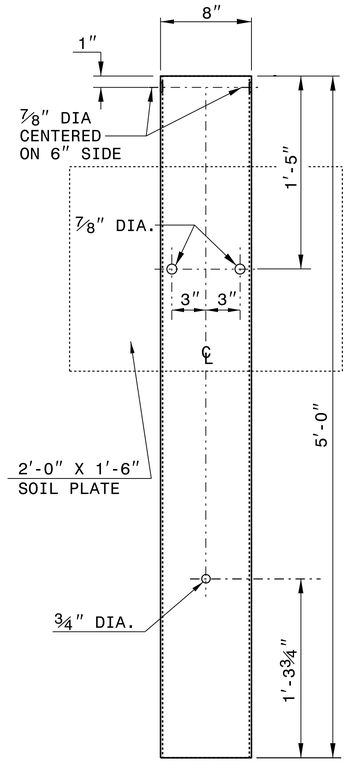
STANDARD W-BEAM GUARDRAIL



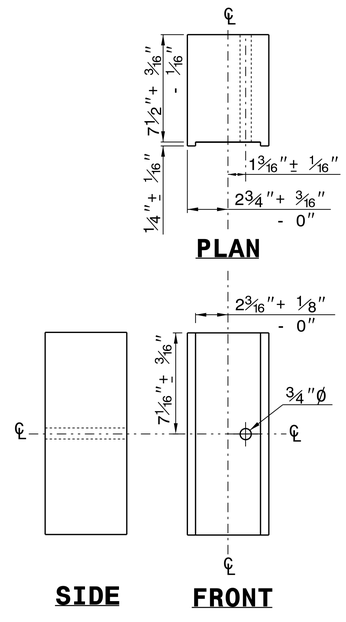
WOOD OFFSET BLOCK
(FOR WOOD POSTS)

STANDARD LINE POST

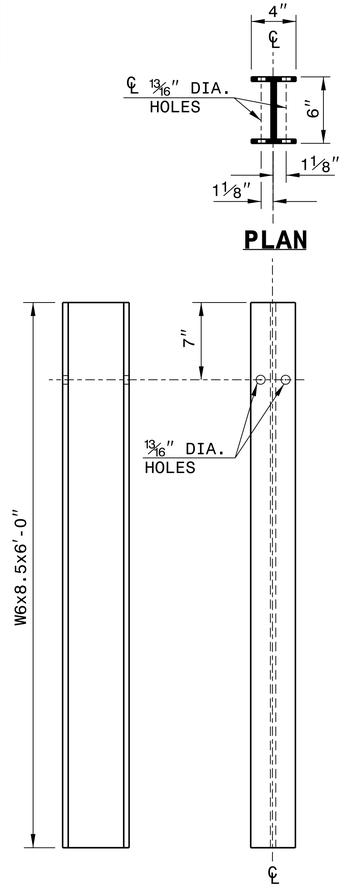
SHORT WOOD BREAKAWAY POST



STEEL TUBE
TS 6"x8"x0.1875"



ROUTED OFFSET BLOCK



"W6" STEEL POST

SYSTEM PARTS

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET 6 OF 8
862D02

SHEET 6 OF 8
862D02

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

DocuSigned by:
Joel S. Howerton
873F3D17DCDC45F...
1/18/2022

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

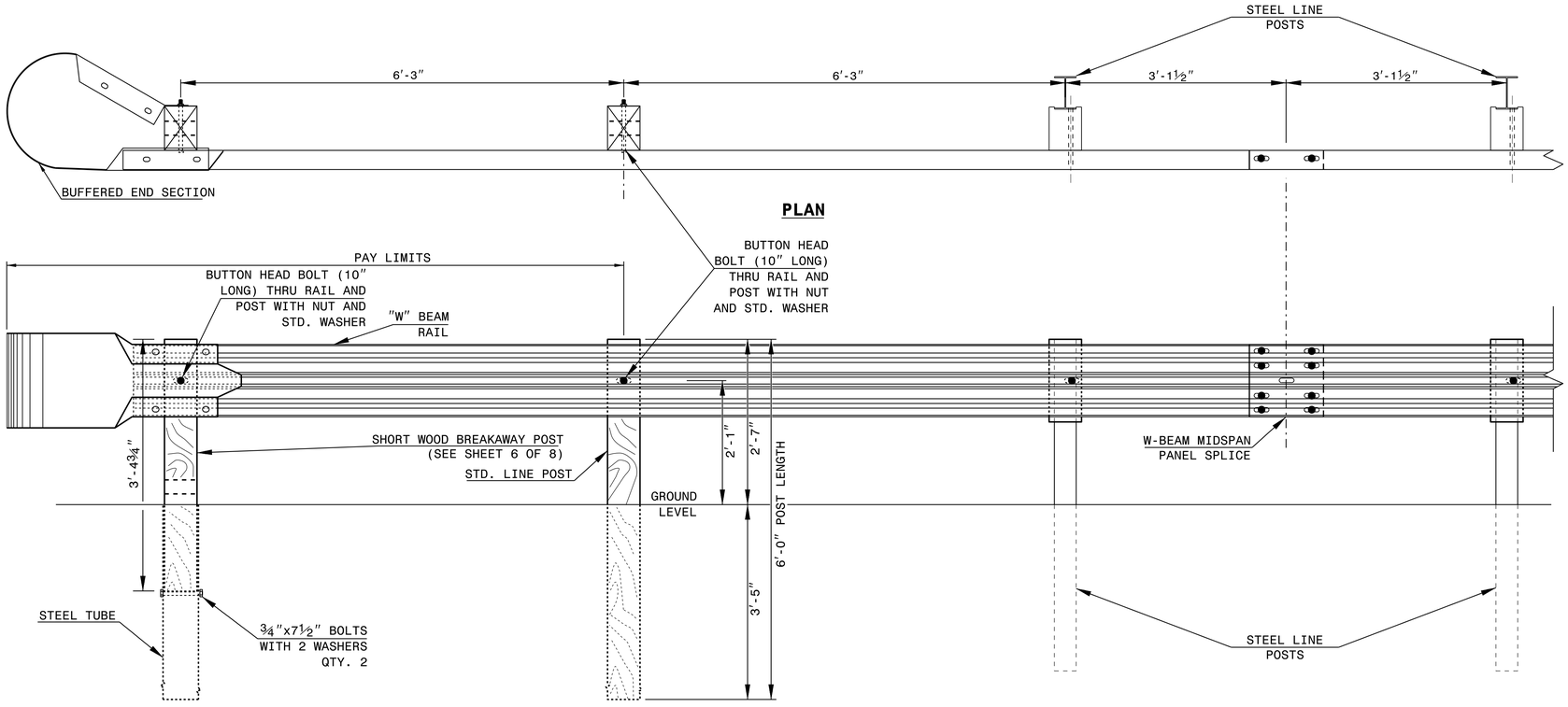
ORIGINAL BY: J.HOWERTON DATE: 3-7-2018
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2C-5

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF



TRAILING END UNIT ASSEMBLY

A.T.-1 SYSTEM

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

ROADWAY DETAIL DRAWING FOR
GUARDRAIL INSTALLATION

SHEET OF

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER JOEL S. HOWERTON

DocuSigned by:
Joel S. Howerton
873F3D17DCDC45F...
1/18/2022

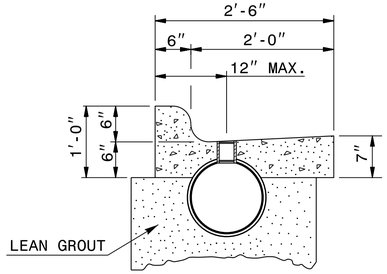
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACTS STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

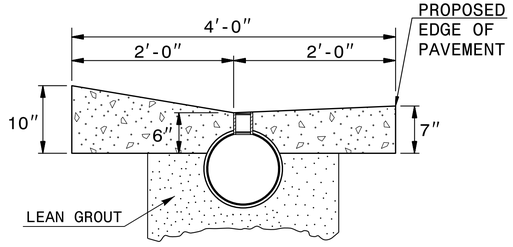
A.T.-1 SYSTEM

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

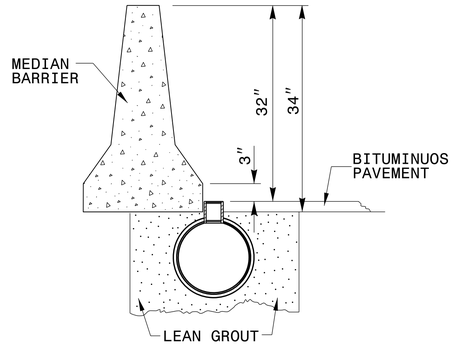
PROJECT REFERENCE NO.	SHEET NO.
R-2511	2C-6



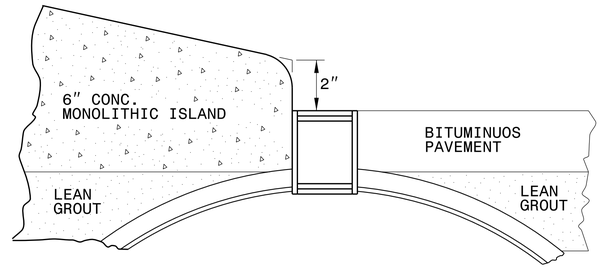
ALTERNATE NO.1



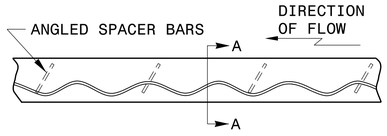
ALTERNATE NO.2

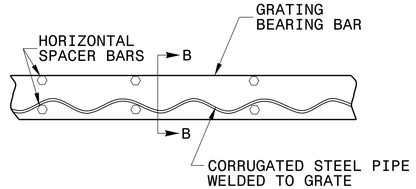


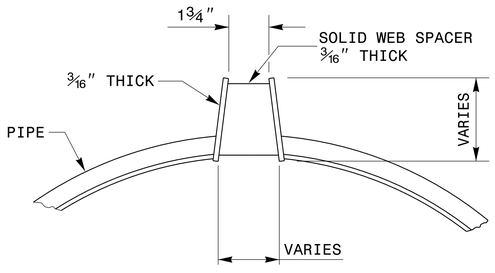
ALTERNATE NO.3



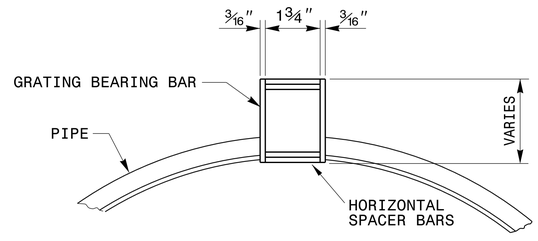
ALTERNATE NO.4





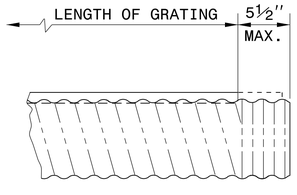


SECTION A-A

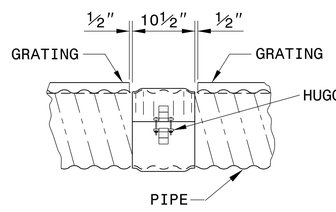


SECTION B-B

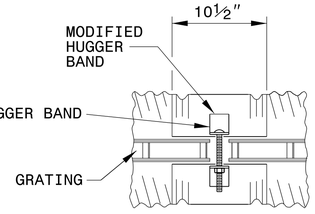
TYPICAL GRATE DETAILS



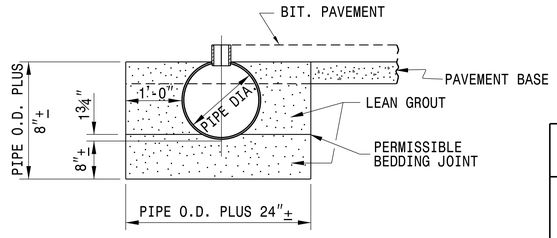
DETAIL AT END OF PIPE



TYPICAL COUPLING BAND



MODIFIED COUPLING BAND



SLOTTED DRAIN PIPE INSTALLATION

NOTES:

USE GRATE ASSEMBLIES FABRICATED FROM STRUCTURAL STEEL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 36 OR ASTM A 36.

HOT-DIP GALVANIZE GRATES AFTER FABRICATION TO MEET ASTM A123.

USE SLOTTED DRAIN PIPE THAT IS ADEQUATE FOR AASHTO H20 LOADING WHEN INSTALLED AS SHOWN.

USE SLOTTED DRAIN PIPE FABRICATED FROM ALUMINIZED CORRUGATED STEEL PIPE MEETING THE REQUIREMENTS OF AASHTO M274 TYPE 2.

NCDOT ALLOWS THE USE OF SIMILAR GRATE CONFIGURATIONS MEETING THE REQUIREMENTS OF THIS DETAIL, THE REQUIREMENTS OF THE SPECIAL PROVISIONS, AND THE APPROVAL OF THE ENGINEER.

NORTH CAROLINA PROFESSIONAL SEAL 022966 ENGINEER Joel S. Howerton

DocuSigned by: Joel S. Howerton 873F3D17CDDC45F...
1/18/2022

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

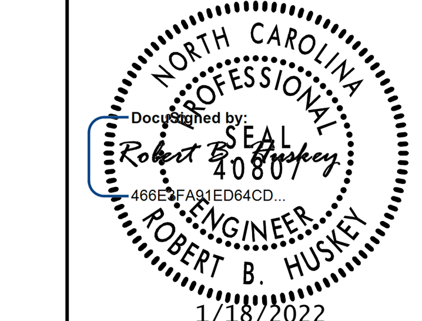
CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

DETAILS OF SLOTTED DRAIN 12″ THRU 36″ DIAMETER PIPE

ORIGINAL BY: T.Spell DATE: 5-21-99
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: s:usr\details\stand\slottdrain.dgn

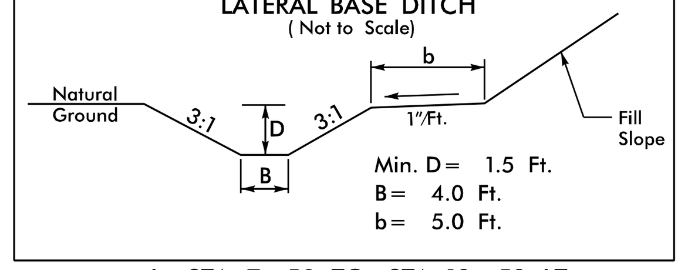
19-JUL-2018 07:40
S:\Contracts\Contracts\Special Details\tspell\tspell\details\stand\slottdrain.dgn
jhowerton AT CSD-292995

HYDRAULICS ENGINEER



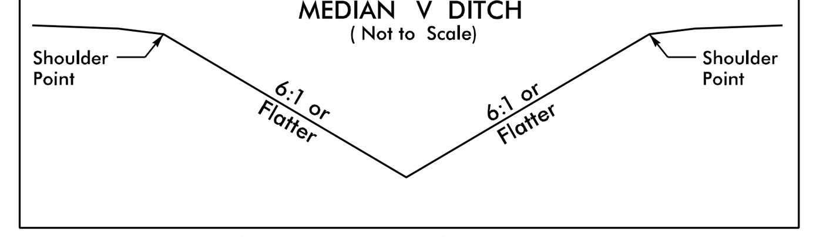
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL A
LATERAL BASE DITCH (Not to Scale)



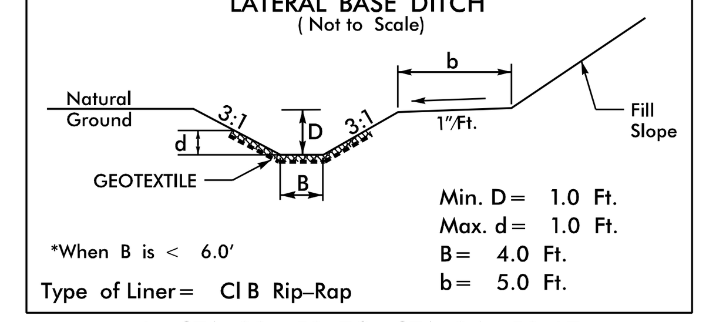
-L- STA. 7+50 TO STA. 12+52 LT
-L- STA. 7+50 TO STA. 18+39 RT
-L- STA. 15+64 TO STA. 17+75 LT
-L- STA. 17+79 TO STA. 23+50 LT
-L- STA. 18+91 TO STA. 31+85 RT
-L- STA. 30+00 TO STA. 53+20 LT
-L- STA. 53+75 TO STA. 54+10 LT
-L- STA. 32+50 TO STA. 54+11 RT
-L- STA. 55+00 TO STA. 69+53 LT
-L- STA. 58+50 TO STA. 68+84 RT
-L- STA. 69+59 TO STA. 92+76 LT
-L- STA. 78+50 TO STA. 84+00 RT
-L- STA. 90+50 TO STA. 98+50 RT
-L- STA. 93+19 TO STA. 99+34 LT
-L- STA. 98+94 TO STA. 109+00 RT
-L- STA. 99+39 TO STA. 105+90 LT
-L- STA. 109+45 TO STA. 129+43 RT
-L- STA. 136+67 TO STA. 144+25 LT
-L- STA. 144+75 TO STA. 152+50 LT
-L- STA. 139+20 TO STA. 147+50 RT
-L- STA. 202+00 TO STA. 212+27 LT
-L- STA. 216+50 TO STA. 246+20 LT
-L- STA. 217+00 TO STA. 229+00 RT
-L- STA. 230+50 TO STA. 238+50 RT
-L- STA. 265+71 TO STA. 273+75 LT
-L- STA. 280+19 TO STA. 294+00 RT
-L- STA. 281+08 TO STA. 282+50 LT
-L- STA. 306+75 TO STA. 318+00 LT
-L- STA. 322+50 TO STA. 331+25 LT
-L- STA. 368+50 TO STA. 373+00 LT
-L- STA. 398+91 TO STA. 401+17 LT
-L- STA. 423+25 TO STA. 430+25 LT
-L- STA. 452+37 TO STA. 453+50 RT
-L- STA. 452+40 TO STA. 460+80 LT
-L- STA. 465+15 TO STA. 471+90 LT
-L- STA. 557+00 TO STA. 557+43 LT
-Y2- STA. 15+00 TO STA. 17+25 LT

DETAIL B
MEDIAN 'V' DITCH (Not to Scale)



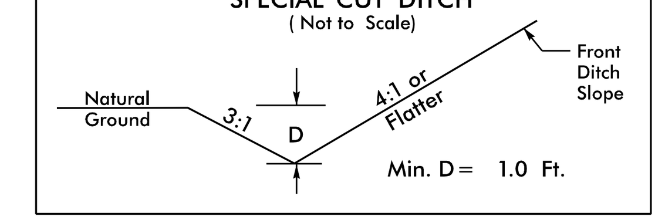
-L- STA. 7+50 TO STA. 8+00 CL
-L- STA. 105+50 TO STA. 107+50 CL
-L- STA. 135+50 TO STA. 138+00 CL
-L- STA. 472+50 TO STA. 476+00 CL
-L- STA. 526+00 TO STA. 533+50 CL
-L- STA. 566+00 TO STA. 568+50 CL

DETAIL C
LATERAL BASE DITCH (Not to Scale)



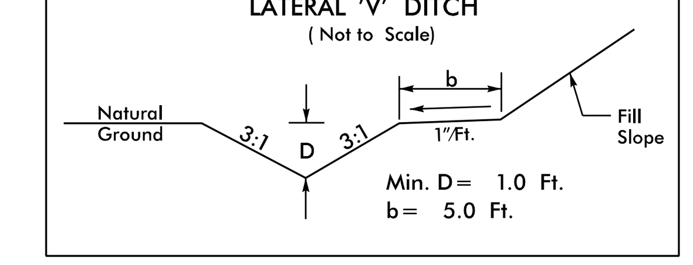
-L- STA. 23+50 TO STA. 24+50 LT
-L- STA. 53+20 TO STA. 53+75 LT

DETAIL D
SPECIAL CUT DITCH (Not to Scale)



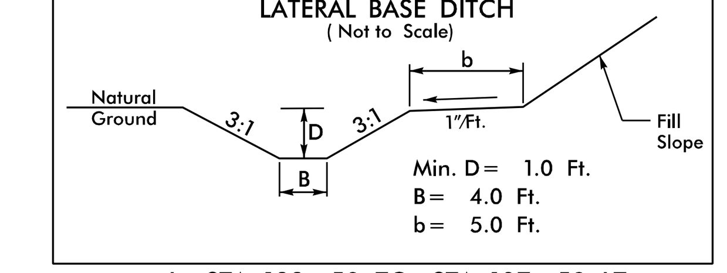
-L- STA. 24+50 TO STA. 28+00 LT
-L- STA. 197+50 TO STA. 199+50 LT
-L- STA. 201+50 TO STA. 204+00 RT
-L- STA. 331+50 TO STA. 335+50 RT
-L- STA. 493+00 TO STA. 497+50 LT
-L- STA. 553+00 TO STA. 554+00 RT
-Y3- STA. 11+00 TO STA. 11+50 RT
-Y3- STA. 12+00 TO STA. 13+00 RT
-Y5- STA. 16+85 TO STA. 18+38 RT
-Y5- STA. 16+85 TO STA. 18+50 LT
-Y5- STA. 12+18 TO STA. 14+50 LT
-Y9- STA. 11+00 TO STA. 12+50 RT
-Y10- STA. 12+14 TO STA. 14+15 RT

DETAIL E
LATERAL 'V' DITCH (Not to Scale)



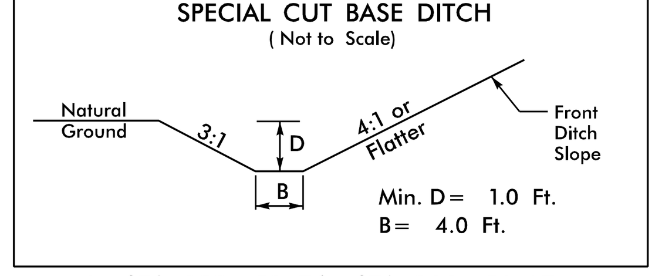
-L- STA. 28+00 TO STA. 30+00 LT
-L- STA. 106+32 TO STA. 108+45 LT
-L- STA. 133+50 TO STA. 138+65 RT
-L- STA. 134+50 TO STA. 135+50 LT
-L- STA. 199+50 TO STA. 200+00 LT
-L- STA. 204+00 TO STA. 205+00 RT
-L- STA. 266+20 TO STA. 274+40 RT
-L- STA. 273+75 TO STA. 277+00 LT
-L- STA. 278+30 TO STA. 280+19 RT
-L- STA. 277+50 TO STA. 280+16 LT
-L- STA. 294+00 TO STA. 300+36 RT
-L- STA. 305+50 TO STA. 310+00 RT
-L- STA. 315+71 TO STA. 319+00 RT
-L- STA. 322+00 TO STA. 329+50 RT
-L- STA. 330+00 TO STA. 331+50 RT
-L- STA. 395+00 TO STA. 398+91 LT
-L- STA. 399+35 TO STA. 401+16 RT
-L- STA. 401+17 TO STA. 405+70 RT
-L- STA. 416+95 TO STA. 421+00 LT
-L- STA. 417+50 TO STA. 419+66 RT
-L- STA. 426+70 TO STA. 437+30 RT
-L- STA. 434+50 TO STA. 435+80 LT
-L- STA. 441+00 TO STA. 442+69 LT
-L- STA. 442+69 TO STA. 446+00 RT
-L- STA. 446+35 TO STA. 452+37 RT
-L- STA. 477+46 TO STA. 480+00 RT
-L- STA. 480+00 TO STA. 481+18 LT
-L- STA. 486+75 TO STA. 493+00 LT
-L- STA. 501+20 TO STA. 505+00 RT
-L- STA. 512+00 TO STA. 515+00 LT
-L- STA. 518+50 TO STA. 521+25 RT
-L- STA. 521+30 TO STA. 524+00 RT
-L- STA. 535+16 TO STA. 538+00 LT
-L- STA. 541+50 TO STA. 544+97 RT
-L- STA. 551+15 TO STA. 553+00 RT
-Y3- STA. 11+00 TO STA. 13+52 LT
-Y6- STA. 21+90 TO STA. 23+65 RT
-Y8- STA. 11+00 TO STA. 14+50 LT
-Y10- STA. 13+50 TO STA. 14+28 LT

DETAIL F
LATERAL BASE DITCH (Not to Scale)



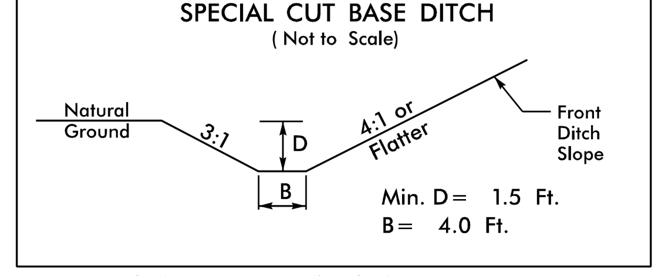
-L- STA. 188+50 TO STA. 197+50 LT
-L- STA. 205+00 TO STA. 217+00 RT
-L- STA. 212+27 TO STA. 216+50 LT
-L- STA. 238+50 TO STA. 240+50 RT
-L- STA. 242+61 TO STA. 255+50 RT
-L- STA. 246+32 TO STA. 253+92 LT
-L- STA. 288+50 TO STA. 306+00 LT
-L- STA. 310+00 TO STA. 315+71 RT
-L- STA. 335+50 TO STA. 341+80 RT
-L- STA. 352+50 TO STA. 363+50 LT
-L- STA. 387+00 TO STA. 389+20 LT
-L- STA. 387+00 TO STA. 389+00 RT
-L- STA. 390+30 TO STA. 395+00 LT
-L- STA. 390+30 TO STA. 398+95 RT
-L- STA. 401+16 TO STA. 405+70 RT
-L- STA. 406+00 TO STA. 416+95 LT
-L- STA. 421+09 TO STA. 426+30 RT
-L- STA. 430+25 TO STA. 434+50 LT
-L- STA. 437+80 TO STA. 442+69 RT
-L- STA. 442+69 TO STA. 452+40 LT
-L- STA. 463+80 TO STA. 465+15 LT
-L- STA. 465+15 TO STA. 471+20 RT
-L- STA. 471+50 TO STA. 475+15 RT
-L- STA. 481+50 TO STA. 486+75 LT
-L- STA. 490+00 TO STA. 499+75 RT
-L- STA. 498+75 TO STA. 502+50 LT
-L- STA. 503+50 TO STA. 510+70 LT
-L- STA. 511+00 TO STA. 512+15 RT
-L- STA. 521+40 TO STA. 526+30 LT
-L- STA. 526+70 TO STA. 534+00 LT
-L- STA. 531+16 TO STA. 537+00 RT
-L- STA. 538+00 TO STA. 541+50 LT
-L- STA. 551+00 TO STA. 554+00 LT
-L- STA. 555+10 TO STA. 557+00 LT
-L- STA. 556+50 TO STA. 560+50 RT

DETAIL G
SPECIAL CUT BASE DITCH (Not to Scale)



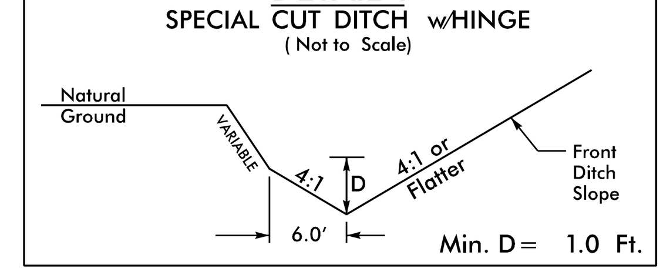
-L- STA. 282+50 TO STA. 288+50 LT
-L- STA. 381+00 TO STA. 387+00 RT
-L- STA. 382+50 TO STA. 387+00 LT
-L- STA. 480+00 TO STA. 486+75 RT
-L- STA. 560+50 TO STA. 564+50 RT
-L- STA. 567+00 TO STA. 568+00 RT

DETAIL H
SPECIAL CUT BASE DITCH (Not to Scale)



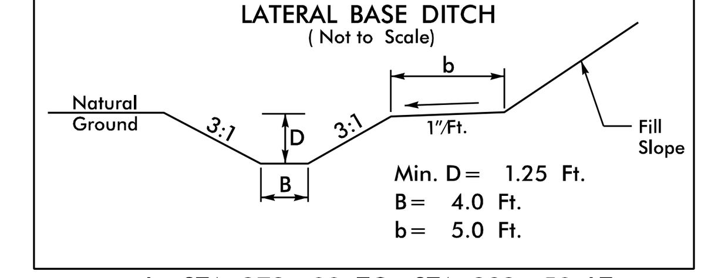
-L- STA. 191+50 TO STA. 200+40 RT
-L- STA. 564+50 TO STA. 567+00 RT
-Y5- STA. 16+28 TO STA. 16+85 RT

DETAIL I
SPECIAL CUT DITCH w/HINGE (Not to Scale)



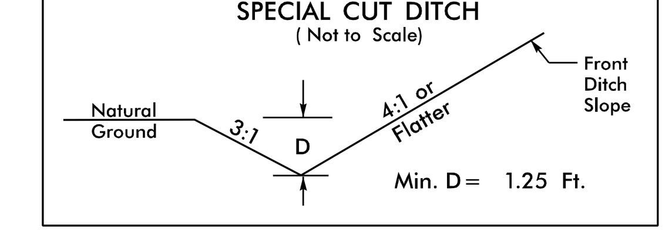
-L- STA. 554+00 TO STA. 556+50 RT

DETAIL J
LATERAL BASE DITCH (Not to Scale)



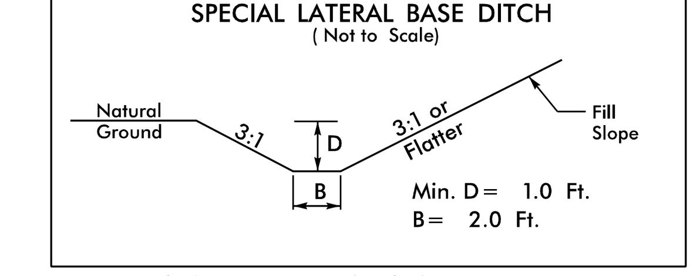
-L- STA. 373+00 TO STA. 382+50 LT
-L- STA. 372+50 TO STA. 381+00 RT
-L- STA. 405+94 TO STA. 417+50 RT
-L- STA. 419+66 TO STA. 421+09 RT
-L- STA. 516+00 TO STA. 521+35 LT
-L- STA. 541+50 TO STA. 544+87 LT
-L- STA. 544+97 TO STA. 550+50 RT
-L- STA. 545+00 TO STA. 551+00 LT
-Y6- STA. 18+73 TO STA. 19+85 LT

DETAIL K
SPECIAL CUT DITCH (Not to Scale)



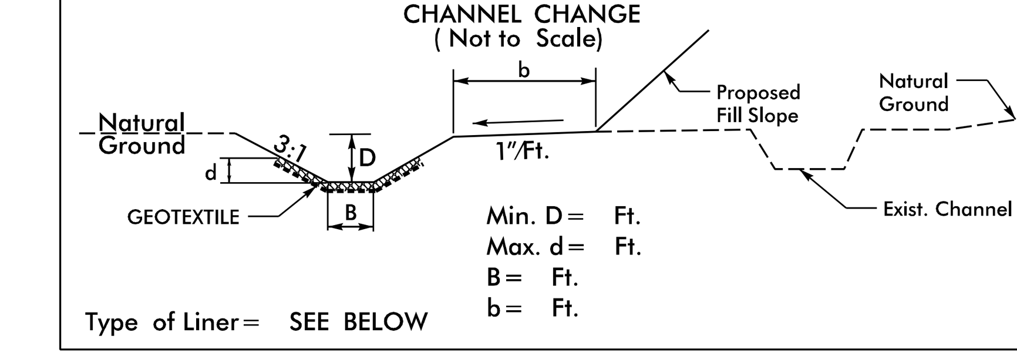
-Y3- STA. 12+00 TO STA. 13+00 RT

DETAIL L
SPECIAL LATERAL BASE DITCH (Not to Scale)



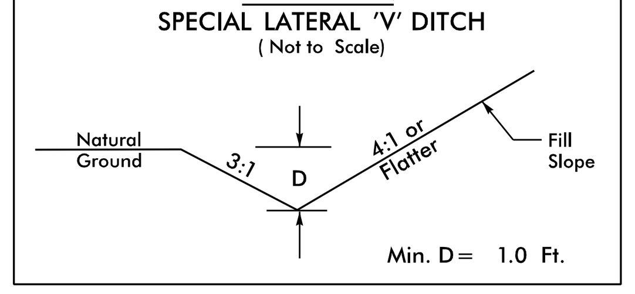
-L- STA. 318+00 TO STA. 319+22 LT
-Y9- STA. 11+00 TO STA. 13+00 LT

DETAIL M
CHANNEL CHANGE (Not to Scale)



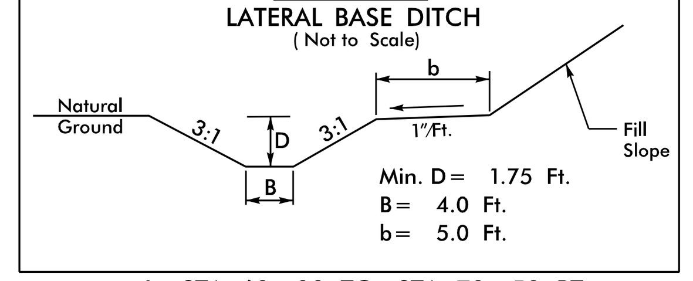
-L- STA. 17+76 LT, B=4.0', S=0.30%, BEG. ELEV=26.10', END ELEV=26.00', GRASS
-L- STA. 18+39 RT, B=4.0', S=0.50%, BEG. ELEV=27.00', END ELEV=26.90', GRASS
-L- STA. 135+50 TO STA. 136+67 LT, B=7.0', S=0.17%, BEG. ELEV=39.06', END ELEV=38.86', GRASS
-Y7- STA. 18+75 TO STA. 20+20 RT, B=4.0', S=0.31%, BEG. ELEV=54.20' END ELEV=53.90', GRASS
-Y8- STA. 12+10 TO STA. 12+85 RT, B=5.0', S=0.89%, BEG. ELEV=51.70', END ELEV=50.90', CL B RIPRAP

DETAIL N
SPECIAL LATERAL 'V' DITCH (Not to Scale)



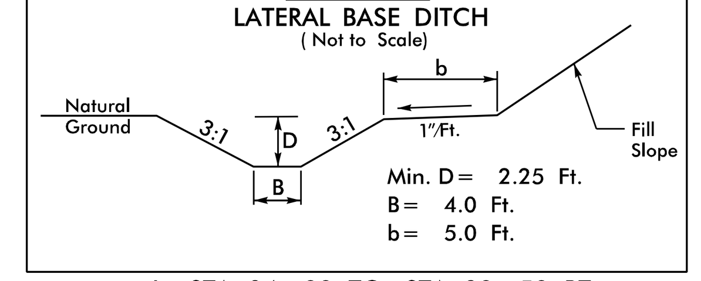
-L- STA. 460+80 TO STA. 461+75 LT
-L- STA. 486+75 TO STA. 490+00 RT
-L- STA. 505+00 TO STA. 511+00 RT
-Y5- STA. 12+31 TO STA. 14+50 RT
-Y6- STA. 17+25 TO STA. 19+80 RT
-Y11- STA. 11+00 TO STA. 11+50 LT
-Y11- STA. 11+00 TO STA. 12+10 RT

DETAIL O
LATERAL BASE DITCH (Not to Scale)



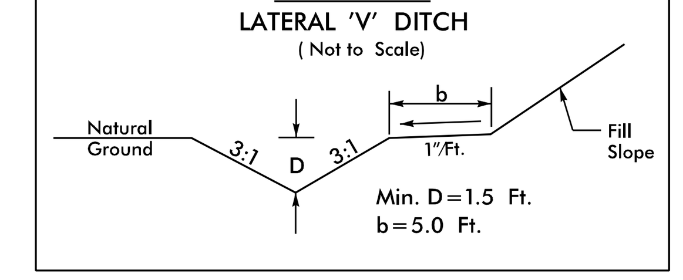
-L- STA. 68+88 TO STA. 78+50 RT
-L- STA. 187+00 TO STA. 191+50 RT
-L- STA. 331+25 TO STA. 340+00 LT
-L- STA. 475+15 TO STA. 477+46 RT

DETAIL P
LATERAL BASE DITCH (Not to Scale)



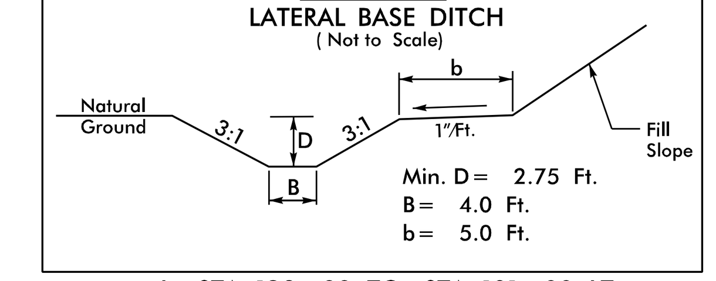
-L- STA. 84+00 TO STA. 90+50 RT
-L- STA. 98+50 TO STA. 98+94 RT
-L- STA. 108+88 TO STA. 129+00 LT
-L- STA. 147+50 TO STA. 154+25 RT
-L- STA. 340+00 TO STA. 342+00 LT
-L- STA. 453+50 TO STA. 461+00 RT
-L- STA. 461+00 TO STA. 465+00 RT; b=1.0 Ft.
-L- STA. 465+00 TO STA. 465+15 RT

DETAIL Q
LATERAL 'V' DITCH (Not to Scale)



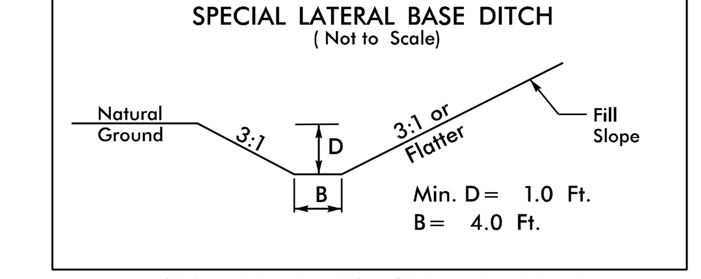
-L- STA. 129+90 TO STA. 132+59 RT
-L- STA. 254+30 TO STA. 262+00 LT
-L- STA. 255+50 TO STA. 263+75 RT
-L- STA. 262+75 TO STA. 265+71 LT
-L- STA. 263+75 TO STA. 266+20 RT
-L- STA. 274+40 TO STA. 276+65 RT
-L- STA. 300+36 TO STA. 305+50 RT
-L- STA. 352+50 TO STA. 356+00 RT
-Y10- STA. 11+62 TO STA. 13+50 LT

DETAIL R
LATERAL BASE DITCH (Not to Scale)



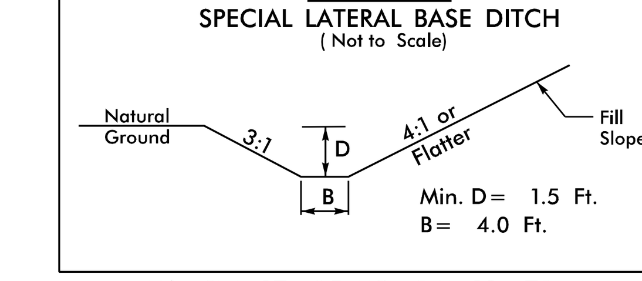
-L- STA. 129+00 TO STA. 131+00 LT
-L- STA. 158+50 TO STA. 188+50 LT
-L- STA. 356+00 TO STA. 365+50 RT
-Y4- STA. 19+58 TO STA. 19+78 LT

DETAIL S
SPECIAL LATERAL BASE DITCH (Not to Scale)



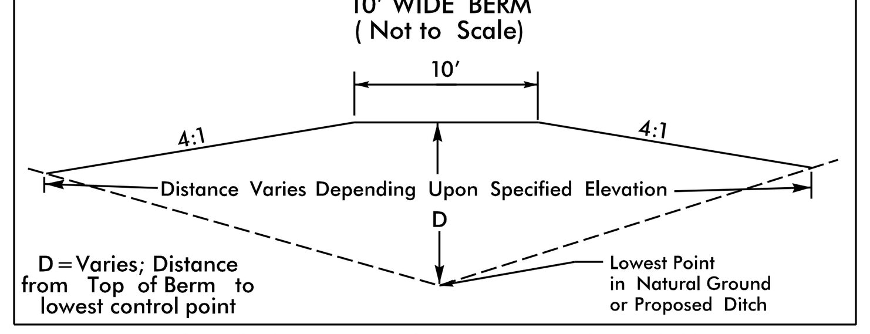
-L- STA. 435+80 TO STA. 441+00 LT
-Y6- STA. 21+85 TO STA. 23+95 LT
-Y7- STA. 17+50 TO STA. 20+30 LT

DETAIL T
SPECIAL LATERAL BASE DITCH (Not to Scale)



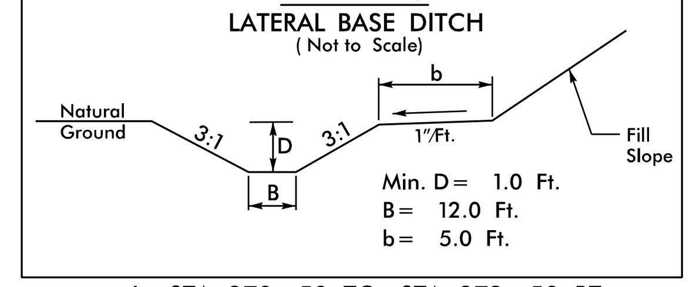
-Y6- STA. 17+25 TO STA. 18+73 LT

DETAIL U
10' WIDE BERM (Not to Scale)



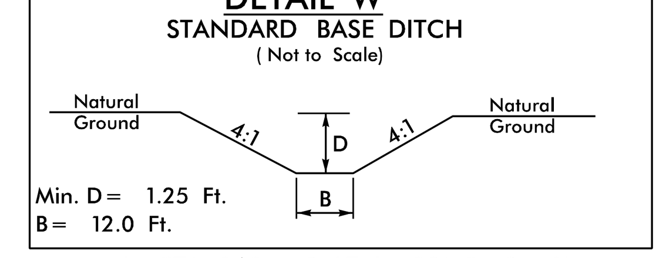
-L- STA. 273+77 LT, TOP ELEV=57.7', D=0.3'

DETAIL V
LATERAL BASE DITCH (Not to Scale)



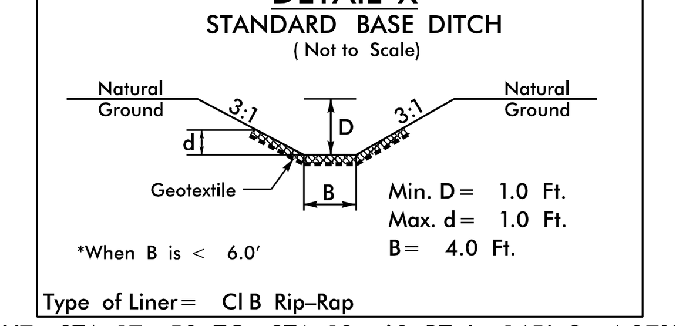
-L- STA. 370+50 TO STA. 372+50 RT

DETAIL W
STANDARD BASE DITCH (Not to Scale)



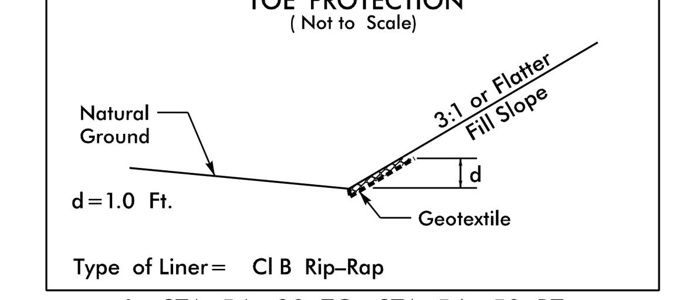
-L- STA. 368+50 LT, L=90', S=0.17%
BEG. ELEV=40.15', END ELEV=40.00'

DETAIL X
STANDARD BASE DITCH (Not to Scale)



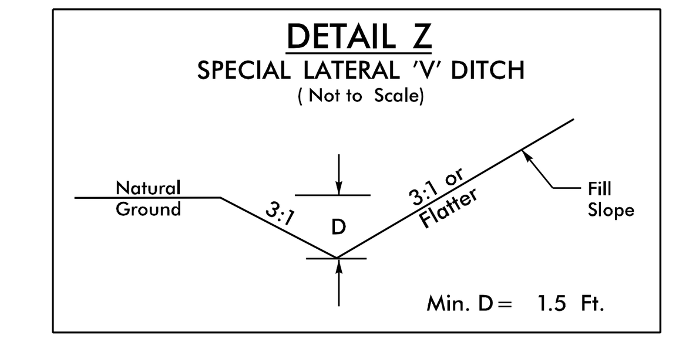
-Y7- STA. 17+50 TO STA. 18+60 RT, L=145', S=4.97%
BEG. ELEV=61.70', END ELEV=54.50'
-Y8- STA. 12+75 RT, L=30', S=2.57%
BEG. ELEV=51.80', END ELEV=51.03'

DETAIL Y
TOE PROTECTION (Not to Scale)



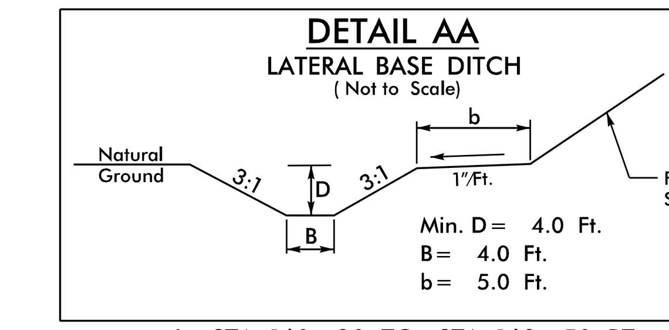
-L- STA. 54+28 TO STA. 54+58 RT
-L- STA. 55+00 TO STA. 55+62 RT
-L- STA. 56+67 TO STA. 57+75 RT
-L- STA. 153+11 TO STA. 156+08 LT
-L- STA. 154+29 TO STA. 156+32 RT
-L- STA. 156+70 TO STA. 157+35 LT
-L- STA. 156+99 TO STA. 160+05 RT
-L- STA. 280+14 TO STA. 281+08 LT
-L- STA. 340+00 TO STA. 342+00 RT
-L- STA. 341+92 TO STA. 345+32 LT
-L- STA. 344+70 TO STA. 345+95 RT
-L- STA. 345+70 TO STA. 349+25 LT
-L- STA. 346+33 TO STA. 347+55 RT
-L- STA. 364+29 TO STA. 365+73 LT
-L- STA. 366+39 TO STA. 367+03 RT
-L- STA. 366+36 TO STA. 367+61 LT
-L- STA. 368+72 TO STA. 370+12 RT

DETAIL Z
SPECIAL LATERAL 'V' DITCH (Not to Scale)



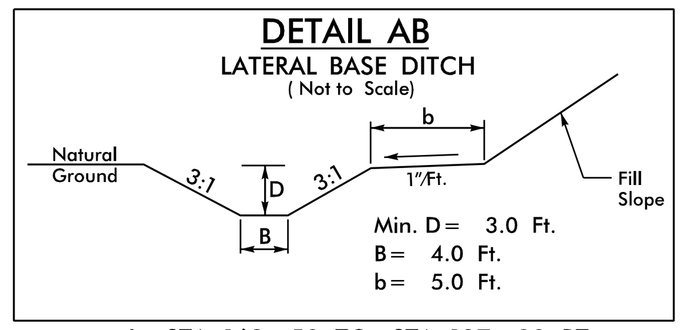
-Y4- STA. 17+00 TO STA. 19+58 LT

DETAIL AA
LATERAL BASE DITCH (Not to Scale)



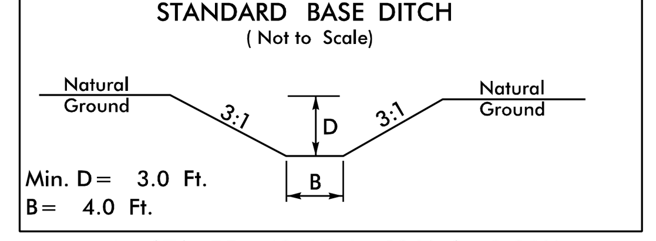
-L- STA. 160+20 TO STA. 163+50 RT

DETAIL AB
LATERAL BASE DITCH (Not to Scale)



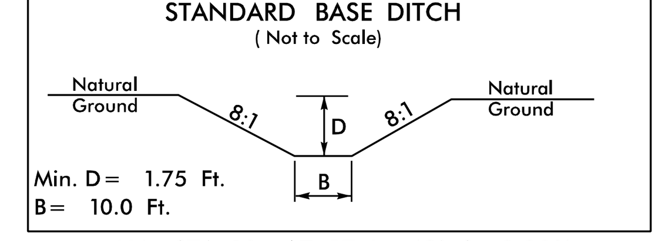
-L- STA. 163+50 TO STA. 187+00 RT

DETAIL AC
STANDARD BASE DITCH (Not to Scale)



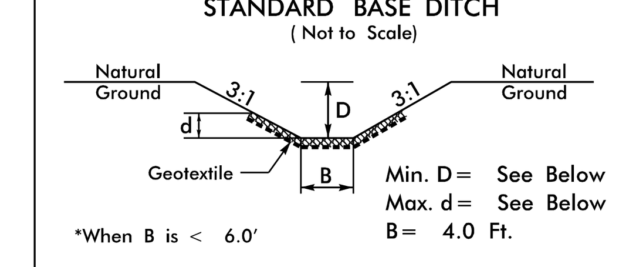
-L- STA. 55+43 LT, L=128', S=0.30%
BEG. ELEV=35.79', END ELEV=35.39'
-L- STA. 128+07 RT, L=73', S=0.58%
BEG. ELEV=41.61', END ELEV=41.19'

DETAIL AD
STANDARD BASE DITCH (Not to Scale)



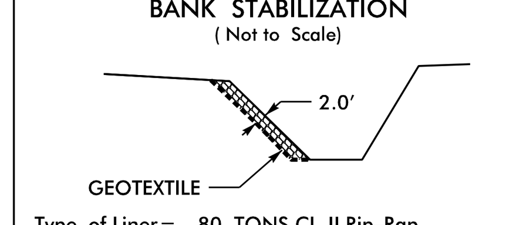
-Y4- STA. 19+67 RT, L=43', S=0.30%
BEG. ELEV=32.63', END ELEV=32.50'

DETAIL AE
STANDARD BASE DITCH (Not to Scale)



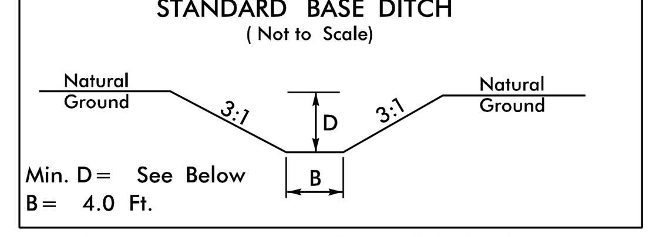
-L- STA. 252+40 LT, L=50', S=2.96%, D=1.25Ft., d=1.25Ft.
BEG. ELEV=56.98', END ELEV=55.50'
-L- STA. 230+81 LT, L=39', S=0.79%, D=1.5Ft., d=1.5Ft.
BEG. ELEV=51.65', END ELEV=51.34'

DETAIL AG
BANK STABILIZATION (Not to Scale)



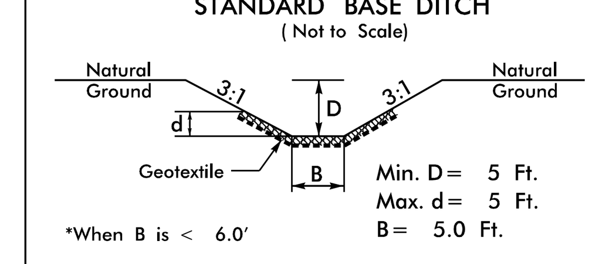
-L- STA. 156+38 TO STA. 156+46 RT
-L- STA. 156+67 TO STA. 156+80 RT

DETAIL AH
STANDARD BASE DITCH (Not to Scale)



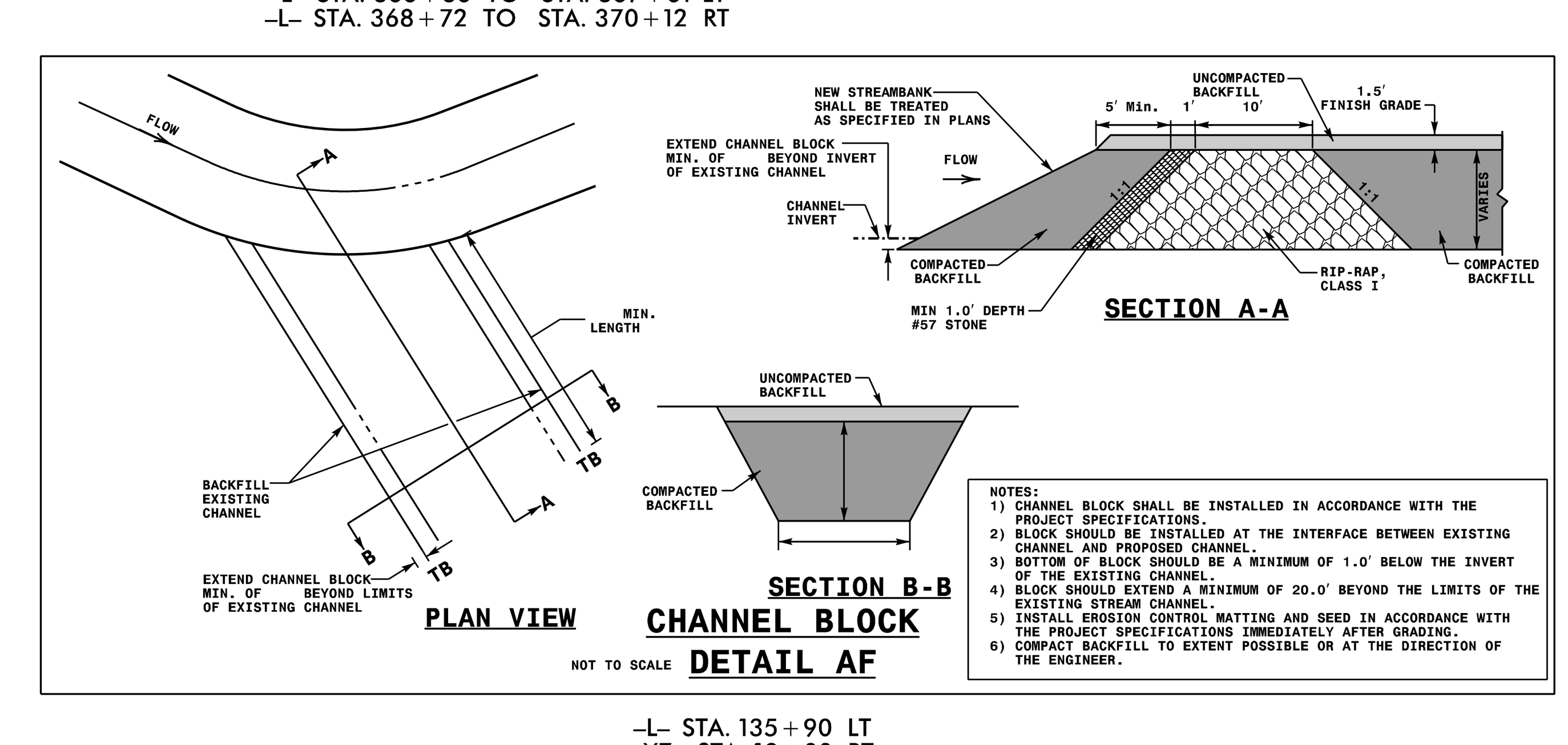
-L- STA. 42+57 LT, L=73', S=0.27%, D=2.0 FT.
BEG. ELEV=40.91', END ELEV=40.71'

DETAIL AI
STANDARD BASE DITCH (Not to Scale)



-L- STA. 11+80 RT, L=50', S=1.66%,
BEG. ELEV=31.53', END ELEV=30.70'

CHANNEL BLOCK

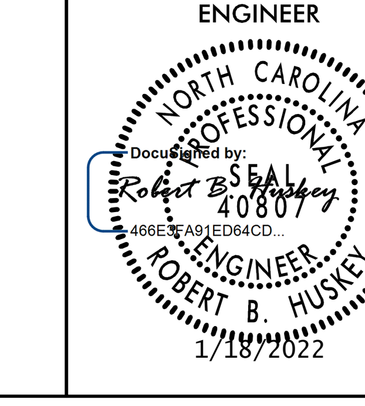


NOT TO SCALE **DETAIL AF**

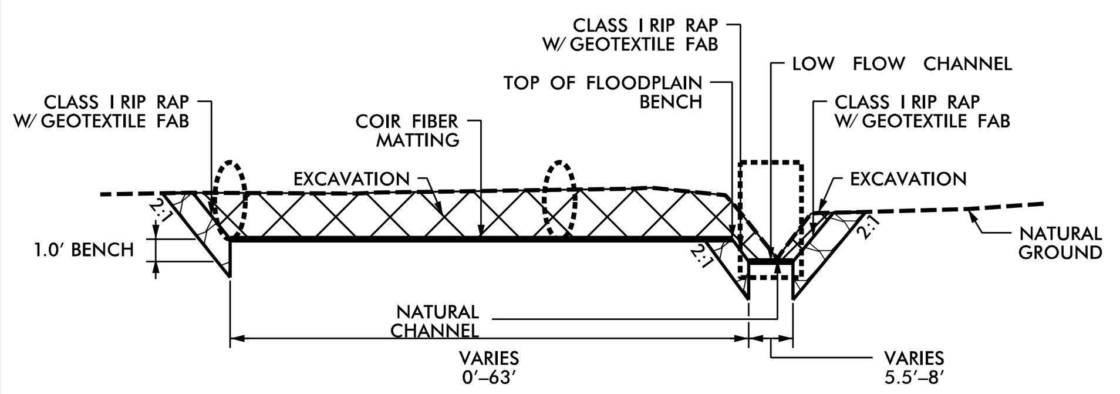
-L- STA. 135+90 LT
-Y7- STA. 19+00 RT
-Y8- STA. 12+40 RT

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

HYDRAULICS ENGINEER

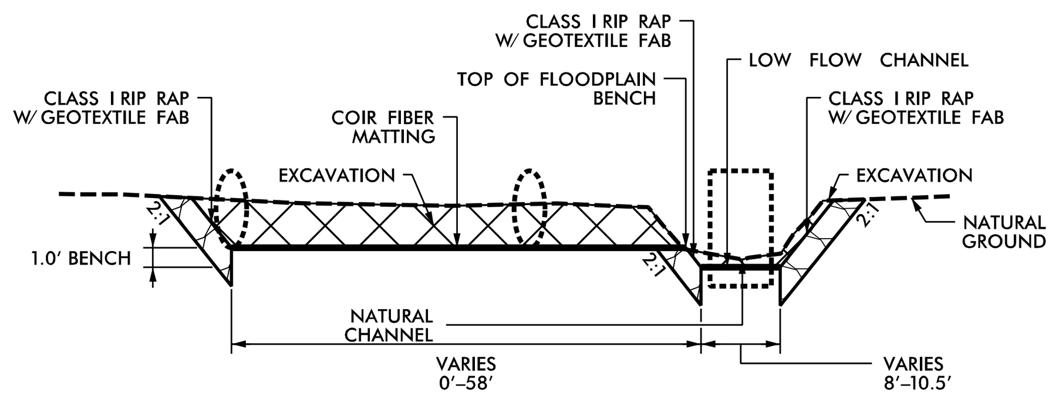


DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



INLET CHANNEL IMPROVEMENTS

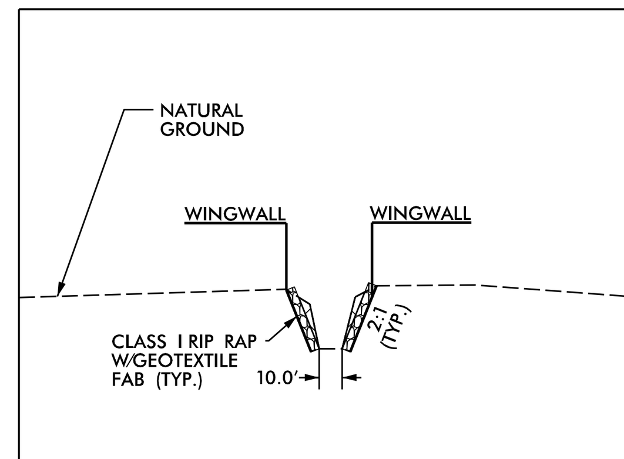
LOOKING DOWNSTREAM (NTS)
LENGTH=105'



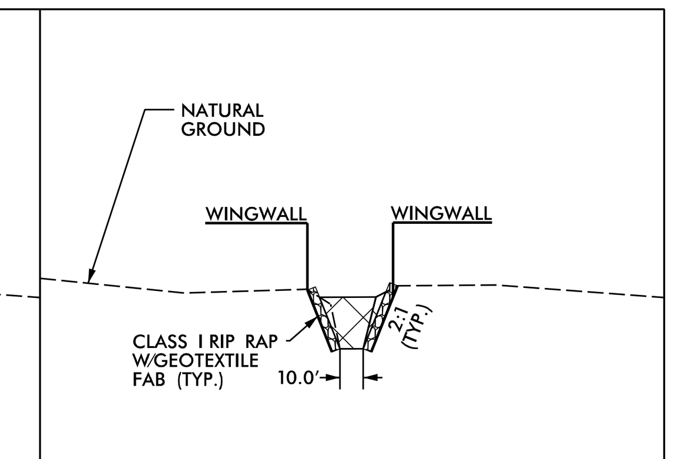
OUTLET CHANNEL IMPROVEMENTS

LOOKING DOWNSTREAM (NTS)
LENGTH=75'

1 @ 8' x 6' RCBC + (2) – 48" WELDED STEEL
STA. 69+25.5 –L–

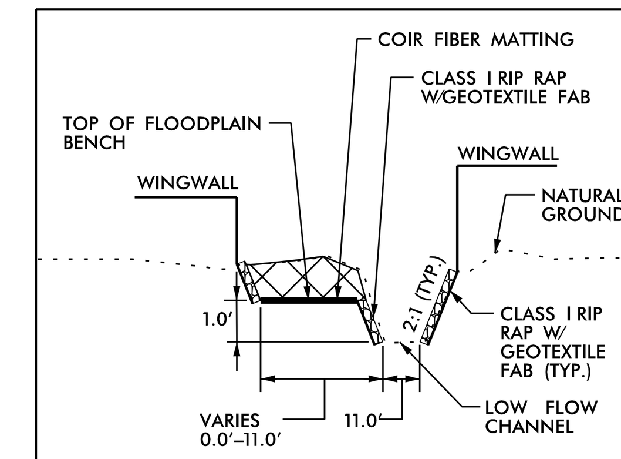


INLET
LOOKING DOWNSTREAM (NTS)
LENGTH=15'

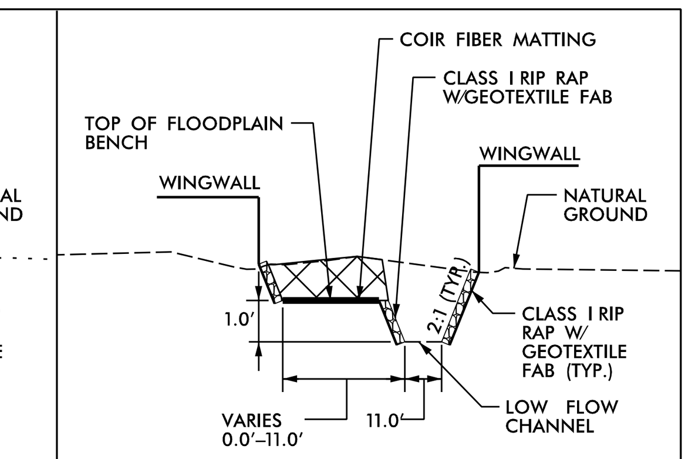


OUTLET
LOOKING DOWNSTREAM (NTS)
LENGTH=95'

1 @ 10' x 5' RCBC
STA. 345+79.0 –L–



INLET
LOOKING DOWNSTREAM (NTS)
LENGTH=35'

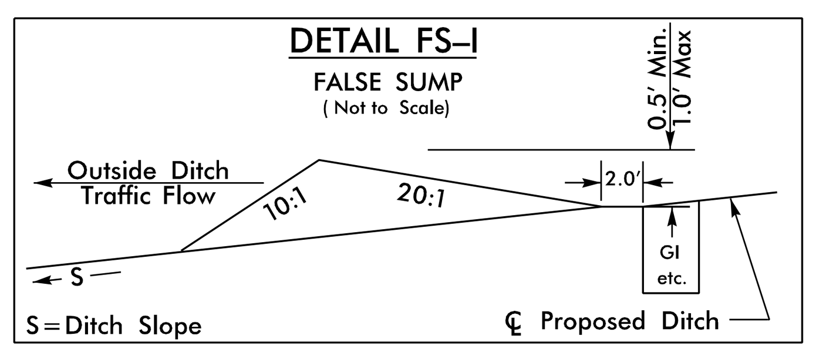


OUTLET
LOOKING DOWNSTREAM (NTS)
LENGTH=45'

2 @ 11' x 8' RCBC
STA. 365+81.0 –L–

DETAIL FS–I

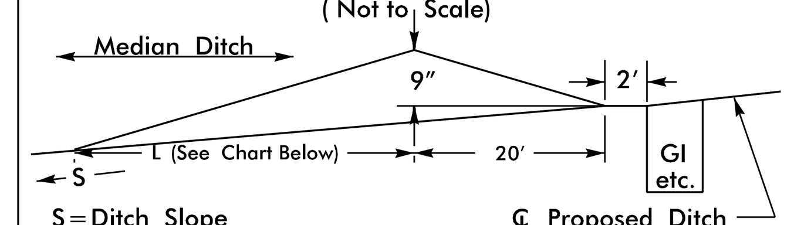
FALSE SUMP
(Not to Scale)



–L– STA. 202+01 LT
–L– STA. 216+53 LT
–L– STA. 253+88 LT
–L– STA. 254+36 LT
–L– STA. 261+92 LT
–L– STA. 331+25 LT
–L– STA. 434+45 LT
–L– STA. 441+00 LT
–L– STA. 445+50 LT
–L– STA. 544+98 LT

DETAIL FS–II

FALSE SUMP
(Not to Scale)

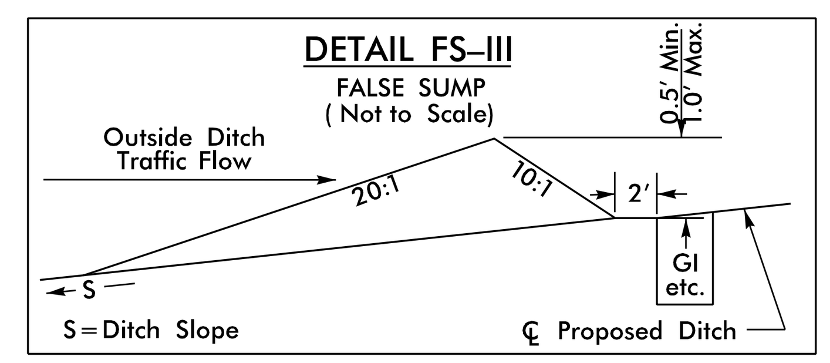


Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

–L– STA. 12+45 LT
–L– STA. 22+37 CL
–L– STA. 34+67 CL
–L– STA. 52+12 LT
–L– STA. 73+87 CL
–L– STA. 79+85 CL
–L– STA. 92+63 CL
–L– STA. 93+99 RT
–L– STA. 121+64 CL
–L– STA. 152+63 CL
–L– STA. 165+84 CL
–L– STA. 173+84 CL
–L– STA. 178+87 LT
–L– STA. 185+38 CL
–L– STA. 190+35 CL
–L– STA. 198+87 LT
–L– STA. 216+65 CL
–L– STA. 223+63 CL
–L– STA. 254+15 RT
–L– STA. 260+64 CL
–L– STA. 263+62 CL
–L– STA. 276+16 CL
–L– STA. 277+13 CL
–L– STA. 299+63 CL
–L– STA. 305+13 CL
–L– STA. 311+63 CL
–L– STA. 329+12 CL
–L– STA. 354+13 CL
–L– STA. 363+37 CL
–L– STA. 368+38 CL
–L– STA. 372+88 LT
–L– STA. 383+85 CL
–L– STA. 405+83 CL
–L– STA. 414+38 RT
–L– STA. 419+50 CL
–L– STA. 430+08 CL
–L– STA. 435+71 LT
–L– STA. 440+13 LT
–L– STA. 446+14 RT
–L– STA. 452+52 CL
–L– STA. 458+38 CL
–L– STA. 470+63 CL
–L– STA. 480+12 CL
–L– STA. 489+87 RT
–L– STA. 496+63 LT
–L– STA. 501+88 RT
–L– STA. 508+62 LT
–L– STA. 518+14 CL
–L– STA. 530+13 CL
–L– STA. 545+05 RT
–L– STA. 550+63 LT
–L– STA. 556+14 CL
–L– STA. 562+13 CL

DETAIL FS–III

FALSE SUMP
(Not to Scale)



–L– STA. 13+02 RT
–L– STA. 93+99 RT
–L– STA. 133+80 RT
–L– STA. 417+50 RT
–L– STA. 479+89 RT
–L– STA. 490+01 RT

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/17/99

1/17/2022
R:\Hydraulics\CADD\R2511_Hyd_InletOutlet Detail.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2G-1

GEOTECHNICAL ENGINEER

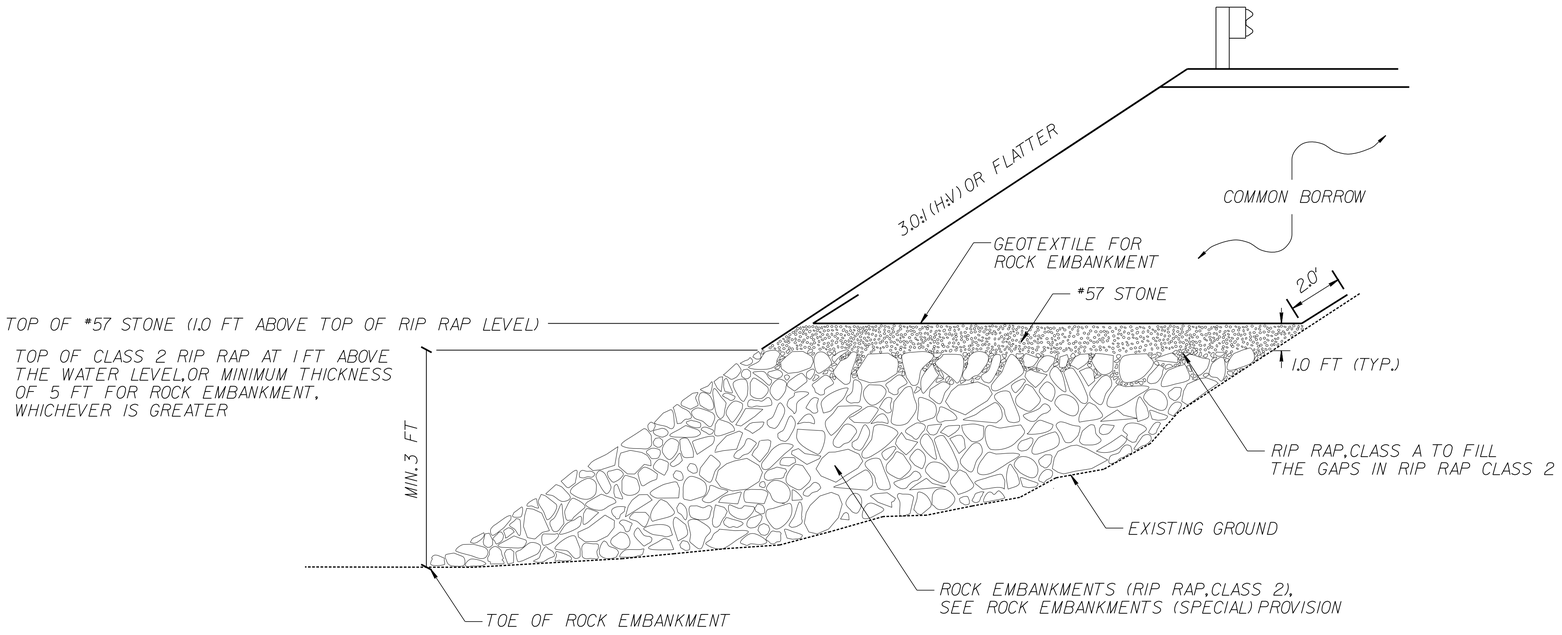
NORTH CAROLINA PROFESSIONAL SEAL 041709 ENGINEER GREGORY K GOINS

DocuSigned by: Gregory K. Goins 1/18/2022
472882704A9E4D7...
SIGNATURE DATE

ENGINEER

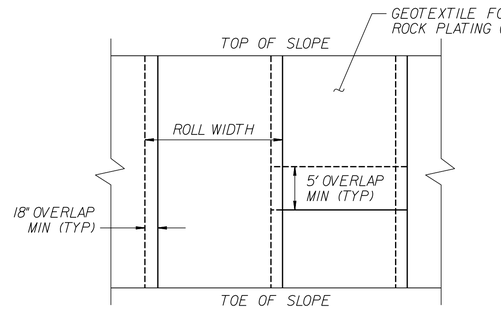
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



ROCK EMBANKMENT TYPICAL SECTION

(NOT TO SCALE)



GEOTEXTILE OVERLAP DETAIL

(PLAN VIEW)

ROCK EMBANKMENT			
LINE	BEGIN	END	LOCATION
-L-	355+40 +/-	355+75 +/-	LEFT
-L-	510+70 +/-	512+40 +/-	LEFT

ESTIMATED QUANTITIES	
RIP RAP, CLASS 2	2,000 TONS
RIP RAP CLASS A	500 TONS
#57 STONE (SELECT MATERIAL, CLASS VI)	1,000 TONS
GEOTEXTILE FOR ROCK EMBANKMENT	500 SY

NOTES

1. FOR ROCK EMBANKMENTS,SEE ROCK EMBANKMENTS (SPECIAL) PROVISION.
2. USE CLASS 2 RIP RAP FOR ROCK EMBANKMENTS.
3. INSTALL ROCK EMBANKMENTS USING CLASS 2 RIP RAP AS SHOWN IN THE PLAN
4. FILL VOIDS IN THE TOP OF ROCK EMBANKMENTS WITH RIP RAP,CLASS A.
5. PLACE #57 STONE (SELECT MATERIAL,CLASS VI) 1 FT.(TYP.) ABOVE RIP RAP,CLASS 2, AS SHOWN IN THE PLAN.
6. INSTALL GEOTEXTILE FOR ROCK EMBANKMENT ON TOP OF # 57 STONE.

PREPARED BY: A. BOZORGI	DATE: 11/2018
REVIEWED BY: M. SNYDER	DATE: 11/2018

ROCK EMBANKMENTS DETAIL & NOTES

REVISIONS					
NO.	BY	DATE	NO.	BY	DATE

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2G-2

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 8/31/2021
F760CAEB96FC4D3... SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

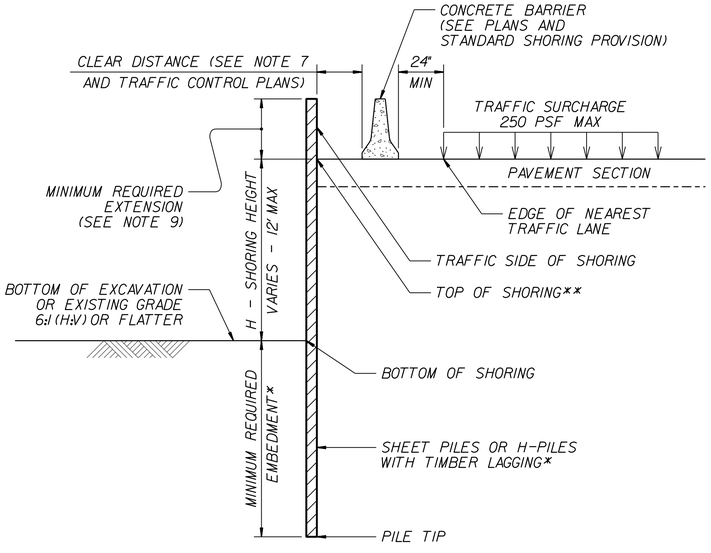
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)			MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (IN^3/FT)	MINIMUM REQUIRED EMBEDMENT* (FT) (SEE NOTE 10)		
				HP 10x42	HP 12x53	HP 14x73			HP 10x42	HP 12x53	HP 14x73
GROUNDWATER ELEVATION BEWTEEN BOTTOM OF SHORING AND PILE TIP	< 6	11.5	4.5	11.5	11.5	11.5	16.0	12.0	13.0	13.0	13.0
	7	13.0	7.0	13.0	13.0	13.0	17.0	14.5	14.5	14.5	14.5
	8	15.0	10.0	--	15.0	15.0	18.0	17.0	--	15.5	15.5
	9	17.0	14.0	--	17.0	17.0	19.0	20.0	--	17.0	17.0
	10	18.5	19.5	--	--	18.5	20.0	23.5	--	--	18.5
	11	20.5	26.0	--	--	--	21.0	28.0	--	--	20.0
	12	22.5	33.0	--	--	--	22.0	33.0	--	--	21.5
GROUNDWATER ELEVATION BELOW PILE TIP	< 6	7.5	3.0	8.0	8.0	8.0	11.0	10.0	9.5	9.5	9.5
	7	8.5	4.5	9.5	9.5	9.5	12.0	12.0	10.5	10.5	10.5
	8	10.0	6.5	10.5	10.5	10.5	12.5	14.0	11.5	11.5	11.5
	9	11.0	9.5	--	12.0	12.0	13.5	16.5	--	12.5	12.5
	10	12.5	13.0	--	--	13.5	14.0	19.5	--	13.5	13.5
	11	13.5	17.0	--	--	14.5	15.0	22.5	--	--	14.5
	12	15.0	21.5	--	--	16.0	16.0	25.5	--	--	15.5

MINIMUM REQUIRED EMBEDMENT AND SECTION MODULUS

*DO NOT USE H-PILES WITH TIMBER LAGGING FOR GROUNDWATER CONDITION, SHORING HEIGHT AND H-PILE SIZE SHOWN IF MINIMUM REQUIRED EMBEDMENT IS "--".

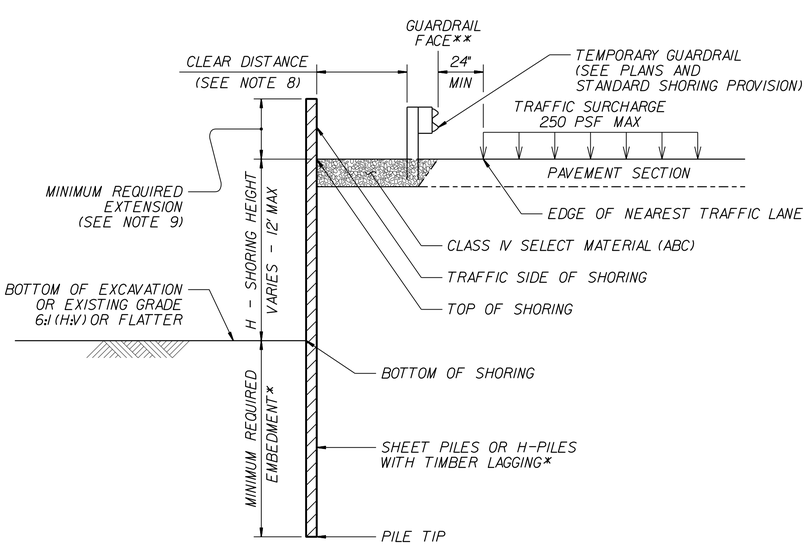
NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, USE "GROUNDWATER ELEVATION BETWEEN BOTTOM OF SHORING AND PILE TIP" FOR GROUNDWATER CONDITION. DO NOT USE STANDARD TEMPORARY SHORING IF GROUNDWATER IS ABOVE BOTTOM OF SHORING.
7. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN THE MINIMUM REQUIRED FOR CONCRETE BARRIER, SET BARRIER NEXT TO AND UP AGAINST TRAFFIC SIDE OF PILES AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
8. AT THE CONTRACTOR'S OPTION OR IF AVAILABLE CLEAR DISTANCE IS LESS THAN 4' FOR TEMPORARY GUARDRAIL, ATTACH GUARDRAIL TO TRAFFIC SIDE OF PILES AS SHOWN IN THE PLANS AND USE "SURCHARGE CASE WITH TRAFFIC IMPACT".
9. MINIMUM REQUIRED EXTENSION IS 6" FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32" FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
10. MINIMUM REQUIRED EMBEDMENT FOR H-PILES WITH TIMBER LAGGING IS BASED ON DRIVEN H-PILES AT MAXIMUM 6' SPACING. AT THE CONTRACTOR'S OPTION, EMBEDMENT DEPTHS MAY BE REDUCED BY 25% FOR DRILLED-IN H-PILES.
11. SUBMIT A "STANDARD TEMPORARY SHORING SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY SHORING CONSTRUCTION. UP TO 3 SHORING LOCATIONS MAY BE INCLUDED ON EACH FORM. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
12. CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.



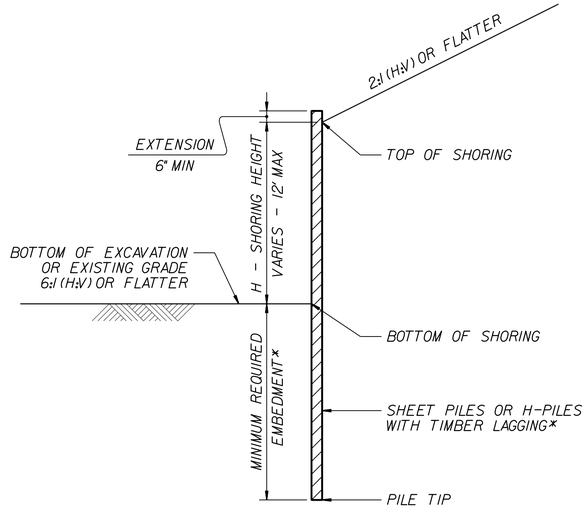
CONCRETE BARRIER

**TOP OF SHORING = EDGE OF PAVEMENT



TEMPORARY GUARDRAIL

**GUARDRAIL FACE = EDGE OF PAVEMENT



STANDARD TEMPORARY SHORING

(SLOPE CASE)

*SEE TABLE ABOVE.

STANDARD TEMPORARY SHORING

(SURCHARGE CASE)

*SEE TABLE ABOVE.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.01

STANDARD TEMPORARY SHORING

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2G-3

GEOTECHNICAL ENGINEER

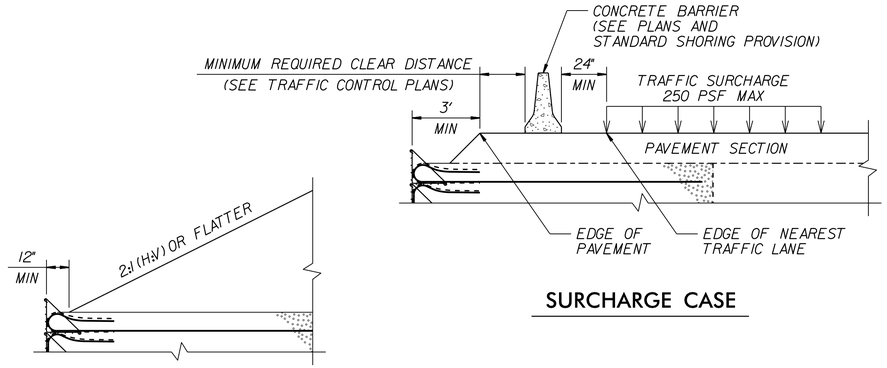
NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 8/31/2021
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

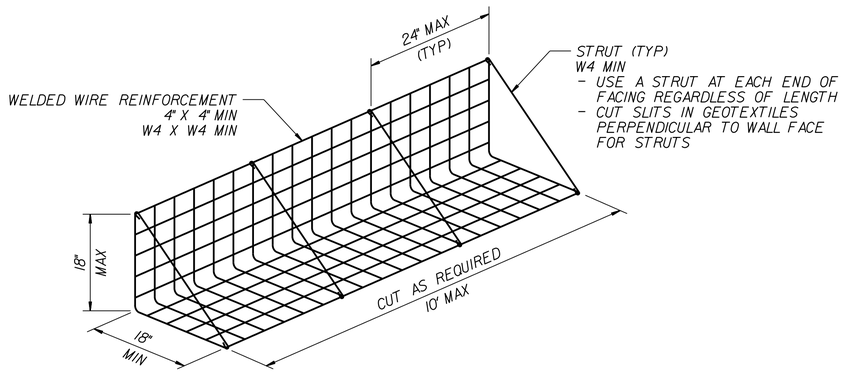
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

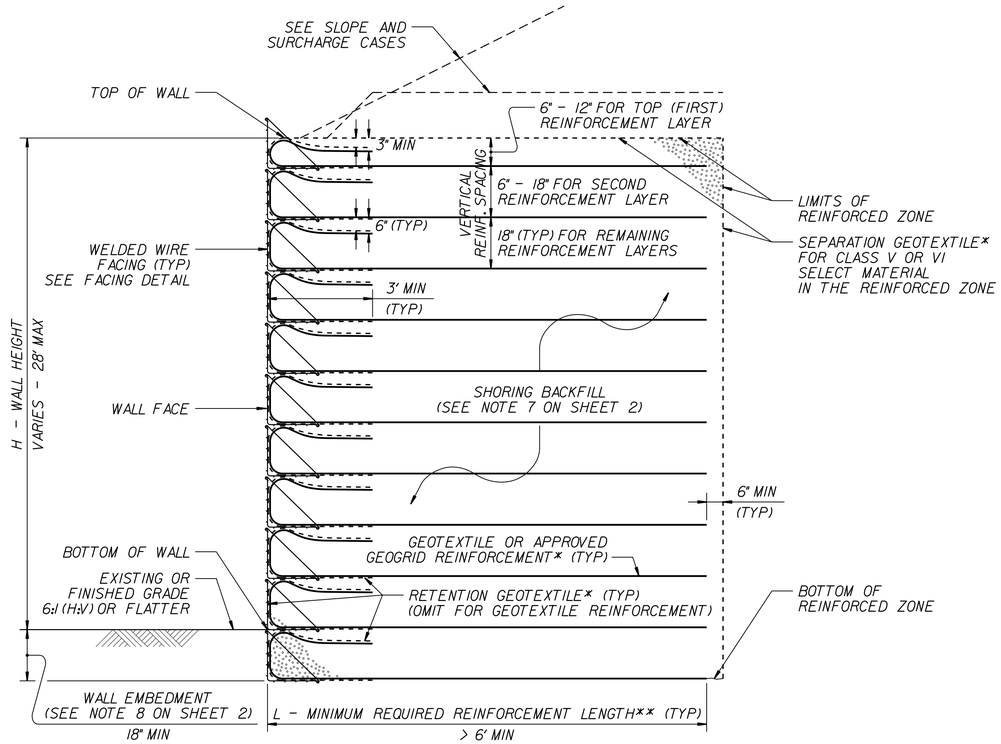


SURCHARGE CASE

SLOPE CASE

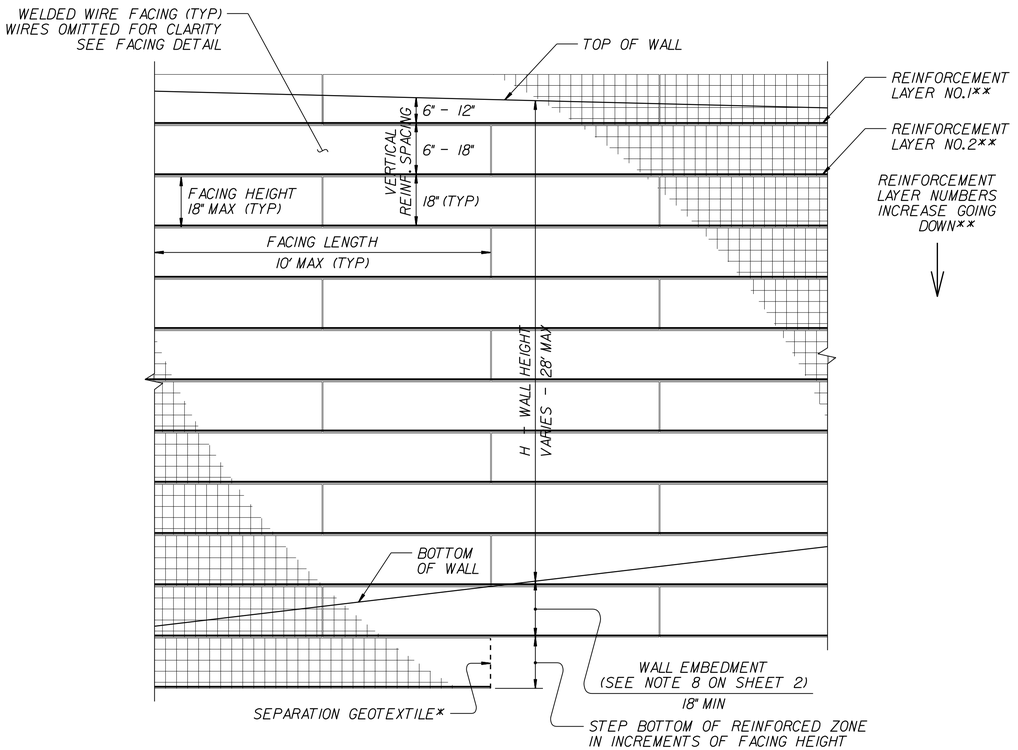


FACING DETAIL



STANDARD TEMPORARY WALL

(FOR STANDARD TEMPORARY WALLS ON STRUCTURES, SEE TEMPORARY WALL ON STRUCTURE DETAIL ON SHEET 2.)
*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.



STANDARD TEMPORARY WALL – PARTIAL ELEVATION

*SEE GEOSYNTHETIC PLACEMENT DETAILS ON SHEET 2.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 1 OF 3

DATE: 11-19-13

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2G-4

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

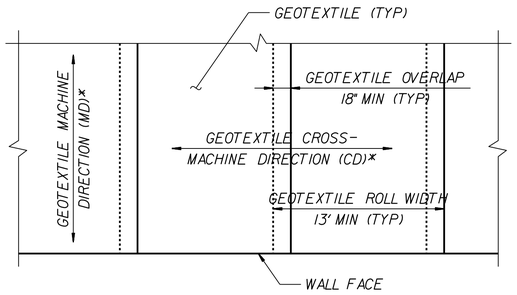
DocuSigned by: Scott A. Hidden 8/31/2021 F760CAEB96FC4D3...

SIGNATURE DATE

ENGINEER

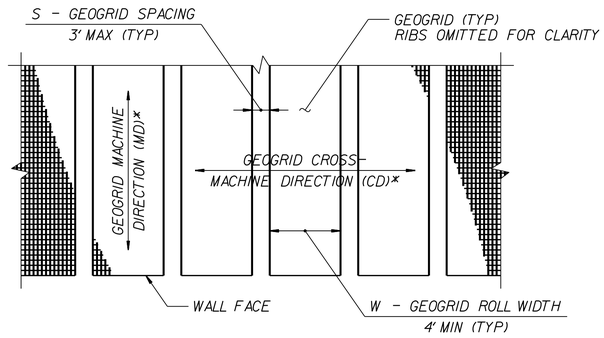
SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



GEOTEXTILE PLACEMENT

(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)

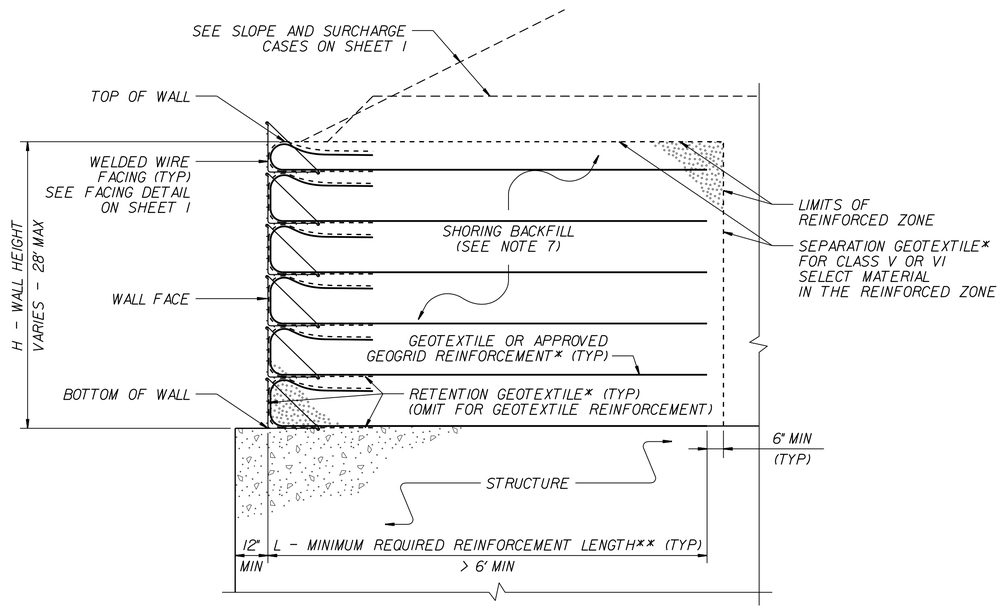


GEOGRID PLACEMENT

(80% COVERAGE MIN FOR GEOGRID REINFORCEMENT – $\frac{W}{W+S}$ x 100 $\geq$ 80%, SEE NOTE 11)

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

*SEE GEOSYNTHETIC PLACEMENT DETAILS.
**SEE REINFORCEMENT TABLES ON SHEET 3.

NOTES:

1. AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY WALLS AS NOTED IN THE PLANS.
2. FOR STANDARD TEMPORARY WALLS, SEE STANDARD SHORING PROVISION.
3. STANDARD TEMPORARY WALLS ARE BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
   UNIT WEIGHT, γ = 120 PCF
   FRICTION ANGLE, ϕ = 30 DEGREES
   COHESION, c = 0 PSF
4. DO NOT USE STANDARD TEMPORARY WALLS IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
5. DO NOT USE STANDARD TEMPORARY WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW TEMPORARY WALLS.
6. USE GROUNDWATER ELEVATION NOTED IN THE PLANS. IF NO GROUNDWATER ELEVATION IS SHOWN IN THE PLANS, ASSUME GROUNDWATER DEPTH IS LESS THAN 7' BELOW BOTTOM OF REINFORCED ZONE. DO NOT USE STANDARD TEMPORARY WALLS IF GROUNDWATER OR FLOOD ELEVATION IS ABOVE BOTTOM OF REINFORCED ZONE.
7. DO NOT USE A-2-4 SOIL FOR STANDARD TEMPORARY WALLS AROUND CULVERTS OR IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS FOR SLOPE CASES. DO NOT USE CLASS VI SELECT MATERIAL IN THE REINFORCED ZONE OF STANDARD TEMPORARY WALLS WITH GEOTEXTILE REINFORCEMENT.
8. WALL EMBEDMENT IS NOT REQUIRED FOR STANDARD TEMPORARY WALLS ON STRUCTURES OR ROCK AS DETERMINED BY THE ENGINEER.
9. DO NOT USE MORE THAN 4 DIFFERENT REINFORCEMENT STRENGTHS FOR EACH STANDARD TEMPORARY WALL.
10. GEOGRIDS FOR GEOGRID REINFORCEMENT ARE APPROVED FOR SHORT TERM DESIGN STRENGTHS (3-YEAR DESIGN LIFE) IN THE MD AND CD BASED ON MATERIAL TYPE. THE LIST OF APPROVED GEOGRIDS WITH DESIGN STRENGTHS IS AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Products.aspx
    DEFINE MATERIAL TYPE FROM THE WEBSITE ABOVE FOR SHORING BACKFILL AS FOLLOWS:

MATERIAL TYPE	SHORING BACKFILL
BORROW	A-2-4 SOIL
FINE AGGREGATE	CLASS II, TYPE I OR CLASS III SELECT MATERIAL
COARSE AGGREGATE	CLASS V OR VI SELECT MATERIAL

11. FOR GEOGRID REINFORCEMENT WITH LESS THAN 100% COVERAGE, STAGGER REINFORCEMENT SO GEOGRIDS ARE CENTERED OVER GAPS IN THE REINFORCEMENT LAYER BELOW.
12. AT THE CONTRACTOR'S OPTION, REINFORCEMENT MAY BE INSTALLED WITH THE MD PARALLEL TO THE WALL FACE IF BOTH OF THE FOLLOWING CONDITIONS OCCUR:
    - W (REINFORCEMENT ROLL WIDTH) $\geq$ (MINIMUM REQUIRED REINFORCEMENT LENGTH) + 4.5' AND
    - REINFORCEMENT STRENGTH IN CD $\geq$ MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD.
13. SUBMIT A "STANDARD TEMPORARY WALL SELECTION FORM" AT LEAST 7 DAYS BEFORE STARTING TEMPORARY WALL CONSTRUCTION. STANDARD SHORING SELECTION FORMS ARE AVAILABLE FROM: connect.ncdot.gov/resources/Geological/Pages/Geotech_Forms_Details.aspx
14. DO NOT PLACE SHORING BACKFILL OR REINFORCEMENT UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.
15. FOR STANDARD TEMPORARY WALLS WITH PILE FOUNDATIONS IN THE REINFORCED ZONE, DRIVE PILES THROUGH REINFORCEMENT AFTER CONSTRUCTING TEMPORARY WALLS.
16. DO NOT SPLICE OR OVERLAP REINFORCEMENT SO SEAMS ARE PARALLEL TO THE WALL FACE.
17. CONTACT THE ENGINEER WHEN EXISTING OR FUTURE OBSTRUCTIONS SUCH AS FOUNDATIONS, PAVEMENTS, PIPES, INLETS OR UTILITIES WILL INTERFERE WITH REINFORCEMENT.
18. FOR STANDARD TEMPORARY WALLS WITH INTERIOR ANGLES LESS THAN 90 DEGREES, WRAP GEOSYNTHETICS AT ACUTE CORNERS AS DIRECTED BY THE ENGINEER.
19. FOR STANDARD TEMPORARY WALLS WITH TOP OF WALL WITHIN 5' OF FINISHED GRADE, REMOVE TOP FACING AND INCORPORATE TOP REINFORCEMENT LAYER INTO FILL WHEN PLACING FILL IN FRONT OF WALL.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD TEMPORARY WALL SHEET 2 OF 3

DATE: 10-19-21

PROJECT REFERENCE NO.	SHEET NO.
R-2511	2G-5

GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 8/31/2021
F760CAEB96FC4D3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SLOPE OR SURCHARGE CASE	GROUNDWATER DEPTH BELOW BOTTOM OF REINFORCED ZONE (SEE NOTE 6 ON SHEET 2) (FT)	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)	H - WALL HEIGHT (FT)																								
			< 4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
SLOPE CASE	> 0	CLASS II,TYPE I, CLASS III,CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	8	9	11	12	13	13	14	15	16	17	18	19	20	21	22	23	24	24	25	26	27	27
SURCHARGE CASE	> 0 TO 7 FOR H < 20' > 0 TO 10 FOR H ≥ 20'	ALL SHORING BACKFILL TYPES	6	7	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	17	17	18	19	19	20	21	22
	> 7 FOR H < 20' > 10 FOR H ≥ 20'	A-2-4 SOIL	6	6	7	8	8	9	9	10	11	11	12	12	13	14	14	15	16	16	17	18	18	19	20	20	21
		CLASS II,TYPE I OR CLASS III SELECT MATERIAL	6	6	7	7	8	8	9	10	10	11	11	12	12	13	14	15	15	16	16	17	17	18	18	19	20
		CLASS V OR CLASS VI SELECT MATERIAL	6	6	7	7	7	8	8	9	9	10	10	11	12	13	13	14	14	15	15	16	17	17	18	19	19

L – MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)

(FOR ALL REINFORCEMENT TYPES)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	2400
2	2400	2400	2400	2400	2400
3	2400	2400	2400	2400	2400
4	2400	2400	2500	2400	2400
5	2500	2400	3000	2400	2400
6	3000	2400	3500	2800	2400
7	3500	2700	4000	3200	2600
8	4000	3100	4500	3600	2900
9	4500	3500	5000	4000	3200
10	5000	3900	5500	4400	3500
11	5500	4300	6000	4800	3800
12	6000	4700	6500	5200	4100
13	6500	5100	7000	5600	4400
14	7000	5400	7500	6000	4700
15	7500	5800	8000	6400	5000
16	8000	6200	8500	6800	5300
17	8500	6600	9000	7200	5600
18	9000	7000	9500	7600	5900
19	9500	7400	10000	8000	6200
20	10000	7800	10500	8400	6500

GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)

REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V OR CLASS VI SELECT MATERIAL
1	240	200	340	290	240
2	380	310	520	430	350
3	530	420	700	570	460
4	690	550	870	720	570
5	860	690	1050	860	680
6	1030	830	1220	1000	790
7	1200	970	1400	1150	900
8	1370	1110	1580	1290	1010
9	1550	1240	1750	1430	1120
10	1720	1380	1930	1580	1230
11	1890	1520	2100	1720	1340
12	2060	1660	2280	1860	1450
13	2240	1800	2450	2010	1560
14	2410	1940	2630	2150	1670
15	2580	2080	2800	2290	1780
16	2750	2220	2980	2440	1890
17	2930	2360	3160	2580	2000
18	3100	2500	3330	2720	2110
19	3270	2640	3510	2860	2220
20	3440	2780	3690	3000	2330

GEOGRID REINFORCEMENT
SHORT–TERM DESIGN STRENGTH (LB/FT)
(SEE NOTE 10 ON SHEET 2.)

WALL HEIGHT (H) + WALL EMBEDMENT (FT)	NUMBER OF REINFORCEMENT LAYERS*
2.5 - 4	3
4 - 5.5	4
5.5 - 7	5
7 - 8.5	6
8.5 - 10	7
10 - 11.5	8
11.5 - 13	9
13 - 14.5	10
14.5 - 16	11
16 - 17.5	12
17.5 - 19	13
19 - 20.5	14
20.5 - 22	15
22 - 23.5	16
23.5 - 25	17
25 - 26.5	18
26.5 - 28	19
28 - 29.5	20

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)
*SEE PARTIAL ELEVATION ON SHEET 1
FOR REINFORCEMENT LAYER NUMBERING.

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

DATE: 11-19-13

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2511	3B-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK
IN CUBIC YARDS

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 1							
-L- LT	8+00.00	38+00.00	3,475		15,288	13,638	1,825
-L- RT	8+00.00	38+00.00	433		15,720	15,287	
-L-	8+00.00	38+00.00		2,083			2,083
-Y1-	10+50.00	12+50.00	12		20	8	
SUBTOTAL			**3,920**	**2,083**	**31,027**	**28,932**	**3,908**
SUMMARY 2							
-L- LT	38+00.00	68+00.00			43,024	43,024	
-L- RT	38+00.00	68+00.00			40,344	40,344	
-L-	38+00.00	68+00.00		230			230
-Y2-	15+50.00	17+50.00	1		1,114	1,113	
SUBTOTAL			**1**	**230**	**84,482**	**84,481**	**230**
SUMMARY 3							
-L- LT	68+00.00	98+00.00			34,419	34,419	
-L- RT	68+00.00	98+00.00			24,548	24,548	
-L-	68+00.00	98+00.00		1,674			1,674
SUBTOTAL				**1,674**	**58,967**	**58,967**	**1,674**
SUMMARY 4							
-L- LT	98+00.00	128+00.00			34,720	34,720	
-L- RT	98+00.00	128+00.00			36,439	36,439	
-L-	98+00.00	128+00.00		2,408			2,408
SUBTOTAL				**2,408**	**71,159**	**71,159**	**2,408**
SUMMARY 5							
-L- LT	128+00.00	156+21.18	18		35,606	35,588	
-L- RT	128+00.00	156+28.87	13		29,426	29,413	
-L-	128+00.00	156+28.87		1,943			1,943
-Y3-	11+00.00	12+50.00	124		260	256	120
SUBTOTAL			**155**	**1,943**	**65,291**	**65,256**	**2,063**
SUMMARY 6							
-L- LT	156+80.76	186+50.00			34,493	34,493	
-L- RT	156+89.29	186+50.00			33,879	33,879	
-L-	156+89.29	186+50.00		1,593			1,593
-Y4-	17+50.00	20+00.00	86		2,929	2,843	
SUBTOTAL			**86**	**1,593**	**71,301**	**71,215**	**1,593**
SUMMARY 7							
-L- LT	186+50.00	216+50.00	600		32,079	31,967	488
-L- RT	186+50.00	216+50.00	8,090		29,160	24,146	3,076
-L-	186+50.00	216+50.00		4,679			4,679
-Y5-	12+50.00	14+50.00	244		664	420	
-Y5-	16+50.00	18+00.00	639		146		493
SUBTOTAL			**9,573**	**4,679**	**62,049**	**56,533**	**8,736**
SUMMARY 8							
-L- LT	216+50.00	246+50.00			39,068	39,068	
-L- RT	216+50.00	246+50.00			41,330	41,330	
-L-	216+50.00	246+50.00		1,266			1,266
SUBTOTAL				**1,266**	**80,397**	**80,398**	**1,266**

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 9							
-L- LT	246+50.00	276+50.00	2		42,106	42,104	
-L- RT	246+50.00	276+50.00			49,626	49,626	
-L-	246+50.00	276+50.00		137			137
SUBTOTAL			**2**	**137**	**91,732**	**91,730**	**137**
SUMMARY 10							
-L- LT	276+50.00	306+50.00	1,720		34,828	33,108	
-L- RT	276+50.00	306+50.00			38,396	38,396	
-L-	276+50.00	306+50.00		3,064			3,064
SUBTOTAL			**1,720**	**3,064**	**73,224**	**71,504**	**3,064**
SUMMARY 11							
-L- LT	306+50.00	336+50.00	10		22,381	22,371	
-L- RT	306+50.00	336+50.00	1,218		36,123	35,704	799
-L- RT	332+75.00	335+25.00					
-L-	306+50.00	336+50.00		312			312
SUBTOTAL			**1,228**	**312**	**58,504**	**58,075**	**1,111**
SUMMARY 12							
-L- LT	336+50.00	366+50.00			50,878	50,878	
-L- RT	336+50.00	366+50.00			39,779	39,779	
-L-	336+50.00	366+50.00		5,659			5,659
SUBTOTAL				**5,659**	**90,657**	**90,657**	**5,659**
SUMMARY 13							
-L- LT	366+50.00	396+50.00	1,431		52,901	51,470	
-L- RT	366+50.00	396+50.00	932		46,831	45,899	
-L-	366+50.01	396+50.01		2,672			2,672
-Y6-	18+00.00	20+00.00	75		451	376	
-Y6-	22+00.00	23+50.00	2		148	146	
SUBTOTAL			**2,440**	**2,672**	**100,331**	**97,891**	**2,672**
SUMMARY 14							
-L- LT	396+50.00	426+50.00			33,388	33,388	
-L- RT	396+50.00	426+50.00			27,511	27,511	
-L-	396+50.00	426+50.00		537			537
SUBTOTAL				**537**	**60,899**	**60,899**	**537**
SUMMARY 15							
-L- LT	426+50.00	456+50.00	249		38,188	37,939	
-L- RT	426+50.00	456+50.00			39,922	39,922	
SUBTOTAL			**249**		**78,109**	**77,860**	
SUMMARY 16							
-L- LT	456+50.00	486+50.00	65		43,744	43,679	
-L- RT	456+50.00	486+50.00	1,206		36,784	35,578	
SUBTOTAL			**1,271**		**80,527**	**79,256**	
SUMMARY 17							
-L- LT	486+50.00	516+50.00	2,413		37,626	35,213	
-L- RT	486+50.00	516+50.00	1,823		36,136	35,213	900
-L-	486+50.00	516+50.00		1,542			1,542
-Y7-	18+00.00	20+50.00	578		2,482	1,904	
-Y8-	11+00.00	14+00.00	8		1,431	1,423	
SUBTOTAL			**4,822**	**1,542**	**77,675**	**73,753**	**2,442**

CHAIN	BEGINNING STATION	ENDING STATION	UNCL. EXCA. C.Y.	UNDERCUT C.Y.	EMBANK. +% C.Y.	BORROW C.Y.	WASTE C.Y.
SUMMARY 18							
-L- LT	516+50.00	546+50.00			27,104	27,104	
-L- RT	516+60.00	546+50.00	2		38,646	38,644	
-L-	516+60.00	546+50.00		527			527
-Y9-	11+00.00	12+50.00	103		334	231	
-Y10-	12+00.00	14+50.00	175		514	339	
SUBTOTAL			**280**	**527**	**66,598**	**66,318**	**527**
SUMMARY 19							
-L- LT	546+50.00	568+50.00	586		8,256	7,670	
-L- RT	546+50.00	568+50.00	10,749		11,408	659	
-Y11-	11+00.00	12+50.00	2		563	561	
SUBTOTAL			**11,337**		**20,227**	**8,890**	
SUMMARY 20							
-TEMP1-	10+00.00	20+91.99	633		553		81
-TEMP1- REMOVAL	10+00.00	20+91.99	425				425
-TEMP2-	10+00.00	18+24.83	76		2,789	2,713	
-TEMP3-	10+00.00	25+78.32	96		8,587	8,491	
-TEMP3- REMOVAL	10+00.00	25+78.32	6,605				6,605
-TEMP4-	10+00.00	17+14.15	35		1,791	1,756	
-TEMP4- REMOVAL	10+00.00	17+14.15	1,378				1,378
-TEMP5-	10+00.00	21+65.65	191		6,491	6,300	
-TEMP6-	10+00.00	18+12.64	128		3,887	3,759	
-TEMP7-	10+00.00	19+57.57	132		4,534	4,402	
-TEMP8-	10+00.00	16+65.48	458		2,330	1,872	
-TEMP9-	10+00.00	19+29.69	198		1,336	1,138	
-TEMP10-	10+00.00	32+88.87	502		8,250	7,748	
-TEMP12-	10+00.00	20+88.42	195		2,716	2,521	
-TEMP14-	10+00.00	21+64.07	158		3,869	3,711	
-TEMP14- REMOVAL	10+00.00	21+64.07	2,976				2,976
-TEMP15-	10+00.00	19+44.81	1,144		2,669	1,525	
-TEMP16-	10+00.00	19+55.12			9,347	9,347	
-TEMP16- REMOVAL	10+00.00	19+55.12	7,190				7,190
-TEMP17-	10+00.00	21+47.93			12,792	12,792	
-TEMP17- REMOVAL	10+00.00	21+47.93	9,840				9,840
-TEMP18-	10+00.00	21+42.11	418		7,092	6,674	
-TEMP19-	10+00.00	21+92.64	181		7,536	7,355	
-TEMP20-	10+00.00	17+52.65	270		39		231
-TEMP20- REMOVAL	10+00.00	17+52.65	30				30
SUBTOTAL			**33,259**		**86,606**	**82,103**	**28,756**
SHEET TOTALS			**70,343**	**30,326**	**1,409,762**	**1,375,876**	**66,783**
MATERIAL FOR SHOULDER CONSTRUCTION					**135,517**	**135,517**	
GRADE POINT UNDERCUT CONTINGENCY				**1,000**	**1,300**	**1,300**	**1,000**
CONTINGENCY UNDERCUT FOR SUBGRADE STABILITY				**3,000**			**3,000**
ADDITIONAL UNDERCUT CONTINGENCY				**2,000**			**2,000**
EARTH WASTE IN LIEU OF BORROW						**-29,249**	**-29,249**
PROJECT TOTAL			**70,343**	**36,326**	**1,546,579**	**1,483,444**	**43,534**
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT						**74,172**	
WASTE FROM REMOVAL OF TEMP. DETOURS 16,17 & 20							**17,060**
GRAND TOTAL			**70,343**			**1,557,617**	**60,594**
SAY			**70,350**			**1,557,620**	**60,600**

DRAINAGE DITCH EXCAVATION = 143,430 CY (7,088 CY UNSUITABLE

SHALLOW UNDERCUT = 1,500 CY

***UNCLASSIFIED EXCAVATION - ACCEPTABLE, BUT NOT TO BE USED IN TOP 3' OF EMBANKMENT OR BACKFILL (15,400 CY) SEE LOCATIONS BELOW**

-L- 9+25 - 11+25 (1392.2 CY)	**-L- 244+75 - 246+75 (205.4 CY)**	**-L- 417+75 - 419+25 (22.0 CY)**
-L- 42+75 - 45+25 (516.2 CY)	**-L- 251+25 - 252+75 (305.9 CY)**	**-L- 461+75 - 463+90 (399.3 CY)**
-L- 75+25 - 76+25 (2169.0 CY)	**-L- 257+25 - 259+75 (439.7 CY)**	**-L- 463+90 - 465+25 (212.7 CY)**
-L- 82+75 - 84+75 (333.7 CY)	**-L- 262+75 - 267+25 (864.8 CY)**	**-L- 488+75 - 491+25 (390.3 CY)**
-L- 91+25 - 94+75 (876.5 CY)	**-L- 270+75 - 272+75 (281.7 CY)**	**-L- 518+75 - 521+25 (1771.7 CY)**
-L- 158+40 - 159+75 (113.4 CY)	**-L- 276+75 - 278+75 (108.4 CY)**	**-Y6- 17+70 - 19+90 (127.8 CY)**
-L- 162+75 - 165+25 (600.0 CY)	**-L- 286+75 - 289+75 (1365.9 CY)**	**-Y6- 21+70 - 23+95 (102.8 CY)**
-L- 232+75 - 236+75 (763.7 CY)	**-L- 307+25 - 313+25 (1170.2 CY)**	
-L- 239+25 - 241+25 (321.1 CY)	**-L- 375+25 - 377+25 (538.6 CY)**	

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

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions