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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CUMBERLAND COUNTY

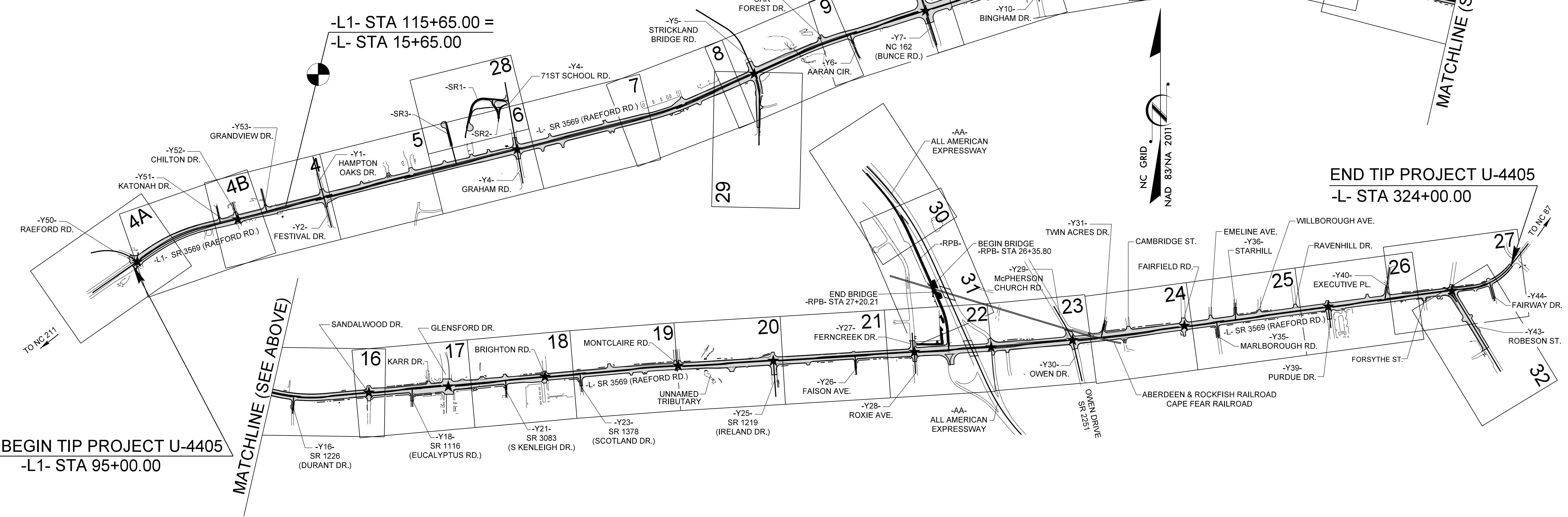
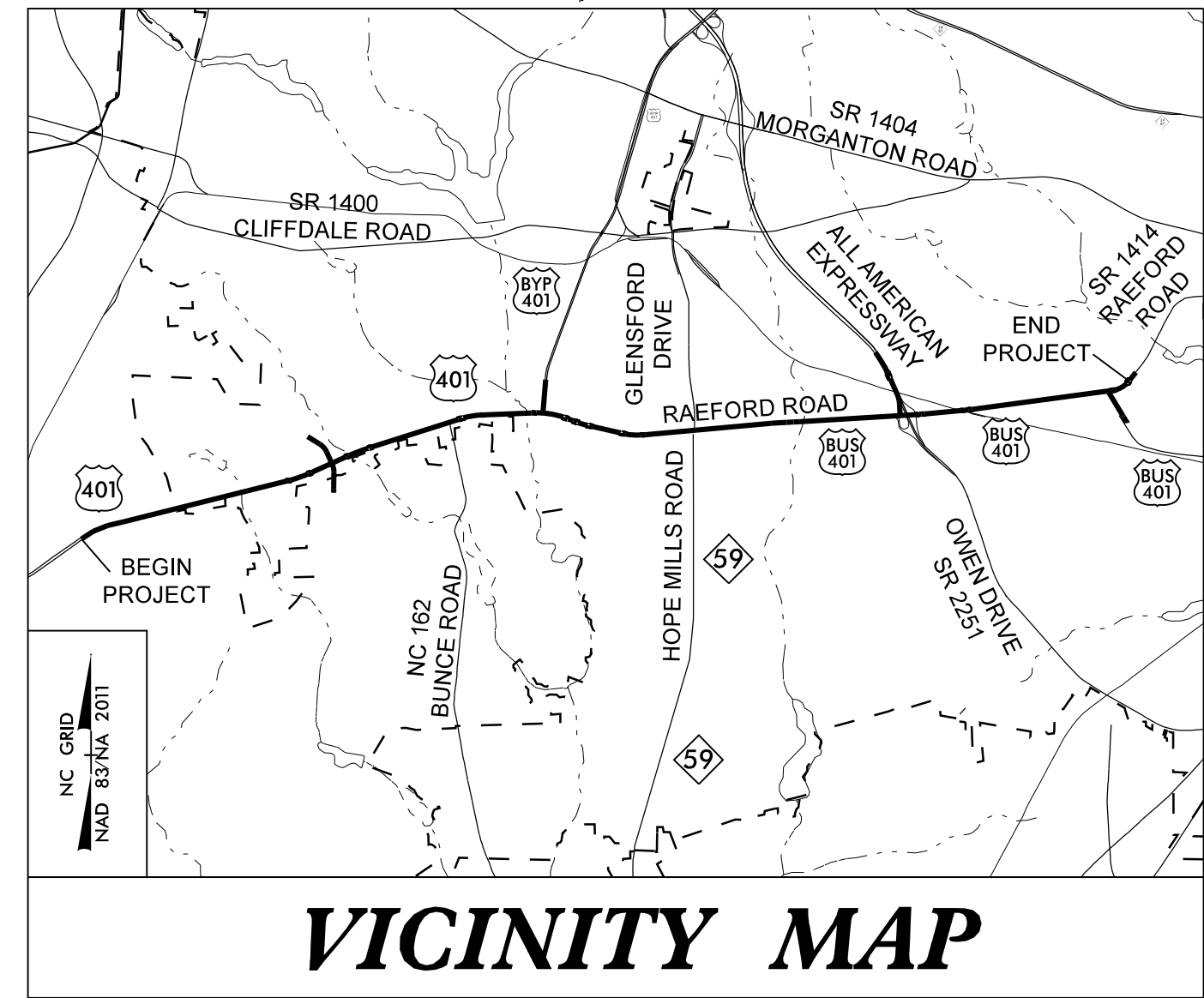
**LOCATION: US 401 FROM OLD RAEFORD ROAD TO EAST OF FAIRWAY DRIVE
IN FAYETTEVILLE**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS, STRUCTURE, RETAINING
WALLS, CULVERTS, AND NOISE WALLS**

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | U-4405 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 39049.1.1 | STPDA-0401(230) | PE | |
| 39049.2.1 | STPDA-0401(230) | RW | |
| 39049.2.1 | STPDA-0401(230) | UTIL | |
| 39049.3.1 | STPDA-0401(230) | CONST | |

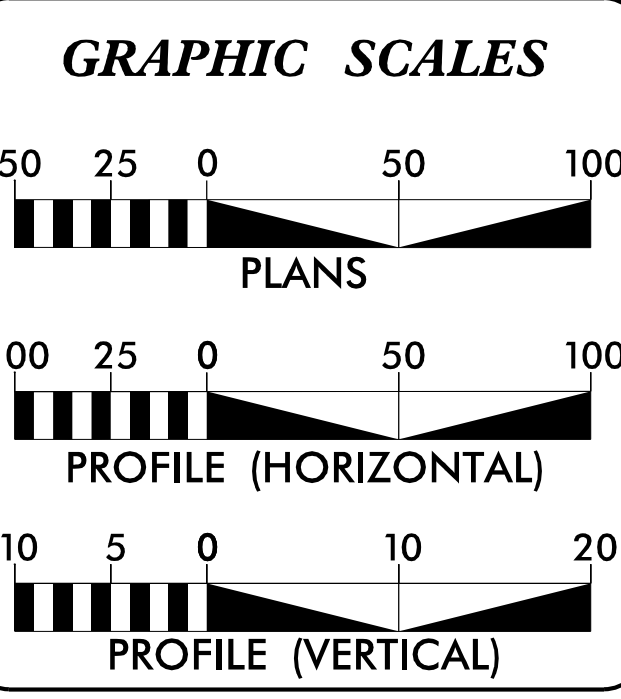
TIP PROJECT: U-4405

CONTRACT: C204107



★ PROPOSED SIGNAL

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



DESIGN DATA

| | |
|--------------------------|------------------------------|
| ADT 2018 = | 63,150 |
| ADT 2038 = | 70,975 |
| K = | 10 % |
| D = | 60 % |
| T = | 3 %* |
| V = | 50 MPH |
| *(TTST = 1% & DUAL = 2%) | |
| FUNC CLASS = | URBAN ARTERIAL REGIONAL TIER |

PROJECT LENGTH

| | |
|-------------------------------------|-------------|
| LENGTH ROADWAY TIP PROJECT U-4405 = | 6.231 MILES |
| TOTAL LENGTH TIP PROJECT U-4405 = | 6.231 MILES |

NCDOT CONTACT: LAURA SUTTON, PE CPM

Prepared In the Office of:

ATKINS
1616 EAST MILLBROOK ROAD, SUITE 160
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JULY 29, 2016

LETTING DATE: SEPTEMBER 18, 2018

CLINTON J. MORGAN, PE
PROJECT ENGINEER

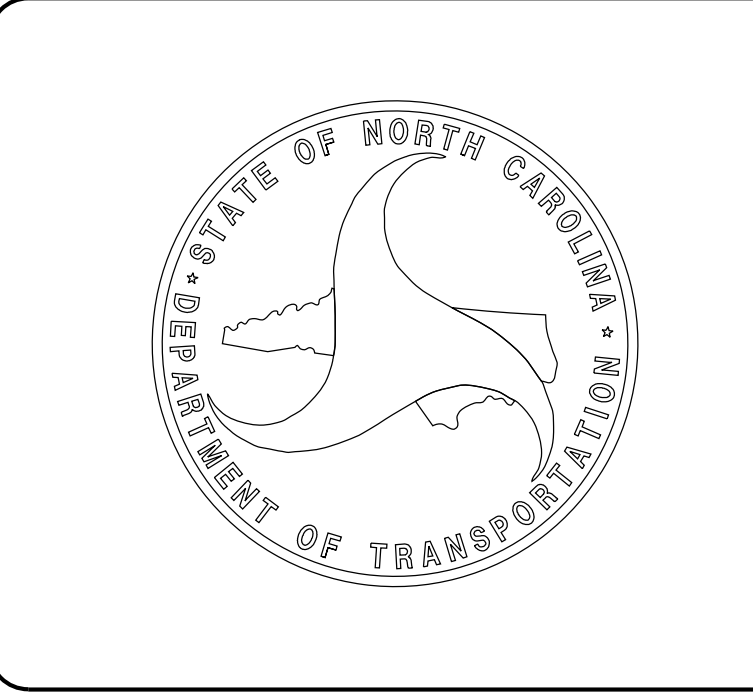
IAN BERDEAU, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

DocuSigned by: Frank F Fleming
8/8/2018
AB04587272EC684 P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by: Clinton J Morgan
8/8/2018
EC8803046102486 P.E.





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

| SHEET NUMBER | SHEET |
|---------------------|--|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 1C-1 THRU 1C-3 | SURVEY CONTROL SHEETS |
| 1D-1 THRU 1D-4 | PROPOSED ALIGNMENT CONTROL SHEETS |
| 1E-1 THRU 1E-8 | RIGHT OF WAY CONTROL SHEETS, PERMANENT EASEMENT CONTROL SHEETS |
| 2A-1 THRU 2A-9 | PAVEMENT SCHEDULE, TYPICAL SECTIONS, WEDGING DETAIL, AND MILLING DETAIL |
| 2B-1 THRU 2B-8 | INTERSECTION DETAILS |
| 2C-1 THRU 2C-30 | DETAIL OF SLOTTED DRAIN 12"THRU 36"DIAMETER PIPE, DETAIL OF 8"X12"CURB TO 2'-6"CURB & GUTTER TRANSITION SECTION, SPECIAL D1 840D14, CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH, TYPE III REINFORCED APPROACH FILLS DETAIL, EXTRA DEPTH CONCRETE CATCH BASIN, MINIMUM DEPTH CONCRETE CATCH BASIN, CONCRETE MEDIAN DROP INLET TYPE 'A' EXTRA DEPTH OVER 12' TO 25', DETAIL TO CONVERT EXISTING D1, CB, DTGB OR G1 TO JUNCTION BOX (MANHOLE OPTIONAL), CONCRETE ENDWALL FOR (3 72" RCP, W/ PIPES IN WINGWALLS), CONCRETE ENDWALL FOR (60"RCP, 66"RCP, 72" WSP, W/ WINGWALLS), CONCRETE ENDWALL FOR (3 60"RCP, 72"RCP, W/ 48"RCP IN WINGWALL), DETAIL OF CHAIN LINK FENCE ON RETAINING WALL, COAL COMBUSTION PRODUCT PLACEMENT DETAIL, DETAIL OF GUARDRAIL INSTALLATION, DETAIL OF CURB RAMPS: DIRECTIONAL RAMPS, DETAIL OF CURB RAMPS: MEDIAN OR TURN ISLANDS, DETAIL OF CURB RAMPS: PARALLEL RAMPS, DETAIL OF CURB RAMPS: SHARED LANDING, METHOD FOR PLACEMENT OF DROP INLETS IN CONCRETE ISLANDS, SPECIAL JUNCTION BOX WITH SLAB LID, DETAIL OF PIPE COLLARS, DETAIL OF 1'-6" CURB & GUTTER TRANSITION SECTION |
| 2G-1 | GEOTECHNICAL DETAIL |
| 2H-1 | STOCKPILE CONTAINMENT DETAIL |
| 2N-1 THRU 2N-2 | NOISE WALL ENVELOPE DETAILS |
| 3B-1 THRU 3B-2 | SUMMARY OF GUARDRAIL, PAVEMENT REMOVAL SUMMARY, SUMMARY OF CONCRETE BARRIER, AND EARTHWORK SUMMARY |
| 3D-1 THRU 3D-44 | DRAINAGE SUMMARY |
| 3G-1 | GEOTECHNICAL SUMMARY |
| 3P-1 THRU 3P-2 | PARCEL INDEX SHEETS |
| 4A THRU 52 | PLAN AND PROFILE SHEETS |
| TMP-1 THRU TMP-31 | TRAFFIC MANAGEMENT PLANS |
| PMP-1 THRU PMP-30 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-69 | EROSION CONTROL PLANS |
| SIGN-1 THRU SIGN-33 | SIGNING PLANS |
| SIG-1 THRU SIG-M8 | SIGNAL PLANS |
| SCP-1 THRU SCP-48 | SIGNAL COMMUNICATION PLANS |
| UO-1 THRU UO-29 | UTILITIES BY OTHERS PLANS |
| UC-1 THRU UC-60 | UTILITIY PLANS |
| X-0A THRU X-0J | CROSS-SECTION INDEX SHEET AND SUMMARY |
| X-1 THRU X-166 | CROSS-SECTIONS |
| S-1 THRU S-26 | STRUCTURES PLANS |
| C1-1 THRU C1-18 | CULVERT 1 PLANS |
| C2-1 THRU C2-3 | CULVERT 2 PLANS |
| SBW-1 THRU SBW-3 | SOUND BARRIER WALL PLANS |
| W-1 THRU W-9 | RETAINING WALL PLANS |

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

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

CLEARING: CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD 11.

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 OR 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.

DRIVEWAYS: DRIVEWAYS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. 848.02 USING 3 FOOT RADIUS OR RADIUS AS SHOWN ON THE PLANS. LOCATIONS OF DRIVES WILL BE AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

STREET TURNOUT: STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADIUS NOTED ON PLANS.

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 Fayetteville PWC (Power) Aqua NC (Water), Fayetteville PWC (Water and Sewer) Piedmont Natural Gas (Gas) CenturyLink (Communication), Spectrum (Communication), Level 3 (Communication)

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

CURB RAMPS
CURB RAMPS ARE SHOWN ON THE PLANS AT APPROXIMATE LOCATIONS. CONSTRUCT ALL CURB RAMPS ACCORDANCE WITH STD 848.05 and/or 848.06.

2018 ROADWAY ENGLISH STANDARD DRAWINGS

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

STD. NO. TITLE

DIVISION 2 - EARTHWORK
200.02 Method of Clearing - Method 11
225.02 Guide for Grading Subgrade - Secondary and Local
225.04 Method of Obtaining Superlevation - Two Lane Pavement
275.01 Rock Plating

DIVISION 3 - PIPE CULVERTS
300.01 Method of Pipe Installation
310.10 Driveway Pipe Construction

DIVISION 5 - SUBGRADE, BASES AND SHOULDERS
560.01 Method of Shoulder Construction - High Side of Superelevated Curve - Method 1
560.02 Method of Shoulder Construction - High Side of Superelevated Curve - Method 11

DIVISION 6 - ASPHALT BASES AND PAVEMENTS
654.01 Pavement Repairs

DIVISION 8 - INCIDENTALS
815.02 Subsurface Drain
838.01 Concrete Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.11 Brick Endwall for Single and Double Pipe Culverts - 15" thru 48" Pipe 90 Skew
838.33 Reinforced Concrete Endwall - for Single 66" Pipe 90 Skew
838.45 Notes for Reinforced Concrete Endwall - Std. Dwg 838.21 thru 838.40
838.63 Reinforced Brick Endwall - for Single 66" Pipe 90 Skew
838.75 Notes for Reinforced Brick Endwall - Std. Dwg 838.51 thru 838.70
838.80 Precast Endwalls - 12" thru 72" Pipe 90 Skew
840.00 Concrete Base Pad for Drainage Structures
840.01 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
840.04 Concrete Open Throat Catch Basin - 12" thru 48" Pipe
840.05 Brick Open Throat Catch Basin - 12" thru 48" Pipe
840.14 Concrete Drop Inlet - 12" thru 30" Pipe
840.15 Brick Drop Inlet - 12" thru 30" Pipe
840.16 Drop Inlet Frame and Grates - for use with Std. Dwg 840.14 and 840.15
840.17 Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18 Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19 Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.24 Frames and Narrow Slot Sag Grates
840.25 Anchorage for Frames - Brick or Concrete or Precast
840.26 Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27 Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28 Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29 Frames and Narrow Slot Flat Grates
840.30 Driveway Drop Inlet
840.31 Concrete Junction Box - 12" thru 66" Pipe
840.32 Brick Junction Box - 12" thru 66" Pipe
840.34 Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.35 Traffic Bearing Grated Drop Inlet - for Cast Iron Double Frame and Grates
840.45 Precast Drainage Structure
840.46 Traffic Bearing Precast Drainage Structure
840.54 Manhole Frame and Cover
840.66 Drainage Structure Steps
840.71 Concrete and Brick Pipe Plug
840.72 Pipe Collar
846.01 Concrete Curb, Gutter and Curb & Gutter
846.04 Drop Inlet Installation in Shoulder Berm Gutter
848.01 Concrete Sidewalk
848.02 Driveway Turnout - Radius Type
848.04 Street Turnout
848.05 Curb Ramp - Proposed Curb & Gutter
852.01 Concrete Islands
852.04 Method for Placement of Drop Inlets in Grassed Median - Using 1'-6" Curb and Gutter
852.06 Method for Placement of Drop Inlets in Concrete Islands
857.01 Precast Reinforced Concrete Barrier - 41" Single Faced
862.01 Guardrail Placement
862.02 Guardrail Installation
862.03 Structure Anchor Units (Special Detail for Type III Anchor Units Sheets 1 of 7 and 2 of 7)
862.04 Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02 Woven Wire Fence - with Wood Post
876.01 Rip Rap in Channels
876.02 Guide for Rip Rap at Pipe Outlets
876.04 Drainage Ditches with Class 'B' Rip Rap

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

12/2/2016

BOUNDARIES AND PROPERTY:

| | |
|---------------------------------------|-------------|
| State Line | ----- |
| County Line | ----- |
| Township Line | ----- |
| City Line | ----- |
| Reservation Line | ----- |
| Property Line | ----- |
| Existing Iron Pin | ○ EIP |
| Computed Property Corner | ----- |
| Property Monument | □ ECM |
| Parcel/Sequence Number | ①23 |
| Existing Fence Line | -x-x-x- |
| Proposed Woven Wire Fence | ○ |
| Proposed Chain Link Fence | □ |
| Proposed Barbed Wire Fence | ◇ |
| Existing Wetland Boundary | --- WLB --- |
| Proposed Wetland Boundary | --- WLB --- |
| Existing Endangered Animal Boundary | --- EAB --- |
| Existing Endangered Plant Boundary | --- EPB --- |
| Existing Historic Property Boundary | --- HPB --- |
| Known Contamination Area: Soil | ☠-S-☠ |
| Potential Contamination Area: Soil | ☠-S-☠ |
| Known Contamination Area: Water | ☠-W-☠ |
| Potential Contamination Area: Water | ☠-W-☠ |
| Contaminated Site: Known or Potential | ☠? |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|-----|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ○ S |
| Well | ○ W |
| Small Mine | ✕ |
| Foundation | □ |
| Area Outline | □ |
| Cemetery | □ |
| Building | □ |
| School | □ |
| Church | □ |
| Dam | □ |

HYDROLOGY:

| | |
|------------------------------------|--------------|
| Stream or Body of Water | ----- |
| Hydro, Pool or Reservoir | ----- |
| Jurisdictional Stream | --- JS --- |
| Buffer Zone 1 | --- BZ 1 --- |
| Buffer Zone 2 | --- BZ 2 --- |
| Flow Arrow | ← |
| Disappearing Stream | → |
| Spring | ○ |
| Wetland | --- WLB --- |
| Proposed Lateral, Tail, Head Ditch | ----- |
| False Sump | ▽ |

RAILROADS:

| | |
|--------------------|---------------|
| Standard Gauge | ----- |
| RR Signal Milepost | ○ MILEPOST 35 |
| Switch | □ SWITCH |
| RR Abandoned | ----- |
| RR Dismantled | ----- |

RIGHT OF WAY & PROJECT CONTROL:

| | |
|---|-------|
| Secondary Horiz and Vert Control Point | ◆ |
| Primary Horiz Control Point | ○ |
| Primary Horiz and Vert Control Point | ◆ |
| Exist Permanent Easement Pin and Cap | ◇ |
| New Permanent Easement Pin and Cap | ◆ |
| Vertical Benchmark | ▲ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | ----- |
| New Right of Way Line | ----- |
| New Right of Way Line with Pin and Cap | ----- |
| New Right of Way Line with Concrete or Granite R/W Marker | ----- |
| New Control of Access Line with Concrete C/A Marker | ----- |
| Existing Control of Access | ----- |
| New Control of Access | ----- |
| Existing Easement Line | ----- |
| New Temporary Construction Easement | ----- |
| New Temporary Drainage Easement | ----- |
| New Permanent Drainage Easement | ----- |
| New Permanent Drainage / Utility Easement | ----- |
| New Permanent Utility Easement | ----- |
| New Temporary Utility Easement | ----- |
| New Aerial Utility Easement | ----- |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|-----------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | --- C --- |
| Proposed Slope Stakes Fill | --- F --- |
| Proposed Curb Ramp | ----- |
| Existing Metal Guardrail | ----- |
| Proposed Guardrail | ----- |
| Existing Cable Guiderail | ----- |
| Proposed Cable Guiderail | ----- |
| Equality Symbol | ⊕ |
| Pavement Removal | ----- |

VEGETATION:

| | |
|--------------|---|
| Single Tree | ○ |
| Single Shrub | ○ |

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

| | |
|------------|-------|
| 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:

| | |
|--------------------------------|-------|
| 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 LOS B (S.U.E.*) | ----- |
| U/G Power Line LOS C (S.U.E.*) | ----- |
| U/G Power Line LOS D (S.U.E.*) | ----- |

TELEPHONE:

| | |
|--|-------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊕ |
| Telephone Pedestal | ⊕ |
| Telephone Cell Tower | ⊕ |
| U/G Telephone Cable Hand Hole | ----- |
| U/G Telephone Cable LOS B (S.U.E.*) | ----- |
| U/G Telephone Cable LOS C (S.U.E.*) | ----- |
| U/G Telephone Cable LOS D (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS B (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS C (S.U.E.*) | ----- |
| U/G Telephone Conduit LOS D (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optics Cable LOS D (S.U.E.*) | ----- |

WATER:

| | |
|--------------------------------|-------|
| Water Manhole | ⊕ |
| Water Meter | ○ |
| Water Valve | ⊗ |
| Water Hydrant | ⊕ |
| U/G Water Line LOS B (S.U.E.*) | ----- |
| U/G Water Line LOS C (S.U.E.*) | ----- |
| U/G Water Line LOS D (S.U.E.*) | ----- |
| Above Ground Water Line | ----- |

TV:

| | |
|---------------------------------------|-------|
| TV Pedestal | ⊕ |
| TV Tower | ⊗ |
| U/G TV Cable Hand Hole | ----- |
| U/G TV Cable LOS B (S.U.E.*) | ----- |
| U/G TV Cable LOS C (S.U.E.*) | ----- |
| U/G TV Cable LOS D (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS B (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS C (S.U.E.*) | ----- |
| U/G Fiber Optic Cable LOS D (S.U.E.*) | ----- |

GAS:

| | |
|------------------------------|-------|
| Gas Valve | ◇ |
| Gas Meter | ⊕ |
| U/G Gas Line LOS B (S.U.E.*) | ----- |
| U/G Gas Line LOS C (S.U.E.*) | ----- |
| U/G Gas Line LOS D (S.U.E.*) | ----- |
| Above Ground Gas Line | ----- |

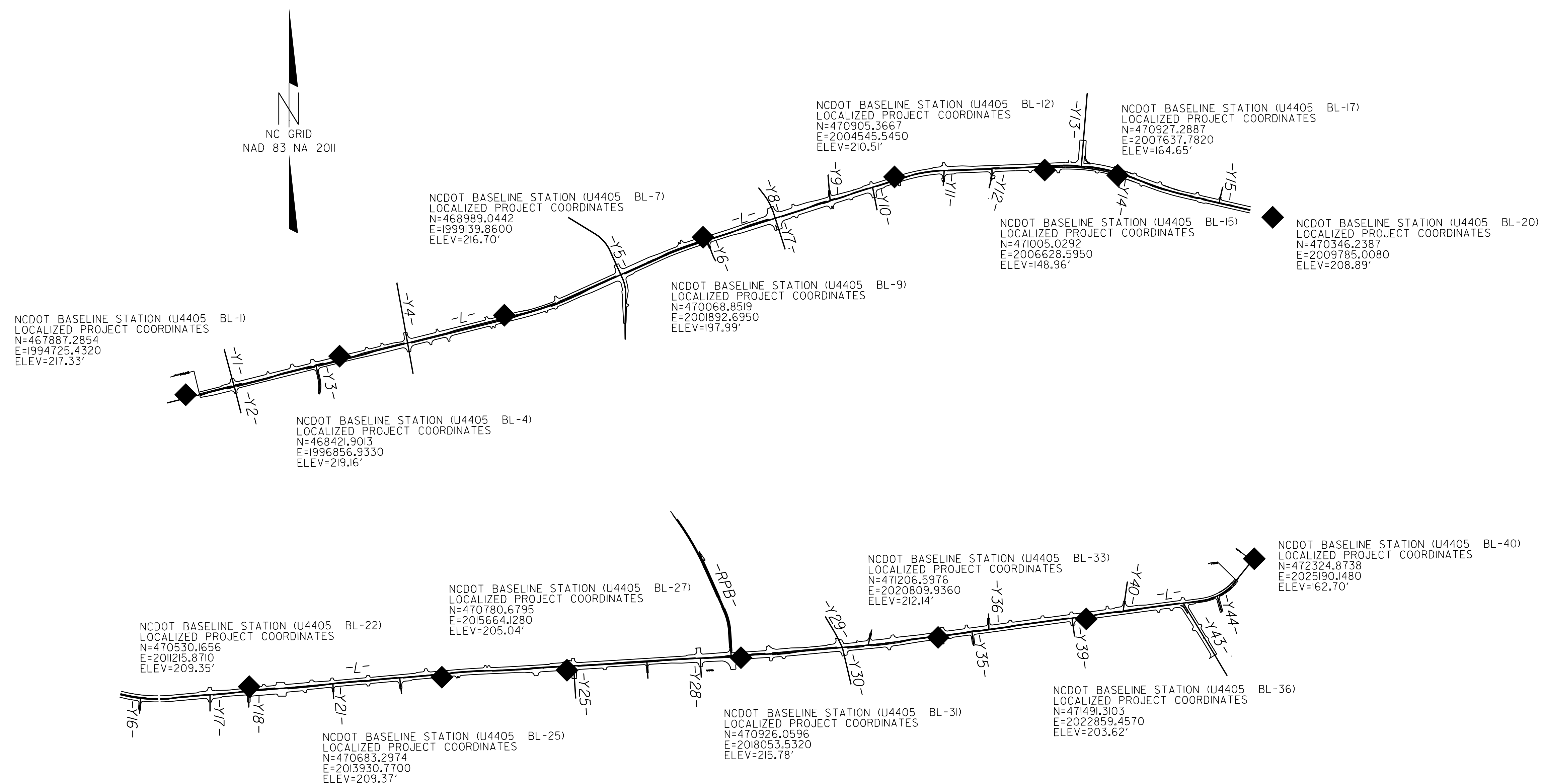
SANITARY SEWER:

| | |
|-------------------------------------|-------|
| Sanitary Sewer Manhole | ⊕ |
| Sanitary Sewer Cleanout | ⊕ |
| U/G Sanitary Sewer Line | ----- |
| Above Ground Sanitary Sewer | ----- |
| SS Forced Main Line LOS B (S.U.E.*) | ----- |
| SS Forced Main Line LOS C (S.U.E.*) | ----- |
| SS Forced Main Line LOS D (S.U.E.*) | ----- |

MISCELLANEOUS:

| | |
|--|-------|
| Utility Pole | ● |
| Utility Pole with Base | □ |
| Utility Located Object | ○ |
| Utility Traffic Signal Box | ⊕ |
| Utility Unknown U/G Line LOS B (S.U.E.*) | ----- |
| U/G Tank; Water, Gas, Oil | ----- |
| Underground Storage Tank, Approx. Loc. | ----- |
| A/G Tank; Water, Gas, Oil | ----- |
| Geoenvironmental Boring | ⊕ |
| U/G Test Hole LOS A (S.U.E.*) | ----- |
| Abandoned According to Utility Records | ----- |
| End of Information | ----- |

SURVEY CONTROL SHEET U-4405



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U3424-1" WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF NORTHING: 470729.901(ft) EASTING: 2003980.051(ft) ELEVATION: 211.69(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 1.0001250200

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U3424-1" TO -L- STATION 10+00.00 IS S72°34'45.67"W 9496.53

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/](https://connect.ncdot.gov/resources/location/)

THE FILES TO BE FOUND ARE AS FOLLOWS:
U-4405_LS_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

© INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

NOTE: DRAWING NOT TO SCALE

SURVEY CONTROL SHEET U-4405

| | |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-4405 | 1C-2 |
| Location and Surveys | |

| BL POINT | DESC. | NORTH | EAST | ELEVATION | L STATION | OFFSET | | | |
|----------|------------|-------------|--------------|-----------|------------------------|------------|-------------------------------|-------------------------------|-------------------------------|
| 501 | | 467351.7800 | 1993272.8230 | 199.08 | OUTSIDE PROJECT LIMITS | | | | |
| 502 | | 470342.1392 | 2000029.3837 | UNKNOWN | 73+11.60 | 1019.65 LT | BM1 ELEVATION = 217.39 | BM8 ELEVATION = 171.28 | BM15 ELEVATION = 212.44 |
| 1 | BL-1 | 467887.2854 | 1994725.4320 | 217.33 | 13+77.19 | 47.30 LT | N 467812 E 1994333 | N 470724 E 2007625 | N 471655 E 2021453 |
| 2 | BL-2 | 468079.7036 | 1995412.1340 | 219.49 | 20+90.04 | 68.03 LT | L STATION 11+00.00 | L STATION 148+38.00 229 RIGHT | L STATION 287+57.00 309 LEFT |
| 3 | BL-3 | 468280.4685 | 1996253.3870 | 220.64 | 29+54.88 | 59.49 LT | N 74+25'11.76" W DIST 140.04 | BENCH TIE IN LIGHT POLE | BENCH TIE IN POWER POLE |
| 4 | BL-4 | 468421.9013 | 1996856.9330 | 219.16 | 35+74.71 | 50.85 LT | R/R SPIKE SET IN 8" PINE | | |
| 5 | BL-5 | 468640.7760 | 1997726.6330 | 215.23 | 44+71.53 | 53.01 LT | | | |
| 6 | BL-6 | 468833.6921 | 1998515.7050 | 216.67 | 52+83.84 | 49.48 LT | | | |
| 7 | BL-7 | 468989.0442 | 1999139.8600 | 216.70 | 59+27.03 | 49.36 LT | | | |
| 105 | BL-105 | 469144.4040 | 1999709.7660 | 211.29 | 65+22.40 | 45.78 LT | | | |
| 504 | U4405-4 | 469468.9590 | 2000469.4370 | 203.29 | 73+52.70 | 42.71 LT | BM2 ELEVATION = 221.46 | BM9 ELEVATION = 209.17 | BM16 ELEVATION = 206.02 |
| 8 | BL-8 | 469798.5445 | 2001197.6680 | 192.13 | 81+51.72 | 43.14 LT | N 468509 E 1996113 | N 470173 E 2009723 | N 471380 E 2023844 |
| 9 | BL-9 | 470068.8519 | 2001892.6950 | 197.99 | 88+92.67 | 52.10 LT | L STATION 28+74.00 315 LEFT | L STATION 169+68.00 226 RIGHT | L STATION 318+90.00 283 RIGHT |
| 10 | BL-10 | 470237.9987 | 2002408.5410 | 210.02 | 94+35.52 | 56.76 LT | BENCH TIE SET IN TREE | BENCH TIE IN LIGHT POLE | BENCH TIE IN LIGHT POLE |
| 402 | U3424-2 | 470430.9535 | 2002945.1840 | 216.09 | 100+05.41 | 77.80 LT | | | |
| 11 | BL-11 | 470628.3125 | 2003619.4020 | 213.95 | 107+07.72 | 61.29 LT | | | |
| 401 | | 468127.6114 | 1997894.8415 | UNKNOWN | 45+01.01 | 483.17 RT | | | |
| 12 | BL-12 | 470905.3667 | 2004545.5450 | 210.51 | 116+74.27 | 44.28 LT | BM3 ELEVATION = 217.46 | | |
| 13 | BL-13 | 471054.4675 | 2005197.1860 | 208.51 | 123+31.88 | 72.05 LT | N 468445 E 1998334 | | BM17 ELEVATION = 157.37 |
| 14 | BL-14 | 470967.6351 | 2005880.7070 | 167.00 | 130+09.28 | 52.75 RT | L STATION 50+14.00 284 RIGHT | BM10 ELEVATION = 214.73 | N 472462 E 2025226 |
| 15 | BL-15 | 471005.0292 | 2006628.5950 | 148.96 | 137+58.06 | 44.84 RT | BENCH TIE SET IN TREE | N 469983 E 2011727 | L STATION 11+00.00 |
| 16 | BL-16 | 471023.4465 | 2007117.5400 | 149.53 | 142+51.28 | 29.76 RT | | L STATION 189+03.00 548 RIGHT | N 81+20'4.78" E DIST 31113.26 |
| 17 | BL-17 | 470927.2887 | 2007637.7820 | 164.65 | 147+87.88 | 31.12 RT | | BENCH TIE IN LIGHT POLE | BENCH TIE IN POWER POLE |
| 18 | BL-18 | 470734.1707 | 2008204.8730 | 186.15 | 153+88.35 | 21.89 RT | | | |
| X62 | | 470584.6302 | 2008739.8865 | 198.15 | 159+41.59 | 30.52 RT | | | |
| 19 | BL-19 | 470497.2101 | 2009052.6510 | 204.40 | 162+65.96 | 46.31 RT | | | |
| 20 | BL-20 | 470346.2387 | 2009785.0080 | 208.89 | 170+08.24 | 47.14 RT | BM4 ELEVATION = 213.77 | | |
| 21 | BL-21 | 470495.2559 | 2010659.0920 | 206.64 | 178+85.47 | 57.58 LT | N 469021 E 2000106 | BM11 ELEVATION = 209.02 | |
| 22 | BL-22 | 470530.1656 | 2011215.8710 | 209.35 | 184+43.14 | 42.62 LT | L STATION 68+38.00 216 RIGHT | N 470451 E 2013373 | |
| 212 | U4422-BL2 | 470565.1010 | 2011624.1450 | 210.28 | 188+52.90 | 40.94 LT | BENCH TIE IN LIGHT POLE | L STATION 205+85.00 229 RIGHT | |
| 216 | U4422-BY16 | 470544.2360 | 2012368.6470 | 209.05 | 195+92.56 | 46.35 RT | | BENCH TIE IN LIGHT POLE | |
| 23 | BL-23 | 470587.1904 | 2012841.2350 | 208.63 | 200+67.10 | 45.78 RT | | | |
| 24 | BL-24 | 470626.8227 | 2013292.7930 | 209.24 | 205+20.39 | 46.64 RT | | | |
| 25 | BL-25 | 470683.2974 | 2013930.7700 | 209.37 | 211+60.86 | 47.39 RT | | | |
| 26 | BL-26 | 470726.6439 | 2014557.4770 | 203.56 | 217+91.38 | 47.47 RT | | | |
| 27 | BL-27 | 470780.6795 | 2015664.1280 | 205.04 | 228+98.42 | 56.00 RT | BM5 ELEVATION = 180.47 | | |
| 28 | BL-28 | 470818.4518 | 2016213.7860 | 210.45 | 234+49.36 | 51.90 RT | N 469612 E 2002119 | BM12 ELEVATION = 200.85 | |
| 29 | BL-29 | 470863.0465 | 2016775.7680 | 211.40 | 240+13.02 | 41.75 RT | L STATION 89+70.00 452 RIGHT | N 470526 E 2015272 | |
| 30 | BL-30 | 470893.2269 | 2017424.6840 | 212.77 | 246+62.56 | 51.29 RT | BENCH TIE IN POWER POLE | L STATION 224+91.00 286 RIGHT | |
| 31 | BL-31 | 470926.0596 | 2018053.5320 | 215.78 | 252+92.24 | 56.96 RT | | BENCH TIE IN TREE | |
| 460 | U4414-60 | 470976.7950 | 2018674.6150 | 218.78 | 259+13.90 | 47.25 RT | | | |
| 505 | U4405-5 | 471016.0430 | 2019314.0470 | 218.28 | 265+54.14 | 67.17 RT | | | |
| X79 | | 471040.6245 | 2019510.6499 | UNKNOWN | 267+52.18 | 60.85 RT | BM6 ELEVATION = 207.85 | | |
| 32 | BL-32 | 471107.8526 | 2020048.3400 | 212.29 | 272+92.38 | 46.26 RT | N 470887 E 2003652 | BM13 ELEVATION = 213.28 | |
| 33 | BL-33 | 471206.5976 | 2020809.9360 | 212.14 | 280+59.85 | 49.71 RT | L STATION 108+17.00 298 LEFT | N 470676 E 2017543 | |
| X85 | | 471270.0528 | 2021241.6814 | UNKNOWN | 284+96.20 | 44.49 RT | BENCH TIE IN POWER POLE | L STATION 247+67.00 275 RIGHT | |
| 34 | BL-34 | 471310.2036 | 2021514.8650 | 212.35 | 287+72.30 | 41.18 RT | | BENCH TIE IN POWER POLE | |
| X88 | | 471337.5939 | 2021722.0948 | UNKNOWN | 289+81.33 | 41.71 RT | | | |
| 35 | BL-35 | 471403.8747 | 2022223.5630 | 207.94 | 294+87.16 | 42.99 RT | | | |
| 36 | BL-36 | 471491.3103 | 2022859.4570 | 203.62 | 301+29.03 | 41.26 RT | | | |
| X91 | | 471548.2234 | 2023293.0002 | UNKNOWN | 305+66.29 | 42.76 RT | | | |
| 37 | BL-37 | 471589.2387 | 2023605.4400 | 202.99 | 308+81.41 | 43.84 RT | BM7 ELEVATION = 192.81 | BM14 ELEVATION = 208.67 | |
| X106 | | 471612.7364 | 2023807.6573 | 203.84 | 310+84.95 | 47.56 RT | N 470648 E 2005724 | N 470453 E 2019555 | |
| 38 | BL-38 | 471647.7314 | 2024108.8180 | 204.53 | 313+88.09 | 53.09 RT | L STATION 128+40.00 366 RIGHT | L STATION 267+42.00 360 RIGHT | |
| 39 | BL-39 | 471789.2599 | 2024684.2430 | 199.52 | 319+70.39 | 34.75 RT | BENCH TIE IN POWER POLE | BENCH TIE IN POWER POLE | |
| X102 | | 472107.8715 | 2024985.1821 | UNKNOWN | 324+01.70 | 5.30 RT | | | |
| 40 | BL-40 | 472324.8738 | 2025190.1480 | 162.70 | OUTSIDE PROJECT LIMITS | | | | |

NOTE: DRAWING NOT TO SCALE

6/2/99

SURVEY CONTROL SHEET U-4405

Table with columns: BY POINT, DESC., NORTH, EAST, ELEVATION, EY STATION, OFFSET. Rows include data for BY1 through BY16.

Table with columns: BY17 POINT, DESC., NORTH, EAST, ELEVATION, EY17 STATION, OFFSET. Rows include data for BY17 through BY33.

Table with columns: BY34 POINT, DESC., NORTH, EAST, ELEVATION, EY34 STATION, OFFSET. Rows include data for BY34 through BY49.

05-APR-2016 14:03
R:\A\F\016\1403
SURVEY CONTROL SHEET
U-4405-1c-3.dgn

NOTE: DRAWING NOT TO SCALE

PROPOSED ALIGNMENT CONTROL SHEET U-4405

NW1

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 28+30.00.

NW2

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 41+35.00.

SR1

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include PC 10+00.00 through POT 18+93.99.

SR2

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+94.74.

SR3

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 15+57.07.

SR4

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 15+10.08.

WALL1

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 8+60.00 through 14+62.97.

WALL2

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 11+70.55 through 14+76.93.

WALL3

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 10+86.70.

Y1

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 15+26.27.

Y2

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 13+85.69.

Y3

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 14+01.69.

Y4

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 22+80.26.

Y5

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 30+20.46.

Y6

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 13+18.54.

Y7

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 19+34.91.

Y9

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 13+62.38.

Y10

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 13+24.44.

Y11

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+10.77.

Y12

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+76.59.

Y13

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 20+11.93.

Y14

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+50.00.

Y15

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+25.21.

Y16

Table with 4 columns: TYPE, STATION, NORTH, EAST. Rows include POT 10+00.00 through 12+17.34.

REVISIONS

6/2/99

Vertical list of revision details.

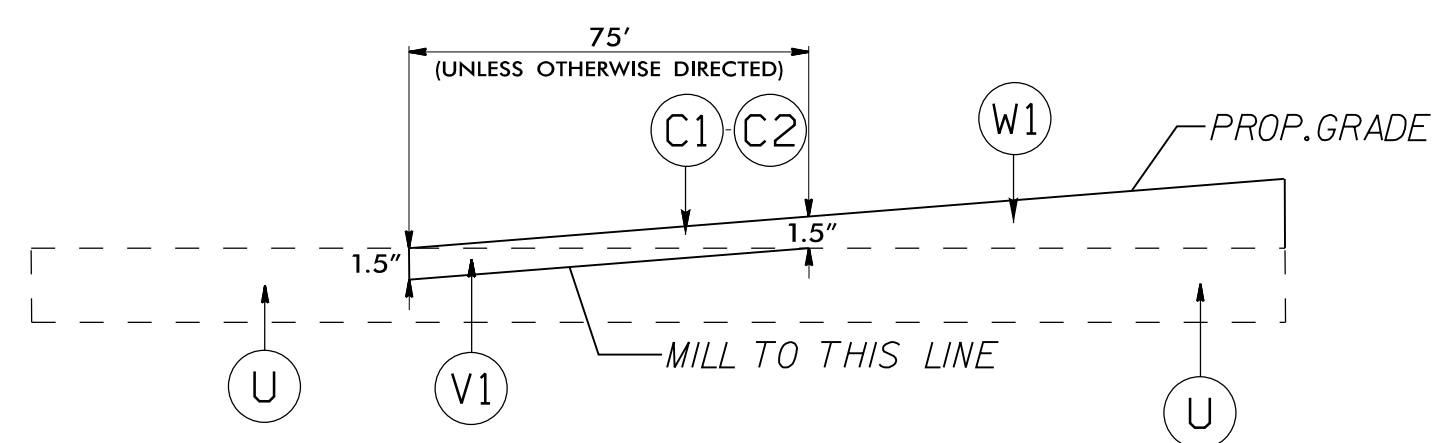
NOTES:

- 1. PROJECT CONTROL WAS ESTABLISHED USING GNSS, THE GLOBAL NAVIGATION SATELLITE SYSTEM.
2. THE PROPOSED ALIGNMENT CONTROL DATA FOR THIS PROJECT HAS BEEN COMPILED FROM VARIOUS SOURCES. IF FURTHER INFORMATION REGARDING PROJECT CONTROL IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

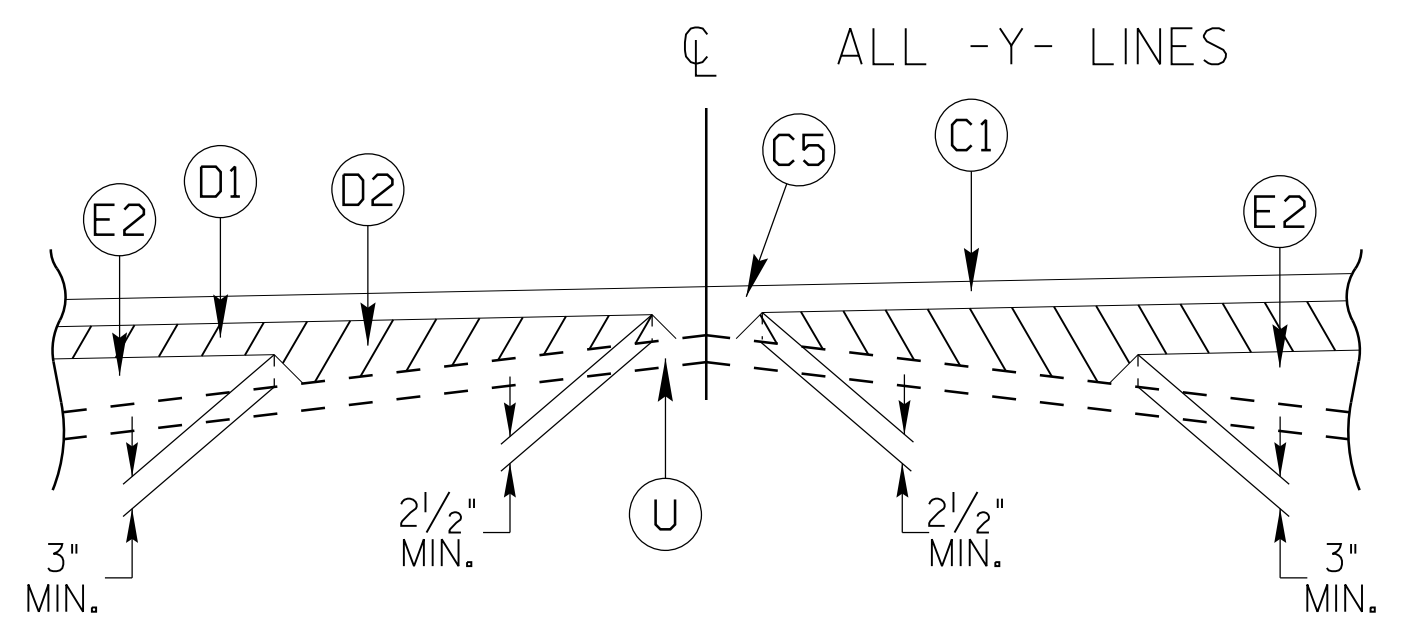
| | |
|---|--|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-1 |
| ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024929 CLAYTON J. MORRIS 6/24/2018 | PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 022896 CLARK W. HARRISON 6/15/2018 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

| FINAL PAVEMENT SCHEDULE | | | |
|-------------------------|--|----|---|
| C1 | PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. | N1 | GEOTEXTILE FOR SOIL STABILIZATION |
| C2 | PROP. APPROX. 1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. | R1 | 2'-6" CONCRETE CURB AND GUTTER |
| C3 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. | R2 | 1'-6" CONCRETE CURB AND GUTTER |
| C4 | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. | R3 | 8" X 12" CONCRETE CURB |
| C5 | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1" OR GREATER THAN 1 1/2" IN DEPTH. | R4 | 5" MONOLITHIC CONCRETE ISLAND (KEYED IN) |
| C6 | 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 LESS THAN 1 1/2" OR GREATER THAN 2" IN DEPTH. | S | 4" CONCRETE SIDEWALK |
| D1 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | T | EARTH MATERIAL |
| 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 2 1/2" OR GREATER THAN 4" IN DEPTH. | U | EXISTING PAVEMENT |
| E1 | PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | V1 | INCIDENTAL MILLING |
| 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" OR GREATER THAN 5 1/2" IN DEPTH. | V2 | 1.5" MILLING |
| L1 | CLASS IV SUBGRADE STABILIZATION | W1 | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS) |
| | | W2 | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS) |
| | | W3 | VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAILS) |

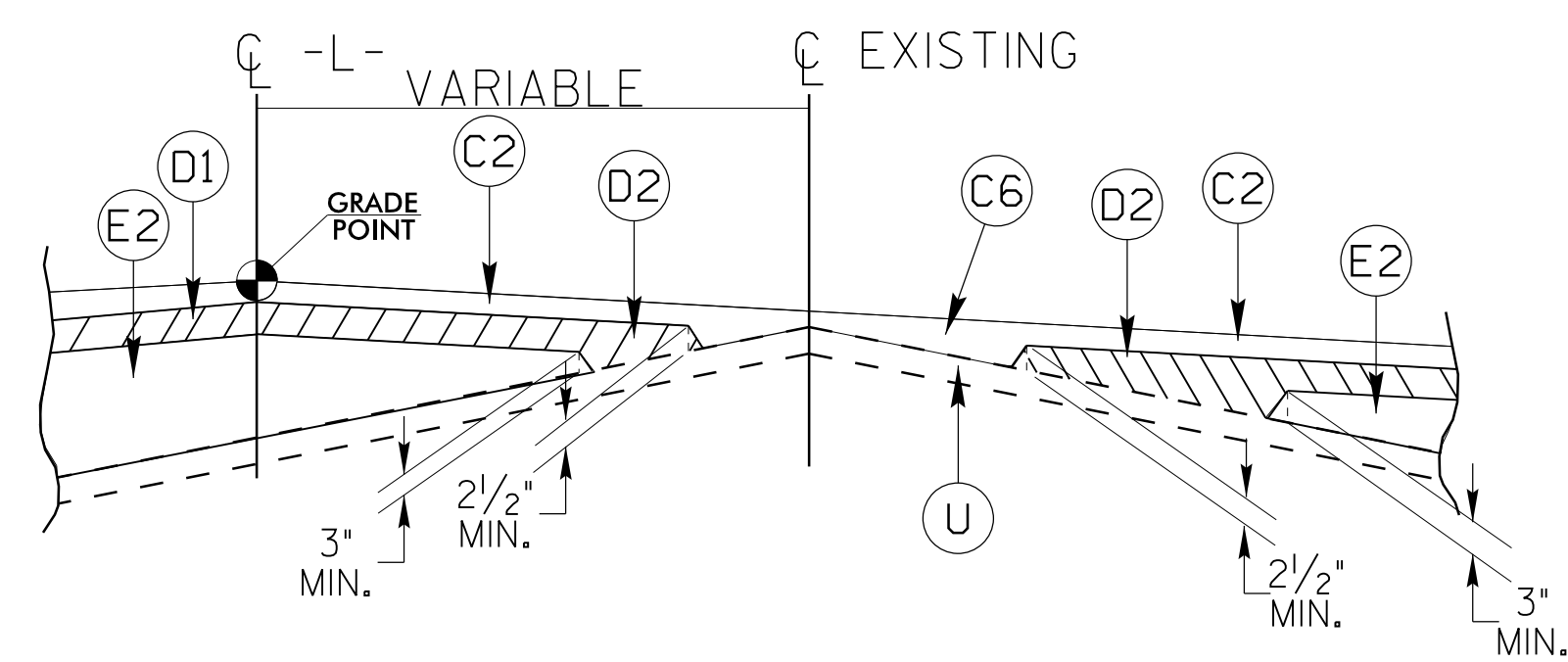
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



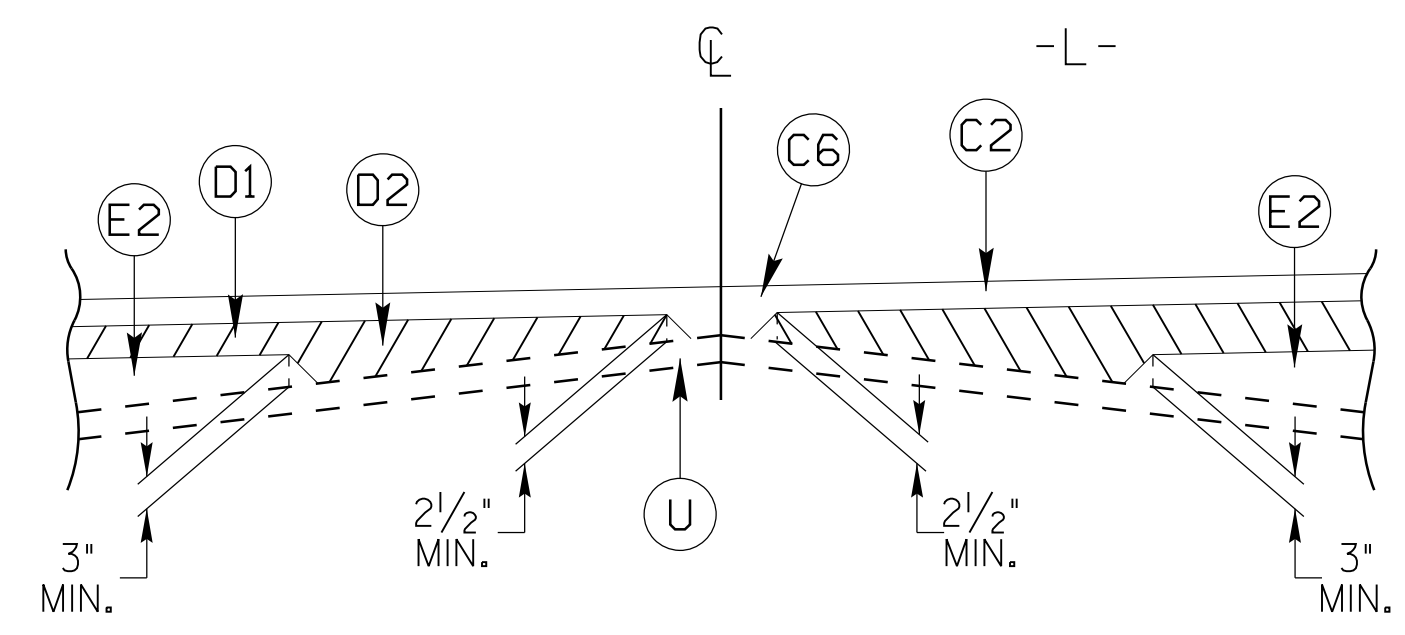
DETAIL FOR INCIDENTAL MILLING
-L- USE C2
ALL OTHER ALIGNMENTS USE C1



W3 DETAIL #2 SHOWING METHOD OF WEDGING

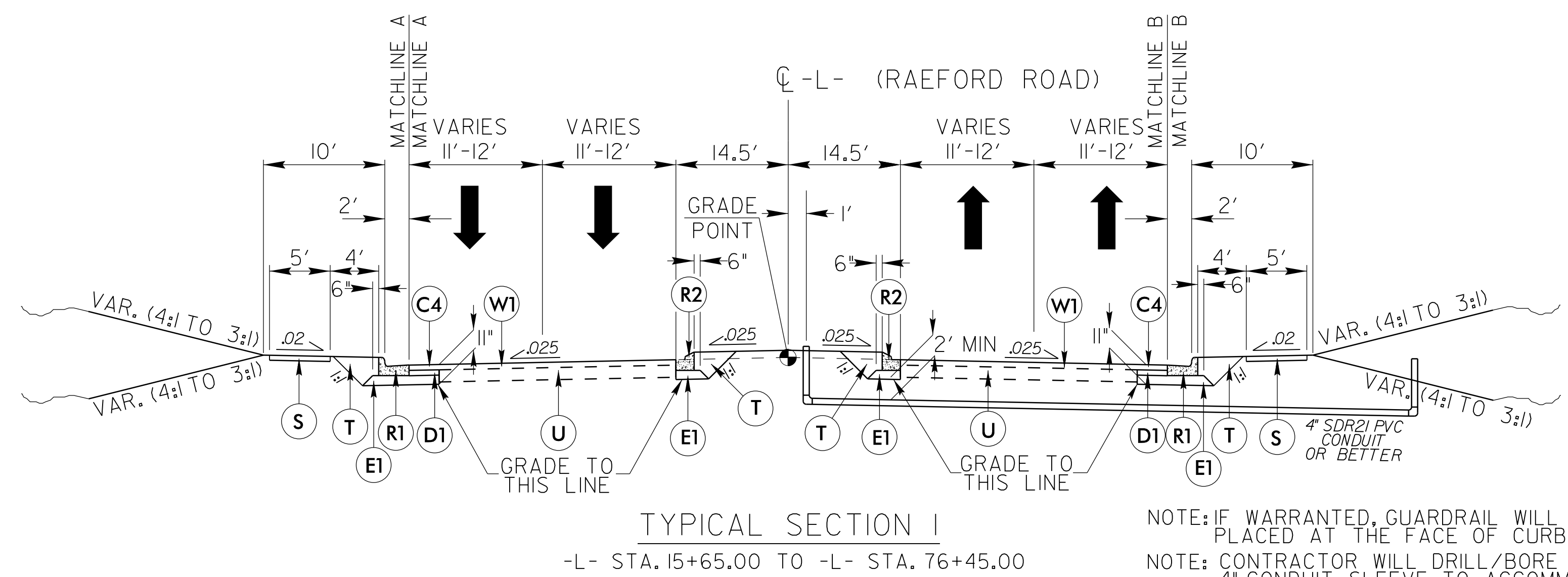
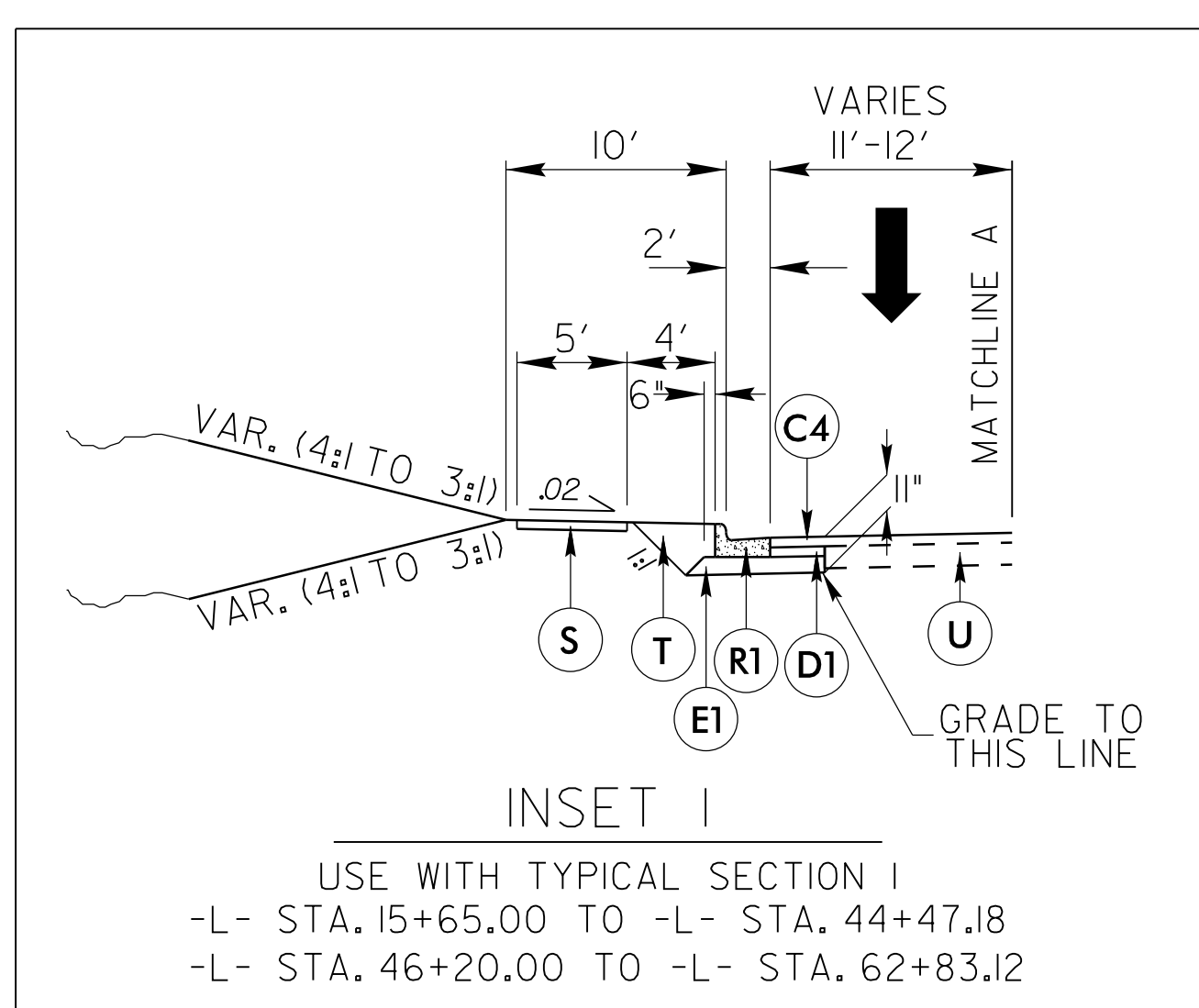


W1 DETAIL #1 SHOWING METHOD OF WEDGING

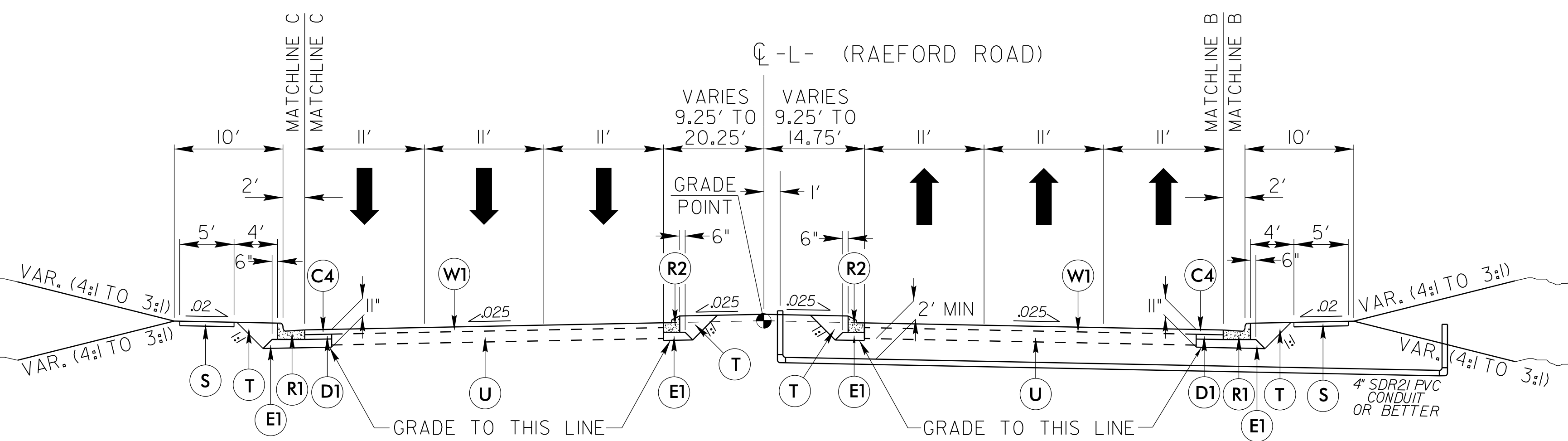


W2 DETAIL #2 SHOWING METHOD OF WEDGING

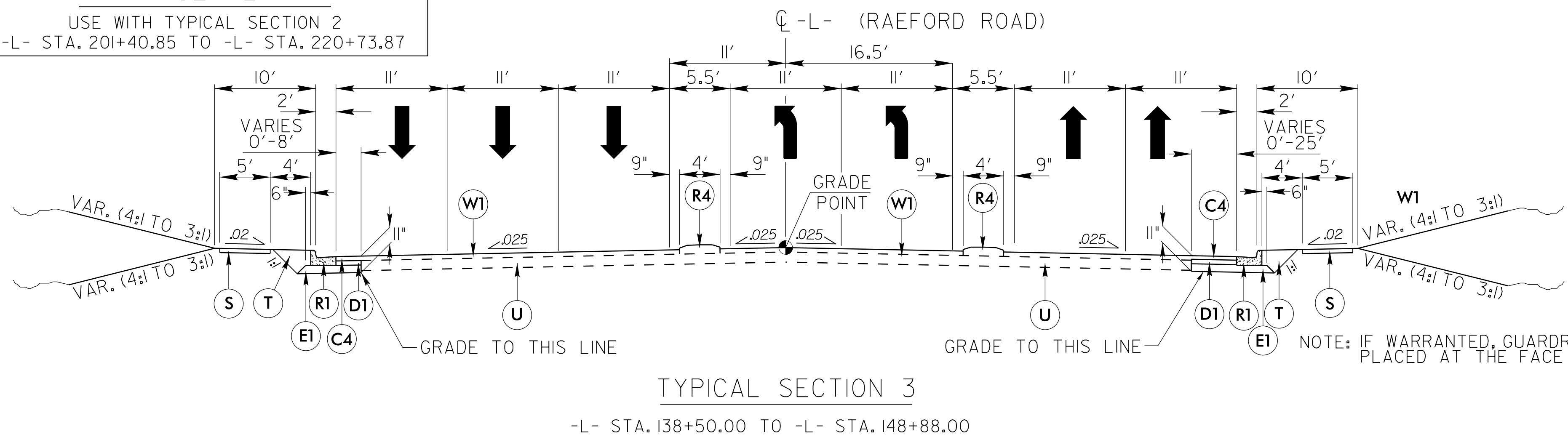
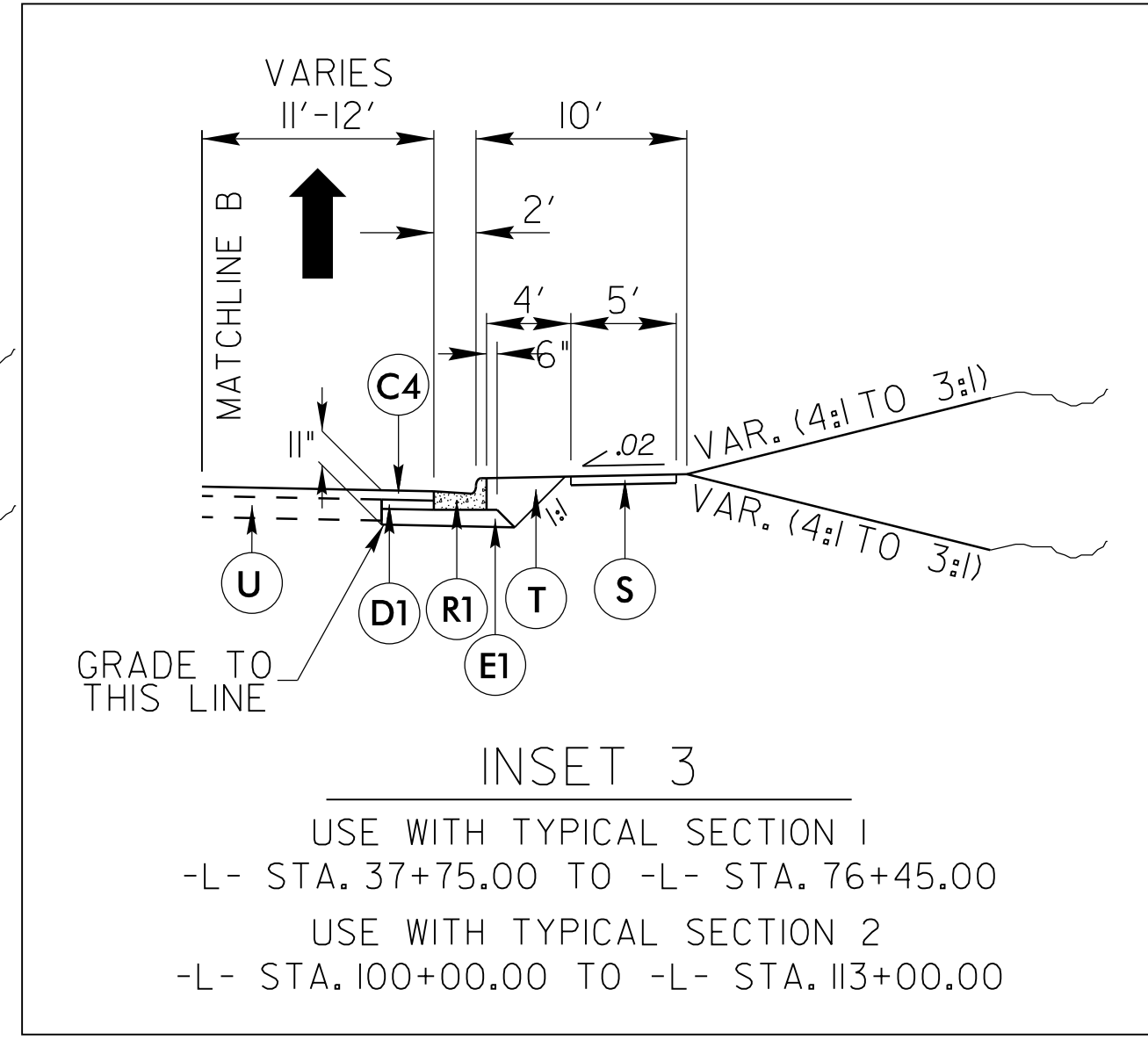
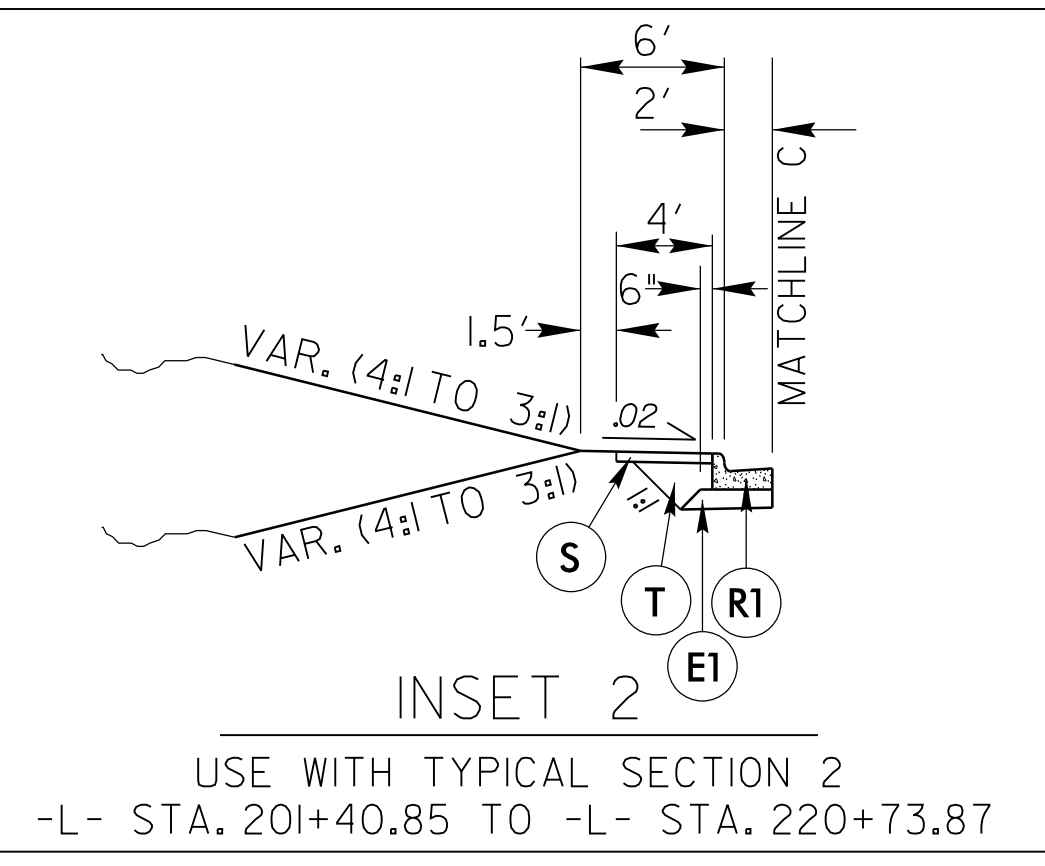
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14-JUN-2018 2:29 PM
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\$\$\$\$\$UNFINISHED\$\$\$\$\$



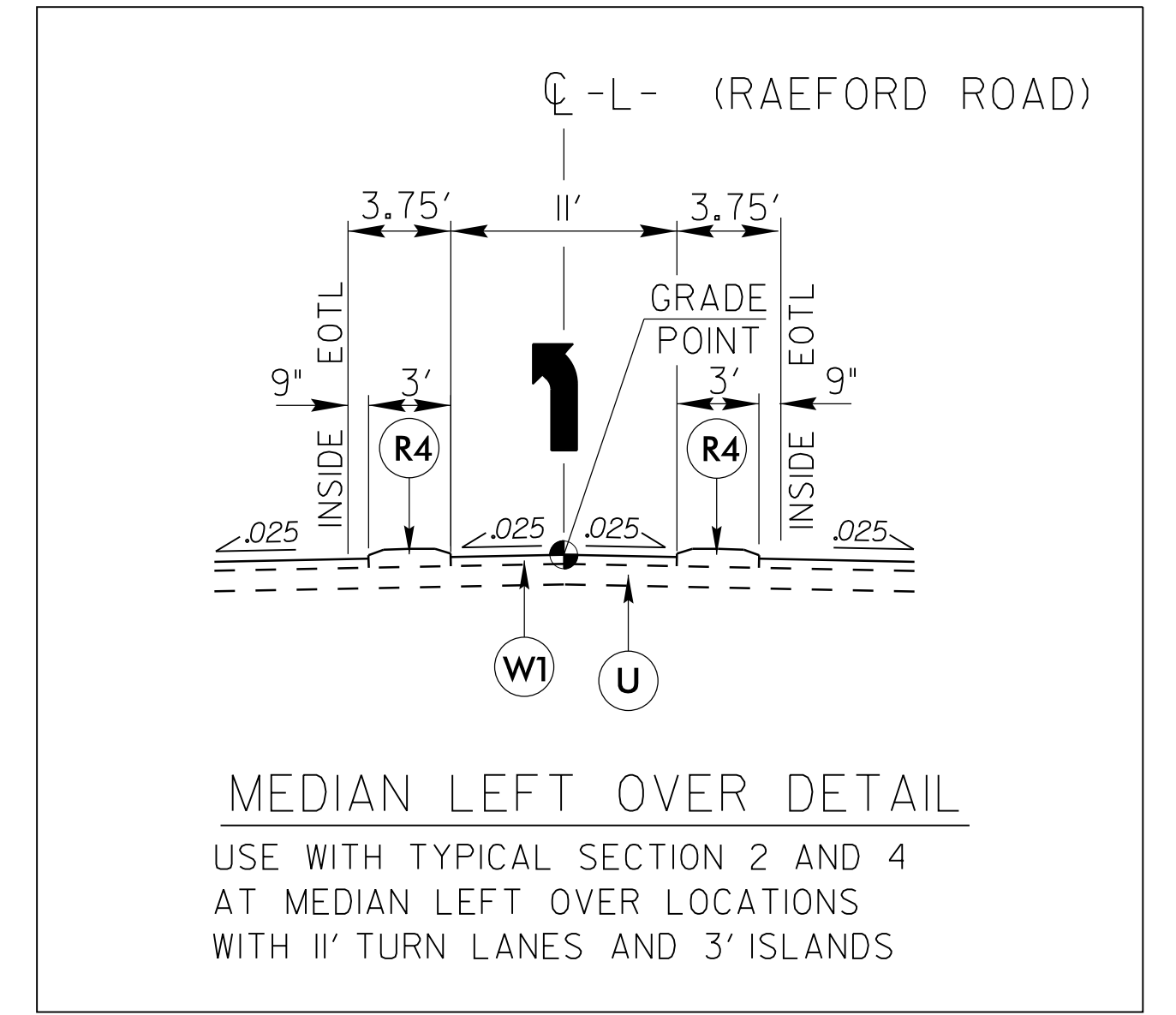
NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB
NOTE: CONTRACTOR WILL DRILL/BORE 4" CONDUIT SLEEVE TO ACCOMMODATE IRRIGATION TO ISLANDS PER RESIDENT ENGINEER DIRECTION.



NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB
NOTE: CONTRACTOR WILL DRILL/BORE 4" CONDUIT SLEEVE TO ACCOMMODATE IRRIGATION TO ISLANDS PER RESIDENT ENGINEER DIRECTION.



NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB

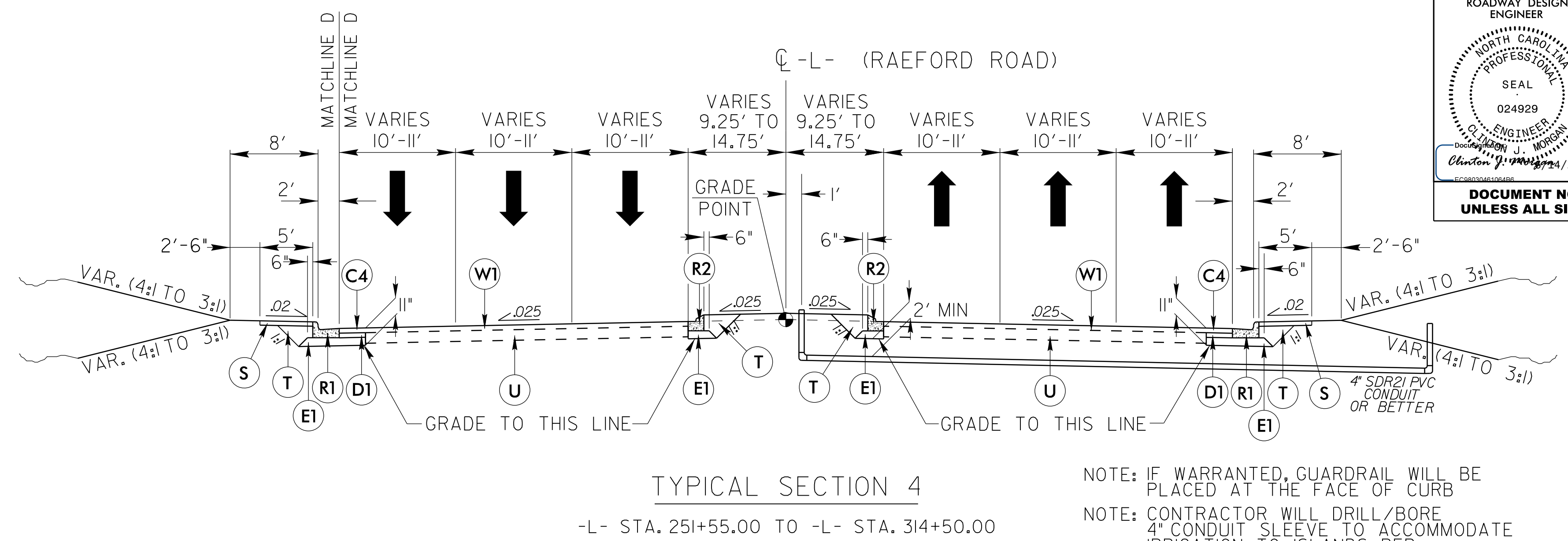
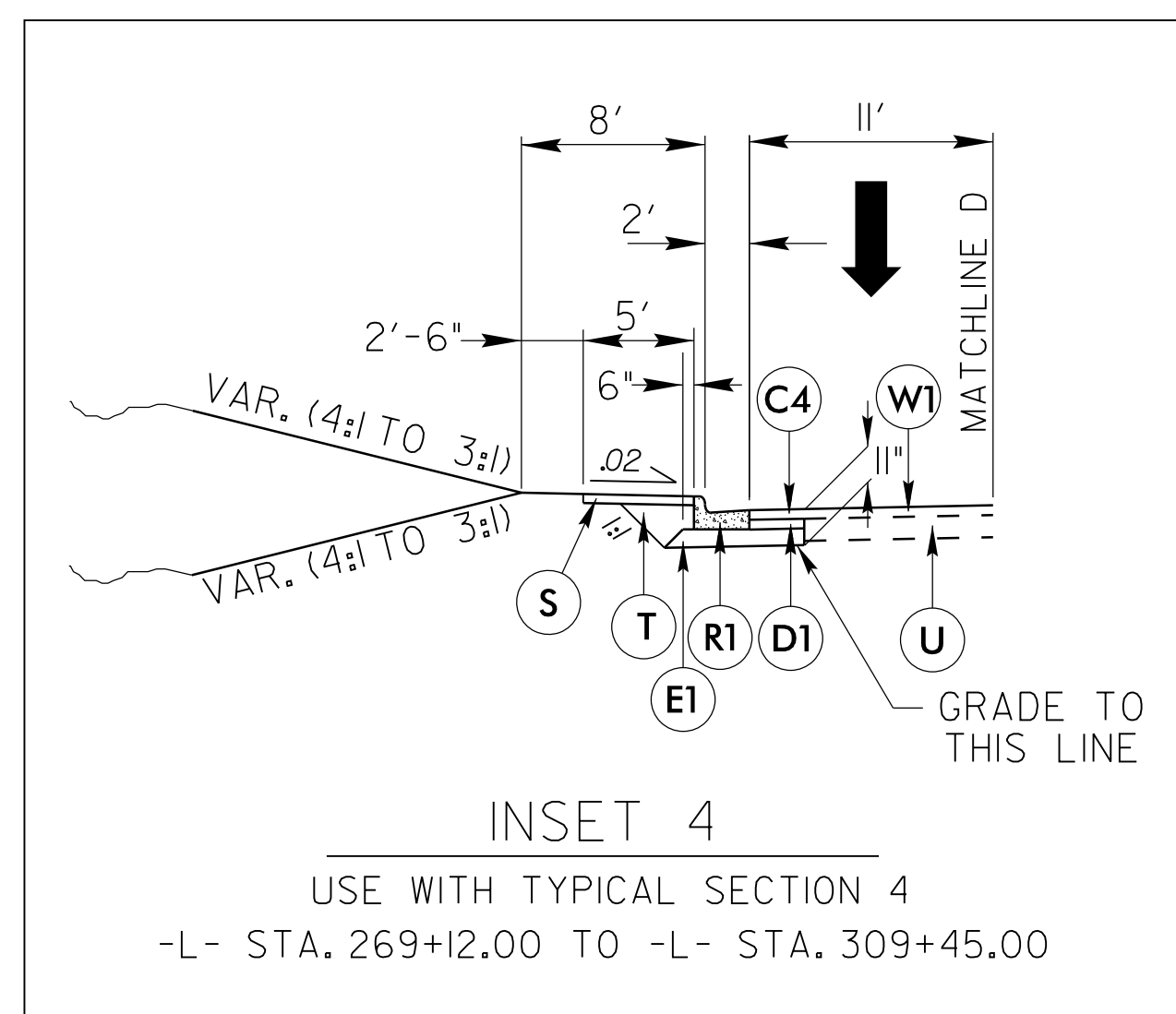


| | |
|---|--|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-2 |
| ROADWAY DESIGN ENGINEER SEAL 024929 C. H. HUGHES 11/15/2018 | PAVEMENT DESIGN ENGINEER SEAL 022896 C. H. HUGHES 11/15/2018 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

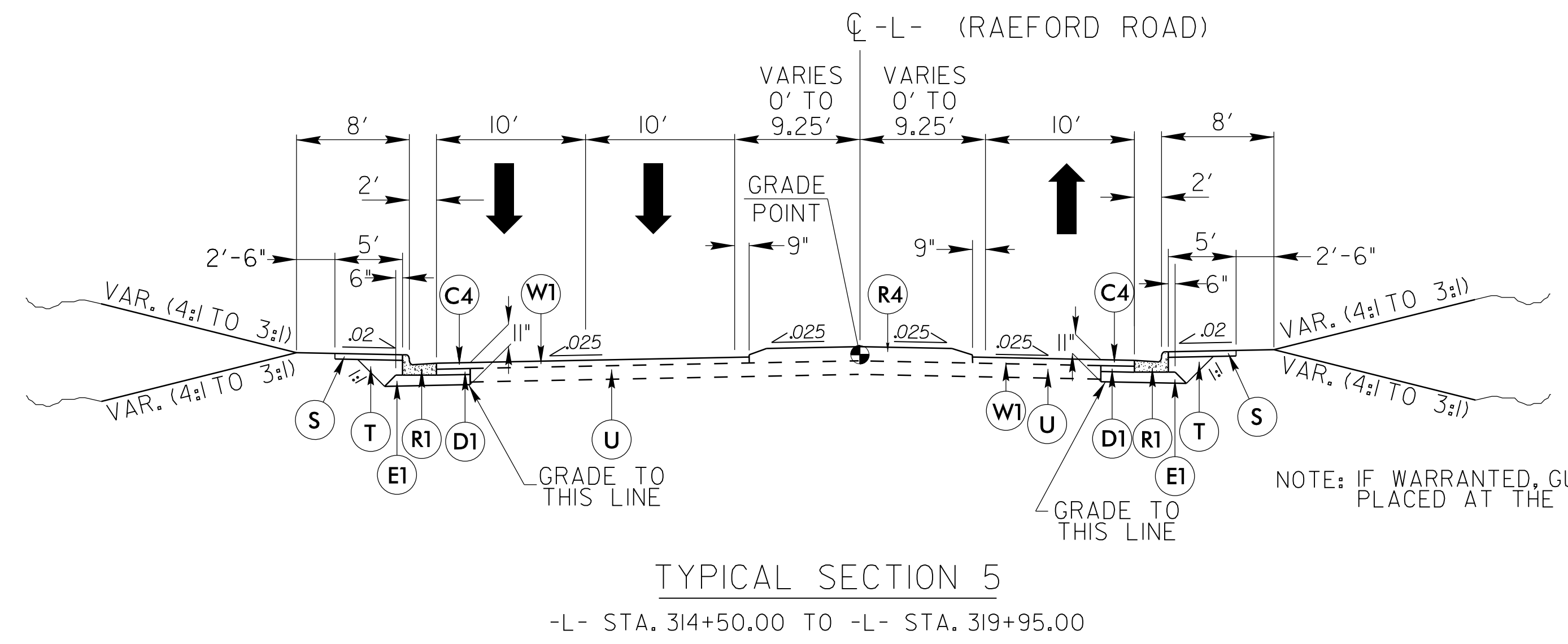
| PAVEMENT SCHEDULE | |
|-------------------|------------------------------|
| C4 | 3" S9.5C |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| R2 | 1'-6" CURB AND GUTTER |
| R4 | MONOLITHIC ISLAND (KEYED IN) |
| S | SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W1 | WEDGING |

6/2/19

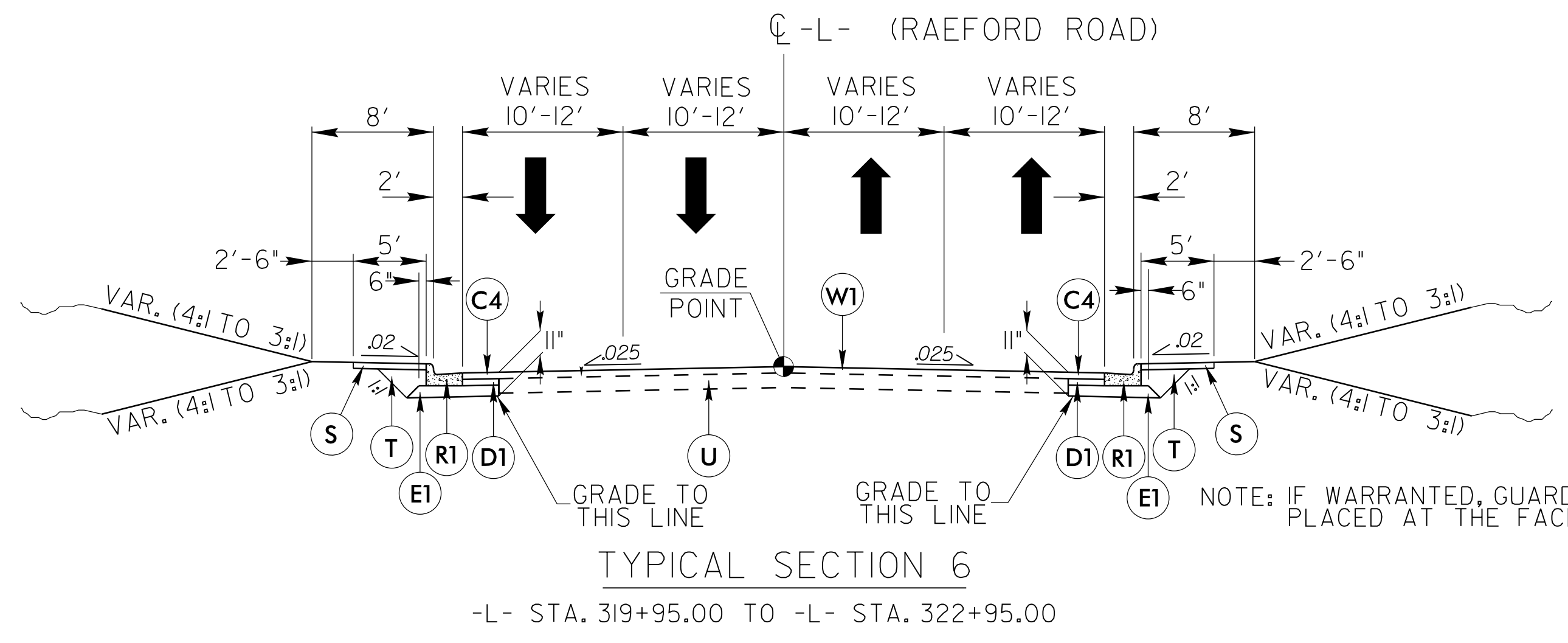
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|---|--|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-3 |
| ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024929 Clark Williams | PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 022896 Clark Williams |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB
NOTE: CONTRACTOR WILL DRILL/BORE 4" CONDUIT SLEEVE TO ACCOMMODATE IRRIGATION TO ISLANDS PER RESIDENT ENGINEER DIRECTION.



NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB

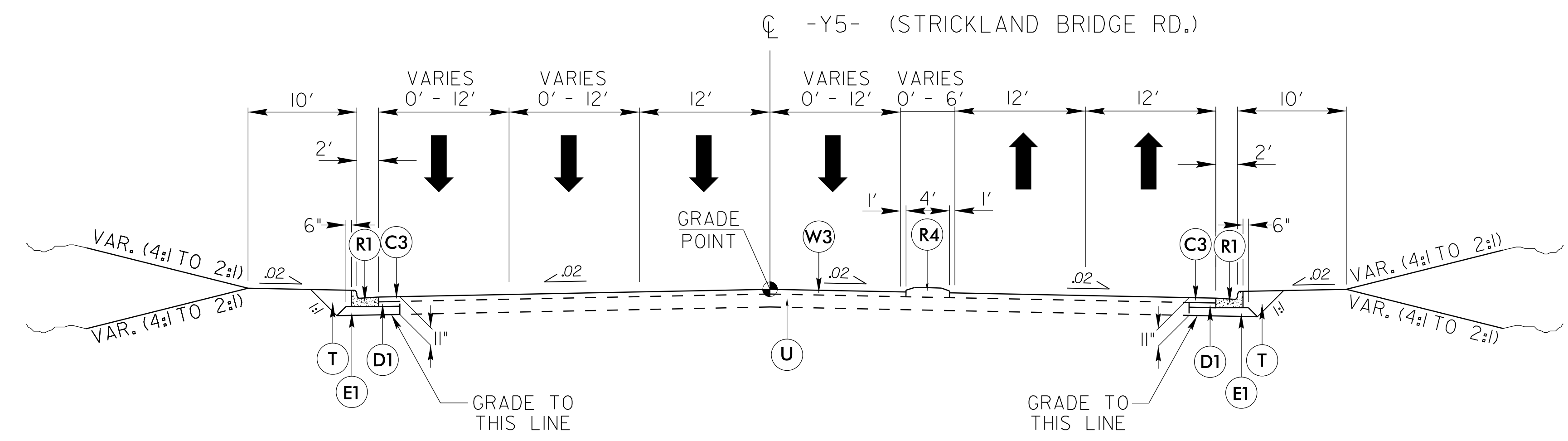


NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB

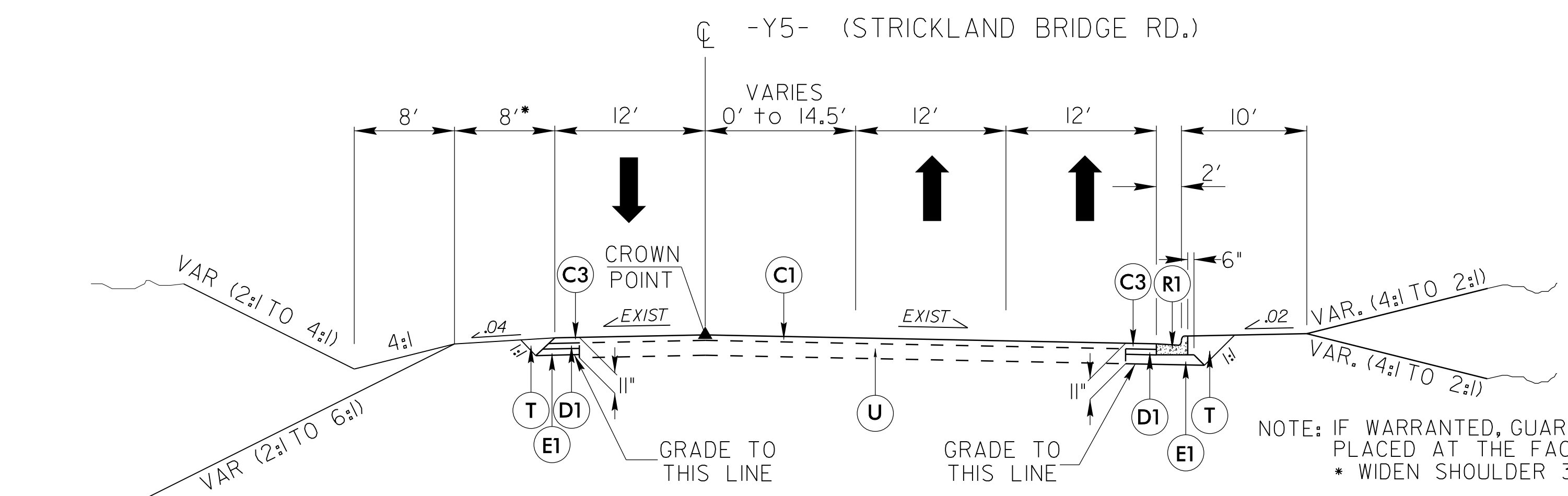
| PAVEMENT SCHEDULE | |
|-------------------|------------------------------|
| C4 | 3" S9.5C |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| R2 | 1'-6" CURB AND GUTTER |
| R4 | MONOLITHIC ISLAND (KEYED IN) |
| S | SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W1 | WEDGING |

14-JUN-2018 2:29 PM
RAY.PADGUGA, P.E. U:\4405_rdy_tup.dgn
\$\$\$\$\$SUSPENSE\$

| | |
|---|--|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-4 |
| ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024929 CLAYTON J. MORGAN 6/24/2018 | PAVEMENT DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 022896 CLARK W. HARRISON 6/15/2018 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



TYPICAL SECTION 7
 -Y5- STA. 19+60.00 TO -Y5- STA. 20+65.04
 -Y5- STA. 21+71.04 TO -Y5- STA. 25+55.00



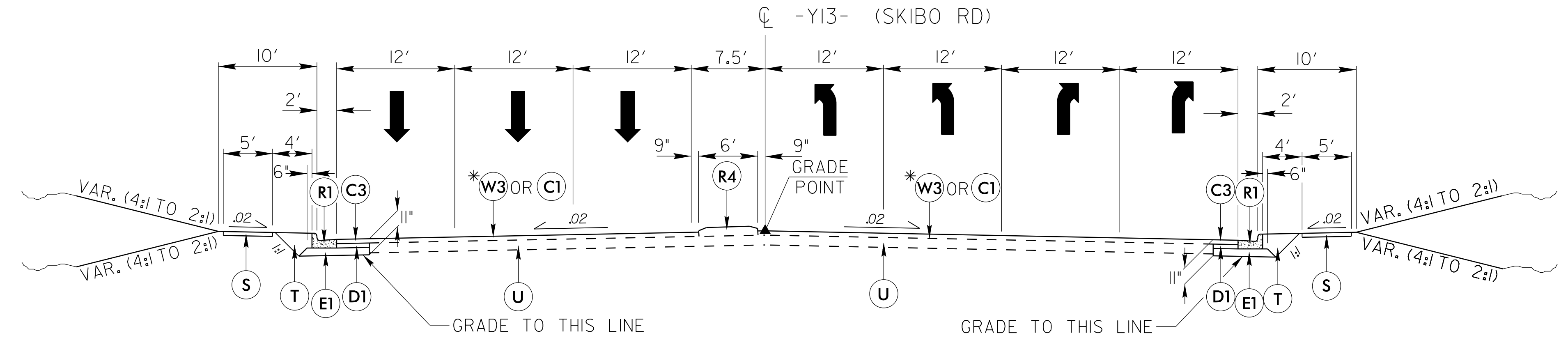
TYPICAL SECTION 8
 -Y5- STA. 25+55.00 TO -Y5- STA. 28+00.00

NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB
 * WIDEN SHOULDER 3' FOR GUARDRAIL

| PAVEMENT SCHEDULE | |
|-------------------|------------------------------|
| C1 | 1.5" S9.5B |
| C3 | 3" S9.5B |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| R4 | MONOLITHIC ISLAND (KEYED IN) |
| S | SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W3 | WEDGING |

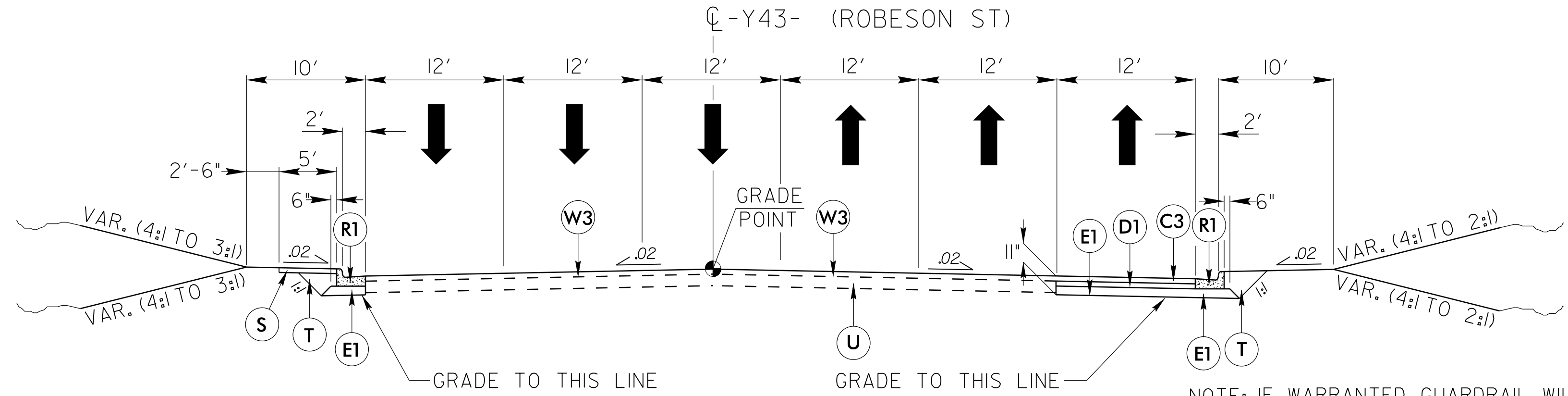
6/27/19

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| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-5 |
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| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



TYPICAL SECTION 9
-Y13- STA. 16+50.00 TO -Y13- STA. 19+67.93

NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB
* RESURFACE FROM 16+50.00 TO 18+15.00 WITH 1.5" S9.5B



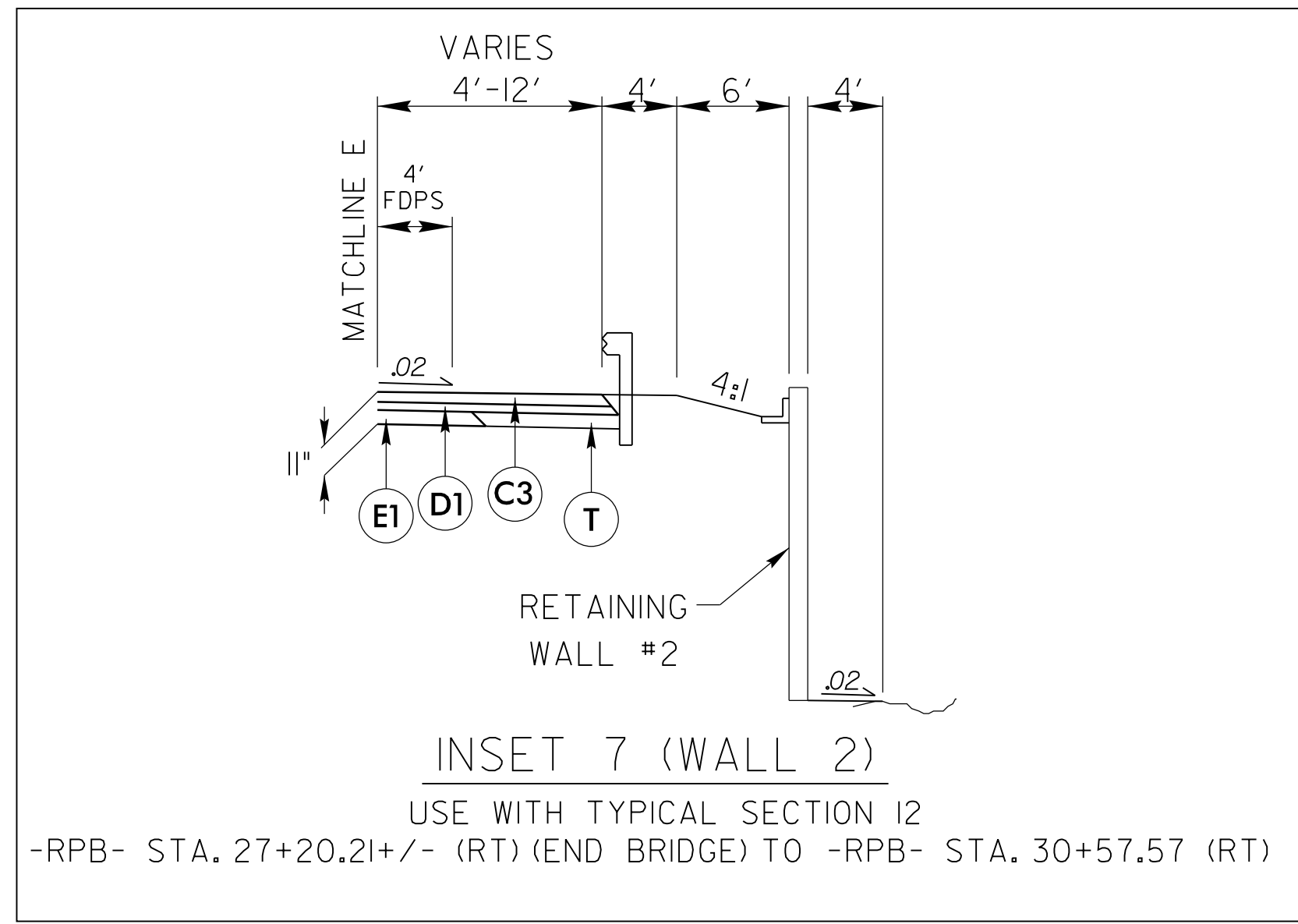
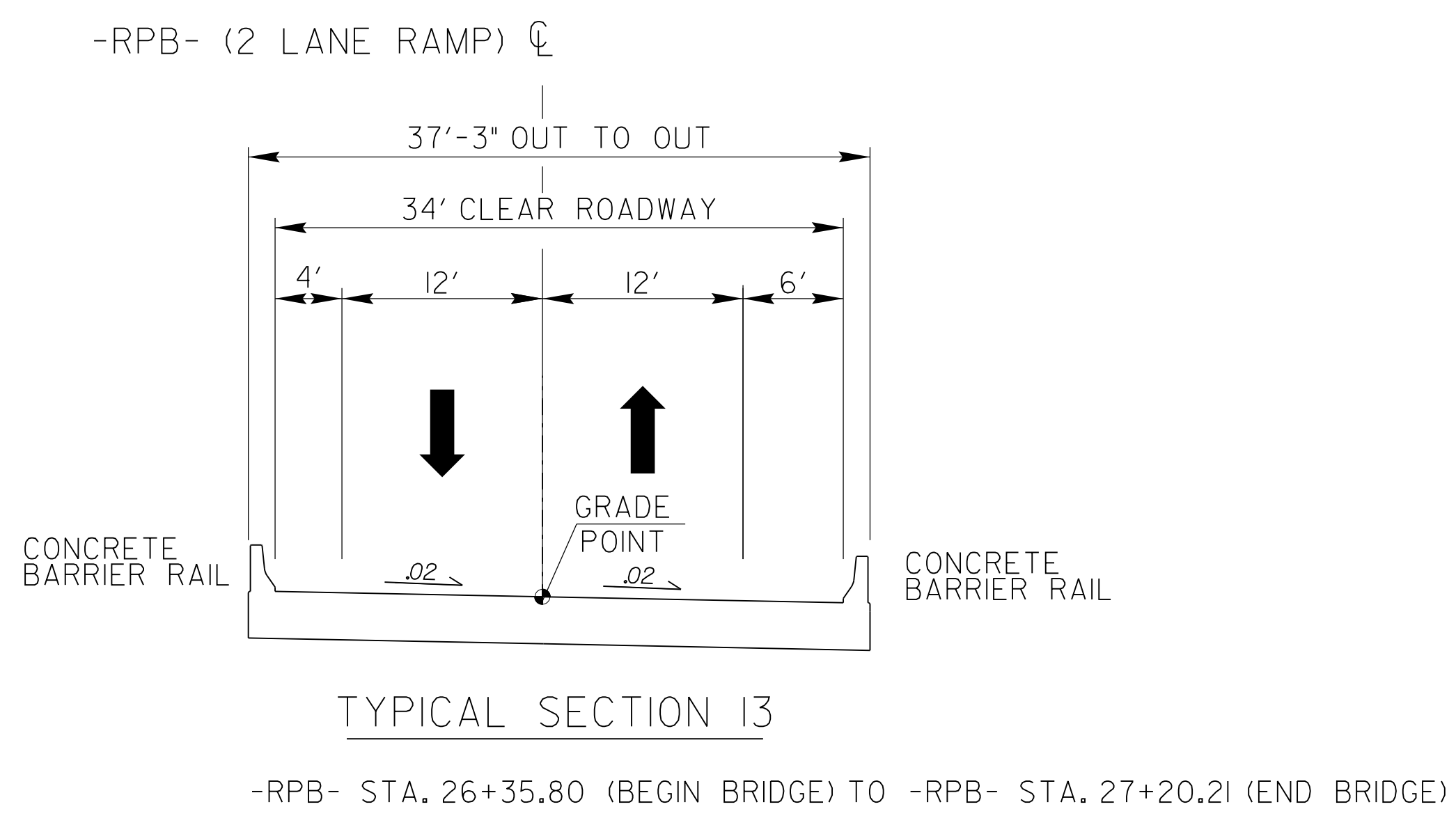
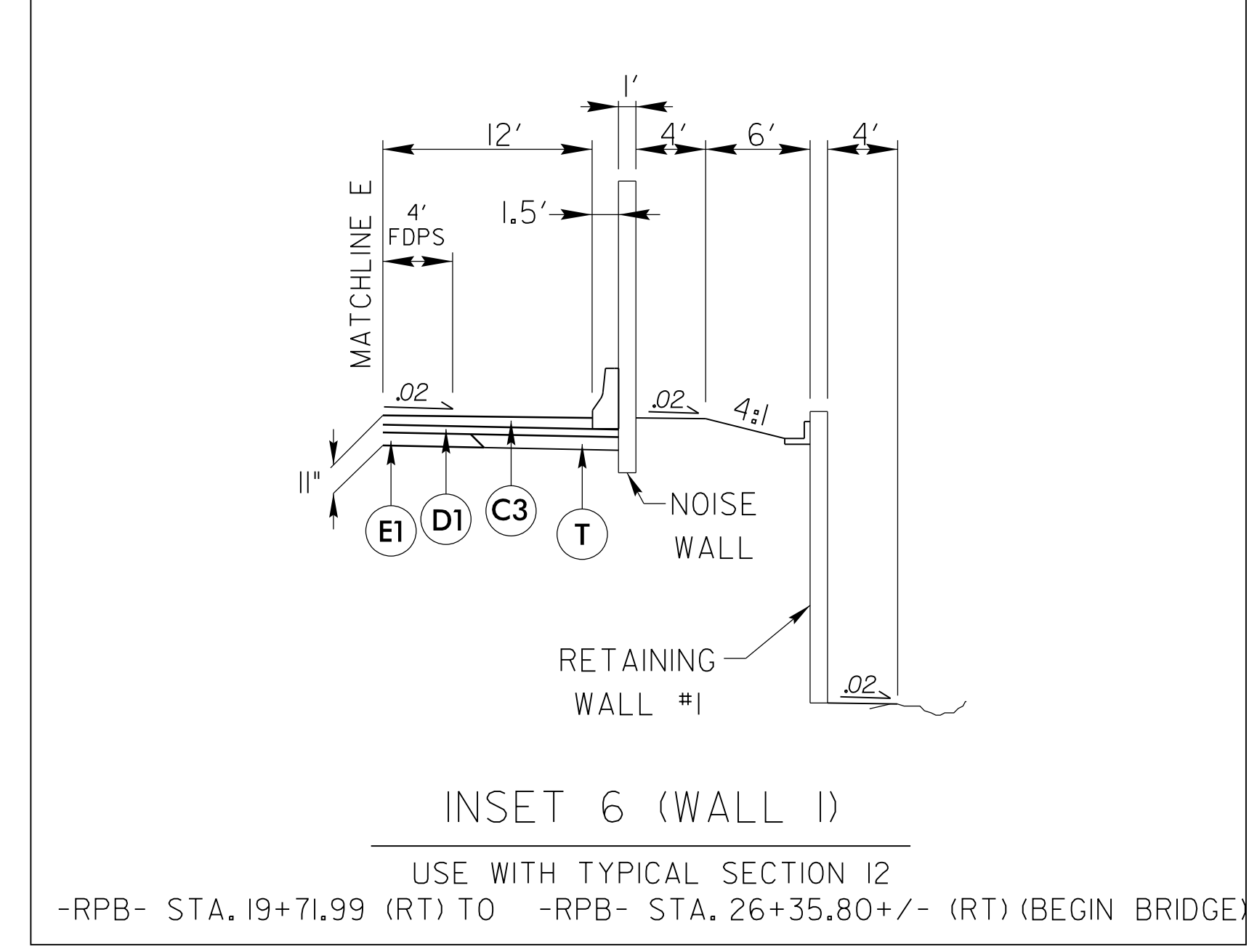
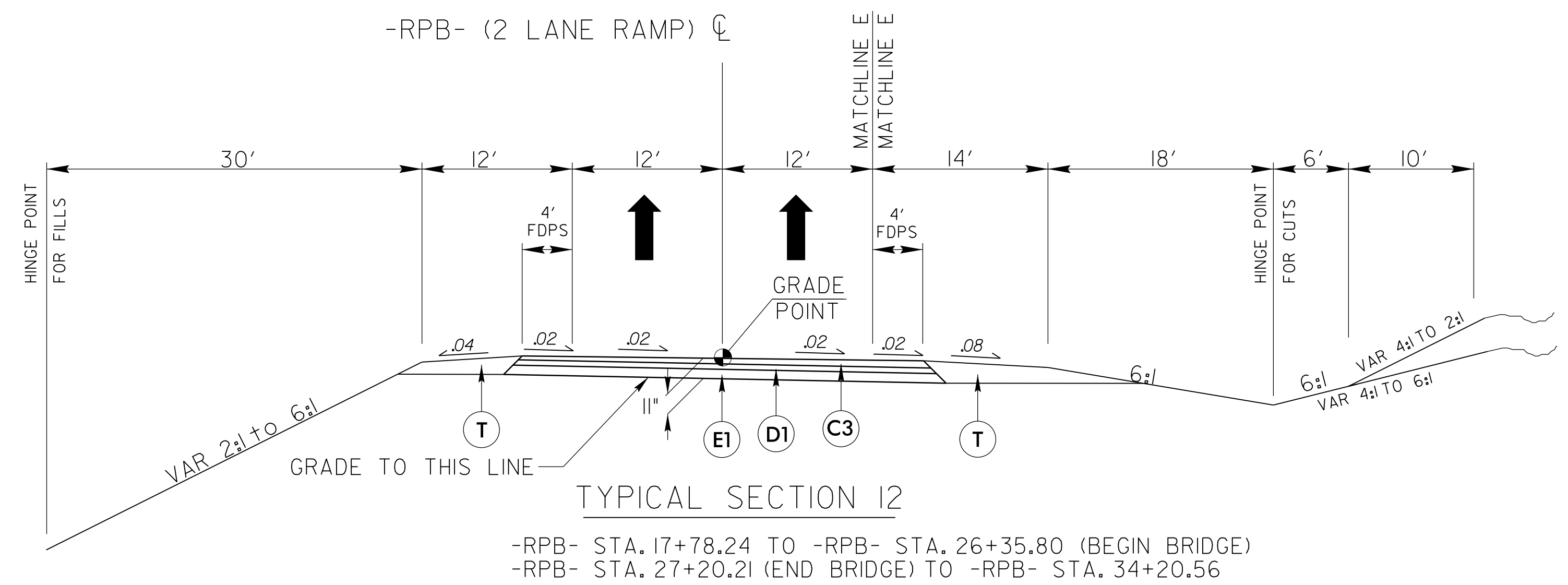
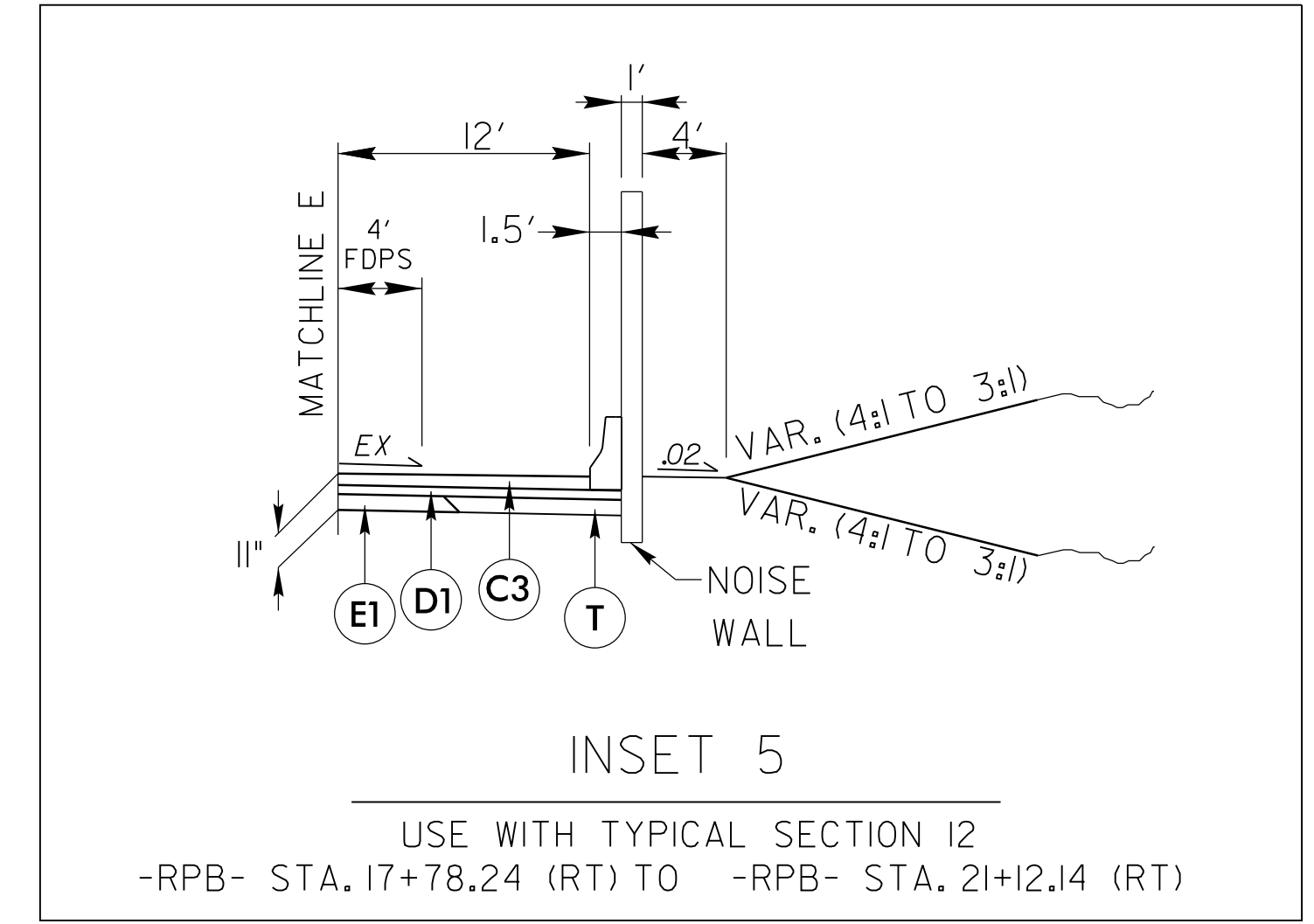
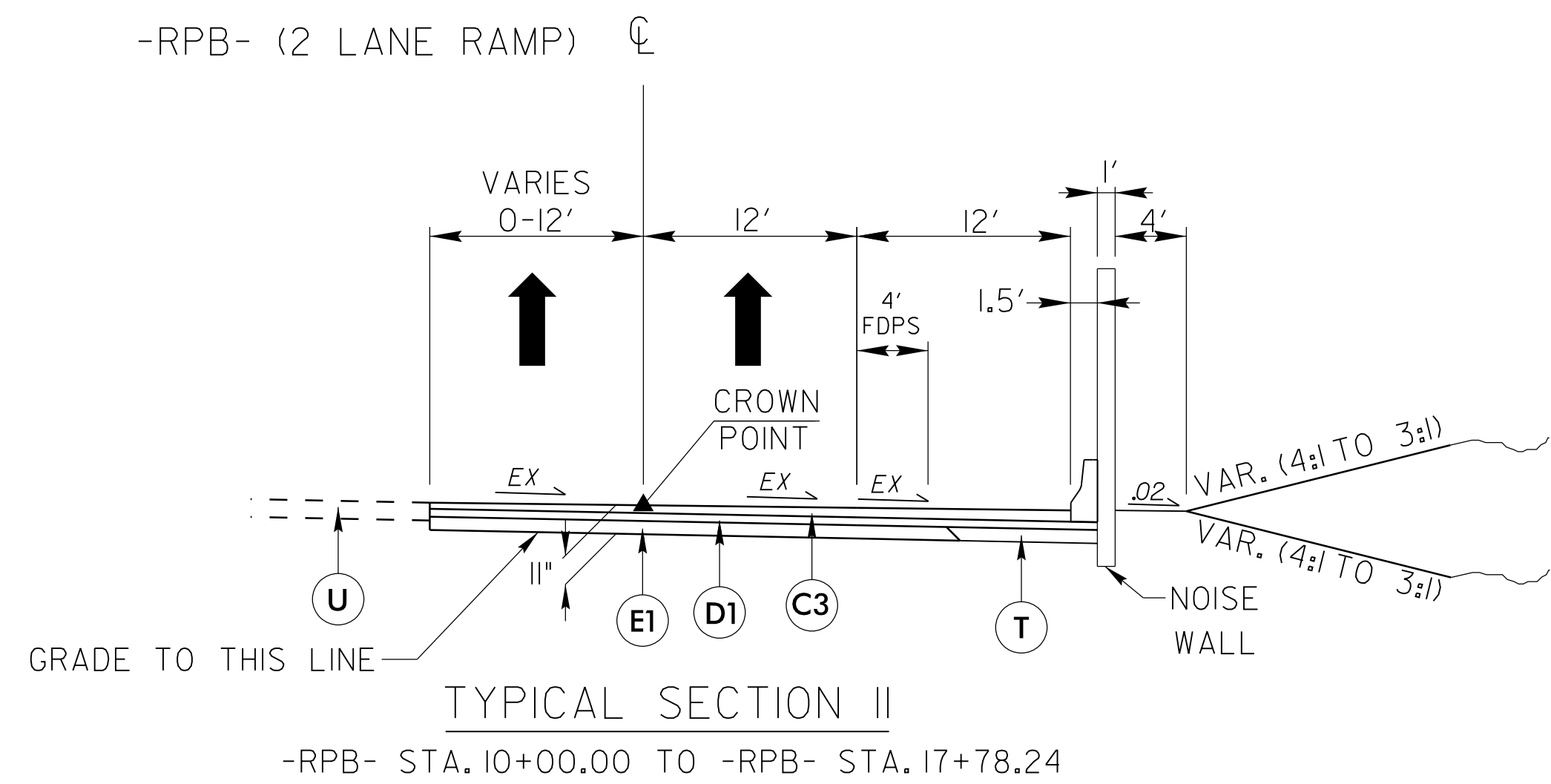
TYPICAL SECTION 10
-Y43- STA. 10+33.01 TO -Y43- STA. 18+43.12

NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB

| PAVEMENT SCHEDULE | |
|-------------------|------------------------------|
| C1 | 1.5" S9.5B |
| C3 | 3" S9.5B |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| R4 | MONOLITHIC ISLAND (KEYED IN) |
| S | SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W3 | WEDGING |

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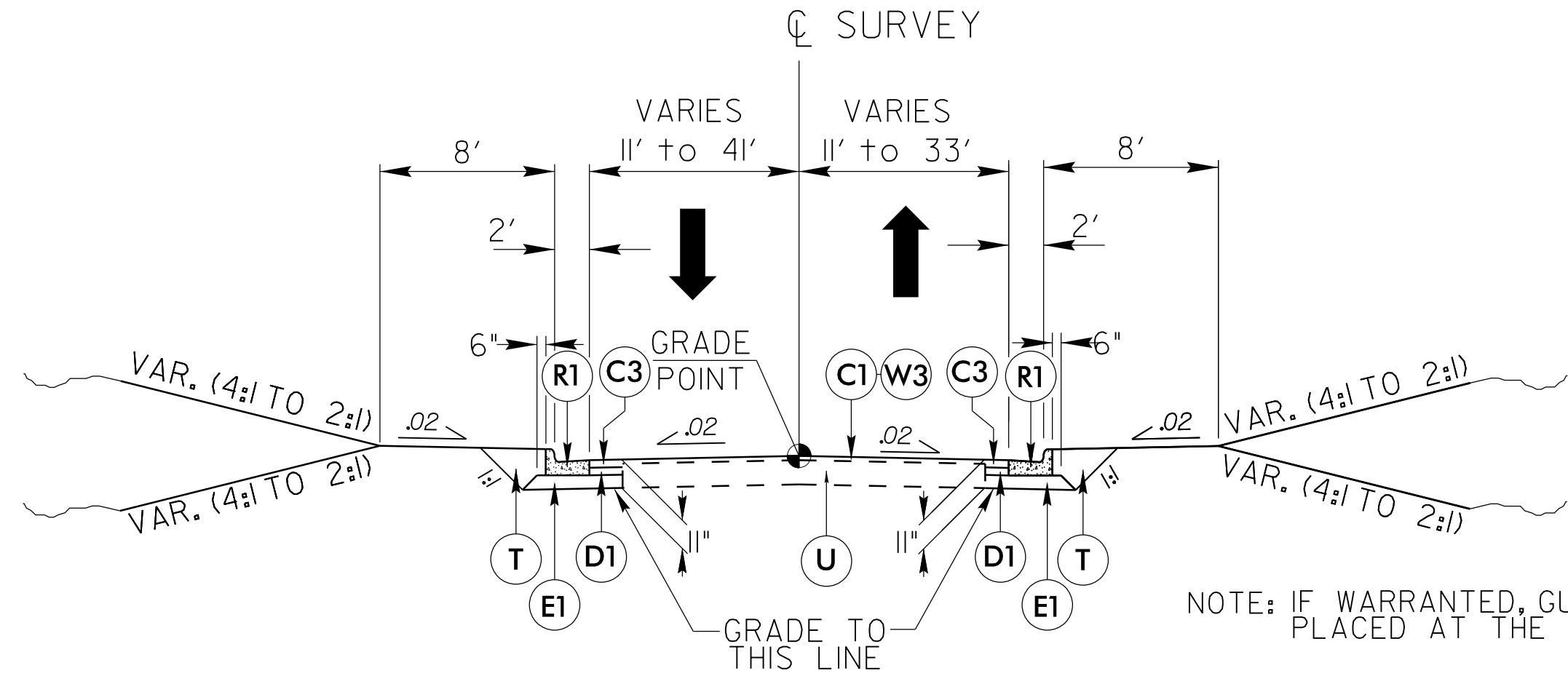
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| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-6 |
| ROADWAY DESIGN ENGINEER CLARK HOLLIS | PAVEMENT DESIGN ENGINEER CLARK HOLLIS |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



| PAVEMENT SCHEDULE | |
|-------------------|-------------------|
| C3 | 3" S9.5B |
| D1 | 4" I19.0C |
| E1 | 4" B25.0C |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |

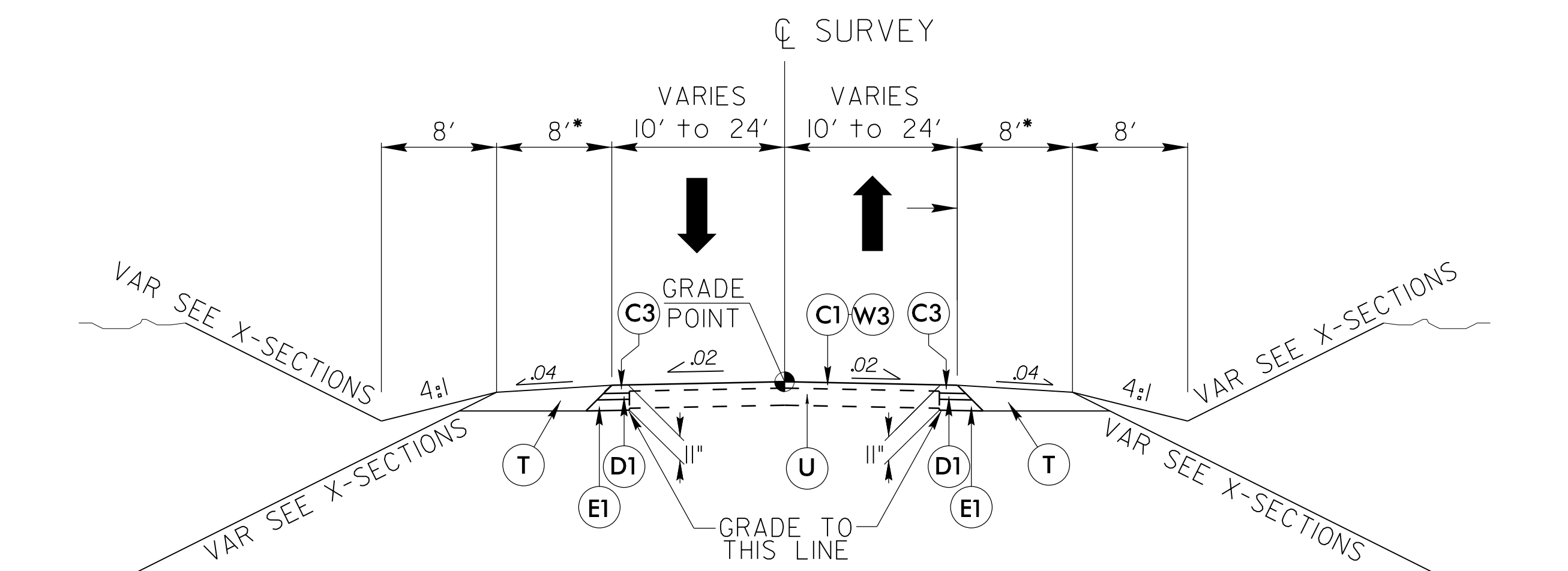
6/2/19

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| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-7 |
| ROADWAY DESIGN ENGINEER CLAYTON J. MORGAN NORTH CAROLINA PROFESSIONAL SEAL 024929 EXPIRES 12/31/2018 | PAVEMENT DESIGN ENGINEER CLARK W. MORRISON NORTH CAROLINA PROFESSIONAL SEAL 022896 EXPIRES 12/15/2018 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



TYPICAL SECTION 14

- | | |
|--|--|
| -Y1- STA. 14+20.00 TO -Y1- STA. 14+75.76 | -Y28- STA. 10+53.25 TO -Y28- STA. 11+20.00 |
| -Y2- STA. 10+50.50 TO -Y2- STA. 11+20.00 | -Y29- STA. 13+50.00 TO -Y29- STA. 14+29.17 |
| -Y7- STA. 13+20.00 TO -Y7- STA. 14+18.26 | -Y30- STA. 10+48.20 TO -Y30- STA. 11+15.00 |
| -Y7- STA. 15+35.76 TO -Y7- STA. 16+45.00 | -Y35- STA. 10+39.25 TO -Y35- STA. 11+75.00 |
| -Y10- STA. 10+53.59 TO -Y10- STA. 11+45.00 | -Y36- STA. 10+60.00 TO -Y36- STA. 11+61.86 |
| -Y11- STA. 10+42.52 TO -Y11- STA. 11+60.00 | -Y39- STA. 10+39.25 TO -Y39- STA. 11+50.00 |
| -Y12- STA. 10+42.25 TO -Y12- STA. 11+50.00 | -Y40- STA. 12+50.00 TO -Y40- STA. 13+56.49 |
| -Y14- STA. 10+44.61 TO -Y14- STA. 11+45.00 | -Y44- STA. 10+29.70 TO -Y44- STA. 12+00.00 |
| -Y21- STA. 10+43.54 TO -Y21- STA. 11+10.00 | -Y25- STA. 10+53.08 TO -Y25- STA. 11+75.00 |



TYPICAL SECTION 15

- | |
|--|
| -Y4- STA. 17+00.00 TO -Y4- STA. 18+12.03 |
| -Y4- STA. 18+96.22 TO -Y4- STA. 19+70.00 |
| -Y6- STA. 10+42.30 TO -Y6- STA. 11+20.00 |
| -Y9- STA. 12+15.00 TO -Y9- STA. 13+04.51 |
| -Y15- STA. 11+40.00 TO -Y15- STA. 11+82.96 |
| -Y16- STA. 10+42.27 TO -Y16- STA. 11+70.00 |
| -Y18- STA. 10+47.17 TO -Y18- STA. 11+50.00 |
| -Y23- STA. 10+42.26 TO -Y23- STA. 11+50.00 |
| -Y26- STA. 10+42.25 TO -Y26- STA. 11+60.00 |

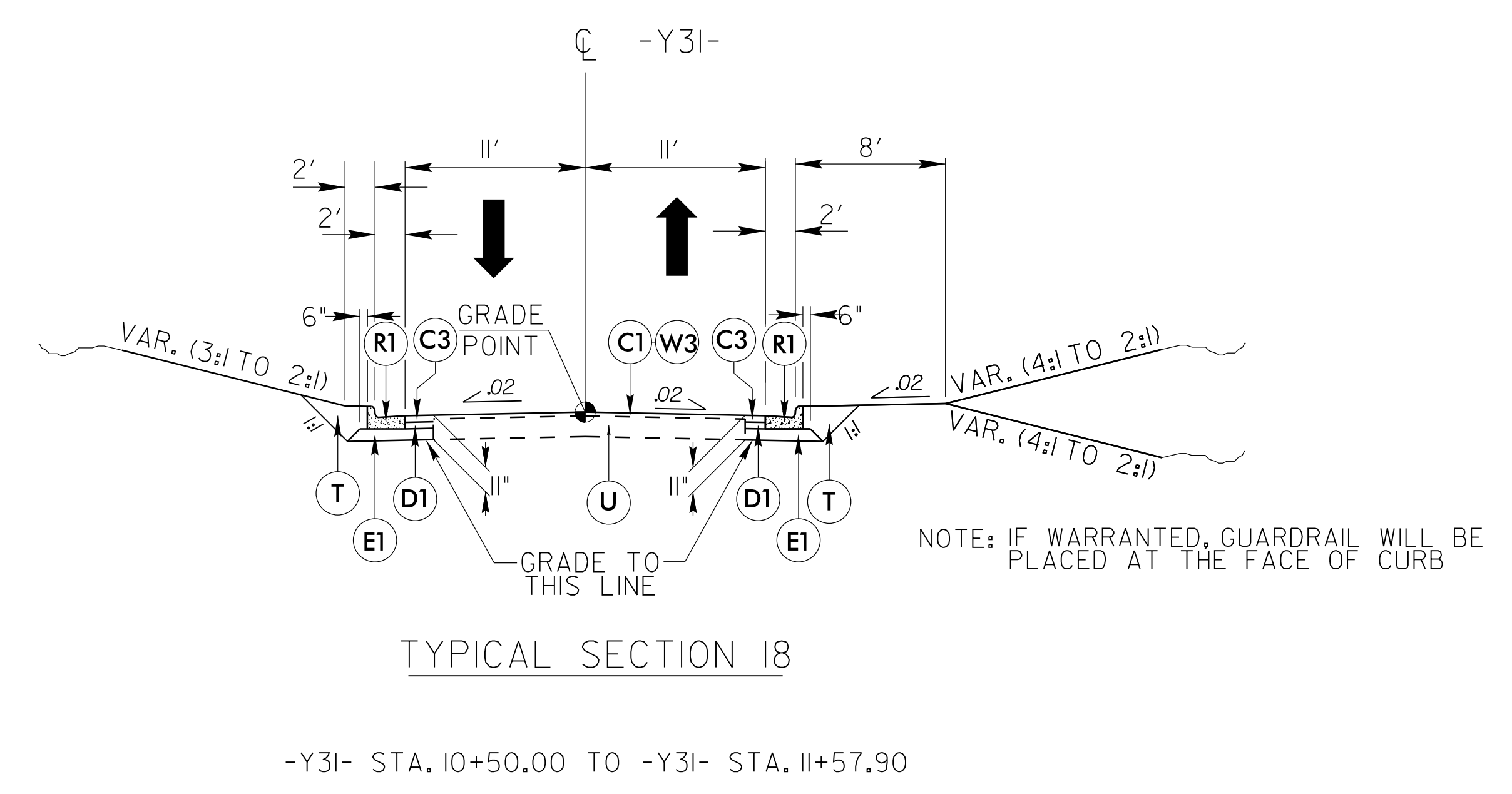
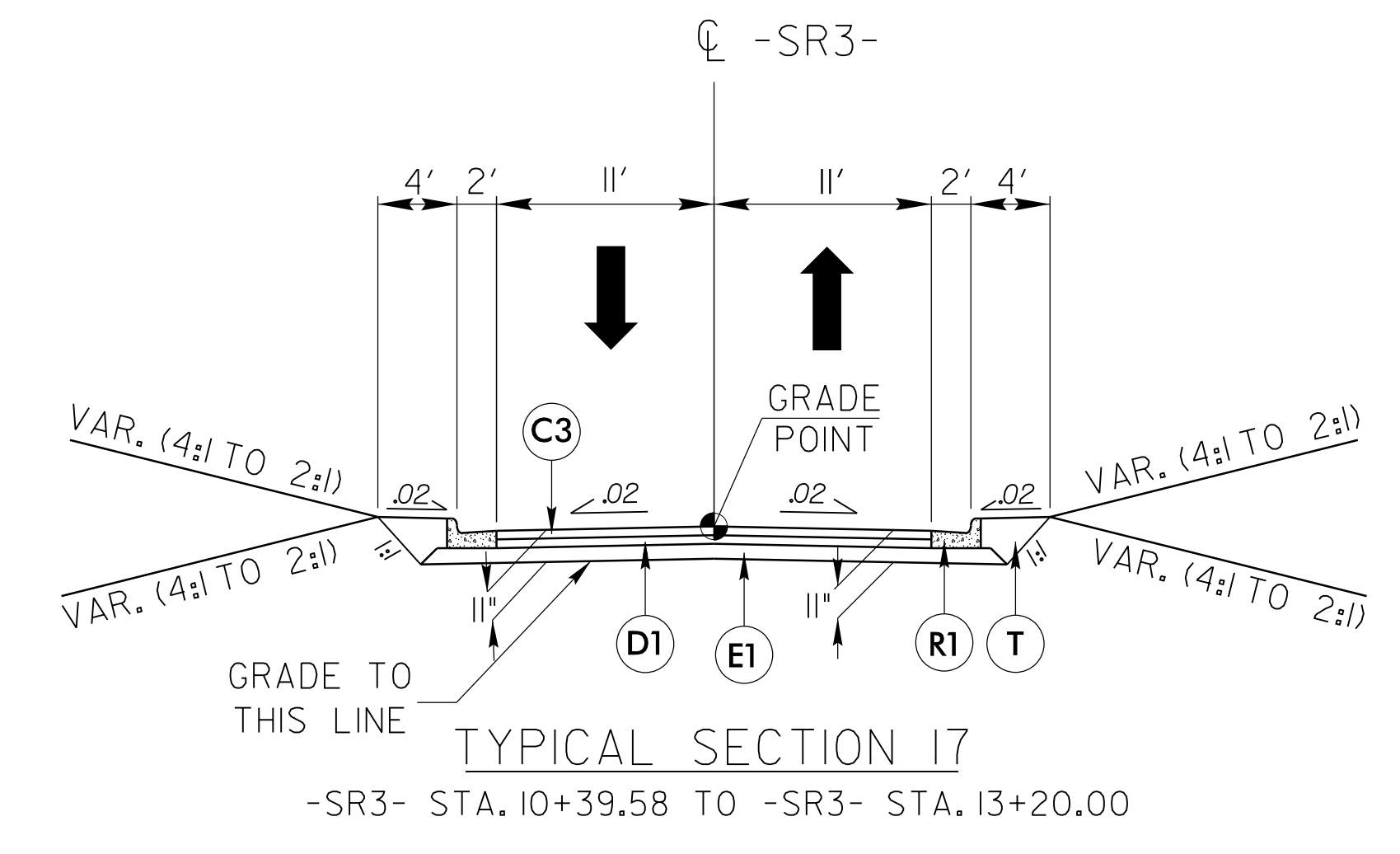
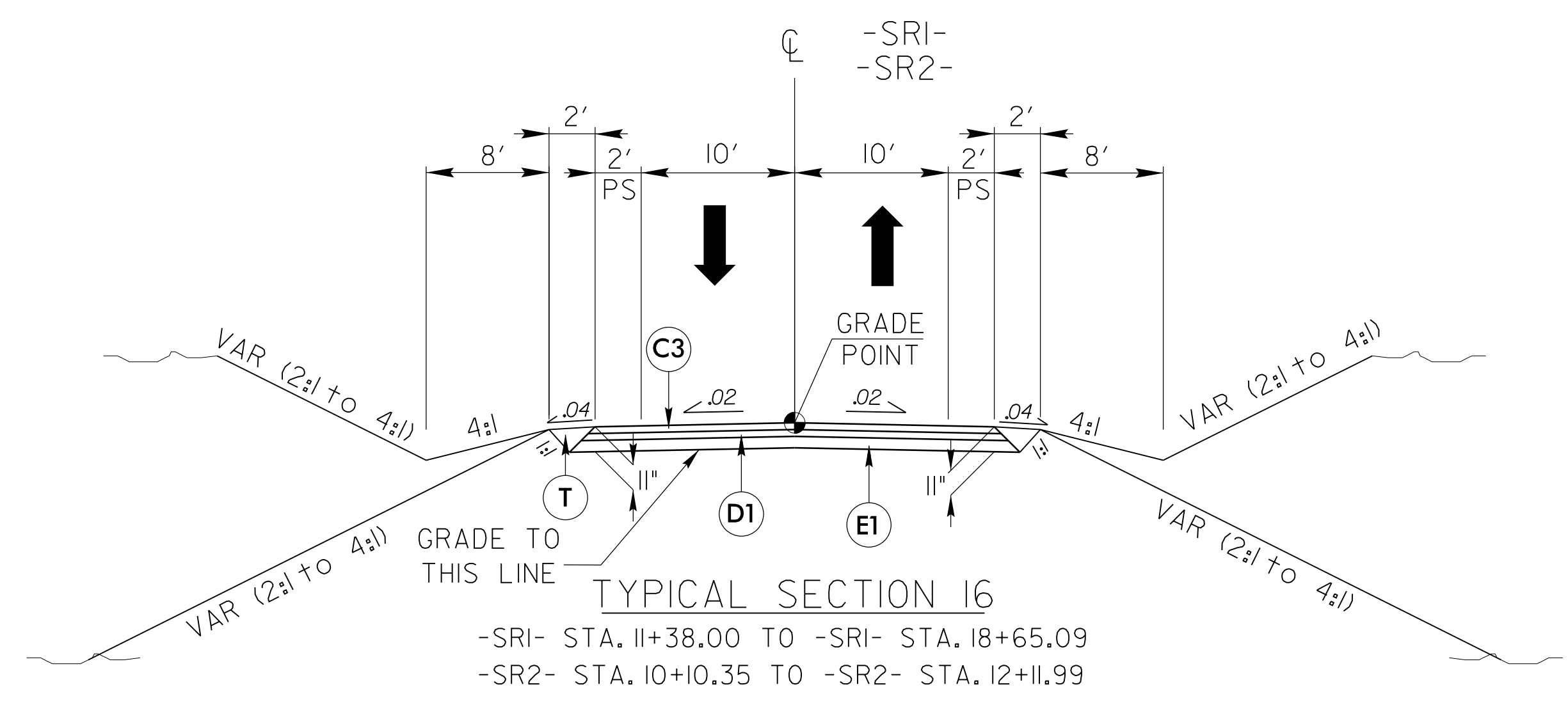
*NOTE: WIDEN SHOULDER 3' FOR GUARDRAIL

| PAVEMENT SCHEDULE | |
|-------------------|-----------------------|
| C1 | 1.5" S9.5B |
| C3 | 3" S9.5B |
| D1 | 4" 19.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| W3 | WEDGING |

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|--|---|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2A-8 |
| ROADWAY DESIGN ENGINEER CLAYTON J. MORGAN NORTH CAROLINA PROFESSIONAL SEAL 024929 EXPIRES 12/31/2018 | PAVEMENT DESIGN ENGINEER CLARK WELLS NORTH CAROLINA PROFESSIONAL SEAL 022896 EXPIRES 12/31/2018 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



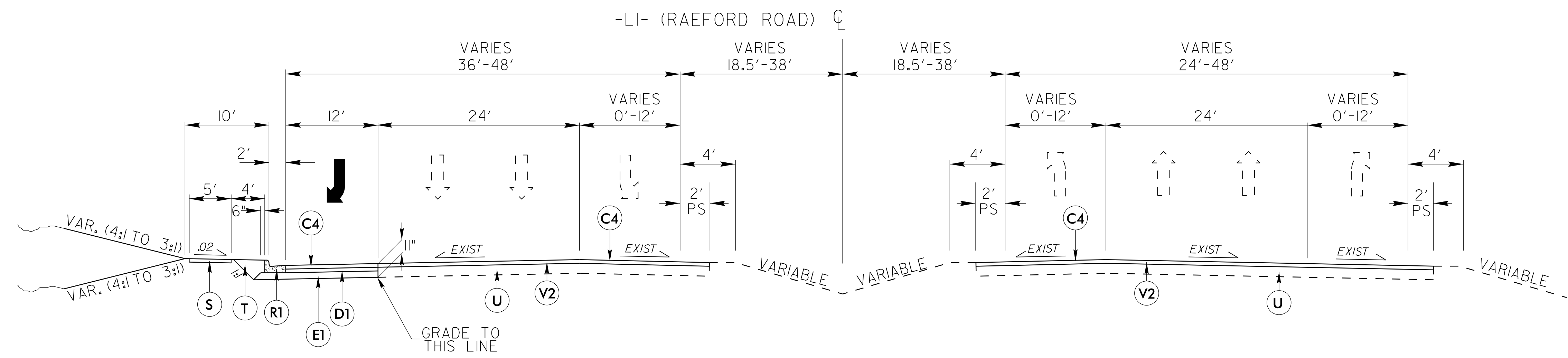
NOTE: IF WARRANTED, GUARDRAIL WILL BE PLACED AT THE FACE OF CURB

| PAVEMENT SCHEDULE | |
|-------------------|-----------------------|
| C1 | 1.5" S9.5B |
| C3 | 3" S9.5B |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| R1 | 2'-6" CURB AND GUTTER |
| T | EARTH MATERIAL |
| W3 | WEDGING |

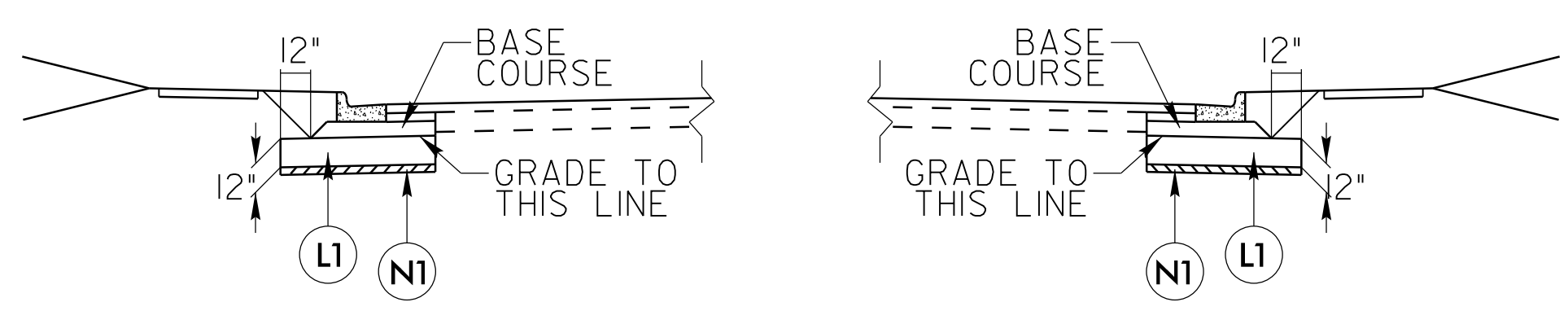
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6/2/2018

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| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



TYPICAL SECTION 19
-LI- STA. 95+00.00 TO -LI- STA. 115+65.00



AGGREGATE SUBGRADE DETAIL
USE IN CONJUNCTION WITH TYPICAL SECTIONS AS DIRECTED BY THE RESIDENT ENGINEER AND AT STATIONS:

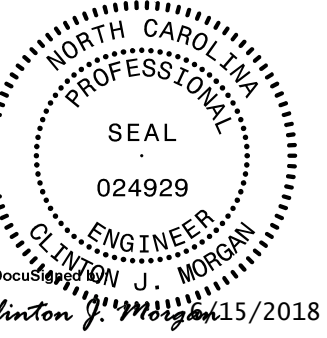
- L- STA. 19+00.00 TO -L- STA. 25+00.00
- L- STA. 70+00.00 TO -L- STA. 74+00.00
- L- STA. 102+00.00 TO -L- STA. 107+00.00
- L- STA. 146+00.00 TO -L- STA. 153+00.00

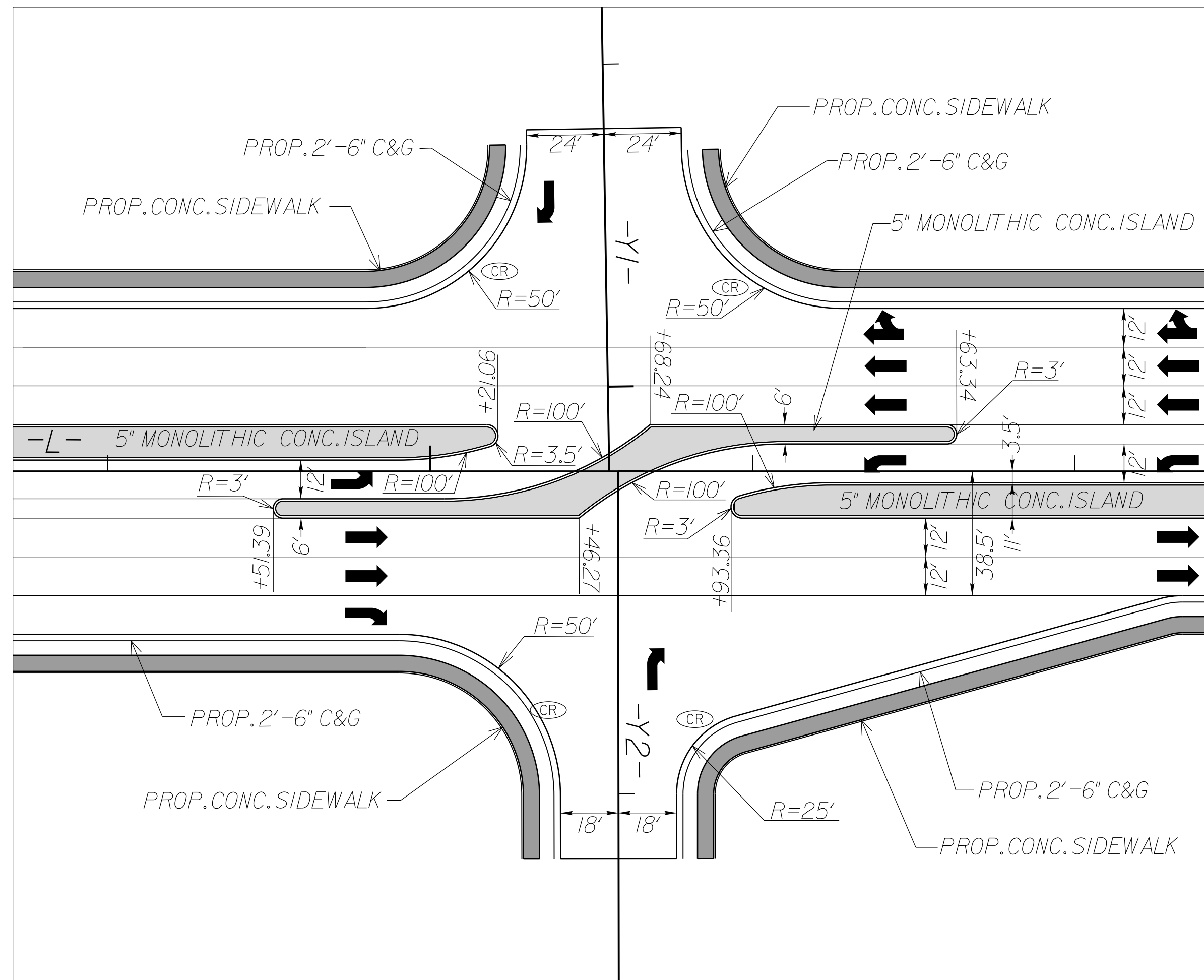
| PAVEMENT SCHEDULE | |
|-------------------|-----------------------------------|
| C4 | 3" S9.5C |
| D1 | 4" 119.0C |
| E1 | 4" B25.0C |
| L1 | CLASS IV SUBGRADE STABILIZATION |
| N1 | GEOTEXTILE FOR SOIL STABILIZATION |
| R1 | 2'-6" CURB AND GUTTER |
| S | SIDEWALK |
| T | EARTH MATERIAL |
| U | EXISTING PAVEMENT |
| V2 | 1.5" MILLING |

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INTERSECTION DETAILS

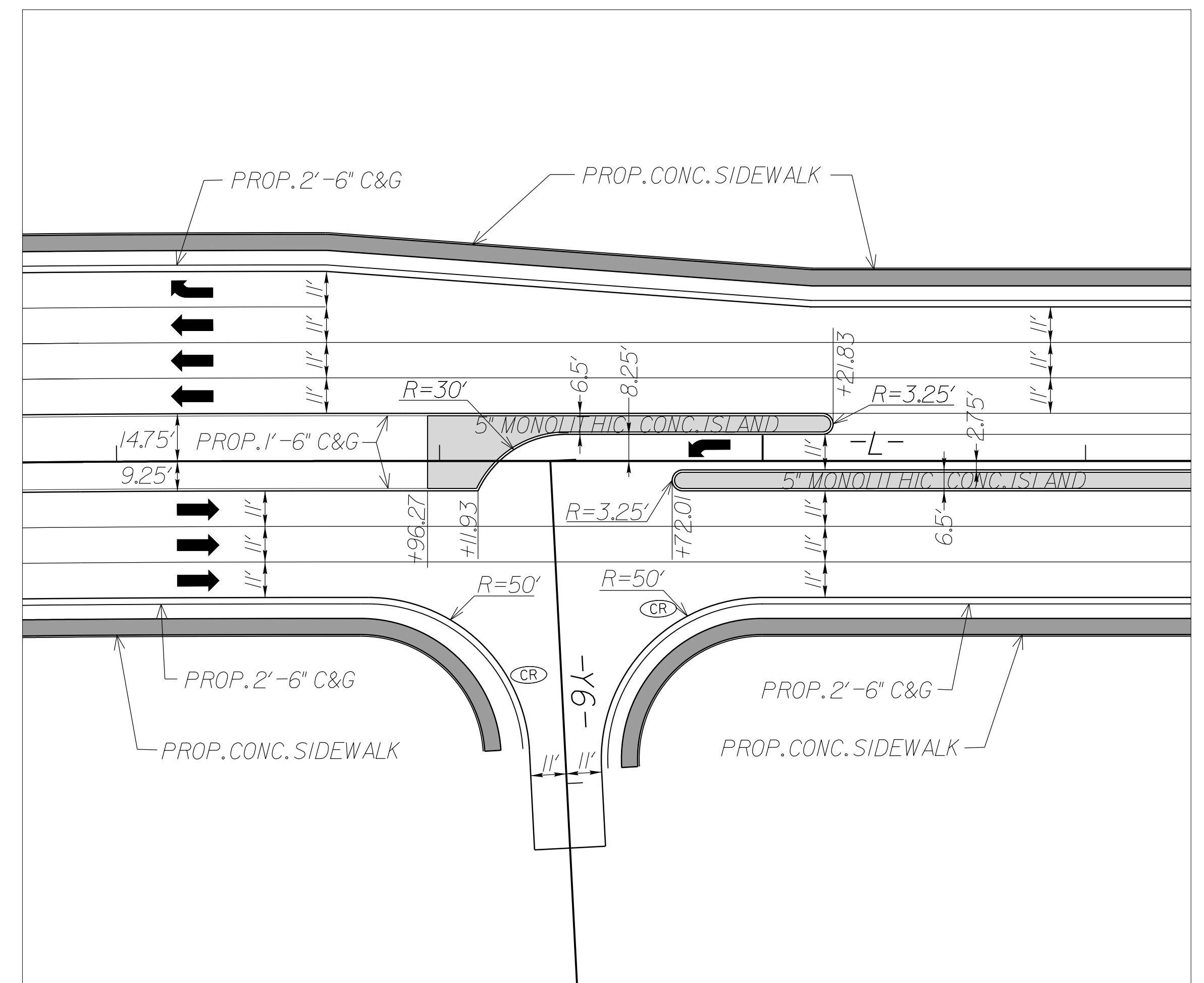
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
|  | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



**INTERSECTION OF
RAEFORD ROAD (-L-)
AND FESTIVAL DRIVE (-Y2-)
(SEE PLAN SHEET 4)**

**INTERSECTION OF
RAEFORD ROAD (-L-)
AND ARRAN CIRCLE (-Y6-)
(SEE PLAN SHEET 10)**



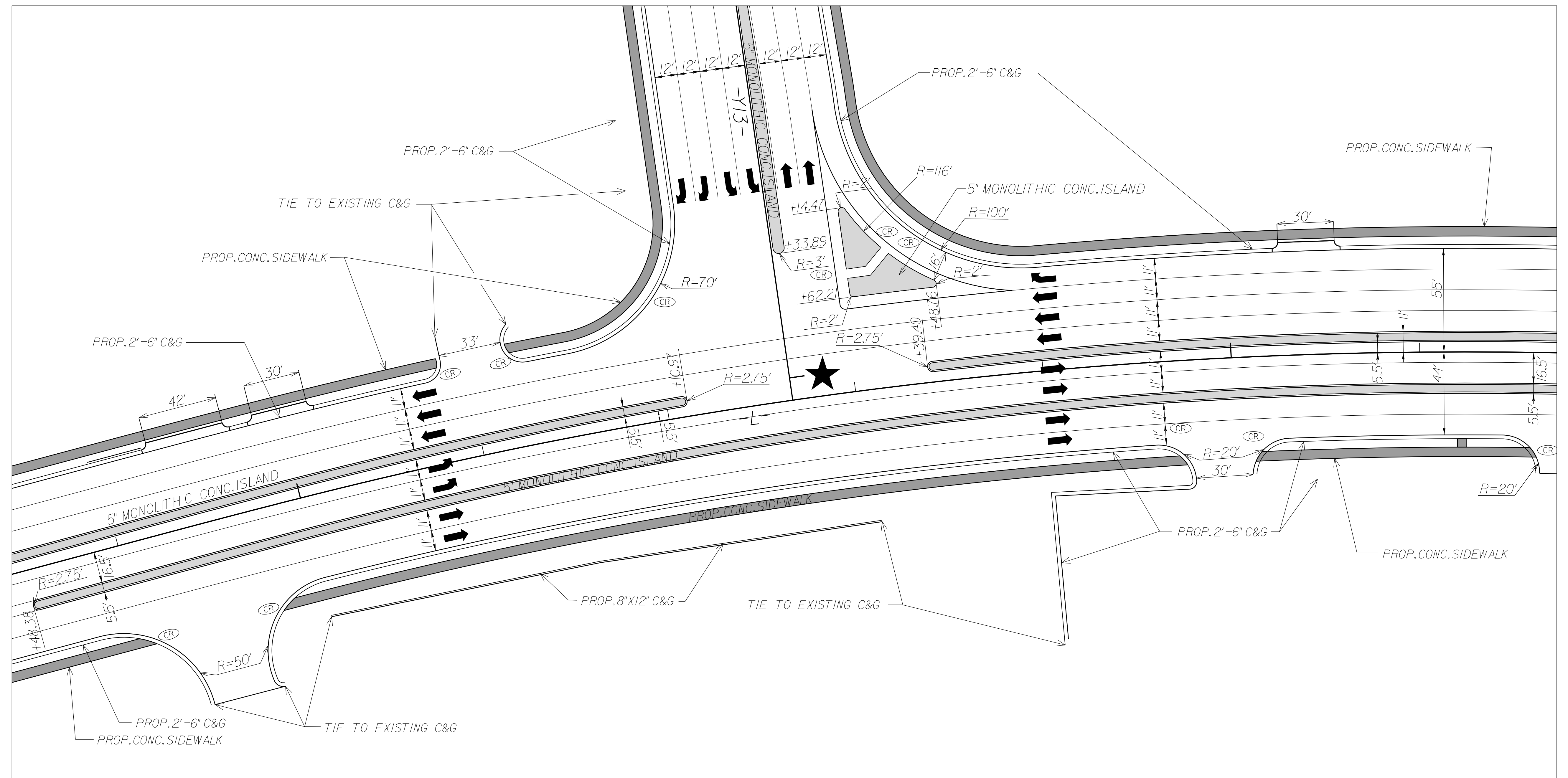
**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

REVISIONS

INTERSECTION DETAILS

NOT TO SCALE

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|--|---------------------|
| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2B-2 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



8/17/99

REVISIONS

**INTERSECTION OF
RAEFORD ROAD (-L-)
AND SKIBO ROAD (-Y13-)
(SEE PLAN SHEET 13 AND 14)**

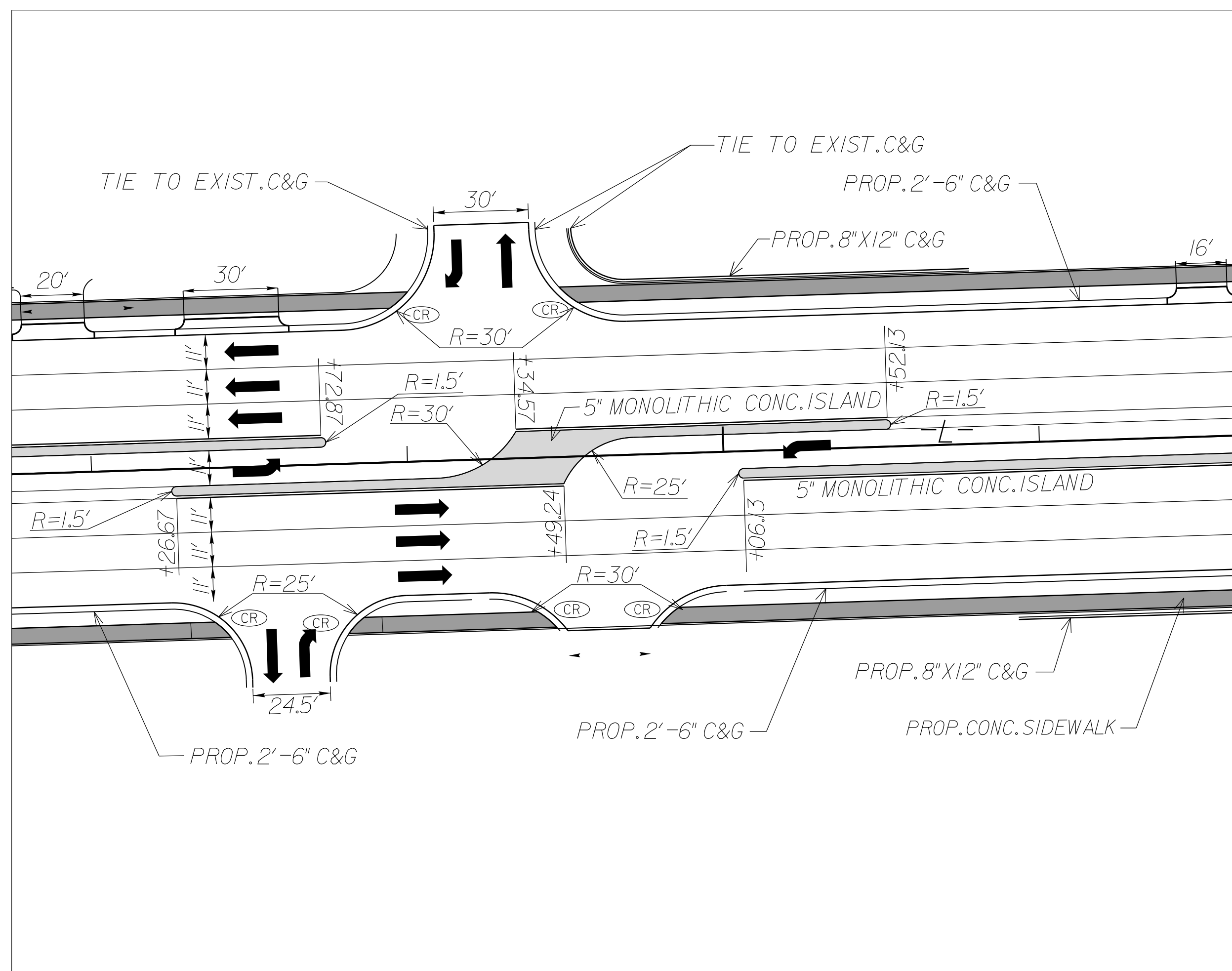
**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

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INTERSECTION DETAILS

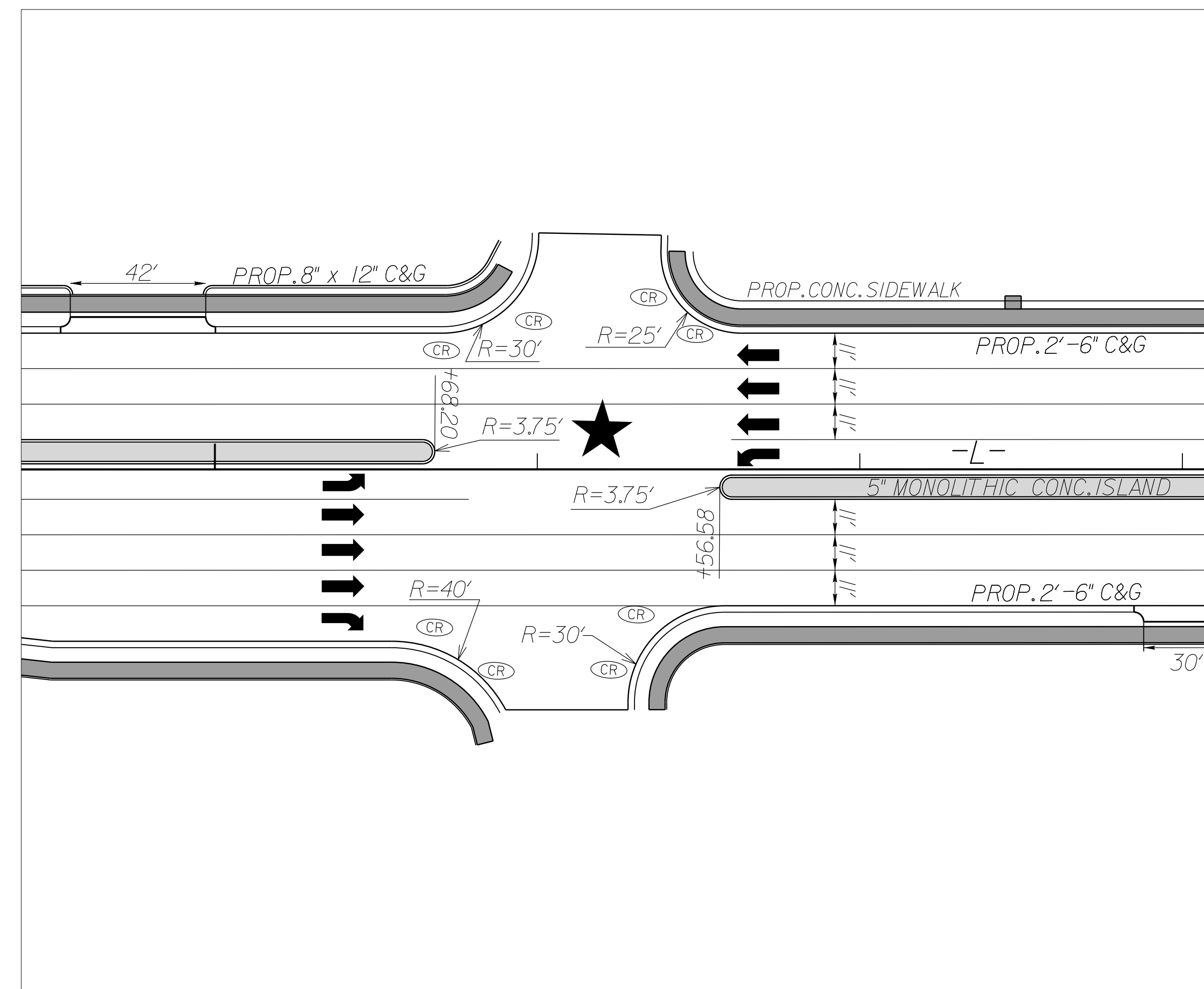
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | |



**BETWEEN
DUKE STREET (-Y14-)
AND POMPTON DRIVE (-Y15-)
ON RAEFORD ROAD (-L-)
(SEE PLAN SHEET 15)**

**BETWEEN
S KENLEIGH DRIVE (-Y21-)
AND SCOTLAND DRIVE (-Y23-)
ON RAEFORD ROAD (-L-)
(SEE PLAN SHEET 18)**



**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

REVISIONS

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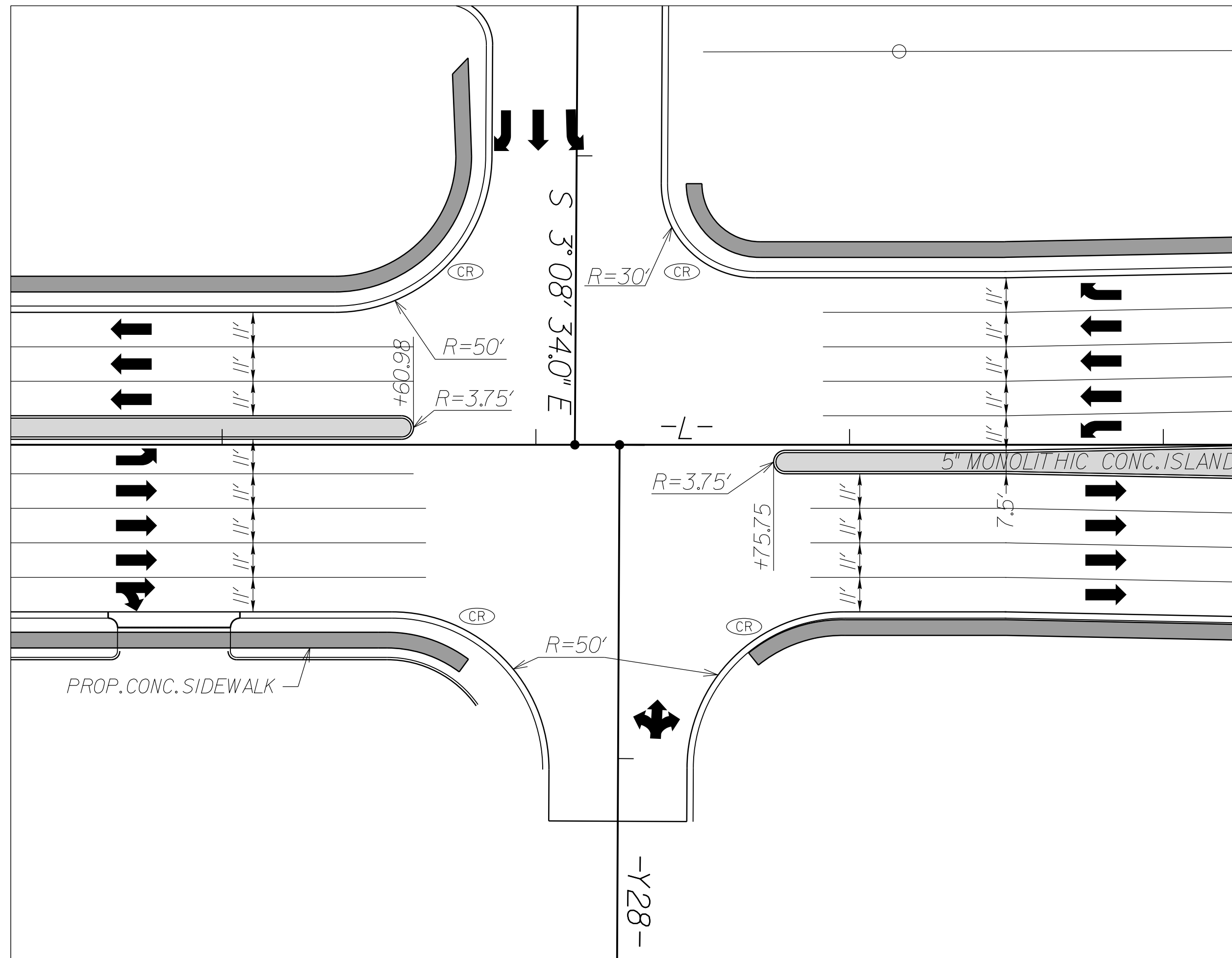
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INTERSECTION DETAILS

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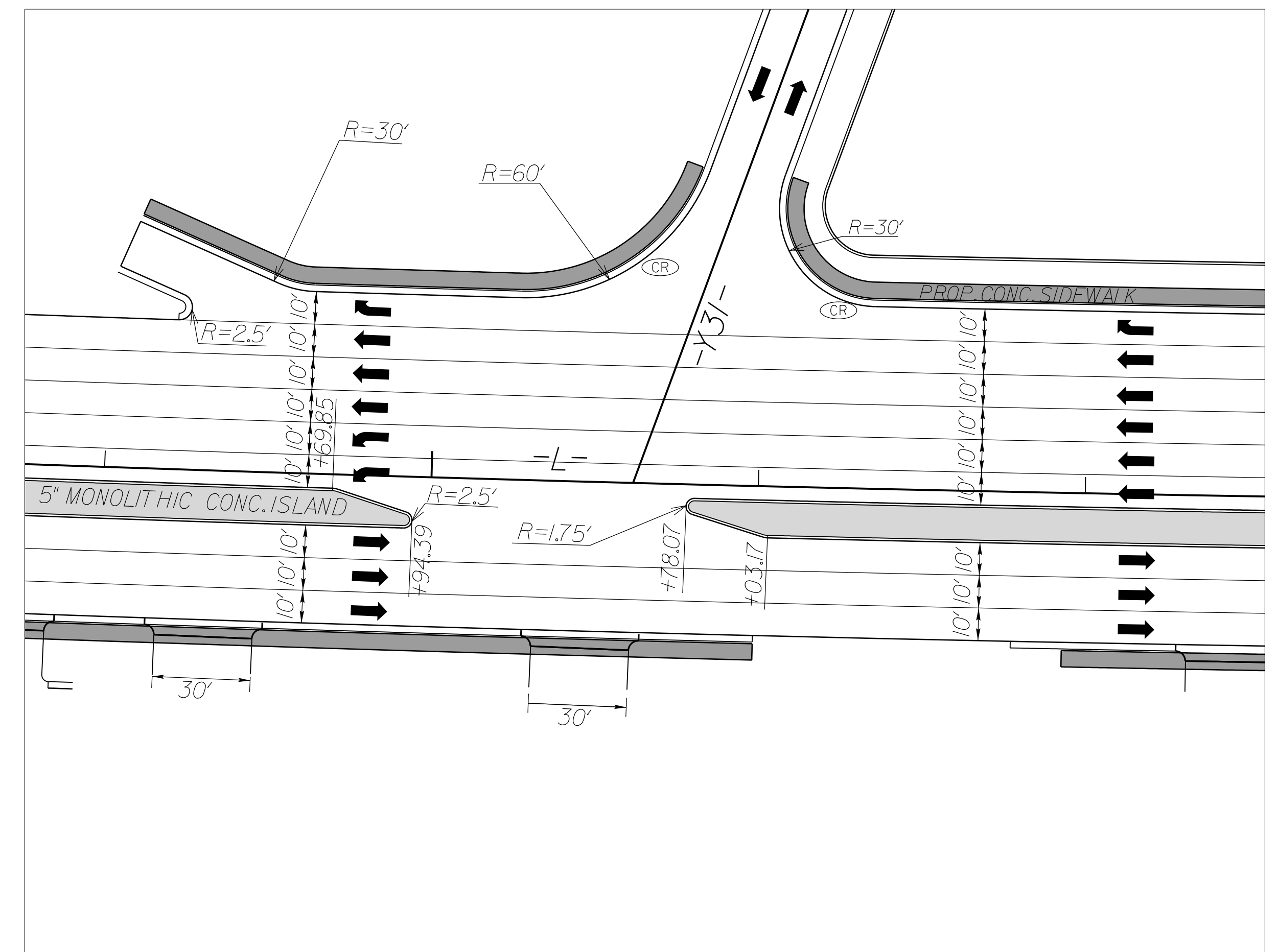
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

REVISIONS



**INTERSECTION OF
RAEFORD ROAD (-L-)
AND ROXIE AVENUE (-Y28-)
(SEE PLAN SHEET 22)**

**INTERSECTION OF
RAEFORD ROAD (-L-)
AND TWIN ACRES DRIVE (-Y31-)
(SEE PLAN SHEET 24)**



**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

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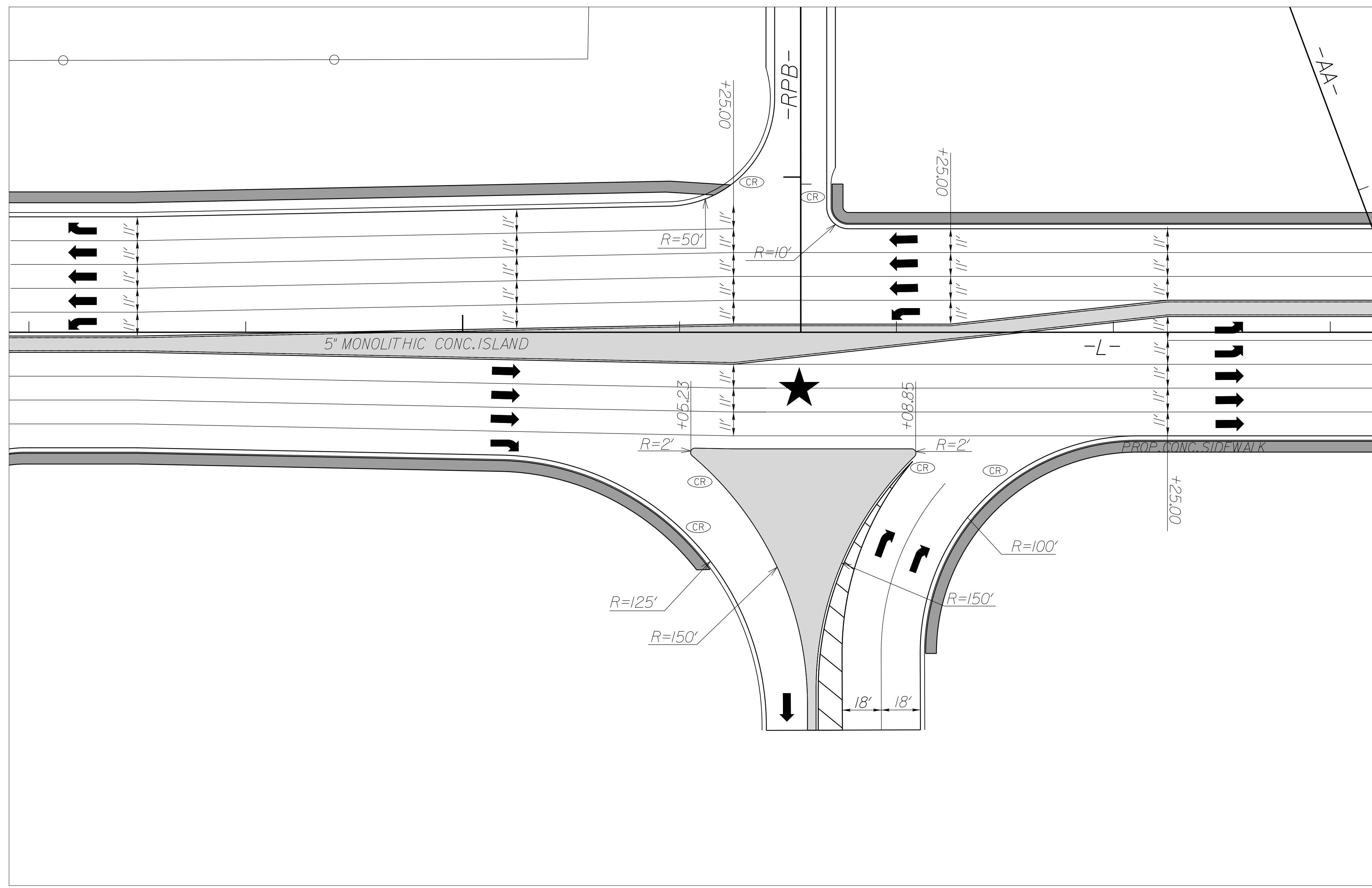
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

INTERSECTION DETAILS

NOT TO SCALE

REVISIONS



**INTERSECTION OF
 RAEFORD ROAD (-L-)
 AND SOUTH BOUND EXIT RAMP
 FROM ALL AMERICAN EXPRESSWAY (-RPB-)
 (SEE PLAN SHEET 22)**

**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
 AND PAVEMENT MARKING LOCATIONS**

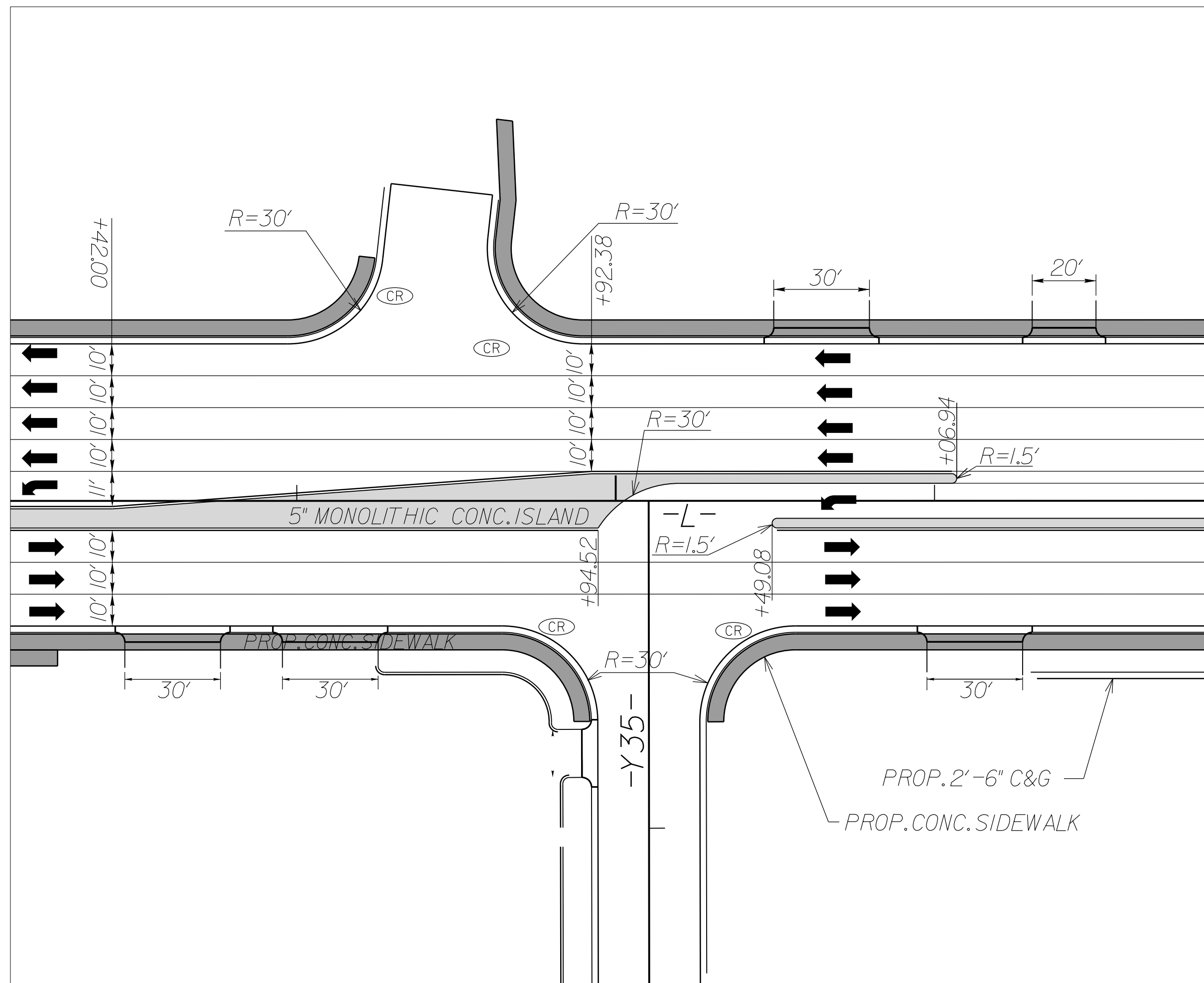
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INTERSECTION DETAILS

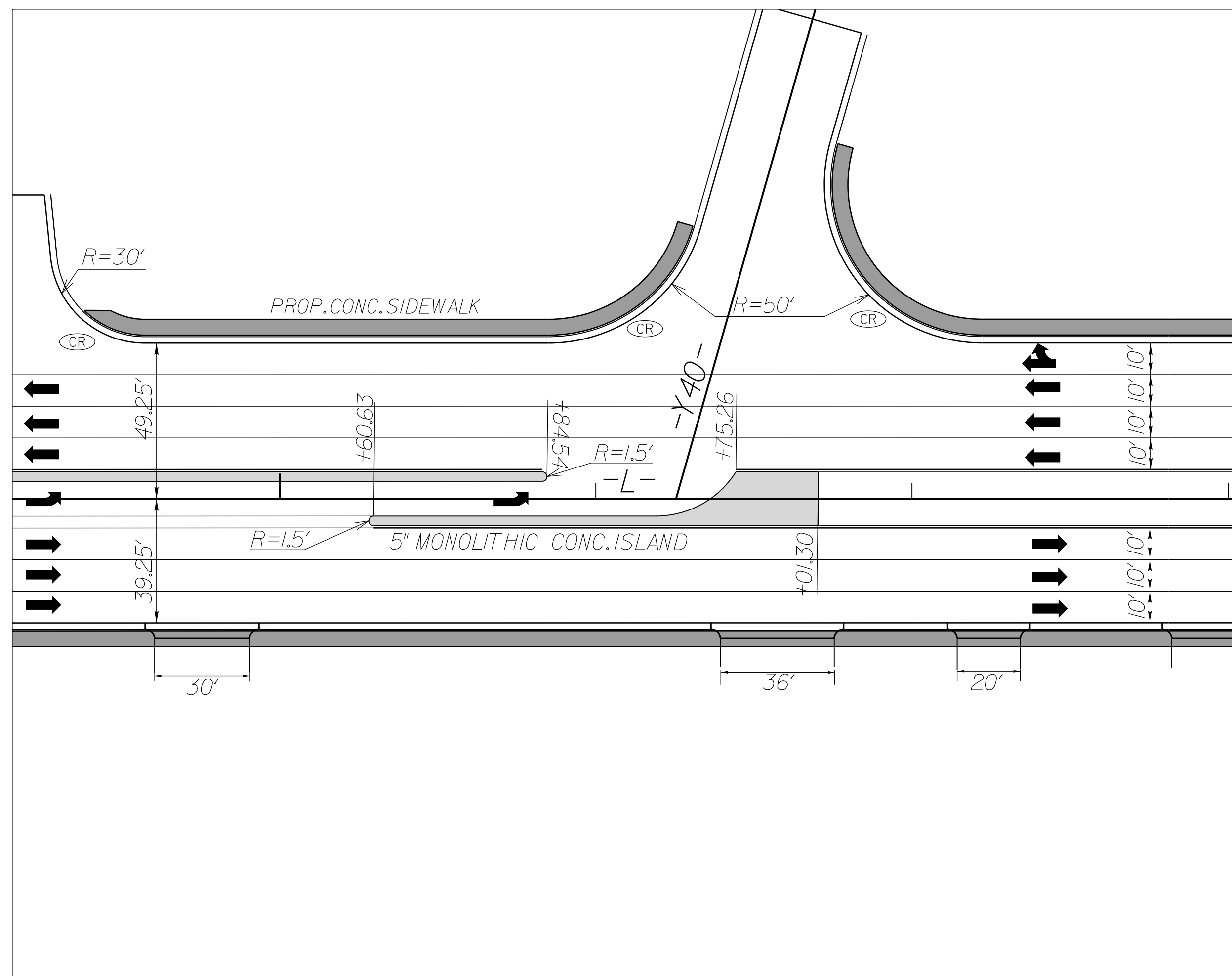
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



**INTERSECTION OF
RAEFORD ROAD (-L-)
AND MARLBOROUGH ROAD (-Y35-)
(SEE PLAN SHEET 25)**

**INTERSECTION OF
RAEFORD ROAD (-L-)
AND EXECUTIVE PLACE (-Y40-)
(SEE PLAN SHEET 26)**



**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

REVISIONS

17 MAY 2018 10:34
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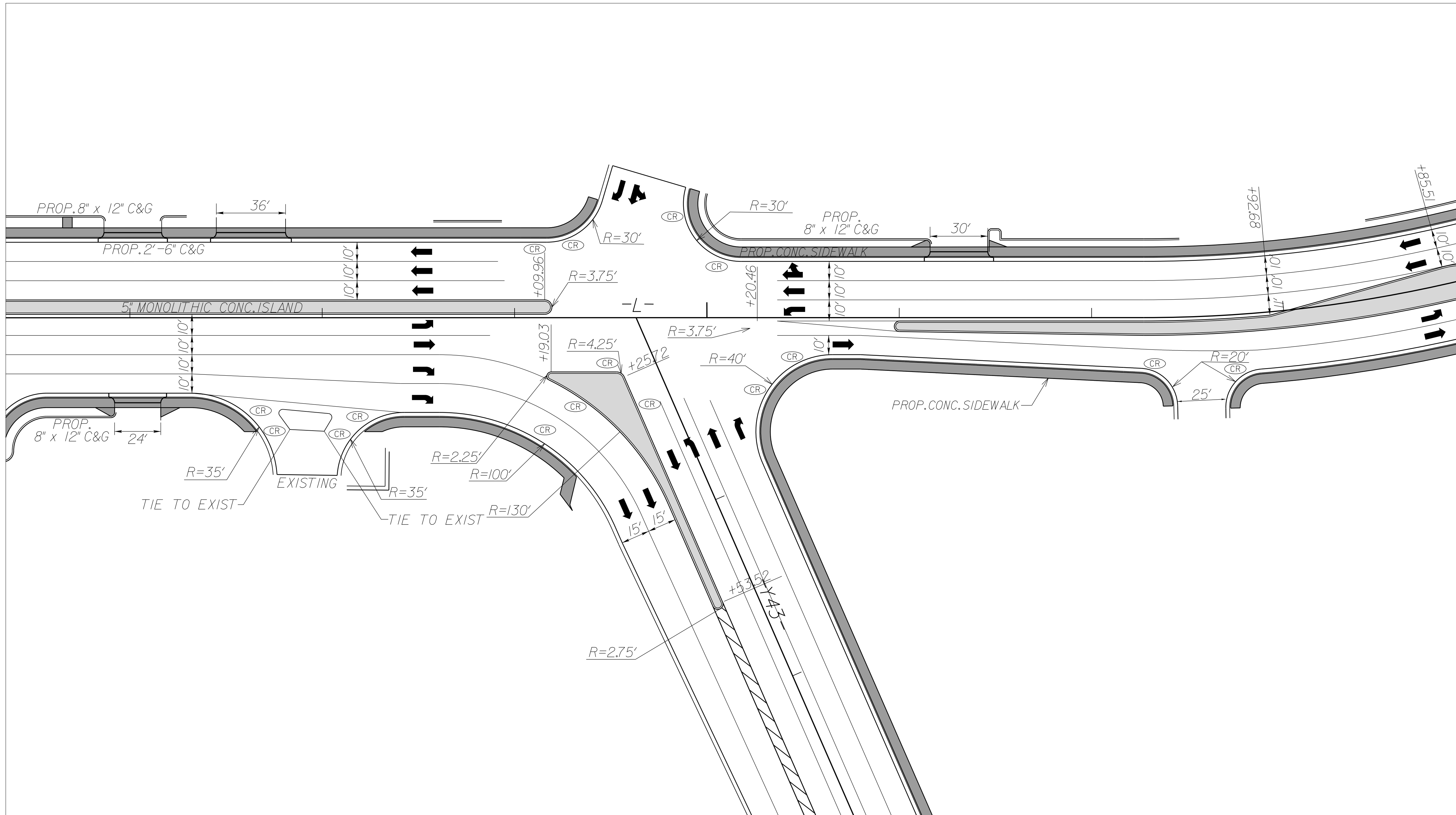
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INTERSECTION DETAILS

NOT TO SCALE

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| PROJECT REFERENCE NO. U-4405 | SHEET NO. 2B-7 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

REVISIONS



**INTERSECTION OF
RAEFORD ROAD (-L-)
AND ROBESON STREET (-Y43-)
(SEE PLAN SHEET 27)**

**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

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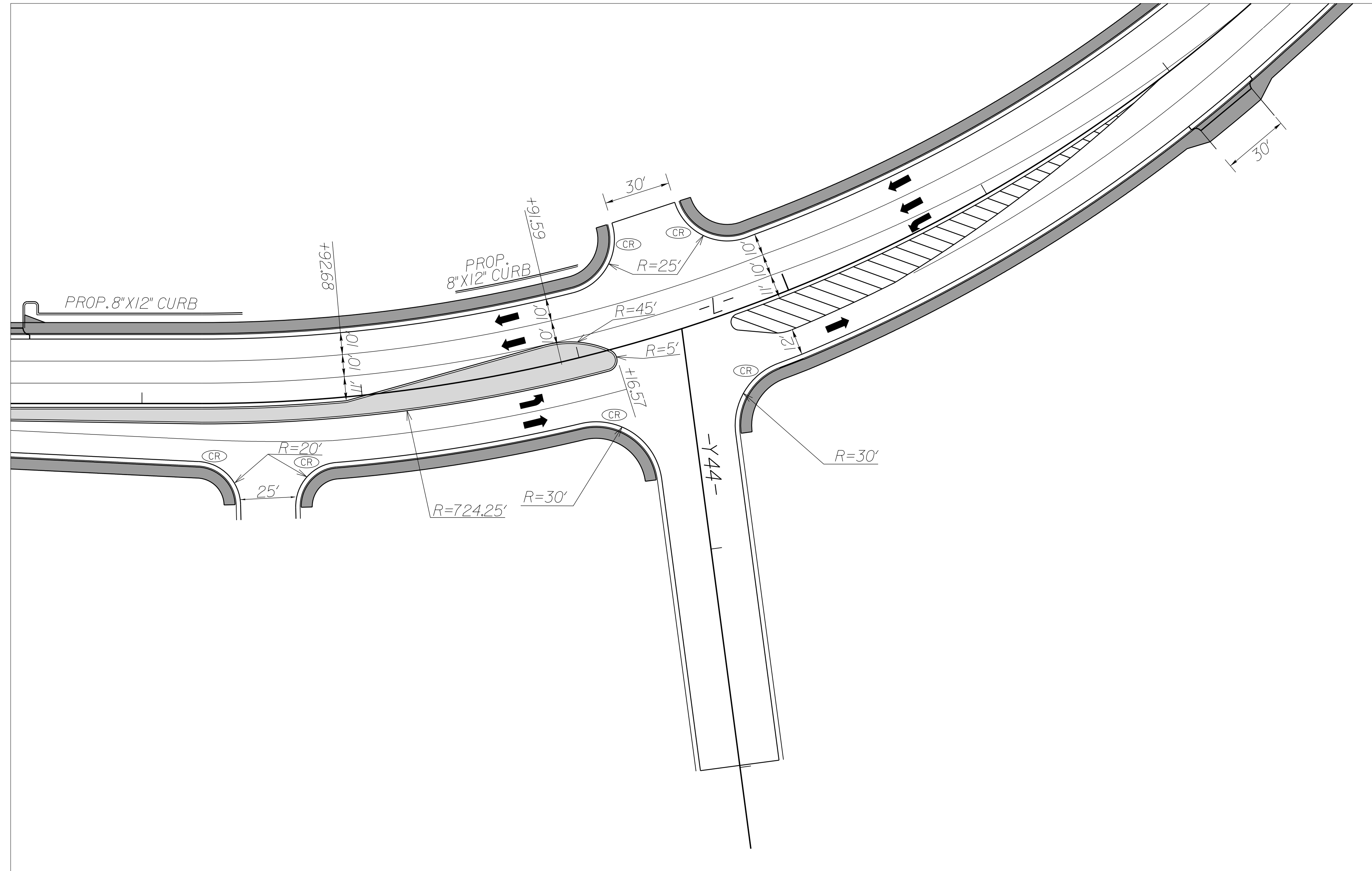
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REVISIONS

INTERSECTION DETAILS

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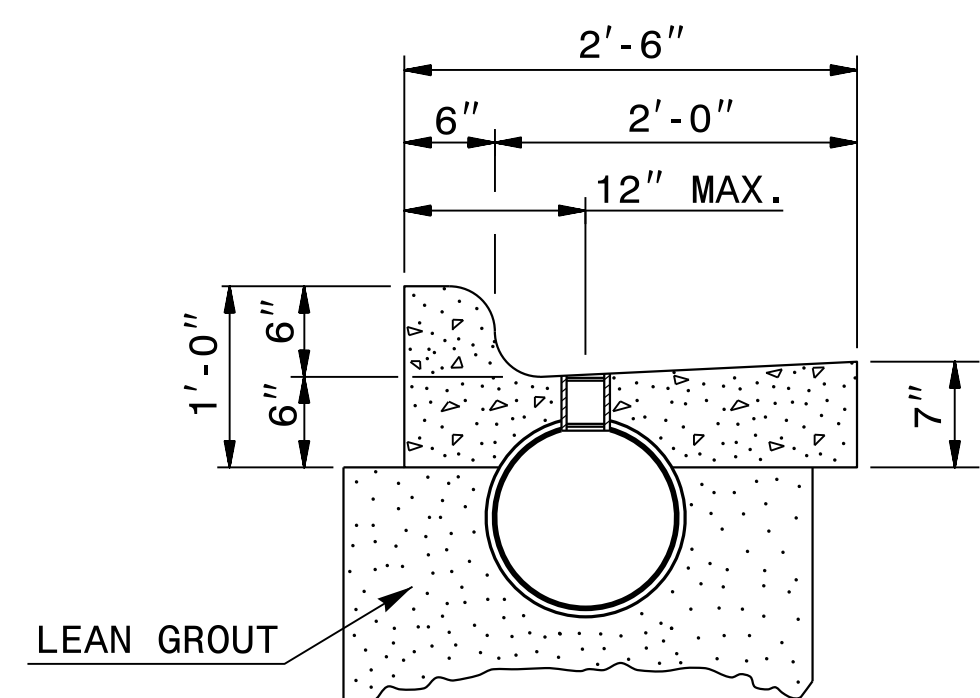
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| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
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| <p>Clinton J. Morgan 11/15/2018</p> | |
| <p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p> | |



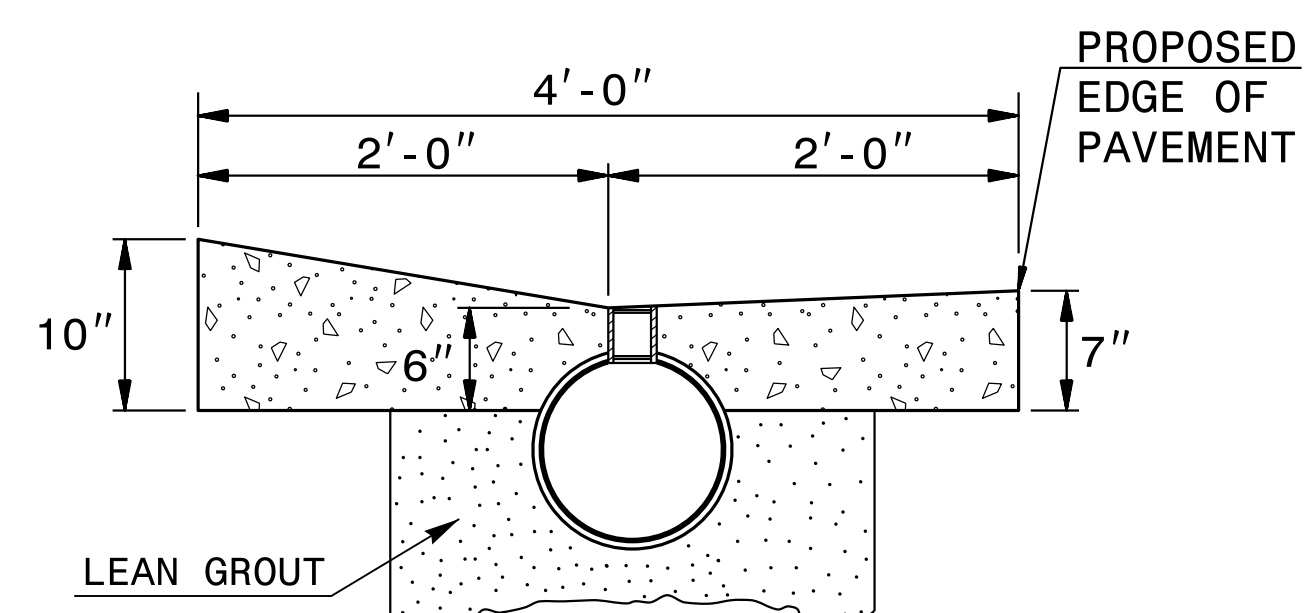
**INTERSECTION OF
RAEFORD ROAD (-L-)
AND FAIRWAY DRIVE (-Y44-)
(SEE PLAN SHEET 27)**

**NOTE: SEE PMP PLANS FOR WHEEL CHAIR RAMP
AND PAVEMENT MARKING LOCATIONS**

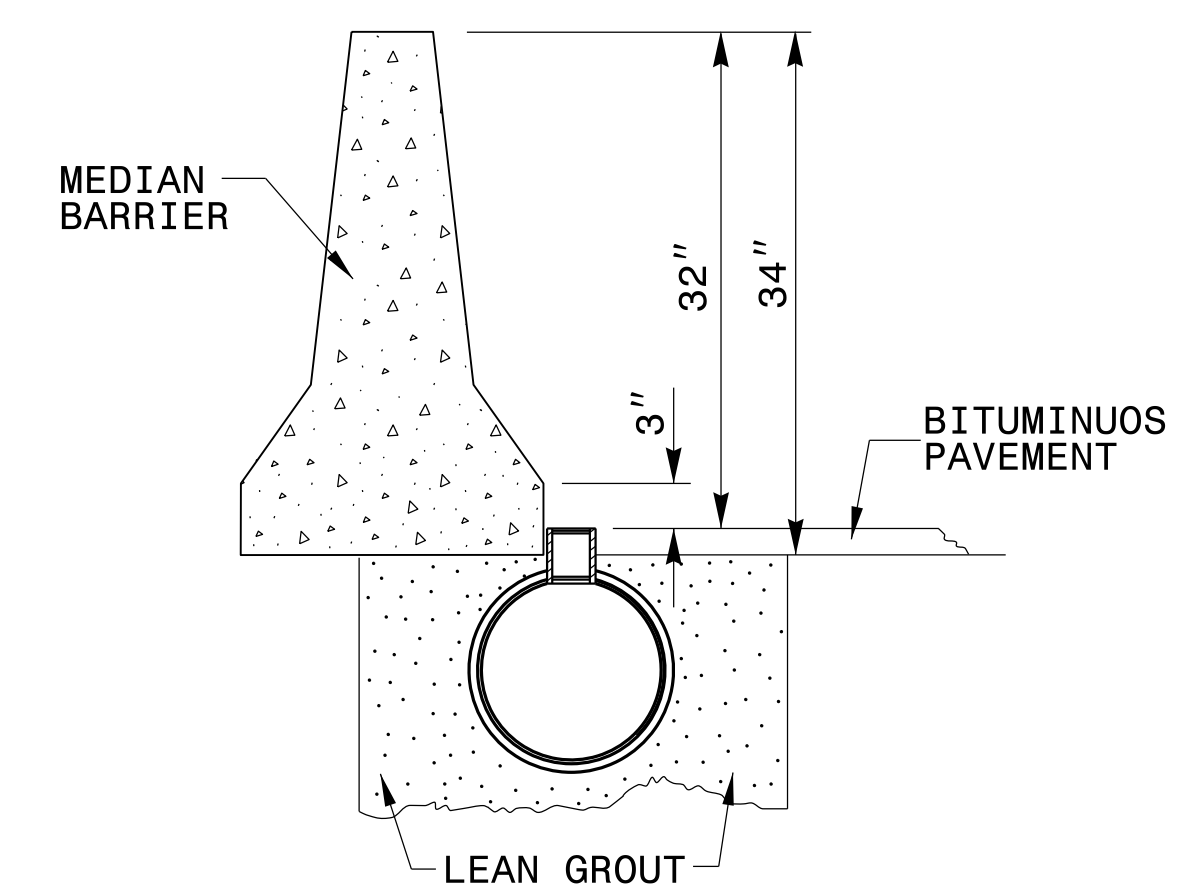
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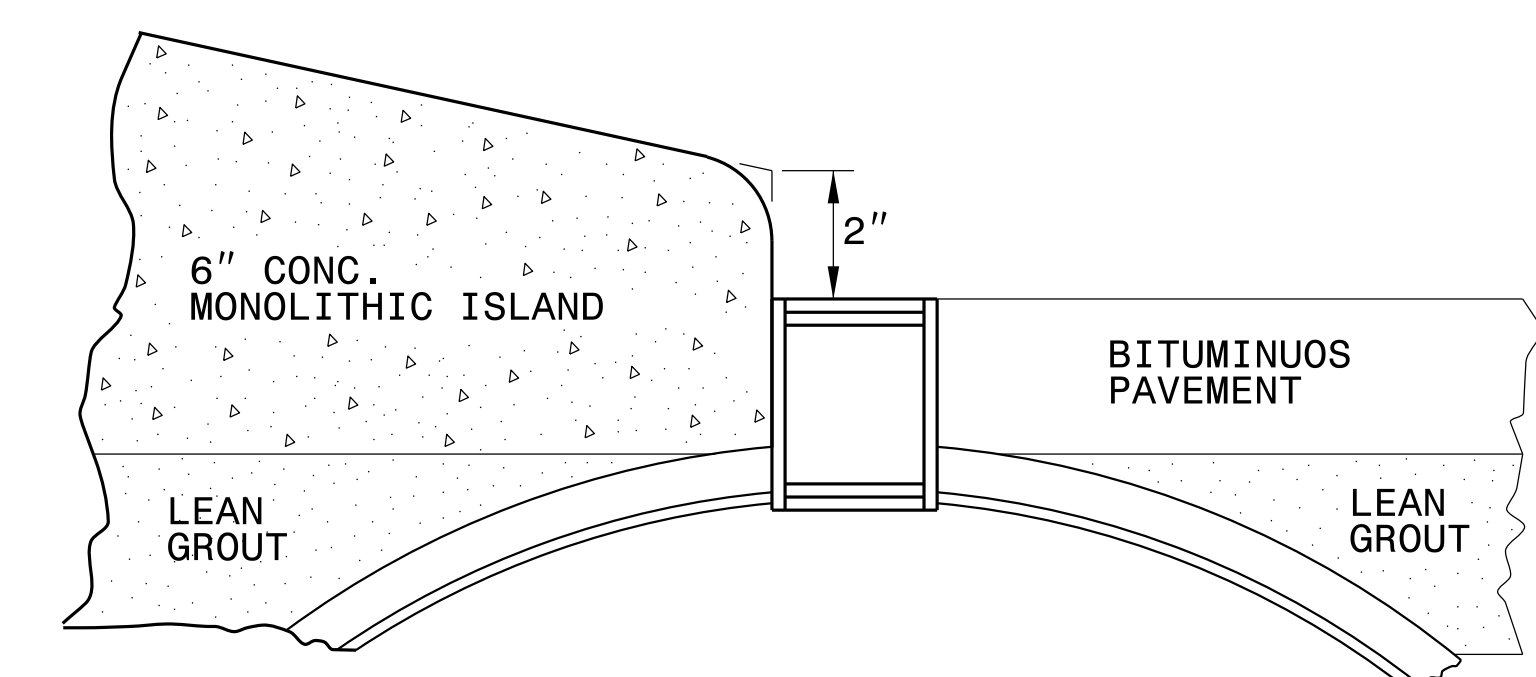
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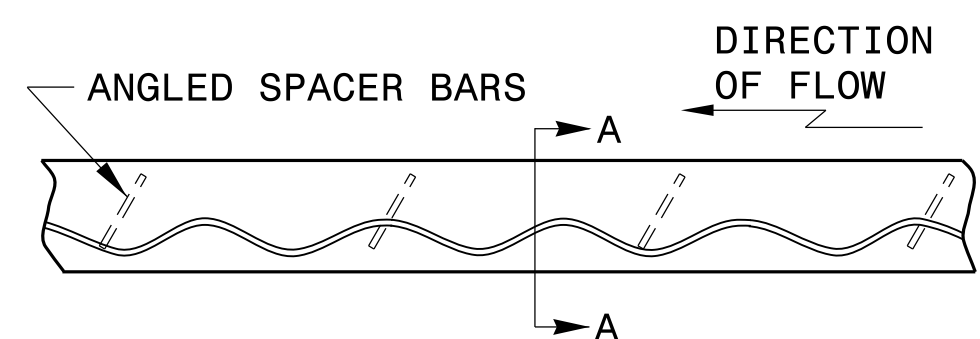
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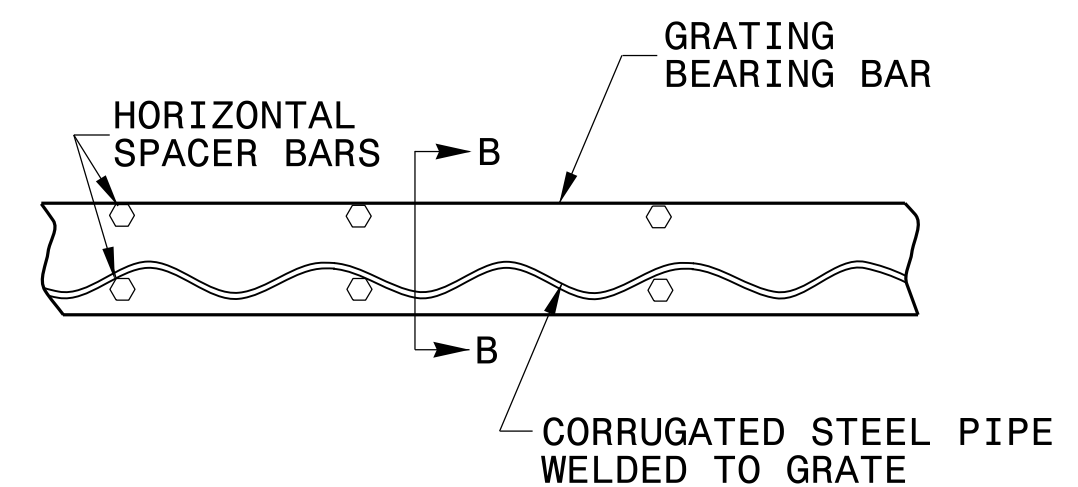
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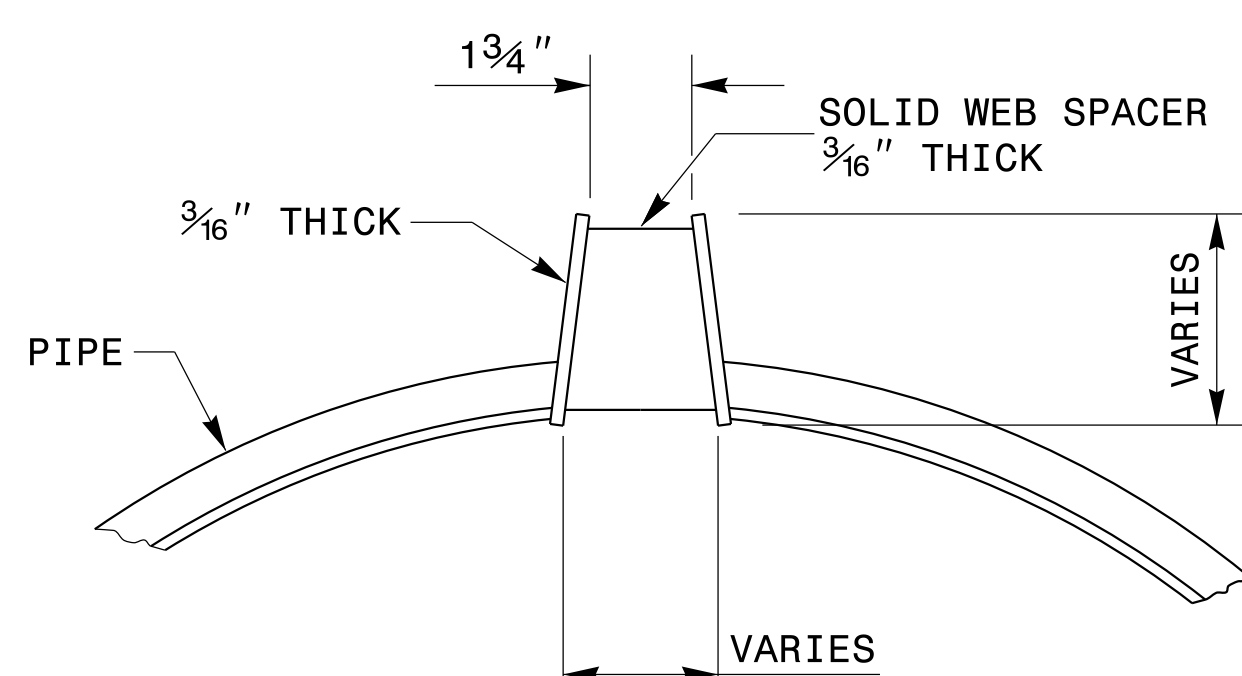
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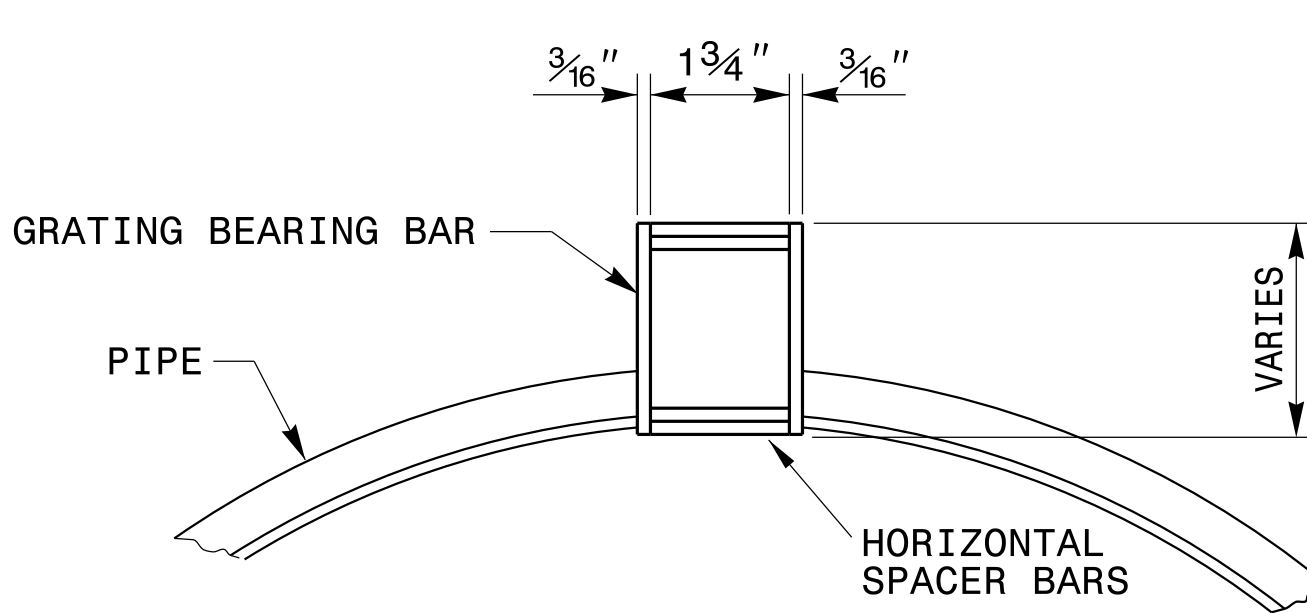
SECTION A-A



SECTION B-B

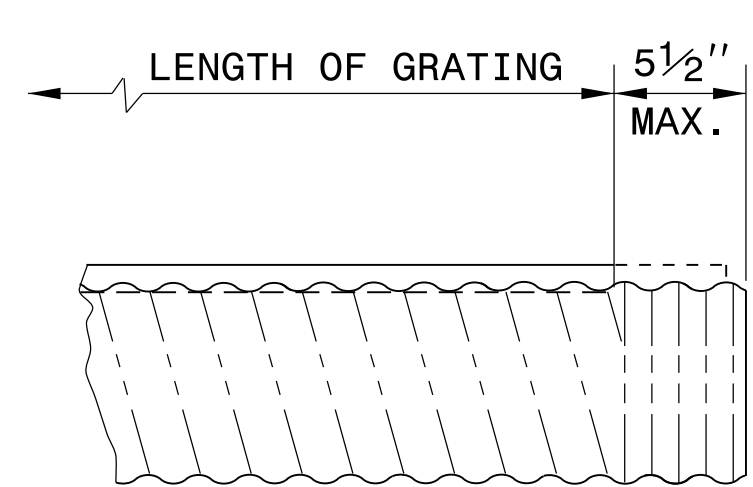


SECTION A-A

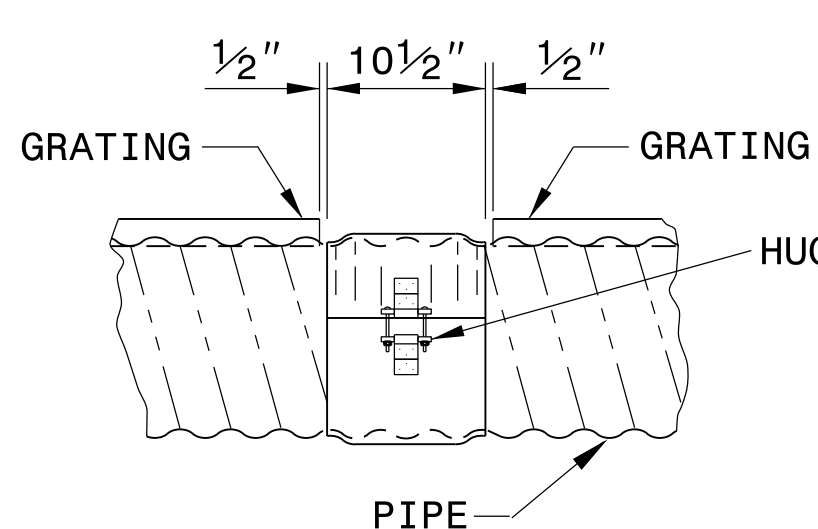


SECTION B-B

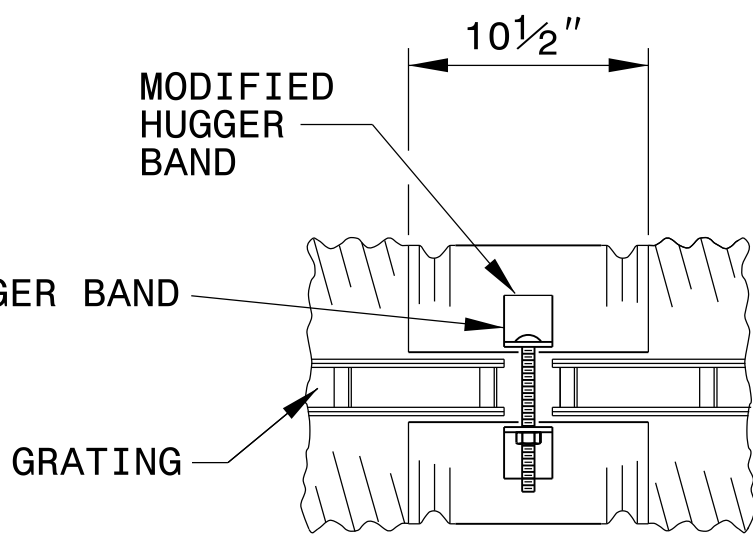
TYPICAL GRATE DETAILS



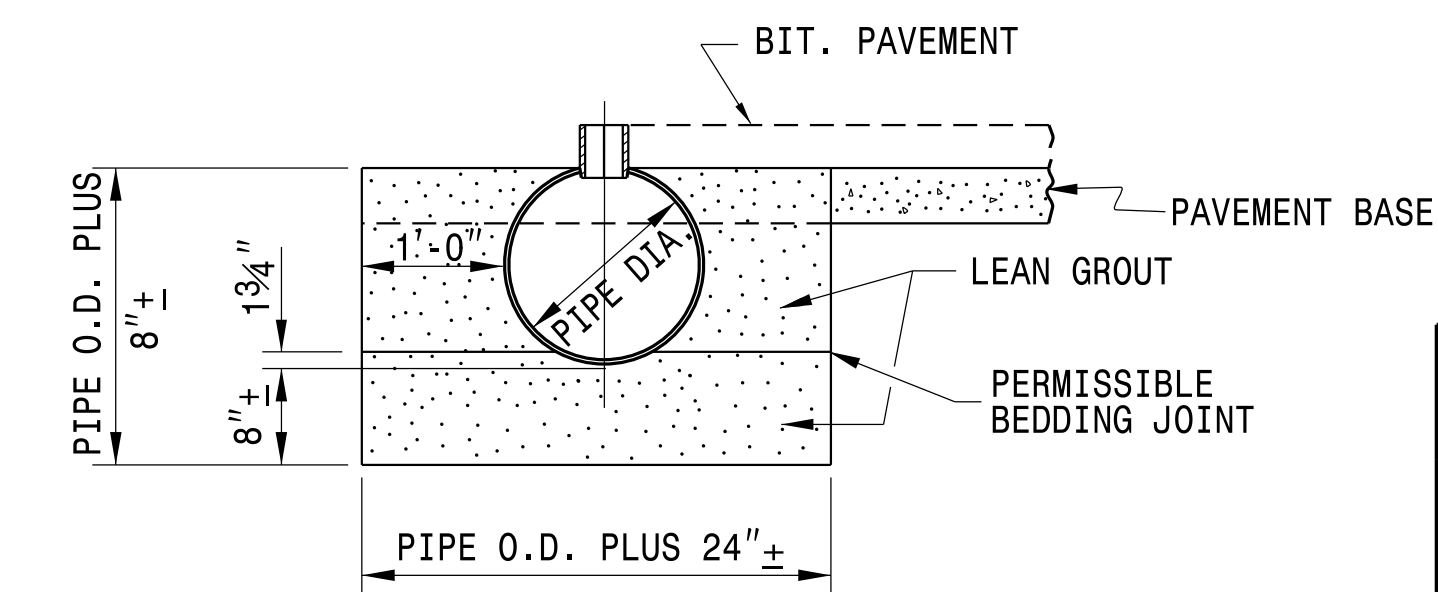
DETAIL AT END OF PIPE



TYPICAL COUPLING BAND



MODIFIED COUPLING BAND



SLOTTED DRAIN PIPE INSTALLATION

NOTES:

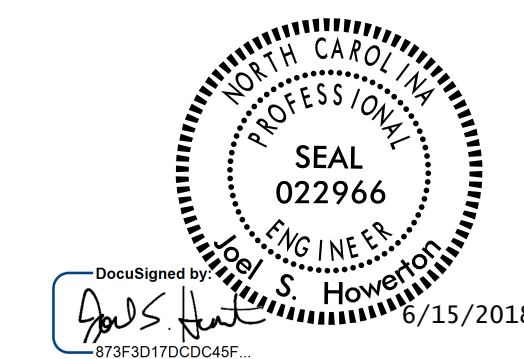
USE GRATE ASSEMBLIES FABRICATED FROM STRUCTURAL STEEL MEETING THE REQUIREMENTS OF ASTM A 570, GRADE 36 OR ASTM A 36.

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

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

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

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



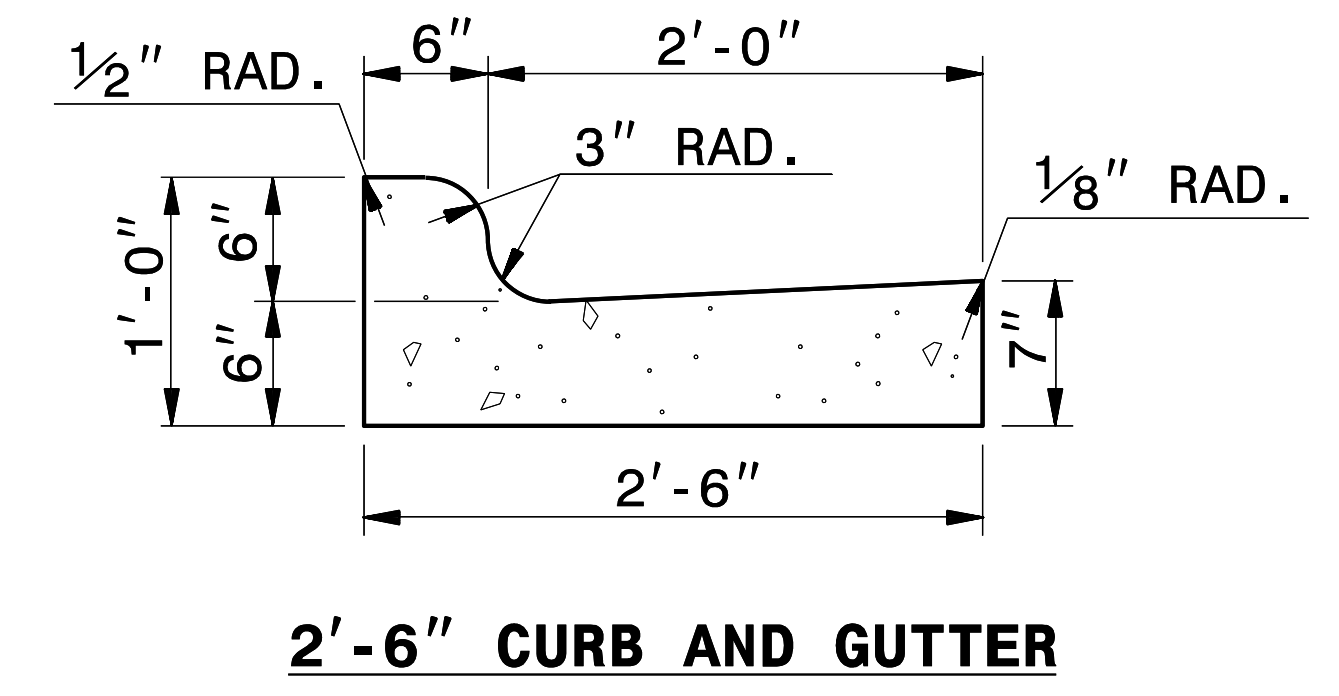
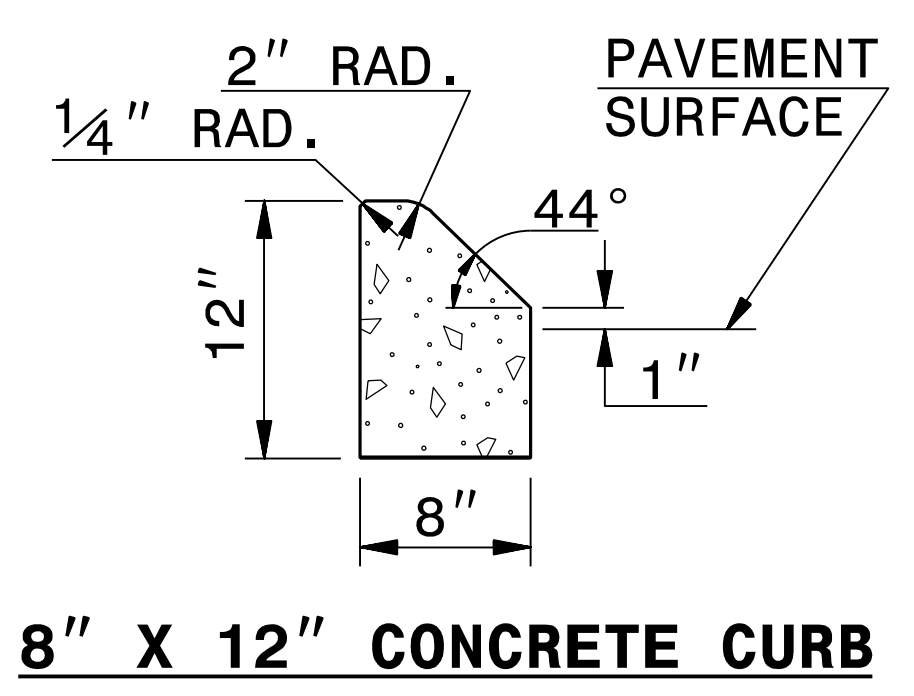
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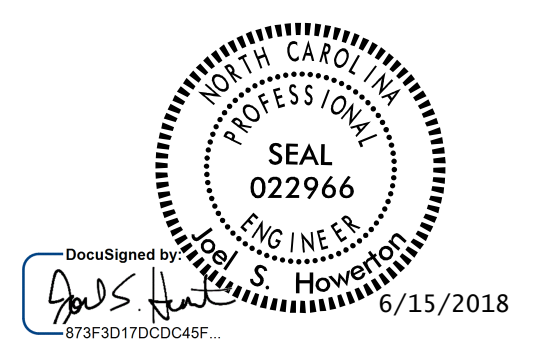
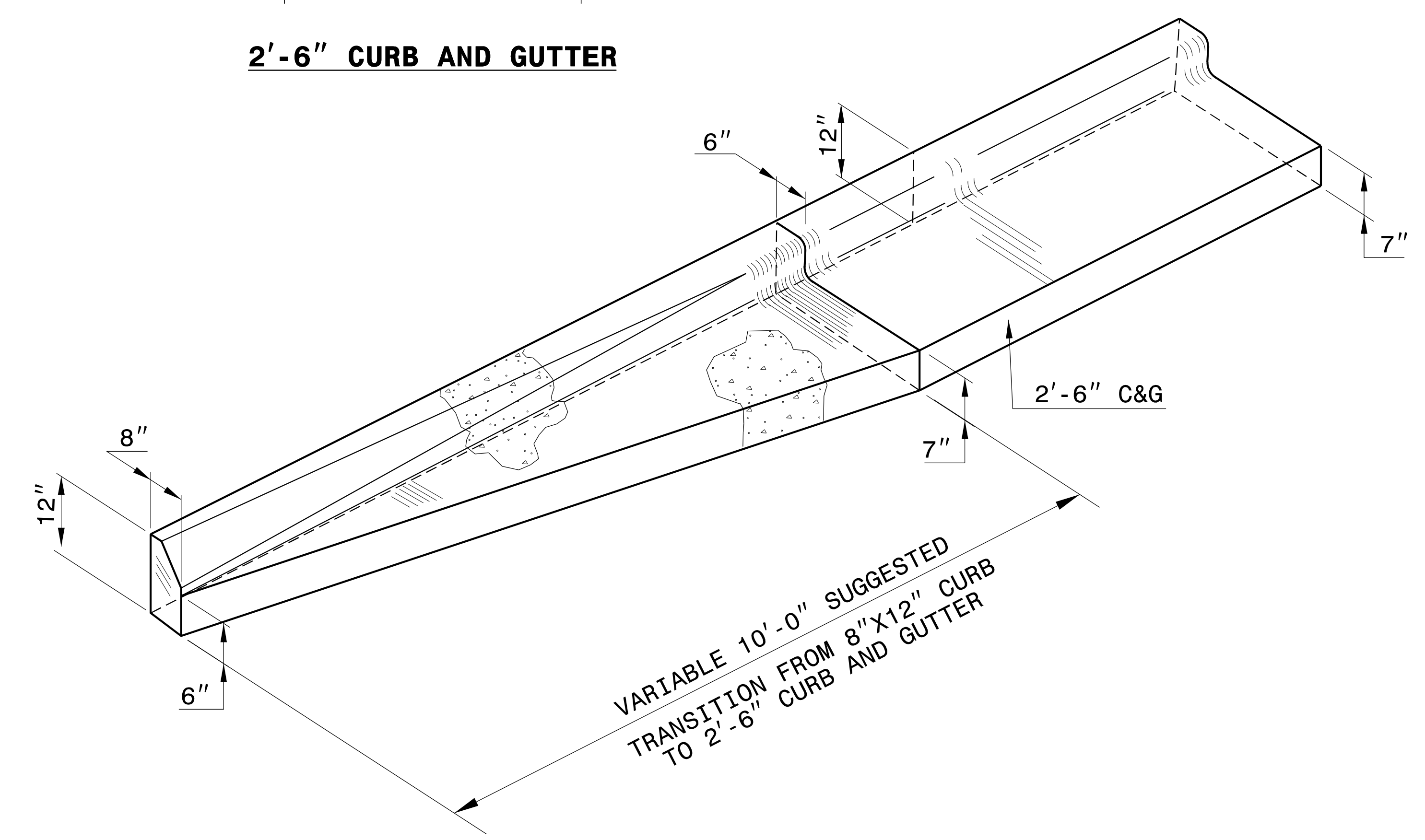
DETAILS OF SLOTTED DRAIN 12" THRU 36" DIAMETER PIPE

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MODIFIED BY: DATE:
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*NOTE: SEE STD. DWG. 846.01 FOR GENERAL NOTES

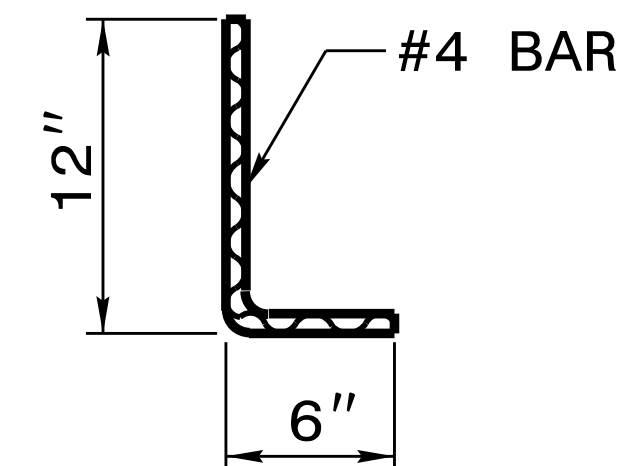
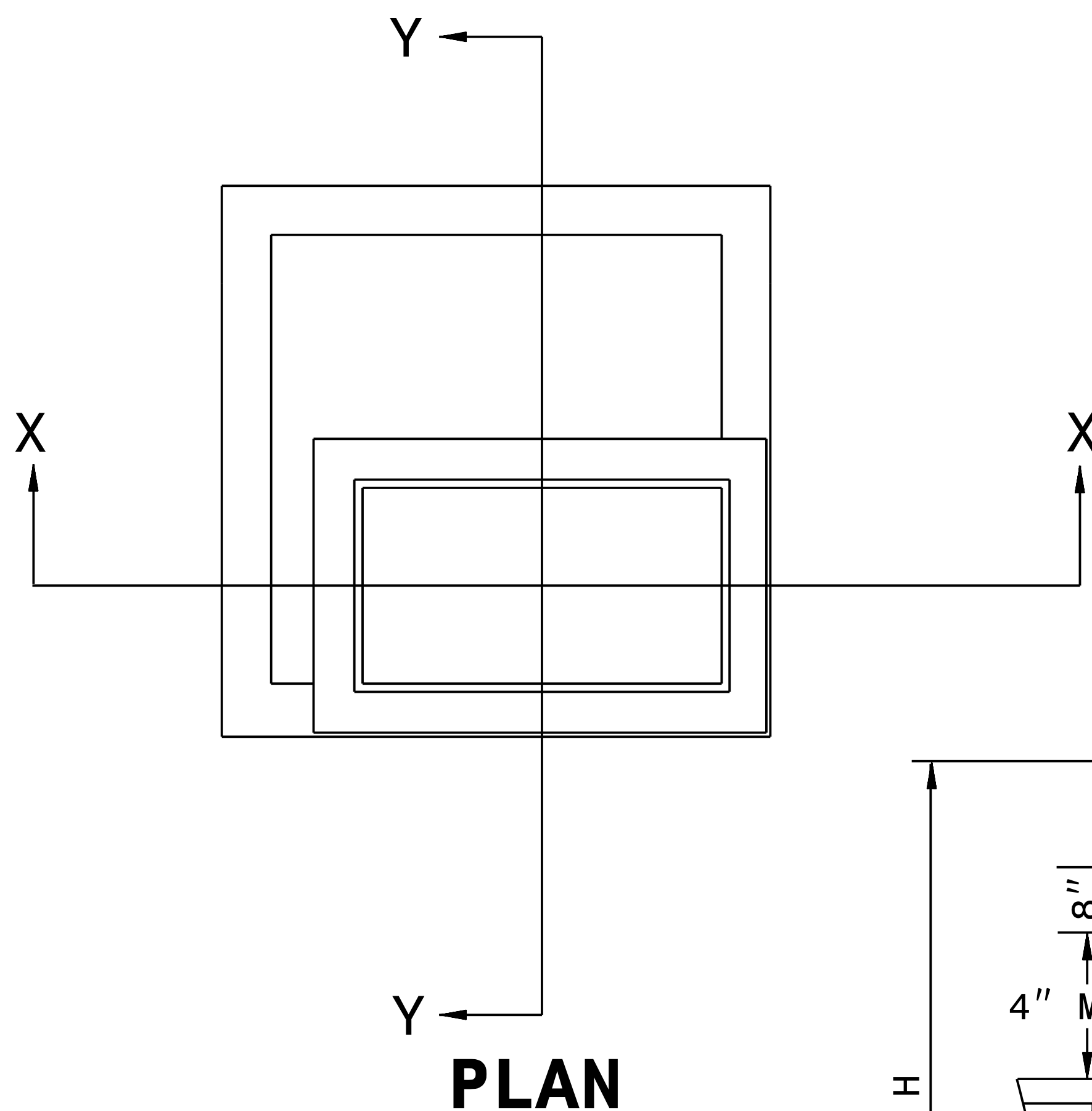


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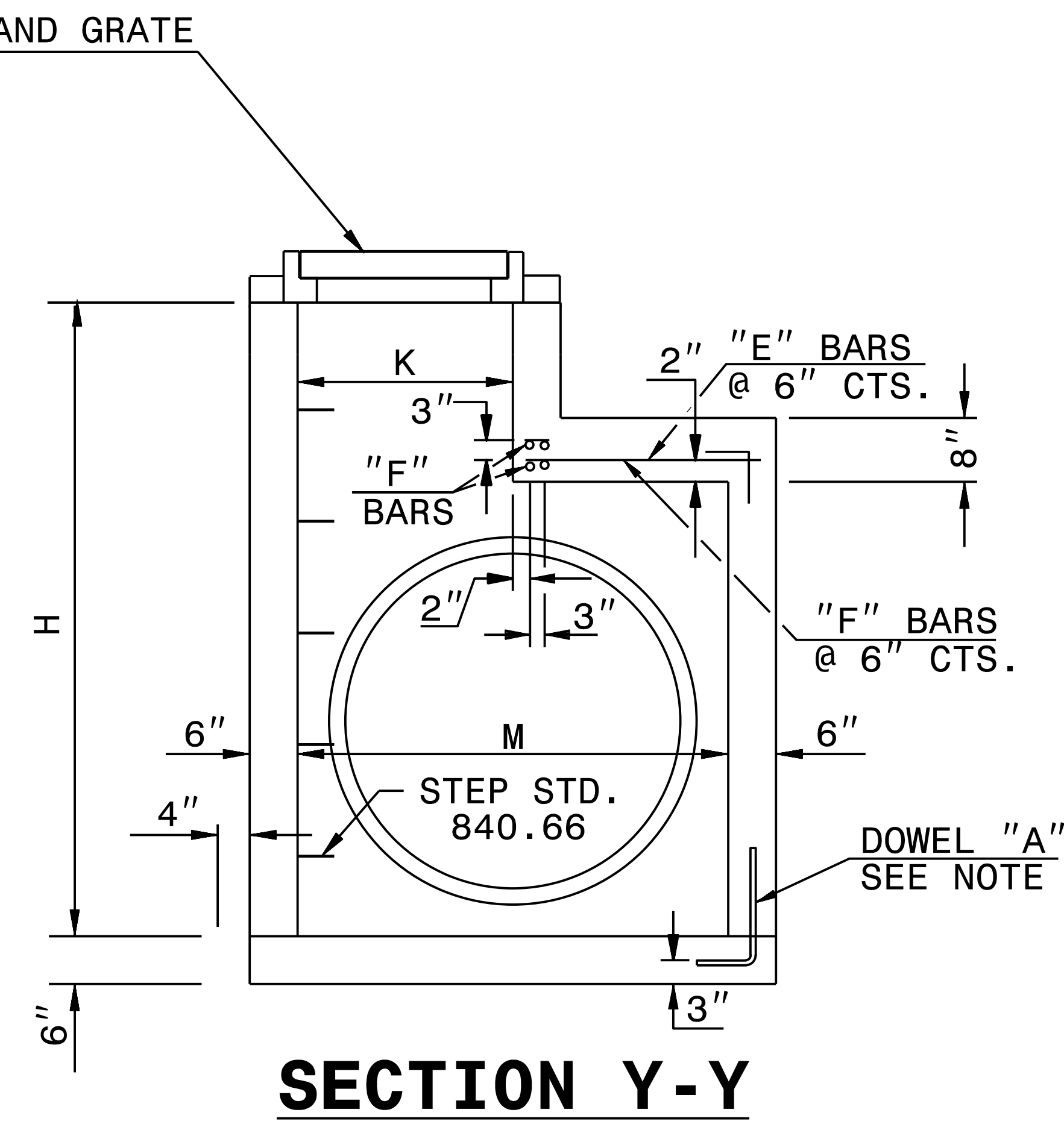
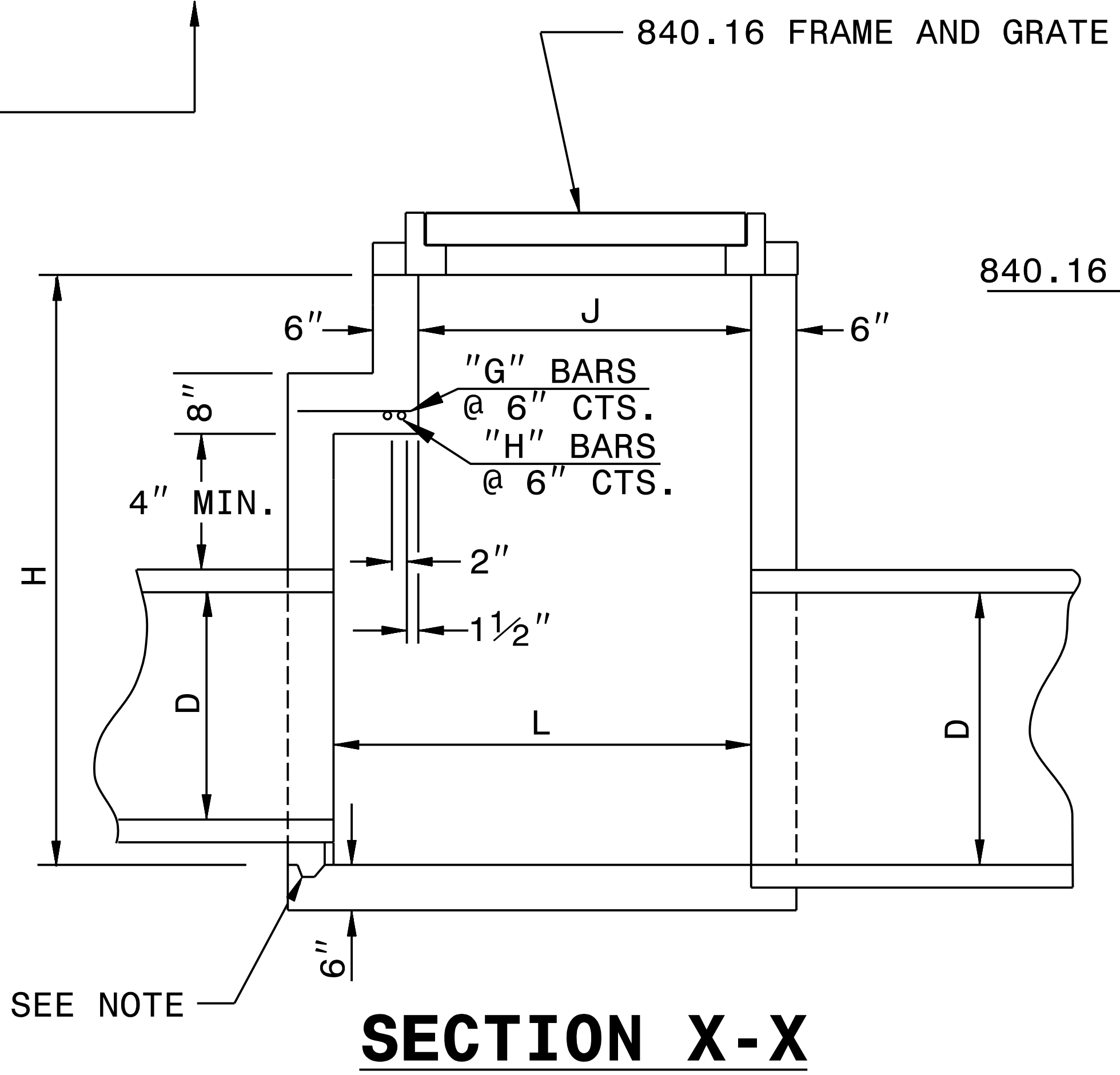
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| PROJECT SERVICES UNIT | |
| STANDARDS AND SPECIAL DESIGN | |
| Office 919-250-4128 | FAX 919-250-4119 |
| DETAIL OF 8"X12" CURB TO 2'-6" CURB & GUTTER TRANSITION SECTION | |
| ORIGINAL BY: _____ | DATE: _____ |
| MODIFIED BY: K. KEMPF | DATE: 10-20-09 |
| CHECKED BY: _____ | DATE: _____ |
| FILE SPEC.: details/ericward/usr/details/stand/cgtransit.dgn | |

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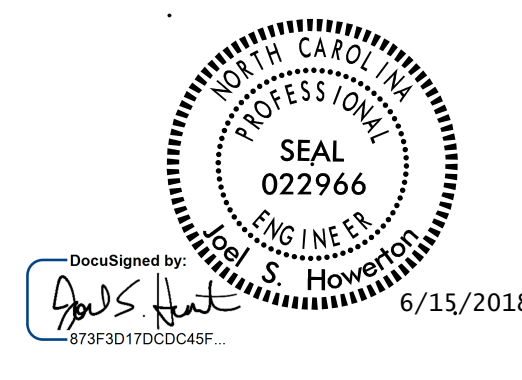


GENERAL NOTES:
 USE CLASS "B" CONCRETE THROUGHOUT.
 PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.
 OPTIONAL CONSTRUCTION - MONOLITHIC POUR 2" KEYWAY OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.
 USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
 IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.
 CONSTRUCT WITH PIPE CROWNS MATCHING.
 INSTALL 2" WEEPHOLES AS DIRECTED BY THE ENGINEER.
 INSTALL STONE DRAINS, OF A MINIMUM OF 1 CUBIC FOOT OF NO. 78M STONE IN A POROUS FABRIC BAG OR WRAP, AT EACH WEEP HOLE OR AS DIRECTED BY THE ENGINEER.
 CHAMFER ALL EXPOSED CORNERS 1".
 DRAWING NOT TO SCALE.
 DIMENSIONS MAY BE FIELD ADJUSTED AS DIRECTED BY THE ENGINEER.



MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET (BASED ON MIN. HEIGHT, H)

| DIMENSIONS OF BOX AND PIPE | | | | | | REINFORCING STEEL - NO. 4 BARS | | | | | | | | CU YDS CONC. IN BOX | | | | DEDUCTIONS FOR ONE PIPE | | |
|----------------------------|--------|---------|--------|---------|----------|--------------------------------|---------------|------------|---------------|------------|---------------|------------|---------------|---------------------|-------------|---------|-------------|-------------------------|-------|-------|
| PIPE D | SPAN J | WIDTH K | SPAN L | WIDTH M | HEIGHT H | BARS E NO. | BARS E LENGTH | BARS F NO. | BARS F LENGTH | BARS G NO. | BARS G LENGTH | BARS H NO. | BARS H LENGTH | TOTAL LBS. | BOTTOM SLAB | H TOTAL | H PER FT HT | TOTAL | C.S. | R.C. |
| 12" | 3'-0" | 2'-0" | 3'-8" | 2'-0" | 3'-9" | — | — | — | — | — | — | — | — | — | 0.362 | 0.926 | 0.247 | 1.288 | 0.015 | 0.024 |
| 15" | 3'-0" | 2'-0" | 3'-8" | 2'-0" | 4'-0" | — | — | — | — | — | — | — | — | — | 0.362 | 0.988 | 0.247 | 1.350 | 0.023 | 0.036 |
| 18" | | | | 2'-0" | 4'-3" | — | — | — | — | — | — | — | — | — | 0.362 | 1.050 | 0.247 | 1.412 | 0.033 | 0.049 |
| 24" | | | | 2'-10" | 4'-9" | 8 | 1'-5" | 6 | 4'-9" | — | — | — | — | 27 | 0.444 | 1.362 | 0.278 | 1.806 | 0.059 | 0.085 |
| 30" | | | 3'-8" | 3'-5" | 5'-3" | 8 | 2'-0" | 7 | 4'-9" | — | — | — | — | 33 | 0.502 | 1.644 | 0.288 | 2.146 | 0.092 | 0.127 |
| 36" | | | 4'-0" | 4'-0" | 5'-9" | 8 | 2'-5" | 8 | 4'-11" | 4 | 0'-9" | 2 | 4'-11" | 47 | 0.560 | 1.931 | 0.321 | 2.525 | 0.132 | 0.178 |
| 42" | | | 4'-10" | 4'-10" | 6'-3" | 10 | 3'-1" | 9 | 5'-7" | 1 | 1'-5" | 3 | 5'-7" | 67 | 0.704 | 2.500 | 0.370 | 3.282 | 0.180 | 0.243 |
| 48" | | | 5'-4" | 5'-4" | 6'-9" | 11 | 3'-7" | 10 | 6'-1" | 1 | 1'-11" | 4 | 6'-1" | 87 | 0.823 | 3.013 | 0.407 | 3.920 | 0.235 | 0.317 |
| 54" | | | 6'-0" | 6'-0" | 7'-3" | 12 | 4'-1" | 11 | 6'-7" | 2 | 2'-5" | 5 | 6'-7" | 107 | 0.951 | 3.589 | 0.444 | 4.677 | 0.297 | 0.401 |
| 60" | | | 6'-6" | 6'-6" | 7'-9" | 13 | 4'-9" | 12 | 7'-3" | 3 | 3'-1" | 6 | 7'-3" | 135 | 1.311 | 4.539 | 0.494 | 5.775 | 0.367 | 0.495 |
| 66" | | | 7'-2" | 7'-2" | 8'-3" | 14 | 5'-4" | 14 | 7'-10" | 3 | 3'-7" | 7 | 7'-10" | 168 | 1.136 | 5.061 | 0.537 | 6.506 | 0.444 | 0.599 |
| 72" | 3'-0" | 2'-0" | 7'-8" | 7'-8" | 8'-9" | 15 | 5'-11" | 15 | 8'-5" | 4 | 4'-3" | 8 | 8'-5" | 199 | 1.500 | 5.860 | 0.580 | 7.473 | 0.528 | 0.713 |



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SPECIAL DI 840D14

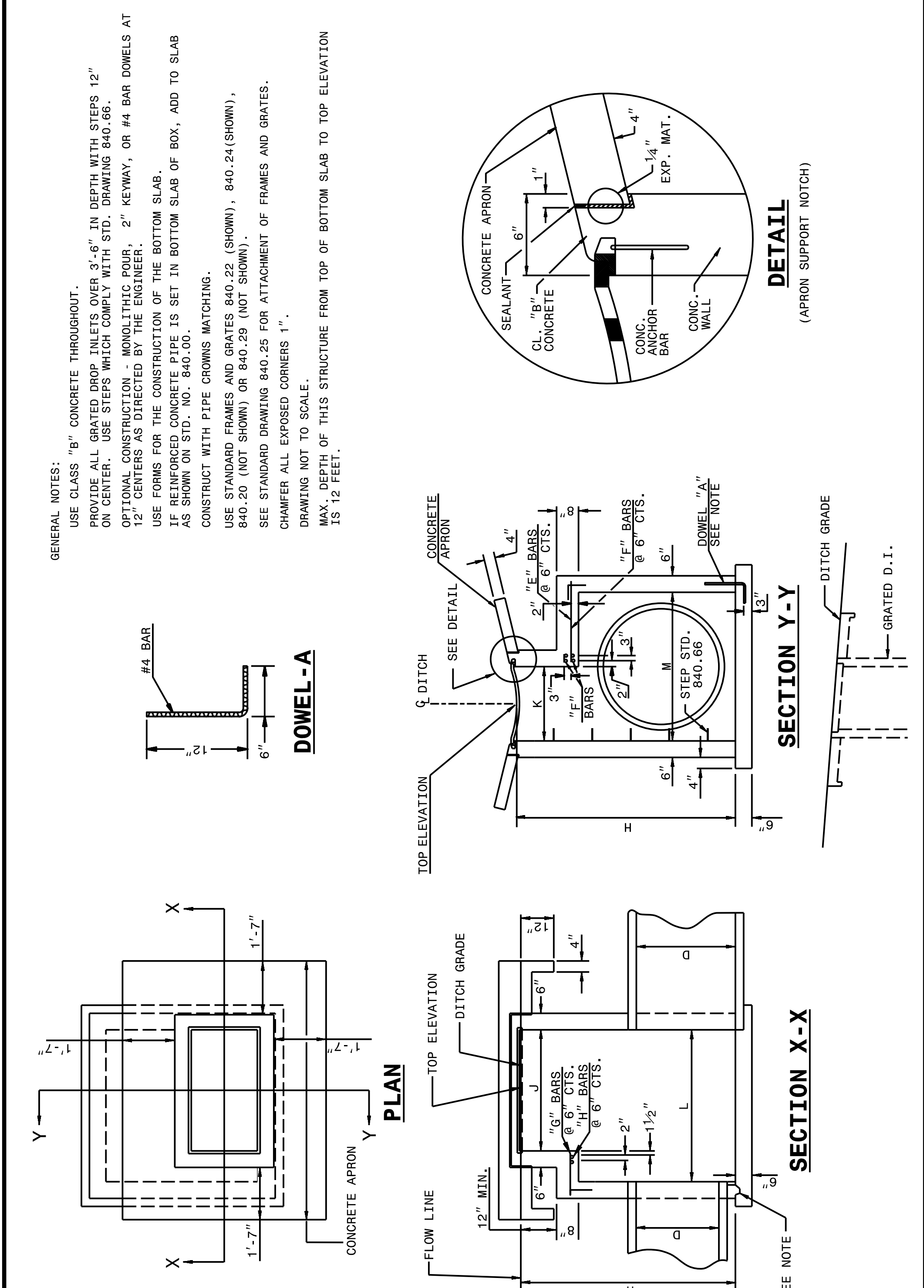
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STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

SHEET 1 OF 2 840d17



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

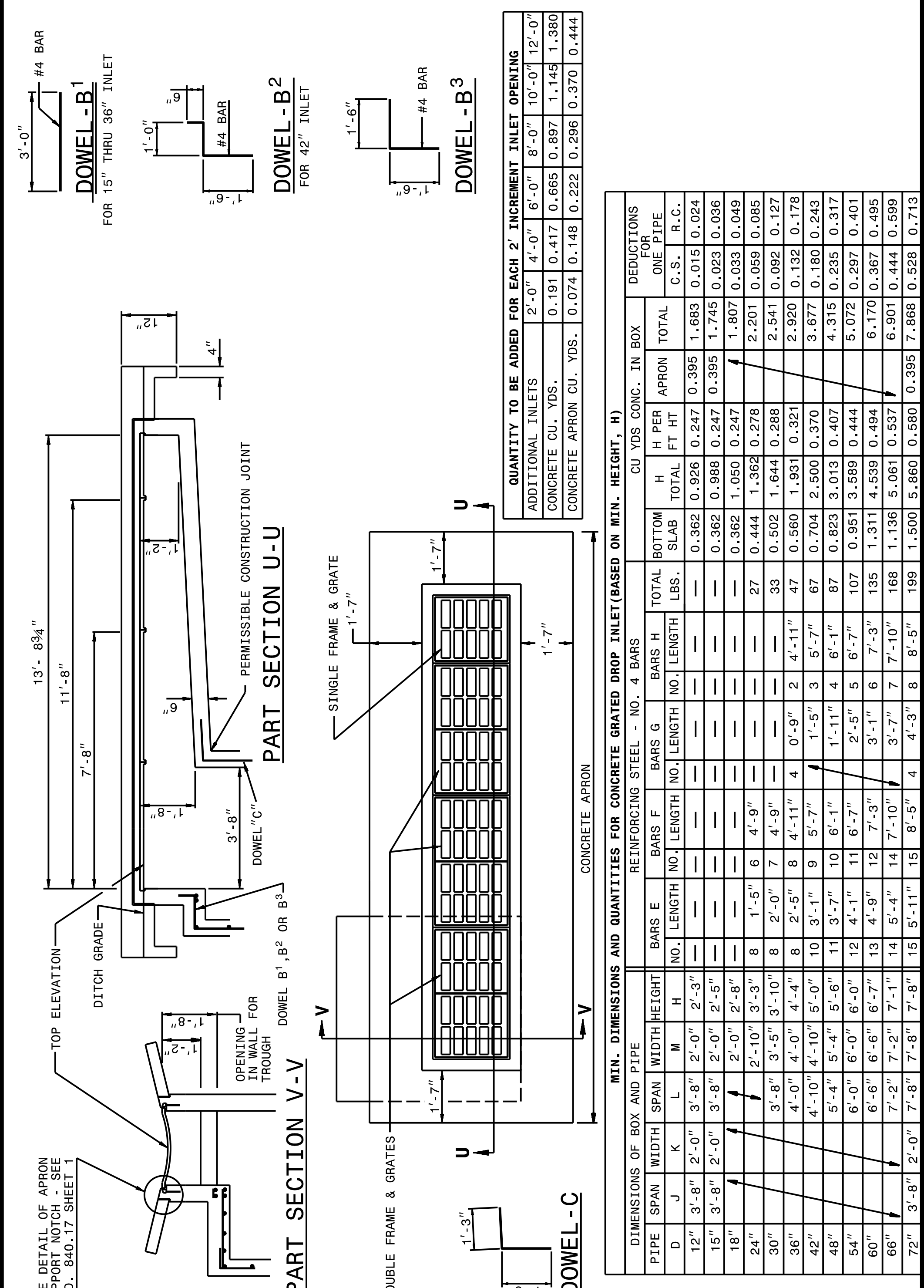
ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

SHEET 1 OF 2 840d17

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

ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

SHEET 2 OF 2 840d17



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

ENGLISH DETAIL DRAWING FOR CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH 12" THRU 72" PIPE

SHEET 2 OF 2 840d17

QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING

| | | | | | | |
|-------------------------|-------|-------|-------|-------|--------|--------|
| ADDITIONAL INLETS | 2'-0" | 4'-0" | 6'-0" | 8'-0" | 10'-0" | 12'-0" |
| CONCRETE CU. YDS. | 0.191 | 0.417 | 0.665 | 0.897 | 1.145 | 1.380 |
| CONCRETE APRON CU. YDS. | 0.074 | 0.148 | 0.222 | 0.296 | 0.370 | 0.444 |

MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET (BASED ON MIN. HEIGHT, H)

| PIPE DIMENSIONS | REINFORCING STEEL - NO. 4 BARS | | | | CU YDS CONC. IN BOX | | DEDUCTIONS ONE PIPE | | | | |
|-----------------|--------------------------------|--------|--------|-----|---------------------|-------------|---------------------|-----------|-------|-------|-------|
| | SPAN | WIDTH | HEIGHT | NO. | LENGTH | H PER TOTAL | APRON TOTAL | C.S. R.C. | | | |
| 12" | 3'-8" | 2'-0" | 2'-3" | — | — | 0.926 | 0.247 | 0.395 | 1.683 | 0.015 | 0.024 |
| 15" | 3'-8" | 2'-0" | 2'-5" | — | — | 0.362 | 0.988 | 0.247 | 0.395 | 1.745 | 0.036 |
| 18" | 3'-8" | 2'-0" | 2'-8" | — | — | 0.362 | 1.050 | 0.247 | 1.807 | 0.033 | 0.049 |
| 24" | 3'-8" | 2'-10" | 3'-3" | 8 | 1'-5" | 0.444 | 1.362 | 0.278 | 2.201 | 0.059 | 0.085 |
| 30" | 3'-8" | 3'-5" | 3'-10" | 8 | 2'-0" | 0.502 | 1.644 | 0.288 | 2.541 | 0.082 | 0.127 |
| 36" | 4'-0" | 4'-0" | 4'-4" | 8 | 2'-5" | 0.560 | 1.931 | 0.321 | 2.920 | 0.132 | 0.178 |
| 42" | 4'-0" | 4'-10" | 5'-0" | 10 | 3'-1" | 0.618 | 2.219 | 0.351 | 3.259 | 0.161 | 0.206 |
| 48" | 5'-4" | 5'-4" | 5'-6" | 11 | 3'-7" | 0.676 | 2.507 | 0.380 | 3.597 | 0.189 | 0.243 |
| 54" | 6'-0" | 6'-0" | 6'-2" | 12 | 4'-1" | 0.734 | 2.795 | 0.409 | 3.935 | 0.217 | 0.281 |
| 60" | 6'-6" | 6'-6" | 6'-7" | 13 | 4'-9" | 0.792 | 3.083 | 0.438 | 4.273 | 0.245 | 0.317 |
| 66" | 7'-2" | 7'-2" | 7'-1" | 14 | 5'-4" | 0.850 | 3.371 | 0.467 | 4.611 | 0.273 | 0.351 |
| 72" | 7'-8" | 7'-8" | 7'-8" | 15 | 5'-11" | 0.908 | 3.659 | 0.496 | 4.949 | 0.301 | 0.395 |

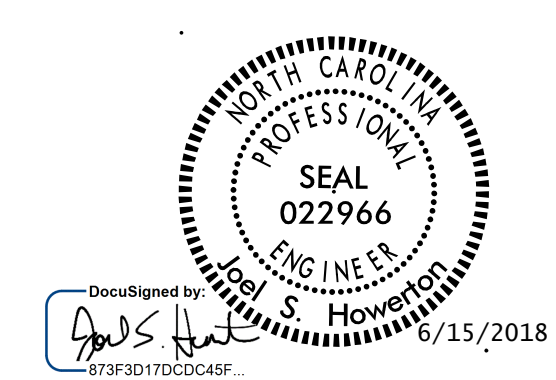
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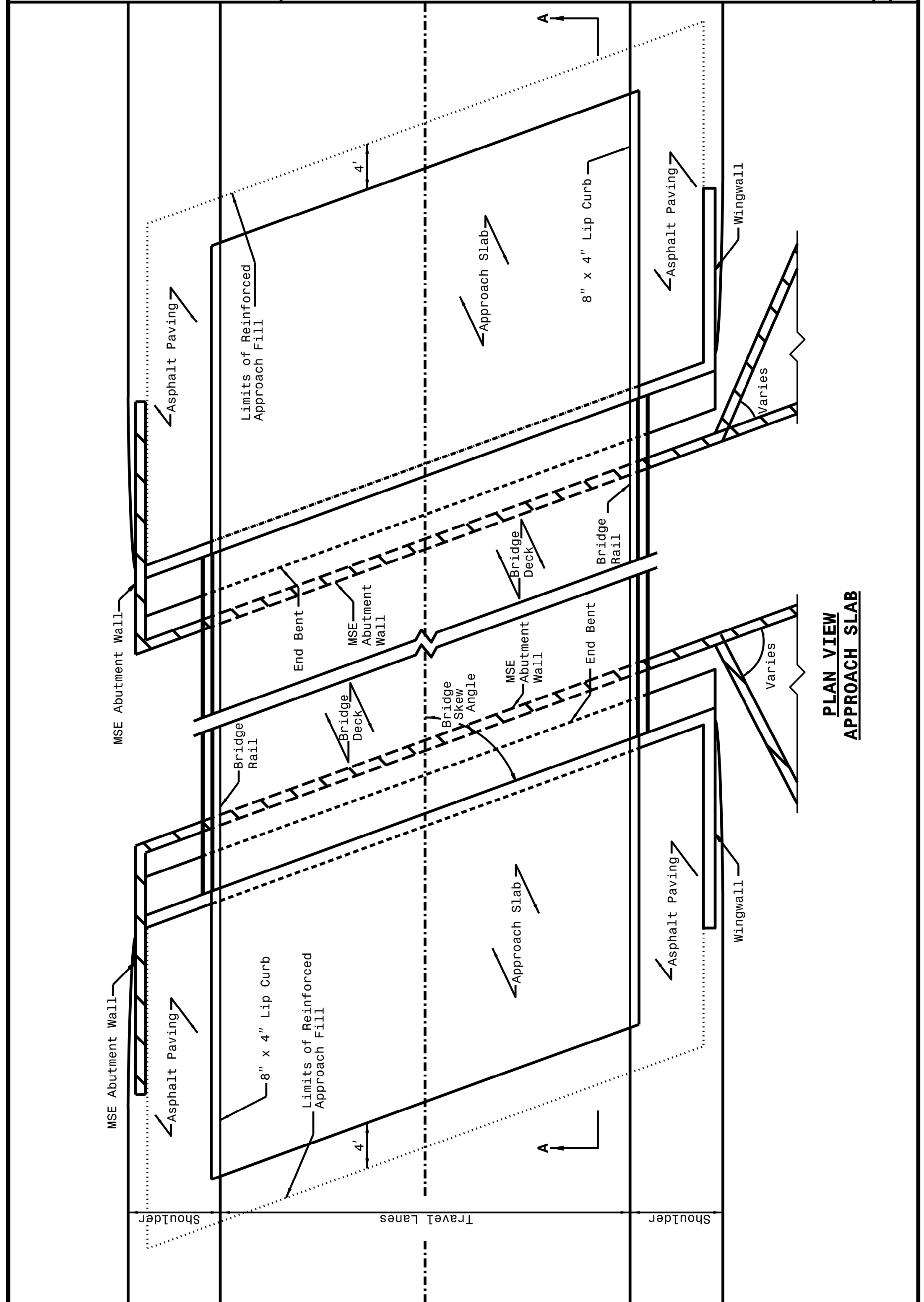
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STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2
422D10



**PLAN VIEW
APPROACH SLAB**

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

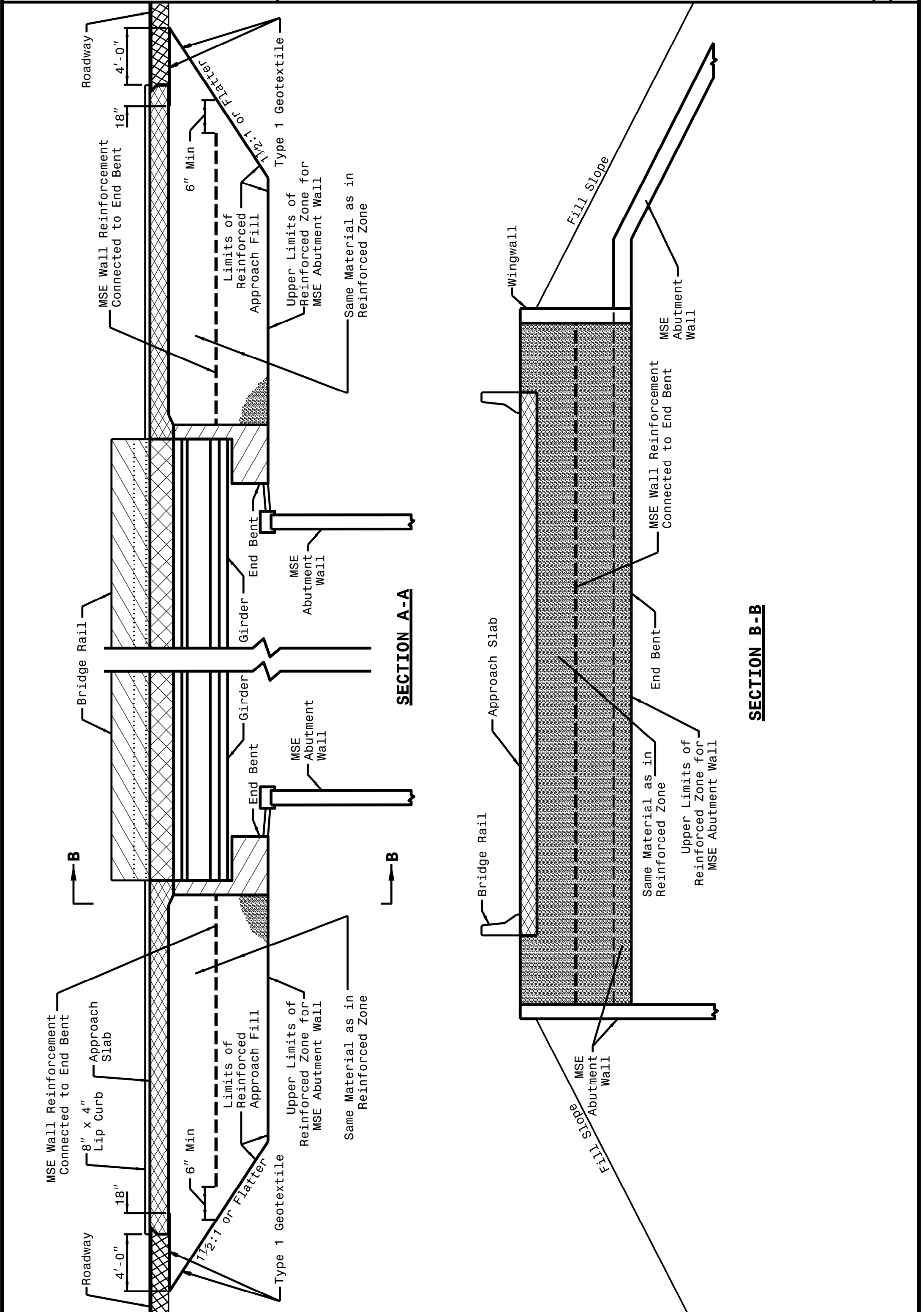
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BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 1 OF 2
422D10

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

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 2 OF 2
422D10



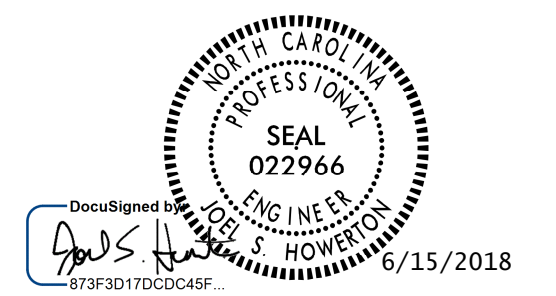
SECTION A-A

SECTION B-B

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

ROADWAY DETAIL DRAWING FOR
BRIDGE APPROACH FILLS
TYPE III - REINFORCED APPROACH FILL FOR
MECHANICALLY STABILIZED EARTH (MSE) ABUTMENT WALL

SHEET 2 OF 2
422D10



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**TYPE III
REINFORCED
APPROACH FILLS**

ORIGINAL BY: K. A. KEMPF DATE: JULY 2017
MODIFIED BY: DATE:
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RALEIGH, N.C.

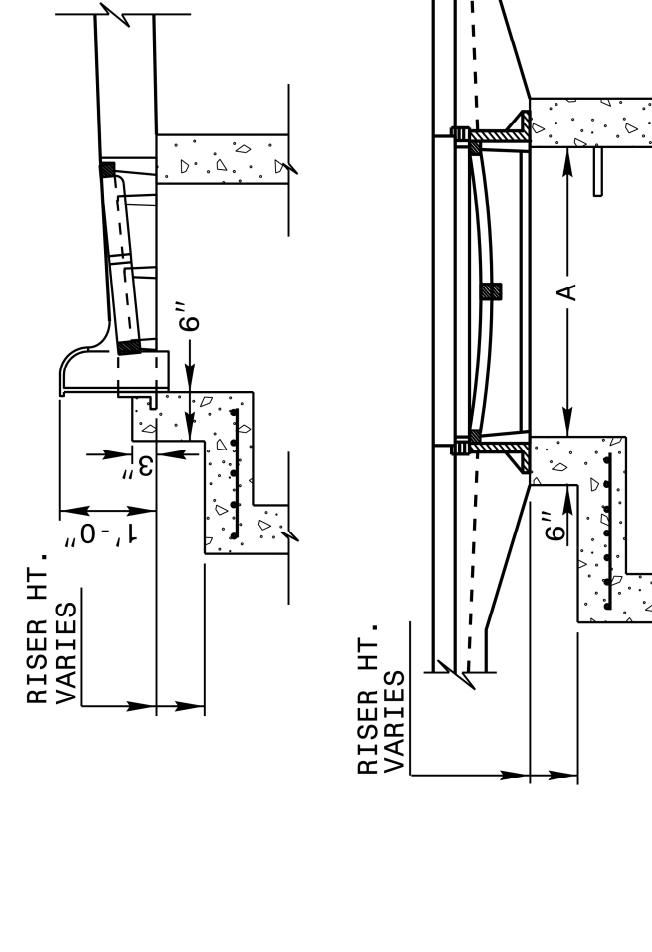
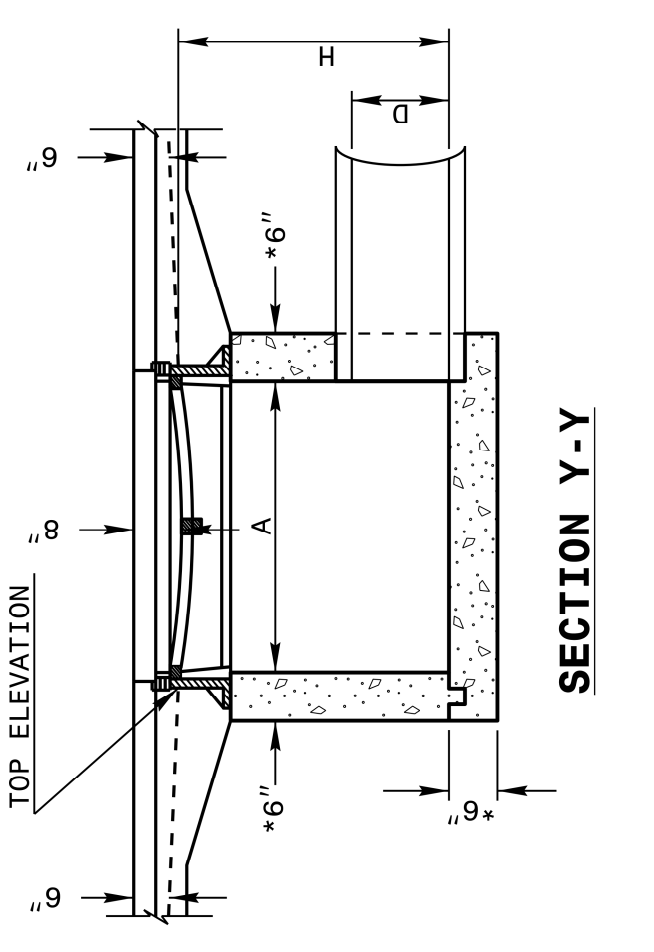
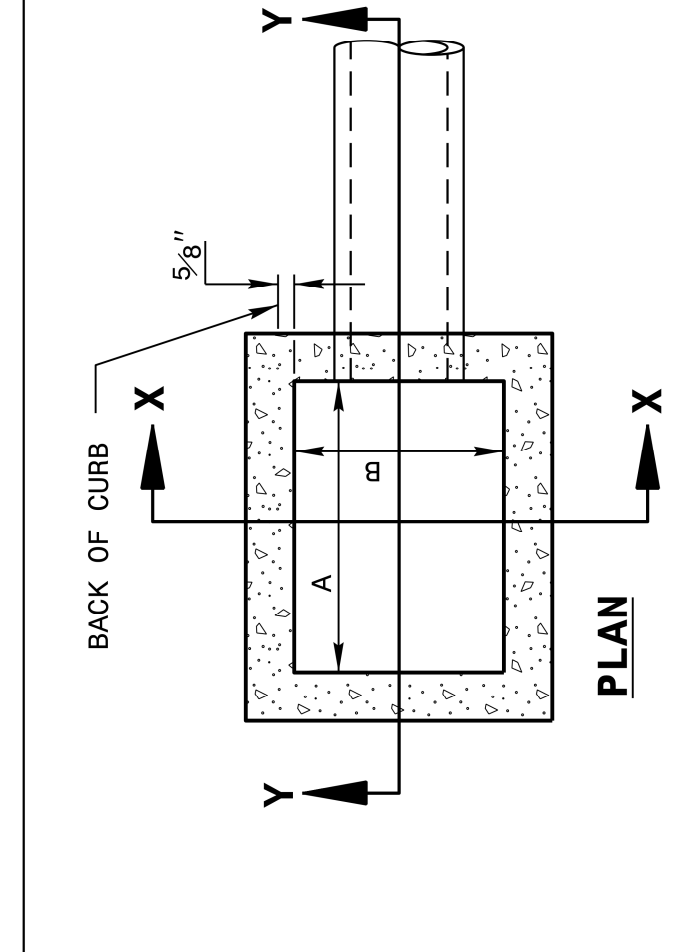
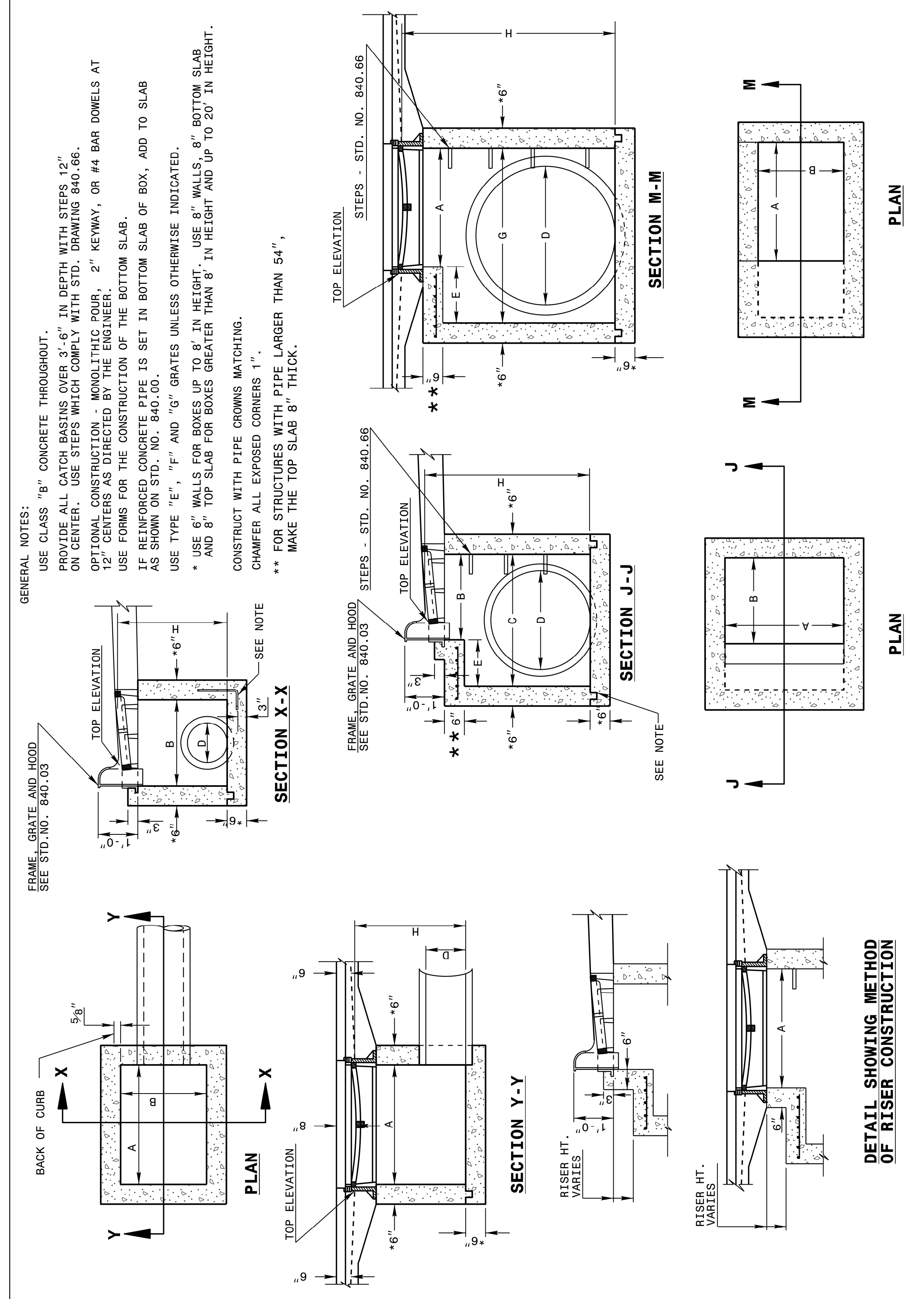
ENGLISH DETAIL DRAWING FOR
**EXTRA DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 1 OF 2
840D02

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RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
**EXTRA DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 1 OF 2
840D02



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

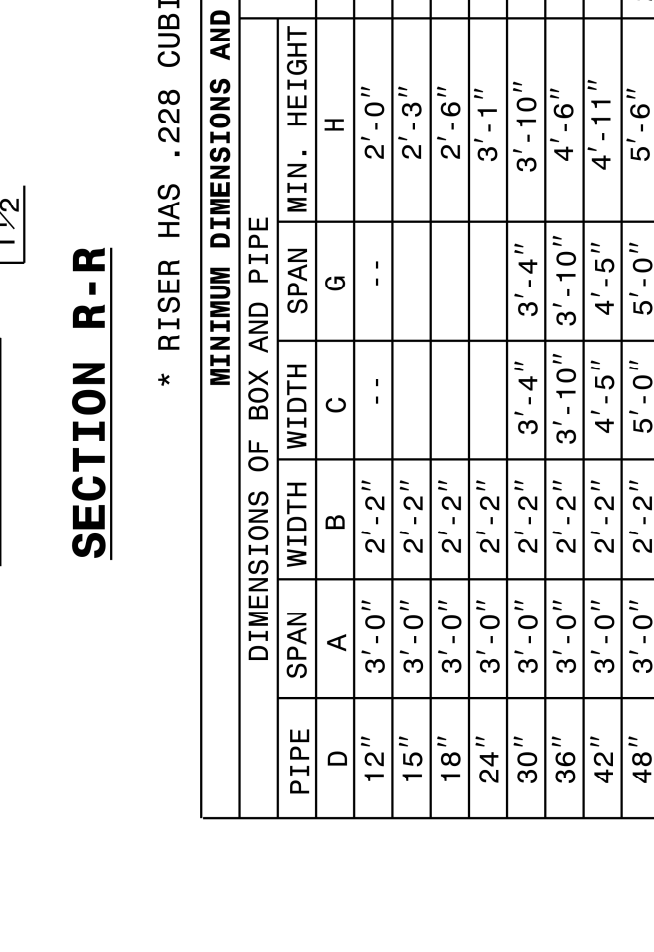
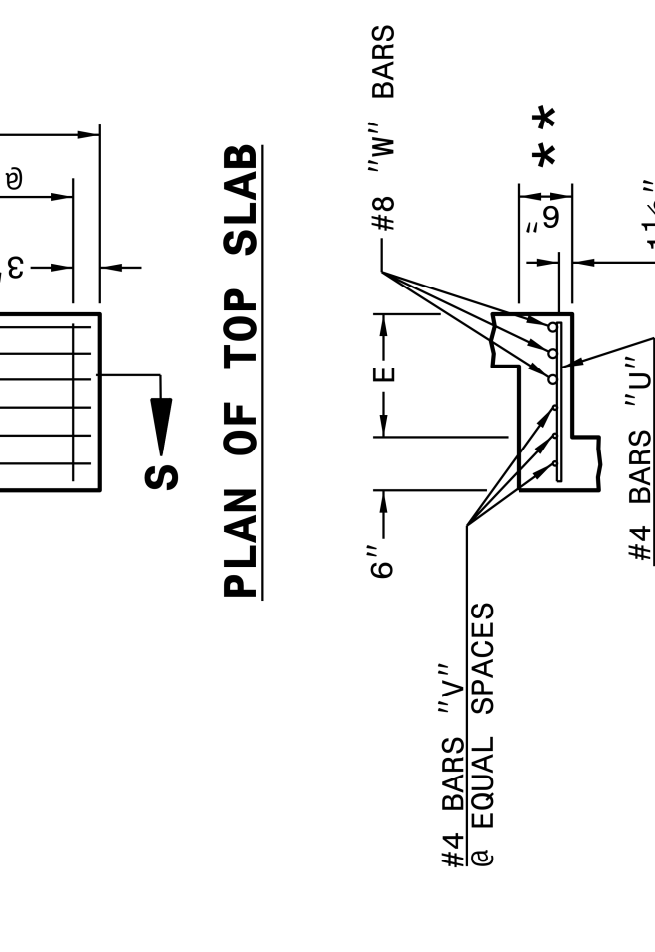
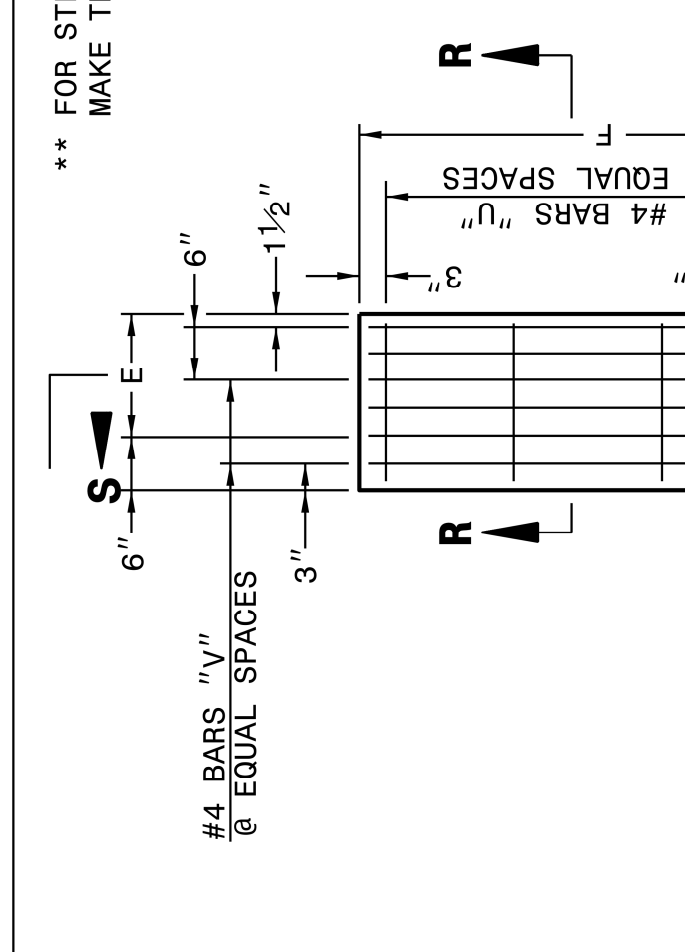
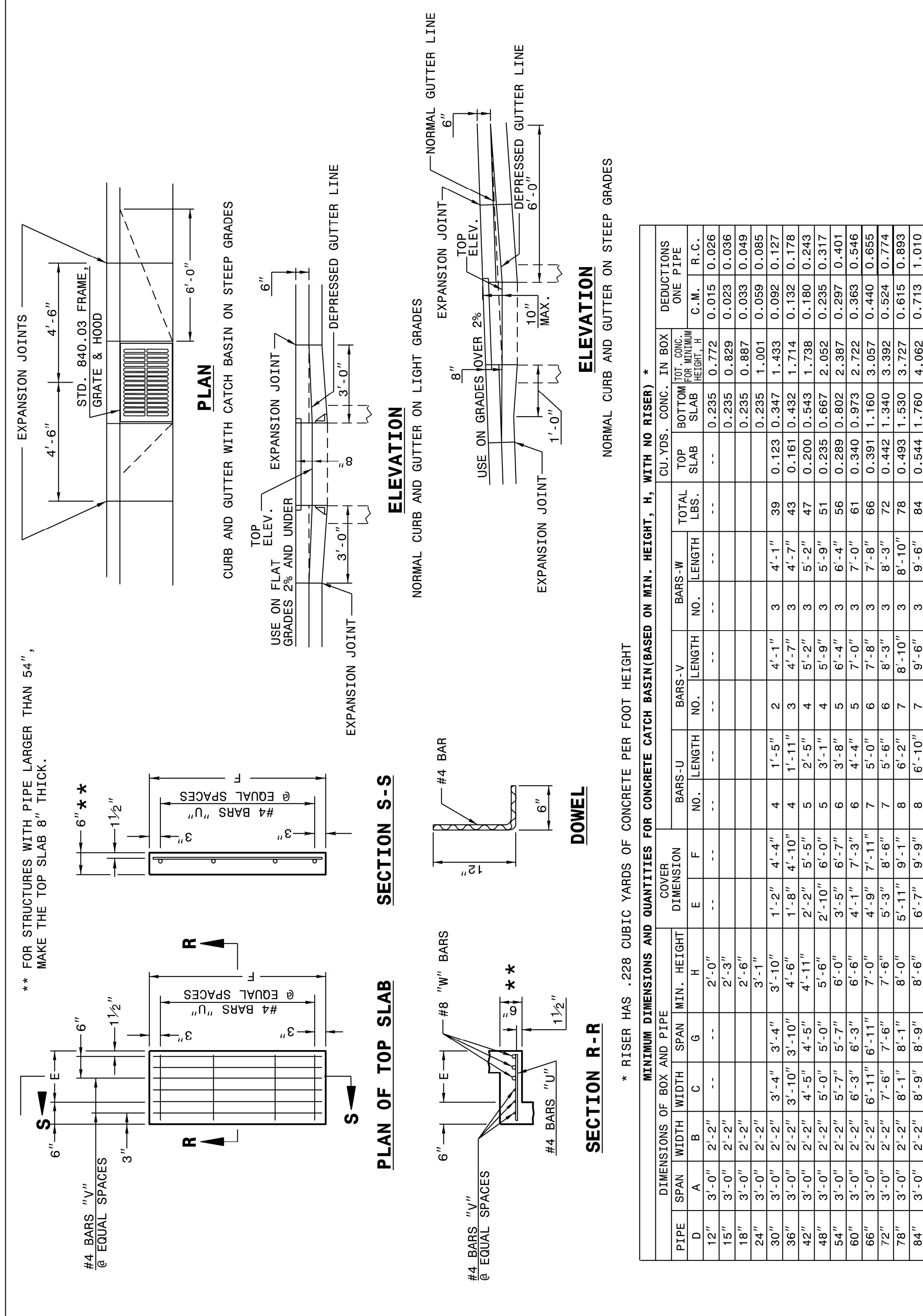
ENGLISH DETAIL DRAWING FOR
**EXTRA DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

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

ENGLISH DETAIL DRAWING FOR
**EXTRA DEPTH
CONCRETE CATCH BASIN**
12" THRU 84" PIPE

SHEET 2 OF 2
840D02

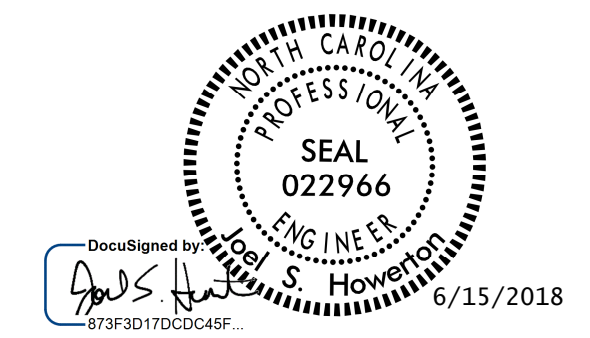


* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

| PIPE D. | MINIMUM DIMENSIONS OF BOX AND PIPE | | | COVER DIMENSION | | | BARS-V | | | BARS-W | | | BARS-U | | | TOTAL LBS. | | | DEDUCTIONS | | | |
|---------|------------------------------------|-------|--------|-----------------|--------|--------|--------|--------|-----|--------|-----|--------|--------|--------|-----|------------|-----------------------|----------|-------------|-----------------------|----------------|-------|
| | SPAN | WIDTH | HEIGHT | E | F | H | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | CUL.YDS. CONC. IN BOX | TOP SLAB | BOTTOM SLAB | TOT. CONC. HEIGHT, H. | CONC. ONE PIPE | R.C. |
| 12" | 3'-0" | 2'-2" | 2'-0" | 2'-0" | 2'-3" | 3'-1" | | | | | | | | | | | 0.235 | 0.772 | 0.015 | 0.026 | 0.015 | 0.026 |
| 15" | 3'-0" | 2'-2" | 2'-3" | 2'-3" | 2'-6" | 3'-1" | | | | | | | | | | | 0.235 | 0.829 | 0.023 | 0.036 | 0.023 | 0.036 |
| 18" | 3'-0" | 2'-2" | 3'-1" | 3'-1" | 3'-1" | 3'-1" | | | | | | | | | | | 0.235 | 0.887 | 0.033 | 0.049 | 0.033 | 0.049 |
| 24" | 3'-0" | 2'-2" | 3'-4" | 3'-4" | 3'-4" | 3'-10" | 4 | 1'-5" | 2 | 4'-1" | 3 | 4'-1" | 3 | 4'-1" | 3 | 4'-1" | 0.235 | 1.001 | 0.059 | 0.085 | 0.059 | 0.085 |
| 30" | 3'-0" | 2'-2" | 3'-10" | 3'-10" | 3'-10" | 4'-6" | 4 | 1'-11" | 3 | 4'-7" | 3 | 4'-7" | 3 | 4'-7" | 3 | 4'-7" | 0.123 | 0.347 | 1.433 | 0.092 | 0.127 | 0.127 |
| 36" | 3'-0" | 2'-2" | 4'-10" | 4'-10" | 4'-10" | 5'-5" | 5 | 2'-5" | 4 | 5'-2" | 3 | 5'-2" | 3 | 5'-2" | 3 | 5'-2" | 0.161 | 0.432 | 1.714 | 0.132 | 0.178 | 0.178 |
| 42" | 3'-0" | 2'-2" | 5'-5" | 5'-5" | 5'-5" | 6'-0" | 5 | 3'-1" | 4 | 5'-9" | 3 | 5'-9" | 3 | 5'-9" | 3 | 5'-9" | 0.200 | 0.543 | 1.738 | 0.180 | 0.243 | 0.243 |
| 48" | 3'-0" | 2'-2" | 5'-7" | 5'-7" | 5'-7" | 6'-6" | 6 | 3'-8" | 5 | 6'-4" | 3 | 6'-4" | 3 | 6'-4" | 3 | 6'-4" | 0.235 | 0.667 | 2.052 | 0.235 | 0.317 | 0.317 |
| 54" | 3'-0" | 2'-2" | 6'-3" | 6'-3" | 6'-3" | 7'-3" | 6 | 4'-4" | 5 | 7'-0" | 3 | 7'-0" | 3 | 7'-0" | 3 | 7'-0" | 0.289 | 0.802 | 2.387 | 0.287 | 0.401 | 0.401 |
| 60" | 3'-0" | 2'-2" | 6'-11" | 6'-11" | 6'-11" | 7'-6" | 7 | 5'-0" | 6 | 7'-8" | 3 | 7'-8" | 3 | 7'-8" | 3 | 7'-8" | 0.340 | 0.973 | 2.722 | 0.363 | 0.546 | 0.546 |
| 66" | 3'-0" | 2'-2" | 7'-6" | 7'-6" | 7'-6" | 8'-3" | 7 | 5'-6" | 6 | 8'-3" | 3 | 8'-3" | 3 | 8'-3" | 3 | 8'-3" | 0.391 | 1.160 | 3.057 | 0.440 | 0.655 | 0.655 |
| 72" | 3'-0" | 2'-2" | 8'-1" | 8'-1" | 8'-1" | 8'-6" | 8 | 6'-2" | 7 | 8'-10" | 3 | 8'-10" | 3 | 8'-10" | 3 | 8'-10" | 0.442 | 1.340 | 3.392 | 0.524 | 0.774 | 0.774 |
| 78" | 3'-0" | 2'-2" | 8'-9" | 8'-9" | 8'-9" | 9'-1" | 8 | 6'-10" | 7 | 9'-9" | 3 | 9'-9" | 3 | 9'-9" | 3 | 9'-9" | 0.493 | 1.530 | 3.727 | 0.615 | 0.893 | 0.893 |
| 84" | 3'-0" | 2'-2" | 8'-9" | 8'-9" | 8'-9" | 9'-9" | 8 | 6'-10" | 7 | 9'-9" | 3 | 9'-9" | 3 | 9'-9" | 3 | 9'-9" | 0.544 | 1.760 | 4.062 | 0.713 | 1.010 | 1.010 |

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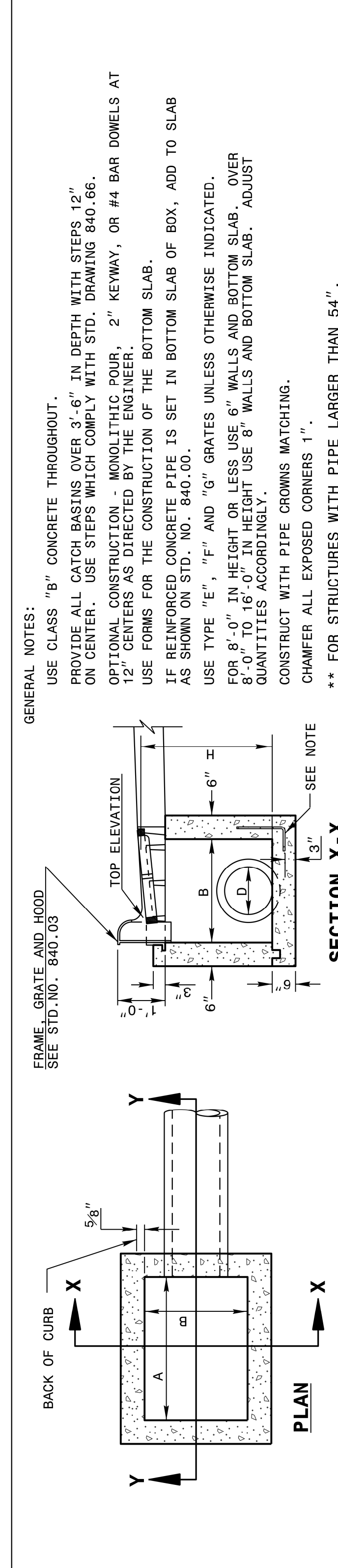
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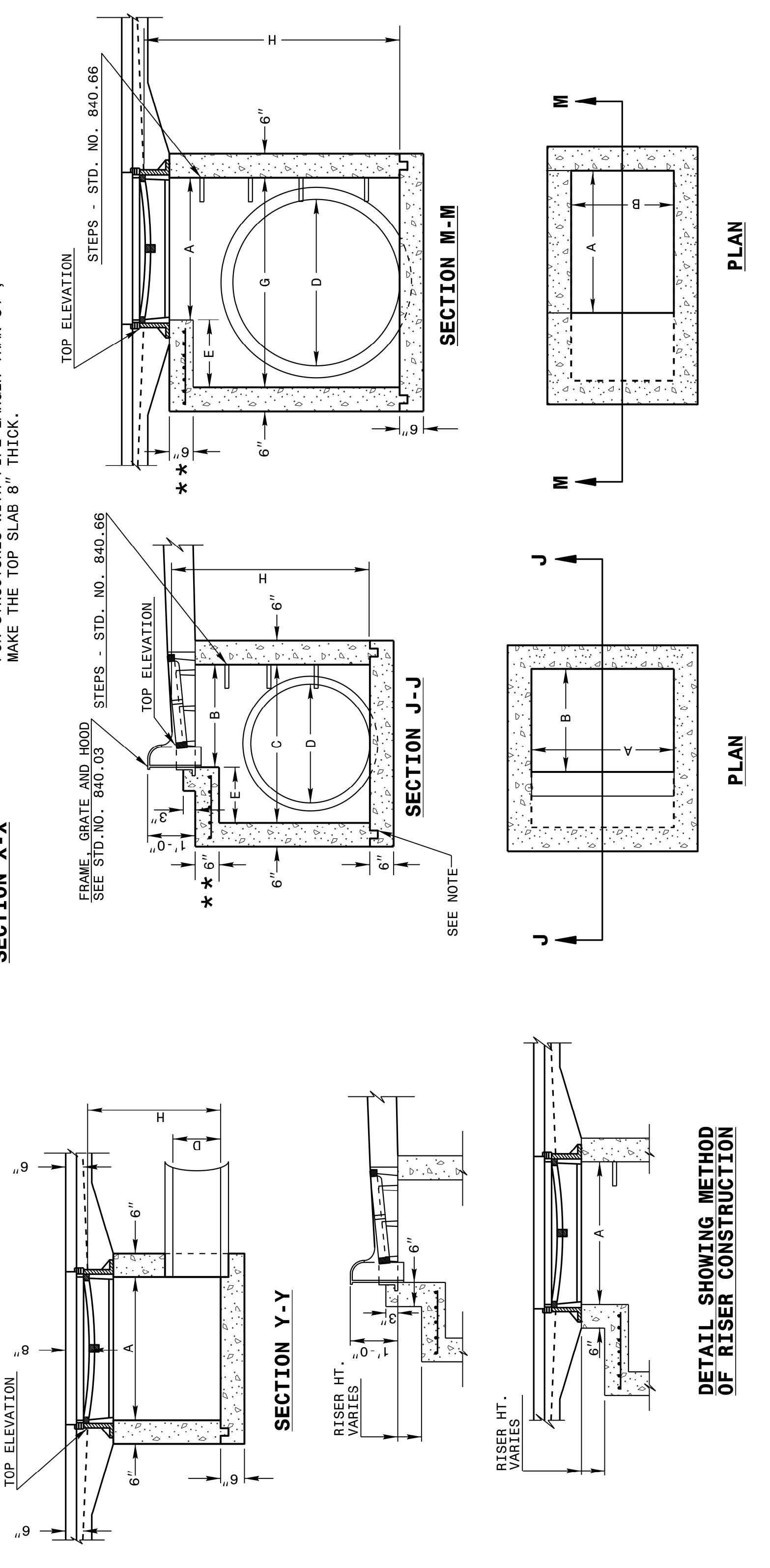
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DIVISION OF HIGHWAYS
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ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 84" PIPE

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 84" PIPE

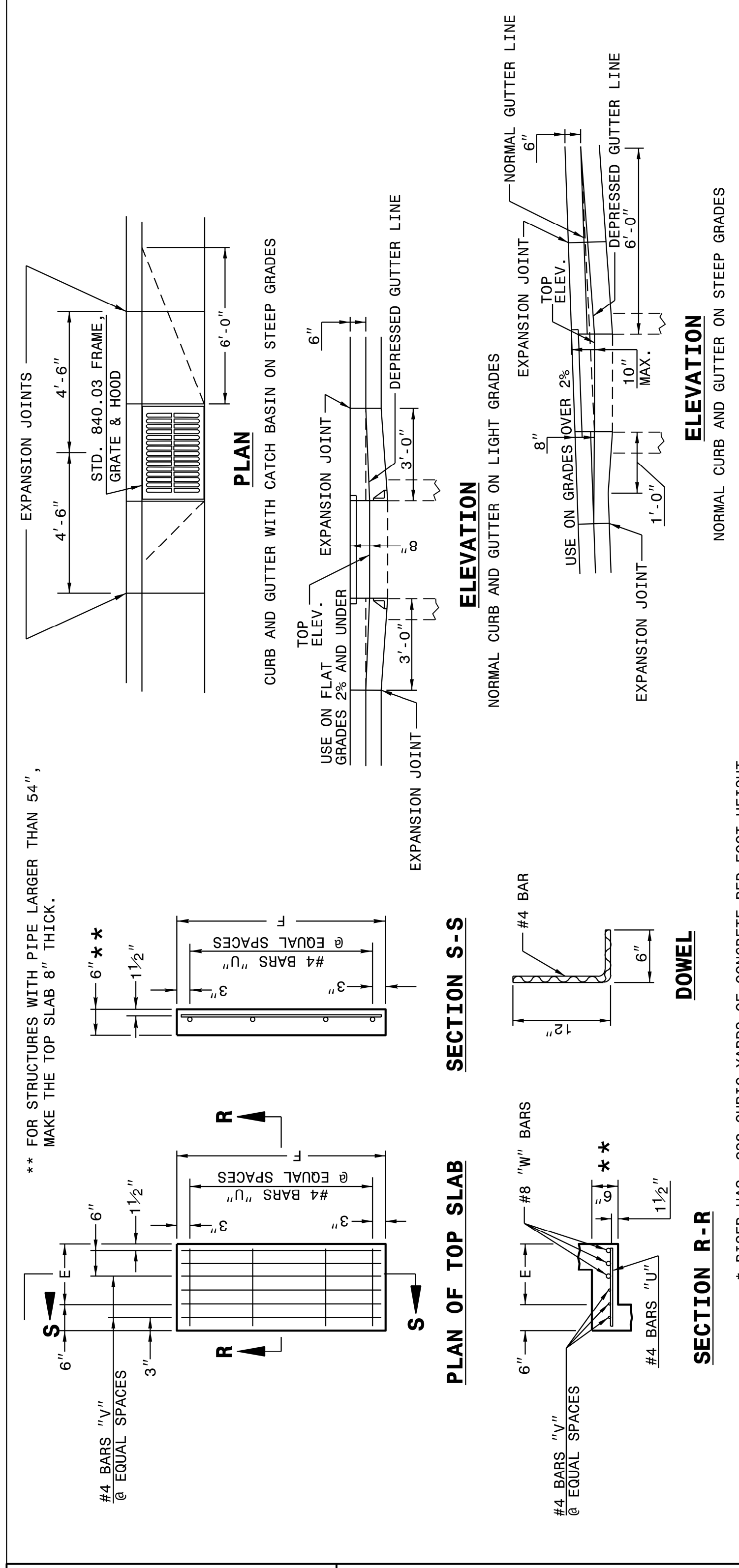


SHEET 1 OF 2
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SHEET 2 OF 2
840D02

SHEET 2 OF 2
840D02

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 84" PIPE

ENGLISH DETAIL DRAWING FOR
MINIMUM DEPTH CONCRETE CATCH BASIN
12" THRU 84" PIPE

* RISER HAS .228 CUBIC YARDS OF CONCRETE PER FOOT HEIGHT

| PIPE D. | DIMENSIONS OF BOX AND PIPE | | | COVER DIMENSION | | | BARS-V | | | BARS-W | | | BARS-U | | | TOTAL LBS. | CU. YDS. CONC. IN BOX | DEDUCTIONS | | |
|---------|----------------------------|-------|--------|-----------------|--------|--------|--------|--------|-----|--------|-----|--------|--------|--------|----------|------------|-----------------------|-------------|-----------------------|-------|
| | SPAN | WIDTH | HEIGHT | E | F | H | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | NO. | LENGTH | TOP SLAB | | | BOTTOM SLAB | TOT. CONC. HEIGHT, H. | C. M. |
| 12" | 3'-0" | 2'-2" | 2'-0" | 2'-3" | 2'-3" | 3'-1" | ... | ... | ... | ... | ... | ... | ... | ... | 0.285 | 0.772 | 0.015 | 0.026 | 0.026 | |
| 15" | 3'-0" | 2'-2" | 2'-3" | 2'-3" | 2'-3" | 3'-1" | ... | ... | ... | ... | ... | ... | ... | ... | 0.295 | 0.829 | 0.023 | 0.036 | 0.036 | |
| 18" | 3'-0" | 2'-2" | 3'-1" | 3'-1" | 3'-1" | 3'-1" | ... | ... | ... | ... | ... | ... | ... | ... | 0.295 | 0.887 | 0.033 | 0.049 | 0.049 | |
| 24" | 3'-0" | 2'-2" | 3'-4" | 3'-4" | 3'-4" | 3'-4" | 4 | 1'-5" | 2 | 4'-1" | 3 | 4'-1" | 3 | 4'-1" | 0.235 | 1.001 | 0.059 | 0.085 | 0.085 | |
| 30" | 3'-0" | 2'-2" | 3'-10" | 3'-10" | 3'-10" | 3'-10" | 4 | 1'-11" | 3 | 4'-7" | 3 | 4'-7" | 3 | 4'-7" | 0.123 | 0.347 | 1.433 | 0.092 | 0.127 | |
| 36" | 3'-0" | 2'-2" | 4'-6" | 4'-6" | 4'-6" | 4'-6" | 4 | 1'-11" | 3 | 4'-7" | 3 | 4'-7" | 3 | 4'-7" | 0.161 | 0.432 | 1.714 | 0.132 | 0.178 | |
| 42" | 3'-0" | 2'-2" | 4'-5" | 4'-5" | 4'-5" | 4'-5" | 5 | 2'-5" | 4 | 5'-2" | 4 | 5'-2" | 4 | 5'-2" | 0.200 | 0.543 | 1.738 | 0.180 | 0.243 | |
| 48" | 3'-0" | 2'-2" | 5'-0" | 5'-0" | 5'-0" | 5'-0" | 5 | 3'-1" | 4 | 5'-9" | 3 | 5'-9" | 3 | 5'-9" | 0.235 | 0.667 | 2.082 | 0.235 | 0.317 | |
| 54" | 3'-0" | 2'-2" | 5'-7" | 5'-7" | 5'-7" | 5'-7" | 6 | 3'-8" | 5 | 6'-4" | 3 | 6'-4" | 3 | 6'-4" | 0.289 | 0.802 | 2.387 | 0.297 | 0.401 | |
| 60" | 3'-0" | 2'-2" | 6'-3" | 6'-3" | 6'-3" | 6'-3" | 6 | 4'-4" | 5 | 7'-0" | 3 | 7'-0" | 3 | 7'-0" | 0.340 | 0.973 | 2.722 | 0.363 | 0.546 | |
| 66" | 3'-0" | 2'-2" | 6'-11" | 6'-11" | 6'-11" | 6'-11" | 7 | 5'-0" | 6 | 7'-8" | 3 | 7'-8" | 3 | 7'-8" | 0.391 | 1.160 | 3.057 | 0.440 | 0.655 | |
| 72" | 3'-0" | 2'-2" | 7'-6" | 7'-6" | 7'-6" | 7'-6" | 7 | 5'-6" | 6 | 8'-3" | 3 | 8'-3" | 3 | 8'-3" | 0.442 | 1.340 | 3.392 | 0.524 | 0.774 | |
| 78" | 3'-0" | 2'-2" | 8'-1" | 8'-1" | 8'-1" | 8'-1" | 8 | 6'-2" | 7 | 8'-10" | 3 | 8'-10" | 3 | 8'-10" | 0.493 | 1.530 | 3.727 | 0.615 | 0.893 | |
| 84" | 3'-0" | 2'-2" | 8'-9" | 8'-9" | 8'-9" | 8'-9" | 8 | 6'-10" | 7 | 9'-6" | 3 | 9'-6" | 3 | 9'-6" | 0.544 | 1.760 | 4.062 | 0.713 | 1.010 | |

SHEET 2 OF 2
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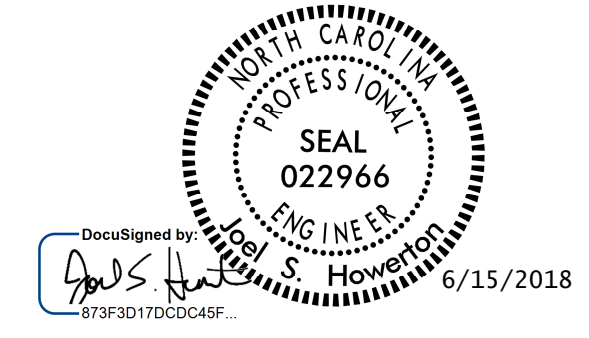
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6/15/2018