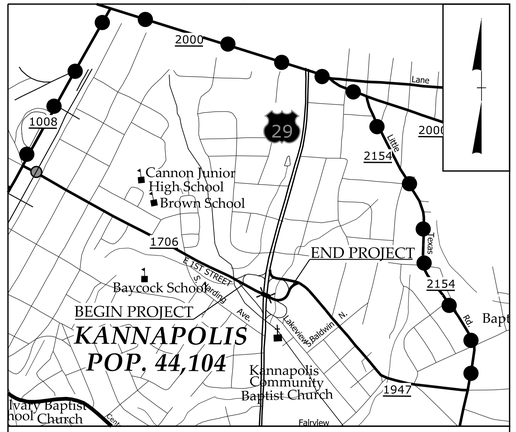
09/08/99

TIP PROJECT: B–5372

CONTRACT: C204384

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



VICINITY MAP (N.T.S.)
OFF–SITE DETOUR

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

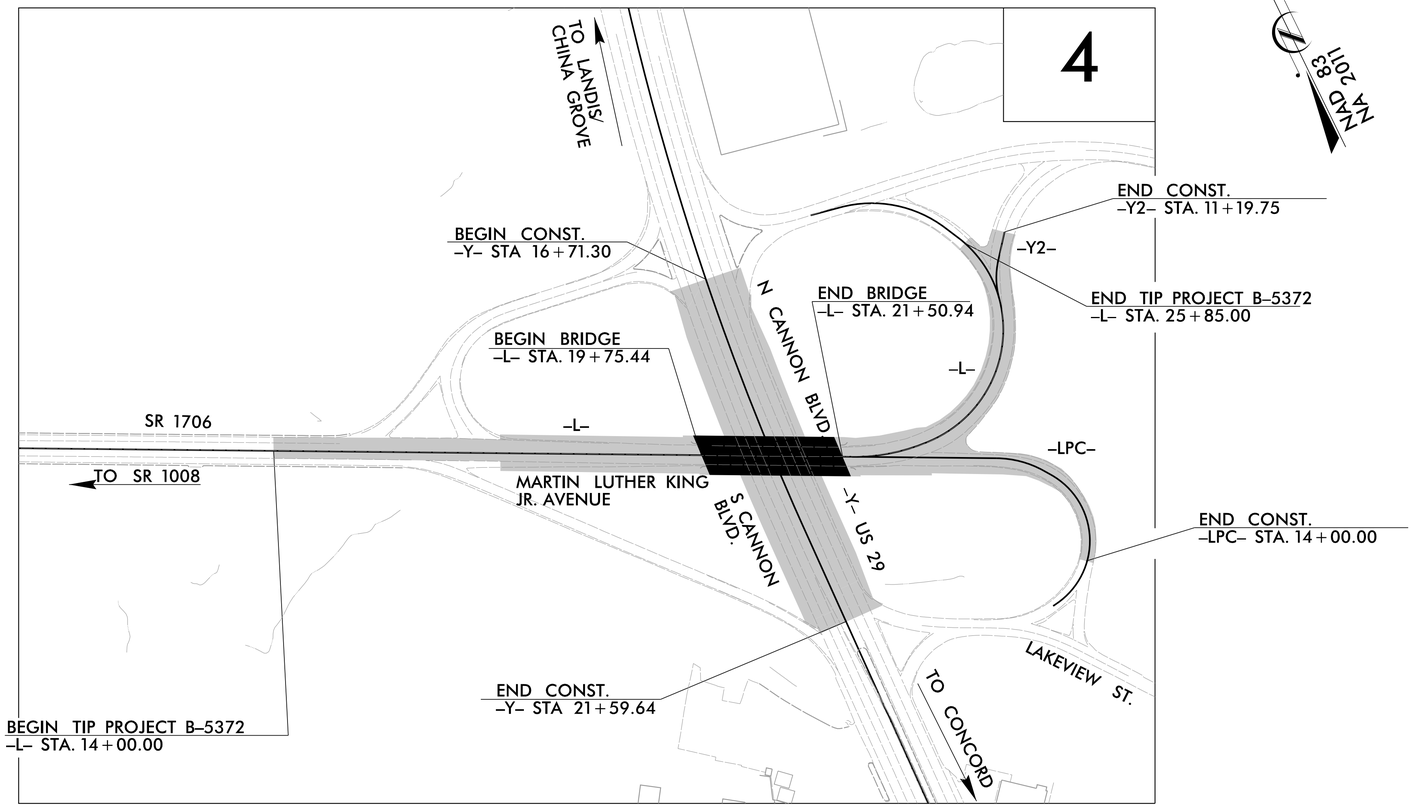
CABARRUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5372	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46087.1.1		P.E.
46087.2.1		ROW/UTILITY
46087.3.1		CONST.

LOCATION: REPLACE BRIDGE NO. 120109 ON SR 1706 (MARTIN LUTHER KING JR. AVE.) OVER US 29 (N. CANNON BLVD.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE



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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 2024 = 3,936
ADT 2044 = 6,016
K = 11%
D = 55%
T = 5% *
V = 40 MPH
* TTST = 1% DUAL = 4%
FUNC CLASS = MINOR COLLECTOR
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–5372 = 0.191 MILES
LENGTH OF STRUCTURE TIP PROJECT B–5372 = 0.033 MILES
TOTAL LENGTH OF TIP PROJECT B–5372 = 0.224 MILES

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2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 21, 2024

LETTING DATE:
DECEMBER 17, 2024

REECE M. SCHULER, P.E, P.L.S
PROJECT ENGINEER

ALEX FITZPATRICK
PROJECT DESIGN ENGINEER

DAVID STUTTS, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

DocuSigned by: Reece M. Schuler
SIGNATURE:
P.E. 10/28/2024

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 26960 ENGINEER REECE M. SCHULER

DocuSigned by: Reece M. Schuler
SIGNATURE:
P.E. 10/28/2024

STATE OF NORTH CAROLINA * DEPARTMENT OF TRANSPORTATION *

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User:amfitzpatrick

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PROJECT REFERENCE NO.	SHEET NO.
B-5372	1A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 28360 ENGINEER REECE M. SCHULER
DocuSigned by: Reece M. Schuler 16634024C7824FC...
10/28/2024

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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-4	PAVEMENT SCHEDULE AND TYPICAL SECTIONS
2C-1 THRU 2C-9	DETAILS IN LIEU OF STANDARDS
2G-1	STANDARD TEMPORARY SHORING DETAIL
3B-1	SUMMARY OF EARTHWORK, GUARDRAIL SUMMARY, PAVEMENT REMOVAL SUMMARY
3D-1 THRU 3D-2	DRAINAGE SUMMARY SHEETS
3G-1	GEOTECHNICAL SUMMARIES
4 THRU 6	PLAN AND PROFILE SHEETS
RW-1 THRU RW-3	SURVEY CONTROL SHEETS, PROPOSED ALIGNMENT CONTROL SHEET
TMP-1 THRU TMP-5	TRAFFIC MANAGEMENT PLANS
PMP-1 THRU PMP-2	PAVEMENT MARKING PLANS
EC-1 THRU EC-5	EROSION CONTROL PLANS
SIGN-01 THRU SIGN-05	SIGNING PLANS
UO-1 THRU UO-3	UTILITY BY OTHERS PLANS
X-1	CROSS-SECTION INDEX SHEET
X-2 THRU X-15	CROSS-SECTIONS
S-1 THRU S-36	STRUCTURE PLANS

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 III.

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. 560.01

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.

BERM DITCHES:

BERM DITCHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 240.01 AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

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".

SUBSURFACE PLANS:

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

END BENTS:

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

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE DOMINION.

CITY OF KANNAPOLIS

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

CURB RAMPS

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

2024 ROADWAY ENGLISH STANDARD DRAWINGS

EFF. 01-16-2024
REV.

The following Roadway Standards as appear in "Roadway Standard Drawings" Contracts Standards and Development Unit - N. C. Department of Transportation - Raleigh, N. C., Dated January 16, 2024 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.02	Guide for Grading Subgrade - Secondary and Local
225.04	Method of Obtaining Superelevation - Two Lane Pavement
235.01	Embankment Monitoring
240.01	Guide for Berm Ditch Construction
DIVISION 4 - MAJOR STRUCTURES	
423.01	Bridge Approach Fills - Type 1 Approach Fill for Bridge 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	
610.01	Guide for Paving Shoulders Under Bridges - Method I
654.01	Pavement Repairs
DIVISION 8 - INCIDENTALS	
815.02	Subsurface Drain
838.39	Reinforced Concrete Endwall - for Single 72" Pipe 90 Skew
840.00	Concrete Base Pad for Drainage Structures
840.01	Brick Catch Basin - 12" thru 54" Pipe
840.02	Concrete Catch Basin - 12" thru 54" Pipe
840.03	Frame, Grates and Hood - for Use on Standard Catch Basin
840.13	Concrete Bridge Approach Drop Inlet - 12" thru 24" Pipe
840.16	Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.45	Precast Drainage Structure
840.66	Drainage Structure Steps
846.01	Concrete Curb, Gutter and Curb & Gutter
848.06	Curb Ramp
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units
876.01	Rip Rap in Channels and Ditches
876.02	Guide for Rip Rap at Pipe Outlets
876.04	Drainage Ditches with Class 'B' Rip Rap

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.

PROJECT REFERENCE NO. B-5372 | SHEET NO. 2A-1

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 028960 REECE M. SCHULER — 10/28/2024

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044590 ANDREW WARGO — 10/29/2024

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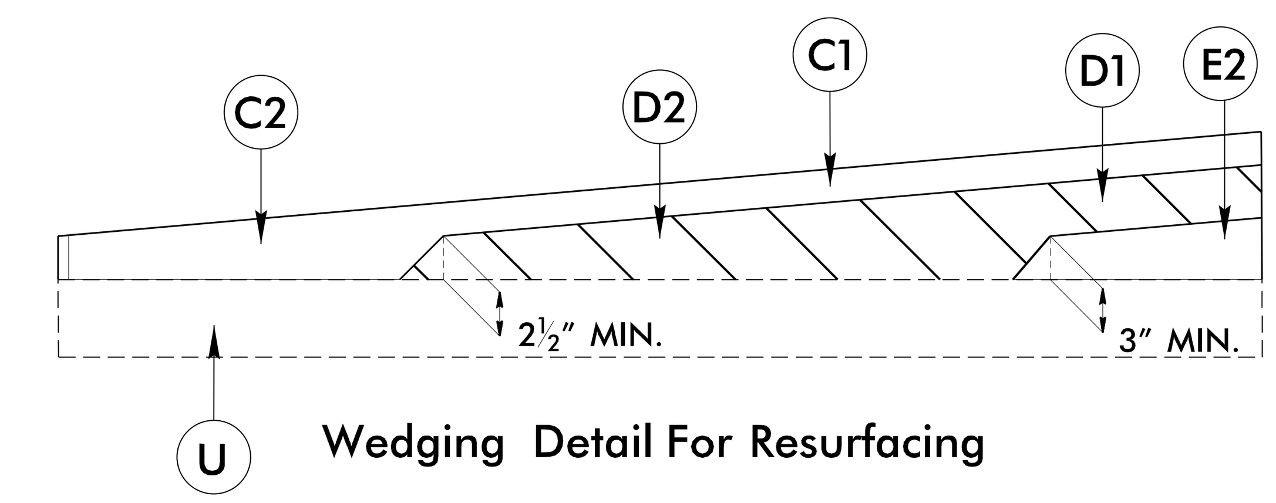
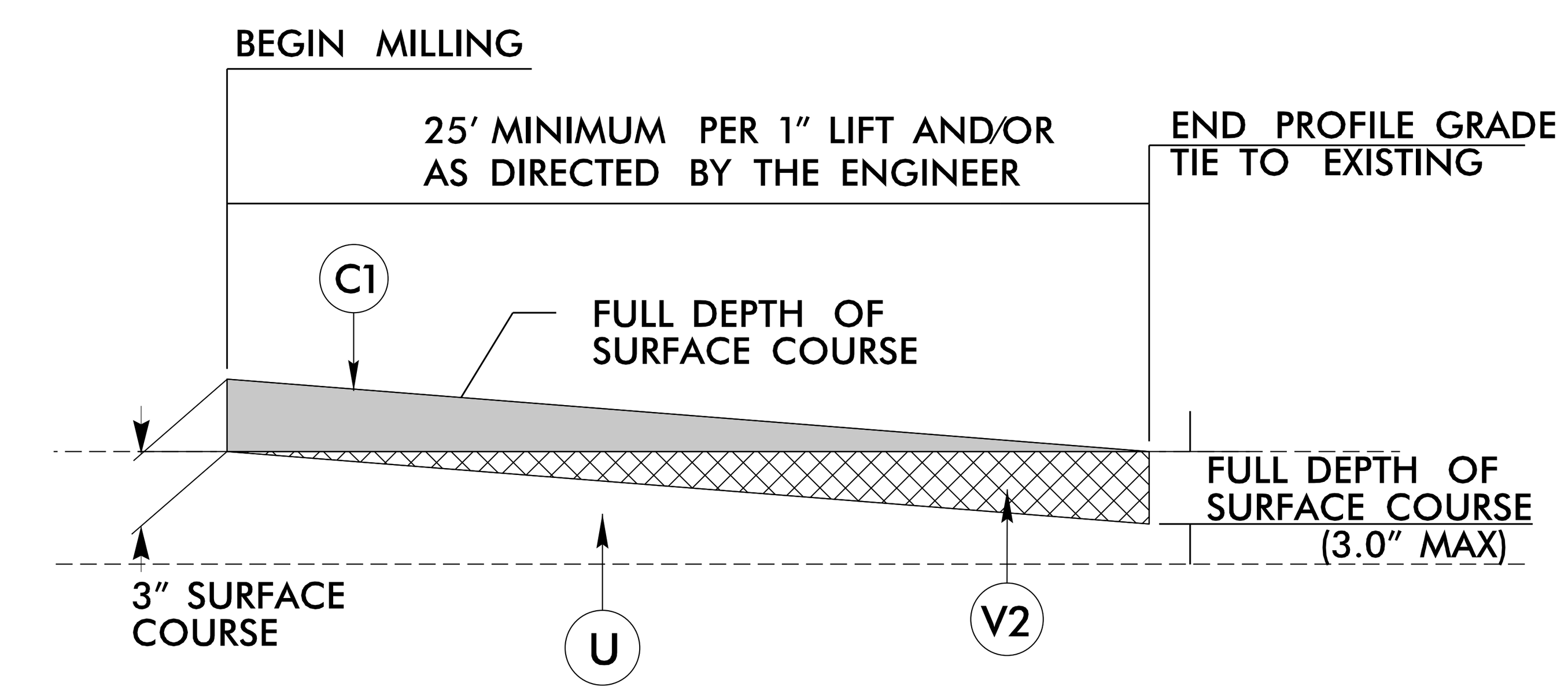
FINAL PAVEMENT SCHEDULE

C1	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.
C2	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.
D1	PROP. APPROX. 4″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	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 2½″ OR GREATER THAN 4″ IN DEPTH.
E1	PROP. APPROX. 4″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.
R1	2′ - 6″ CONCRETE CURB AND GUTTER
S	4″ CONCRETE SIDEWALK
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V1	MILLING ASPHALT PAVEMENT. 1½″ DEPTH
V2	INCIDENTAL MILLING
W	WEDGING

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

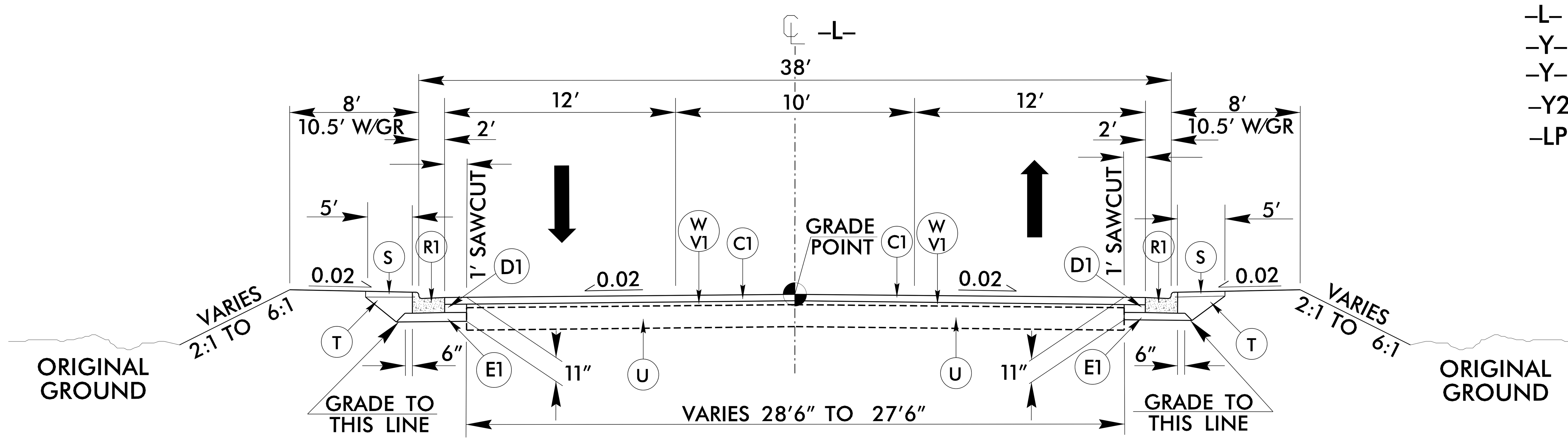


Wedging Detail For Resurfacing



Incidental Milling

–L– STA. 17+00.00 to –L– STA. 17+50.00
–L– STA. 25+35.00 to –L– STA. 25+85.00
–Y– STA. 16+71.30 to –Y– STA. 17+21.30
–Y– STA. 21+09.64 to –Y– STA. 21+59.64
–Y2– STA. 10+69.76 to –Y2– STA. 11+19.76
–LPC– STA. 13+50.00 to –LPC– STA. 14+00.00



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
–L– STA. 17+00.00 to –L– STA. 18+00.00

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PROJECT REFERENCE NO.	SHEET NO.
B-5372	2A-2

ROADWAY DESIGN ENGINEER — SEAL 028560 — REECE M. SCHULER — 10/28/2024

PAVEMENT DESIGN ENGINEER — SEAL 049930 — ANDREW WARGO — 10/29/2024

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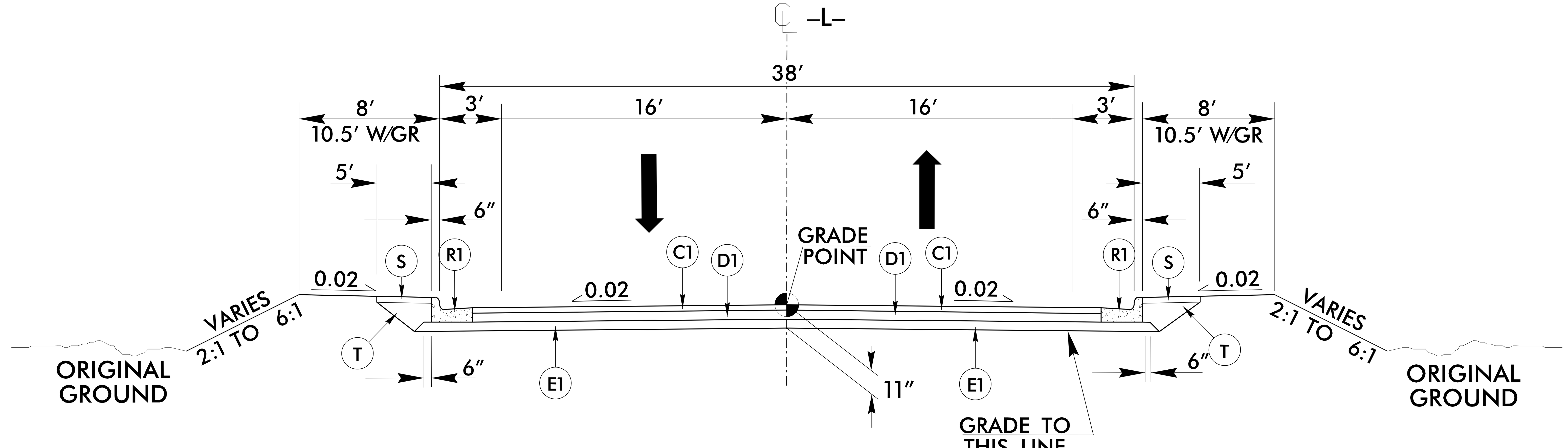
PAVEMENT SCHEDULE	
C1	3″ S.95C
C2	VAR S.95C
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	VAR B25.0C
R1	2′-6″ CONC C&G
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	1½″ MILLING
V2	INC. MILLING
W	WEDGING

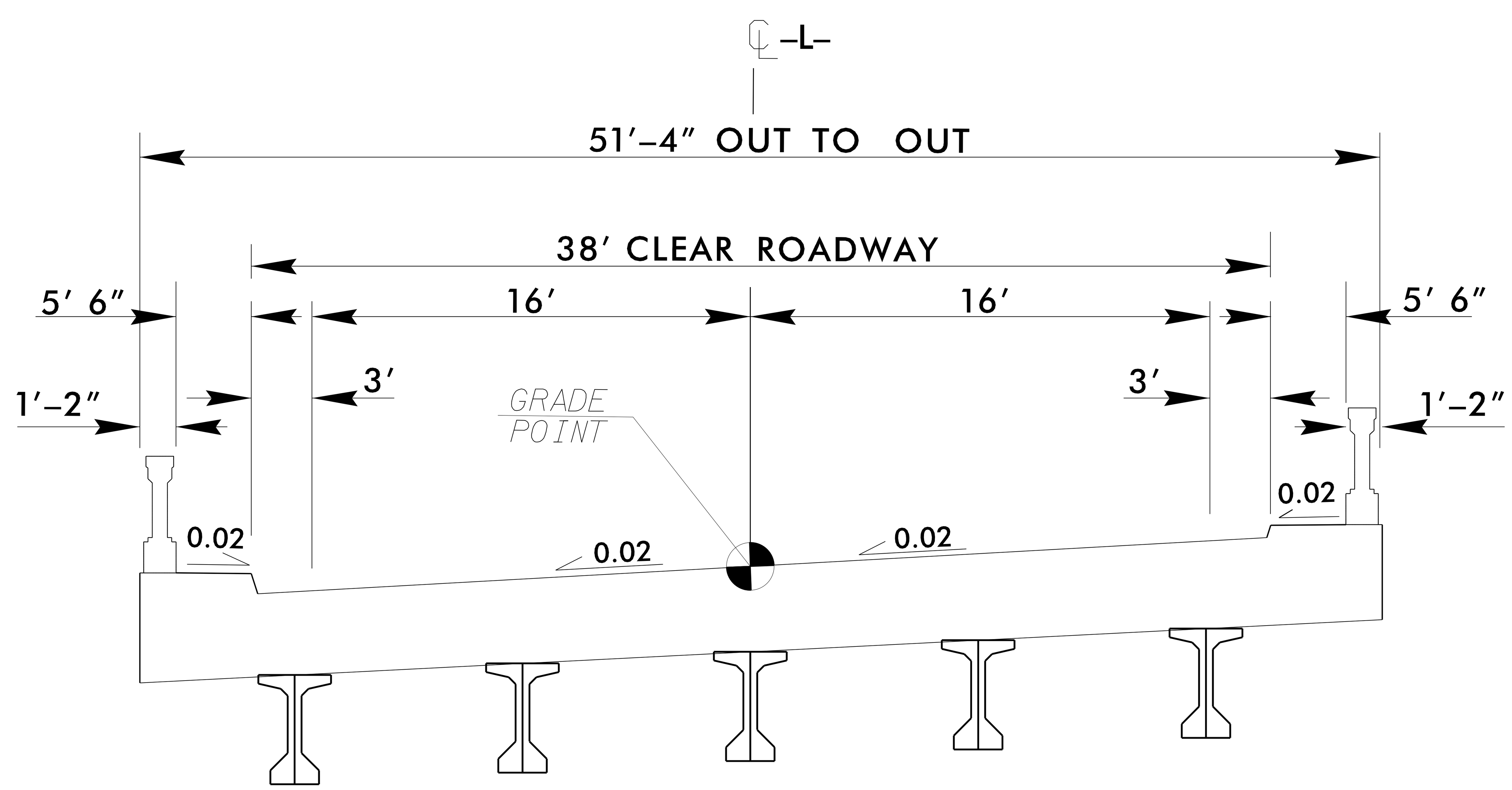
NOTE: PVMNT EDGES ARE 1:1



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2

-L- STA. 18+00.00 to -L- STA. 19+75.44 (BEG. BRIDGE)
-L- STA. 21+50.94 (END BRIDGE) to -L- STA. 23+50.00



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

-L- STA. 19+75.44 to -L- STA. 21+50.94

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PROJECT REFERENCE NO.	SHEET NO.
B-5372	2A-3

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — REECE M. SCHULER — 10/28/2024

PAVEMENT DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL — ANDREW WARGO — 10/29/2024

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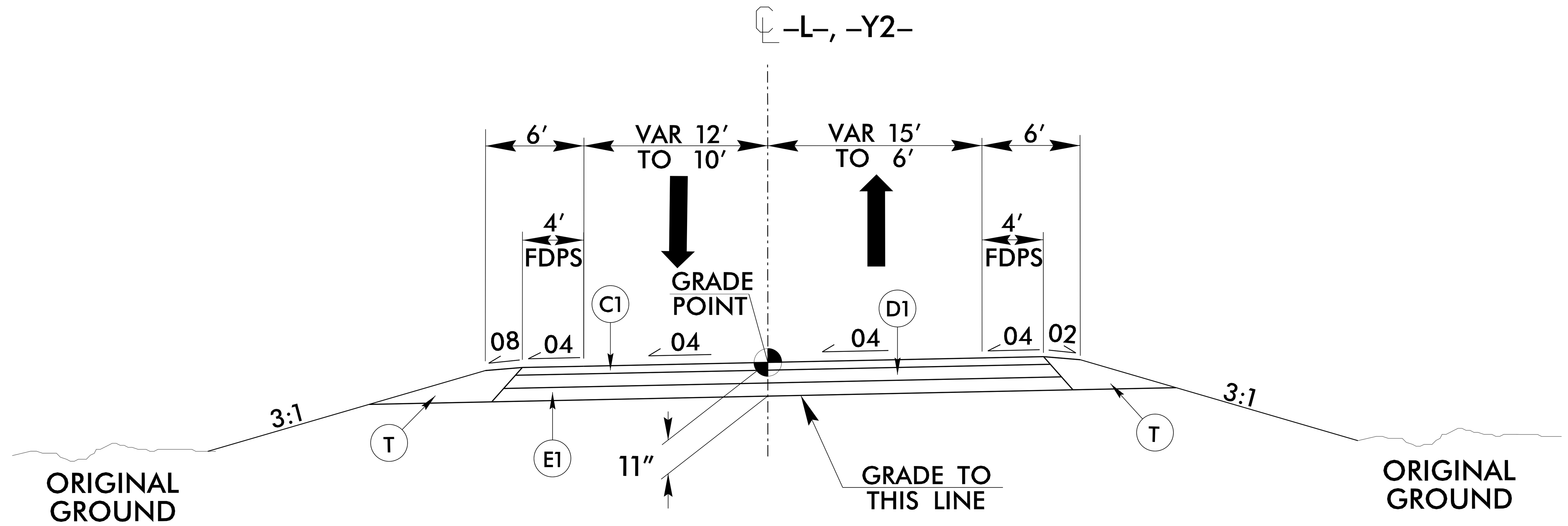
PAVEMENT SCHEDULE	
C1	3″ S.95C
C2	VAR S.95C
D1	4″ I19.0C
D2	VAR I19.0C
E1	4″ B25.0C
E2	VAR B25.0C
R1	2′-6″ CONC C&G
S	4″ CONC SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	1½″ MILLING
V2	INC. MILLING
W	WEDGING

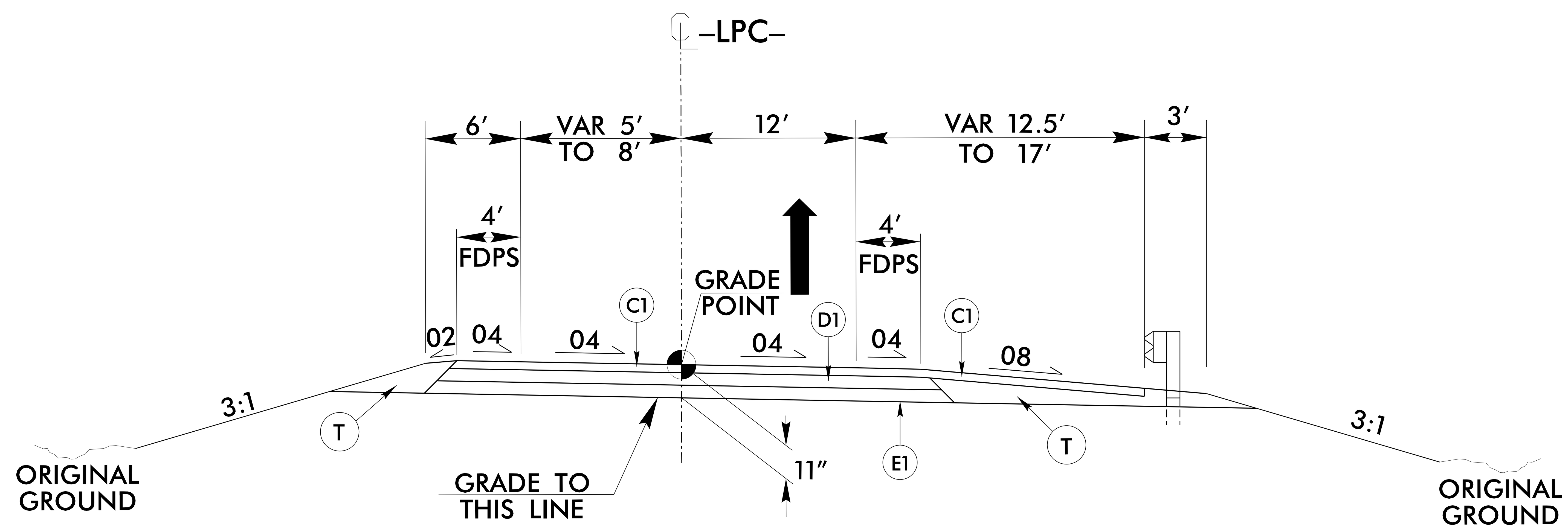
NOTE: PVMNT EDGES ARE 1:1



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4

-L- STA. 23+50.00 to -L- STA. 25+50.00
-Y2- STA. 10+00.00 to -Y2- STA. 10+69.76



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-LPC- STA. 10+75.53 to -LPC- STA. 13+50.00

PROJECT REFERENCE NO.	SHEET NO.
B-5372	2A-4

ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26960 REECE M. SCHULER 10/28/2024	NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 044950 ANDREW WARGO 10/29/2024

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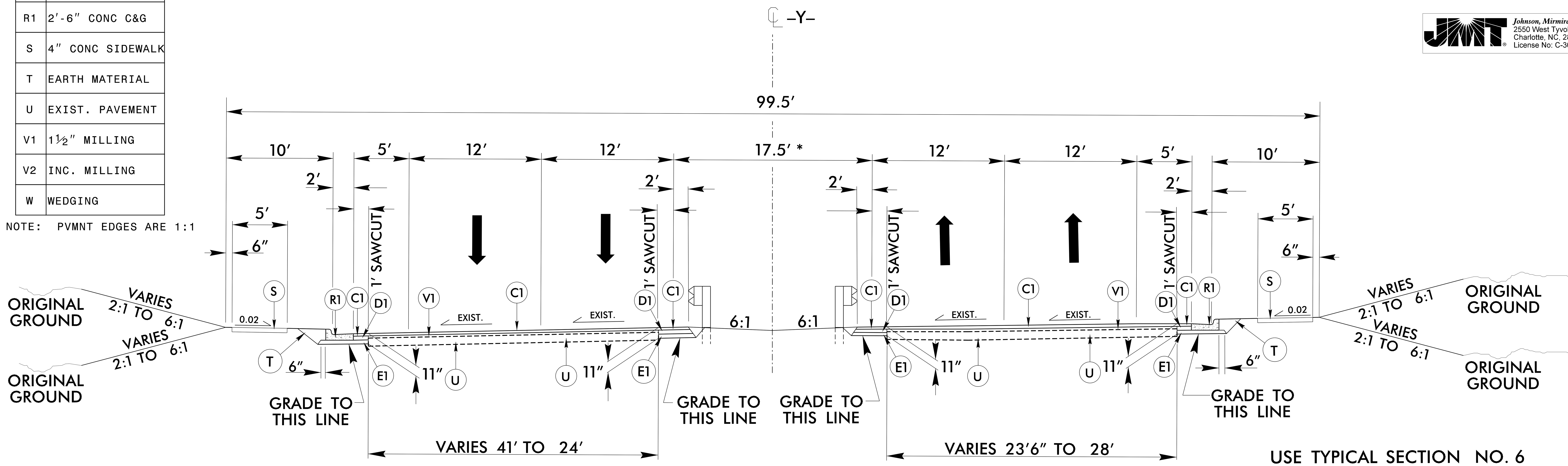
PAVEMENT SCHEDULE	
C1	3" S.95C
C2	VAR S.95C
D1	4" I19.0C
D2	VAR I19.0C
E1	4" B25.0C
E2	VAR B25.0C
R1	2'-6" CONC C&G
S	4" CONC SIDEWALK
T	EARTH MATERIAL
U	EXIST. PAVEMENT
V1	1½" MILLING
V2	INC. MILLING
W	WEDGING

NOTE: PVMNT EDGES ARE 1:1

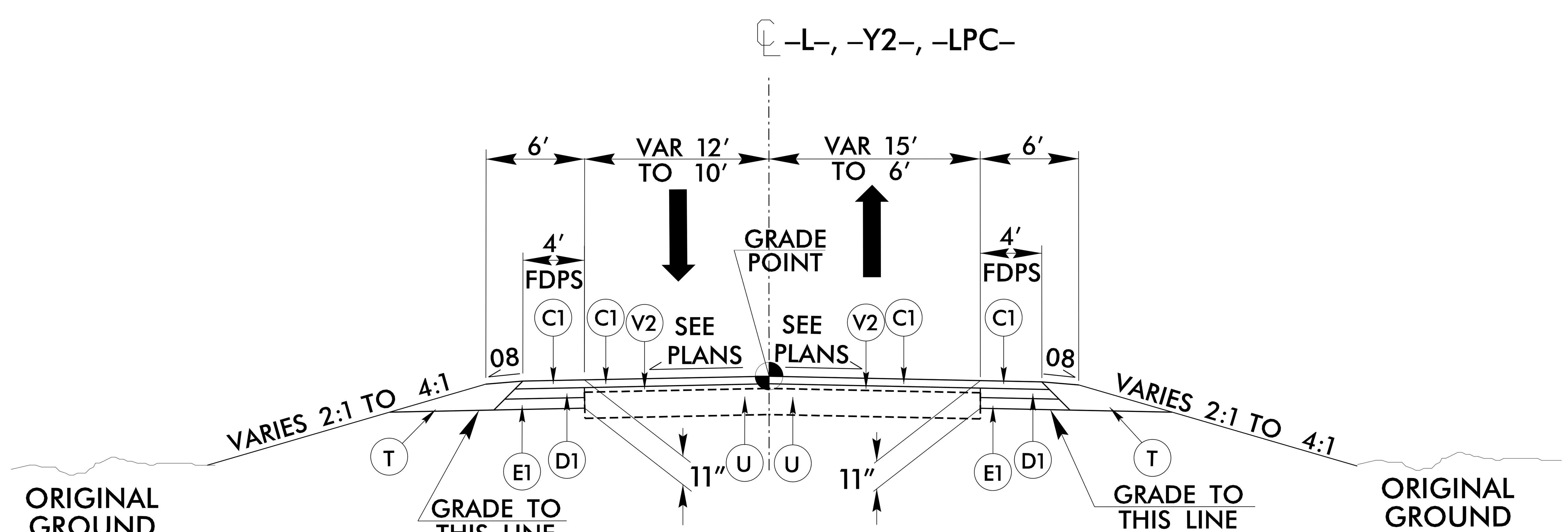


TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-Y- STA. 16+71.30 to -Y- STA. 21+02.38
-Y- STA. 21+02.38 to -Y- STA. 21+59.64

*VARIES to 22.5' -Y- STA. 16+71.30 to -Y- STA. 17+38.41
AND -Y- STA. 21+02.38 to -Y- STA. 21+59.64

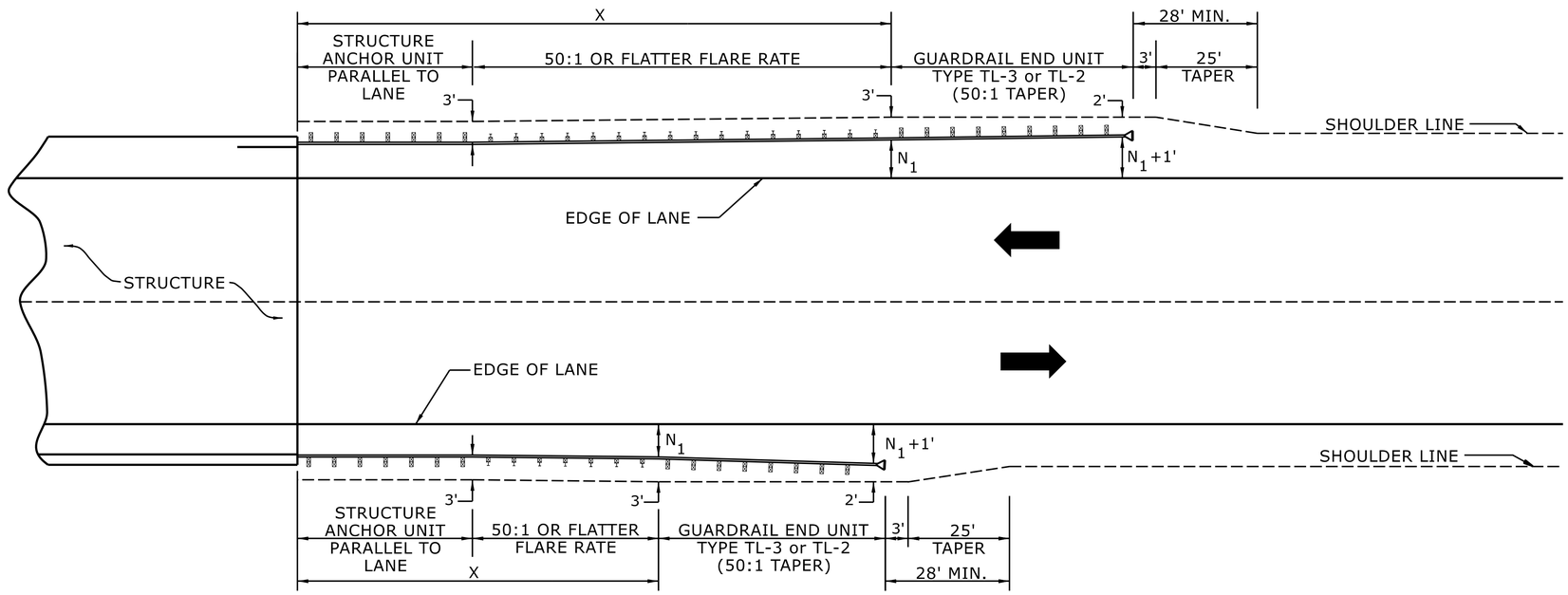


TYPICAL SECTION NO. 7

USE TYPICAL SECTION NO. 7

-L- STA. 25+50.00 to -L- STA. 25+85.00
-Y2- STA. 10+69.76 to -Y2- STA. 11+19.76
-LPC- 13+50.00 to -LPC- STA. 14+00.00

PROJECT REFERENCE NO.	SHEET NO.
B-5372	2C-1



USE FLARE RATE AS THE CONTROL IF THE "N_1" DISTANCE IS NOT OBTAINED.
("N_1" IS BASED ON SHOULDER WIDTHS IN THE ROADWAY DESIGN MANUAL)

SEE STD. 862.03 FOR STRUCTURE ANCHOR UNITS

FOR POSTED SPEEDS ≥ 45MPH USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45MPH USE GREU TYPE TL-2

GUARDRAIL LENGTH OF NEED (X) IS CALCULATED BASED ON THE AASHTO ROADSIDE DESIGN GUIDE.

LENGTHS AND OFFSETS FOR PROPOSED GUARDRAIL AT TWO LANE - TWO WAY LOCATIONS

STATE OF
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DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 4 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 033144 NICOLE M. HACKLER
10/28/2024

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CONTRACTS STANDARDS
AND DEVELOPMENT UNIT
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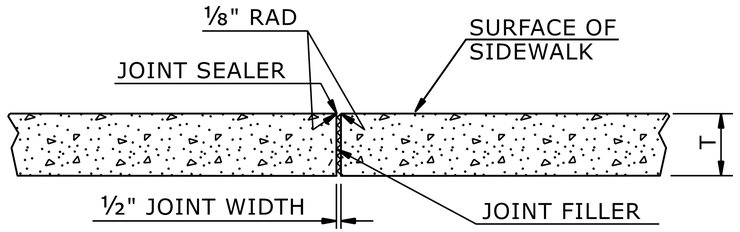
B-5372	2C-2

NOTES:

CONSTRUCT STANDARD SIDEWALK 5' WIDE AND 4" THICK UNLESS OTHERWISE DENOTED ON PLANS.

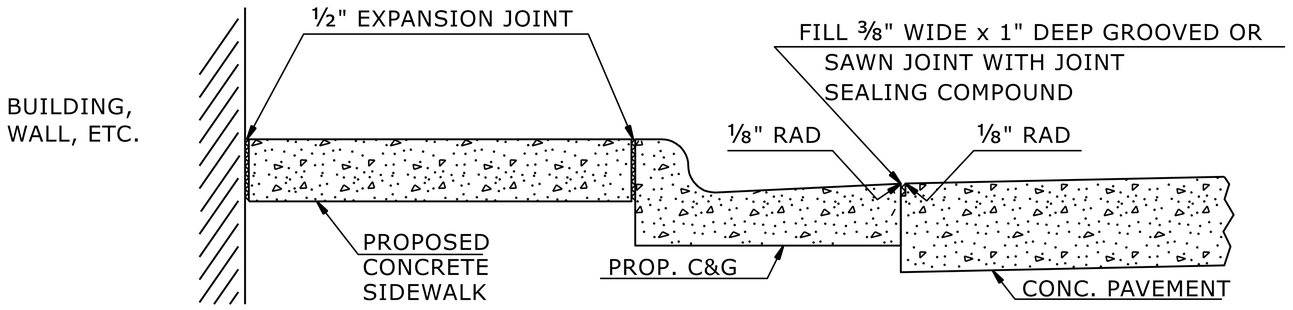
PLACE A GROOVE JOINT 1" DEEP WITH ⅛" RADII IN THE CONCRETE SIDEWALK AT 5' INTERVALS. ONE ½" EXPANSION JOINT WILL BE REQUIRED AT 50' INTERVALS. A ½" EXPANSION JOINT WILL BE REQUIRED WHERE THE SIDEWALK JOINS ANY RIGID STRUCTURE.

SEE STD. DWG. 848.06 FOR CURB RAMP LOCATION REQUIREMENTS AND CONSTRUCTION GUIDELINES.



T = SIDEWALK THICKNESS

TRANSVERSE EXPANSION JOINT IN SIDEWALK



DETAILS SHOWING JOINTS IN CONCRETE SIDEWALK

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

CONCRETE SIDEWALK

SHEET 1 OF 1

848D01

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10/28/2024

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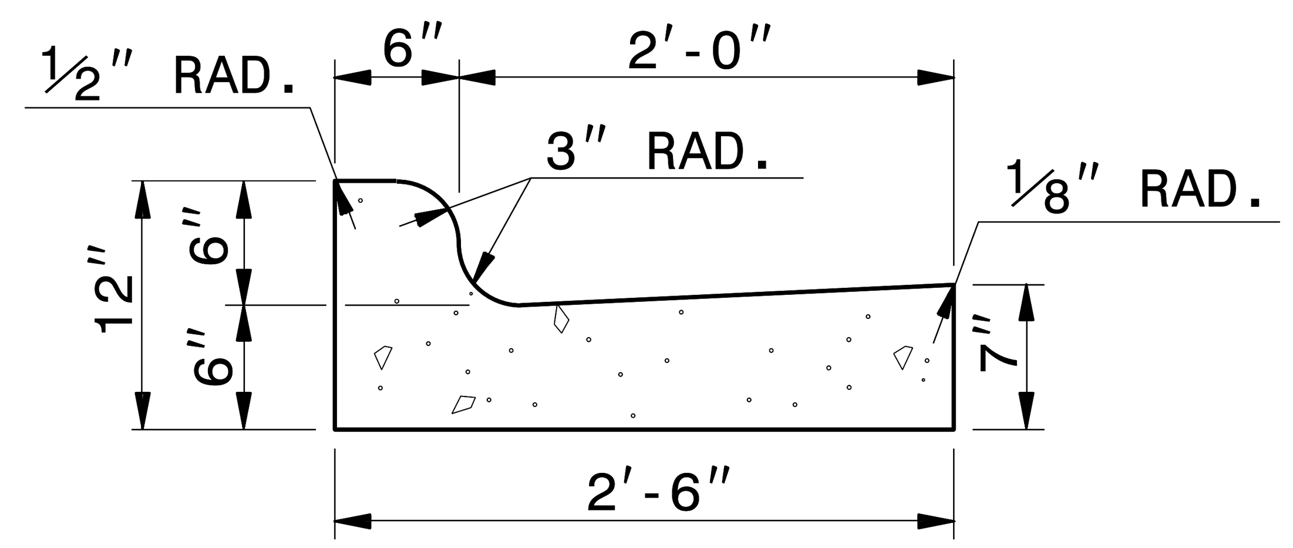
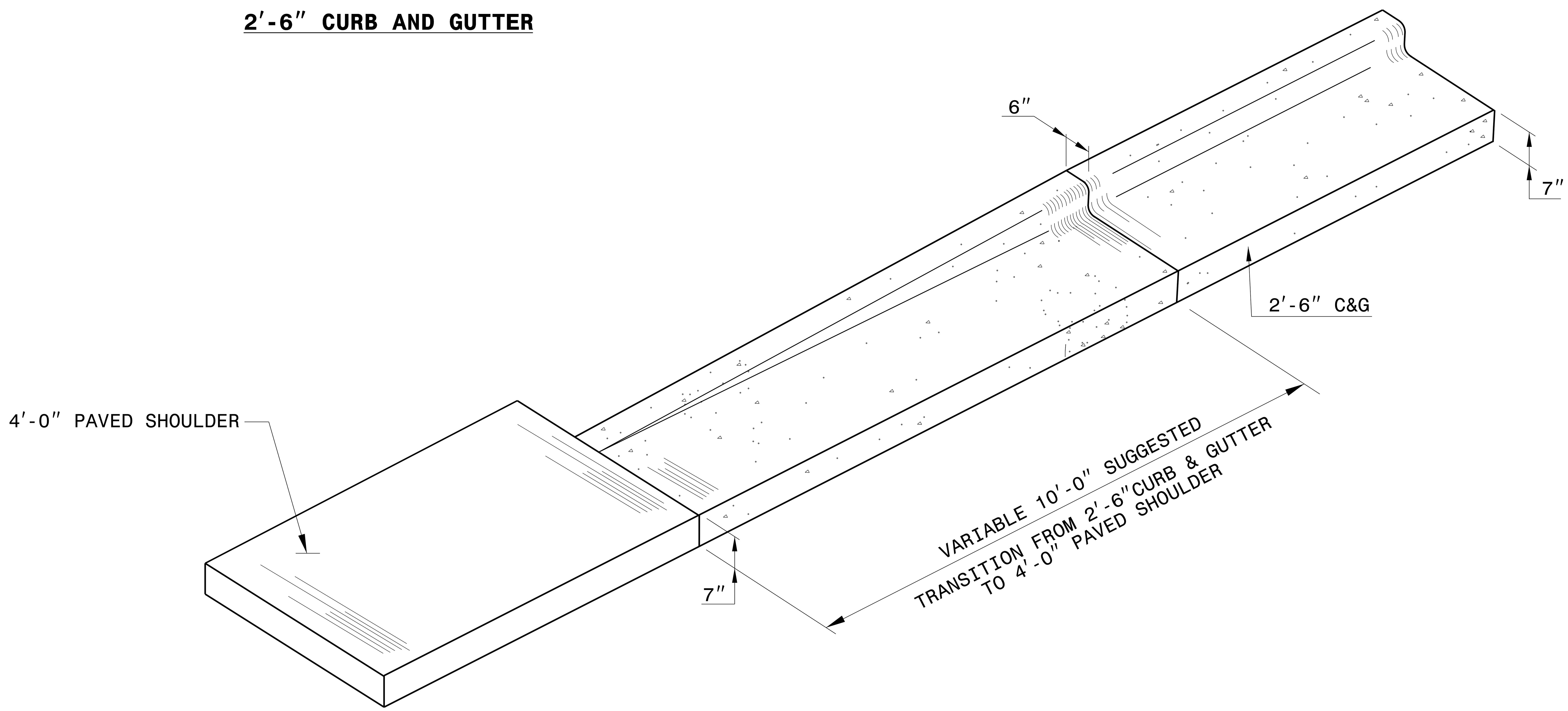
B-5372	2C-3

*NOTE: SEE STD. DWG. 846.01 FOR GENERAL NOTES



2′-6″ CURB AND GUTTER



ISOMETRIC VIEW OF TRANSITION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 53446 NICOLE M. HACKLER
10/28/2024

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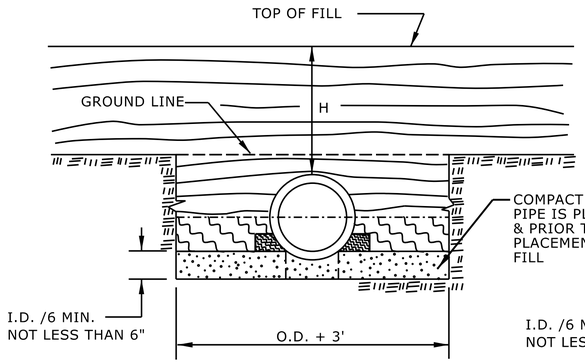
DETAIL OF 10′ TRANSITION FROM 2′-6″CURB & GUTTER TO 4′-0″ PAVED SHOULDER

ORIGINAL BY: ______ DATE: ______
MODIFIED BY: rnbritt DATE: 04-13-2016
CHECKED BY: ______ DATE: ______
FILE SPEC.: details/nbritt/english/misc/c&g transition sections.dgn

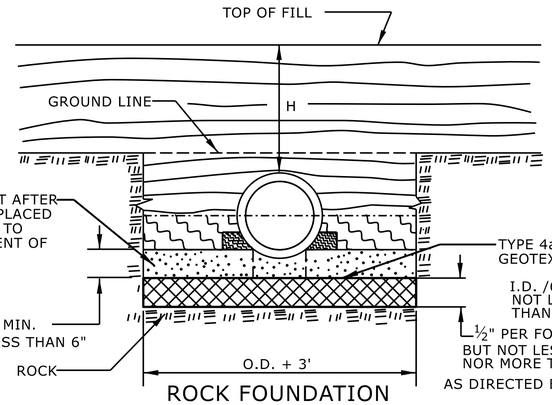
5/14/99

10-MAR-2020 11:25
S:\Contracts\Contracts Special Details\nbritt\english\misc\c&g transition sections.dgn
jhowerton AT CSD-320965

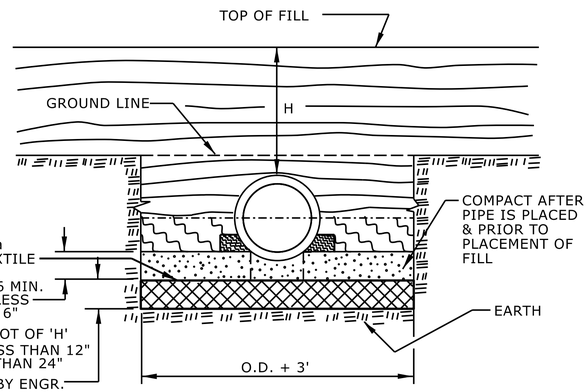
PROJECT REFERENCE NO.	SHEET NO.
B-5372	2C-4



NORMAL EARTH FOUNDATION

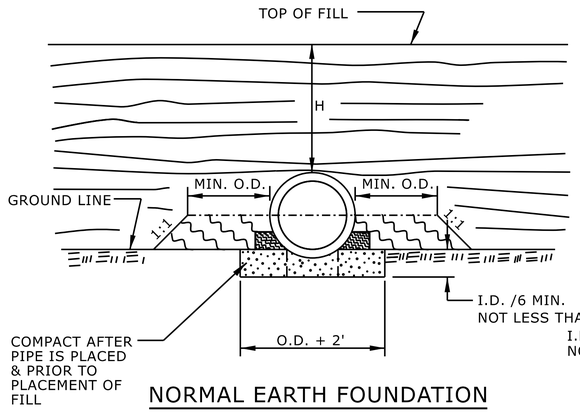


ROCK FOUNDATION

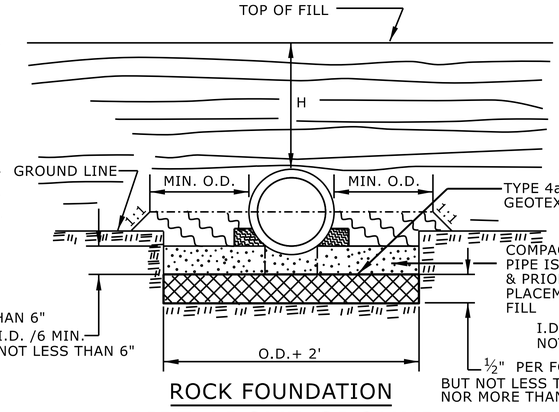


UNSUITABLE MATERIAL FOUNDATION

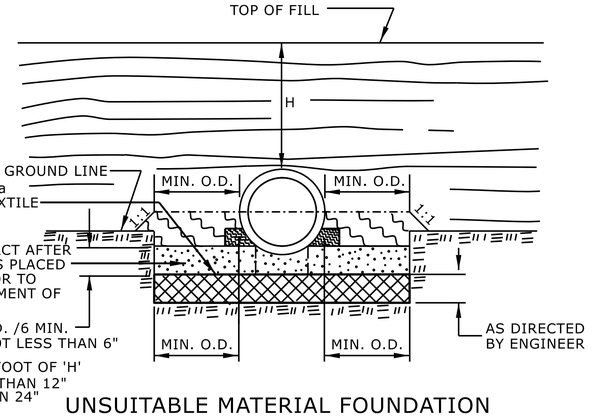
PIPE IN TRENCH



NORMAL EARTH FOUNDATION



ROCK FOUNDATION



UNSUITABLE MATERIAL FOUNDATION

PIPE ABOVE GROUND

GENERAL NOTES:

I.D. = THE MAXIMUM HORIZONTAL INSIDE DIAMETER DIMENSION.

O.D. = THE MAXIMUM HORIZONTAL OUTSIDE DIAMETER DIMENSION.

H = THE FILL HEIGHT MEASURED VERTICALLY AT ANY POINT ALONG THE PIPE FROM THE TOP OF THE PIPE TO THE TOP OF THE EMBANKMENT AT THAT POINT.

APPROVED SUITABLE LOCAL MATERIAL.

TAKE CARE TO FULLY COMPACT HAUNCH ZONE OF PIPE BACKFILL.

LOOSELY PLACED SELECT MATERIAL CLASS III OR CLASS II, TYPE 1 FOR PIPE BEDDING. LEAVE SECTION DIRECTLY BENEATH PIPE UNCOMPACTED AS PIPE SEATING AND BACKFILL WILL ACCOMPLISH COMPACTION.

DO NOT OPERATE HEAVY EQUIPMENT OVER ANY PIPE CULVERT UNTIL THE PIPE CULVERT HAS BEEN PROPERLY BACKFILLED AND COVERED WITH AT LEAST 3 FEET OF APPROVED MATERIAL.

REFER TO NCDOT PIPE MATERIAL SELECTION GUIDE AND STANDARD SPECIFICATIONS FOR ALLOWABLE PIPE FILL HEIGHTS AND PIPE SPECIFICATIONS.

SPRINGLINE OF PIPE

SELECT BACKFILL MATERIAL CLASS III OR CLASS II, BELOW SPRINGLINE.

UNDISTURBED EARTH MATERIAL

SELECT MATERIAL CLASS V OR VI FOR FOUNDATION CONDITIONING. ENCAPSULATE WITH TYPE IV GEOTEXTILE AS DIRECTED BY THE ENGINEER.

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DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR

METHOD OF PIPE INSTALLATION

RIGID PIPE

NORTH CAROLINA PROFESSIONAL SEAL 033144 ENGINEER NICOLE M. HACKLER
10/28/2024

SHEET 2 OF 2

300.01

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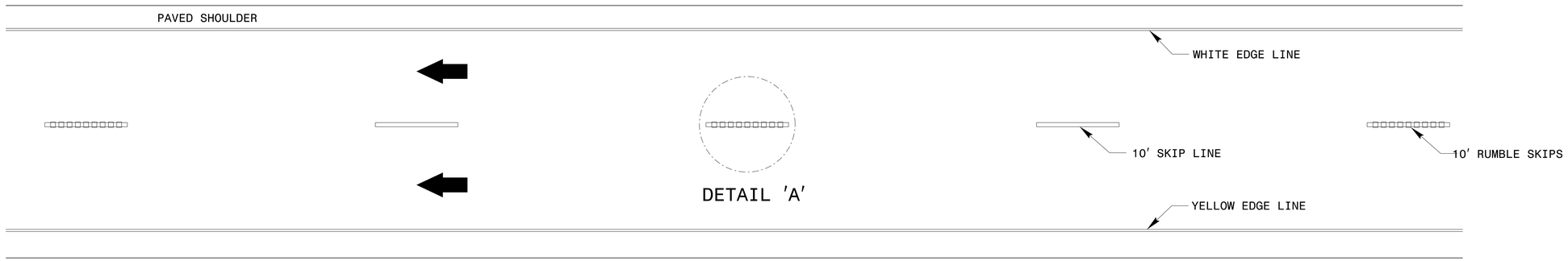
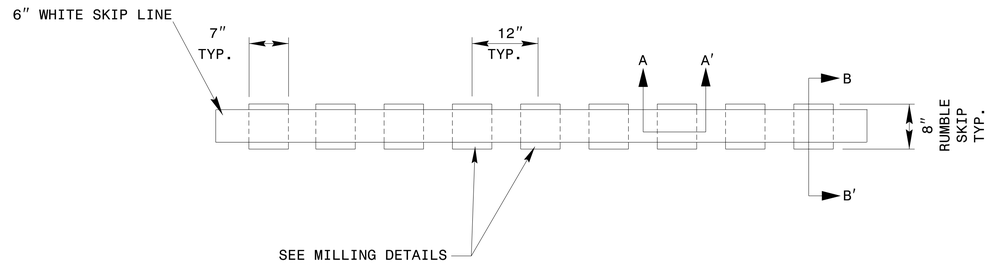
B-5372	2C-5

LANE TREATMENT

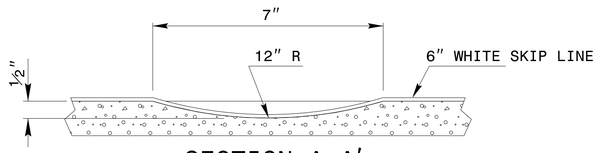


DETAIL 'A'

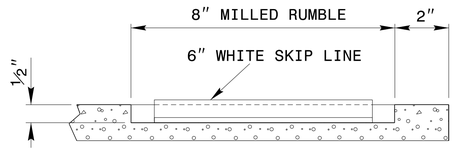


10′ RUMBLE SKIP

MILLING/MARKING DETAILS



SECTION A-A′



SECTION B-B′

NOTES:

1) USING A VACUUM IN THE SAME OPERATION, REMOVE ALL DEBRIS FROM THE MILLINGS JUST PRIOR TO PLACING ANY PAVEMENT MARKINGS.

2) ENSURE GLASS BEADS ARE SPREAD UNIFORMLY OVER THE ENTIRE SURFACE OF PAVEMENT MARKING.

3) MILL RUMBLES EVERY OTHER SKIP AS SHOWN.

4) SEE PLANS FOR MARKING THICKNESS

11/1/2024

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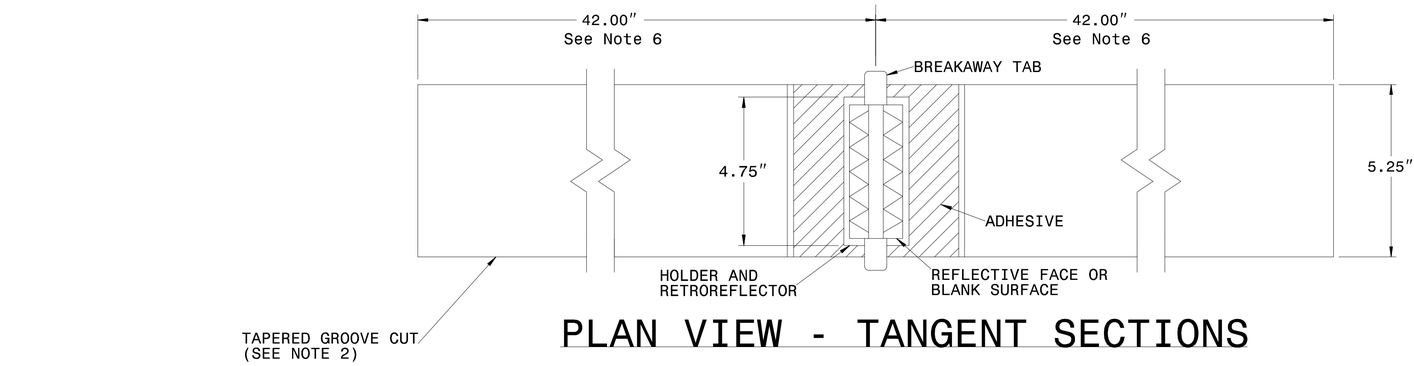
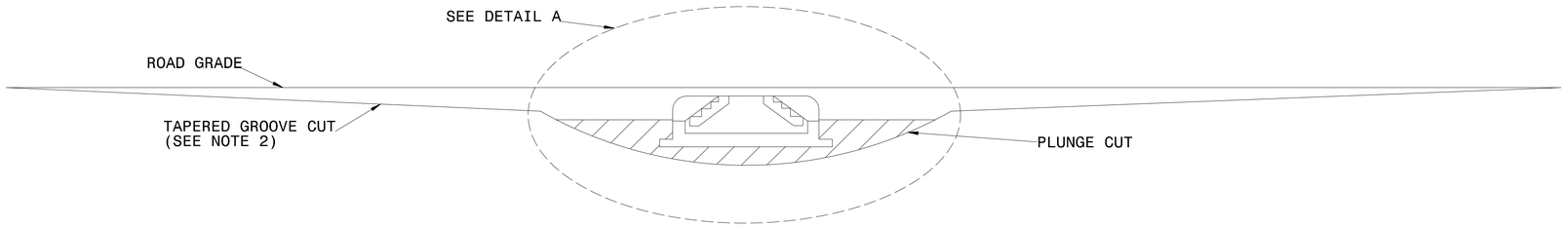
DETAIL OF MILLED RUMBLE SKIPS

ORIGINAL BY: rgwatson DATE: 02-06-2024
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.:

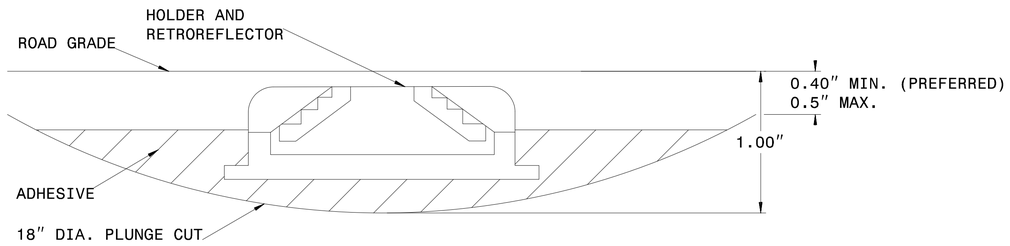
PROJECT REFERENCE NO.	SHEET NO.
B-5372	2C-6



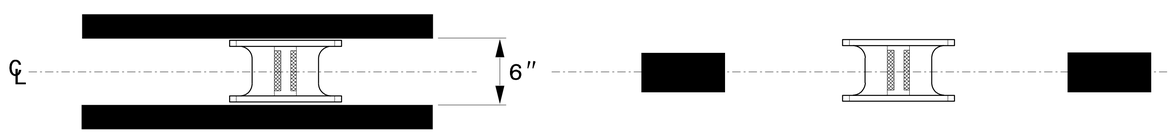
PLAN VIEW - TANGENT SECTIONS



PROFILE VIEW



DETAIL A



MARKER SPACING

NOTES:

1. ALL GROOVE EDGES SHALL BE AT LEAST 2 INCHES FROM ANY SEAM OR PAVEMENT JOINT
2. GROOVE CUTS MAY BE TAPERED OR BEVELED. TAPERED CUTS SHALL START AT ROAD LEVEL ON EACH END AND TAPER AT A FIXED RATE AS SHOWN ON THE PROFILE VIEW. BEVELED GROOVE CUTS SHALL BE 0.5″ MAXIMUM DEPTH (0.4″ PREFERRED), AND SHALL BE 0.4″ MINIMUM DEPTH AT BOTH ENDS OF THE PLUNGE CUT.
3. GROOVE AND PLUNGE CUT SHALL BE CLEAN AND DRY PRIOR TO PLACEMENT OF ADHESIVE.
4. THE EPOXY ADHESIVE SHALL BE THOROUGHLY MIXED UNTIL IT IS UNIFORM IN COLOR, AND APPLIED IN COLOR, AND APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
5. MARKER SHALL BE INSTALLED AS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS WITH THE BREAKWAY TABS RESTING ON THE PAVEMENT SURFACE. THE EPOXY SHALL BE FILLED TO THE LEVEL OF THE TOP OF THE MARKER HOLDER. EPOXY SHALL NOT TOUCH THE RETROREFELCTOR.
6. TOTAL GROOVE LENGTH MAY BE SHORTENED TO 54″ ON SHARP CURVES IF APPROVED BY THE ENGINEER. GROOVES SHALL NOT OVERLAP WITH LOOP DETECTOR WIRES.

NORTH CAROLINA PROFESSIONAL SEAL 042546 ENGINEER MATTHEW V. SPRINGER

Digitally signed by: Matthew V. Springer
DocuSigned by: BC60F6E8B584403...

11/1/2024

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DETAIL OF INLAID CRADLE MARKER

ORIGINAL BY: rgwatson DATE: 02-06-2024
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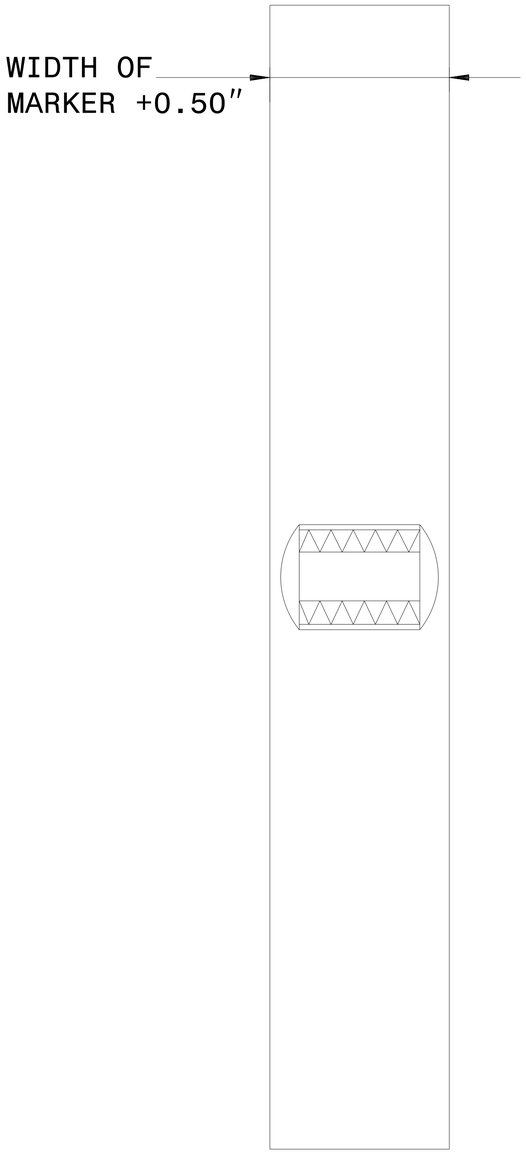
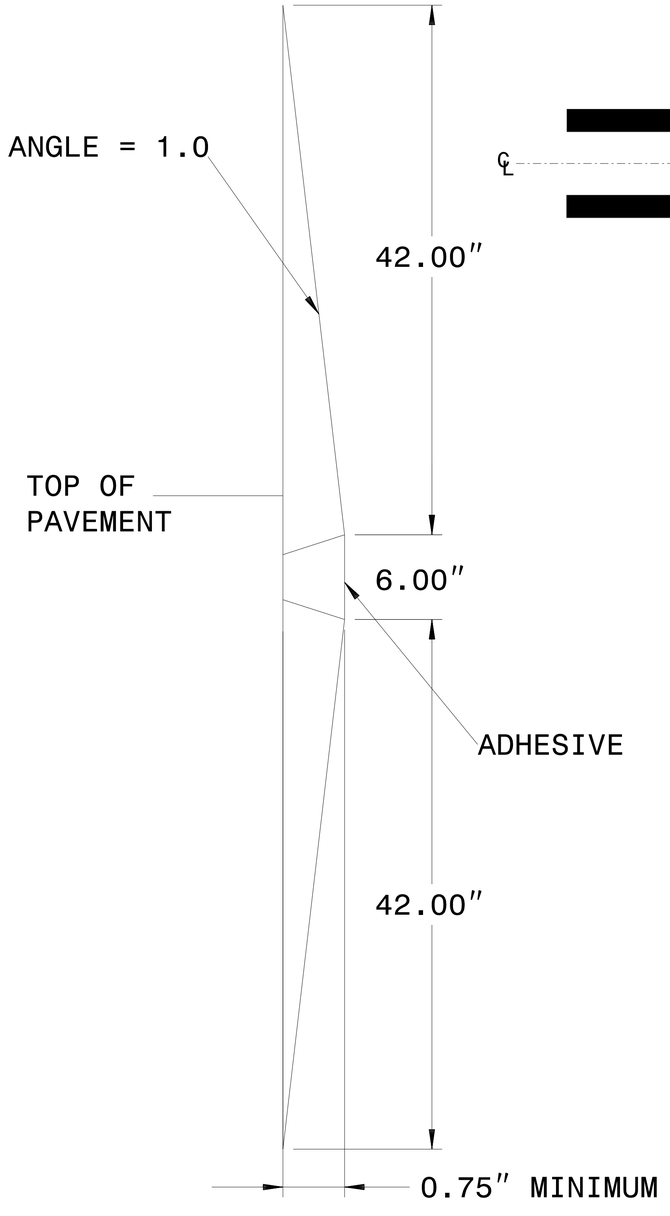
B-5372	2C-7

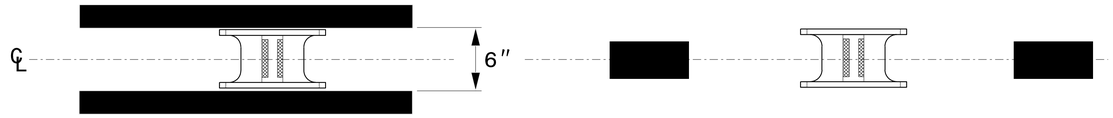
PLAN VIEW



SECTION VIEW



MARKER SPACING



Digitally signed by Matthew V. Springer
BC60F6E88584403...

11/1/2024

NOTES:

1. THE PAVEMENT SHALL BE SAW CUT TO THE DIMENSIONS SHOWN.
2. THE SAW CUT AREA MUST BE DRY AND FREE OF DUST. DIRT OR ANY MATERIAL WHICH WILL ADVERSELY AFFECT THE BOND OF THE ADHESIVE.
3. INSTALL MARKERS WITH APPROVED ADHESIVE. ADHESIVE SHOULD NOT BE ALLOWED TO BUILD UP IN FRONT OF MARKER LENS.
4. THE MARKER AND THE ADHESIVE PAD SHALL NOT EXCEED THE TOP OF THE PAVEMENT SURFACE. DEPTH = 0.75″ MINIMUM.
5. RECESSED MARKERS INSTALLED ON CONCRETE PAVEMENT SHOULD BE INSTALLED A MINIMUM OF 2″ FROM THE PAVEMENT JOINT OR EDGE

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DETAIL OF INLAID RAISED PAVEMENT MARKER

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

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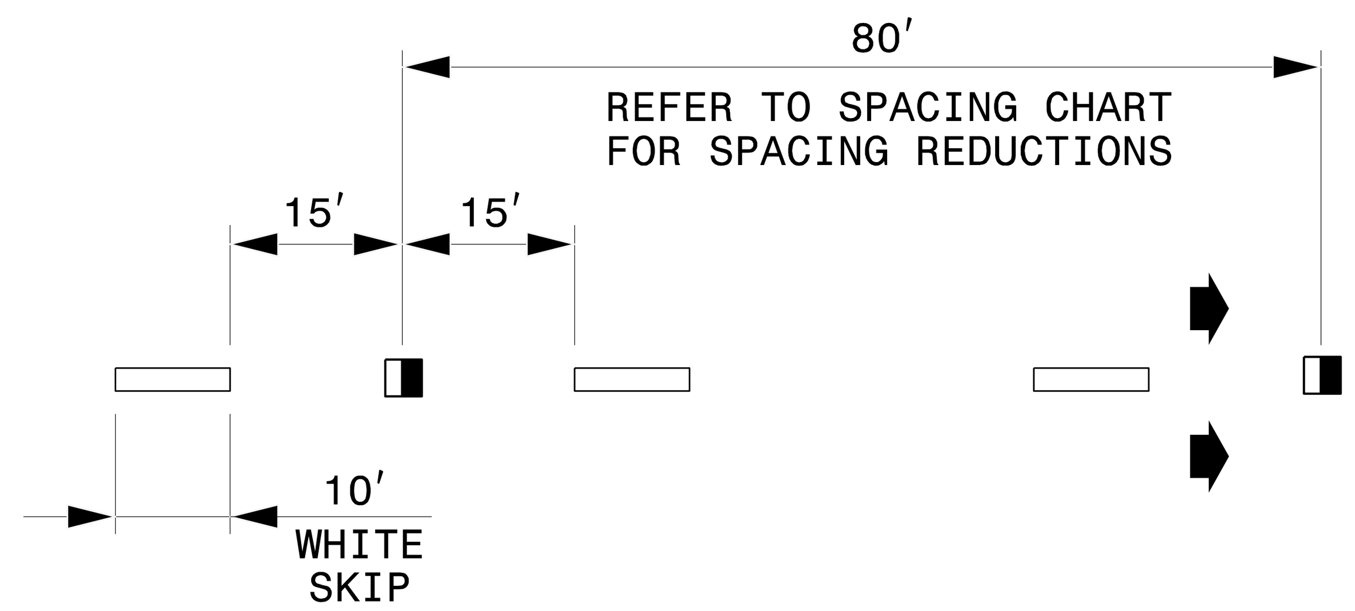
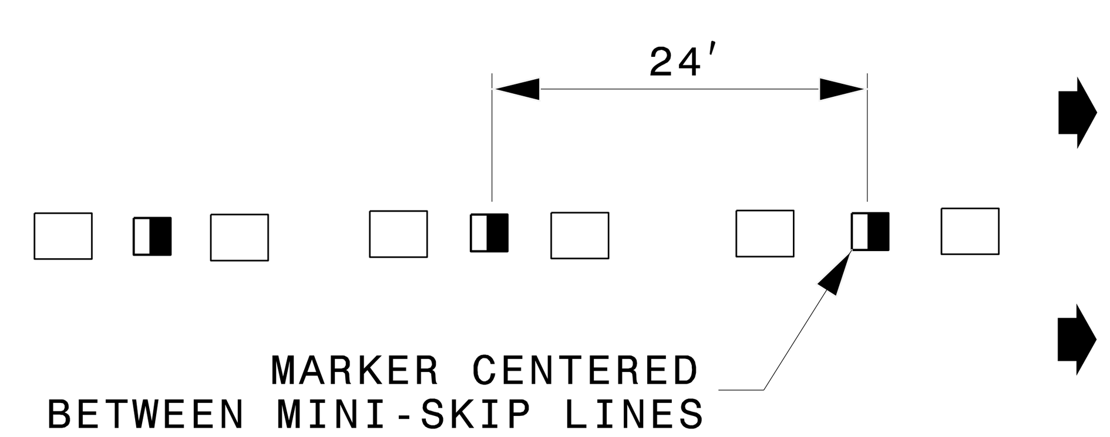
B-5372	2C-8

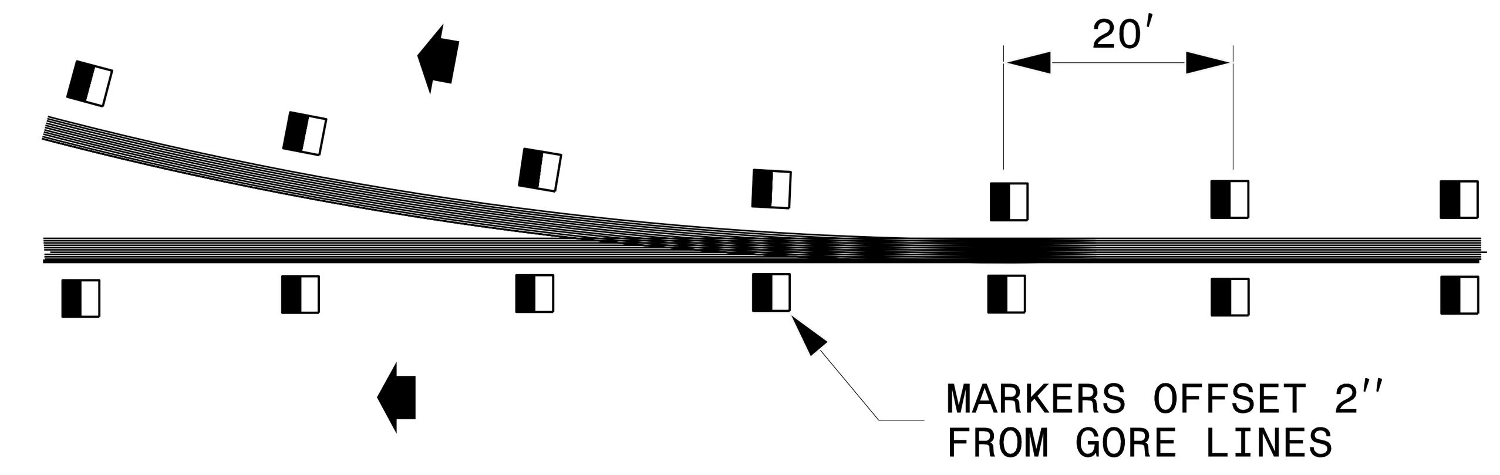
10′-30′/SP SKIP LINE



3′-9′/SP MINI-SKIP LINE

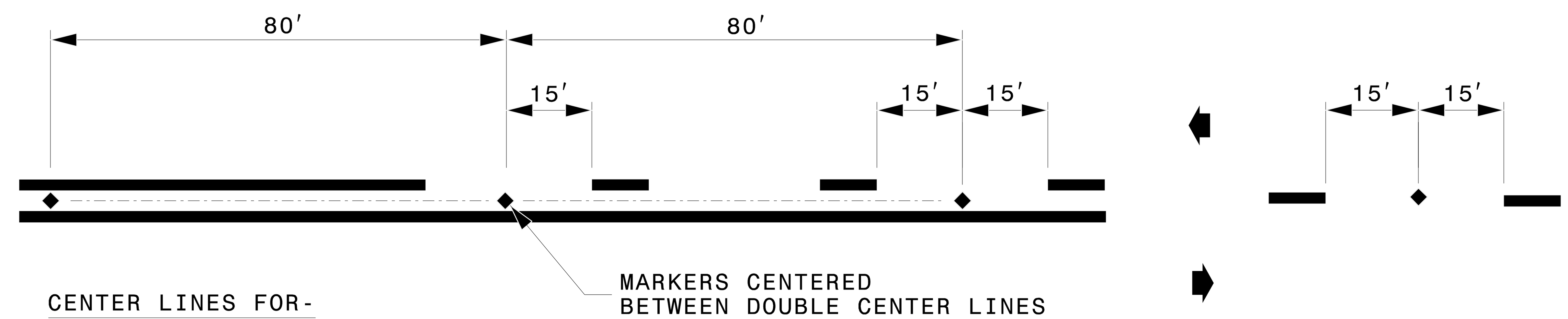


GORE LINES



YELLOW CENTER LINES

REFER TO SPACING CHART
FOR SPACING REDUCTIONS

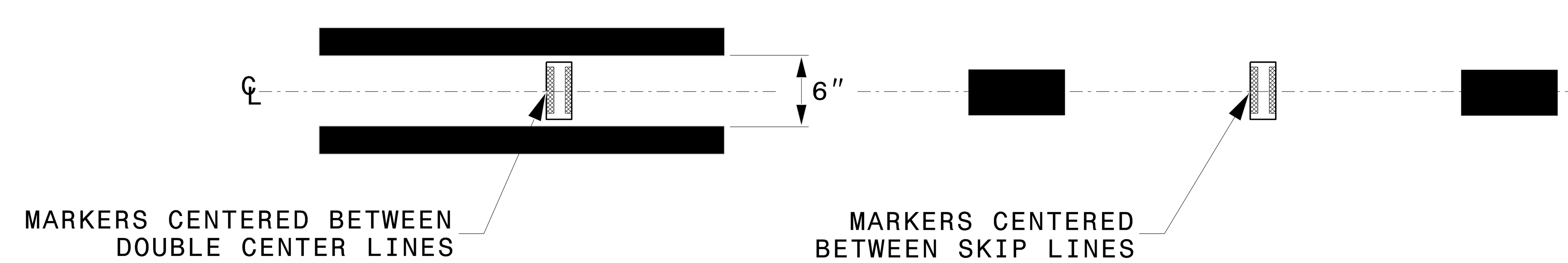


CENTER LINES FOR-

TWO-LANE, TWO-WAY ROADWAYS
UNDIVIDED ROADWAYS
TWO-WAY LEFT TURN LANES

DETAIL OF PAVEMENT MARKER PLACEMENT

RAISED REFLECTIVE PAVEMENT MARKERS



LEGEND

- CRYSTAL/RED PAVEMENT MARKER
- YELLOW/YELLOW PAVEMENT MARKER
- DIRECTION OF TRAFFIC FLOW

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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
RAISED PAVEMENT MARKERS
INSTALLATION SPACING

SHEET 2 OF 3
1250D01

11/1/2024

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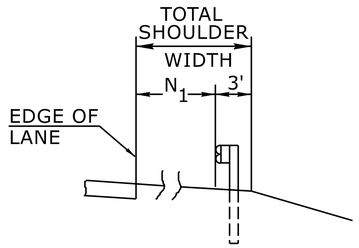
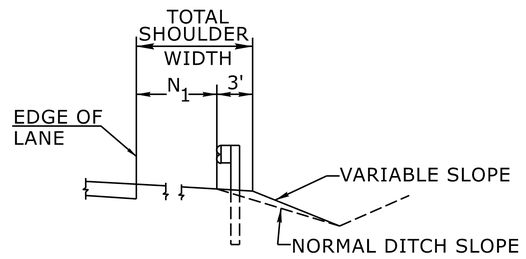
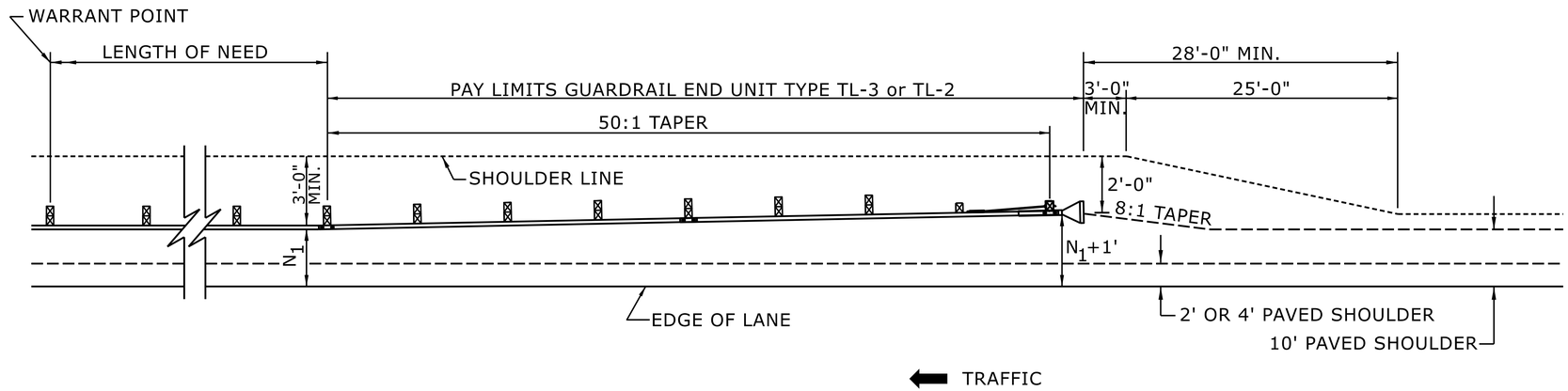


FILL SECTION



CUT SECTION

"N_1"= DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL WHERE GUARDRAIL IS PARALLEL TO LANE.



FOR POSTED SPEEDS ≥ 45mph USE GREU TYPE TL-3
FOR POSTED SPEEDS < 45mph USE GREU TYPE TL-2

DETAIL OF BEGINNING OF GUARDRAIL IN CUT OR FILL SECTION

STATE OF
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RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
GUARDRAIL PLACEMENT

SHEET 6 OF 15

862D01

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 023144 NICOLE M. HACKLEY
10/28/2024

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GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 022246 ENGINEER SCOTT A. HIDDEN

DocuSigned by: Scott A. Hidden 08/22/2024
F760CAEB96EC4D3...
SIGNATURE DATE

ENGINEER

SIGNATURE DATE

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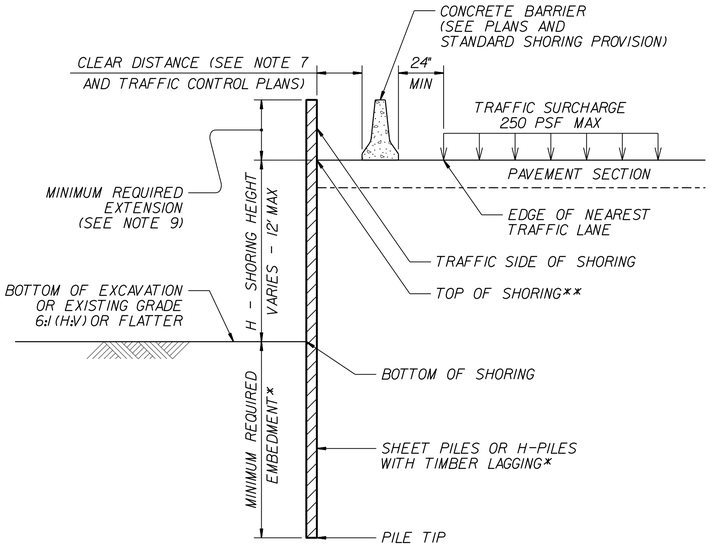
GROUNDWATER CONDITION (SEE NOTE 6)	H SHORING HEIGHT (FT)	SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT					SURCHARGE CASE WITH TRAFFIC IMPACT				
		SHEET PILES		H-PILES WITH TIMBER LAGGING			SHEET PILES		H-PILES WITH TIMBER LAGGING		
		MINIMUM REQUIRED EMBEDMENT (FT)	MINIMUM REQUIRED SECTION MODULUS (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 "--".

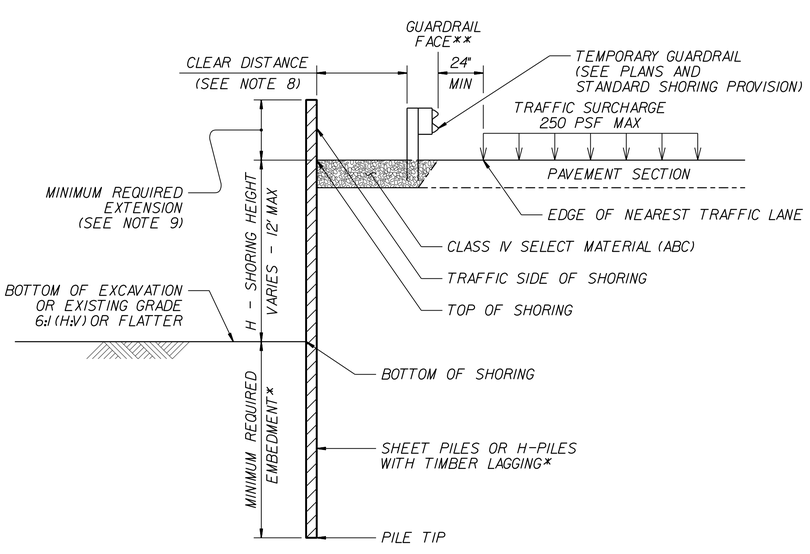
NOTES:

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.



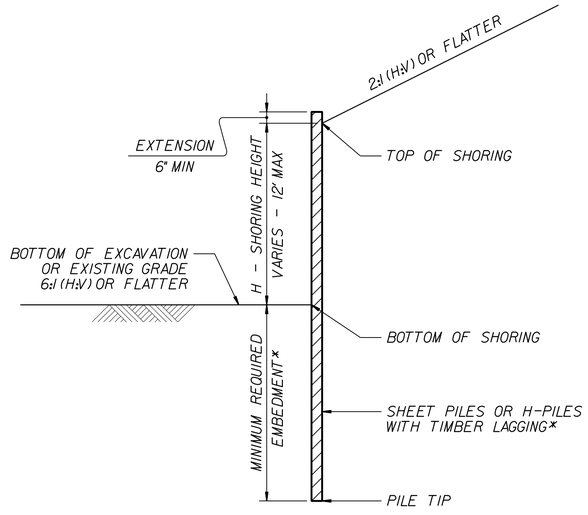
CONCRETE BARRIER

**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

SUMMARY OF EARTHWORK

IN CUBIC YARDS

STATION	STATION	UNCL. EXCAV.	EMBANK. ±	BORROW	WASTE
-L- 17+00.00	-L- 19+75.44 (BEGIN BRIDGE)	9	5743	5734	
-Y- 16+71.30	-Y- 21+59.64	2935	706		2229
-L- 21+50.94 (END BRIDGE)	-L- 25+85.00	41	9520	9479	
-LPC- 10+75.53	-LPC- 14+00.00	9	7259	7250	
-Y2- 10+00.00	-Y2- 11+19.76	31	21		10
PROJECT SUBTOTALS:		3,025	23,249	22,463	2,239
WASTE IN LIEU OF BORROW				-2,239	
PROJECT TOTALS:		3,025	23,249	20,224	
EST.5% TO REPLACE TOP SOIL ON BORROW PIT				1,011	
GRAND TOTALS:		3,025		21,235	
SAY:		3,100		21,300	

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

UNDERCUT EXCAVATION = 450 CY (CONTINGENCY)
SELECT GRANULAR MATERIAL = 400 CY (CONTINGENCY)
GEOTEXTILE FOR SOIL STABILIZATION = 400 SY (CONTINGENCY)
GEOTEXTILE FOR SUBGRADE STABILIZATION = 300 SY (CONTINGENCY)
SHALLOW UNDERCUT = 100 CY (CONTINGENCY)
CLASS IV SUBGRADE STABILIZATION = 200 TON (CONTINGENCY)
DRAINAGE DITCH EXCAVATION = 370 CY

PAVEMENT REMOVAL SUMMARY

IN SQUARE YARDS

SURVEY LINE	STATION	STATION	LOCATION LT/RT/CL	ASPHALT REMOVAL	ASPHALT BREAKUP	CONCRETE REMOVAL	CONCRETE BREAKUP
-L-	18+00	18+45	CL	164.56			
-L-	24+45	25+50	CL	343.78			
-L-	18+45	19+65	CL		389.78		
-L-	21+62	24+45	CL		961.66		
-LPC-	10+00	13+50	CL		679.44		
			TOTAL:	508.34	2030.88		
			SAY:	510	2040		

"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.

*ADDITIONAL GUARDRAIL POSTS = 10

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH		TEMPORARY		WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH		W		ANCHORS								IMPACT ATTENUATOR TYPE TL-3			SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
				STRAIGHT	SHOP CURVED	STRAIGHT	SHOP CURVED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	GREU TYPE TL-3	GREU TYPE TL-2	III	CAT-1	B-77	BIC	AT-1	EA	G	NG				
-L-	18+25.91	19+86.11	RT.	156.25'					19+86.11	7.5'	8.5'	137.5'		3.39'				1	1									90.5'		
-L-	19+08.52	19+64.77	LT.	56.25'				19+64.77		7.5'	8.5'		37.5'		1.39'			1	1									91.6'		
-L-/-LPC-	21+61.61	14+09.01	RT.	356.25'				21+61.61		12'	15'		25'		0.5'			1	1									94.4'		
-L-	21+40.28	24+04.46	LT.	256.25'				23+50.00	21+40.28	9.5'	10.5'	25'		0.5'				1	1									81.9'		
-Y-	16+96.36	17+17.36	MEDIAN																					1		1				
-Y-	17+17.36	21+17.25	MED.RT.	400.00'																								212.6'		
-Y-	17+17.36	21+17.25	MED.LT.	400.00'																								305.6		
-Y-	21+17.25	21+38.50	MEDIAN																					1		1				
PROJECT TOTAL				1625.00'														4	4					2		2		876.6		
LESS DEDUCTION FOR ANCHOR UNITS																														
4 TYPE III @ 18.75'				-75'																										
4 GREU TL-2 @ 25'				-100'																										
TOTAL				1,450.00'														4	4					2		2		876.6'		

TEMPORARY GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	TEMPORARY STRAIGHT	TEMPORARY SHOP CURVED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOUL. WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	XI MOD	GREU TYPE TL-3	GREU TYPE TL-2	III	CAT-1	B-77	BIC	AT-1	EA	G	NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-Y-	17+17.36	21+17.25	RT.			368.75'											1			1										
-Y-	21+17.25	21+38.50	LT.			331.25'											1			1										
PROJECT TOTAL						700.00'																								
LESS DEDUCTION FOR ANCHOR UNITS																														
2 CAT-1 @ 6.25'						-12.5'																								SEE SHEET TMP-5 FOR TEMPORARY GUARDRAIL
2 GREU TL-3 @ 25'						-50'																								SEE SHEET TMP-5 FOR TEMPORARY GUARDRAIL
TOTAL						637.50'											2			2										

CNC21475L

COMPUTED BY:	OJS	**DATE:**	08/08/2024
CHECKED BY:	JCF	**DATE:**	08/08/2024

PROJECT NO.	SHEET NO.
B-5372	3D-1

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

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

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET		STRUCTURE NUMBER FROM	TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C.S. PIPE 15 .064	18 .064	24 .064	30 .079	36 .079	42 .109	48 .109	R. C. PIPE CLASS IV 12	15	18	24	30	36	42	48
L 17+21	19	LT	0402		722.49																		
			0402	0401		719.24	712.45		48														
L 17+21	19	RT	0403		722.49																		
			0403	0402		719.49	719.24										36						
Y 18+12	0	CL	0405		713.47																		
			0405	0418		709.75	709.50	0.3									36						
L 19+58	77	LT	0406		712.44																		
			0406	0417		710.52	710.30										24						
L 19+30	19	LT	0407		732.90																		
			0407	0406		729.90	710.52		64														
L 22+70	19	LT	0409		733.91																		
			0409	0408		724.08	709.79		72														
L 21+65	19	LT	0410		736.32																		
			0410	0409		733.32	730.91										100						
Y 19+68	0	CL	0411		708.61																		
			0411	0412		705.52	705.14											40					
Y 19+69	40	LT	0412		708.91																		
			0412	0421		705.14	703.37											76					
Y 20+46	0	CL	0413		706.30																		
			0413	0421		703.55	703.16										40						
Y 21+17	40	LT	0414		704.89																		
			0414	0415		700.64	700.43											24					
Y 21+26	40	RT	0416		704.68																		
			0416	0414		701.68	700.89										80						
Y 18+12	40	RT	0417		713.30																		
			0417	0405		710.30	709.75										36						
Y 18+12	40	LT	0418		713.30																		
			0418	0404		709.50	709.34	0.4									32						
Y 19+66	40	RT	0419		708.97																		
			0419	0411		705.72	705.52											40					
Y 20+46	40	LT	0421		706.62																		
			0421	0414		702.91	700.64											72					
Y 21+20	62	RT	0425		702.90																		
			0425	0426		699.90	699.50											36					
L 23+48	19	LT	0427		727.65																		
			0427	0409		724.65	724.08										112						
SHEET TOTALS									184								496	288					
PROJECT TOTALS									184								496	288					

FROM	TO	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G	
0402								1			1		1		
0402	0401														
0403								1			1			1	
0403	0402														
0405								1							
0405	0418														
0406								1							
0406	0417														
0407								1			1		1		
0407	0406														
0409								1	4.83		1			1	
0409	0408														
0410								1			1			1	
0410	0409														
0411								1							
0411	0412														
0412								1			1			1	
0412	0421														
0413								1							
0413	0421														
0414								1			1			1	
0414	0415														
0416								1			1		1		
0416	0414														
0417								1			1		1		
0417	0405														
0418								1			1			1	
0418	0404														
0419								1			1		1		
0419	0411														
0421								1			1			1	
0421	0414														
0425								1							
0425	0426														
0427								1			1			1	
0427	0409														
SHEET TOTALS								18	4.8		13		5	8	
PROJECT TOTALS								18	4.8		13		5	8	

FROM	TO	CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29
0402																		
0402	0401																	
0403																		
0403	0402																	
0405									1					1				
0405	0418																	
0406									1					1				
0406	0417																	
0407																		
0407	0406																	
0409																		
0409	0408																	
0410																		
0410	0409																	
0411									1					1				
0411	0412																	
0412																		
0412	0421																	
0413									1					1				
0413	0421																	
0414																		
0414	0415																	
0416																		
0416	0414																	
0417																		
0417	0405																	
0418																		
0418	0404																	
0419																		
0419	0411																	
0421																		
0421	0414																	
0425									1							1		
0425	0426																	
0427																		
0427	0409																	
SHEET TOTALS									5					4		1		
PROJECT TOTALS									5					4		1		

FROM	TO	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
0402																																		
0402	0401																			2														
0403																																		
0403	0402																																	
0405																																		
0405	0418																																	
0406																																		
0406	0417																																	
0407																																		
0407	0406																			2														
0409																																		
0409	0408																			2														
0410																																		
0410	0409																																	
0411																																		
0411	0412																																	
0412																																		
0412	0421																																	
0413																																		
0413	0421																																	
0414																																		
0414	0415																																	
0416																																		
0416	0414																																	
0417																																		
0417	0405																																	
0418																																		
0418	0404																																	
0419																																		
0419	0411																																	
0421																																		
0421	0414																																	
0425																																		
0425	0426																																40	
0427																																		
0427	0409																																	
SHEET TOTALS																				6													40	
PROJECT TOTALS																				6													40	

ABBREVIATIONS

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

CNC2147SL

COMPUTED BY:	OJS	**DATE:**	08/08/2024
CHECKED BY:	JCF	**DATE:**	08/08/2024

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

PROJECT NO.	SHEET NO.
B-5372	3D-2

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

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 54 INCHES & OVER)

LINE & STATION / SIZE / THICKNESS OR GAUGE	OFFSET	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	TOP ELEVATION FT.	INVERT ELEVATION FT.	INVERT ELEVATION FT.	MINIMUM REQUIRED SLOPE %	C. S. PIPE 15 .064	C. S. PIPE 54	C. S. PIPE 60	C. S. PIPE 66	C. S. PIPE 72	C. S. PIPE 78	C. S. PIPE 84	R. C. PIPE CLASS III 54	R. C. PIPE CLASS III 60	R. C. PIPE CLASS III 66	R. C. PIPE CLASS III 72	R. C. PIPE CLASS III 78	R. C. PIPE CLASS III 84	72" WELDED STEEL PIPE 1" THICK, GRADE B IN SOIL	72" WELDED STEEL PIPE 1" THICK, GRADE B NOT IN SOIL	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CY	REINFORCED ENDWALLS CY
L 21+82	99 LT	0420		708.4																				7.500
		0420	0422		702.4	692.7	0.6														124	124		
SHEET TOTALS																					124	124		7.500
PROJECT TOTALS																					124	124		7.500

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	DRAINAGE STRUCTURE MASONRY CY	QUANTITIES FOR DRAINAGE STRUCTURES (NOTE: TOTAL LIN. FT. FOR PAY QUANTITY SHALL BE A + (1.3 X B)) 0' THRU 5' EACH	A 5' THRU 10' LIN. FT.	B 10' AND ABOVE LIN. FT.	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STD. 840.03 GRATE TYPE E	F	G		CONCRETE TRANSITIONAL SECTION D.I. STD. 852.04 OR STD. 852.06	C.B. STD. 852.05	OPEN THROAT C.B. STD. 840.04 OR STD. 840.05	CONCRETE BRIDGE APPROACH D.I. STD. 840.13	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATES STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR STD. 840.26	G.D.I. TYPE "B" STD. 840.18 OR STD. 840.27	G.D.I. TYPE "D" STD. 840.19 OR STD. 840.28	G.D.I. (W.S. FLAT) FRAME WITH GRATE STD. 840.20	G.D.I. (W.S. FLAT) FRAME W/ 2 GRATES STD. 840.20	G.D.I. (W.S. SAG) FRAME W/ GRATE STD. 840.22	G.D.I. (W.S. SAG) FRAME W/ 2 GRATES STD. 840.22	G.D.I. (N.S. SAG) FRAME W/ GRATE STD. 840.24	G.D.I. (N.S. SAG) FRAME W/ 2 GRATES STD. 840.24	G.D.I. (N.S. FLAT) FRAME W/ GRATE STD. 840.29	G.D.I. (N.S. FLAT) FRAME W/ 2 GRATES STD. 840.29	DRIVEWAY D.I. STD. 840.30	FRAME W/ GRATE FOR DRIVEWAY STD. 840.30
L 21+82	0420																													
	0420	0422																												
SHEET TOTALS																														
PROJECT TOTALS																														

LINE & STATION	STRUCTURE NUMBER FROM	STRUCTURE NUMBER TO	J.B. STD. 840.31 OR STD. 840.32	ANGLED VANE GRATES AND FRAMES STD. 840.33	T.B.J.B. STD. 840.34	T.B.D.I. STD. 840.35	T.B.D.I. FOR STEEL GRATES STD. 840.36	STEEL FRAME WITH TWO GRATES STD. 840.37	TEMP STEEL PLATE COVER MASONRY DRAINAGE	SPRING BOX STD. 840.41	M.H. STD. 840.51, STD. 840.52, OR STD. 840.53	M.H. FRAME AND COVER STD. 840.54	CONVERT EXISTING C.B. TO J.B.	CONVERT EXISTING C.B. TO D.I.	CONVERT EXISTING D.I. TO J.B.	CONVERT EXISTING J.B. TO D.I.	ADJUST C.B.	ADJUST D.I.	15" C.S. ELBOW	18" C.S. ELBOW	24" C.S. ELBOW	30" C.S. ELBOW	36" C.S. ELBOW	BERM DITCH OUTLET STD. 850.10 (PER EACH)	BERM DITCH OUTLET STD. 850.11 (PER EACH)	MODIFIED CONC. FLUME	PREFORMED SCOUR HOLE (PER EACH)	ENERGY DISSIPATION BASIN	FLOWABLE FILL CY	CONCRETE COLLARS CL. "B" STD. 840.72 CY	CONCRETE AND BRICK PIPE PLUG STD. 840.71 CY	PIPE REMOVAL LIN. FT.	REMARKS
L 21+82	0420																												133		1.760		
	0420	0422																															
SHEET TOTALS																													133		1.760		
PROJECT TOTALS																													133		1.760		

ABBREVIATIONS

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

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-5372	3G-1

ROADWAY DESIGN ENGINEER

DocuSigned by: Reece M. Schuler

10/28/2024

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Johnson, Mirmiran, & Thompson Inc.
2550 West Tyvola Road, Suite 120,
Charlotte, NC, 28217
License No: C-3097

COMPUTED BY: Eddie Beverly DATE: June 8, 2022
CHECKED BY: DATE:

(12-17-19)

PROJECT NO.	SHEET NO.
B-5372	3G-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

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 Soil Stabilization SY	Geotextile for Subgrade Stabilization SY	Stabilizer Aggregate TONS	Class IV Aggregate Stabilization TONS
CONTINGENCY			ASU(1)	12	100	200	400	300		
TOTAL CY/TONS/SY:					100	200**	400**	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.

PROJECT REFERENCE NO.	SHEET NO.
B-5372	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
REECE M. SCHULER DocuSigned by: Reece M. Schuler 10/28/2024	REECE M. SCHULER DocuSigned by: Reece M. Schuler 10/28/2024

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-L-

PI Sta 22+20.05	PI Sta 24+04.92	PI Sta 25+44.94	PI Sta 26+96.20
△ = 25° 03′ 06.3″ (LT)	△ = 78° 39′ 33.1″ (LT)	△ = 37° 52′ 24.5″ (LT)	△ = 52° 17′ 47.1″ (LT)
D = 22° 55′ 05.9″	D = 35° 48′ 35.5″	D = 38° 11′ 49.9″	D = 35° 48′ 35.5″
L = 109.31′	L = 219.66′	L = 99.15′	L = 146.04′
T = 55.54′	T = 131.10′	T = 51.46′	T = 78.55′
R = 250.00′	R = 160.00′	R = 150.00′	R = 160.00′
R.O. = SEE PLANS	R.O. = SEE PLANS	R.O. = SEE PLANS	
SE = 0.04	SE = 0.04	SE = 0.04	
V = 30 mph	V = 25 mph	V = 25 mph	

-Y-

PI Sta 13+58.32	PI Sta 18+08.02
△ = 7° 00′ 57.1″ (LT)	△ = 6° 43′ 45.3″ (LT)
D = 1° 30′ 28.0″	D = 1° 35′ 29.6″
L = 465.31′	L = 422.81′
T = 232.95′	T = 211.65′
R = 3,800.00′	R = 3,600.00′

-Y2-

PI Sta 10+89.79
△ = 19° 03′ 06.3″ (RT)
D = 55° 37′ 37.1″
L = 34.25′
T = 17.28′
R = 103.00′

-LPC-

PI Sta 12+23.69	PI Sta 14+28.38
△ = 28° 21′ 14.7″ (RT)	△ = 116° 40′ 08.1″ (RT)
D = 44° 04′ 25.2″	D = 57° 17′ 44.8″
L = 64.33′	L = 203.63′
T = 32.84′	T = 162.13′
R = 130.00′	R = 100.00′
R.O. = SEE PLANS	SE = 0.04
SE = 0.04	V = 20 mph
V = 20 mph	

SEE SHEET 5 FOR -L-, -LPC- AND -Y2- PROFILES

SEE SHEET 6 FOR -Y- PROFILE

SEE SHEET S-1 THRU S-36 FOR STRUCTURE PLANS

PROJECT REFERENCE NO.	SHEET NO.
B-5372	5

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26960 REECE M. SCHULER — DocuSigned by: Reece M. Schuler 16634024C7824FC... — 10/28/2024

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 26960 REECE M. SCHULER — DocuSigned by: Reece M. Schuler 16634024C7824FC... — 10/28/2024

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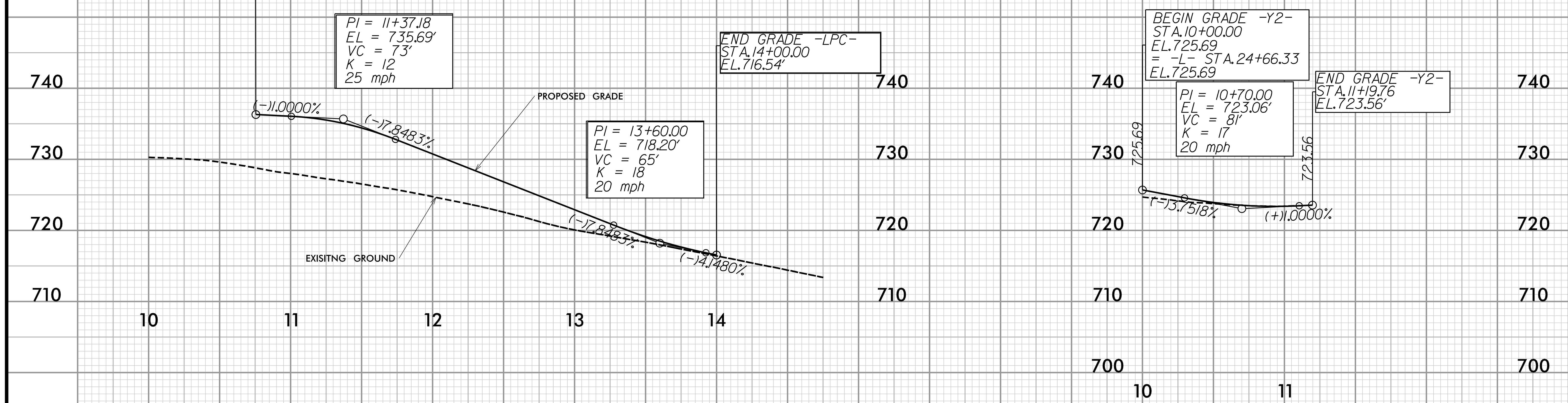
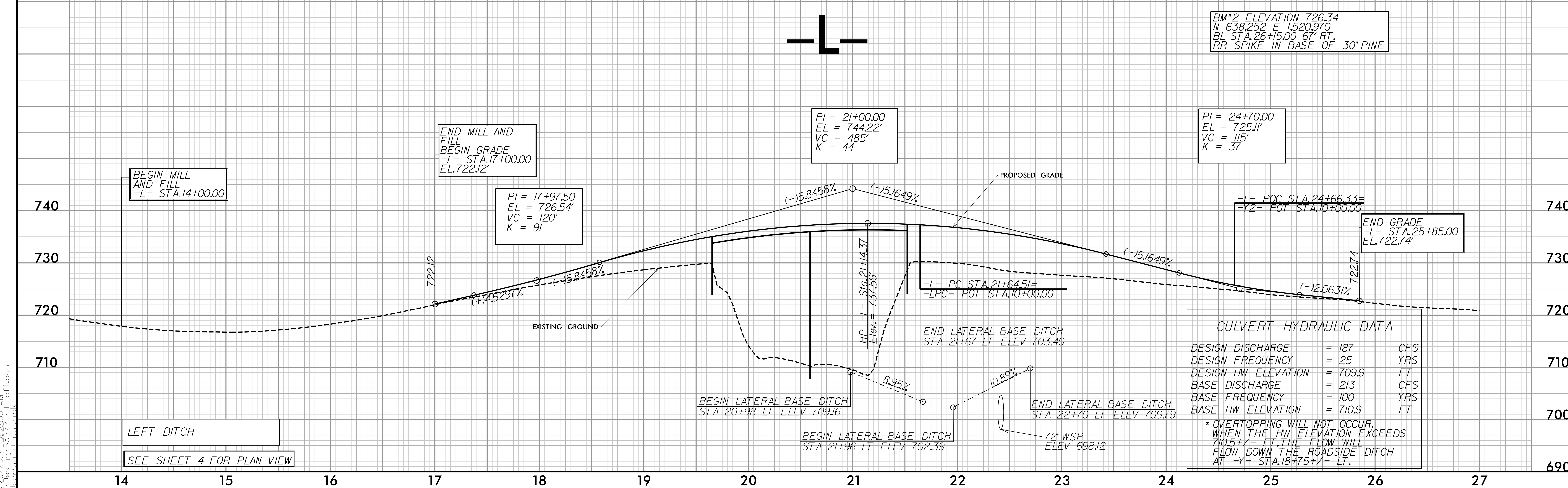
5/14/99

-LPC-

-Y2-


BEGIN GRADE -LPC-
STA.10+75.53
EL.736.30'
= -L- STA.22+37.86
EL.735.86'
PI = 11+37.18
EL = 735.69'
VC = 73'
K = 12
25 mph
END GRADE -LPC-
STA.14+00.00
EL.716.54'
PROPOSED GRADE
(-)1.0000%
(-)17.8483%
PI = 13+60.00
EL = 718.20'
VC = 65'
K = 18
20 mph
(-)17.8483%
(-)4.1480%
EXISITNG GROUND
740
730
720
710
10
11
12
13
14
BEGIN GRADE -Y2-
STA.10+00.00
EL.725.69
= -L- STA.24+66.33
EL.725.69
END GRADE -Y2-
STA.11+19.76
EL.723.56'
PI = 10+70.00
EL = 723.06'
VC = 81'
K = 17
20 mph
725.69
723.56
(-)3.7518%
(+)1.0000%
700

-L-


BM#2 ELEVATION 726.34
N 638,252 E 1,520,970
BL STA.26+15.00 67' RT.
RR SPIKE IN BASE OF 30" PINE
PI = 21+00.00
EL = 744.22'
VC = 485'
K = 44
PI = 24+70.00
EL = 725.11'
VC = 115'
K = 37
END MILL AND FILL
BEGIN GRADE
-L- STA.17+00.00
EL.722.12'
BEGIN MILL AND FILL
-L- STA.14+00.00
PI = 17+97.50
EL = 726.54'
VC = 120'
K = 91
PROPOSED GRADE
(+)5.8458%
(-)5.1649%
-L- POC STA.24+66.33=
-Y2- POT STA.10+00.00
END GRADE
-L- STA.25+85.00
EL.722.74'
722.12
(+)4.5297%
(+)5.8458%
EXISTING GROUND
HP -L- Sta.21+14.37
Elev.= 737.59'
-L- PC STA.21+64.51=
-LPC- POT STA.10+00.00
(-)5.1649%
(-)12.0631%
722.74
END LATERAL BASE DITCH
STA 21+67 LT ELEV 703.40
BEGIN LATERAL BASE DITCH
STA 20+98 LT ELEV 709.16
8.95%
10.89%
END LATERAL BASE DITCH
STA 22+70 LT ELEV 709.79
BEGIN LATERAL BASE DITCH
STA 21+96 LT ELEV 702.39
72" WSP
ELEV 698.12
LEFT DITCH
SEE SHEET 4 FOR PLAN VIEW
740
730
720
710
700
690
14
15
16
17
18
19
20
21
22
23
24
25
26
27

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	187	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	709.9	FT
BASE DISCHARGE	=	213	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	710.9	FT

* OVERTOPPING WILL NOT OCCUR. WHEN THE HW ELEVATION EXCEEDS 710.5+/- FT.THE FLOW WILL FLOW DOWN THE ROADSIDE DITCH AT -Y- STA.18+75+/- LT.

10/28/2024 10:06:53 AM

PROJECT REFERENCE NO.	SHEET NO.
B-5372	6

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032620 REECE M. SCHUER — 10/28/2024

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 032620 REECE M. SCHUER — 10/28/2024

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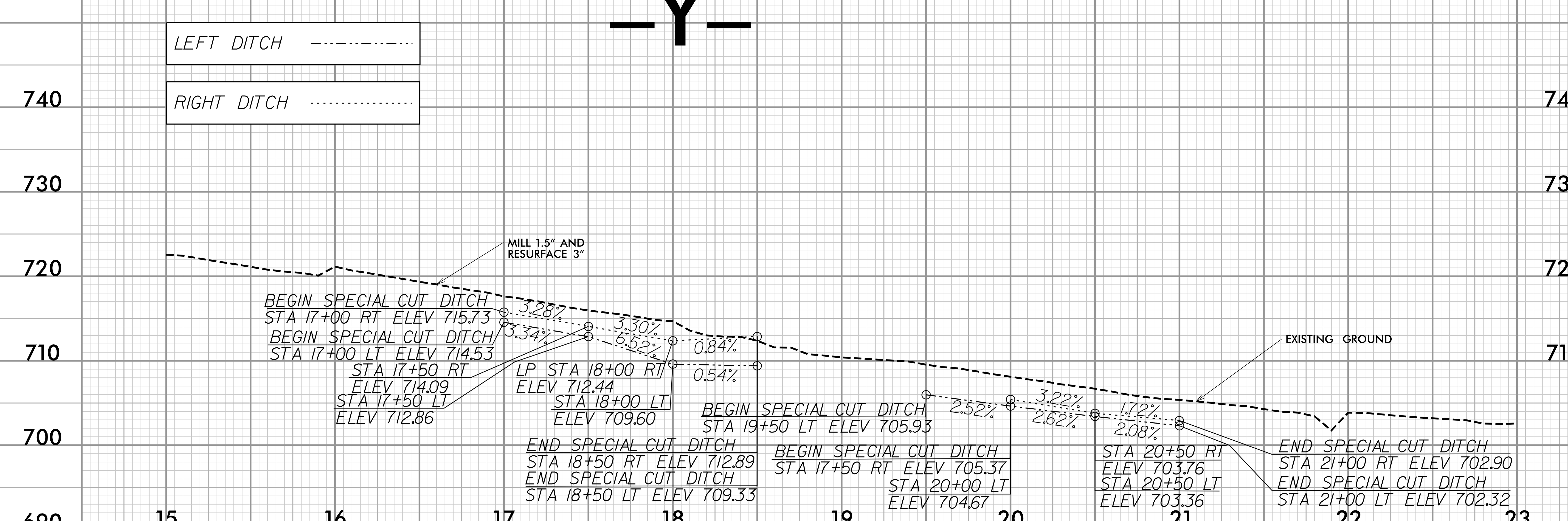
5/14/99

BM 3 ELEVATION 730.45
N 638,638 E 1,520,445
BY STATION 7+57.00 94' RT.
RR SPIKE IN BASE OF 15 INCH PINE

BM#4 ELEVATION 700.80
N 637,628 E 1,520,558
BL STA.17+31.00 100' LT.
RR SPIKE IN BASE OF 24" SWEET GUM

-Y-



SEE SHEET 4 FOR PLAN VIEW

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