

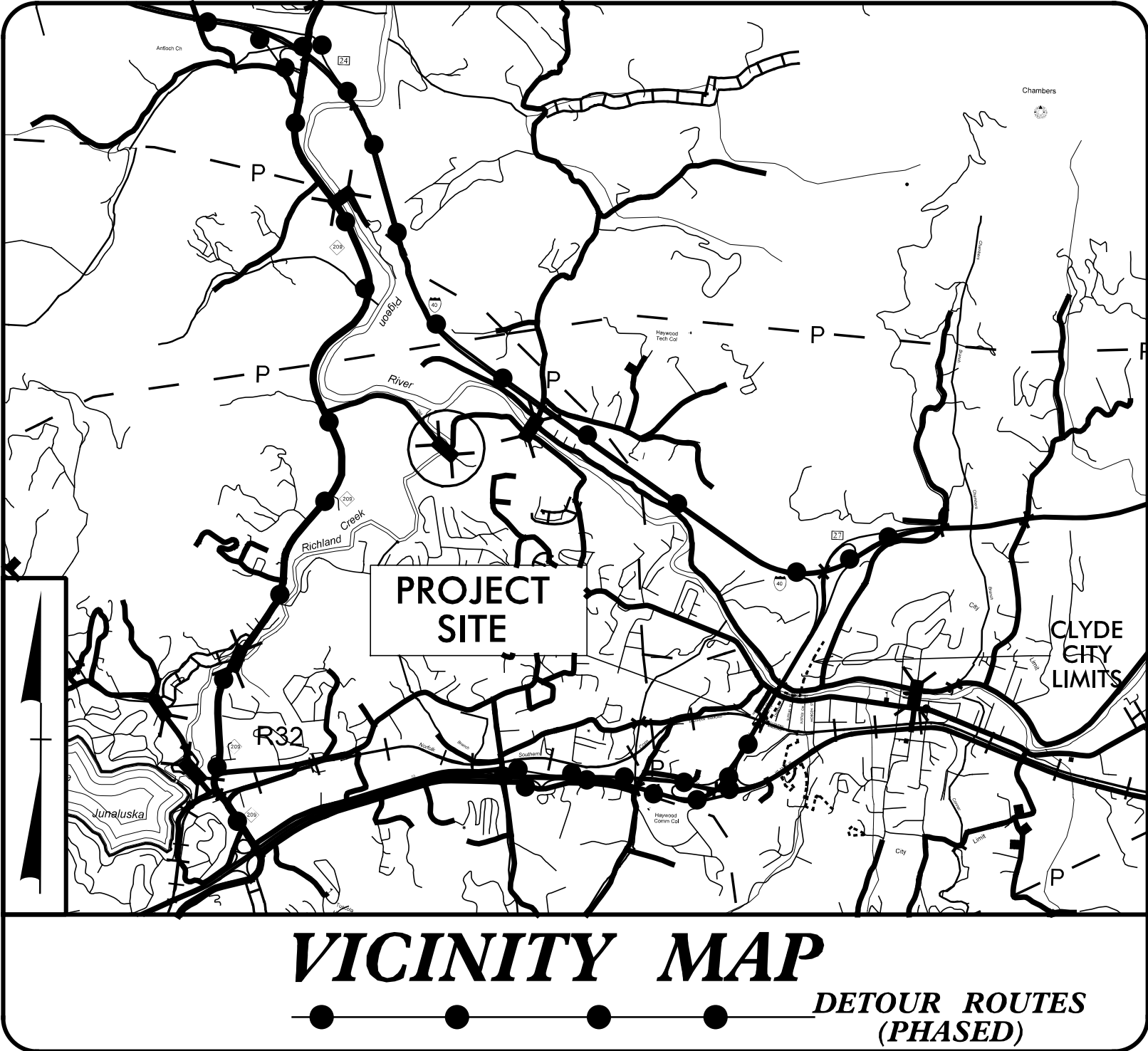
\$\$\$DATE\$\$\$

TIP PROJECT: B-5982

CONTRACT: C204925

6/12/2024
B5982_rdy_+sh.dgn
mmussey

See Sheet 1-A For Index of Sheets, List of Standards and General Drawings
See Sheet 1-B For Conventional Symbols



VICINITY MAP

NOT TO SCALE

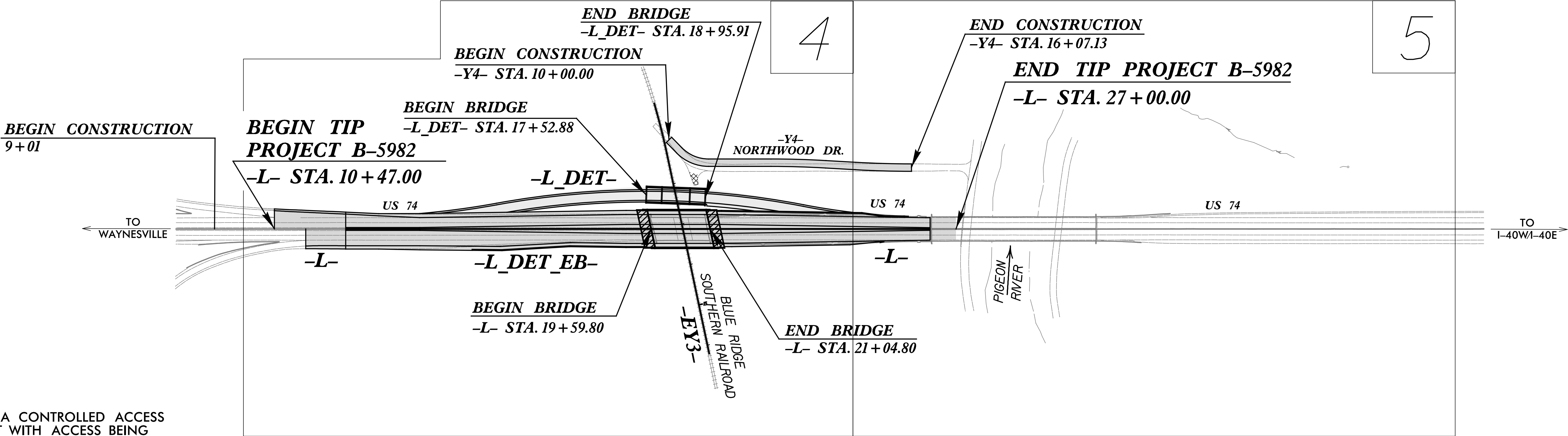
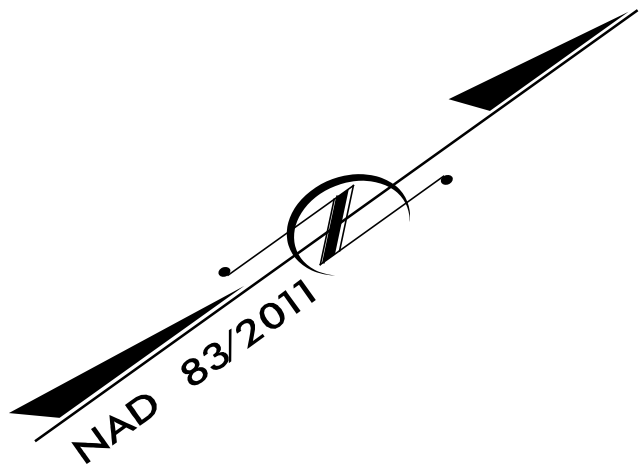
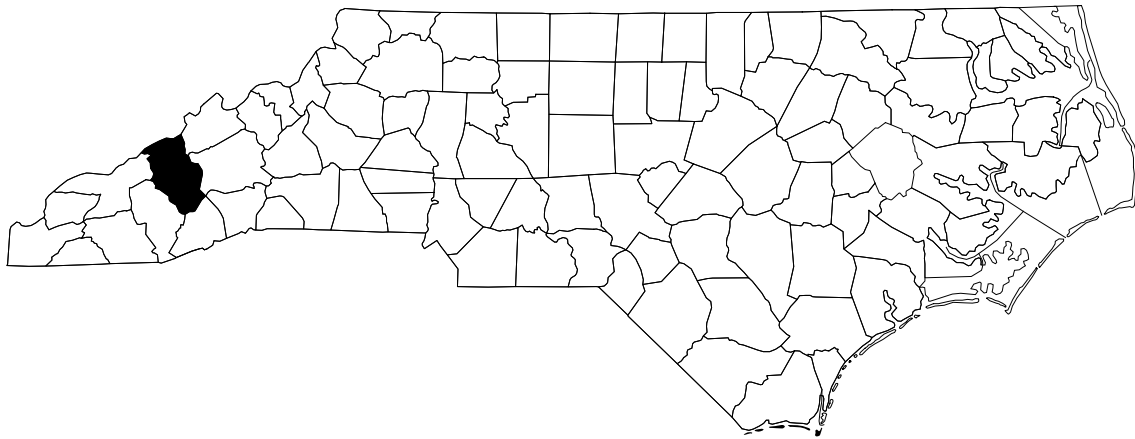
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

HAYWOOD COUNTY

LOCATION: BRIDGE 430095 ON US 74 OVER
BLUE RIDGE SOUTHERN RAILROAD

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

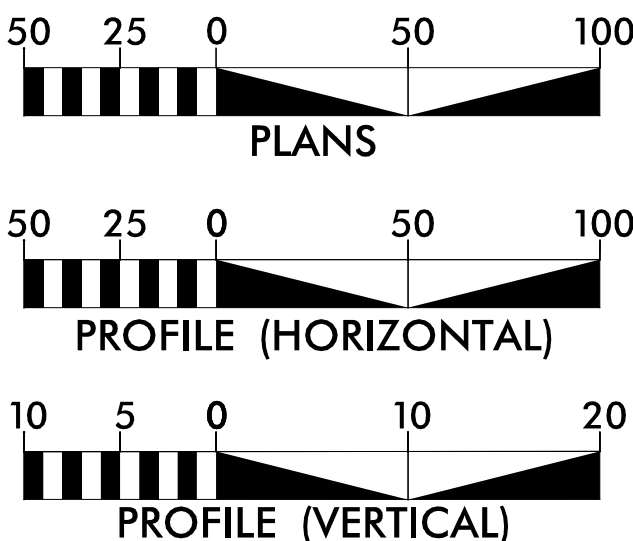
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5982	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
47814.1.1		PE	
47814.2.1		RW, UTIL	
47814.3.1		CONST.	



THIS IS A CONTROLLED ACCESS
PROJECT WITH ACCESS BEING
LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2024 = 35,000
ADT 2042 = 44,000
K = 8 %
D = 55 %
T = 9 % *
V = 65 MPH
* TTST = 5% DUAL 4%
FUNC CLASS =
FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5982 = 0.286 MI.
LENGTH OF STRUCTURE TIP PROJECT B-5982 = 0.027 MI.
TOTAL LENGTH OF TIP PROJECT B-5982 = 0.313 MI.

Prepared for the North Carolina Department of Transportation
In the Office of:

vhb
940 Main Campus Drive, Suite 500
Raleigh, NC 27605
N.C. License No. C-25705

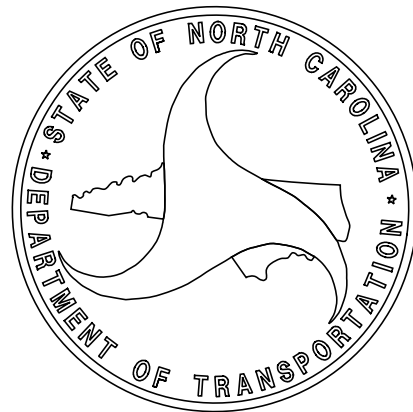
2024 STANDARD SPECIFICATIONS	RIGHT OF WAY DATE: APRIL 28, 2023	MARK A. COLGAN, PE PROJECT ENGINEER
	LETTING DATE: AUGUST 20, 2024	KYLE F. SMIACH, PE PROJECT DESIGN ENGINEER
NCDOT CONTACT	DAVID S. STUTTS, PE PROJECT ENGINEER-ROADWAY DESIGN	

HYDRAULICS ENGINEER

DocuSigned by:
Eric Bump
SEAL 052478
ENGINEER
P.E.

DocuSigned by:
Tim Gons
SEAL 037874
ENGINEER
P.E.

ROADWAY DESIGN ENGINEER



INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1A	INDEX OF SHEETS, GENERAL NOTES, AND STANDARD DRAWINGS
1B	CONVENTIONAL SYMBOLS
2A-1 THRU 2A-2	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2B-1	DETAIL OF STAGE CONSTRUCTION
2B-2 THRU 2B-3	DETOUR DETAILS
2B-4	DETAIL OF MILLING AND WEDGING FOR EAST BOUND DETOUR
2G-1 THRU 2G-3	GEOTECHNICAL DETAIL OF STANDARD TEMPORARY WALL
3B-1	SUMMARY OF EARTHWORK, PAVEMENT REMOVAL AND SHOULDER BERM GUTTER
3B-2	GUARDRAIL SUMMARIES
3D-1	DRAINAGE SUMMARY
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 5	PLAN SHEETS
6 THRU 10	PROFILE SHEETS
TMP-1 THRU TMP-13	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-3	PAVEMENT MARKING PLANS
EC-1 THRU EC-9	EROSION CONTROL PLANS
RF-1	REFORESTATION
SGN-1 THRU SGN-5	SIGNING PLANS
ITS-1 THRU ITS-6	ITS PLANS
UO-1 THRU UO-3	UTILITY BY OTHERS PLANS
X-1A THRU X-1C	CROSS-SECTION INDEX AND SUMMARY SHEETS
X-1 THRU X-64	CROSS-SECTIONS
S-1 THRU S-51	STRUCTURE PLANS

GENERAL NOTES

GENERAL NOTES:	2024 SPECIFICATIONS EFFECTIVE: 01-16-2024 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. 225.04 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.
SHOULDER CONSTRUCTION:	ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO. 560.02
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.
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: Haywood County EMC ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS
RIGHT OF WAY MARKERS:	ALL RIGHT OF WAY MARKERS ON THIS PROJECT SHALL BE PLACED BY OTHERS.

STANDARD DRAWINGS

2024 ROADWAY ENGLISH STANDARD DRAWINGS	EFF. 01-16-2024 REV.
The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2024 are applicable to this project and by reference hereby are considered a part of these plans:	
STD.NO. 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	TITLE
DIVISION 3 - PIPE CULVERTS 300.01 Method of Pipe Installation	
DIVISION 4 - MAJOR STRUCTURES 423.01 Bridge Approach Fills - Type 1 Approach Fill for Bridge Abutment	
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS 560.02 Method of Shoulder Construction - High Side of Superelevated Curve - Method II	
DIVISION 6 - ASPHALT BASES AND PAVEMENTS 654.01 Pavement Repairs 665.01 Asphalt Shoulders - Milled Rumble Strips 665.02 Limits for Asphalt Shoulder Milled Rumble Strips	
DIVISION 8 - INCIDENTALS 815.02 Subsurface Drain 840.00 Concrete Base Pad for Drainage Structures 840.17 Concrete Grated Drop Inlet Type A - 12" thru 72" Pipe 840.18 Concrete Grated Drop Inlet Type B - 12" thru 72" Pipe 840.24 Frames and Narrow Slot Sag Grates 840.25 Anchorage for Frames 840.26 Brick Grated Drop Inlet Type A - 12" thru 72" Pipe 840.27 Brick Grated Drop Inlet Type B - 12" thru 72" Pipe 840.29 Frames and Narrow Slot Flat Grates 840.31 Concrete Junction Box - 12" thru 66" Pipe 840.32 Brick Junction Box - 12" thru 66" Pipe 840.36 Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates 840.37 Steel Grade and Frame 840.45 Precast Drainage Structure 840.46 Traffic Bearing Precast Drainage Structure 840.66 Drainage Structure Steps 840.72 Pipe Collar 846.01 Concrete curb, Gutter and Curb and Gutter 854.02 Double Faced Concrete Barrier - Types T,T1 and T2 854.05 Concrete Median Transition Barrier 857.01 Precast Reinforced Concrete Barrier - Double Faced 862.01 Guardrail Placement 862.02 Guardrail Installation 862.03 Structure Anchor Units 866.02 Woven Wire Fence-with Wood Post 876.01 Rip Rap in Channels and Ditches 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	

PROJECT REFERENCE NO.	SHEET NO.
B-5982	1A
 940 Main Campus Drive, Suite 300 Raleigh, NC 27608 NC License No. C-2702	ROADWAY DESIGN ENGINEER  DocuSigned by  0000785166060465
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

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)*	

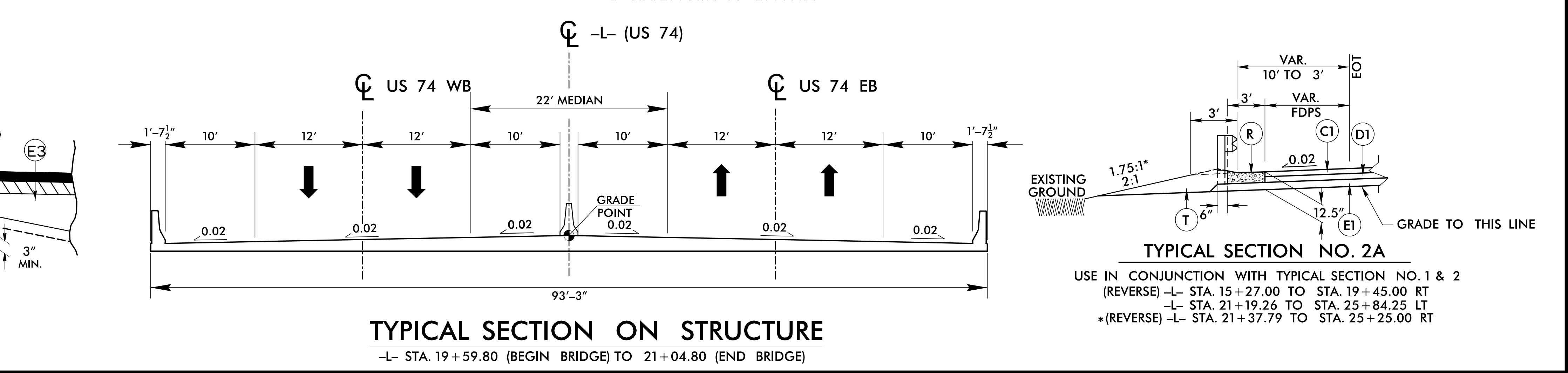
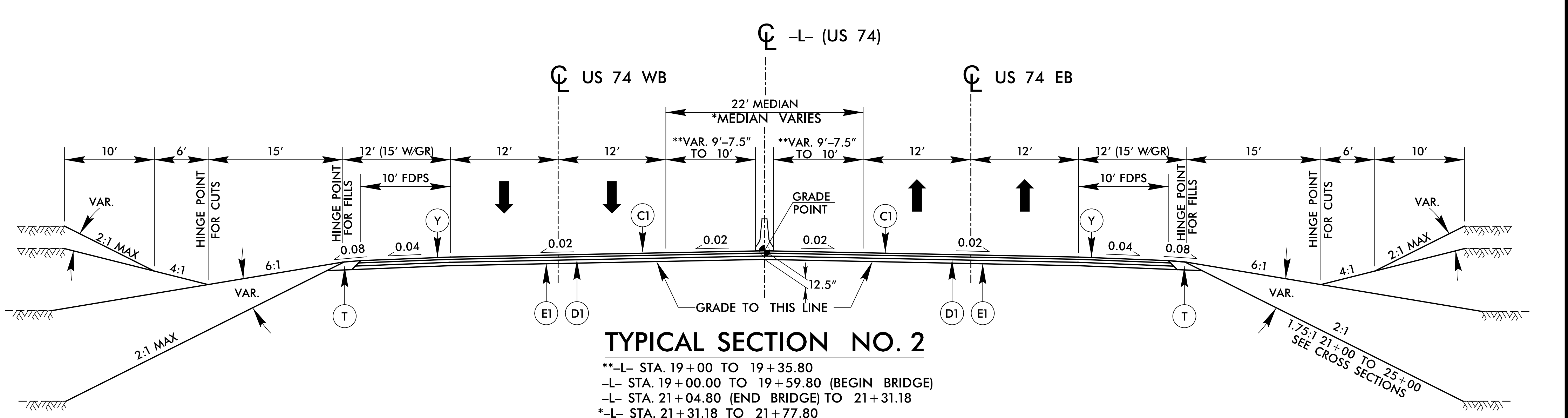
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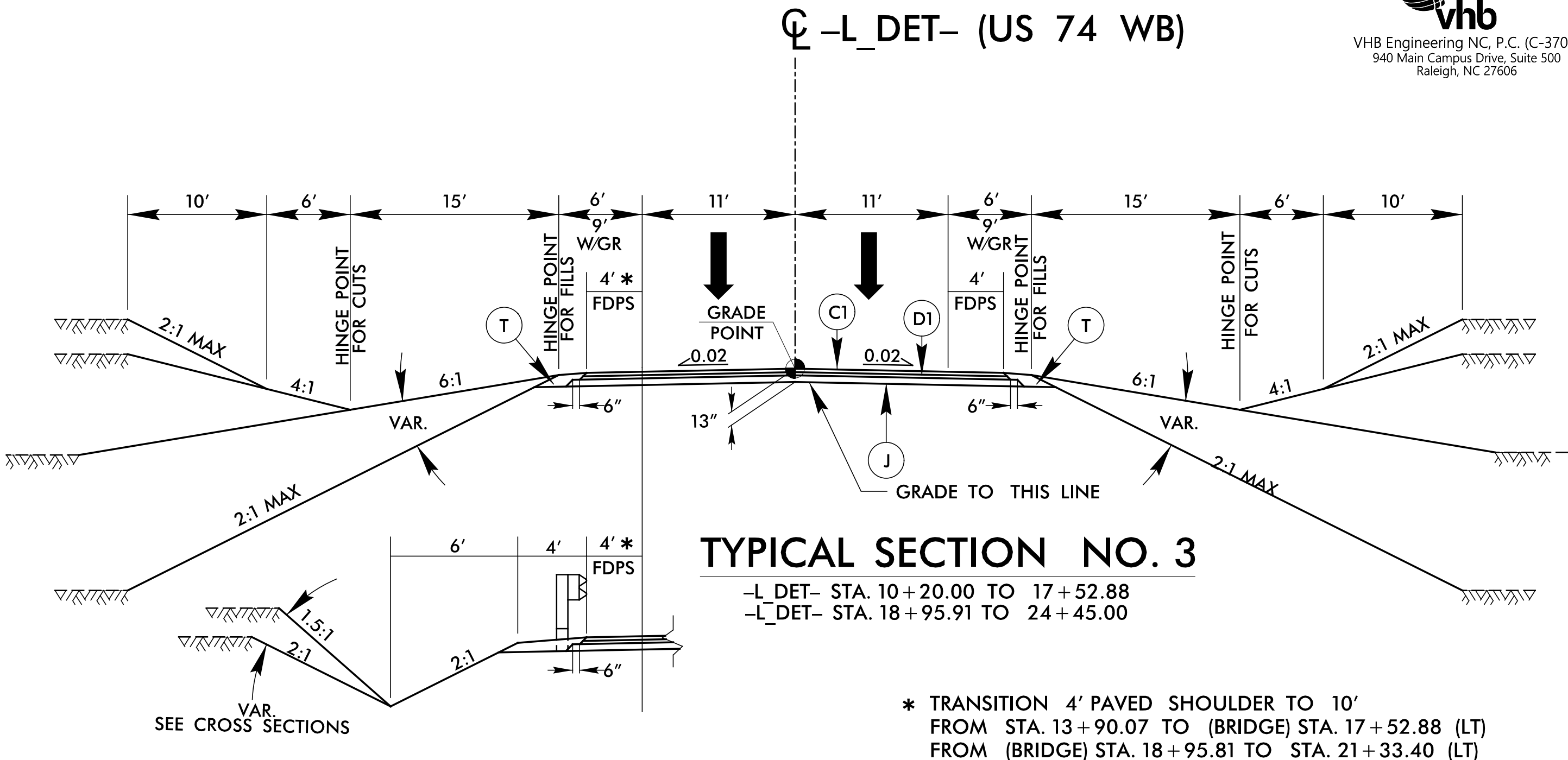
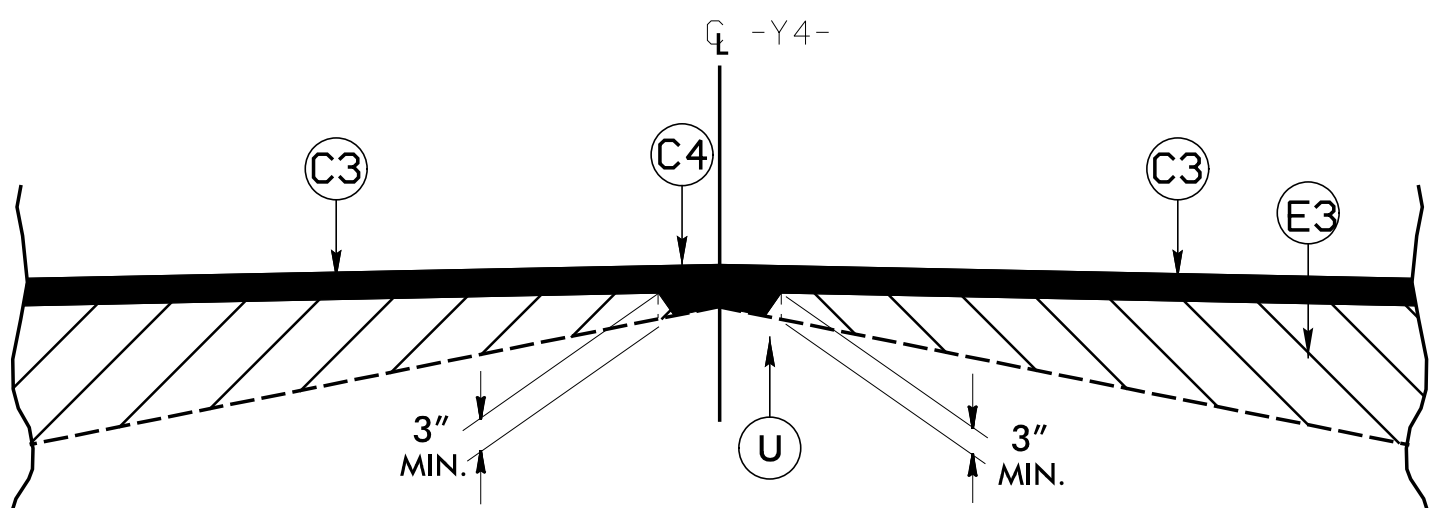
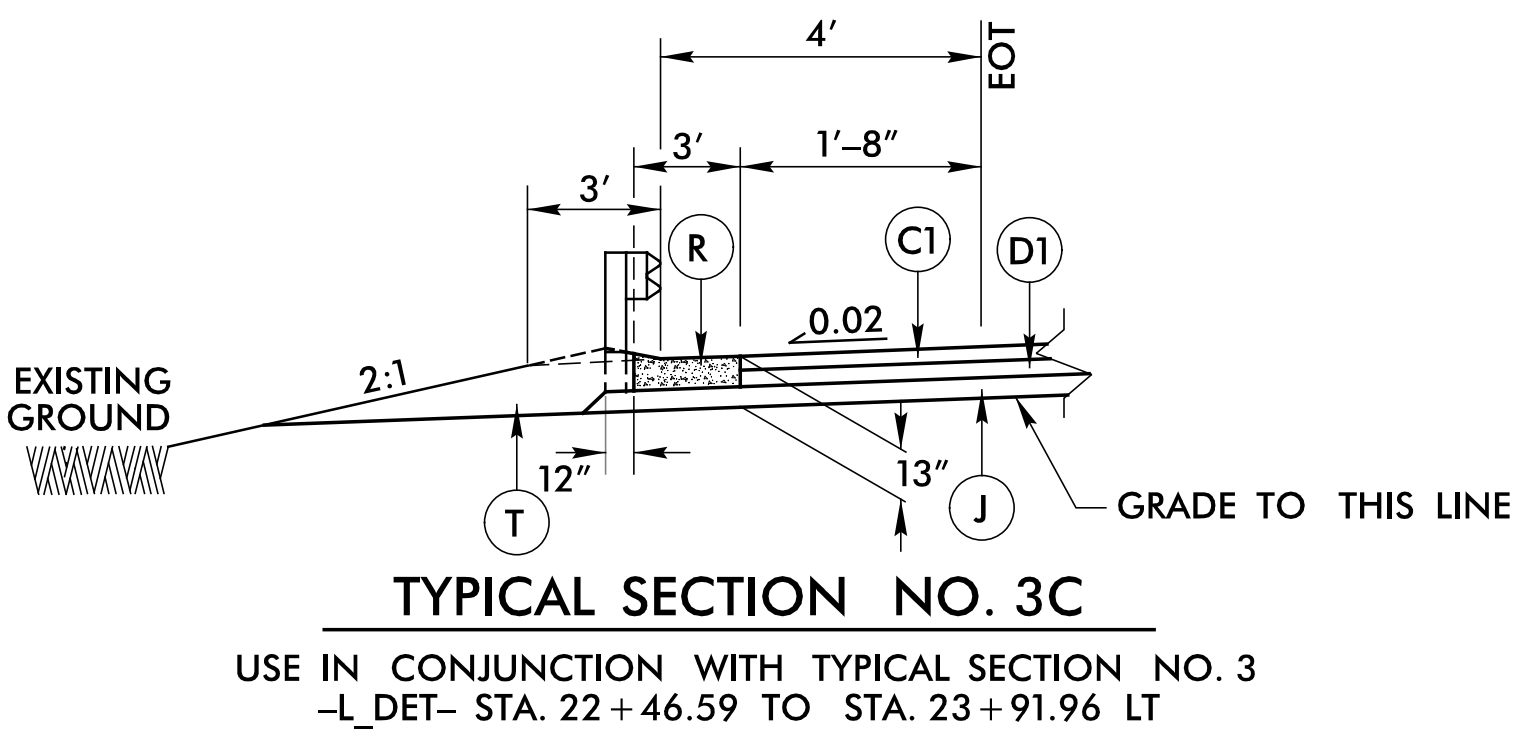
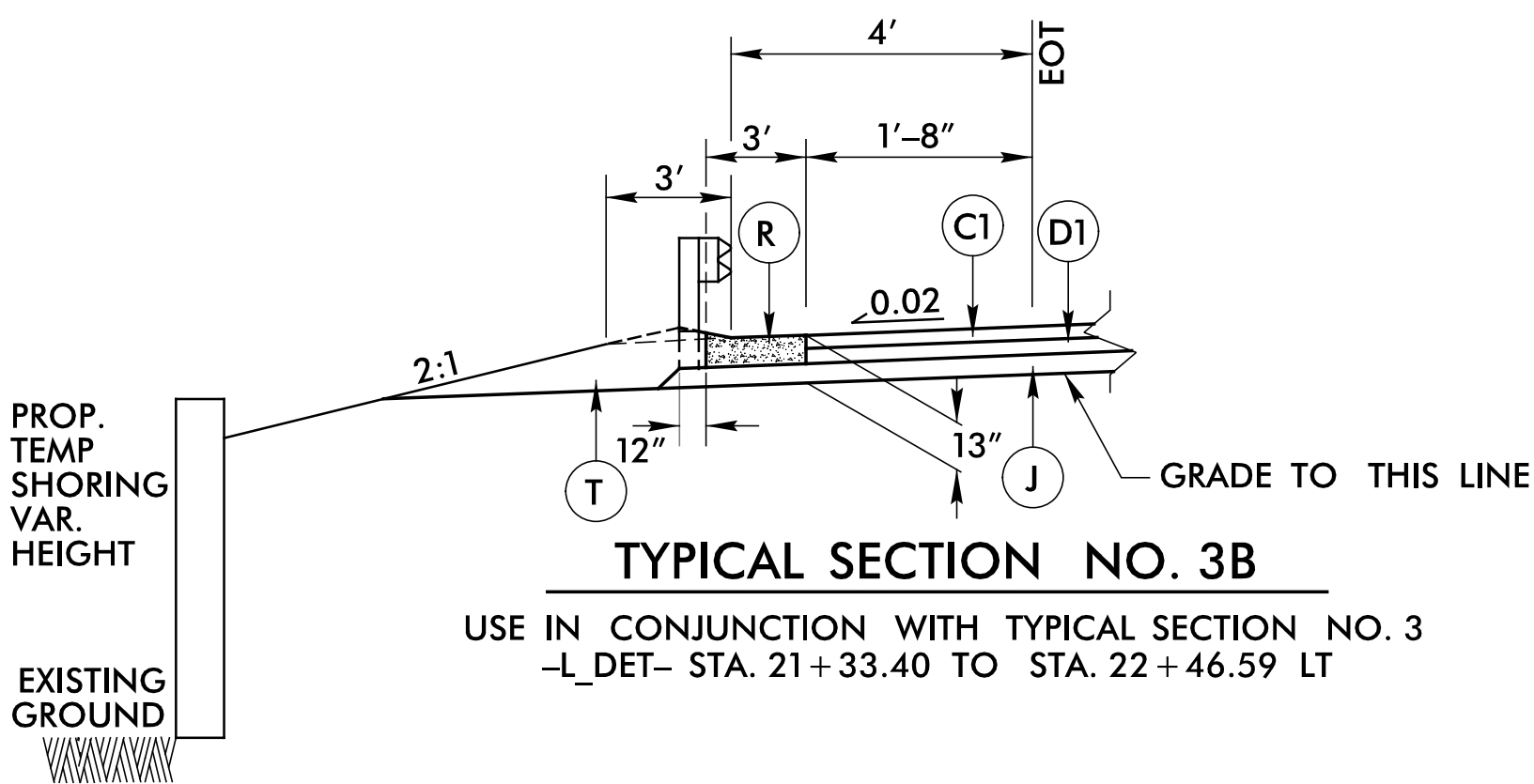
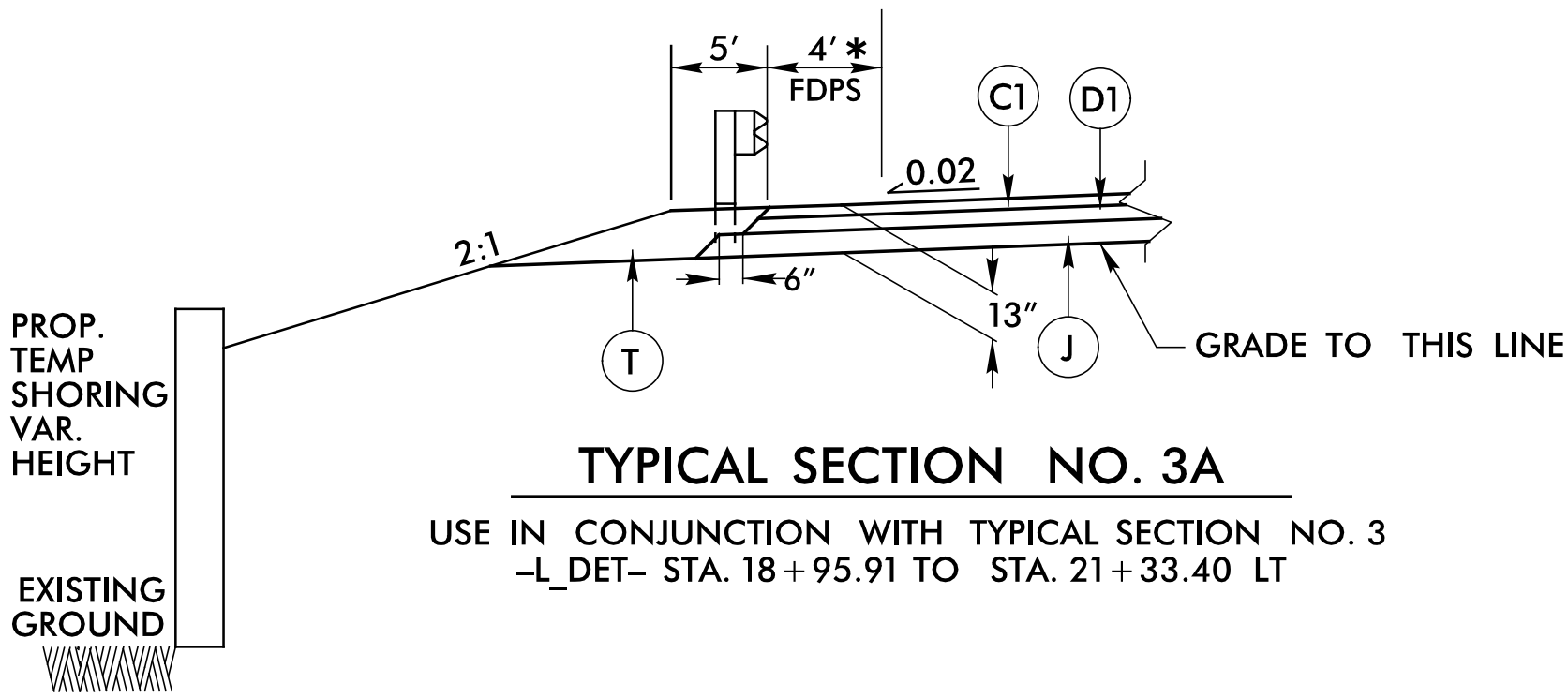
Utility Pole	
Utility Pole with Base	
Utility Located Object	
Utility Traffic Signal Box	
Utility Unknown U/G Line (SUE – LOS B)*	
U/G Tank; Water, Gas, Oil	
Underground Storage Tank, Approx. Loc.	
A/G Tank; Water, Gas, Oil	
Geoenvironmental Boring	
Abandoned According to Utility Records	
End of Information	

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

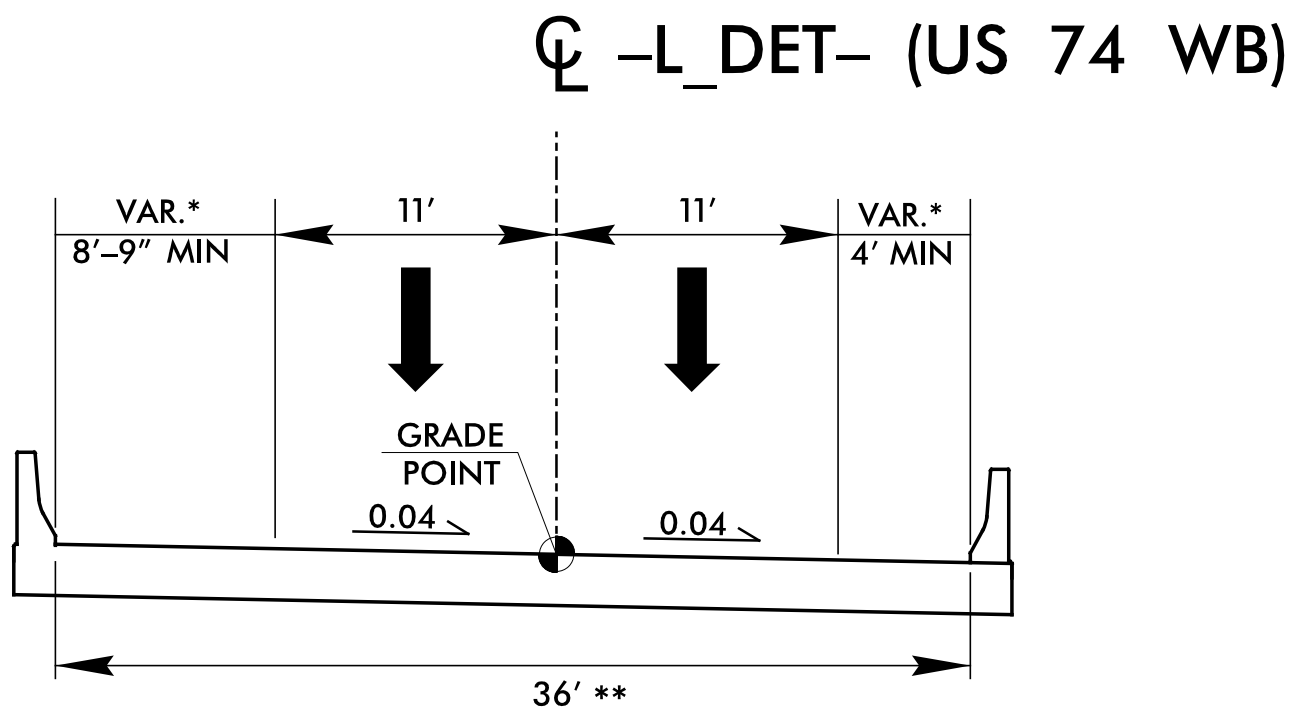
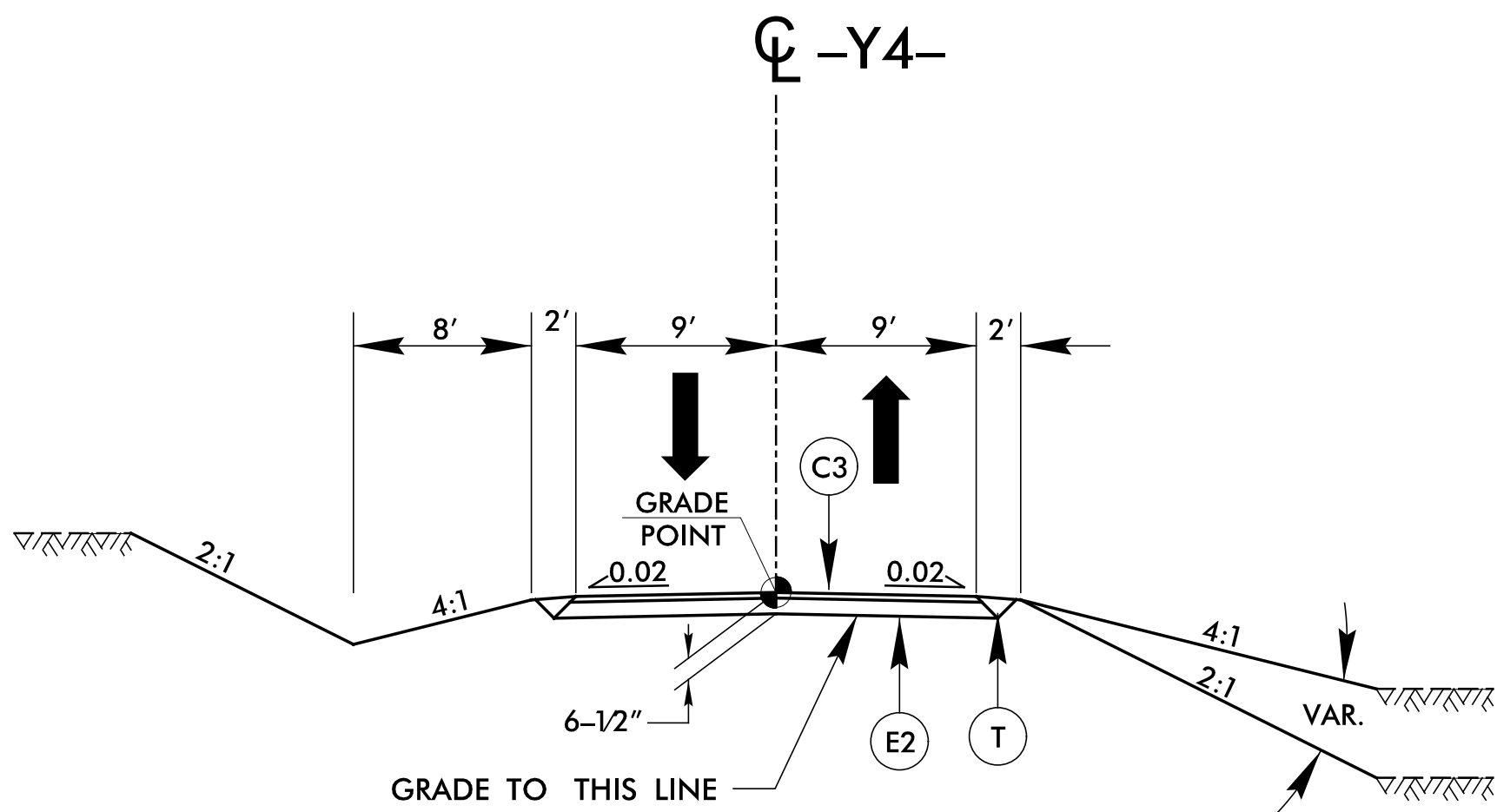
***MILLING LIMITS:**
 -L- STA. = 12+20.00 TO 19+00.00
 -L- STA. = 21+77.80 TO 26+37.14

Detail Showing Method of Wedging





TYPICAL SECTION NO. 3D
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 3
-L_DET- STA. 13+00.00 TO STA. 15+00.00 LT



*NOTE: -L_DET- IS PLACED WITH VARIABLE OFFSET ON THE TEMPORARY STRUCTURE

** THE REQUIRED TEMPORARY STRUCTURE SECTION IS SHOWN ASSUMING A 36' CLEAR WIDTH BETWEEN BARRIERS. THE OVERALL STRUCTURE WIDTH MAY BE WIDER THAN SHOWN IF A TRUSS-TYPE BRIDGE IS USED.

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO.	SHEET NO.
B-5982	2A-2
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
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PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN: NOVEMBER 15, 2023)

C1	3" S9.5C
C2	VAR. DEPTH S9.5C
C3	2-1/2" S9.5B
C4	VAR. DEPTH S9.5B
D1	4" 19.0C,
D2	VAR. DEPTH I19.0C,
E1	5 1/2" B25.0C,
E2	4" B25.0C,
E3	VAR. DEPTH B25.0C,
J	6" ABC. **
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	VAR. DEPTH MILLING ASPHALT PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT
Y	RUMBLE STRIPS

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

** DETOUR ABC COURSE SHALL BE REMOVED
AND DISPOSED OF AT THE LOCAL NCDOT
YARD LOCATED AT 619 PARAGON PARKWAY,
CLYDE, NC 28721

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO.	SHEET NO.
B-5982	2B-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
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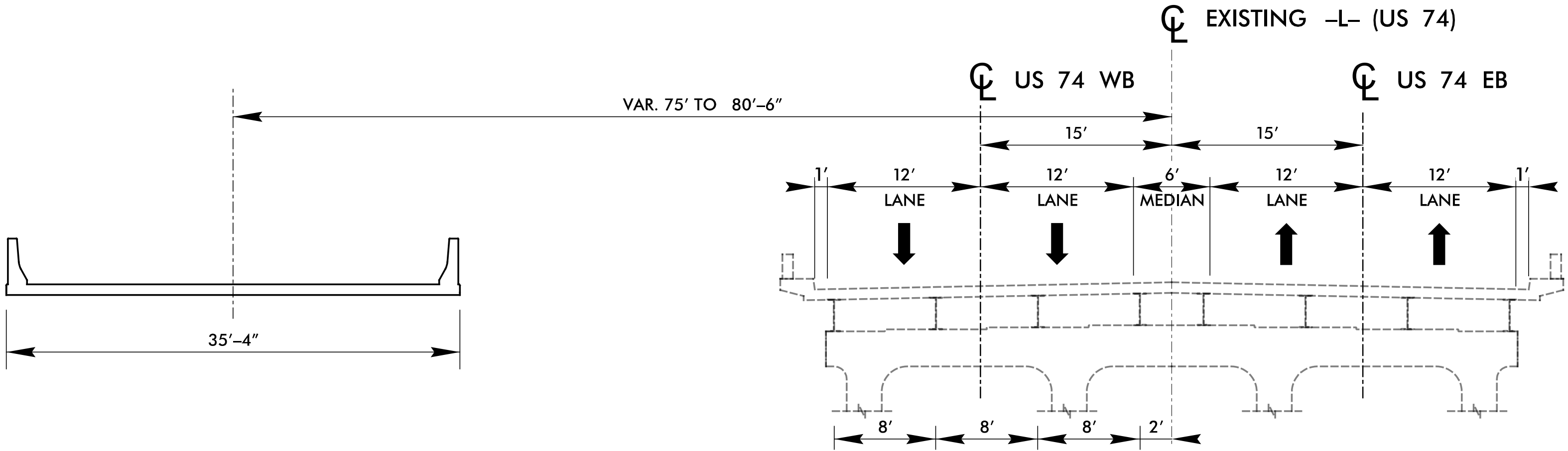
CONSTRUCTION PHASING NARRATIVE:
THE FOLLOWING DESCRIBES THE ANTICIPATED STAGES OF CONSTRUCTION FOR REPLACING THE BRIDGE ON US 74 OVER BLUERIDGE SOUTHERN RAILROAD. PRIOR TO ANY WORK STARTED AND THROUGHOUT CONSTRUCTION, THE CONTRACTOR WILL BE REQUIRED TO MAINTAIN CLOSE COORDINATION WITH THE RAILROAD AND FOLLOW RAILROAD PROTOCOL FOR CONSTRUCTION WITHIN THE RAILROAD RIGHT-OF-WAY. THE RAILROAD RIGHT-OF-WAY EXTENDS 100-FT ON EITHER SIDE OF THE CENTERLINE OF TRACK.

STAGE 1:
CONSTRUCT THE TEMPORARY DETOUR AND BRIDGE WEST OF THE EXISTING BRIDGE ON US 74, MAINTAINING A MINIMUM OF 10-FT BETWEEN STRUCTURES.

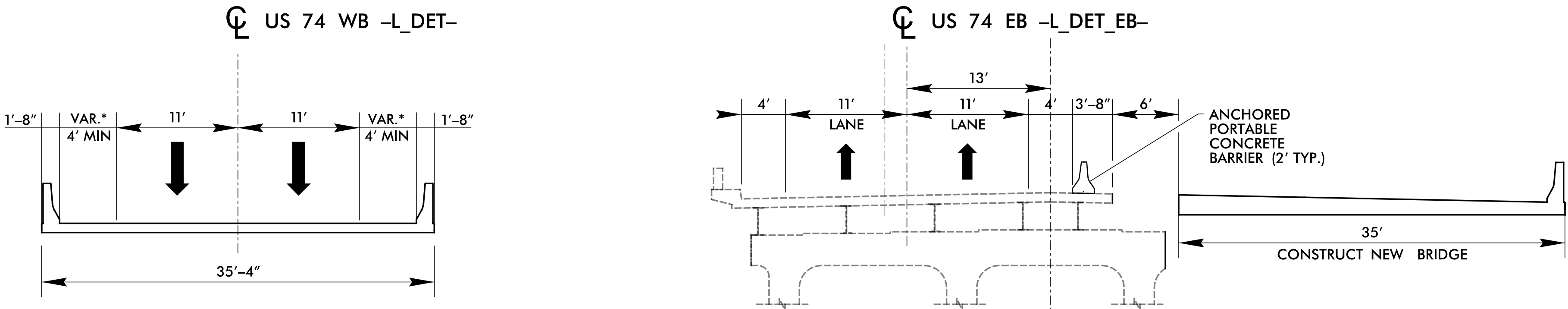
STAGE 2:
INSTALL ANCHORED BARRIER ON THE EXISTING BRIDGE. SHIFT SOUTHBOUND TRAFFIC ONTO THE TEMPORARY STRUCTURE AND NORTHBOUND TRAFFIC ONTO THE EXISTING SOUTHBOUND SIDE OF THE BRIDGE. REMOVE THE NORTHBOUND SIDE OF THE BRIDGE, INCLUDING THE SUPERSTRUCTURE AND THE EASTERN BENT PIER AND APPROXIMATELY 15'-6" OF THE INTERIOR BENT CAPS TO THE NEXT CLOSEST BENT SUPPORT. CONSTRUCT 35'-0" PORTION OF THE PROPOSED BRIDGE IN ITS PLACE, LEAVING 6' BETWEEN THE EXISTING BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE.

STAGE 3:
INSTALL ANCHORED PORTABLE CONCRETE BARRIER ON THE NEW STRUCTURE AND SHIFT NORTHBOUND TRAFFIC ONTO THE NEWLY CONSTRUCTED PORTION OF THE PROPOSED BRIDGE. REMOVE THE REMAINING PORTION OF THE EXISTING BRIDGE IN ITS ENTIRETY, INCLUDING SUPERSTRUCTURE AND SUBSTRUCTURES. CONSTRUCT 58'-3" PORTION OF THE PROPOSED BRIDGE.

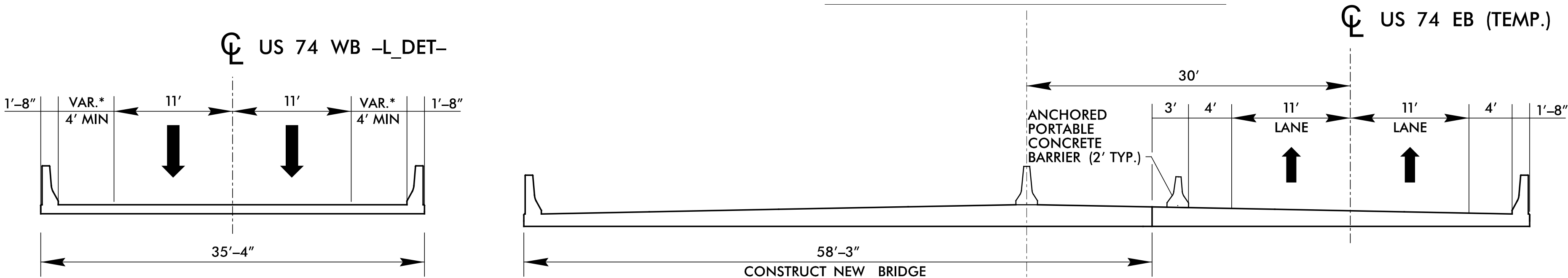
FINAL:
REMOVE THE PORTABLE CONCRETE BARRIER (NEW MEDIAN BARRIER INSTALLED IN STAGE 3) AND SHIFT THE NORTHBOUND TRAFFIC TO THE FINAL ALIGNMENT. SHIFT THE SOUTHBOUND TRAFFIC FROM THE TEMPORARY DETOUR ONTO THE WEST SIDE OF THE PROPOSED BRIDGE. REMOVE THE TEMPORARY DETOUR AND TEMPORARY STRUCTURE.



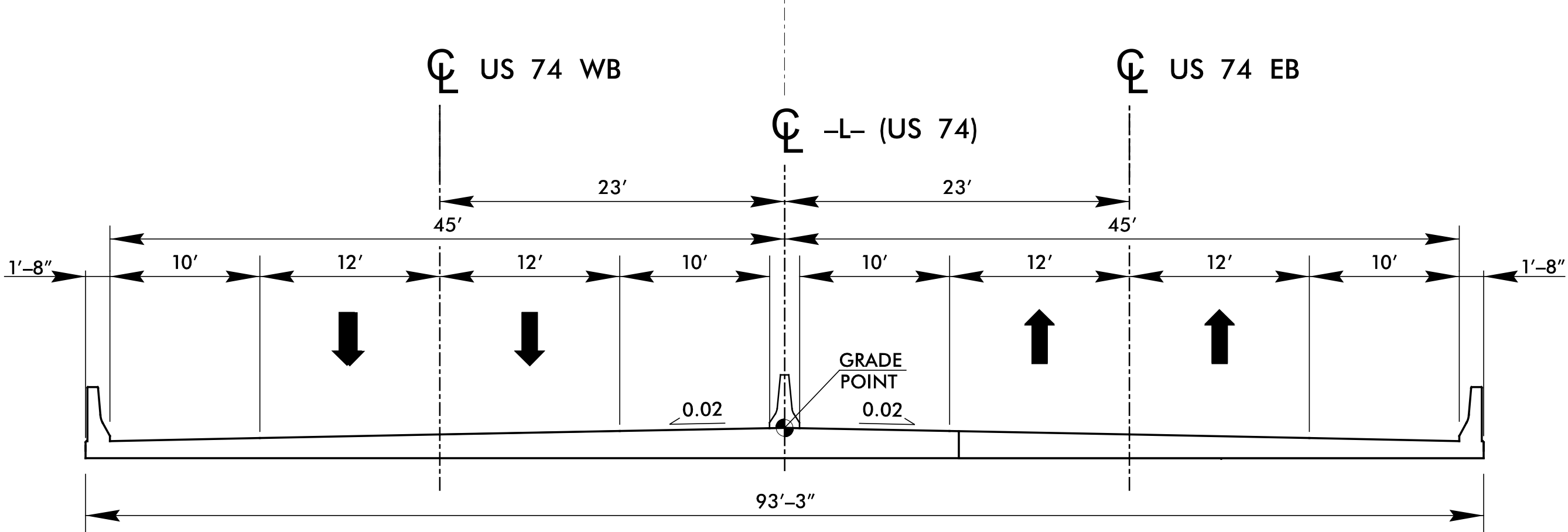
STAGE 1 CONSTRUCTION



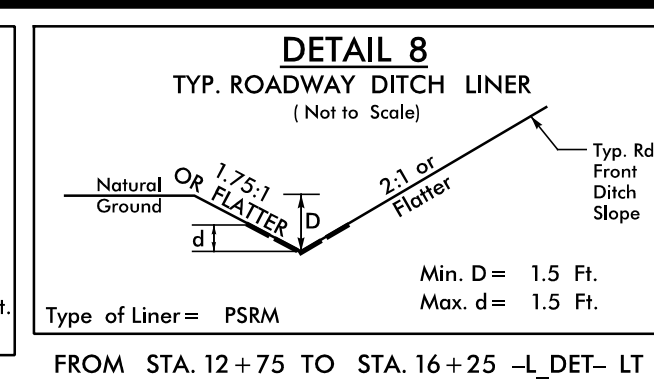
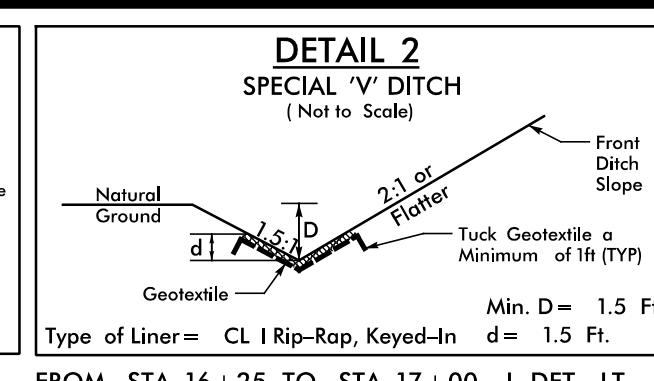
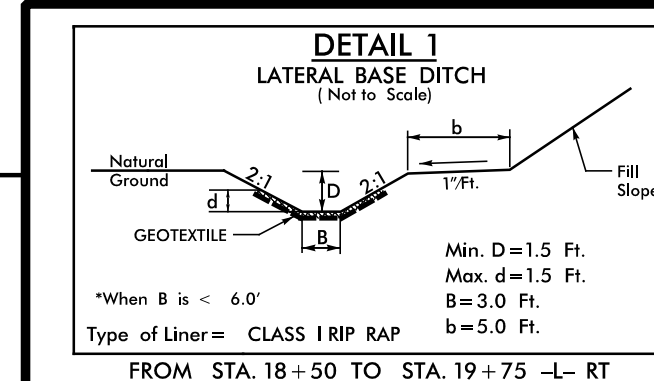
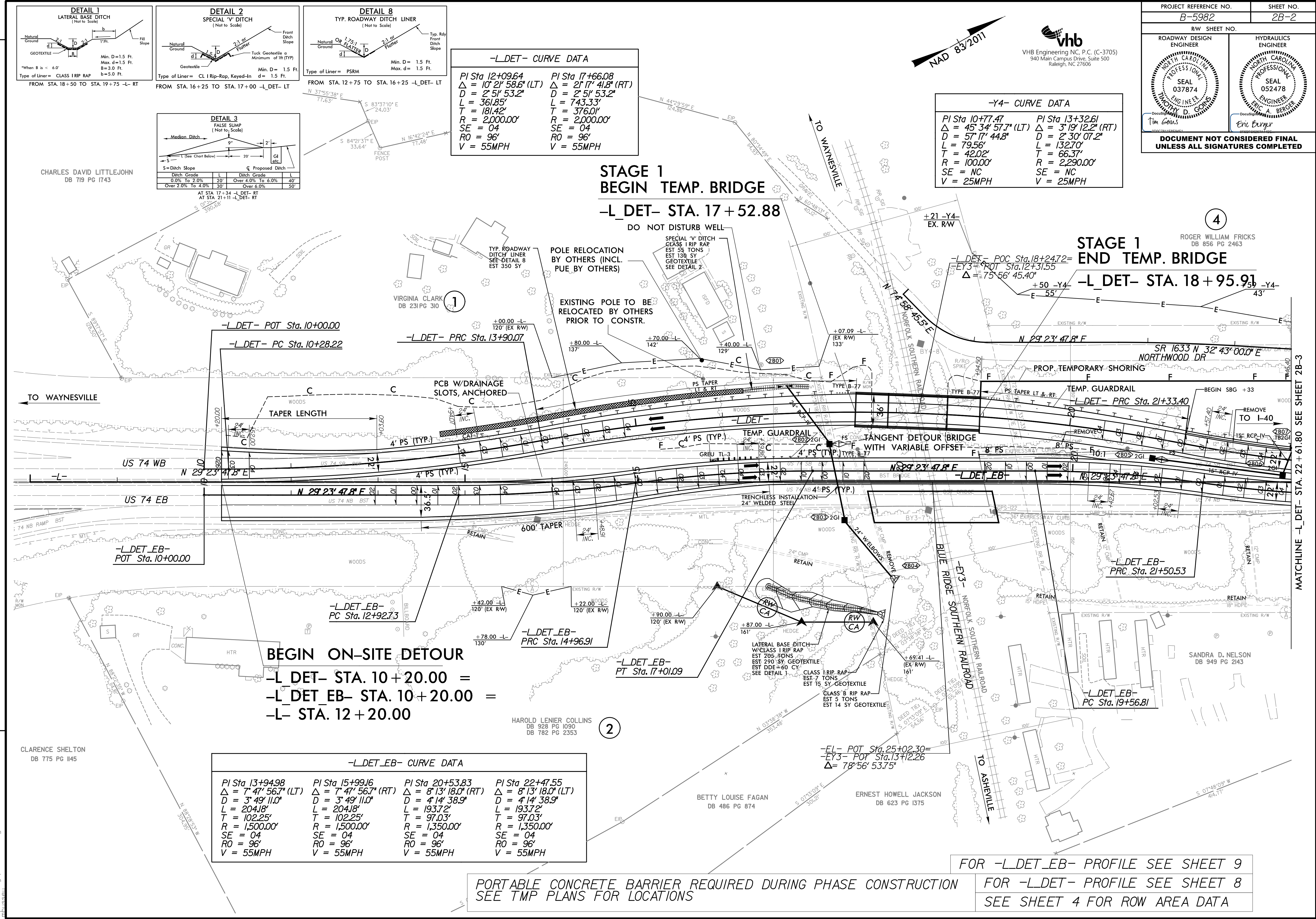
STAGE 2 CONSTRUCTION



STAGE 3 CONSTRUCTION



FINAL BRIDGE SECTION

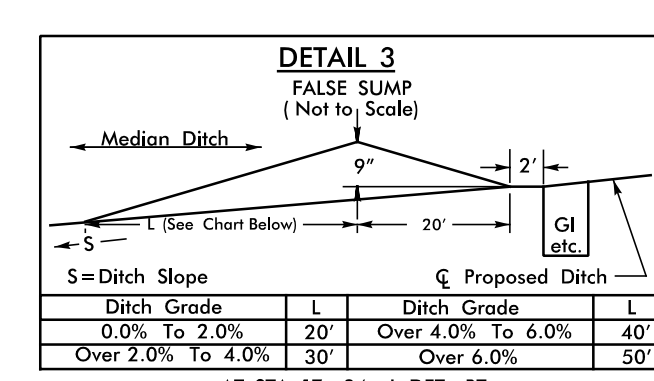


-L_DET- CURVE DATA

PI Sta 12+09.64 Δ = 10° 21' 58.6" (LT) D = 2° 51' 53.2" L = 361.85' T = 181.42' R = 2,000.00' SE = 04 RO = 96' V = 55MPH	PI Sta 17+66.08 Δ = 2° 17' 41.8" (RT) D = 2° 51' 53.2" L = 743.33' T = 376.01' R = 2,000.00' SE = 04 RO = 96' V = 55MPH
--	---

-Y4- CURVE DATA

PI Sta 10+77.47 Δ = 45° 34' 57.7" (LT) D = 57° 17' 44.8" L = 79.56' T = 42.02' R = 100.00' SE = NC V = 25MPH	PI Sta 13+32.61 Δ = 3° 19' 12.2" (RT) D = 2° 30' 07.2" L = 132.70' T = 66.37' R = 2,290.00' SE = NC V = 25MPH
---	--



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'

AT STA. 17+34 -L_DET- RT
AT STA. 21+11 -L_DET- RT

CHARLES DAVID LITTLEJOHN
DB 719 PG 1743

PROJECT REFERENCE NO. **B-5982** SHEET NO. **2B-2**

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

SEAL 037874

SEAL 052478

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

R/W REVISION: 11/09/2023 - TCE LIMITS ON PARCEL 1 (VIRGINIA CLARK) REDUCED TO AVOID WELL DISCOVERED DURING NEGOTIATION.

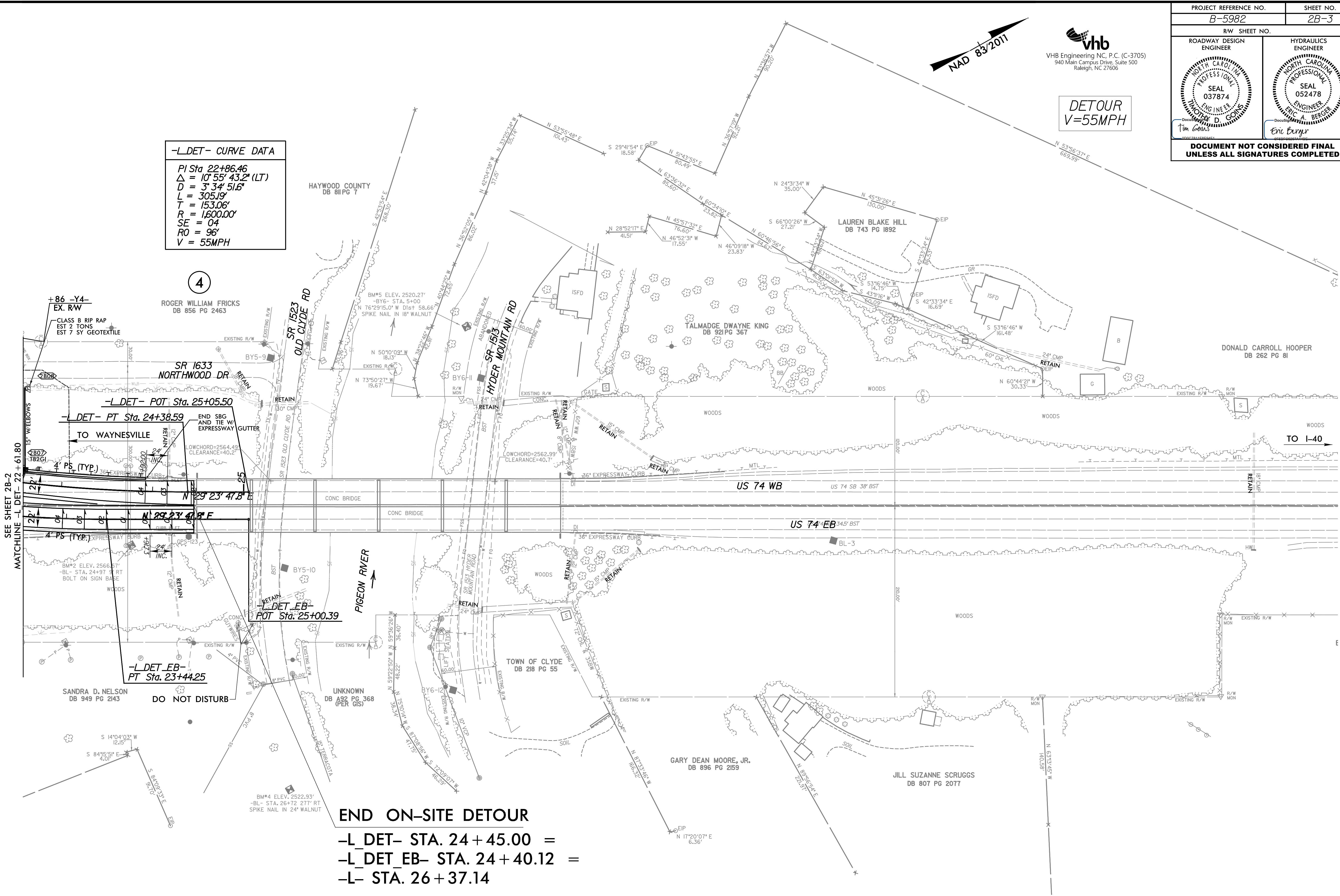
CLARENCE SHELTON
DB 775 PG 1145

-L_DET_EB- CURVE DATA

PI Sta 13+94.98 Δ = 7° 47' 56.7" (LT) D = 3° 49' 11.0" L = 204.18' T = 102.25' R = 1,500.00' SE = 04 RO = 96' V = 55MPH	PI Sta 15+99.16 Δ = 7° 47' 56.7" (RT) D = 3° 49' 11.0" L = 204.18' T = 102.25' R = 1,500.00' SE = 04 RO = 96' V = 55MPH	PI Sta 20+53.83 Δ = 8° 13' 18.0" (RT) D = 4° 14' 38.9" L = 193.72' T = 97.03' R = 1,350.00' SE = 04 RO = 96' V = 55MPH	PI Sta 22+47.55 Δ = 8° 13' 18.0" (LT) D = 4° 14' 38.9" L = 193.72' T = 97.03' R = 1,350.00' SE = 04 RO = 96' V = 55MPH
---	---	--	--

PORTABLE CONCRETE BARRIER REQUIRED DURING PHASE CONSTRUCTION
SEE TMP PLANS FOR LOCATIONS

FOR -L_DET_EB- PROFILE SEE SHEET 9
FOR -L_DET- PROFILE SEE SHEET 8
SEE SHEET 4 FOR ROW AREA DATA



-L_DET- CURVE DATA
PI Sta 22+86.46
$\Delta = 10^{\circ} 55' 43.2''$ (LT)
D = 3' 34' 51.6"
L = 305.19'
T = 153.06'
R = 1,600.00'
SE = 04
RO = 96'
V = 55MPH

PROJECT REFERENCE NO.	SHEET NO.
B-5982	2B-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

END ON-SITE DETOUR

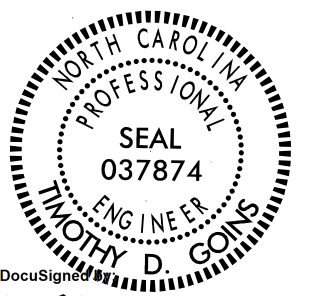
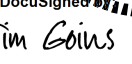
- L_DET- STA. 24 + 45.00 =
- L_DET_EB- STA. 24 + 40.12 =
- L- STA. 26 + 37.14

PORTABLE CONCRETE BARRIER REQUIRED DURING PHASE CONSTRUCTION
SEE TMP PLANS FOR LOCATIONS

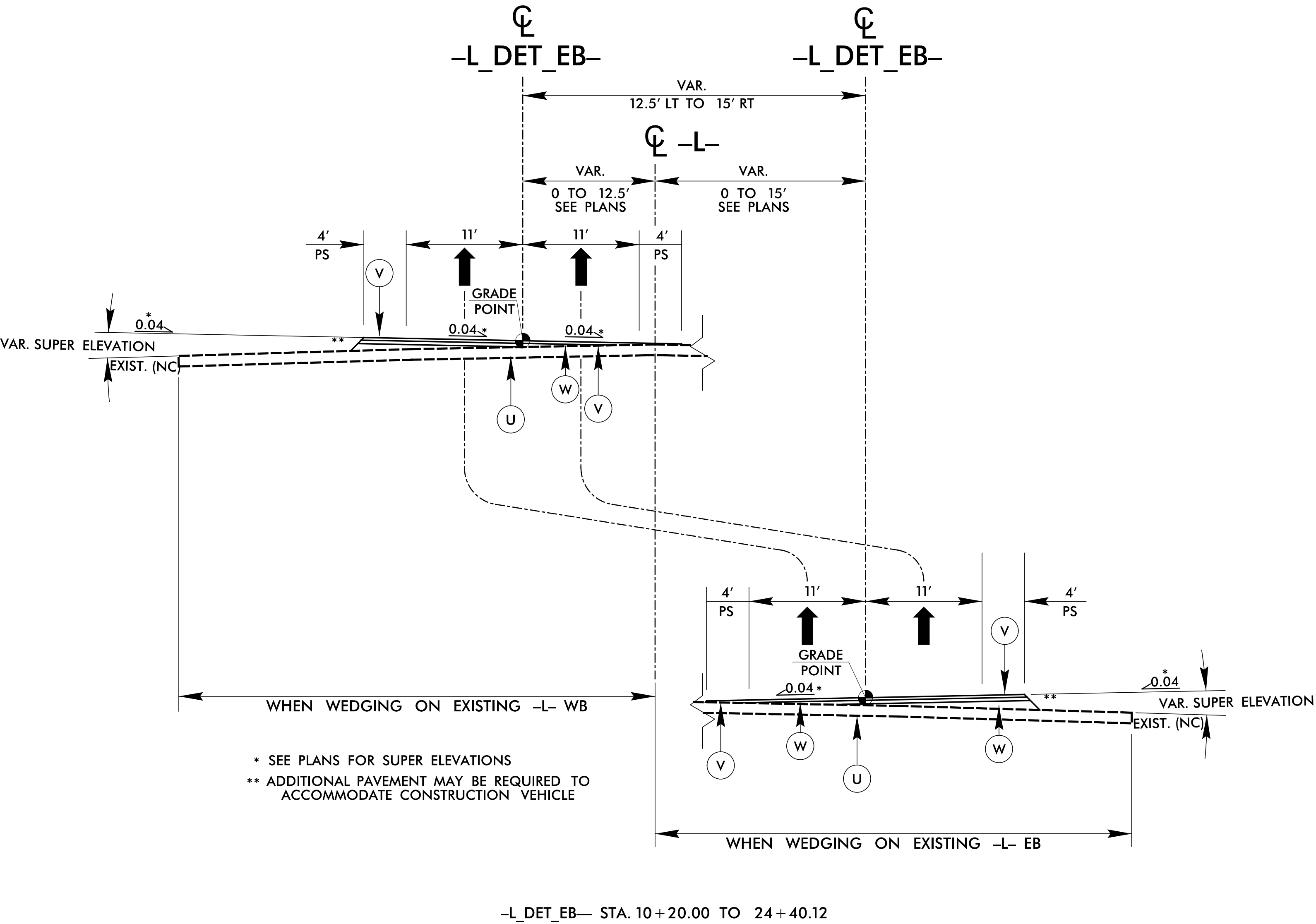
FOR -L_DET- PROFILE SEE SHEET 8
SEE SHEET 4 FOR ROW AREA DATA

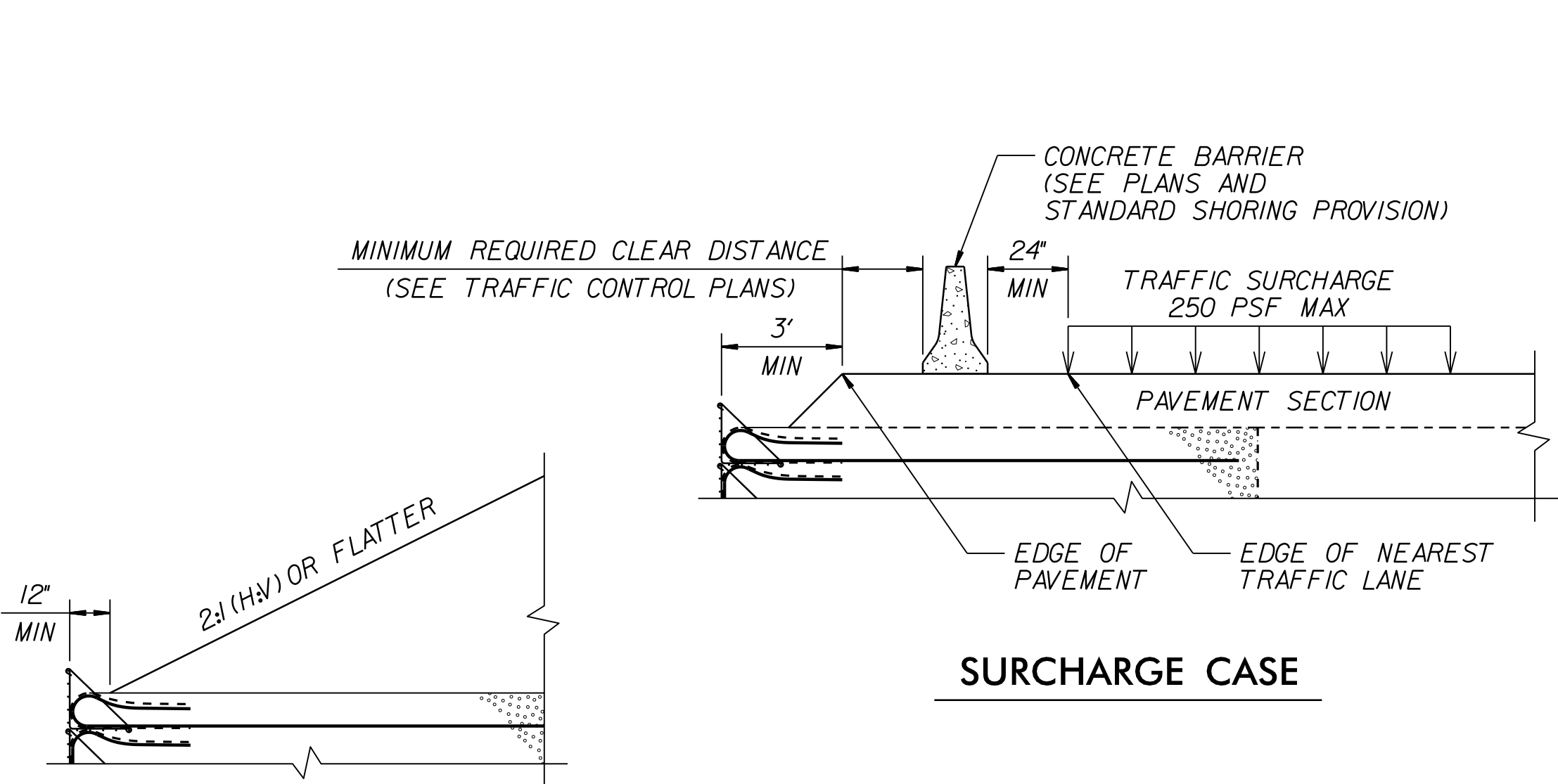
DETAIL OF MILLING AND WEDGING FOR EAST BOUND DETOUR CROSS OVER

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

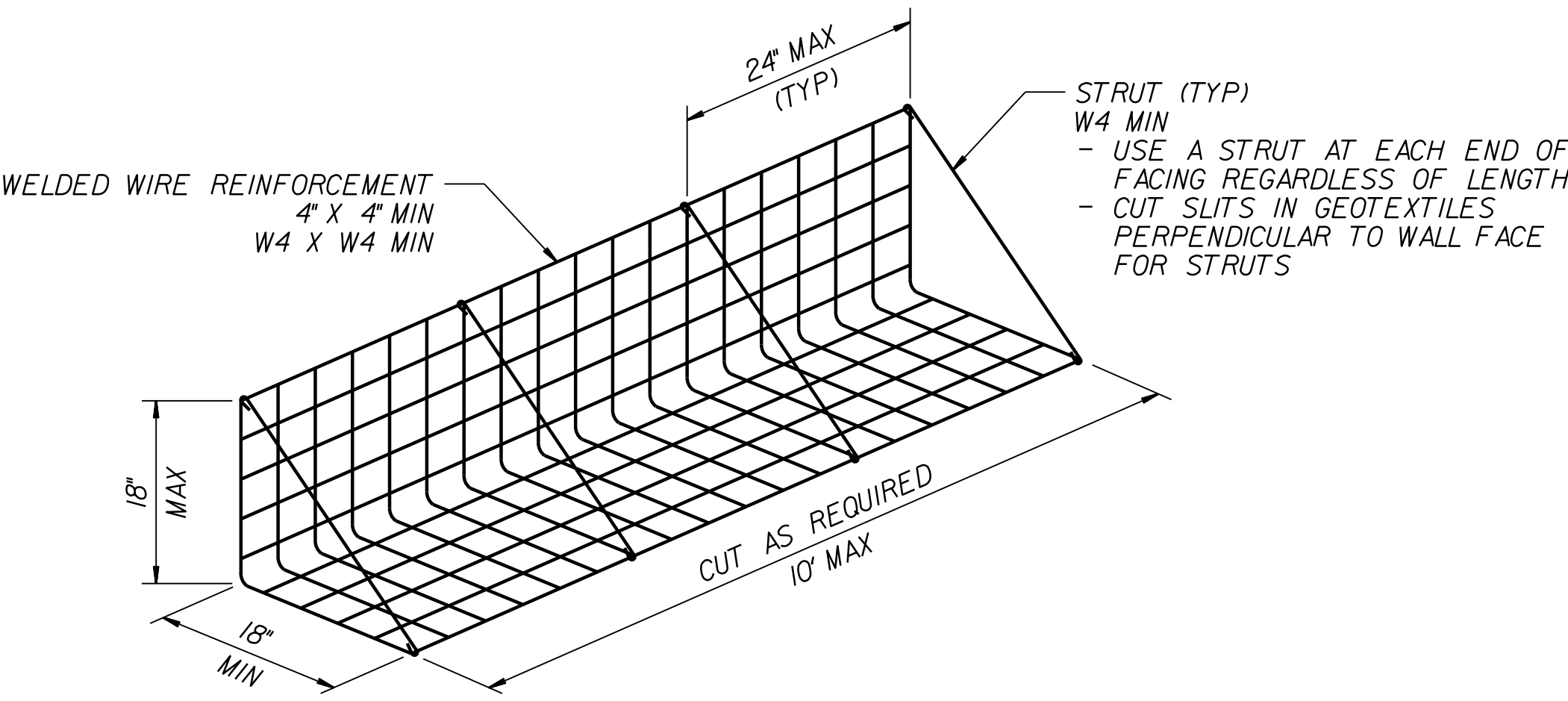
PROJECT REFERENCE NO.	SHEET NO.
B-5982	2B-4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

U	EXISTING PAVEMENT
V	VAR. DEPTH MILLING ASPHALT PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT



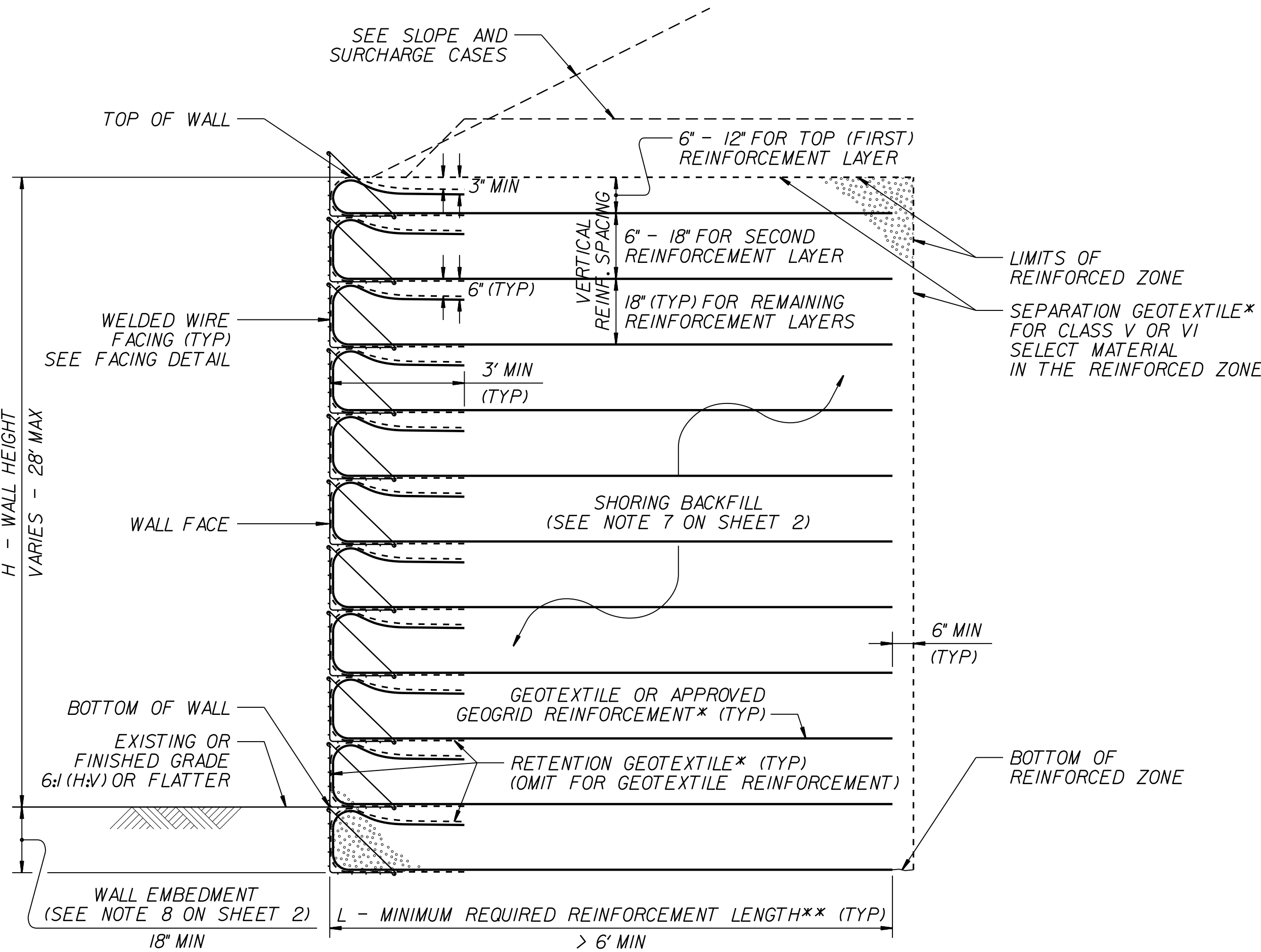


SURCHARGE CASE



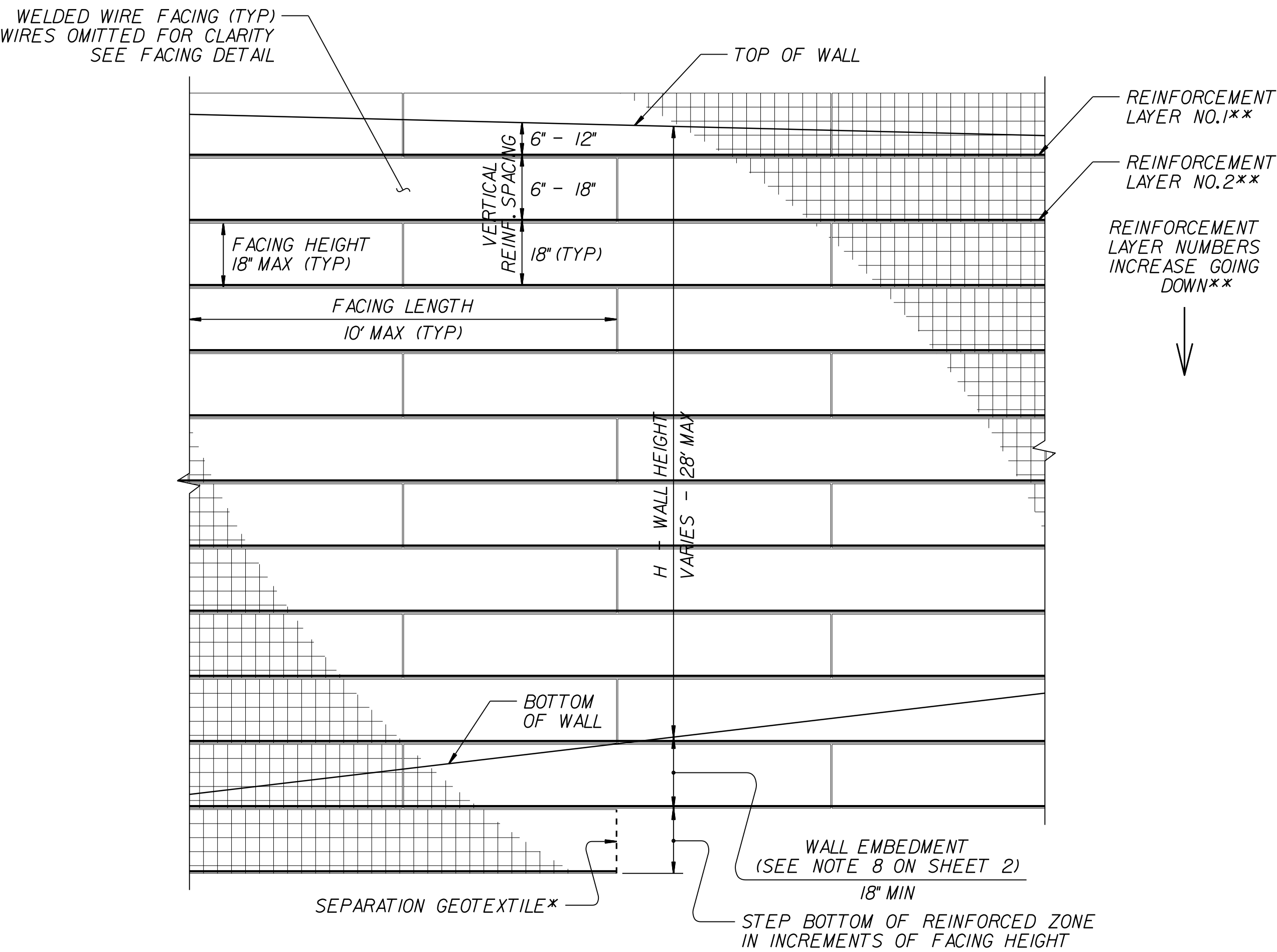
FACING DETAIL

SLOPE CASE



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.

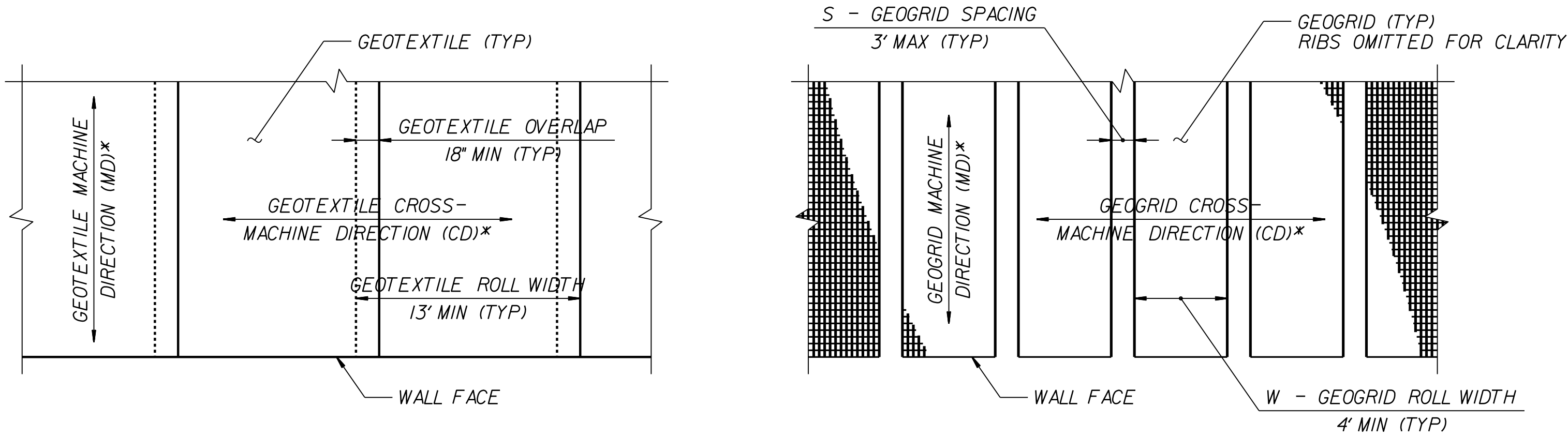


NORTH CAROLINA
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DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

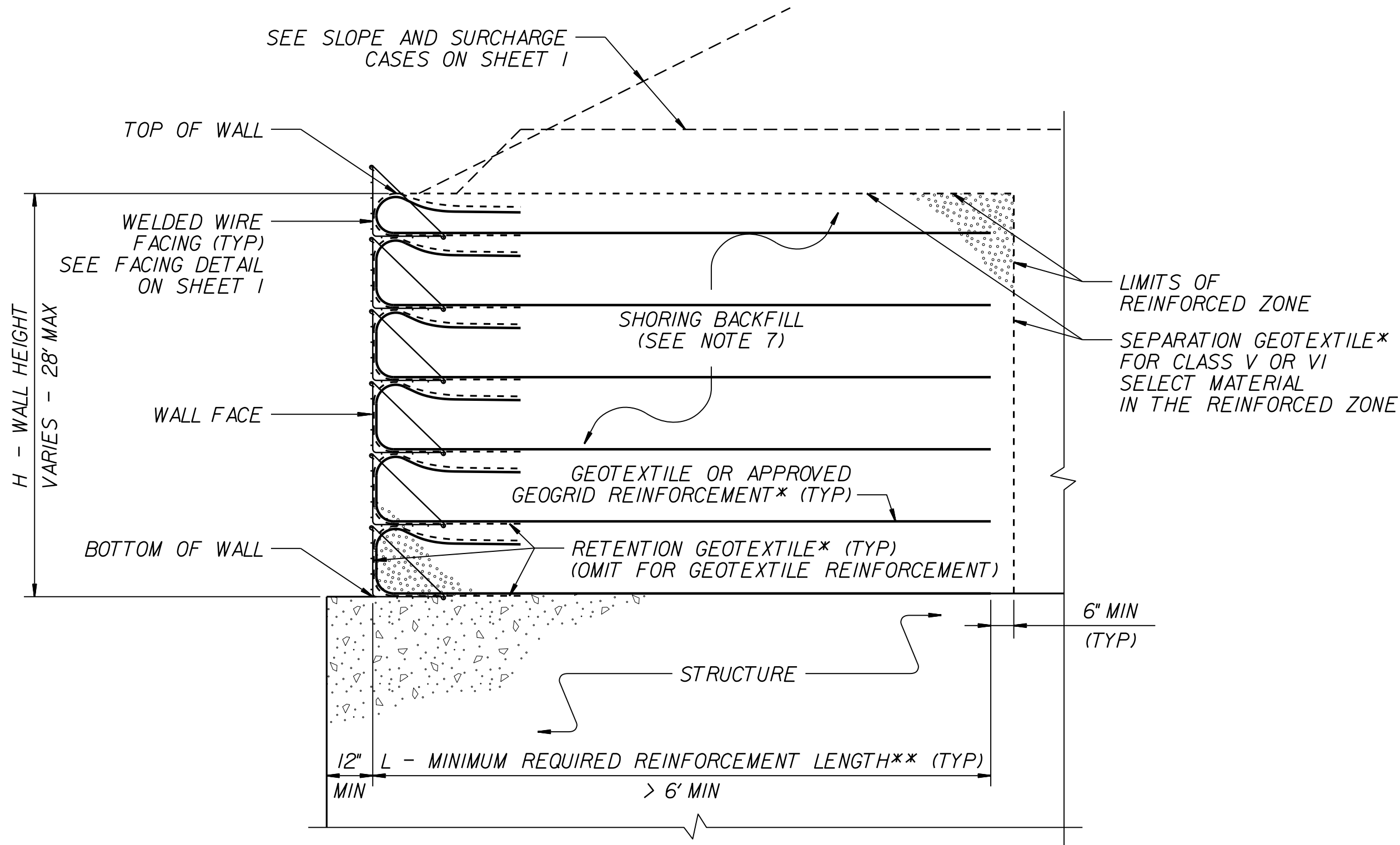
STANDARD
TEMPORARY WALL
SHEET 1 OF 3



GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR
GEOTEXTILE REINFORCEMENT)

GEOGRID PLACEMENT
(80% COVERAGE MIN FOR
GEOGRID REINFORCEMENT –
 $\frac{W}{W+S} \times 100 \geq 80\%$,
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, $\gamma = 120$ PCF
FRICTION ANGLE, $\phi = 30$ 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.

PROJECT REFERENCE NO.
B-5982

SHEET NO.
2G-3

GEOTECHNICAL ENGINEER



DocuSigned by:
Scott A. Hadden05/23/2024
F780CA5B9F4C43
SIGNATURE

ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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.

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)

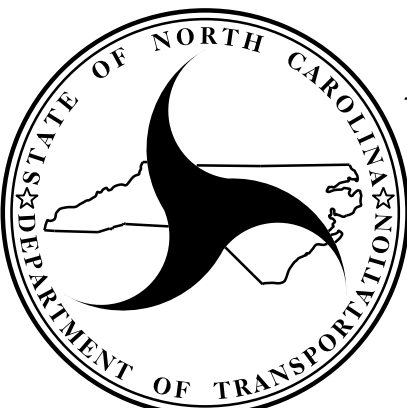
REINFORCEMENT LAYER NUMBER*	SHORING BACKFILL TYPE IN THE REINFORCED ZONE (SEE NOTE 7 ON SHEET 2)				
	SLOPE CASE		SURCHARGE CASE		
	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL	A-2-4 SOIL	CLASS II,TYPE I OR CLASS III SELECT MATERIAL	CLASS V SELECT MATERIAL
1	2400	2400	2400	2400	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.)

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK IN CUBIC YARDS

STATION	STATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBANK. +%	BORROW	WASTE
PHASE I (DETOUR)						
-L DET- 10+20.00	17+52.88 (BEG. BRIDGE)	10,097		558	0	9,539
-L DET- 18+95.91 (END BRIDGE)	24+45.00	84		16,858	16,774	0
SUBTOTAL:		10,181		17,416	16,774	9,539
WASTE IN LIEU OF BORROW					-9,539	-9,539
TOTAL PHASE I		10,181		17,416	7,235	0
PHASE III (-L- RIGHT)						
-L- 12+20.00	19+59.80 (BEG. BRIDGE)	2,187		3,713	1,526	0
-L- 21+04.80 (END BRIDGE)	27+00.00	85		4,383	4,298	0
-Y4- 10+00.00	16+07.00	4		2,606	2,602	0
SUBTOTAL:		2,276		10,702	8,426	0
WASTE IN LIEU OF BORROW						
TOTAL PHASE III		2,276		10,702	8,426	0
PHASE IV (-L- LEFT)						
-L- 12+20.00	19+59.80 (BEG BRIDGE)	1,914		43	0	1,871
-L- 21+04.80 (END BRIDGE)	27+00.00	321		61	0	260
SUBTOTAL:		2,235		104	0	2,131
WASTE IN LIEU OF BORROW						
TOTAL PHASE IV		2,235		104	0	2,131
PHASE V-DET REMOVAL						
-L- 12+20.00	-L- 19+59.80 (BEG BRIDGE)	2,466		0	0	2,466
-L- 21+04.80 (END BRIDGE)	-L- 27+00.00	9,993		196	0	9,797
SUB TOTAL:		12,459		196	0	12,263
WASTE IN LIEU OF BORROW						
TOTAL PHASE V		12,459		196	0	12,263
SUB TOTALS:		27,151		28,418	15,661	14,394
SHOULDER BORROW				863	863	
PROJECT TOTALS:		27,151	0	28,418	16,524	14,394
EST. 5% TO REPLACE TOP SOIL ON BORROW PIT					826	
GRAND TOTALS		27,151			17,350	
SAY		27,175			17,375	

EST. DDE = **195 CY**

EST. **400 CY** OF SELECT GRANULAR MATERIAL TO REPLACE UNDERCUT PER GEOTECH RECOMMENDATION

EST. **100 CY** AS CONTINGENCY OF SHALLOW UNDERCUT PER GEOTECH RECOMMENDATION

EST. **200 TONS** OF CLASS IV SUBGRADE STABILIZATION TO REPLACE SHALLOW UNDERCUT PER GEOTECH RECOMMENDATION

EST. 450 CY AS CONTINGENCY OF UNDERCUT EXCAVATION PER GEOTECH RECOMMENDATION

NOTE: APPROXIMATE QUANTITIES ONLY. BORROW EXCAVATION, UNCLASSIFIED EXCAVATION, FINE GRADING, CLEARING AND GRUBBING AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE LUMP SUM PRICE FOR "GRADING".

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

SUMMARY OF REMOVAL EXISTING ASPHALT PAVEMENT

LINE	STATION	STATION	LOCATION	SQ. YD.
L	19+00.00	19+73.12	CL	459.53
L	20+91.70	21+77.80	CL	547.23
Y4	10+78.37	10+97.38	RT	44.92
L_DET	10+20.00	17+53.88	CL	2015.22
L_DET	18+95.88	24+45.00	CL	1490.33
TOTAL				4557.23
SAY				4560

SUMMARY OF SHOULDER BERM GUTTER

LINE	STATION	STATION	LENGTH (LF)
L	15+27.00	19+45.00	418.0
L	21+38.00	25+25.00	387.0
L	21+19.00	25+84.25	465.25
L_DET	21+33.00	23+92.00	259.0
		TOTAL	1529.25
		SAY	1530

SUMMARY OF WOVEN WIRE FENCE

LINE	STATION	STATION	LENGTH (LF)
L (LT)	16+00.00	19+49.50	387.6
			0.0
			0.0
			0.0
		TOTAL	387.6
		SAY	390

5/28/99

COMPUTED BY:	FMM	DATE:	09/09/22
CHECKED BY:	MRH	DATE:	12/04/23

PROJECT REFERENCE NO.	SHEET NO.
B-5982	3B-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUARDRAIL SUMMARY

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR			SINGLE FACED CONCRETE BARRIER	DOUBLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	GREU, TL-2	CAT-1		G	NG						
-L-	14+76.58	1957.89	RT	481.31			1957.89		12	15	50		1		1		1									490		
-L-	21+23.69	25+25.00	RT	401.31				2123.69	10	10					1											409		
-L-	21+04.21	25+84.25	LT	420.64				2104.21	10	10					1											493		
-L-	12+20.00	19+35.82	MED																						715.82			
-L-	21+28.78	26+37.14	MED																						508.36			
TOTAL				1303.26											3		1									1224.18	1392	
DEDUCTION FOR ANCHORS																												
TYPE		QTY	LT/EA																									
GREU TL-3		1	50	50.00																								
TYPE III		3	18.75	56.25																								
TYPE B-77		0	22.875	0.00																								
CAT-1		0	6.25	0.00																								
TOTAL DEDUCTION				106.25																								
GRAND TOTAL				1197.01																								
SAY				1275																					1230			
ADDITIONAL GUARDRAIL POSTS				10	EA																							

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR		SINGLE FACED CONCRETE BARRIER	DOUBLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS	
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	Type III	B-77	GREU, TL-3	GREU, TL-2	CAT-1		G	NG						
-L_DET_EB-	18+93.10	23+32.62	LT						4																			
-L_DET_EB-	23+46.36	24+39.73	LT						4																			
-L_DET_EB-	15+84.72	17+59.72	LT	185.375			1958.44		4	9	50		1			1	1											
-L_DET-	18+96.48	23+52.77	RT						4																			
-L_DET-	18+95.17	23+91.900	LT	496.730			18+95.17		10	13						1												
-L_DET-	13+00.00	17+53.63	LT	453.69				17+53.63	VAR.	VAR.						1			1									
TOTAL				1135.80												3	1		1			0.00		0	0	0		
DEDUCTION FOR ANCHORS																												
TYPE		QTY	LT/EA																									
GREU TL-3		1	50	50.00																								
TYPE III		0	18.75	0																								
TYPE B-77		3	22.875	68.63																								
CAT-1		1	6.25	6.25																								
TOTAL DEDUCTION				124.88																								
GRAND TOTAL				1010.92																								
SAY				1037.5																								
Additional Temporary GR Posts				10	EA																							

8/6/2024 8:53:30 AM
B:\5982\3B\3G_sum.dgn
B:\5982\3B\3G_sum.dgn

COMPUTED BY: DMM____ DATE: 5/6/2022__
CHECKED BY: JCK____ DATE: 5/6/2022__
UPDATED BY: SCC____ DATE: 6/14/2024__

(2-3-23)

STATE OF NORTH CAROLINA

DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5982	3G-1

SUMMARY OF SUBSURFACE DRAINAGE

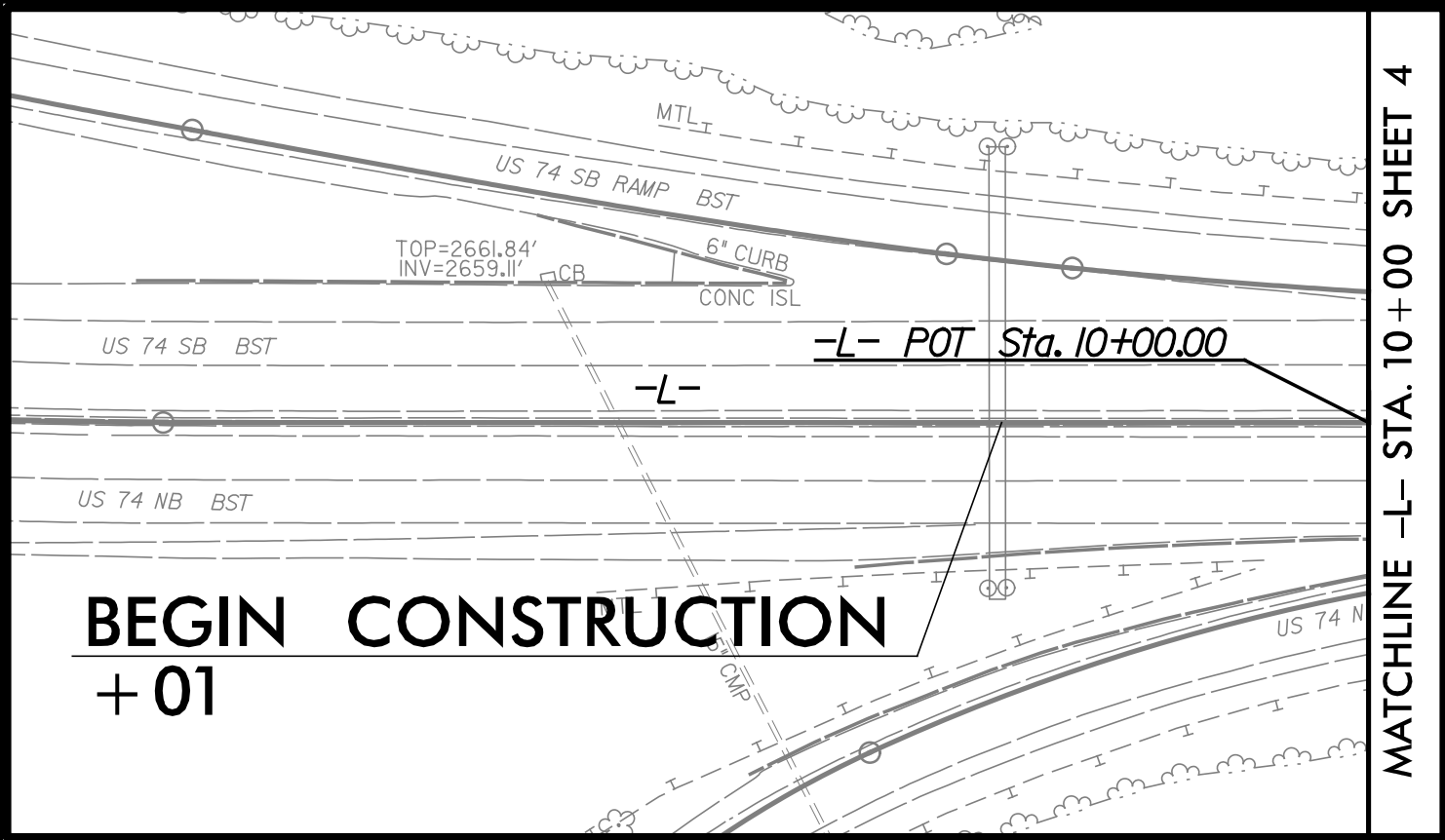
LINE	Station	Station	Location LT/RT/CL	Drain Type* UD/BD/SD	LF
CONTINGENCY				SD	200
				TOTAL LF:	200

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

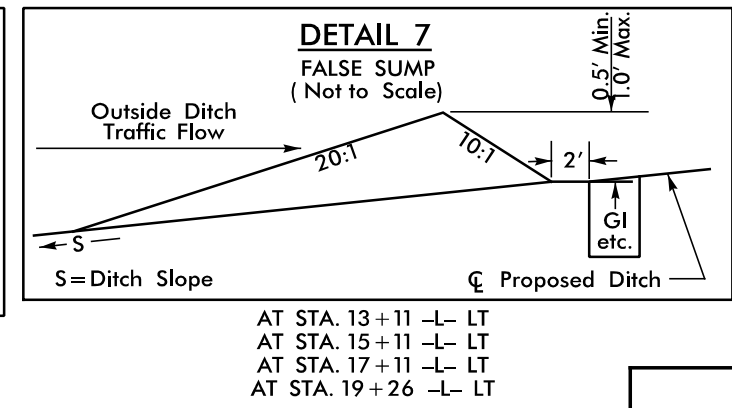
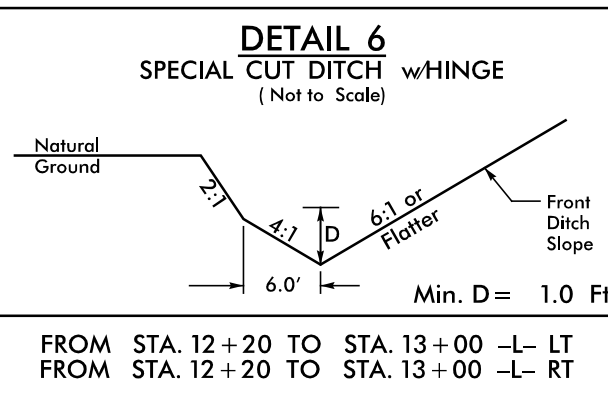
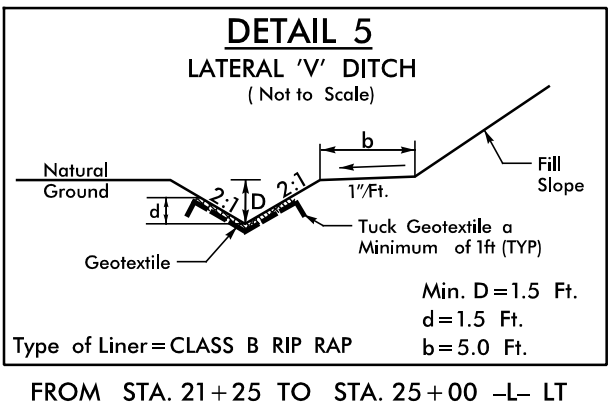
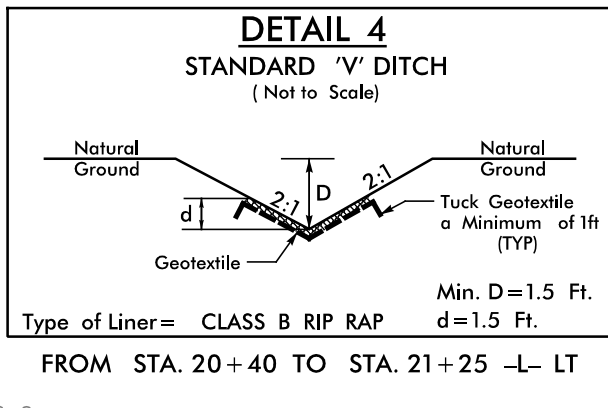
SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

LINE	Station	Station	Aggregate Type* ASU(1/2)/ AST	Aggregate Thickness INCHES [8" for ASU(2)]	Shallow Undercut CY	Class IV Subgrade Stabilization TONS	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			1		100	200	300		
			TOTAL CY/TONS/SY:		100	200**	300**	0	0

*ASU(1/2) = Aggregate Subgrade (Type 1 or 2)
*AST = Aggregate Stabilization
**Total tons of "Class IV Subgrade Stabilization" and total square yards of "Geotextile for Soil Stabilization" are only the estimated quantities for ASU(1/2)/AST and may only represent a portion of the subgrade stabilization and geotextile quantities shown in the Item Sheets of the Proposal.



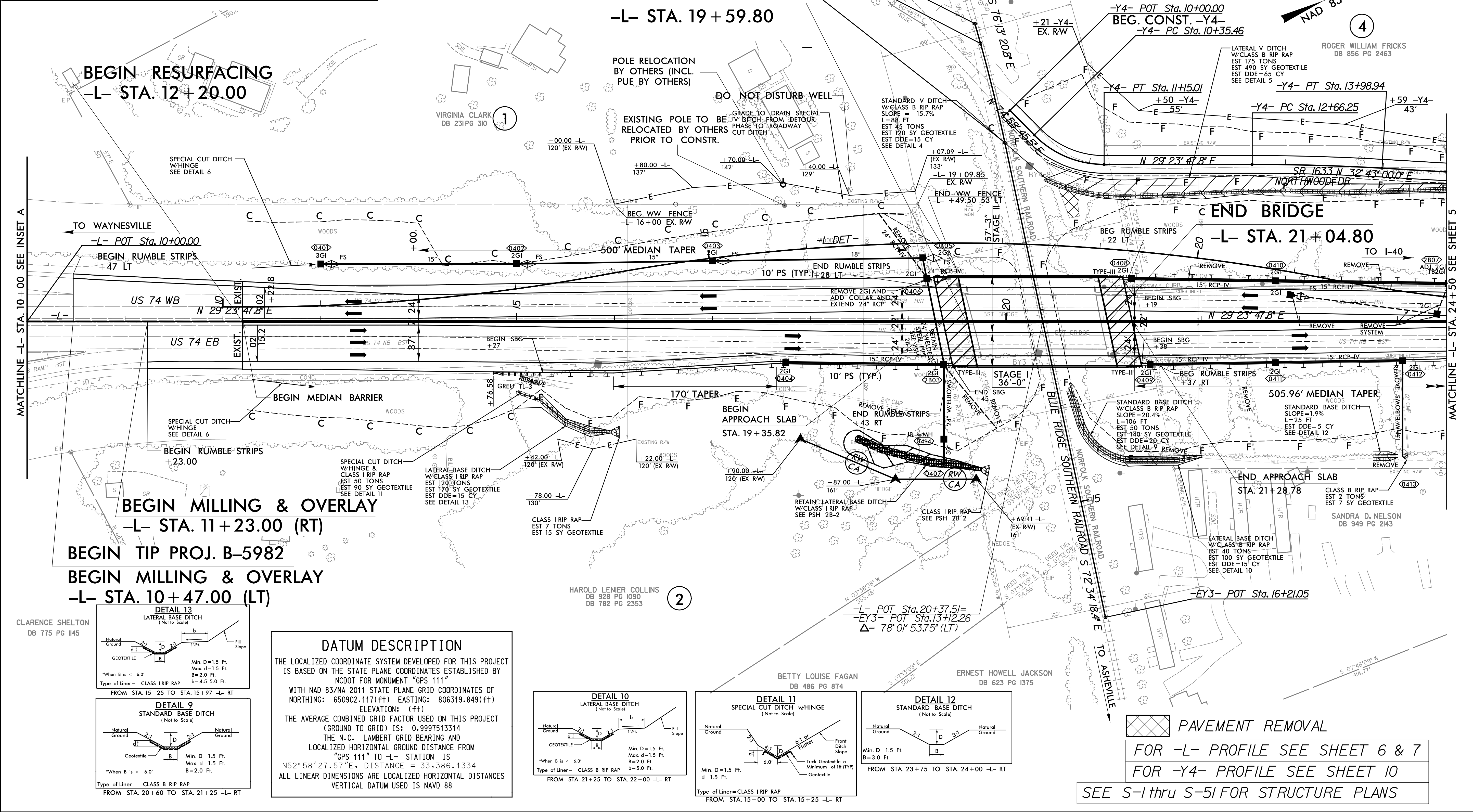
INSET A



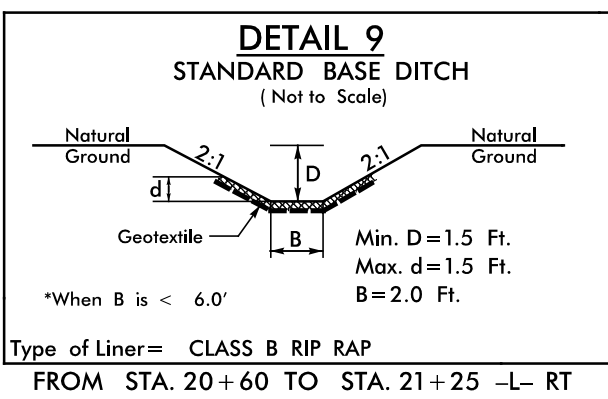
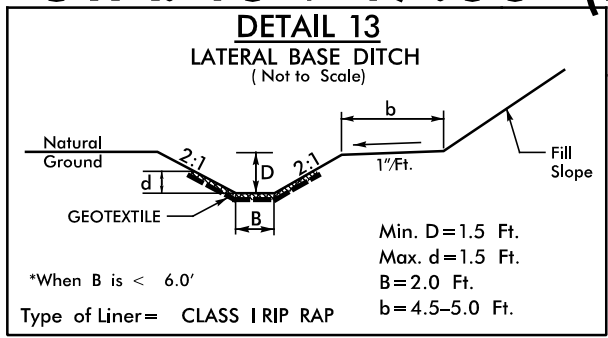
-Y4- CURVE DATA	
PI Sta 10+77.47 $\Delta = 45^\circ 34' 57.7''$ (LT) D = 57' 17" 44.8" L = 79.56' T = 42.02' R = 100.00' SE = NC V = 25MPH	PI Sta 13+32.61 $\Delta = 3^\circ 19' 12.2''$ (RT) D = 2' 30' 07.2" L = 132.70' T = 66.37' R = 2,290.00' SE = NC V = 25MPH

vhb
VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO.		SHEET NO.
B-5982		4
RW SHEET NO.		HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER		ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

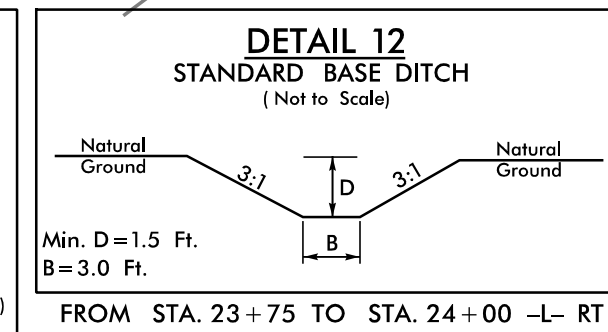
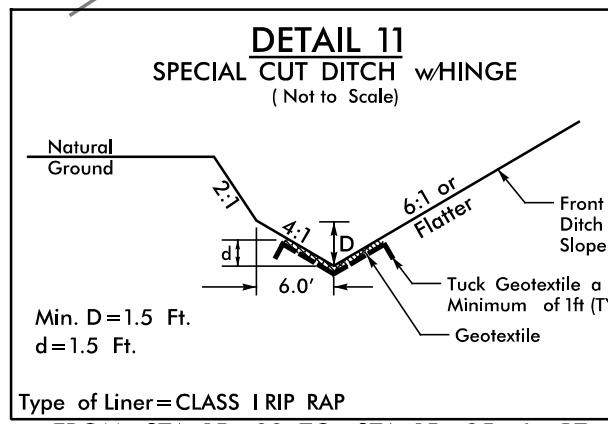
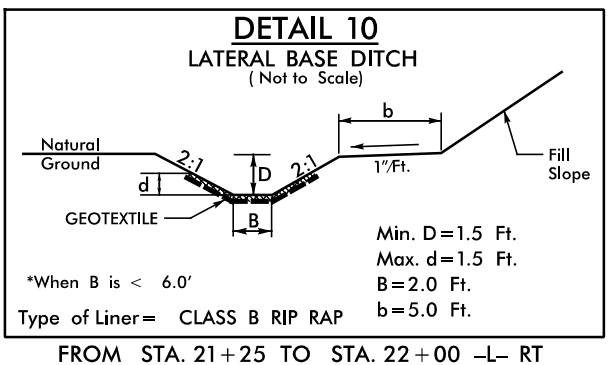


CLARENCE SHELTON
DB 775 PG 1145



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "GPS 111" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 650902.117(FT) EASTING: 806319.849(FT) ELEVATION: (FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9997513314 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "GPS 111" TO -L- STATION IS N52°58'27.57"E, DISTANCE = 33,386.1334 ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88



PAVEMENT REMOVAL

FOR -L- PROFILE SEE SHEET 6 & 7

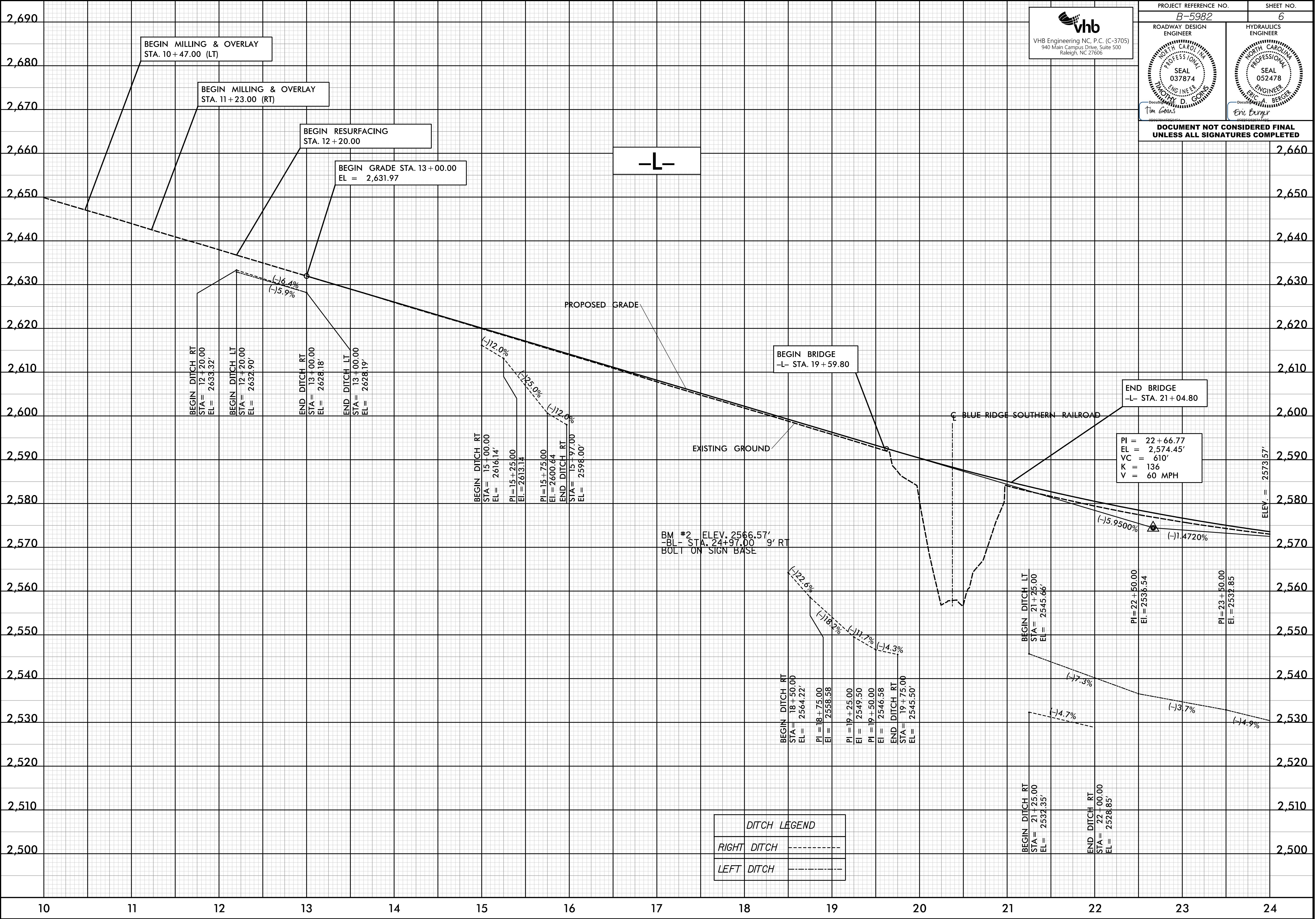
FOR -Y4- PROFILE SEE SHEET 10

SEE S-1 thru S-51 FOR STRUCTURE PLANS



5/14/99

4/28/2024
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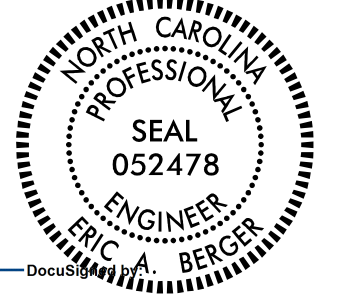




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940 Main Campus Drive, Suite 500
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PROJECT REFERENCE NO.
B-5982

ROADWAY DESIGN ENGINEER

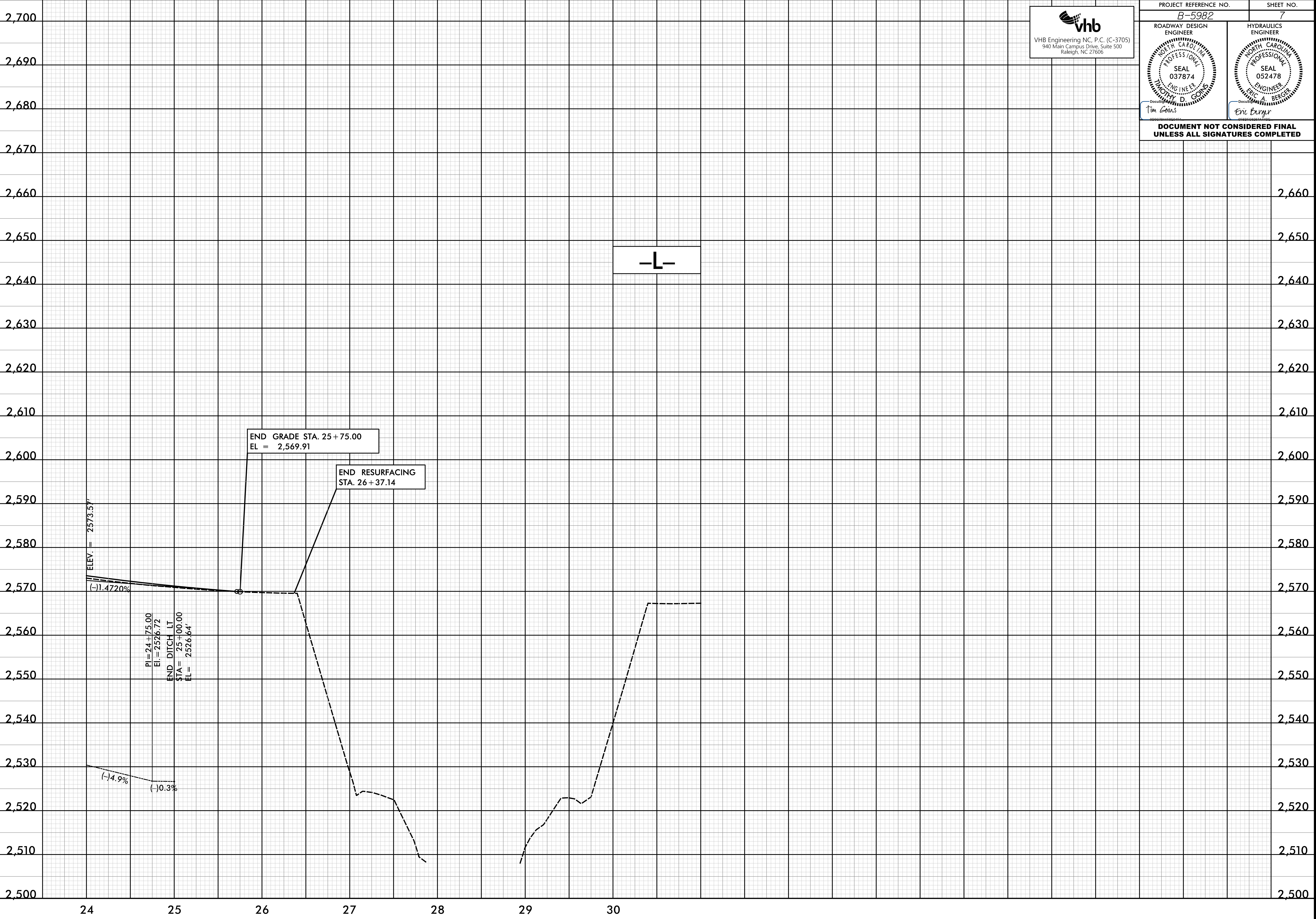

HYDRAULICS ENGINEER


DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

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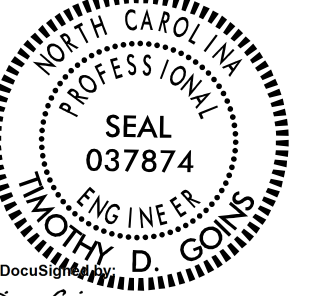
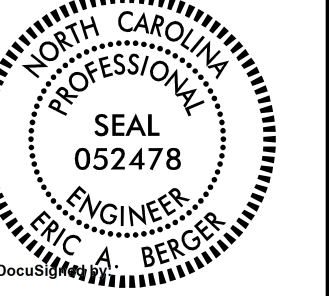
5/14/99

4/28/2024
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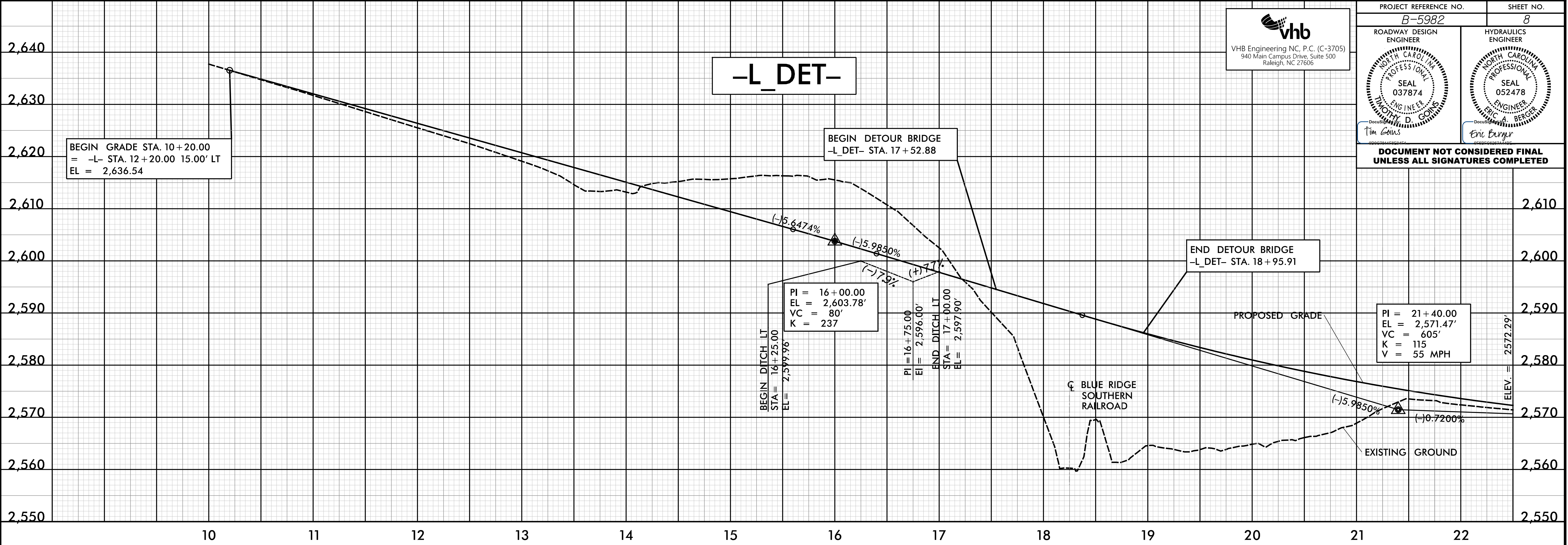


VHB Engineering NC, P.C. (C-3705)
940 Main Campus Drive, Suite 500
Raleigh, NC 27606

PROJECT REFERENCE NO. <i>B-5982</i>		SHEET NO. <i>7</i>	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
			
			

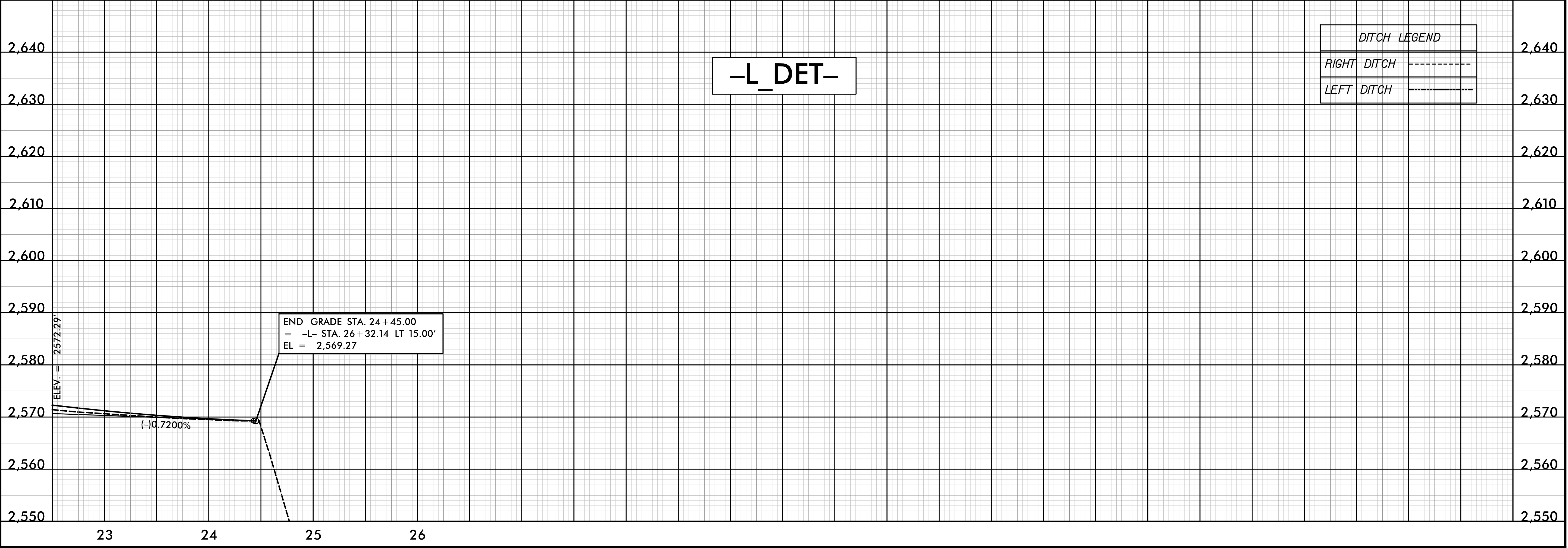
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

5/28/24



PROJECT REFERENCE NO.		SHEET NO.
B-5982		8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		

4/28/2024
B-5982.dgn
B-5982.dgn



DITCH LEGEND		
RIGHT	DITCH	----
LEFT	DITCH	----

