

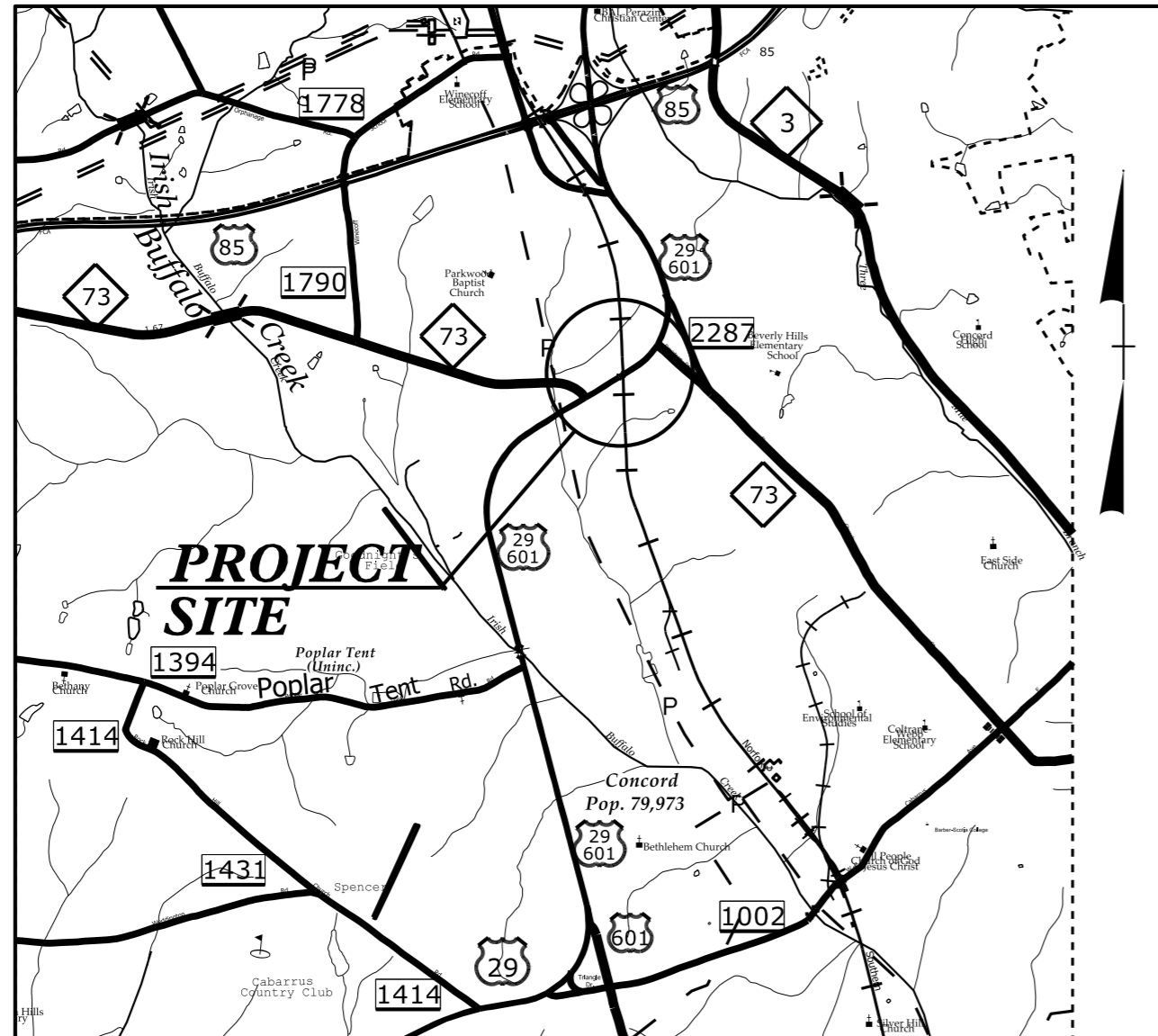
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09/08/99

See Sheet 1-A For Index of Sheets



VICINITY MAP

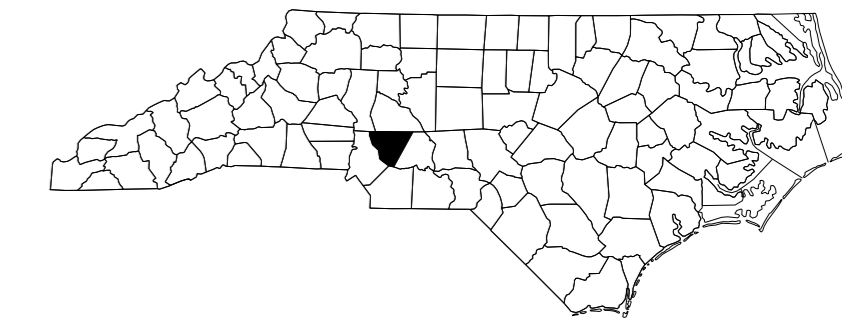
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

LOCATION: BRIDGES 66 AND 69 OVER NORFOLK SOUTHERN RAILROAD ON US 29/US 601

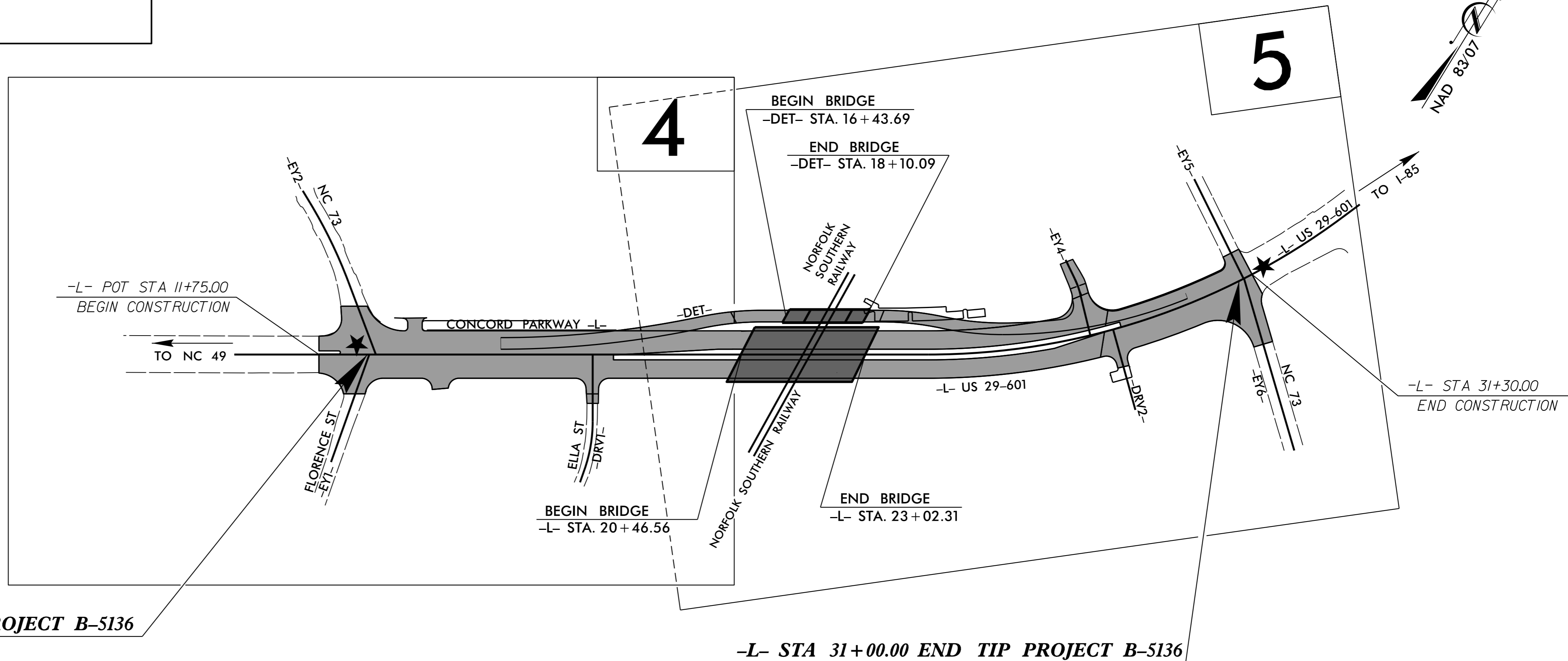
TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURES, SIGNALS, LIGHTING AND RETAINING WALLS

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | B-5136 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 42295.1.1 | BRSTP-0029(43) | PE | |
| 42295.2.1 | BRSTP-0029(43) | RW & UTIL | |
| 42295.3.FR1 | BRSTP-0029(43) | CONST. | |



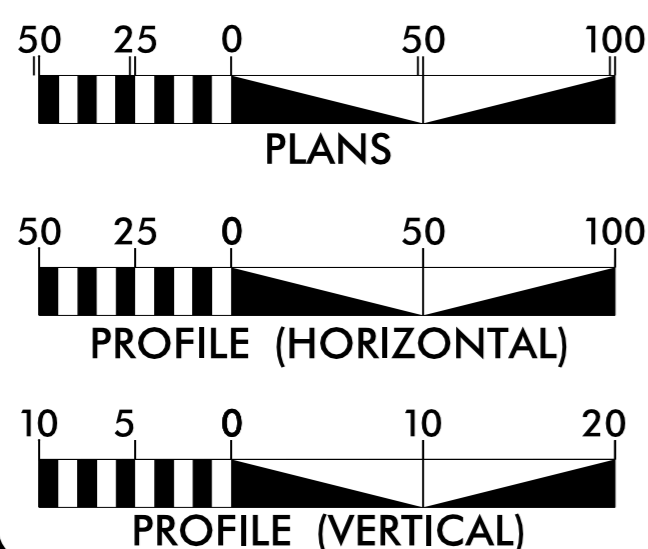
TIP PROJECT: B-5136

CONTRACT: C203565



★ TRAFFIC SIGNAL

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 33,400
ADT 2035 = 54,800
K = 10 %
D = 55 %
T = 6 % *
V = 50 MPH
* TTST = 2% DUAL 4%
FUNC CLASS = PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-5136 = 0.297 MILES
LENGTH STRUCTURE TIP PROJECT B-5136 = 0.049 MILES
TOTAL LENGTH TIP PROJECT B-5136 = 0.346 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
APRIL 23, 2013

LETTING DATE:
AUGUST 18, 2015

G. E. BREW, P.E.
PROJECT ENGINEER

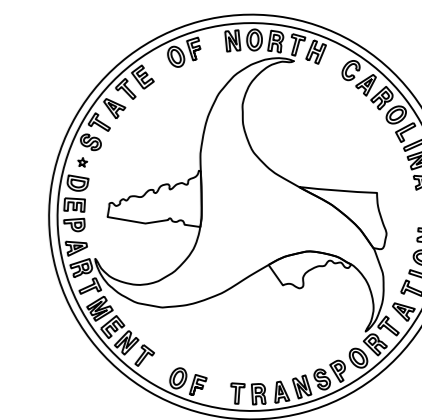
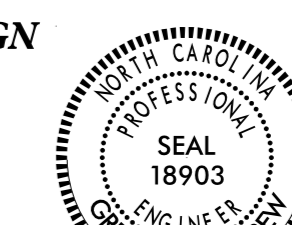
I. T. YOUNIS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

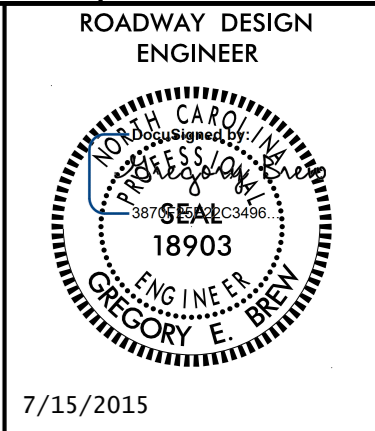
DocuSigned by:
Karen Hejner
5/7/2015
P.E.

ROADWAY DESIGN ENGINEER

DocuSigned by:
Gregory Brew
5/7/2015
P.E.



06-MAY-2015 08:50 R:\Roadway\Proj\B5136_Rdy_Tsh.dgn \$\$\$USERNAME\$\$\$



STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

| SHEET NUMBER | INDEX OF SHEETS SHEET |
|-----------------------|--|
| 1 | TITLE SHEET |
| 1A | INDEX OF SHEETS, GENERAL NOTES AND LIST OF STANDARD DRAWINGS |
| 1B | CONVENTIONAL SYMBOLS |
| 1C-1 | SURVEY CONTROL SHEET |
| 2A-1 THRU 2A-4 | PAVEMENT SCHEDULE, TYPICAL SECTIONS AND WEDGING DETAIL |
| 2B-1 THRU 2B-2 | TEMPORARY DETOUR DETAILS |
| 2B-3 | INTERSECTION AND CHANNELIZATION DETAIL SHEET |
| 2C-1 | DETAIL OF CONVERTING TB DI TO CATCH BASIN |
| 2C-2 | DETAIL OF TEMPORARY STEEL PLATES |
| 2C-3 | DETAIL OF STRUCTURE ANCHOR UNITS |
| 2C-4 | DETAIL OF ASPHALT CURB |
| 2C-5 | DETAIL OF TEMPORARY ANCHOR UNIT TYPE W-BEAM |
| 2C-6 | DETAIL OF PEDESTRIAN SAFETY RAIL |
| 2C-7 | DETAIL OF DIRECTIONAL CURB RAMP |
| 2C-8 | DETAIL OF CHAIN LINK FENCE WITH BARBED WIRE |
| 2G-1 THRU 2G-3 | STANDARD TEMPORARY WALL DETAILS |
| 2G-4 | STANDARD TEMPORARY SHORING DETAIL |
| 2G-5 THRU 2G-6 | DETAIL OF TEMPORARY RETAINING WALL ENVELOPES |
| 2H-1 | STOCKPILE CONTAINMENT DETAIL |
| 3B-1 | SUMMARY OF EARTHWORK, SUMMARY OF REMOVAL AND BREAKING OF EXISTING PAVEMENT AND FENCE SUMMARY |
| 3B-2 | GUARDRAIL SUMMARY |
| 3D-1 THRU 3D-2 | SUMMARY OF DRAINAGE QUANTITIES |
| 3G-1 | SUMMARY OF GEOTECHNICAL QUANTITIES |
| 3P-1 | PARCEL INDEX SHEET |
| 4 THRU 7 | PLAN SHEETS |
| 8 THRU 9 | PROFILE SHEETS |
| TMP-1 THRU TMP-28 | TRAFFIC MANGEMENT PLANS |
| PMP-1 THRU PMP-4 | PAVEMENT MARKING PLANS |
| EC-1 THRU EC-9 | EROSION CONTROL PLANS |
| SIGN-1 THRU SIGN-5 | SIGNING PLANS |
| SIG-1.0 THRU SIG-11.1 | SIGNAL PLANS |
| UC-1 THRU UC-5 | UTILITY CONSTRUCTION PLANS |
| UD-1 THRU UD-3 | UTILITIES BY OTHERS PLANS |
| X-1A | CROSS-SECTION SUMMARY SHEETS |
| X-1 THRU X-23 | CROSS-SECTIONS |
| S-1 THRU S-72 | STRUCTURE PLANS |
| W-1 THRU W-13 | RETAINING WALL PLANS |

2012 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, 2012 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 |
| 225.05 | Method of Obtaining Superelevation - Divided Highways |
| DIVISION 3 - PIPE CULVERTS | |
| 300.01 | Method of Pipe Installation |
| DIVISION 4 - MAJOR STRUCTURES | |
| 422.10 | Reinforced Bridge Approach Fills |
| DIVISION 5 - SUBGRADE, BASES AND SHOULDERS | |
| 560.01 | Method of Shoulder Construction - High Side of Superelevated Curve - Method I |
| DIVISION 6 - ASPHALT BASES AND PAVEMENTS | |
| 654.01 | Pavement Repairs |
| DIVISION 8 - INCIDENTALS | |
| 815.03 | Pipe Underdrain and Blind Drain |
| 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 |
| 840.14 | 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 |
| 840.29 | Frames and Narrow Slot Flat Grates |
| 840.31 | Concrete Junction Box - 12" thru 66" Pipe |
| 840.32 | Brick Junction Box - 12" thru 66" Pipe |
| 840.34 | 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 |
| 848.01 | Concrete Sidewalk |
| 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 |
| 852.05 | Median Curb for Catch Basin - for Use with 1'-6" Curb and Gutter |
| 852.06 | Method for Placement of Drop Inlets in Concrete Islands |
| 862.01 | Guardrail Placement |
| 862.02 | Guardrail Installation |
| 866.01 | Chain Link Fence - 4', 5' and 6' High Fence |
| 876.02 | Guide for Rip Rap at Pipe Outlets |

GENERAL NOTES:

2012 SPECIFICATIONS

EFFECTIVE: 01-17-12
REVISED: 07/30/12

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 & 225.05 USING THE RATE OF SUPERELEVATION AND RUNOFF SHOWN ON THE PLANS. SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

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

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.

UNDERDRAINS:
UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 815.03 AT LOCATIONS DIRECTED BY THE ENGINEER.

STREET TURNOUT:
STREET RETURNS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 848.04 USING THE RADII 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".

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: City of Concord, Windstream, Duke Net, TIME Warner, NCDOT (Communication ITS).

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS, EXCEPT AS SHOWN ON THE PLANS.

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 IN ACCORDANCE WITH STD. 848.05 AND/OR 848.06.

8/17/09

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12/05/11

Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

| | |
|--|---------|
| State Line | ----- |
| County Line | ----- |
| Township Line | ----- |
| City Line | ----- |
| Reservation Line | ----- |
| Property Line | ----- |
| Existing Iron Pin | ○ EP |
| 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 |
| Known Soil Contamination: Area or Site | ☠ ☠ |
| Potential Soil Contamination: Area or Site | ☠ ? |

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 | ✕ |
| Proposed Lateral, Tail, Head Ditch | → FLOW |
| False Sump | ▽ |

RAILROADS:

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

RIGHT OF WAY:

| | |
|--|---------|
| Baseline Control Point | ★ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | ----- |
| Proposed Right of Way Line | ----- |
| Proposed Right of Way Line with Iron Pin and Cap Marker | ○ R/W |
| Proposed Right of Way Line with Concrete or Granite R/W Marker | ○ R/W |
| Proposed Control of Access Line with Concrete CA Marker | ○ C/A |
| Existing Control of Access | ○ C/A |
| Proposed Control of Access | ○ C/A |
| Existing Easement Line | --- E |
| Proposed Temporary Construction Easement | --- E |
| Proposed Temporary Drainage Easement | --- TDE |
| Proposed Permanent Drainage Easement | --- PDE |
| Proposed Permanent Drainage / Utility Easement | --- DUE |
| Proposed Permanent Utility Easement | --- PUE |
| Proposed Temporary Utility Easement | --- TUE |
| Proposed Aerial Utility Easement | --- AUE |
| Proposed Permanent Easement with Iron Pin and Cap Marker | ○ |

ROADS AND RELATED FEATURES:

| | |
|----------------------------|-------|
| Existing Edge of Pavement | ----- |
| Existing Curb | ----- |
| Proposed Slope Stakes Cut | --- C |
| Proposed Slope Stakes Fill | --- F |
| Proposed Curb Ramp | ○ CR |
| 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 | □ Vineyard |

EXISTING STRUCTURES:

| | |
|--|-----------|
| MAJOR: | |
| Bridge, Tunnel or Box Culvert | □ CONC |
| Bridge Wing Wall, Head Wall and End Wall | □ CONC WW |
| MINOR: | |
| Head and End Wall | □ CONC HW |
| Pipe Culvert | □ |
| Footbridge | □ |
| Drainage Box: Catch Basin, DI or JB | □ CB |
| 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 | ● |
| Recorded U/G Power Line | --- P |
| Designated U/G Power Line (S.U.E.*) | --- P |

TELEPHONE:

| | |
|---|----------|
| Existing Telephone Pole | ● |
| Proposed Telephone Pole | ○ |
| Telephone Manhole | ⊕ |
| Telephone Booth | □ |
| Telephone Pedestal | □ |
| Telephone Cell Tower | ⊗ |
| U/G Telephone Cable Hand Hole | □ |
| Recorded U/G Telephone Cable | --- T |
| Designated U/G Telephone Cable (S.U.E.*) | --- T |
| Recorded U/G Telephone Conduit | --- TC |
| Designated U/G Telephone Conduit (S.U.E.*) | --- TC |
| Recorded U/G Fiber Optics Cable | --- T FO |
| Designated U/G Fiber Optics Cable (S.U.E.*) | --- T FO |

WATER:

| | |
|-------------------------------------|---------------|
| Water Manhole | ⊕ |
| Water Meter | ○ |
| Water Valve | ⊗ |
| Water Hydrant | ⊕ |
| Recorded U/G Water Line | --- W |
| Designated U/G Water Line (S.U.E.*) | --- W |
| Above Ground Water Line | --- A/G Water |

TV:

| | |
|--|-----------|
| TV Satellite Dish | ☼ |
| TV Pedestal | □ |
| TV Tower | ⊗ |
| U/G TV Cable Hand Hole | □ |
| Recorded U/G TV Cable | --- TV |
| Designated U/G TV Cable (S.U.E.*) | --- TV |
| Recorded U/G Fiber Optic Cable | --- TV FO |
| Designated U/G Fiber Optic Cable (S.U.E.*) | --- TV FO |

GAS:

| | |
|-----------------------------------|-------------|
| Gas Valve | ◇ |
| Gas Meter | ⊕ |
| Recorded U/G Gas Line | --- G |
| Designated U/G Gas Line (S.U.E.*) | --- G |
| Above Ground Gas Line | --- A/G Gas |

SANITARY SEWER:

| | |
|--|------------------------|
| Sanitary Sewer Manhole | ⊕ |
| Sanitary Sewer Cleanout | ⊕ |
| U/G Sanitary Sewer Line | --- SS |
| Above Ground Sanitary Sewer | --- A/G Sanitary Sewer |
| Recorded SS Forced Main Line | --- FSS |
| Designated SS Forced Main Line (S.U.E.*) | --- FSS |

MISCELLANEOUS:

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

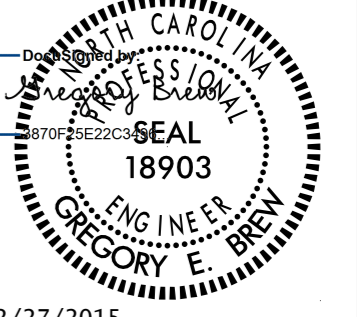
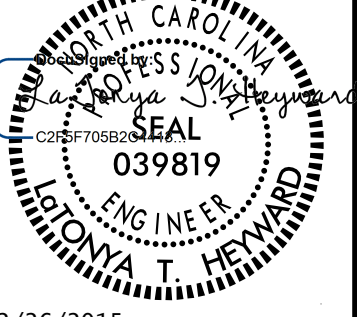
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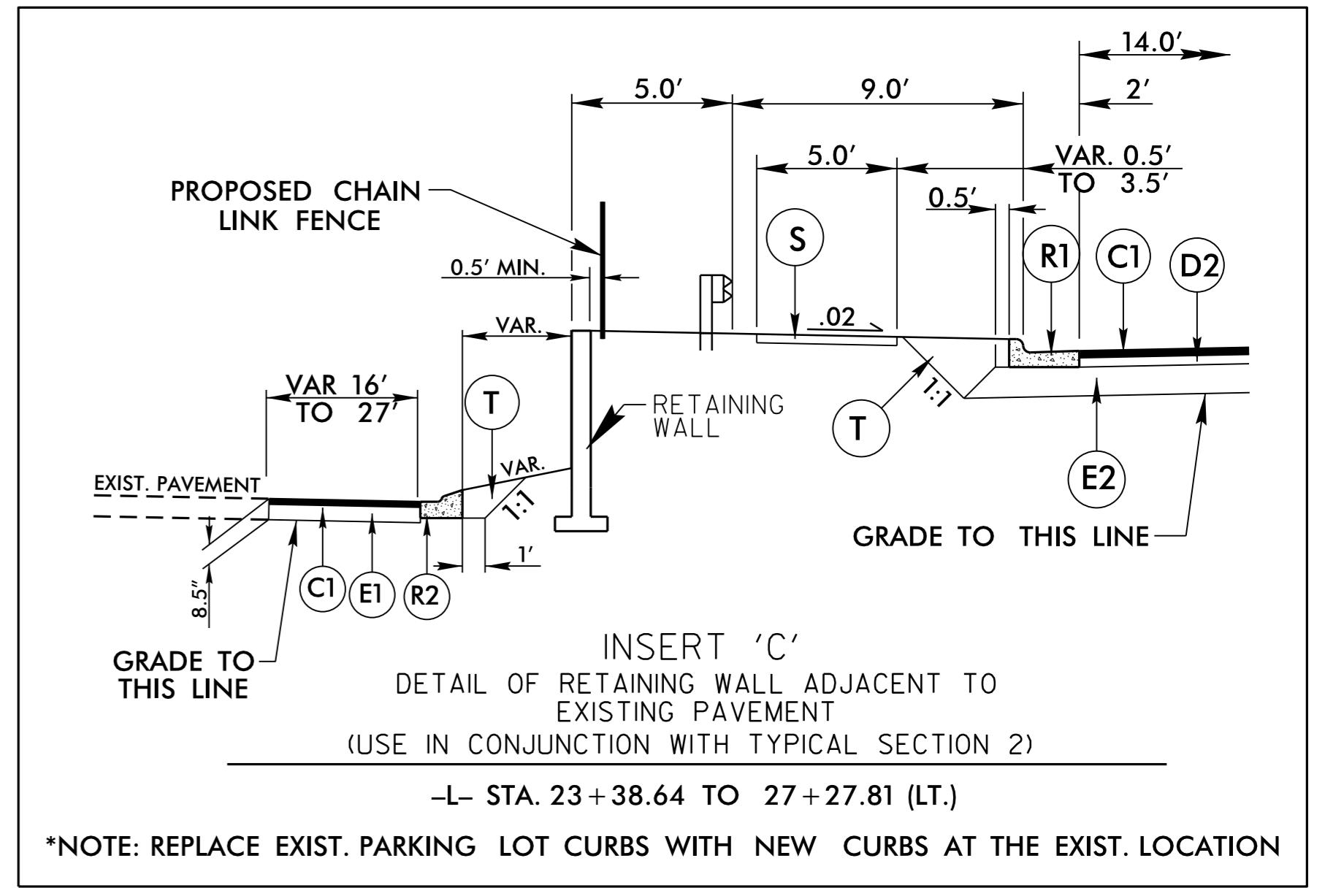
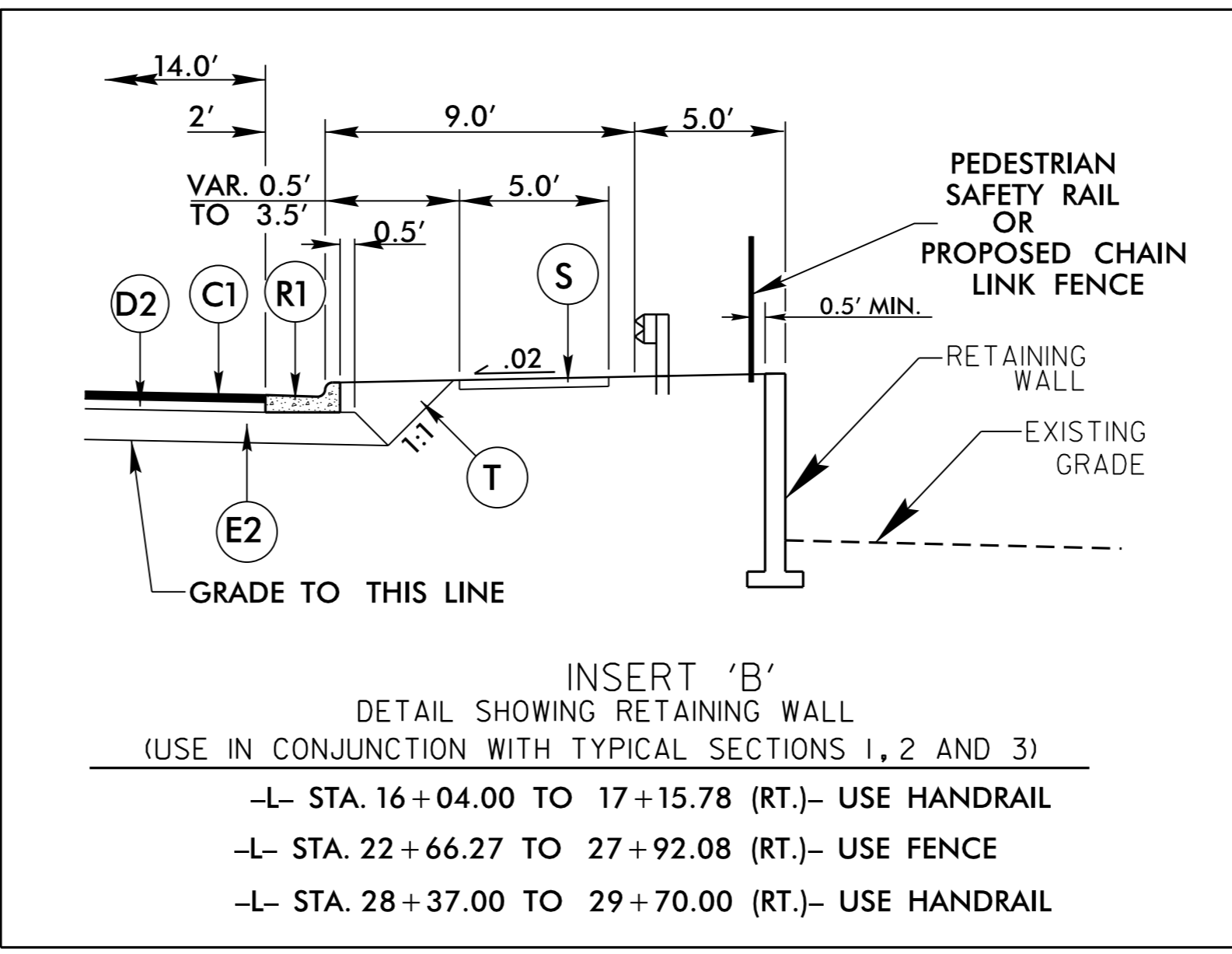
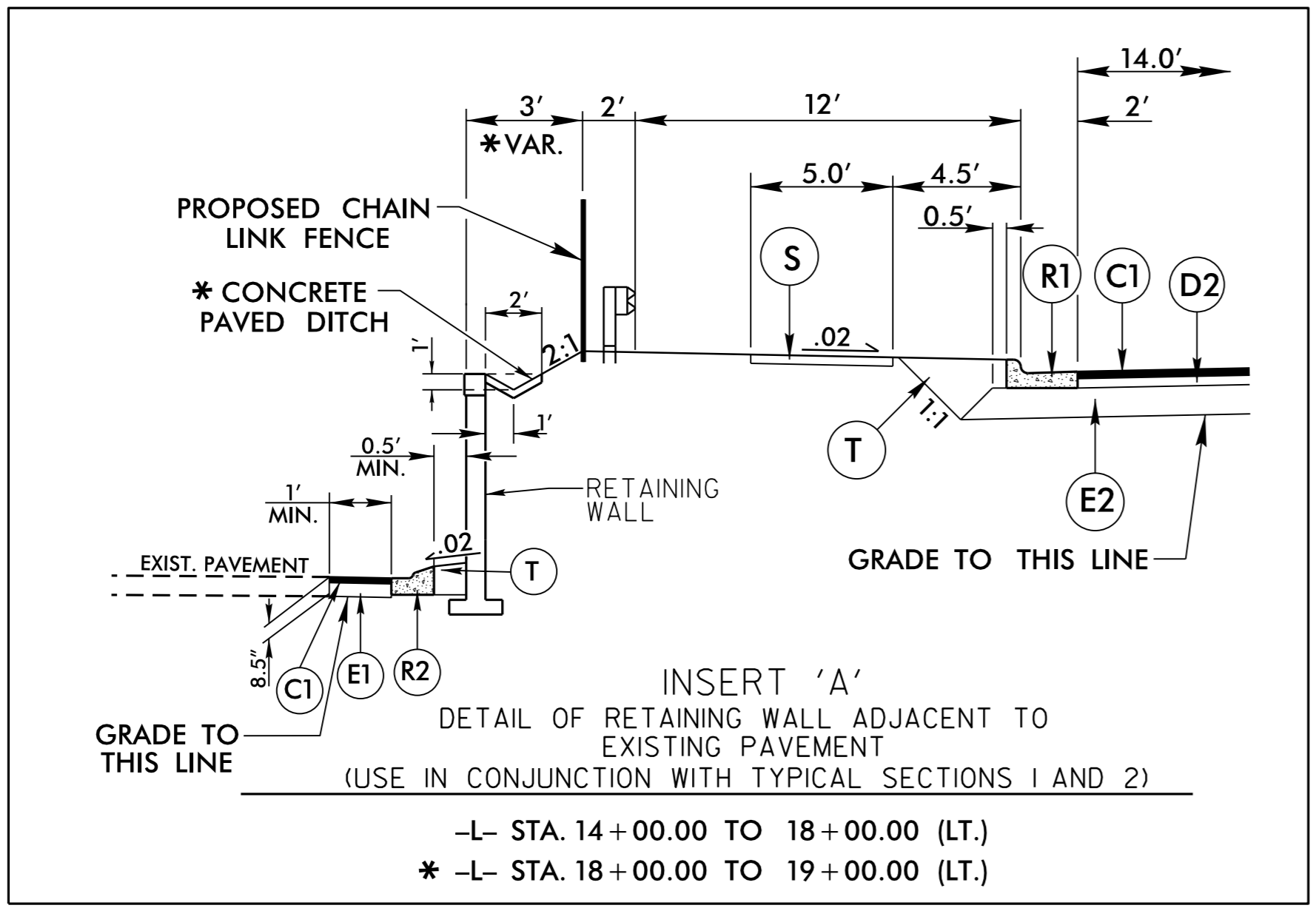
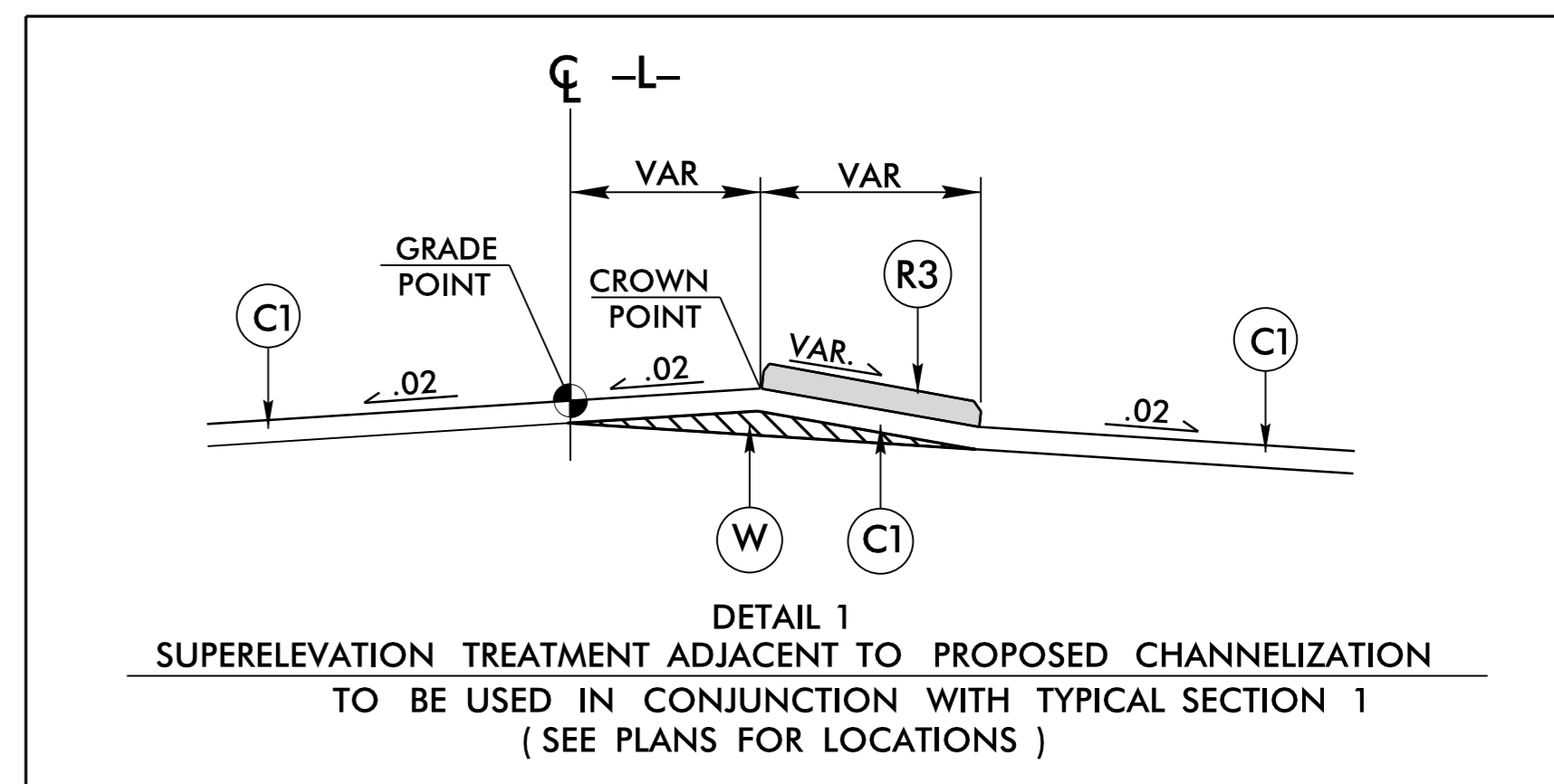
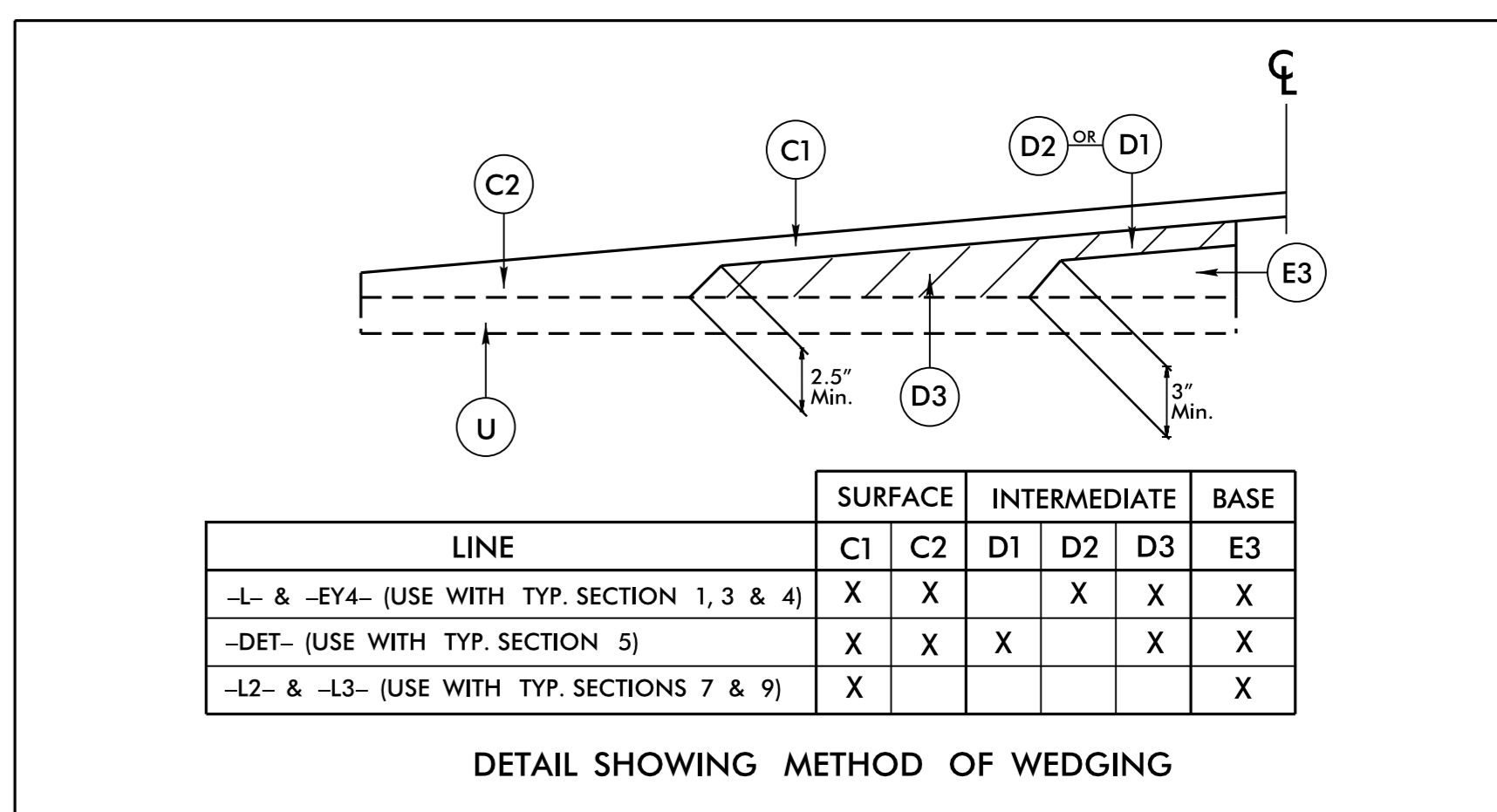
FINAL PAVEMENT SCHEDULE

| | | | |
|----|---|----|---|
| 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. | J | PROP. 8" AGGREGATE BASE COURSE |
| 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. | R1 | 2'-6" CONCRETE CURB AND GUTTER |
| D1 | PROP. APPROX 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD. | R2 | 1'-6" CONCRETE CURB AND GUTTER. |
| D2 | PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | R3 | 5" MONOLITHIC CONCRETE ISLAND. |
| D3 | PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH. | R4 | 8" X 6" ASPHALT CURB |
| E | PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD. | S | 4" CONCRETE SIDEWALK. |
| E1 | PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD. | T | EARTH MATERIAL. |
| E2 | PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS. | U | EXISTING PAVEMENT. |
| E3 | 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. | W | VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL) |

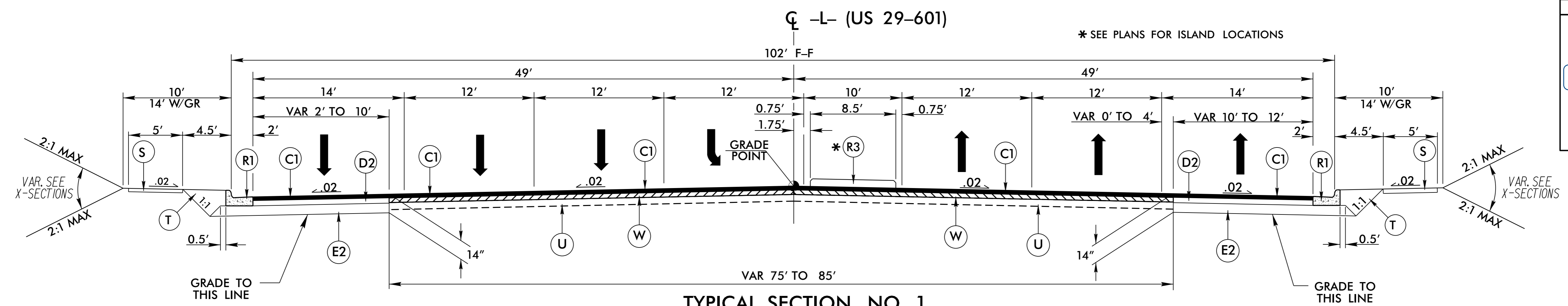
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
 2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
 3. SEE PLANS FOR LOCATION OF TURN LANES

| | |
|--|---|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 2A-1 |
| ROADWAY DESIGN ENGINEER  | PAVEMENT DESIGN ENGINEER  |
| 2/27/2015 | 2/26/2015 |



20-FEB-2015 08:51 B5136_Rdy_tup.dgn

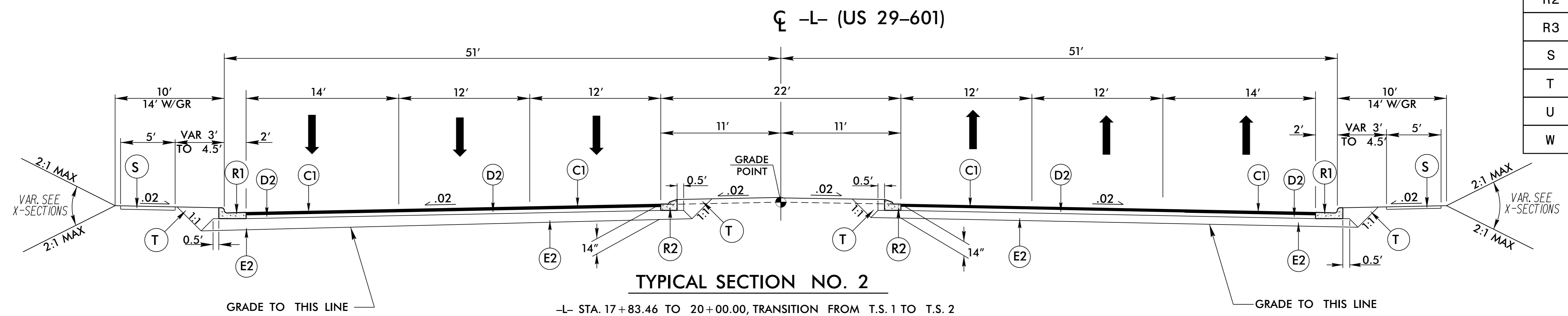


TYPICAL SECTION NO. 1

-L- STA. 11+75 TO 12+75, OVERLAY EXISTING PAVEMENT
-L- STA. 12+75.00 TO 17+83.46

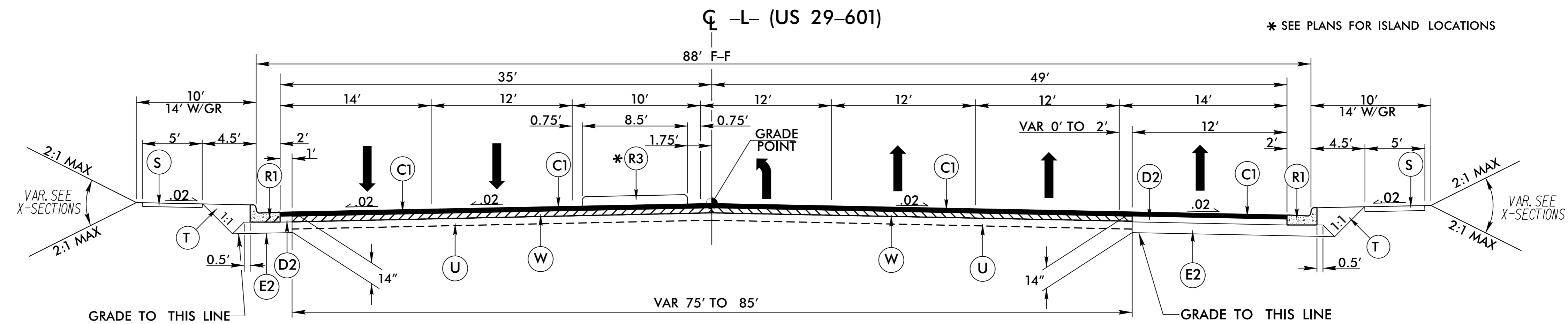
FINAL PAVEMENT DESIGN

| | |
|----|---------------|
| C1 | 3" S9.5C |
| D1 | 2 1/2" I19.0C |
| D2 | 4" I19.0C |
| E1 | 5.5" B25.0C |
| E2 | 7" B25.0C |
| J | 8" ABC |
| R1 | 2'-6" C & G |
| R2 | 1'-6" C & G |
| R3 | CONC. ISLAND |
| S | 4" SIDEWALK |
| T | EARTH MAT. |
| U | EXIST PAVE |
| W | WEDGING |



TYPICAL SECTION NO. 2

-L- STA. 17+83.46 TO 20+00.00, TRANSITION FROM T.S. 1 TO T.S. 2
-L- STA. 20+00.00 TO 20+46.56 (BEGIN BRIDGE)
-L- STA. 23+02.31 (END BRIDGE) TO 26+93.78
-L- STA. 26+93.78 TO 28+37.74, TRANSITION FROM T.S. 2 TO T.S. 3



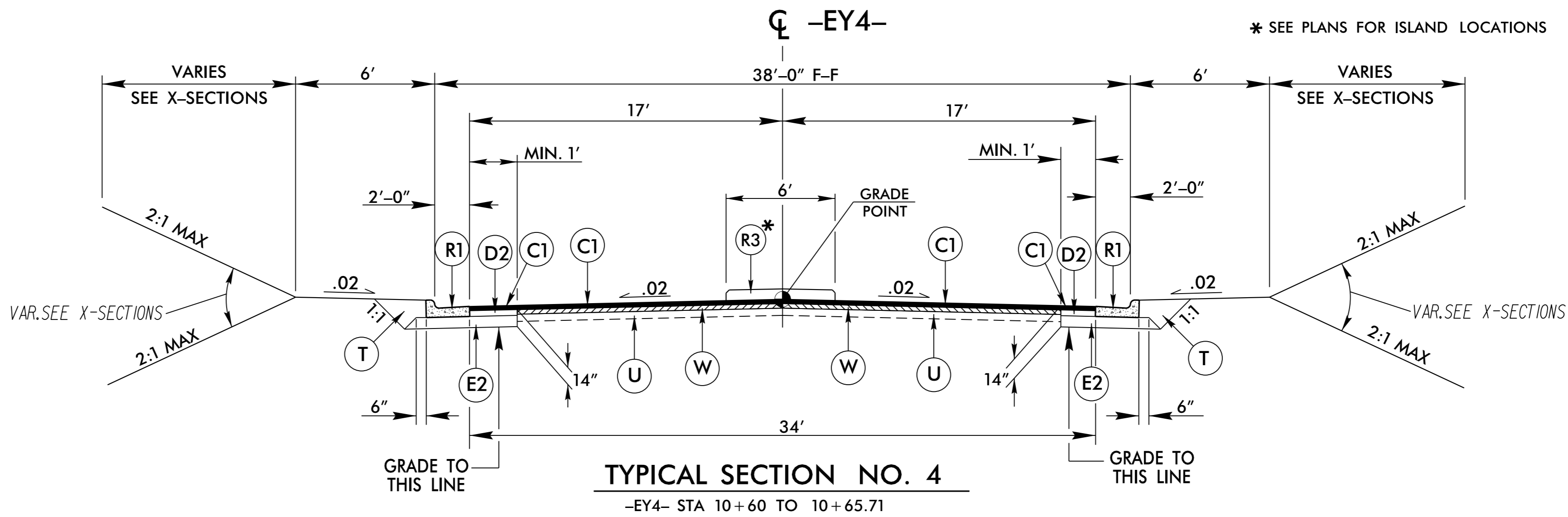
TYPICAL SECTION NO. 3

-L- STA. 28+37.74 TO 30+50.00
-L- STA. 30+50 TO 31+30, TRANSITION FROM T.S. 3 TO EXIST. PAVEMENT

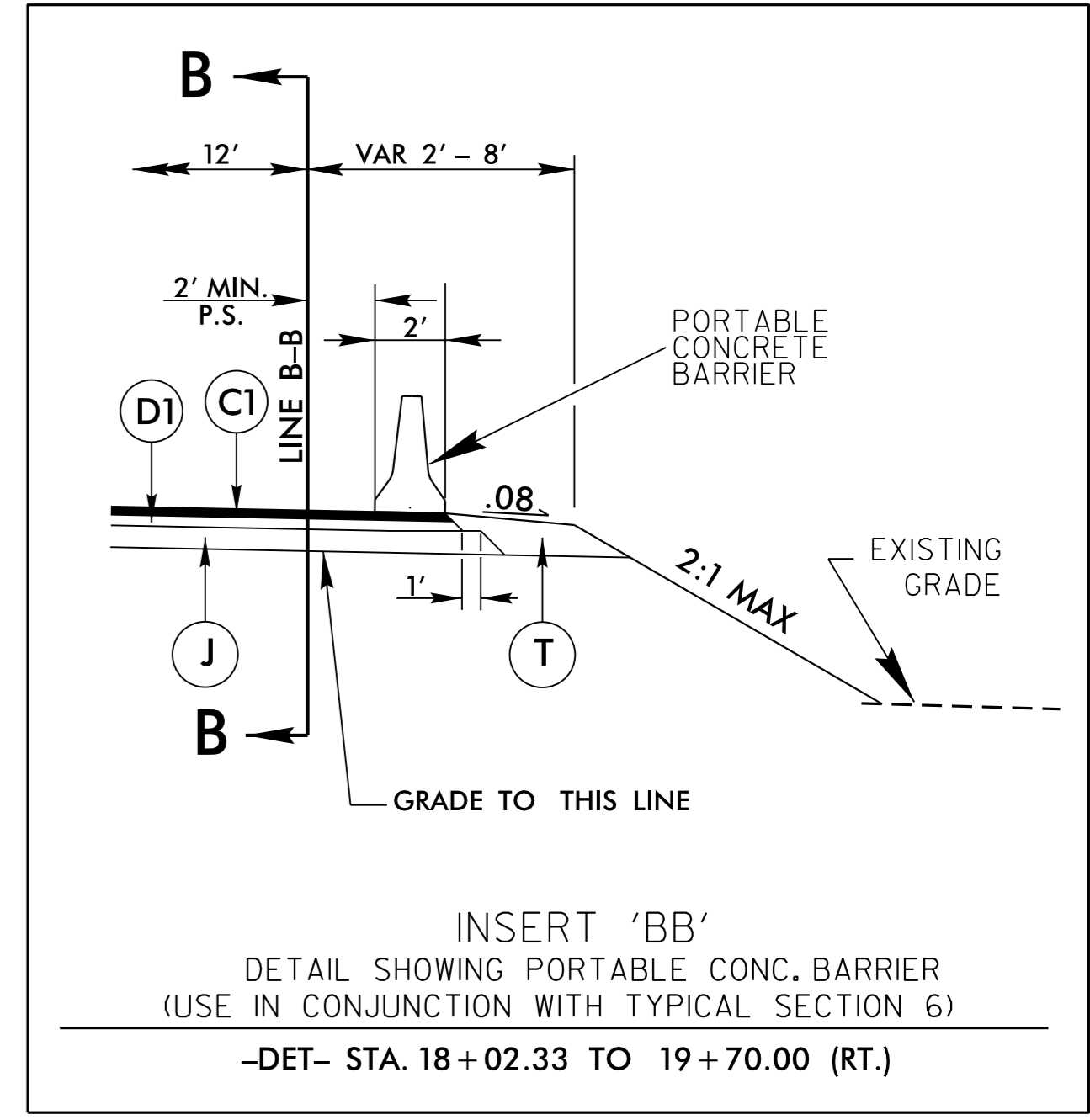
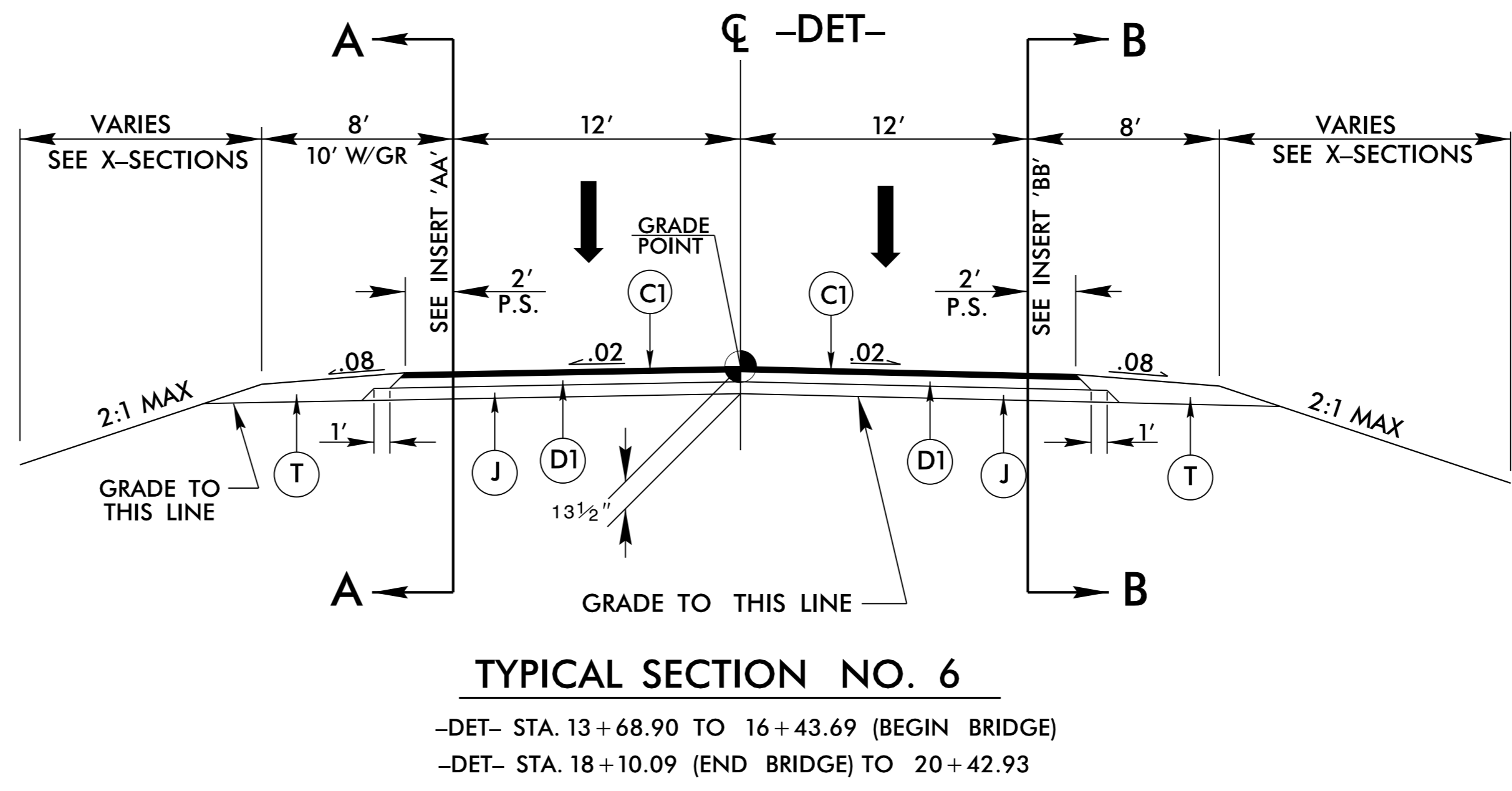
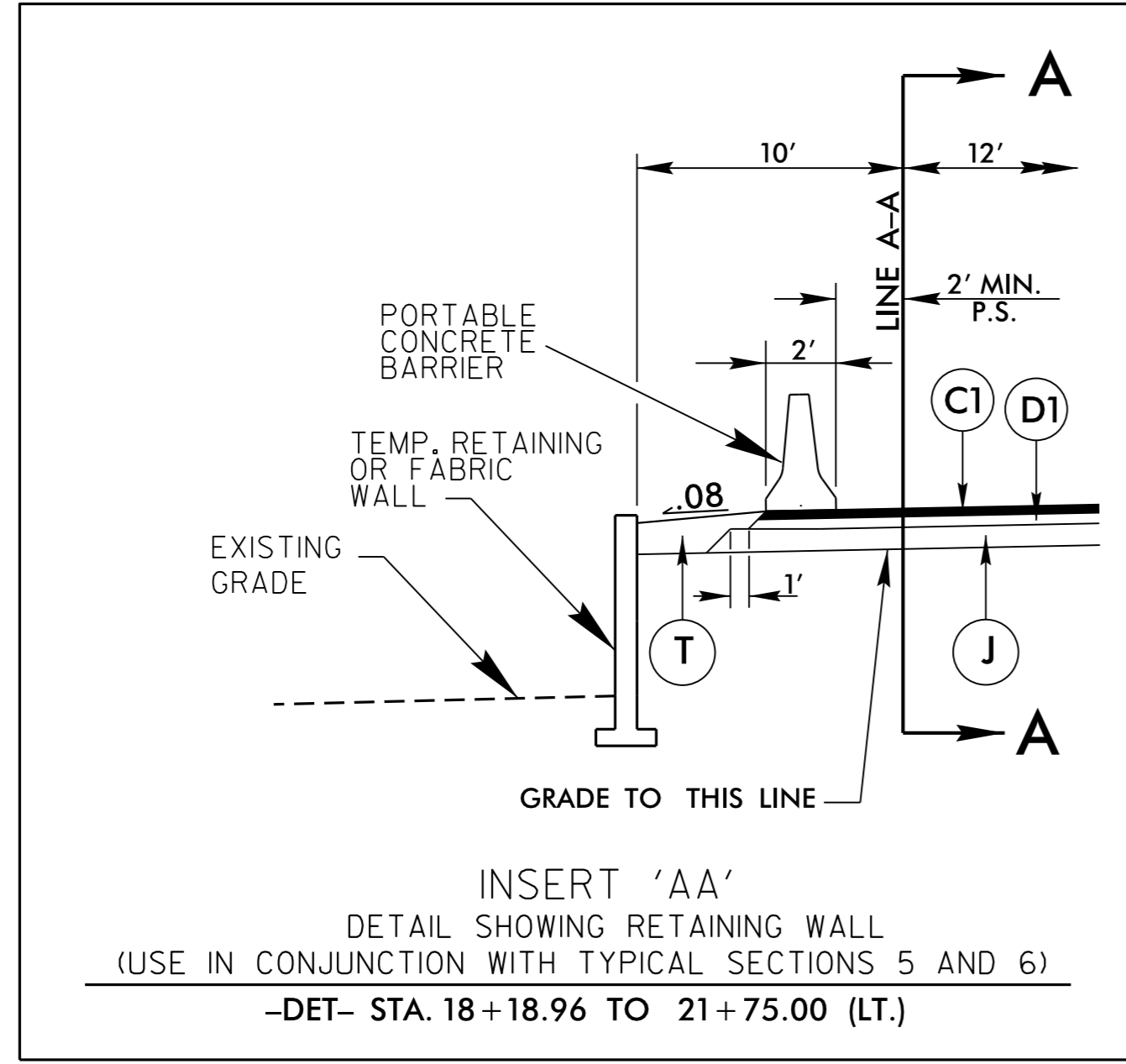
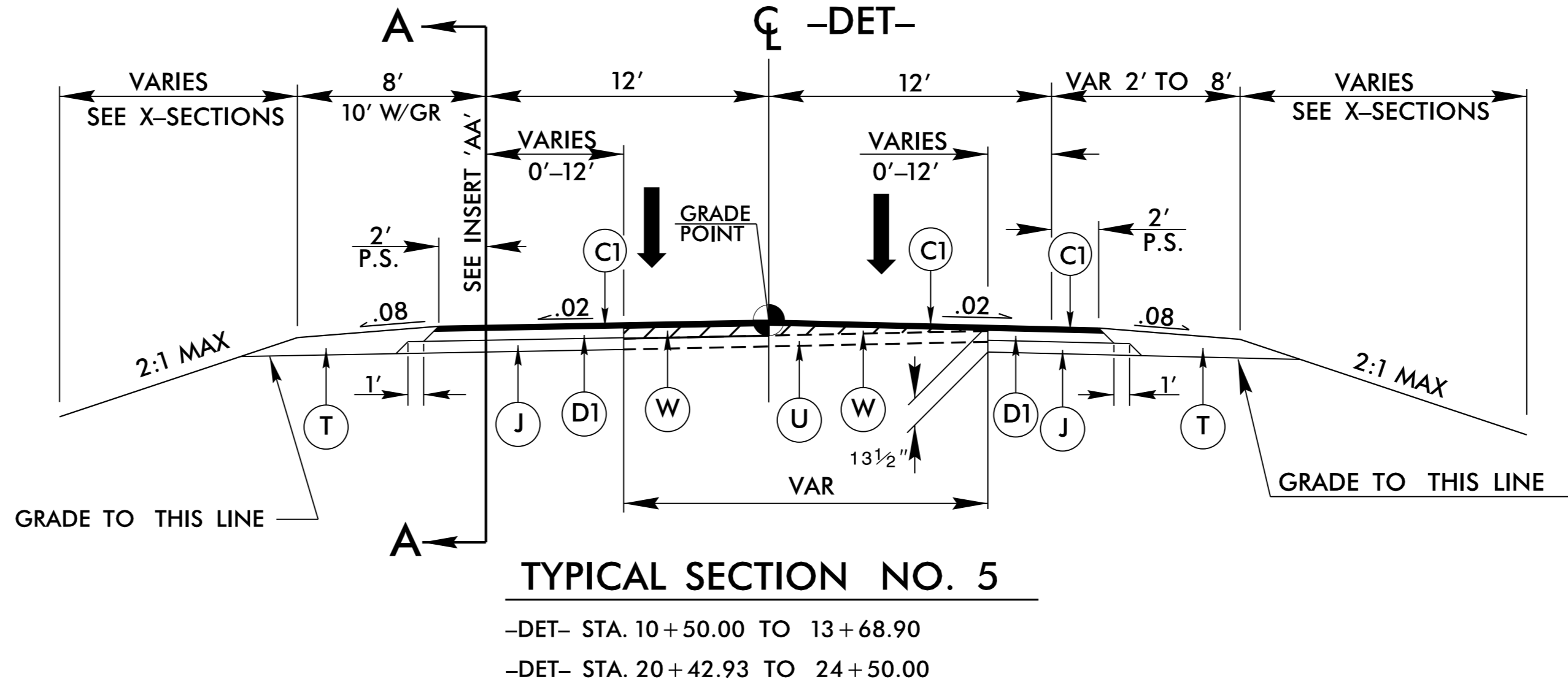
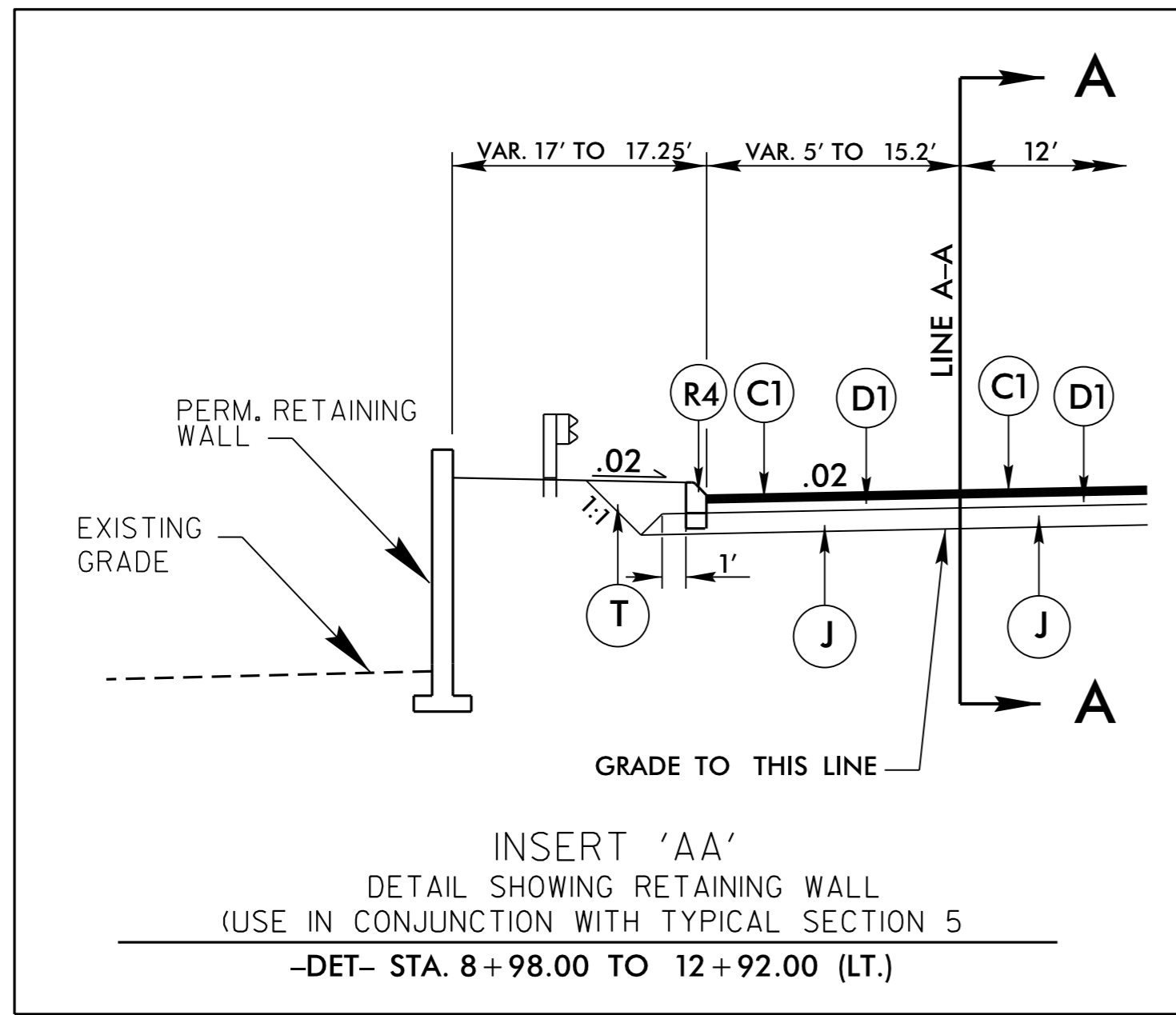
NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES

6/2/99

12 JAN 2015 09:56 B5136_RdJ_tup.dgn
12:50:58 PM

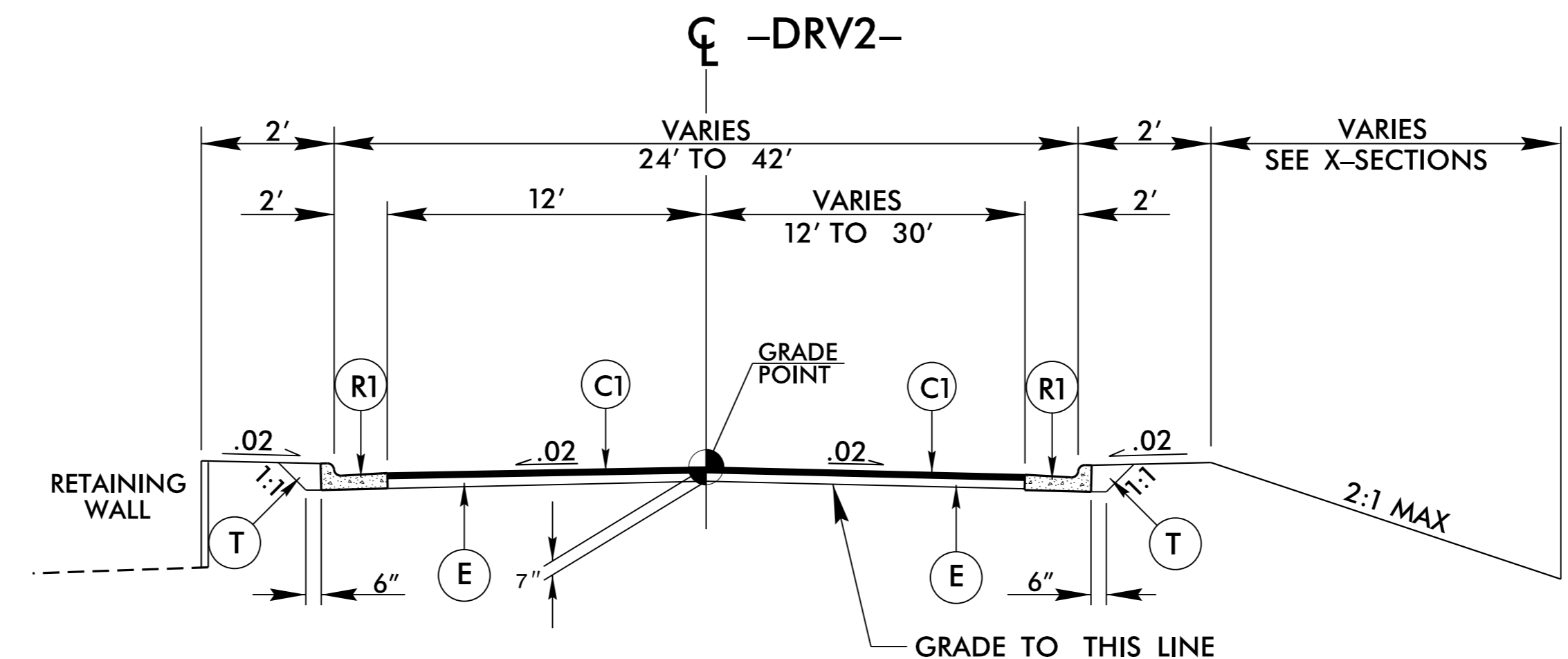


| FINAL PAVEMENT DESIGN | |
|-----------------------|------------------|
| C1 | 3" S9.5C |
| D1 | 2½" I19.0C |
| D2 | 4" I19.0C |
| E1 | 5.5" B25.0C |
| E2 | 7" B25.0C |
| J | 8" ABC |
| R1 | 2'-6" C & G |
| R2 | 1'-6" C & G |
| R3 | CONC. ISLAND |
| R4 | 8"X6" ASPH. CURB |
| S | 4" SIDEWALK |
| T | EARTH MAT. |
| U | EXIST PAVE |
| W | WEDGING |



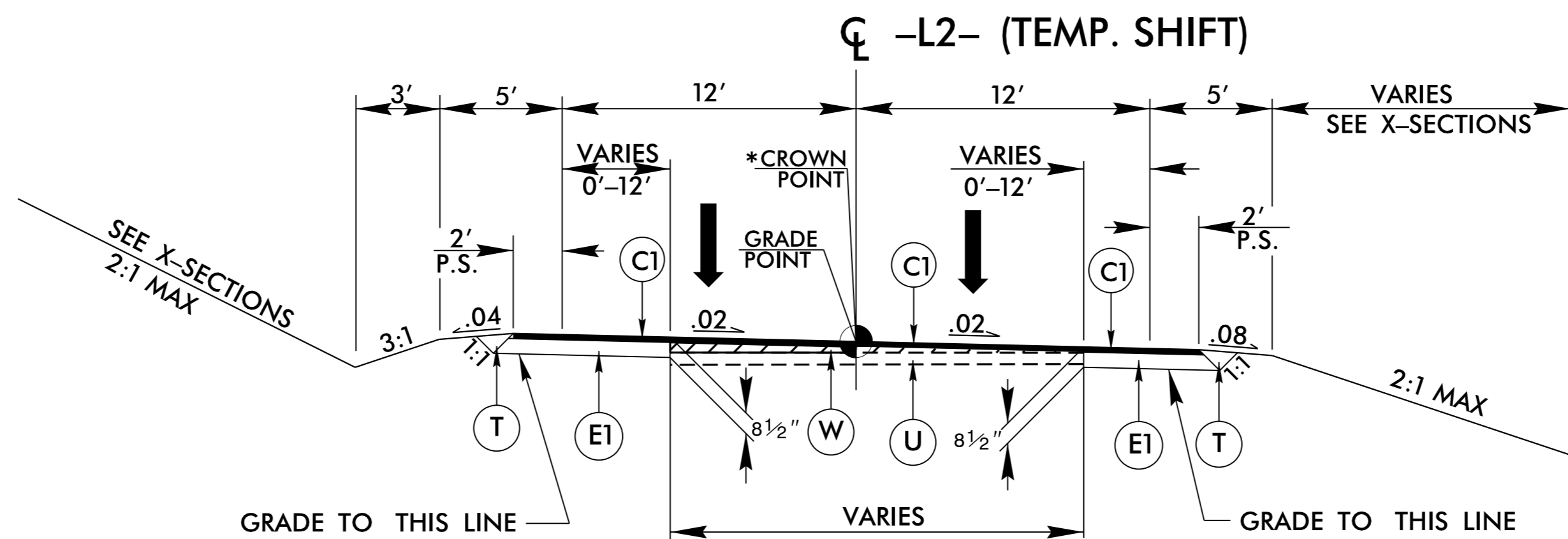
NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
3. SEE PLANS FOR LOCATION OF TURN LANES

13-JAN-2015 10:09 R:\PROJECTS\2015\B5136-RdJ-typ.dgn



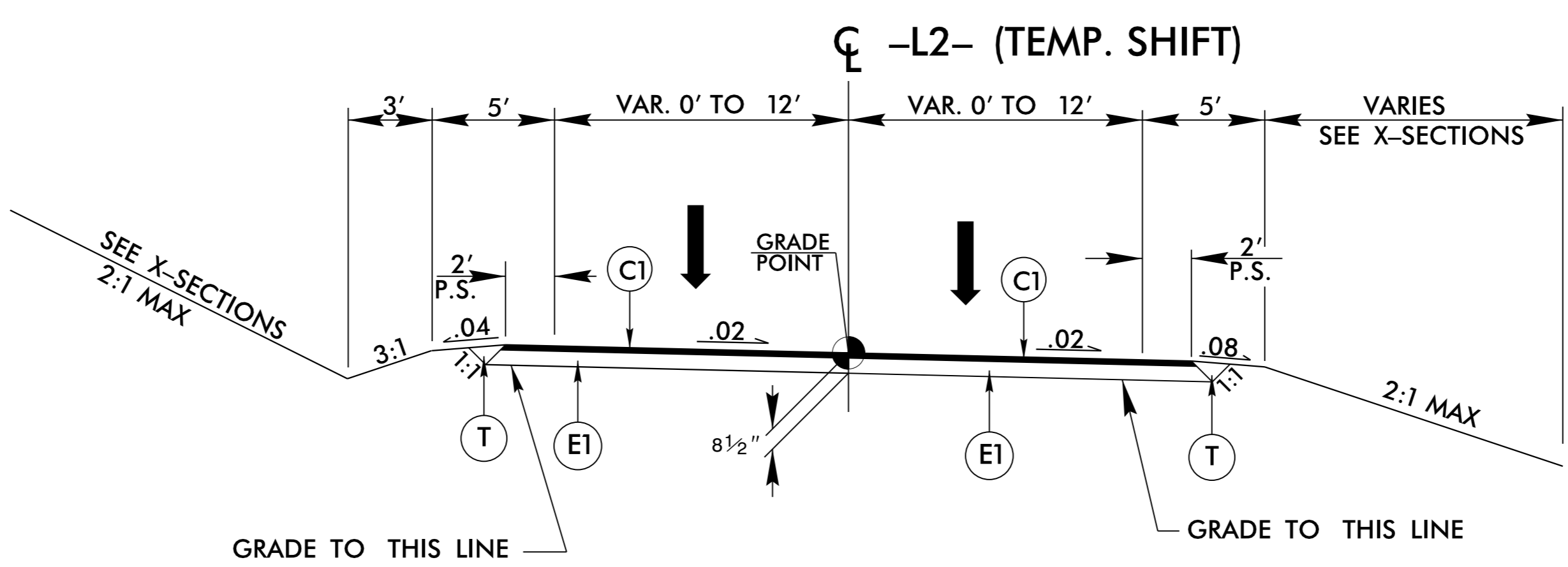
TYPICAL SECTION NO. 8

-DRV2- STA. 10+70.39 TO 10+90.00
 -DRV2- STA. 10+90.00 TO 11+10.00, TRANSITION FROM T.S. 8 TO EXISTING



TYPICAL SECTION NO. 9

-L2- STA. 17+00.00 TO 20+30.00
 * -L2- STA. 20+30.00 TO 20+52.89
 -L2- STA. 23+50.00 TO 25+30.00



TYPICAL SECTION NO. 10

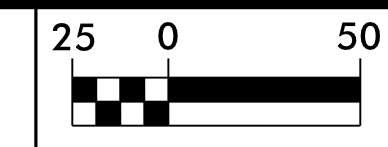
-L2- STA. 25+30.00 TO 26+79.23
 -L2- STA. 26+79.23 TO 27+60.00, TRANSITION FROM T.S. 10 TO EXISTING

| FINAL PAVEMENT DESIGN | |
|-----------------------|--------------|
| C1 | 3.0" S9.5C |
| D1 | 2.5" I19.0C |
| D2 | 4.0" I19.0C |
| E | 4.0" B25.0C |
| E1 | 5.5" B25.0C |
| E2 | 7.0" B25.0C |
| J | 8.0" ABC |
| R1 | 2'-6" C & G |
| R2 | 1'-6" C & G |
| R3 | CONC. ISLAND |
| S | 4" SIDEWALK |
| T | EARTH MAT. |
| U | EXIST PAVE |
| W | WEDGING |

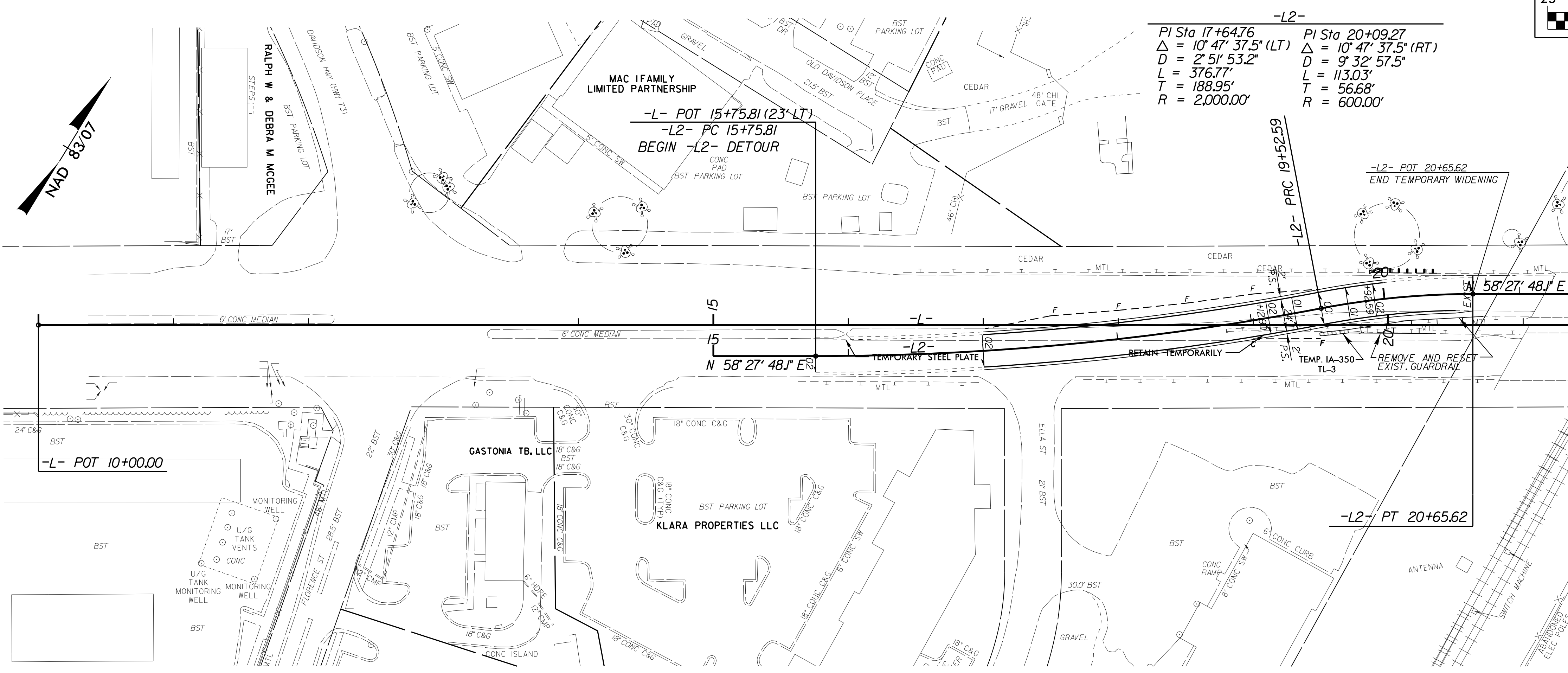
NOTES: 1. ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.
 2. SHOULDER ROLLOVER NOT TO EXCEED 0.06 (TYP).
 3. SEE PLANS FOR LOCATION OF TURN LANES

6/2/09

20 JAN 2015 12:23 B5136_Rdy_typ.dgn



| | |
|--|--------------------------|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 2B-1 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| SEE SHEET 4 FOR PLANS | |

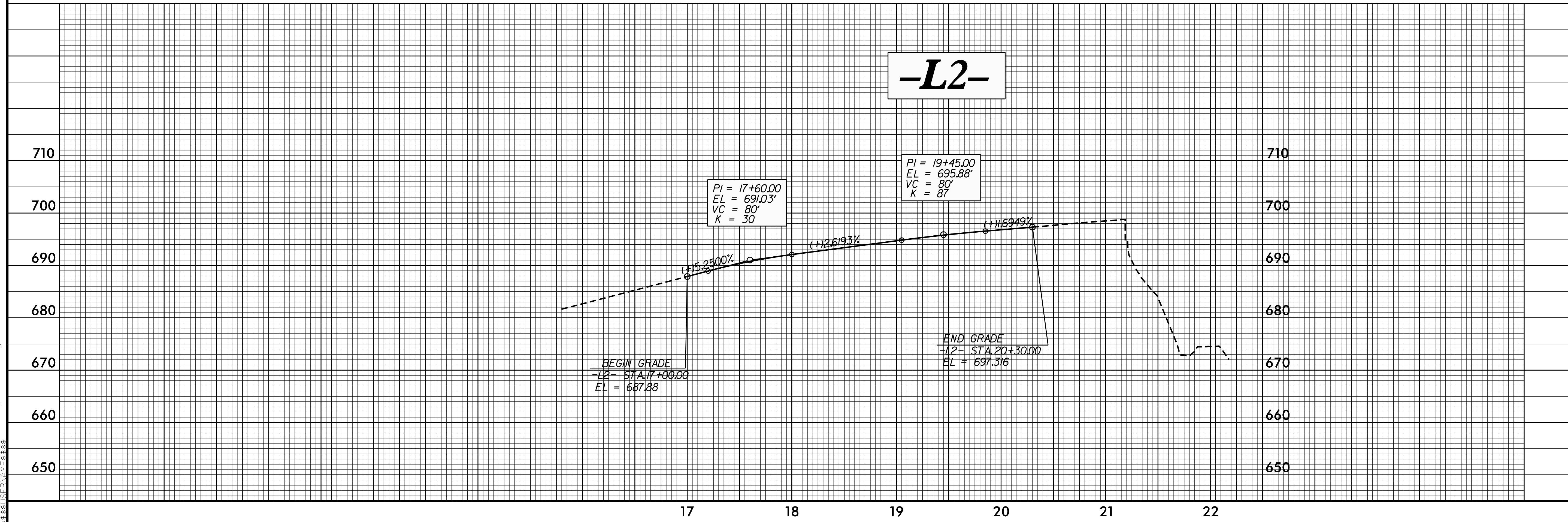


-L2-
 PI Sta 17+64.76 PI Sta 20+09.27
 $\Delta = 10' 47' 37.5''$ (LT) $\Delta = 10' 47' 37.5''$ (RT)
 $D = 2' 51' 53.2''$ $D = 9' 32' 57.5''$
 $L = 376.77'$ $L = 113.03'$
 $T = 188.95'$ $T = 56.68'$
 $R = 2,000.00'$ $R = 600.00'$

USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION (UTILIZING EXITING BRIDGE)

DETOUR DESIGN SPEED= 35 MPH MAX.

MATCH LINE -L2- STA 18+00 SEE SHEET 2B-2

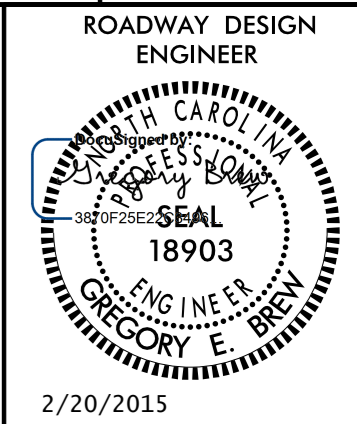


8/17/99

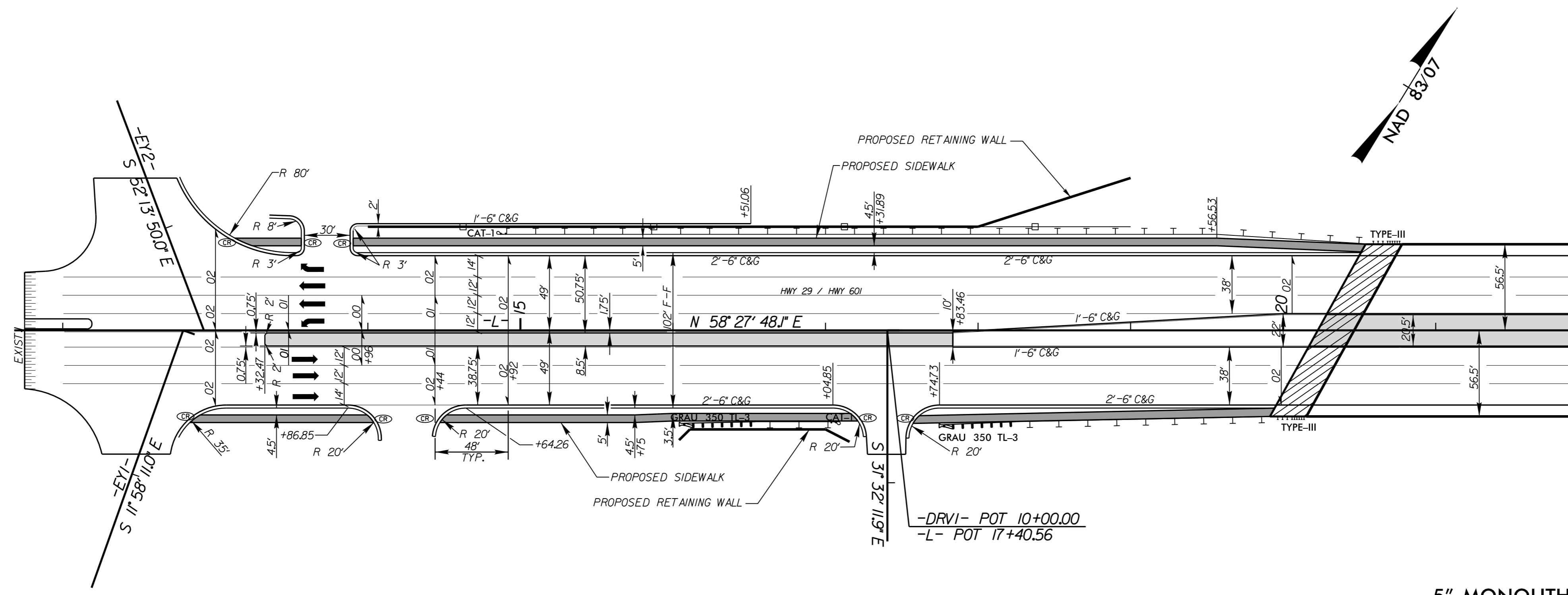
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5/14/99

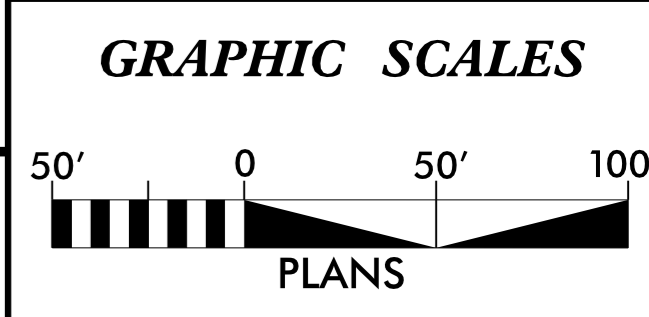
CHANNELIZATION DETAIL



2/20/2015

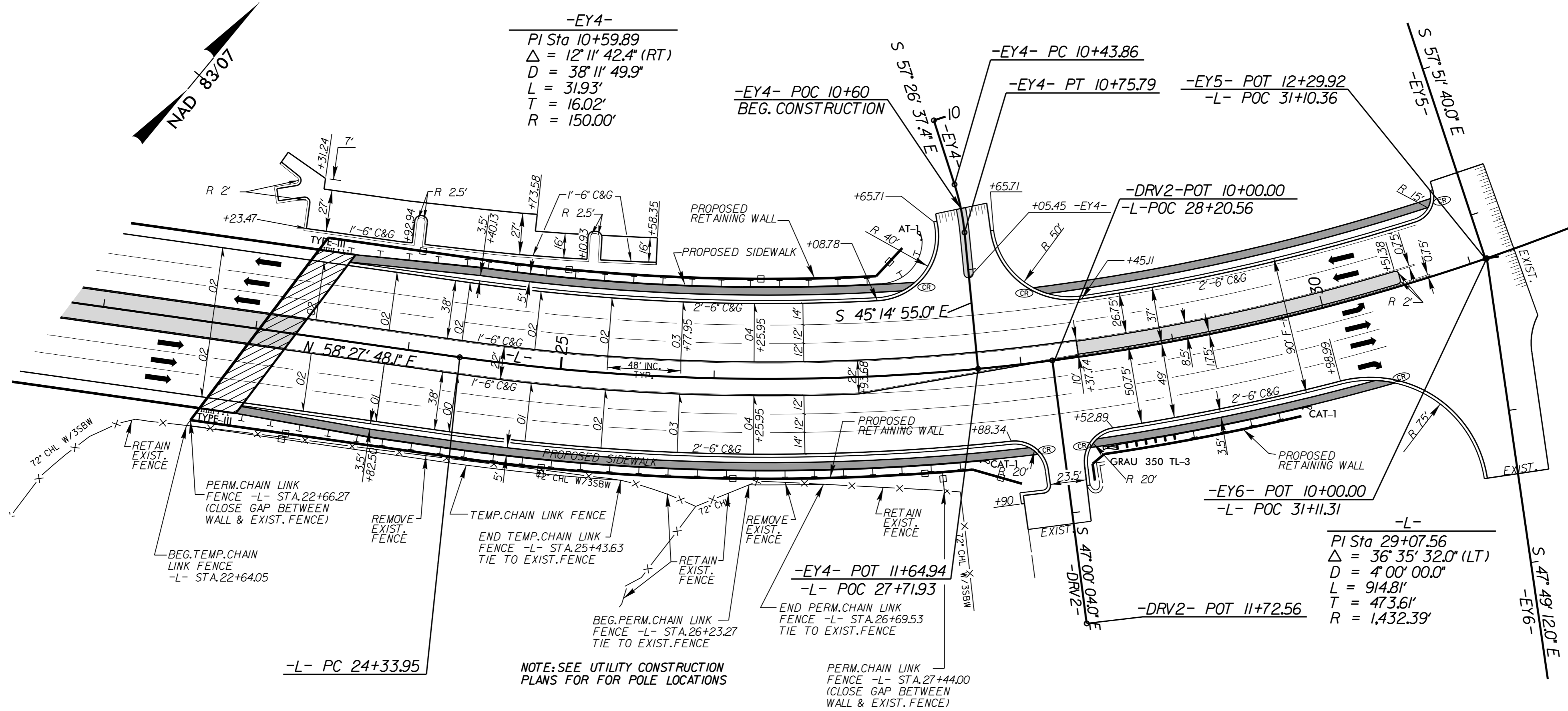


5" MONOLITHIC CONC. ISLAND



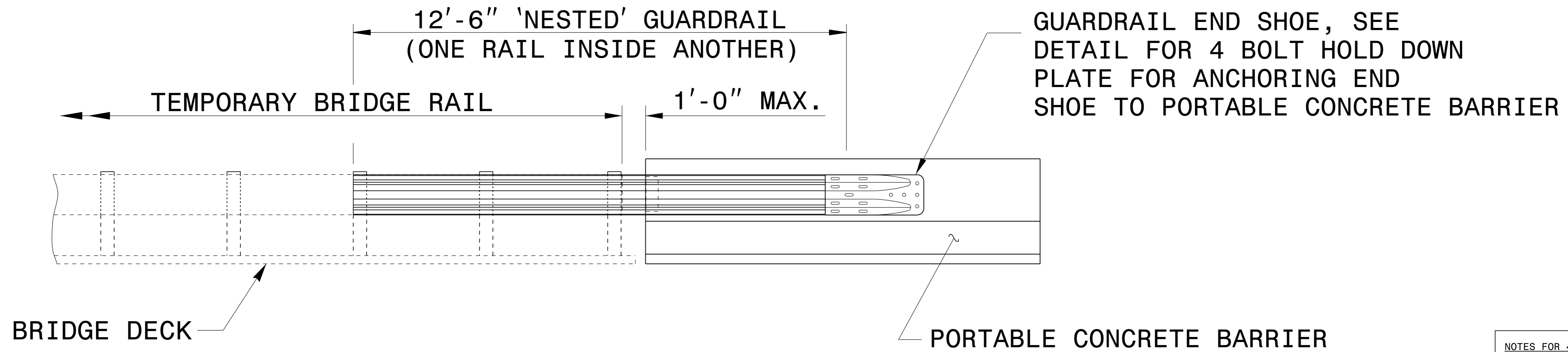
FOR PLANS OF -L- SEE SHEET 5

CHANNELIZATION DETAIL

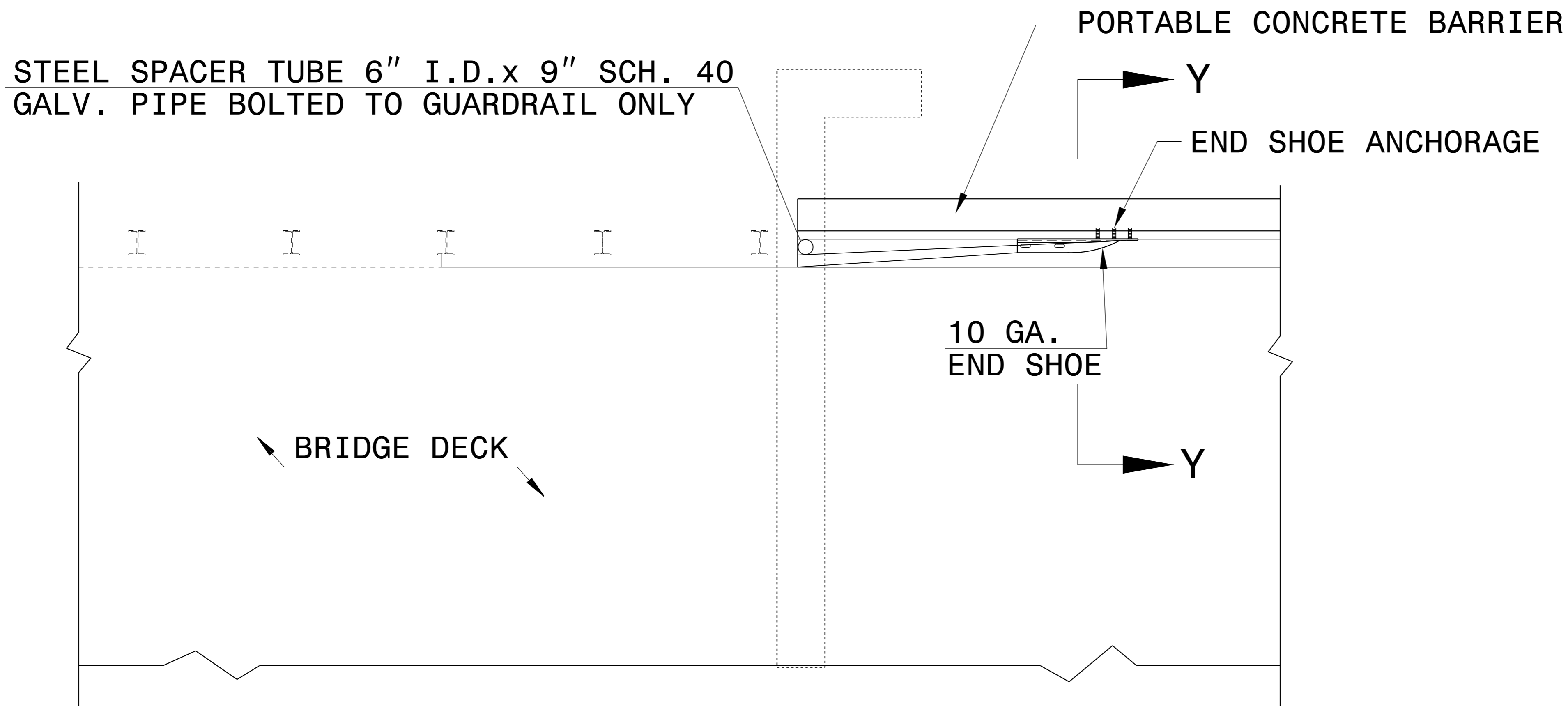


5" MONOLITHIC CONC. ISLAND

20-FEB-2015 09:26:36 - rdj...EY4_psh.2B-3.dgn



ELEVATION VIEW



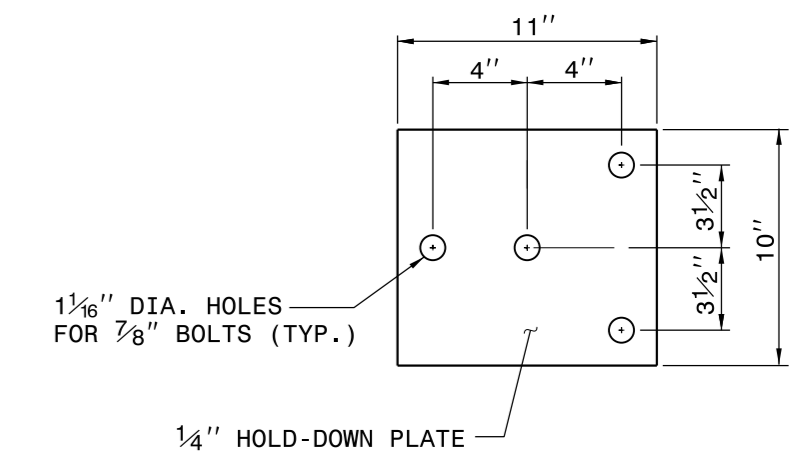
PLAN VIEW

NOTES FOR 4 BOLT HOLD DOWN PLATE

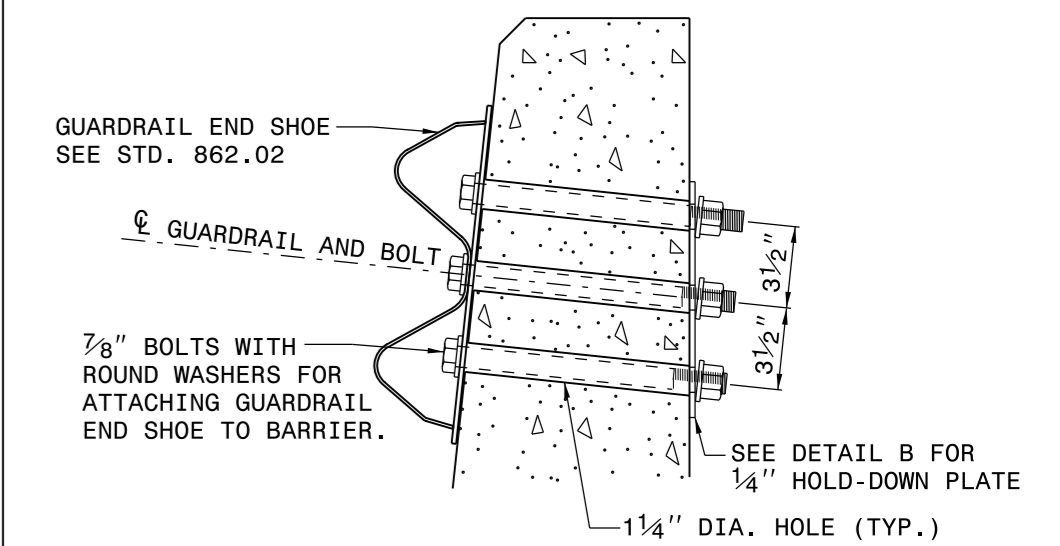
THE GUARDRAIL ANCHOR ASSEMBLY SHALL CONSIST OF A 1/4" HOLD DOWN PLATE AND 4 - 7/8" DIA. BOLTS WITH NUTS AND WASHERS.

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

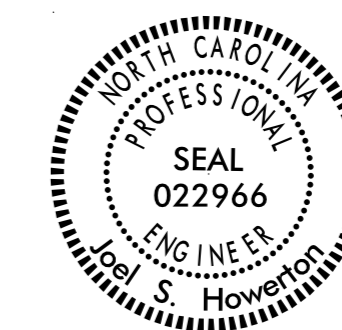
AFTER INSTALLATION, THE EXPOSED THREAD OF THE BOLT SHALL BE BURRED WITH A SHARP POINTED TOOL. THE 1/4" DIA. HOLES SHALL BE FORMED OR DRILLED WITH A CORE BIT. IMPACT TOOLS WILL NOT BE PERMITTED. ANY CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.



4 BOLT HOLD DOWN PLATE



PART SECTION OF BARRIER OR RAIL THRU END SHOE SECTION AND 4 BOLT HOLD DOWN PLATE



DocuSigned by:
Joel Howerton
873F3D17DCDC45F

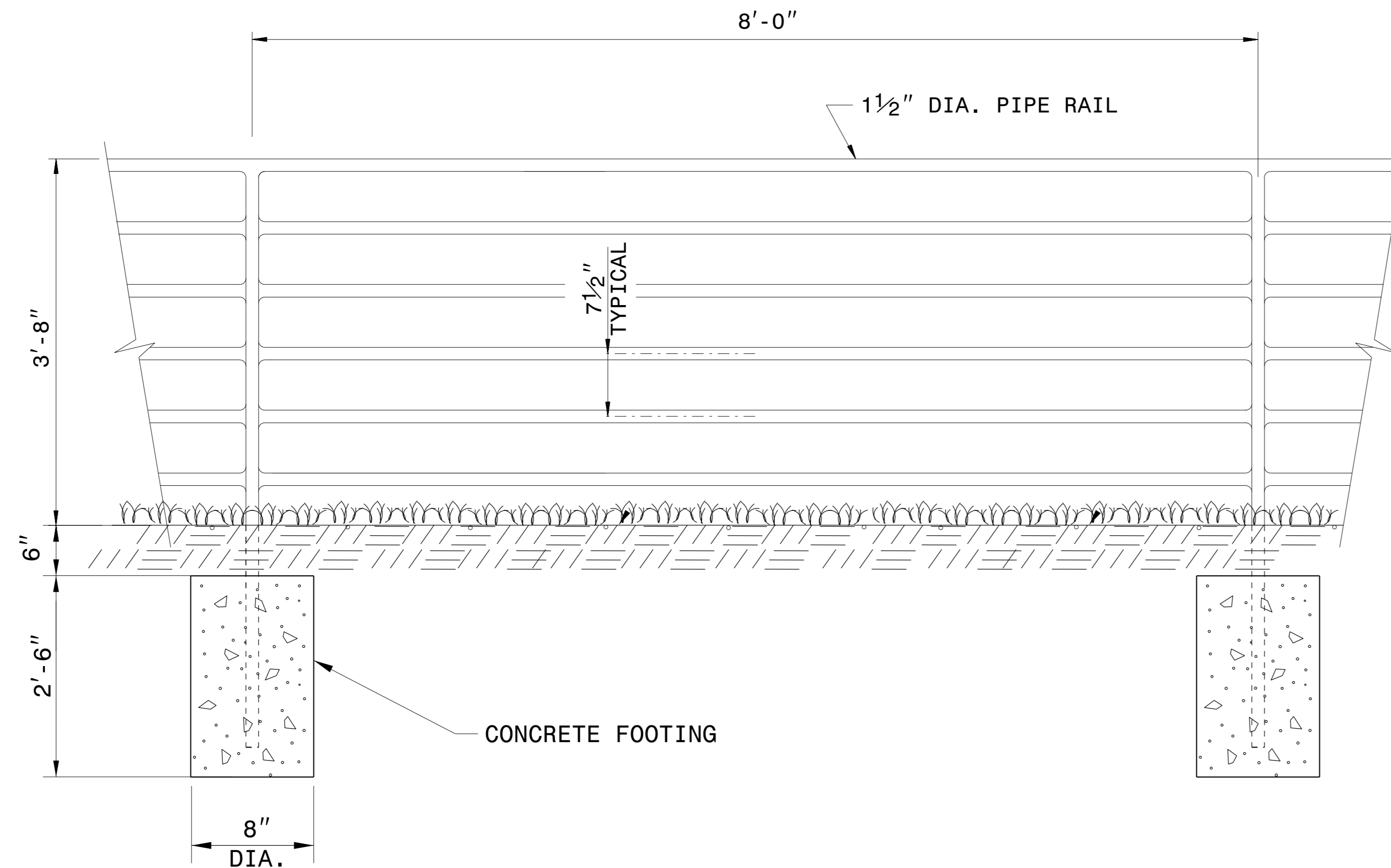
1/21/2015

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

TEMPORARY ANCHOR UNIT TYPE W-BEAM

ORIGINAL BY: E.E. WARD DATE: 10-03
 MODIFIED BY: DATE: _____
 CHECKED BY: DATE: _____
 FILE SPEC.: /usr/details/stand/862stds/anc.dgn

5/14/99
 TIME
 USERNAME
 \$\$\$



ELEVATION OF HANDRAIL

NOTES:

CONSTRUCT PROPOSED STEEL PIPE RAIL OF 1 1/2" DIAMETER SCHEDULE 40 PLAIN END GALVANIZED STEEL PIPE MEETING THE REQUIREMENTS OF ASTM A53.

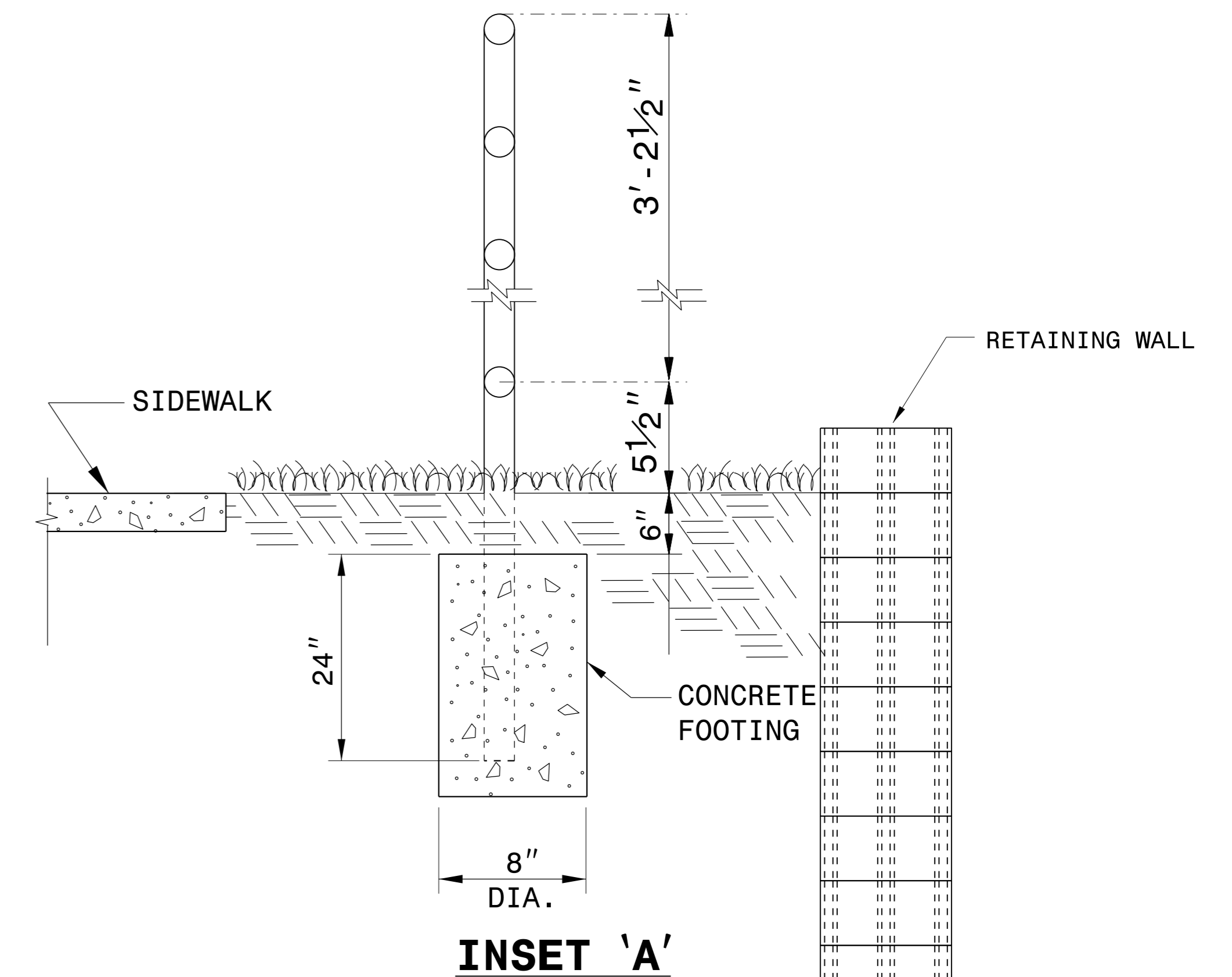
REPAIR GALVANIZING IN ACCORDANCE WITH SECTION 1076 OF THE NCDOT STANDARD SPECIFICATIONS.

PAINT, IF REQUIRED BY THE ENGINEER, IN ACCORDANCE WITH SECTION 1080 OF THE STANDARD SPECIFICATIONS.

WELD IN ACCORDANCE WITH ARTICLE 1072-18 OF THE STANDARD SPECIFICATIONS.

USE CLASS 'B' CONCRETE FOR HANDRAIL FOOTINGS.

PLACEMENT OF HANDRAIL IN RELATION TO RETAINING WALL AND SIDEWALK MAY BE MODIFIED AS DIRECTED BY THE ENGINEER.



DocuSigned by:
Joel Howerton
87983D170CC48F...

1/21/2015

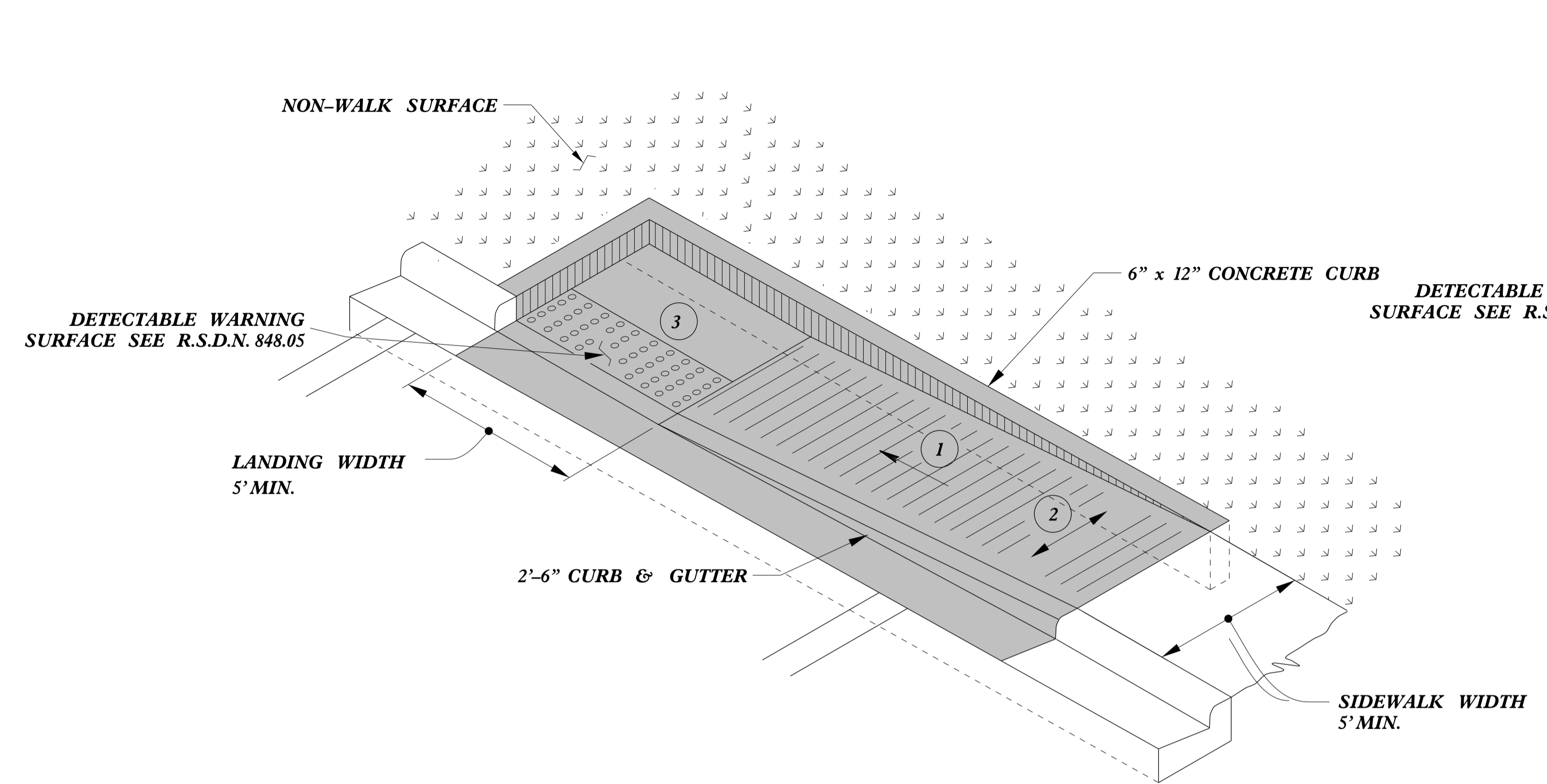
**CONTRACT STANDARDS
AND DEVELOPMENT UNIT**
Office 919-707-6950 FAX 919-250-4119

PROPOSED PEDESTRIAN SAFETY RAIL

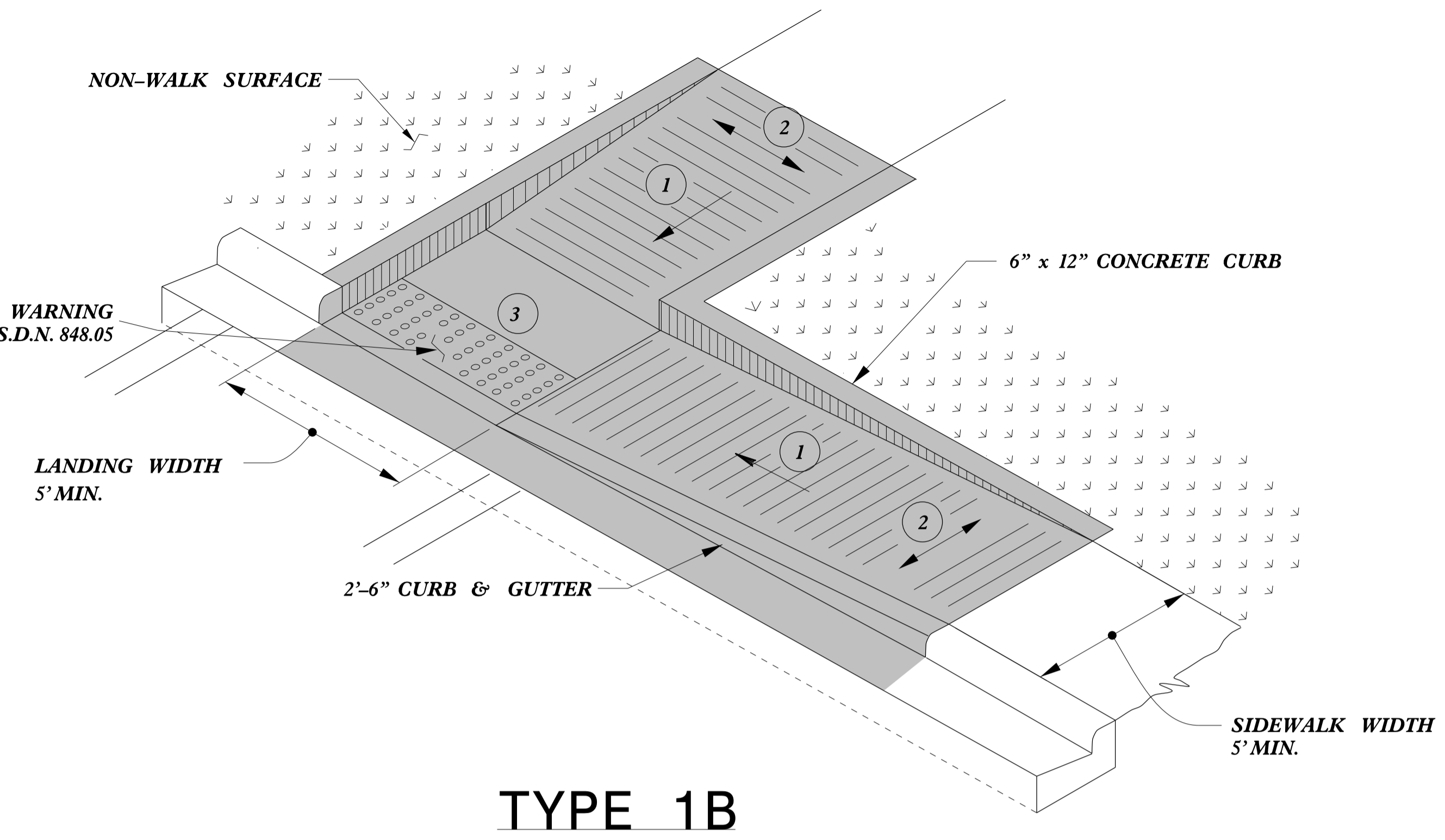
ORIGINAL BY: E.E. WARD DATE: 12-99
 MODIFIED BY: DATE:
 CHECKED BY: DATE:
 FILE SPEC.: jhowerton/handrail on retaining_wall.dgn

\$\$\$\$\$
 TIME\$\$\$\$\$
 Y-\$\$\$\$\$
 X-\$\$\$\$\$
 USER\$\$\$\$\$
 NAME\$\$\$\$\$

5/14/99



TYPE 1A

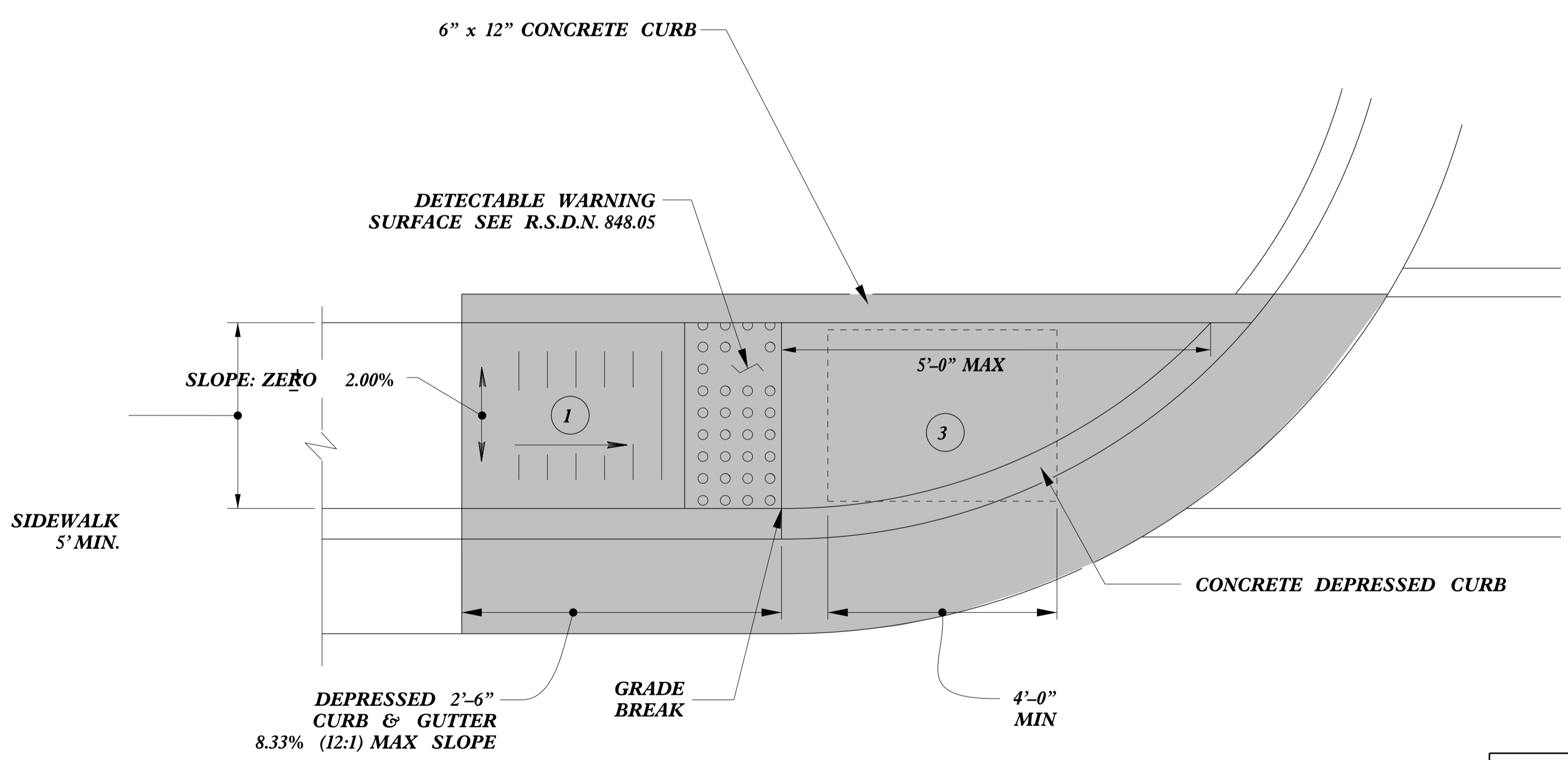


TYPE 1B

1/30/2015

PAY LIMITS FOR 1 CURB RAMP

- 1 8.33% (12:1) MAX RAMP SLOPE
- 2 CROSS SLOPE: 2.00%
- 3 CURB RAMPS REQUIRE A (4'-0") MINIMUM LANDING WITH A MAXIMUM CROSS SLOPE AND LONGITUDINAL SLOPE OF 2.00% WHERE PEDESTRIANS PERFORM TURNING MANEUVERS. SLOPE TO DRAIN TO CURB.



TYPE 1



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Office 919-707-6950 FAX 919-250-4119

CURB RAMPS
Directional Ramps

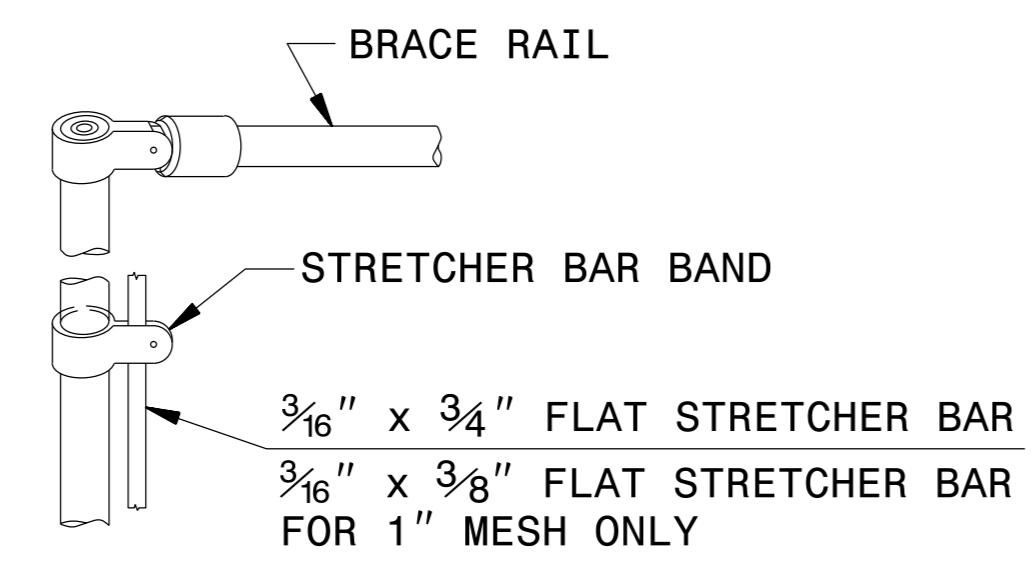
ORIGINAL BY: J.S. HOWERTON DATE: 7/7/11
 MODIFIED BY: _____ DATE: _____
 CHECKED BY: _____ DATE: _____
 FILE SPEC.: stds/2012CurbRamp/CurbRampDetails.dgn

REFER TO ROADWAY STANDARD DRAWING NUMBER 848.05 SHEET 3 OF 3 FOR ALL RAMP NOTES

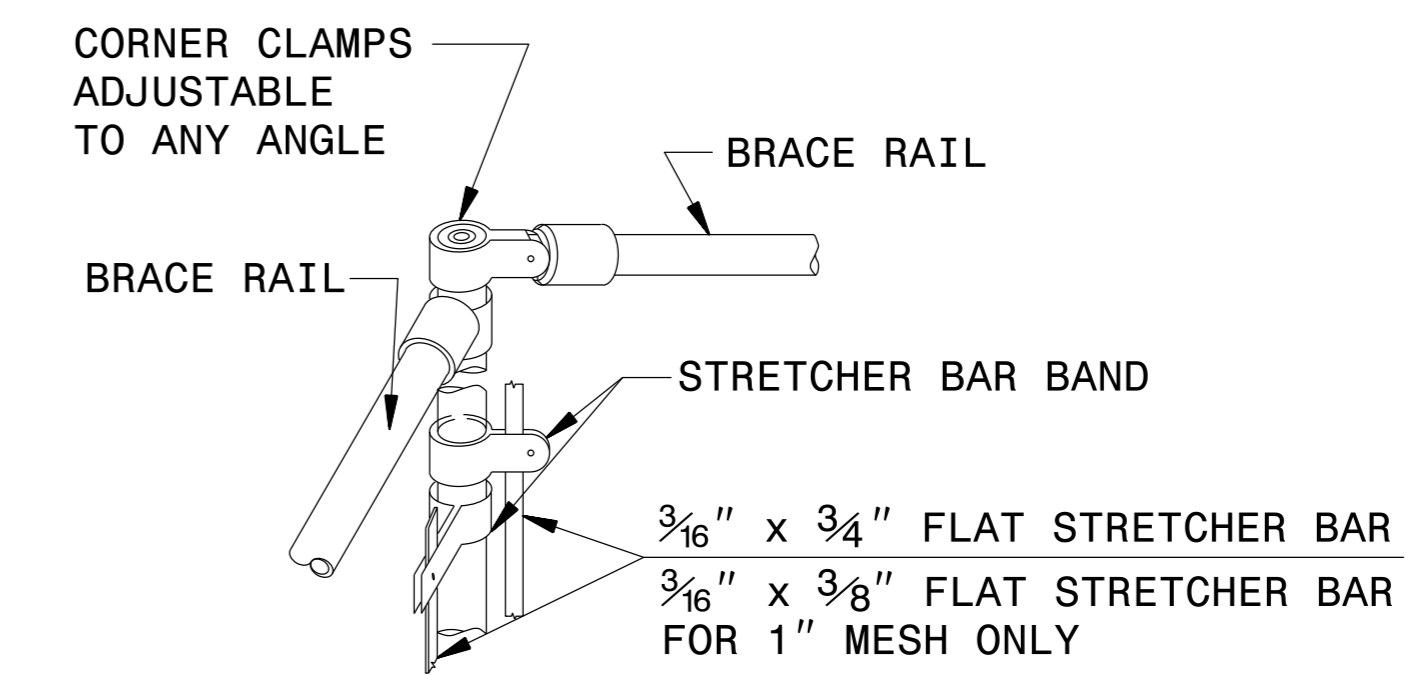
STATE OF NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE WITH BARBED WIRE
6', 7' AND 8' HEIGHT

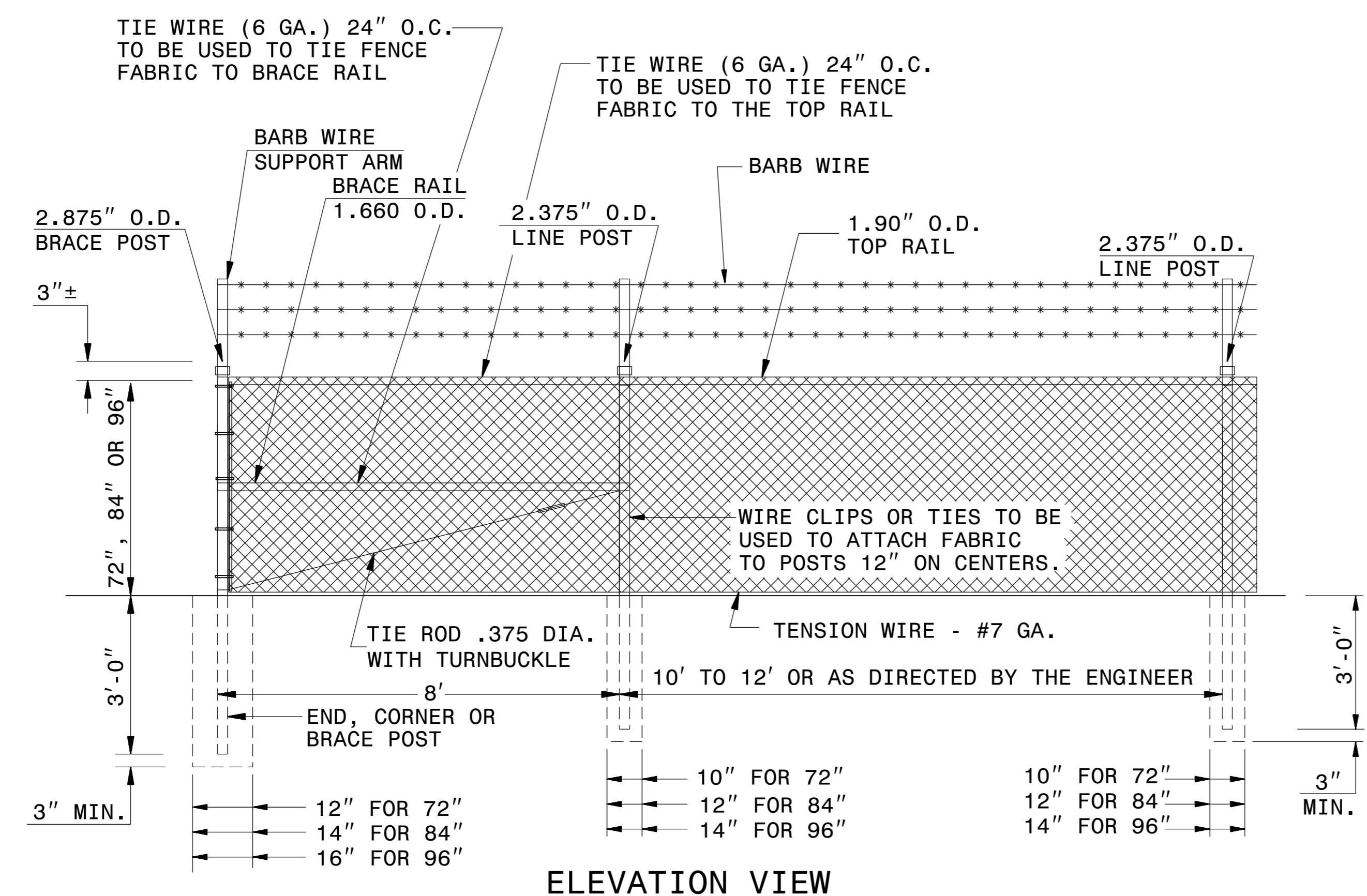
SHEET OF
fence4c1



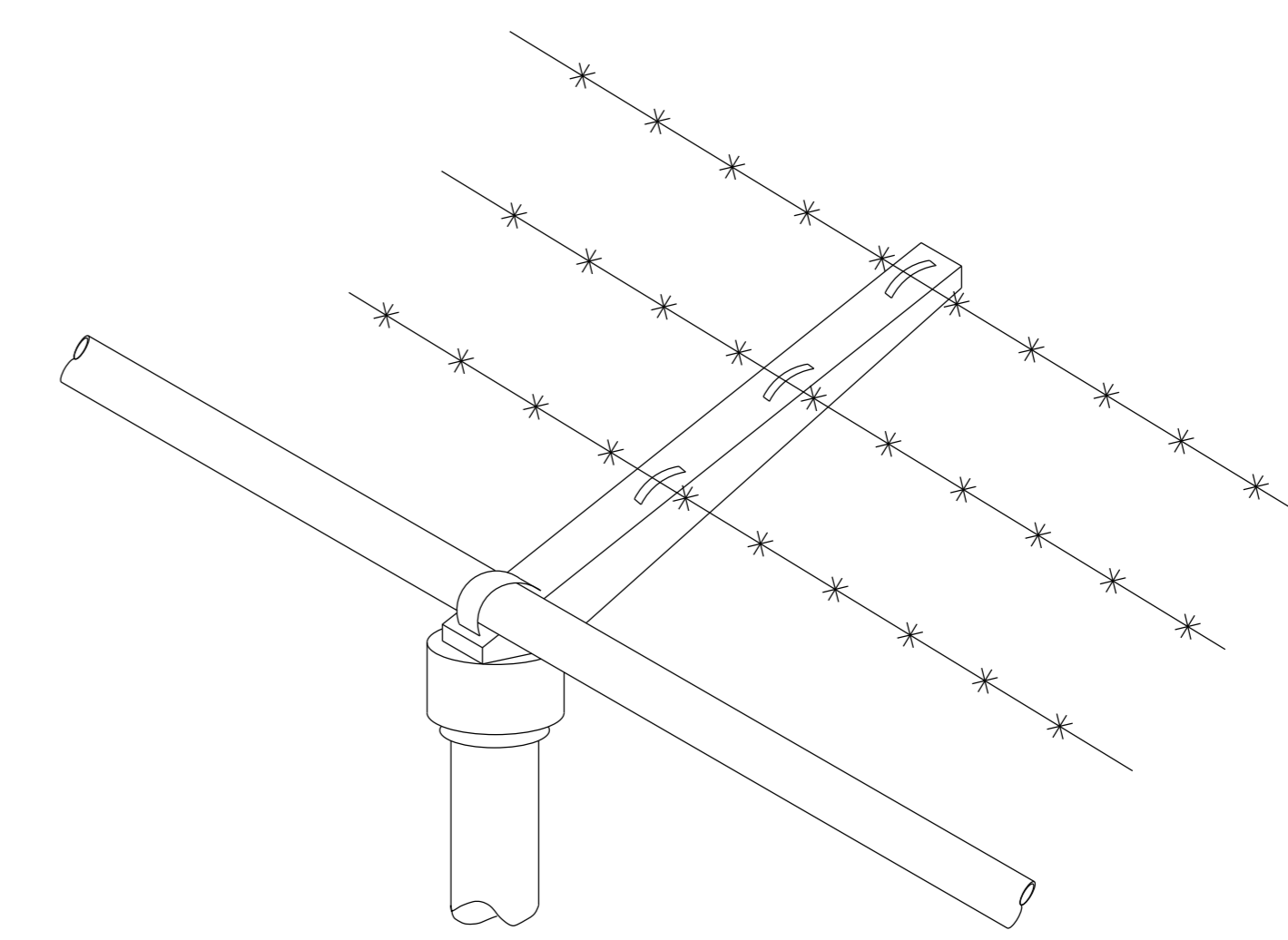
END, GATE OR BRACE POST WITH STRETCHER BAR ATTACHMENT



CORNER WITH STRETCHER BAR ATTACHMENT



ELEVATION VIEW



BARBED WIRE FENCE SUPPORT ARM

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

ENGLISH DETAIL DRAWING FOR
CHAIN LINK FENCE WITH BARBED WIRE
6', 7' AND 8' HEIGHT

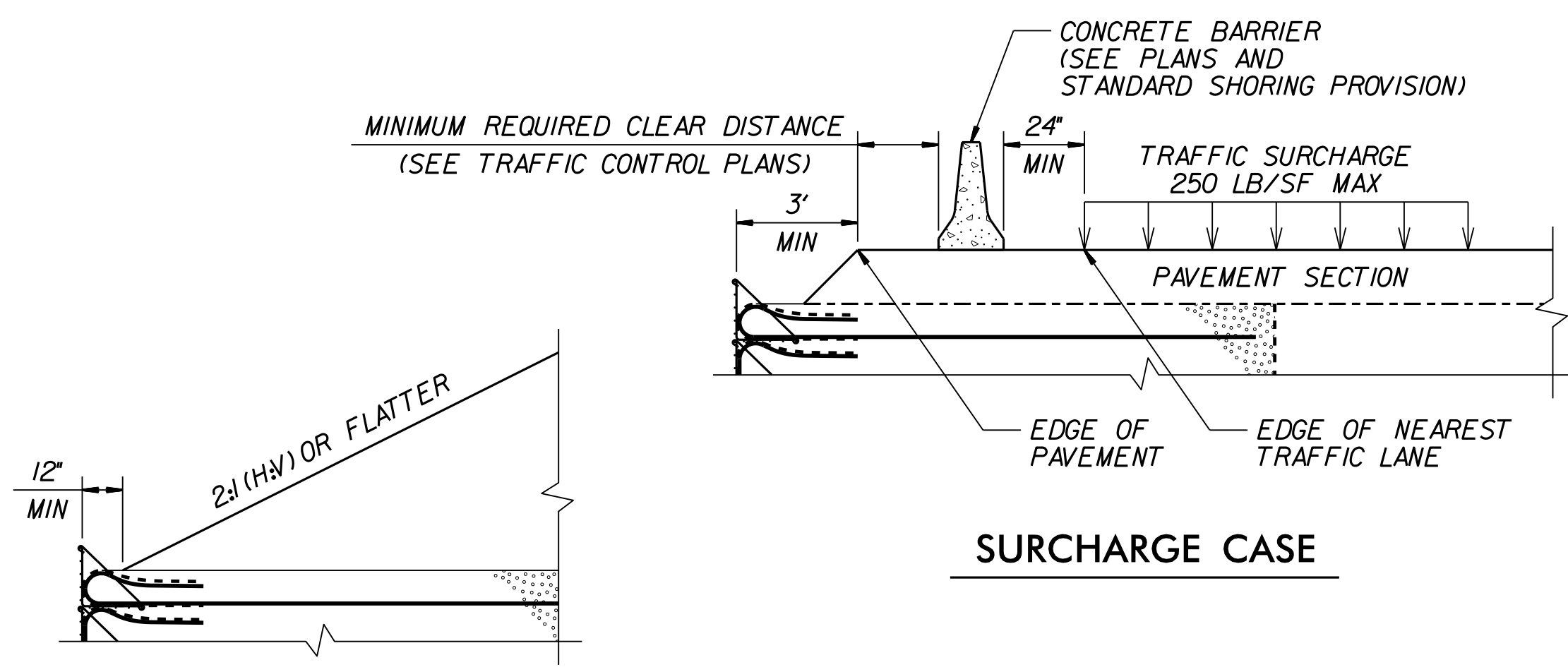
SHEET OF
fence4c1

SEE 866.01 FOR CHAIN LINK FENCE
INSTALLATION



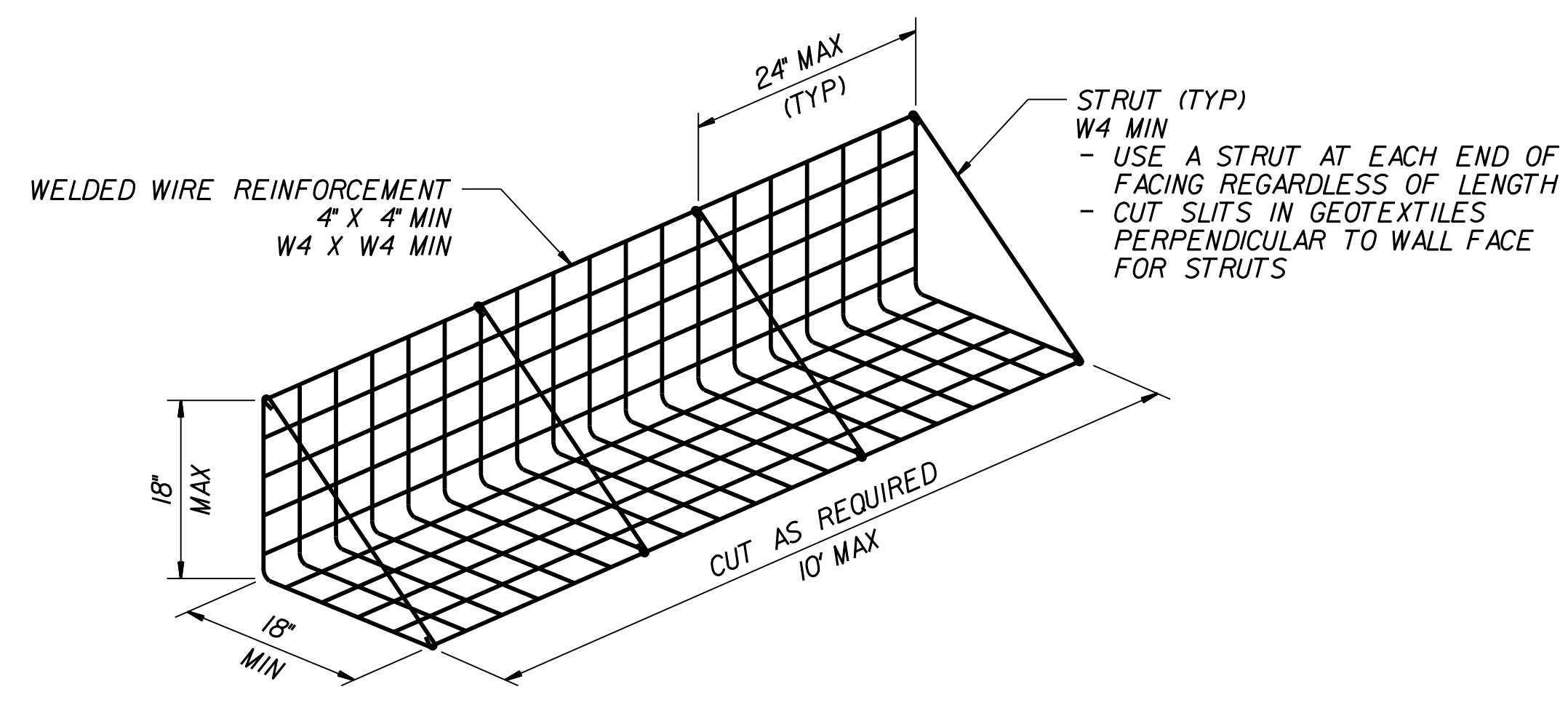
| | |
|--|--------------------|
| CONTRACT STANDARDS AND DEVELOPMENT UNIT | |
| Office 919-707-6950 FAX 919-250-4119 | |
| SEE PLATE FOR TITLE | |
| ORIGINAL BY: N.T. KEGLERS | DATE: MAR.11, 1996 |
| MODIFIED BY: | DATE: |
| CHECKED BY: | DATE: |
| FILE SPEC.: | |

CONTRACT STANDARDS AND DEVELOPMENT UNIT
 1000 SOUTH MAIN STREET, SUITE 200
 RALEIGH, NC 27601
 TEL: 919-707-6950 FAX: 919-250-4119
 WWW.DOT.UNC.GOV

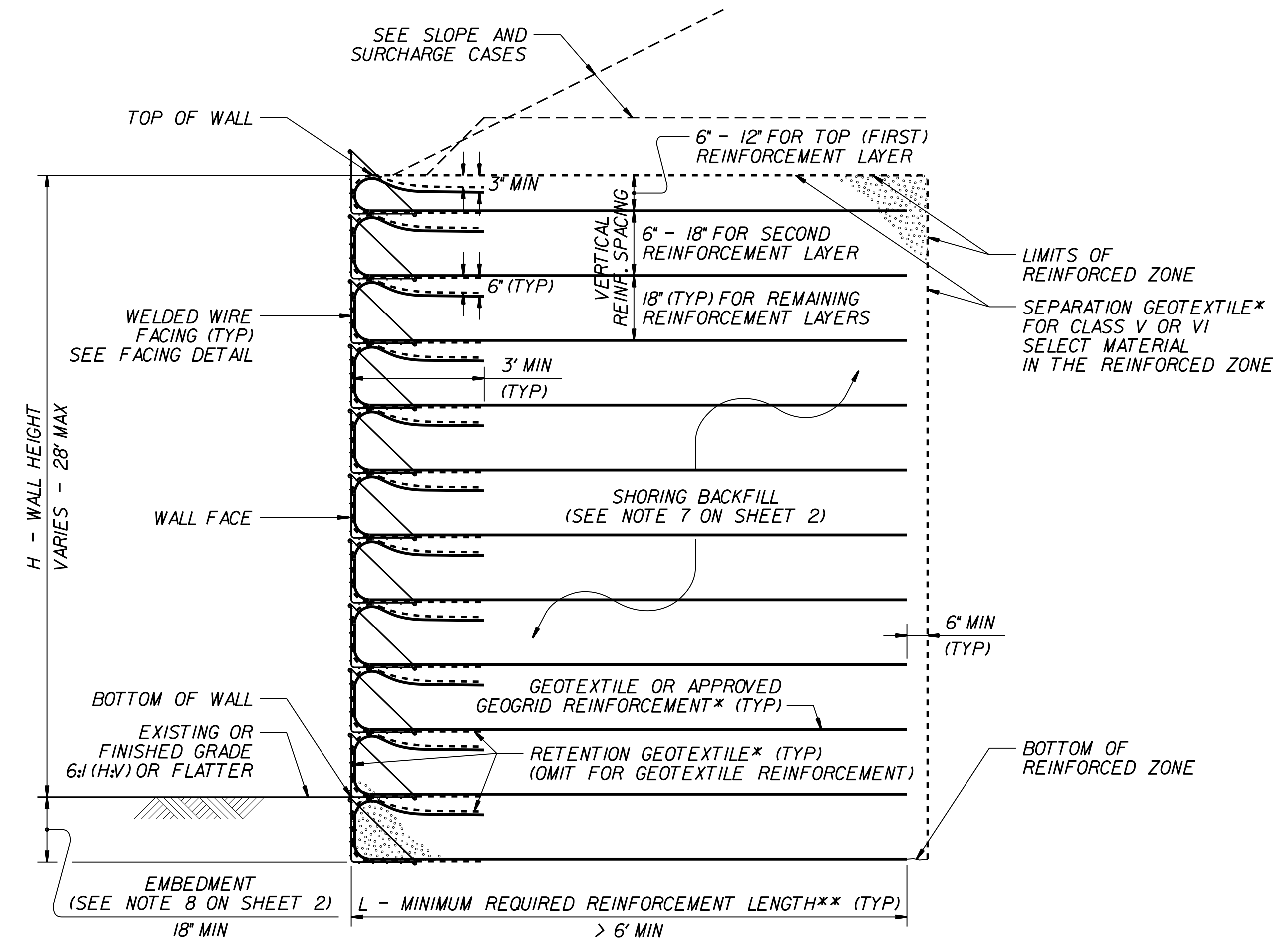


SLOPE CASE

SURCHARGE CASE

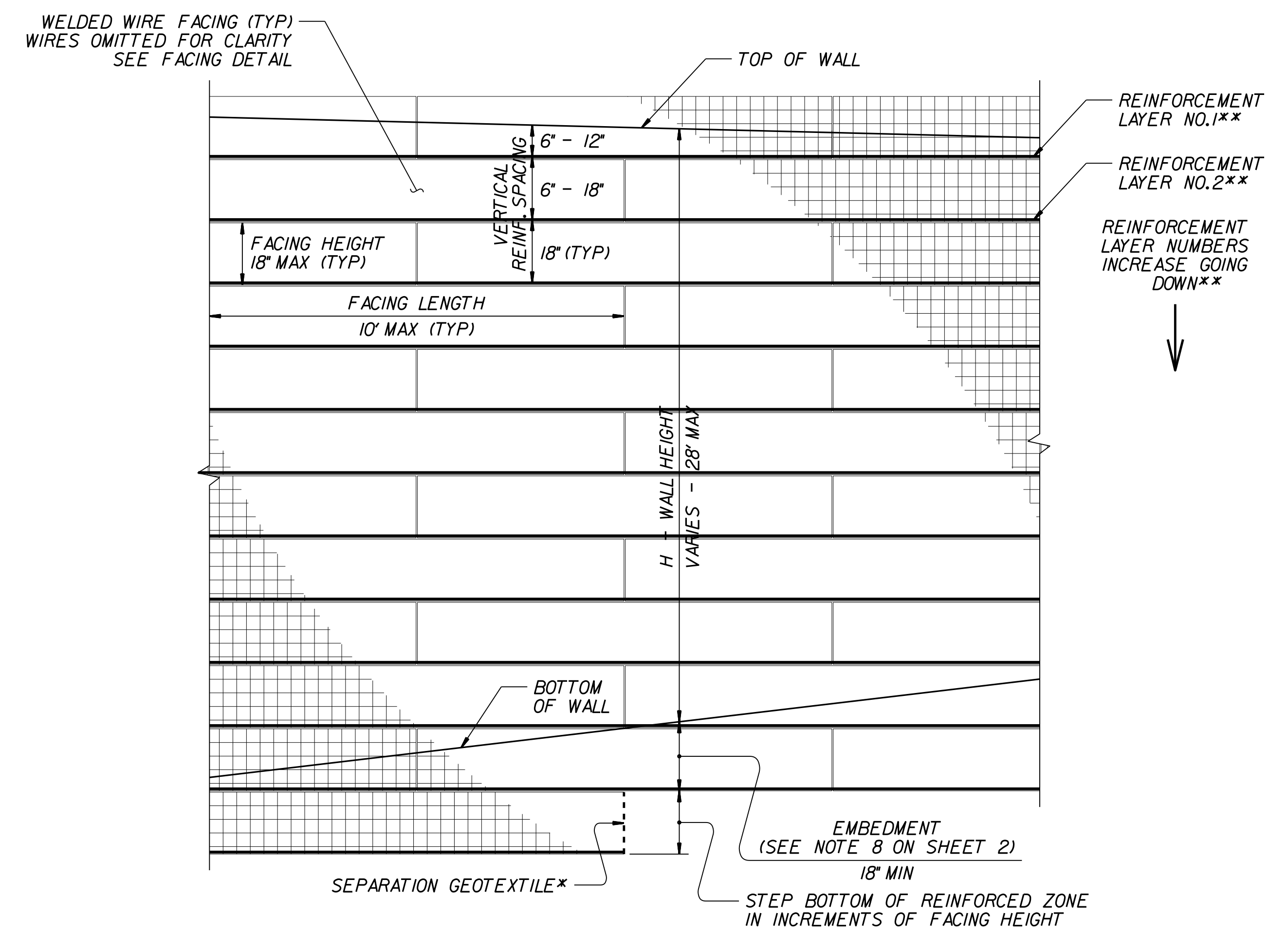


FACING DETAIL



STANDARD TEMPORARY WALL

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



STANDARD TEMPORARY WALL - PARTIAL ELEVATION

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

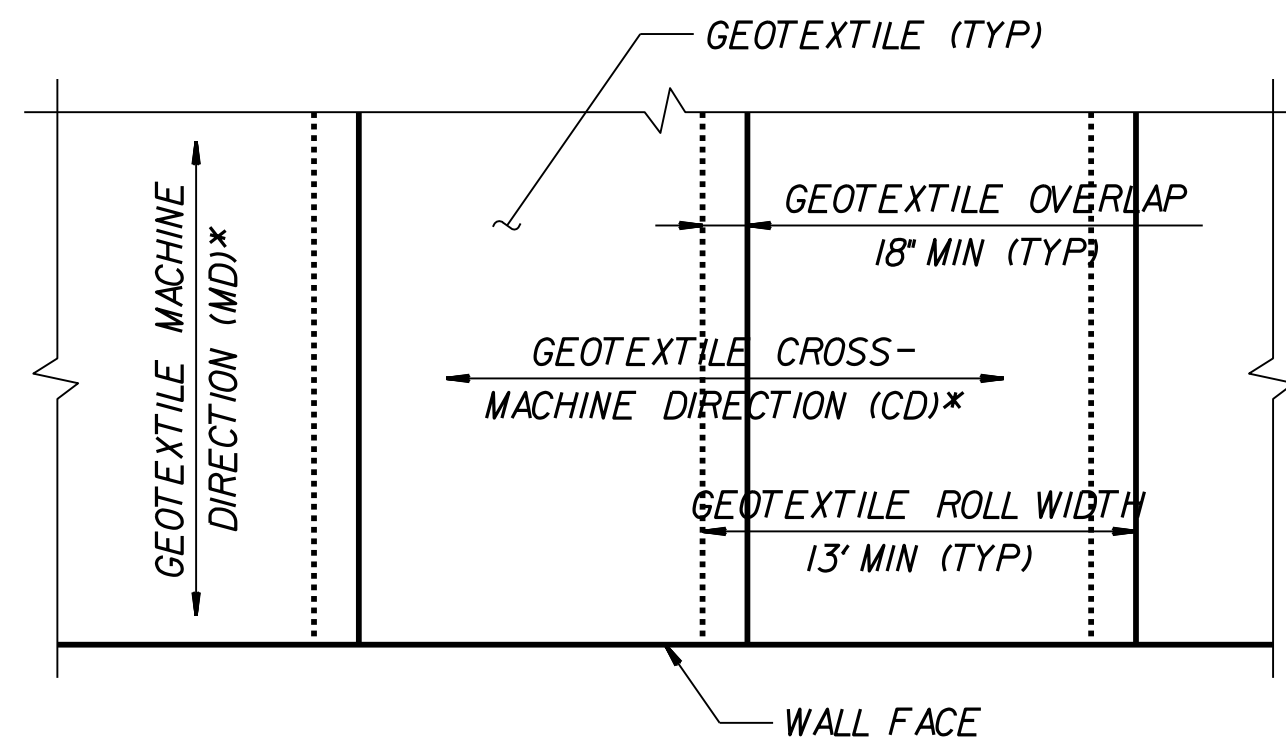


NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

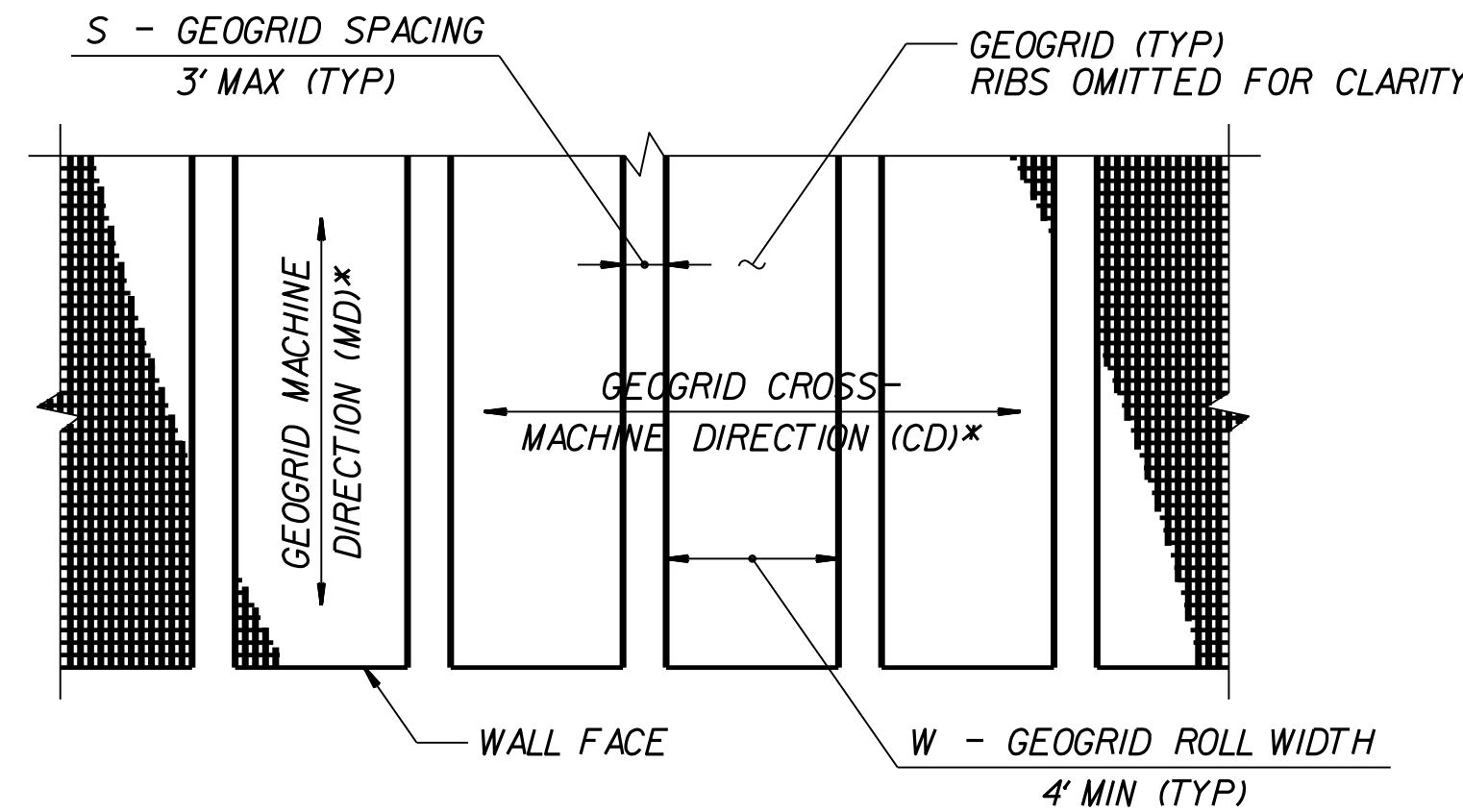
**GEOTECHNICAL
 ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02

STANDARD
 TEMPORARY WALL
 SHEET 1 OF 3



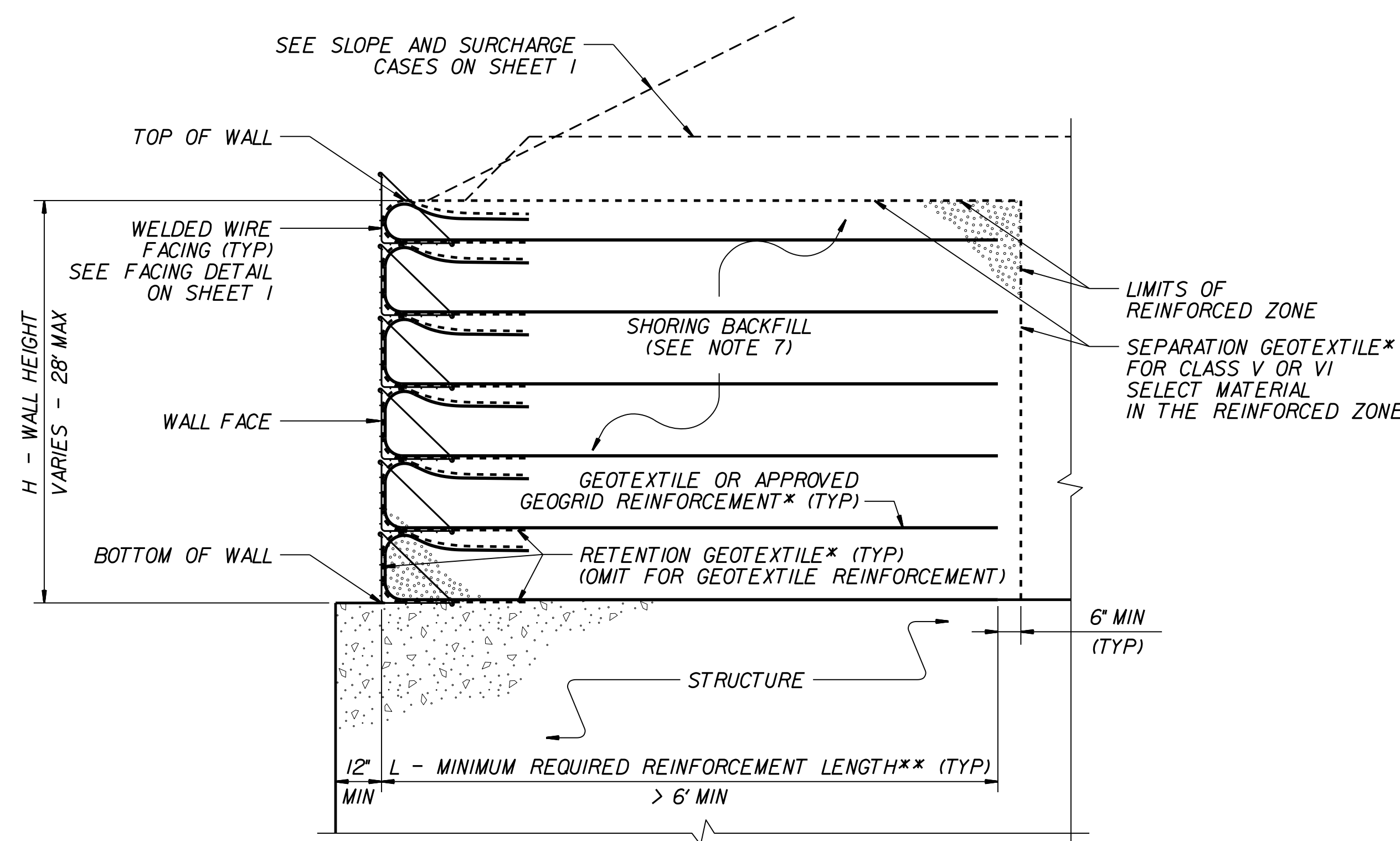
GEOTEXTILE PLACEMENT
(100% COVERAGE MIN FOR GEOTEXTILE REINFORCEMENT)



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

GEOSYNTHETIC PLACEMENT DETAILS

(PLAN VIEW)
*SEE NOTE 12.



TEMPORARY WALL ON STRUCTURE DETAIL

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

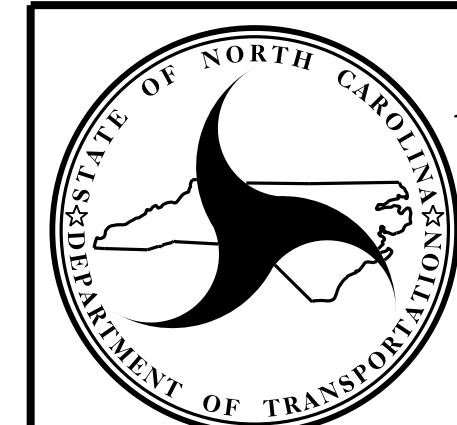
NOTES:

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

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

IF THE WEBSITE DOES NOT LIST A SHORT-TERM DESIGN STRENGTH FOR AN APPROVED GEOGRID, USE A SHORT-TERM DESIGN STRENGTH EQUAL TO THE ULTIMATE TENSILE STRENGTH DIVIDED BY 3.5 FOR THE GEOGRID REINFORCEMENT.

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

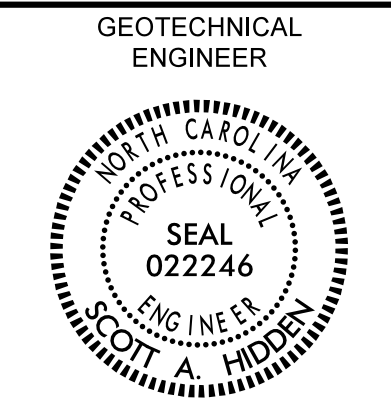


NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GEOTECHNICAL
ENGINEERING UNIT

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 2 OF 3

| | |
|---|----------------------------------|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 2G-3 |
|  | ENGINEER |
| DocuSigned by: <i>Scott A. Hadden</i> <small>1/28/2015</small> | SIGNATURE DATE SIGNATURE DATE |

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

L - MINIMUM REQUIRED REINFORCEMENT LENGTH (FT)
(FOR ALL REINFORCEMENT TYPES)

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

*BASED ON VERTICAL REINFORCEMENT SPACING SHOWN ON SHEET 1.

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

**GEOTEXTILE REINFORCEMENT
ULTIMATE TENSILE STRENGTH (LB/FT)**

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

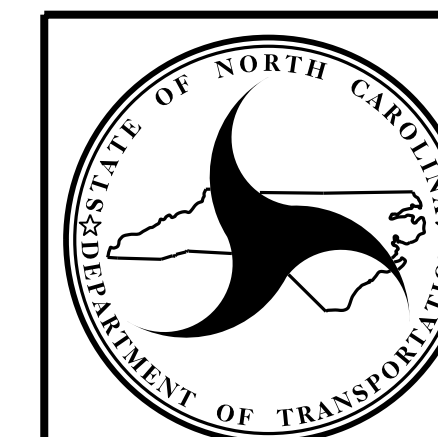
**GEOGRID REINFORCEMENT
SHORT-TERM DESIGN STRENGTH (LB/FT)**

(SEE NOTE 10 ON SHEET 2.)

MINIMUM REQUIRED REINFORCEMENT STRENGTH IN MD

(SEE NOTE 9 ON SHEET 2.)

*SEE PARTIAL ELEVATION ON SHEET 1 FOR REINFORCEMENT LAYER NUMBERING.



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

**GEOTECHNICAL
ENGINEERING UNIT**

STANDARD DETAIL NO. 1801.02

STANDARD
TEMPORARY WALL
SHEET 3 OF 3

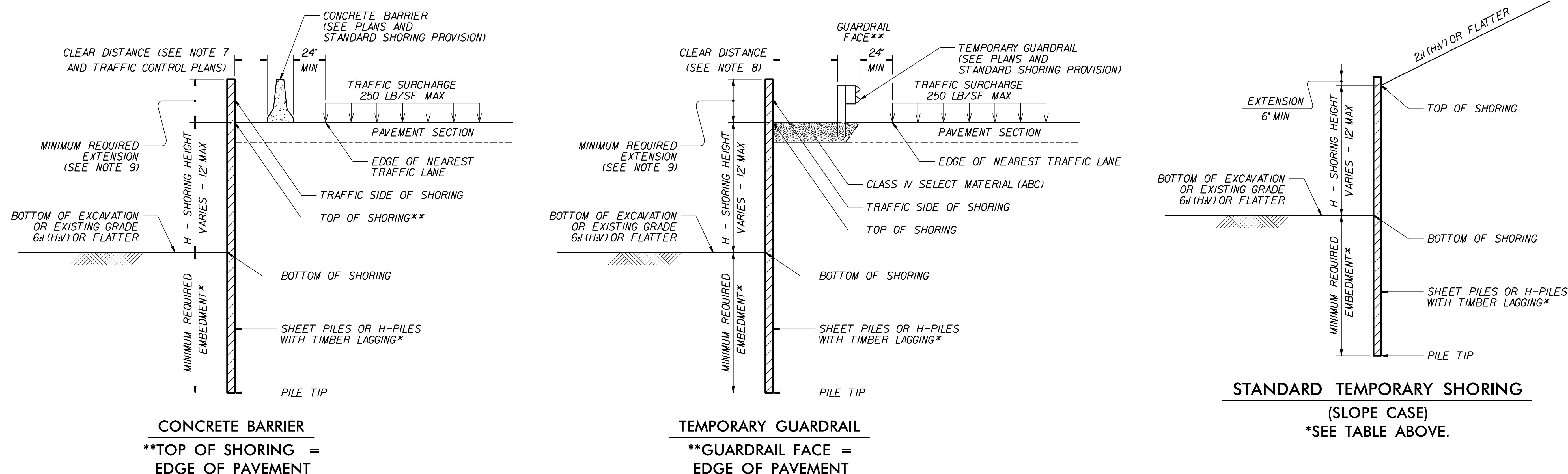
| GROUNDWATER CONDITION (SEE NOTE 6) | H SHORING HEIGHT (FT) | SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT | | | | | SURCHARGE CASE WITH TRAFFIC IMPACT | | | | |
|--|-----------------------|--|--|--|----------|----------|------------------------------------|--|--|----------|----------|
| | | SHEET 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 BETWEEN 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 "--".

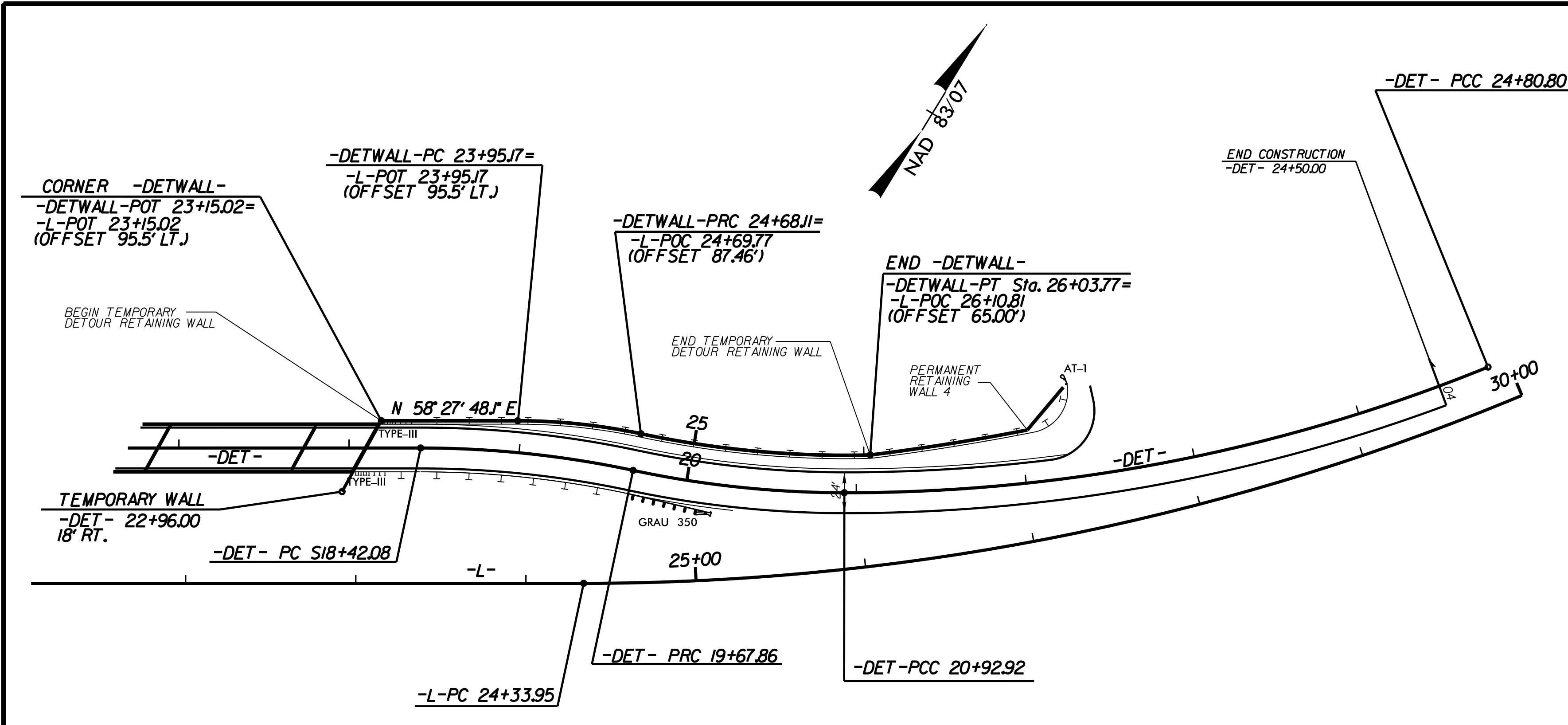
NOTES:

- AT THE CONTRACTOR'S OPTION, USE STANDARD TEMPORARY SHORING AS NOTED IN THE PLANS.
- FOR STANDARD TEMPORARY SHORING, SEE STANDARD SHORING PROVISION.
- STANDARD TEMPORARY SHORING IS BASED ON THE FOLLOWING IN-SITU ASSUMED SOIL PARAMETERS:
UNIT WEIGHT, $\gamma = 120$ LB/CF
FRICTION ANGLE, $\phi = 30$ DEGREES
COHESION, $c = 0$ LB/SF
- DO NOT USE STANDARD TEMPORARY SHORING IF ASSUMED SOIL PARAMETERS ARE NOT APPLICABLE.
- DO NOT USE STANDARD TEMPORARY SHORING WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS WITHIN THE EMBEDMENT DEPTH.
- 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.
- 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".
- 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".
- MINIMUM REQUIRED EXTENSION IS 6' FOR "SLOPE OR SURCHARGE CASE WITH NO TRAFFIC IMPACT" AND 32' FOR "SURCHARGE CASE WITH TRAFFIC IMPACT".
- 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.
- 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
- CONTACT THE ENGINEER IF PILES DO NOT ATTAIN THE MINIMUM REQUIRED EMBEDMENT.

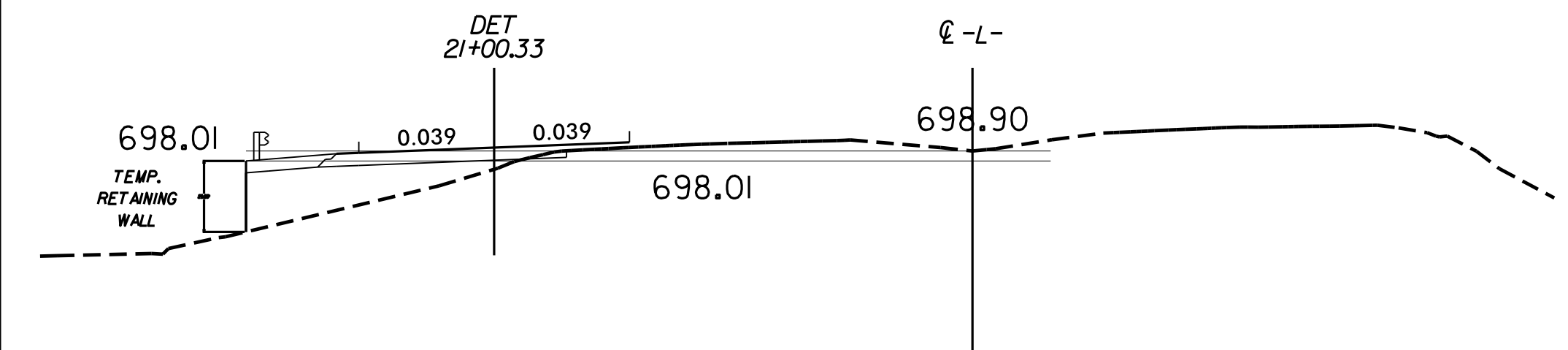


STANDARD TEMPORARY SHORING
(SURCHARGE CASE)
*SEE TABLE ABOVE.

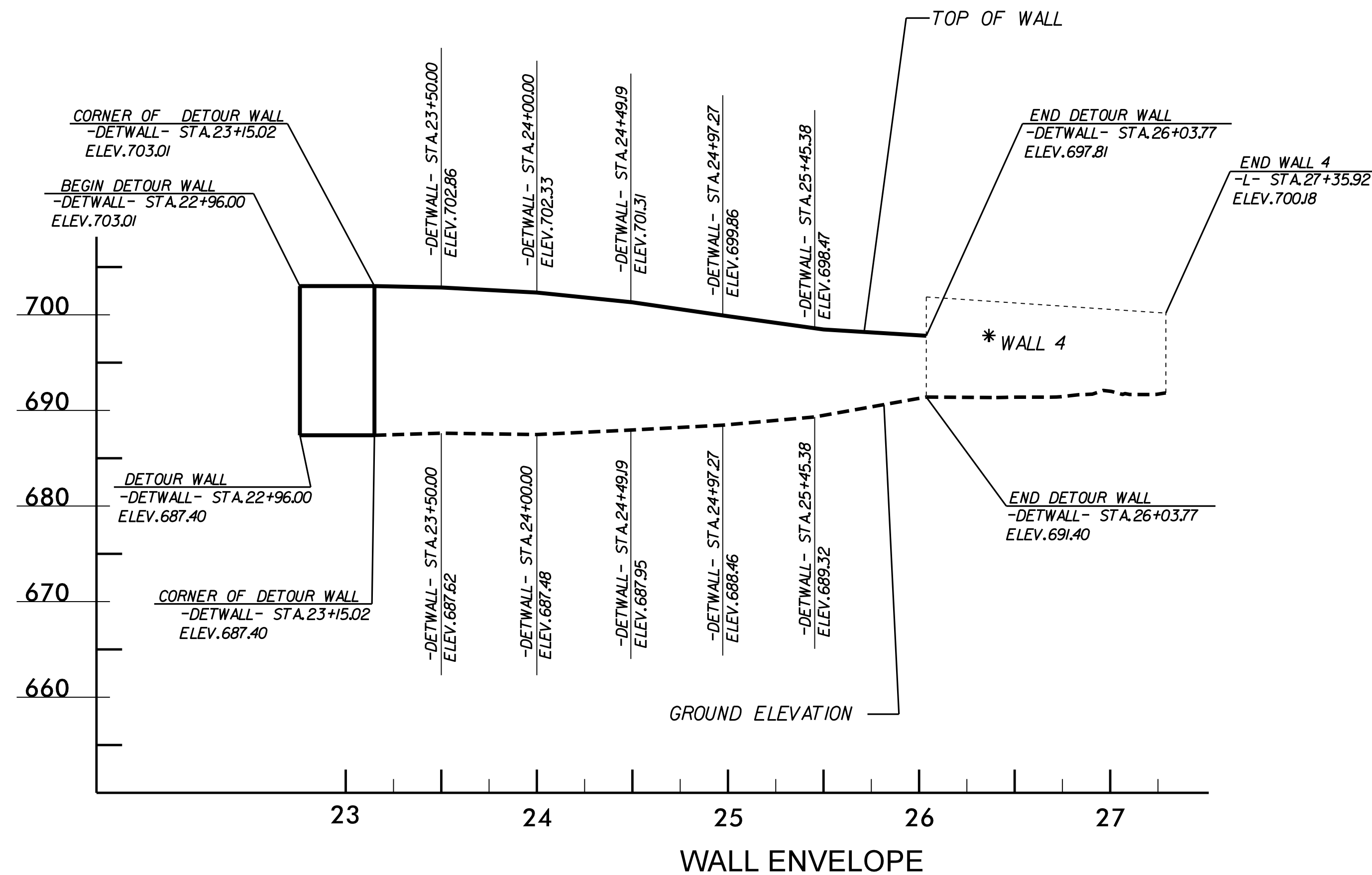
STANDARD TEMPORARY SHORING
(SLOPE CASE)
*SEE TABLE ABOVE.



LOCATION SKETCH



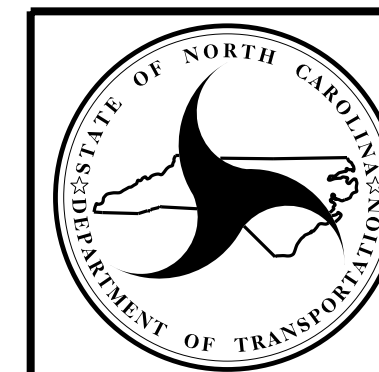
SECTION THRU WALL



| ESTIMATED TEMPORARY WALL QUANTITY | |
|-----------------------------------|----------------|
| TEMPORARY RETAINING WALL | * 4500 SQ. FT. |

* PAID FOR AS TEMPORARY SHORING PER NCDOT STANDARD DWG. 1801.02

* WALL #4 IS SHOWN FOR REFERENCE ONLY. WALL #4 MAY OR MAY NOT BE PART OF THE CONSTRUCTION SEQUENCE OF THE DETOUR WALL.



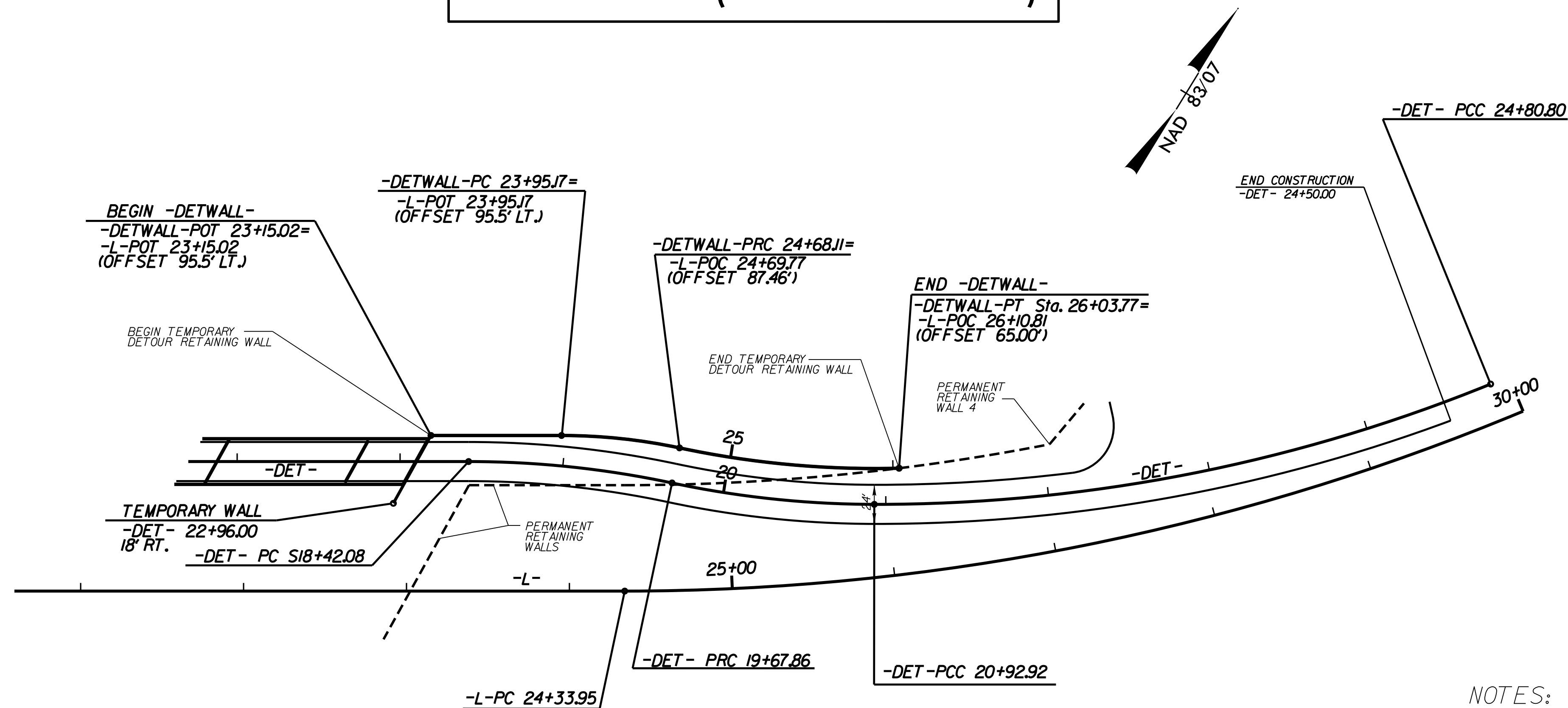
GEOTECHNICAL ENGINEER

ENGINEER



DocuSigned by:
Shane C. Clark 1/30/2015

-DET WALL- (DETOUR WALL)



PLAN

SHOWING RELATIONSHIP BETWEEN
RETAINING WALL #4 AND TEMPORARY RETAINING WALL

NOTES:

FOR TEMPORARY SHORING AND POSITIVE PROTECTION FOR TEMPORARY SHORING, SEE PLANS AND TEMPORARY SHORING PROVISION.

BEFORE BEGINNING TEMPORARY SHORING DESIGN OR CONSTRUCTION, SURVEY EXISTING GROUND ELEVATIONS IN THE VICINITY OF SHORING LOCATIONS TO DETERMINE ACTUAL SHORING HEIGHTS.

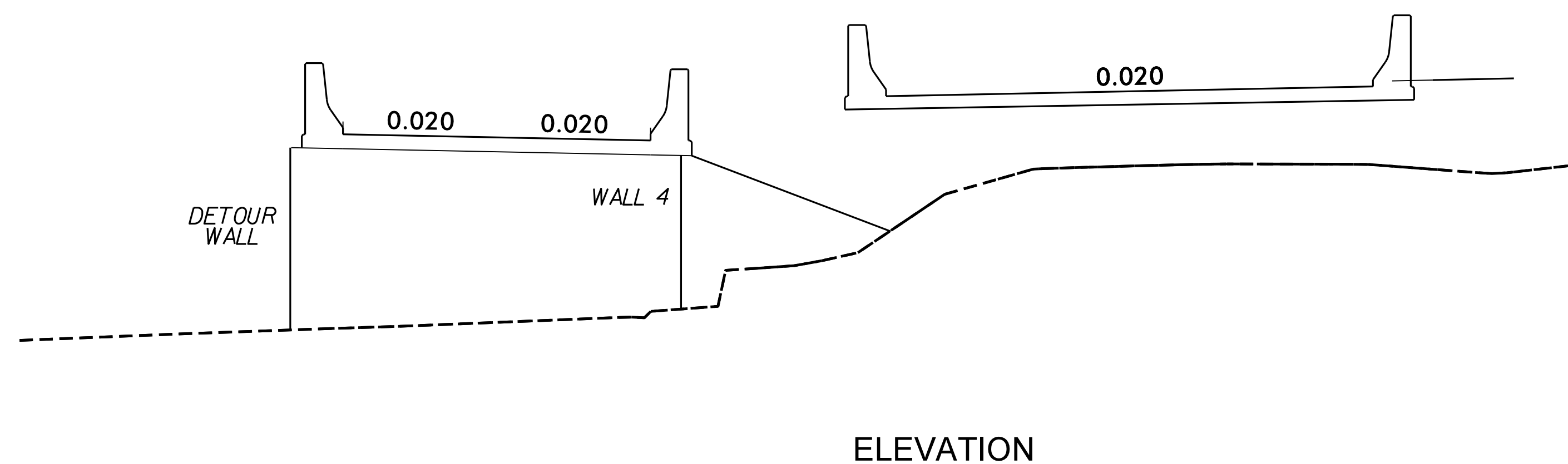
DESIGN TEMPORARY DETOUR SHORING FOR THE FOLLOWING ASSUMED SOIL PARAMETERS AND GROUNDWATER ELEVATION:

UNIT WEIGHT (γ) = 120 LB/CF
FRICTION ANGLE (ϕ) = 30 DEGREES
COHESION (c) = 0 LB/SF

LIMITED SUBSURFACE INFORMATION IS AVAILABLE IN THE VICINITY OF TEMPORARY DETOUR SHORING. THE INFORMATION PROVIDED FOR TEMPORARY DETOUR SHORING DESIGN WAS ASSUMED AND MAY NOT BE APPLICABLE TO THE ACTUAL SITE CONDITIONS ENCOUNTERED DURING CONSTRUCTION.

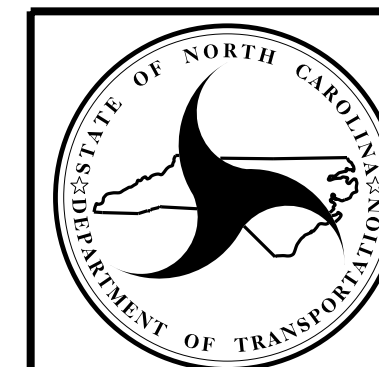
AT THE CONTRACTOR'S OPTION, USE A STANDARD TEMPORARY WALL FOR TEMPORARY DETOUR SHORINGS. SEE STANDARD DETAIL NO. 1801.02 FOR STANDARD TEMPORARY WALLS.

WHEN BACKFILL FOR RETAINING WALLS OVERLAPS WITH THE REINFORCED ZONE OF TEMPORARY WALLS, USE SHORING BACKFILL OR BACKFILL MATERIAL REQUIRED FOR RETAINING WALLS, WHICHEVER IS BETTER, IN THE REINFORCED ZONE OF TEMPORARY WALLS.



ELEVATION

PREPARED BY: EJS DATE: 1/15
REVIEWED BY: SCC DATE: 1/15



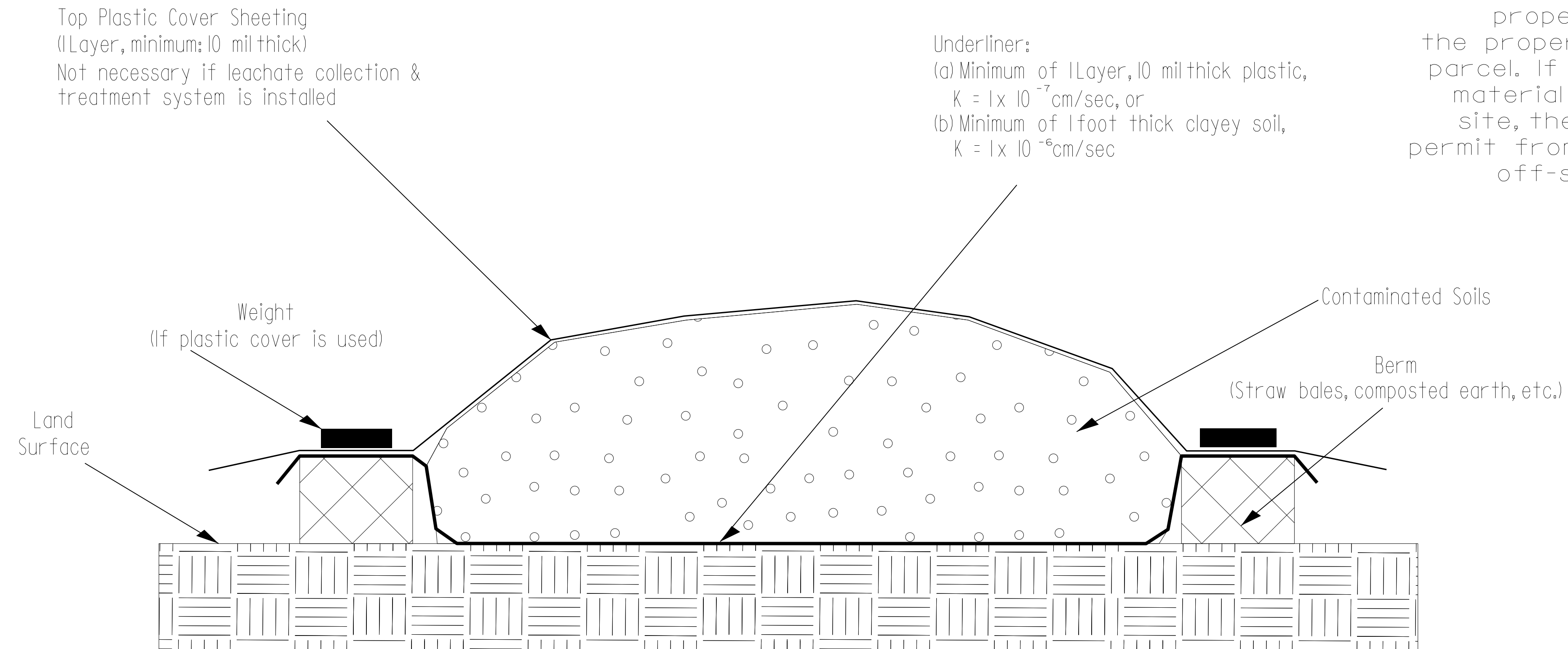
**GEOTECHNICAL
ENGINEERING UNIT**
STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

TEMPORARY
DETOUR WALL

SHEET 2 OF 2

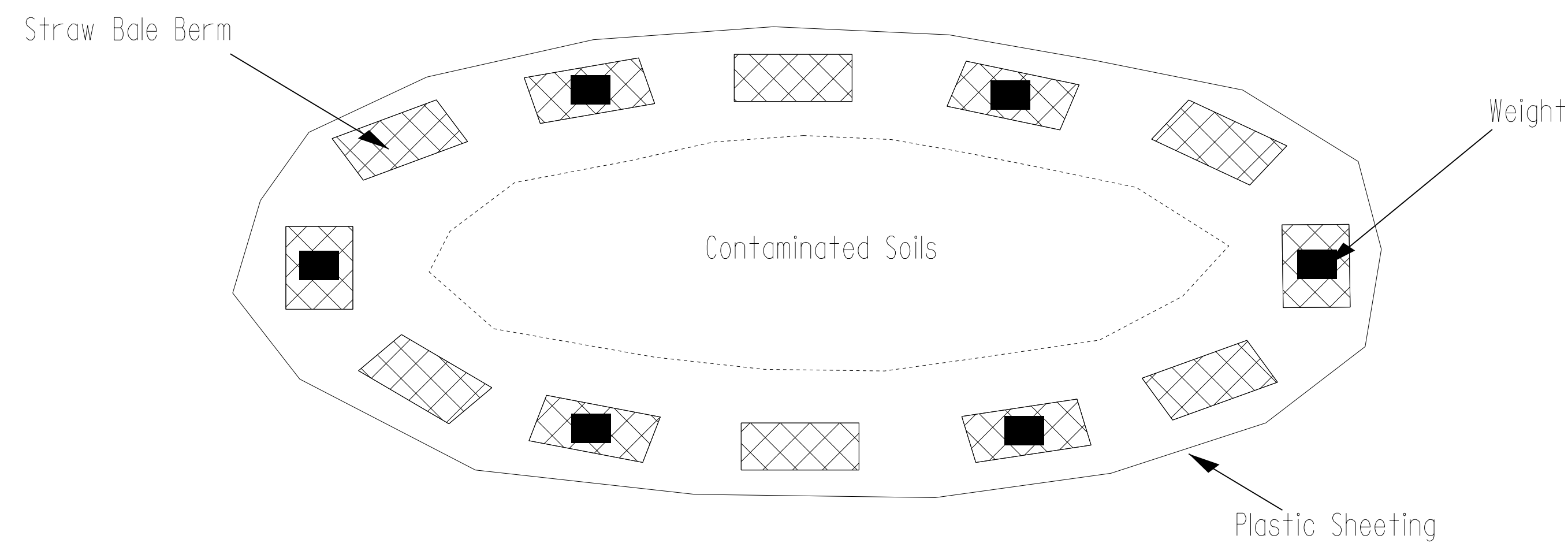
Detail for Temporary Containment of Contaminated Soil

Cross-Section View



NOTE:
The Contractor shall stockpile all contaminated soil excavated from a property in a location within the property boundaries of the source parcel. If the volume of contaminated material exceeds available space on site, the Contractor shall obtain a permit from the NCDENR UST Section for off-site temporary storage.

Map View



GEOTECHNICAL ENGINEERING UNIT

EASTERN REGIONAL OFFICE
 WESTERN REGIONAL OFFICE
 CONTRACT OFFICE

STATE OF NORTH CAROLINA
 DEPARTMENT OF TRANSPORTATION
 RALEIGH

STOCKPILE CONTAINMENT DETAIL

| REVISIONS | | | | | |
|-----------|----|------|-----|----|------|
| NO. | BY | DATE | NO. | BY | DATE |
| 1 | | | 3 | | |
| 2 | | | 4 | | |

| | |
|--------------|-------|
| PREPARED BY: | DATE: |
| REVIEWED BY: | DATE: |

COMPUTED BY: Y DATE: 2/19/2015
 CHECKED BY: KDA DATE: 2/19/2015

PROJECT NO. B-5136 SHEET NO. 3B-1

STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS

RD226

SUMMARY OF EARTHWORK

| CUBIC YARDS | | | | | CUBIC YARDS | | | | |
|--|-----------------|-----------------|---------------|------------|--|-----------------|-----------------|---------------|--------------|
| Station to Station | Uncl. Exc. C.Y. | Embank. +% C.Y. | Borrow C.Y. | Waste C.Y. | Station to Station | Uncl. Exc. C.Y. | Embank. +% C.Y. | Borrow C.Y. | Waste C.Y. |
| SUMMARY 1 (Phase 1) | | | | | SUMMARY 5 (Phase 5) | | | | |
| -DET- (-L- 13+50.00) TO (-L- 21+39.75) | 62 | 14,833 | 14,771 | | -L- 12+75.00 TO 21+00.00 LT | 3,253 | 2,718 | | 535 |
| -DET- (-L- 23+06.15) TO (-L- 27+50.00) | 6 | 5,152 | 5,146 | | -L- 23+50.00 TO 31+00.00 LT | 2,452 | 1,859 | | 593 |
| SUMMARY 1 TOTAL | 68 | 19,985 | 19,917 | | -EY4- 10+60.00 TO 10+80.00 | 3 | 19 | 16 | |
| SUMMARY 2 (Phase 2) | | | | | SUMMARY 5 TOTAL | | | | |
| -L- 12+75.00 TO 17+00.00 RT | 141 | 730 | 589 | | PROJECT TOTAL | 6,054 | 43,888 | 38,961 | 1,128 |
| -L2- (-L- 17+00) TO -L2- (-L- 20+50) | 14 | 127 | 113 | | | | | | |
| -L2- (-L- 23+50) TO -L2- (-L- 27+50) | 6 | 656 | 650 | | | | | | |
| -L- 27+00.00 TO 30+50.00 RT | 19 | 1,292 | 1,273 | | Bridge End Bent Volume | | | 1,490 | |
| -DRV2- 10+70.00 TO 10+90.00 | | 31 | 31 | | Est. Shoulder Material | | | 227 | |
| SUMMARY 2 TOTAL | 180 | 2,836 | 2,656 | | Est 5% To Repl. Topsoil at Borrow Pit | | | 2,034 | |
| SUMMARY 3 (Phase 3) | | | | | GRAND TOTALS | | | | |
| -L- 17+00.00 RT TO -L- 20+26.04 RT | 8 | 4,775 | 4,767 | | SAY | 6,054 | | 42,712 | 1,128 |
| -L- 23+00.00 RT TO -L- 30+50.00 RT | 29 | 7,667 | 7,638 | | | | | 43,000 | |
| SUMMARY 3 TOTAL | 37 | 12,442 | 12,405 | | | | | | |
| SUMMARY 4 (Phase 4) | | | | | ESTIMATED UNDERCUT = 1,000 C.Y. | | | | |
| -L- 17+50.00 TO -L- 20+50.00 | | 1,430 | 1,430 | | EST. SELECT GRANULAR MATERIAL = 1,000 C.Y. | | | | |
| -L- 23+00.00 TO -L- 30+00.00 | 61 | 2,598 | 2,537 | | SHALLOW UNDERCUT = 1,470 C.Y. | | | | |
| SUMMARY 4 TOTAL | 61 | 4,028 | 3,967 | | CLASS IV SUBGRADE STABILIZATION = 2,646 TONS | | | | |

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

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

SUMMARY OF ASPHALT PAVEMENT REMOVAL & BREAKING

| SQUARE YARDS | | | | |
|----------------------|----------------------|--------------|-----------------|-----------------|
| LINE | Station to Station | LOC LT/RT/CL | Removal | Breaking |
| -DET- | 14+00.00 TO 16+51.44 | CL | 758.15 | |
| -DET- | 18+02.33 TO 20+00.00 | CL | 590.83 | |
| -L- | 17+00 TO 20+65.62 | LT | 192.41 | |
| -L-(MED.) | 17+83.46 TO 20+46.56 | CL | 498.79 | |
| -L-(MED.) | 23+26.17 TO 28+37.74 | CL | 1,134.38 | |
| -DET- | 8+98.00 TO 14+00.00 | LT | | 707.83 |
| -DET- | 20+00.00 TO 22+35.87 | LT | | 480.13 |
| -L2- | 17+00.00 TO 20+65.62 | CL | | 1,137.48 |
| -L2- | 23+50.00 TO 27+57.14 | CL | | 1081.32 |
| -L- | 22+98.95 TO 25+58.35 | Parking | | 605.8 |
| -DRV2- | 10+49.00 TO 11+10.00 | Parking | | 219.61 |
| PROJECT TOTAL | | | 3,174.56 | 4,232.17 |
| SAY | | | 3,180 | 4,240 |

SUMMARY OF DARK GREEN VINYL COATED CHAIN LINK FENCE

| LINE | STATION TO STATION | LOCATION | FABRIC (FT.) | 4" LINE POST (EA) | 5" TERM. POST (EA) |
|----------------------|----------------------|----------|-----------------|-------------------|--------------------|
| -L- | 14+00.00 TO 19+00.00 | LT. | 500.00 | 42 | 3 |
| -L- | 23+38.64 TO 27+27.81 | LT. | 392.68 | 33 | 4 |
| -L- | 22+66.27 TO 27+92.08 | RT. | 554.25 | 46 | 3 |
| PROJECT TOTAL | | | 1,446.93 | 121 | 10 |
| SAY | | | 1,450 | | |

PERMANENT 72" CHAIN LINK FENCE WITH 3 SBW

| LINE | STATION TO STATION | LOCATION | FABRIC (FT.) | 4" LINE POST (EA) | 5" TERM. POST (EA) |
|----------------------|----------------------|----------|--------------|-------------------|--------------------|
| -L- | 22+64.16 TO 22+66.27 | RT. | 4.34 | | 2 |
| -L- | 26+23.27 TO 26+69.53 | RT. | 48.49 | 4 | 2 |
| -L- | 27+44.00 | RT. | 12.21 | 1 | 2 |
| PROJECT TOTAL | | | 65.04 | 5 | 6 |
| SAY | | | 66 | | |

PEDESTRIAN SAFETY RAIL

| LINE | STATION TO STATION | LOCATION | LENGTH (FT.) |
|----------------------|----------------------|----------|---------------|
| -L- | 16+04.00 TO 17+15.78 | RT. | 116.65 |
| -L- | 28+37.00 TO 29+70.00 | RT. | 151.53 |
| PROJECT TOTAL | | | 268.18 |
| SAY | | | 270 |

TEMPORARY 72" CHAIN LINK FENCE W/POSTS

| LINE | STATION TO STATION | LOCATION | LENGTH (FT.) |
|----------------------|----------------------|----------|---------------|
| -L- | 16+78.33 TO 21+56.17 | LT. | 491.27 |
| -L- | 22+64.05 TO 25+43.63 | RT. | 284.76 |
| PROJECT TOTAL | | | 776.03 |
| SAY | | | 780 |

COMPUTED BY: KDA DATE: 11/20/2014
 CHECKED BY: IY DATE: 12/12/2014

PROJECT NO. SHEET NO.
 B-5136 3G-1

**STATE OF NORTH CAROLINA
 DIVISION OF HIGHWAYS**

SUMMARY OF SUBSURFACE DRAINAGE

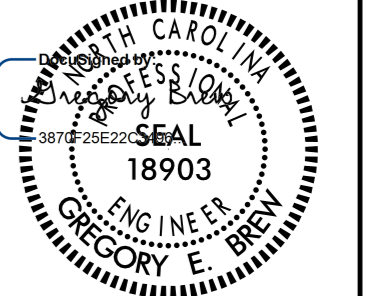
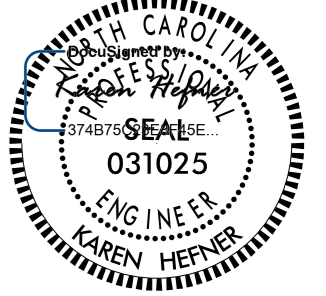
| LINE | Station | Station | Location LT/RT/CL | UNDER DRAIN (LF) | |
|------|---------|---------|----------------------|---------------------|--|
| | | | | | |
| | | | | | |
| | | | CONTINGENCY | 500 | |
| | | | TOTAL LF: | 500 | |

SUMMARY OF AGGREGATE SUBGRADE/STABILIZATION

| LINE | Station | Station | Aggregate Type* ASU/AST | Aggregate Thickness INCHES | Shallow Undercut CY | Class IV Subgrade Stabilization TONS | Geotextile for Soil Stabilization SY | Stabilizer Aggregate TONS | Class IV Aggregate Stabilization TONS |
|------|---------|---------|-------------------------------|----------------------------------|---------------------------|---|---|---------------------------------|--|
| | | | | | | | | | |
| | | | | | | | | | |
| | | | CONTINGENCY | | 1,470 | 2,646 | 2,470 | | |
| | | | TOTAL CY/TONS/SY: | | 1,470 | 2,646 | 2,470 | | |

*ASU = Aggregate Subgrade

*AST = Aggregate Stabilization

| | | |
|---|--|--|
| PROJECT REFERENCE NO. B-5136 | | SHEET NO. 4 |
| RW SHEET NO. | | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER |  GREGORY E. BRIEN 2/23/2015 | |
| SEE SHEET 8 FOR PROFILE OF -L- | |  KAREN HENNER 2/23/2015 |
| SEE TRAFFIC MARKING PLANS FOR CURB RAMP LOCATIONS | | |

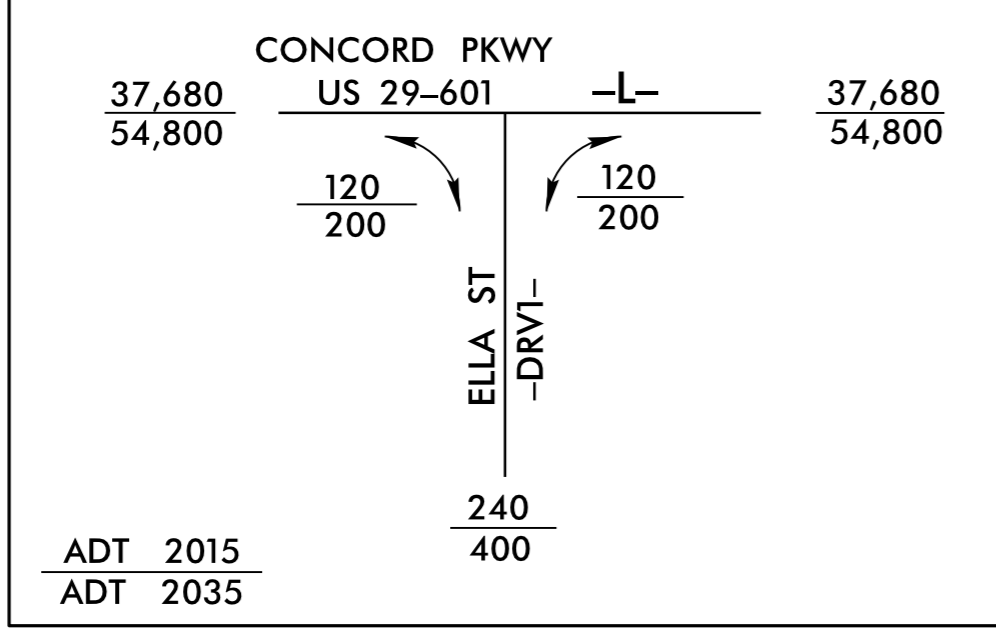
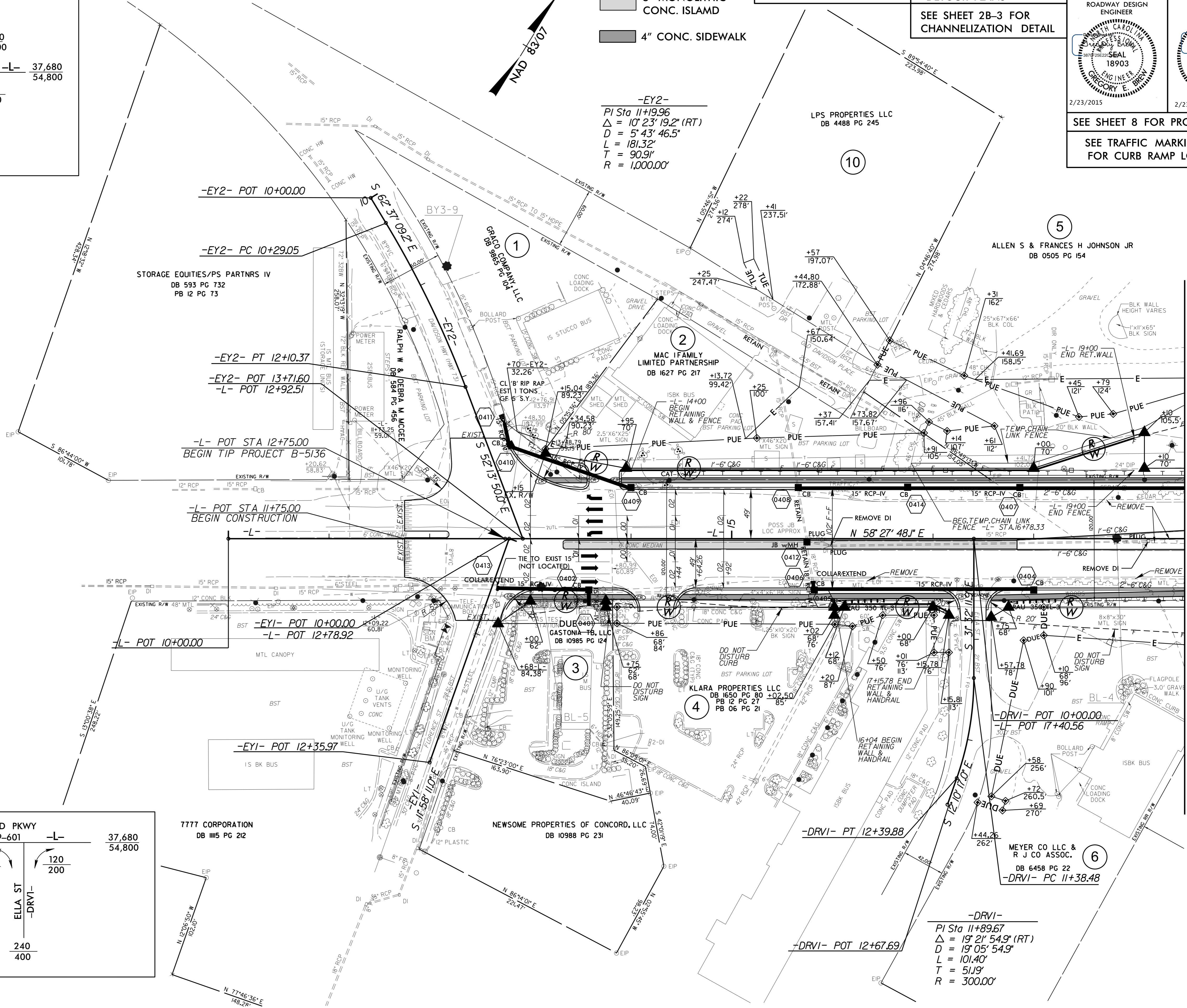
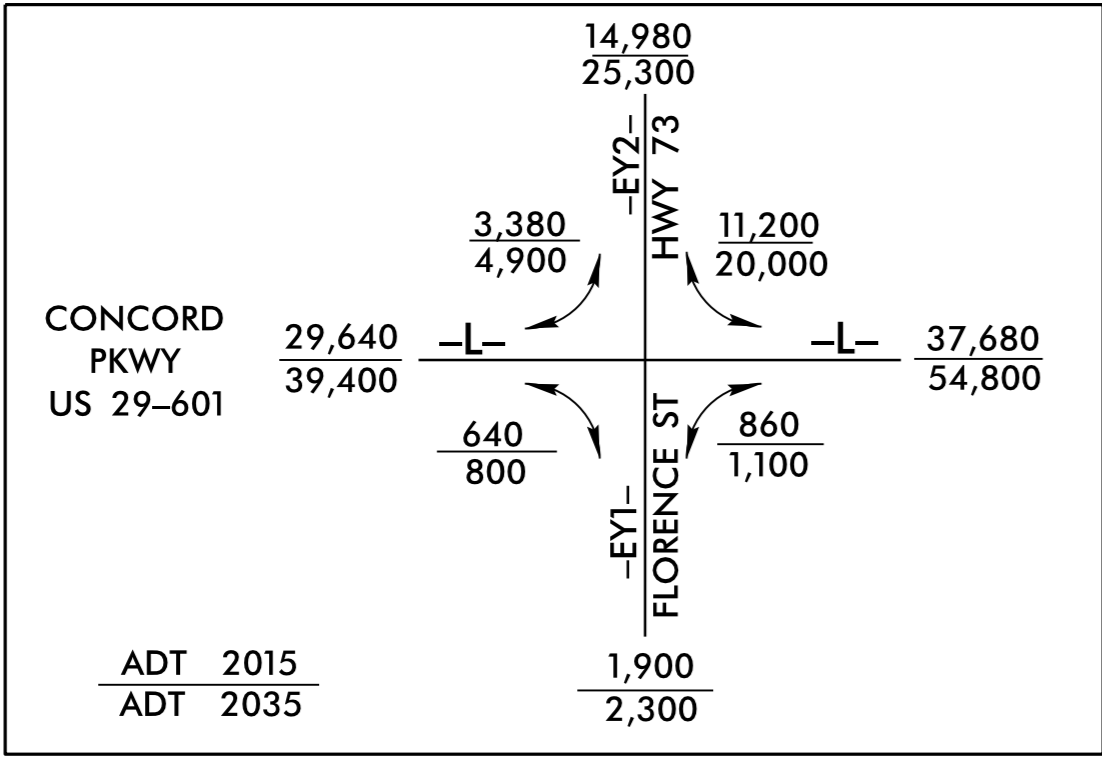
SEE SHEETS W-1 THRU W-11 FOR RETAINING WALL PLANS

SEE SHEETS 2B-1, 2B-2, 6 & 7 FOR TEMPORARY DETOUR PLANS

SEE SHEET 2B-3 FOR CHANNELIZATION DETAIL

- 5" MONOLITHIC CONC. ISLAND
- 4" CONC. SIDEWALK

-EY2-
PI Sta 11+19.96
 $\Delta = 10^\circ 23' 19.2" (RT)$
 $D = 5^\circ 43' 46.5"$
 $L = 181.32'$
 $T = 90.91'$
 $R = 1,000.00'$



7777 CORPORATION DB 1115 PG 212

NEWSOME PROPERTIES OF CONCORD, LLC DB 10988 PG 231

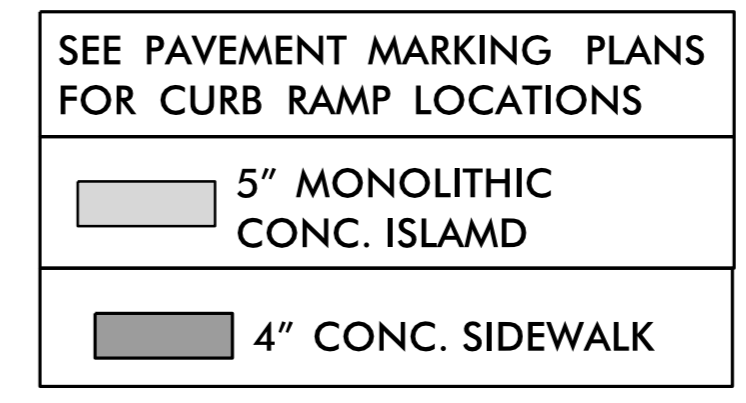
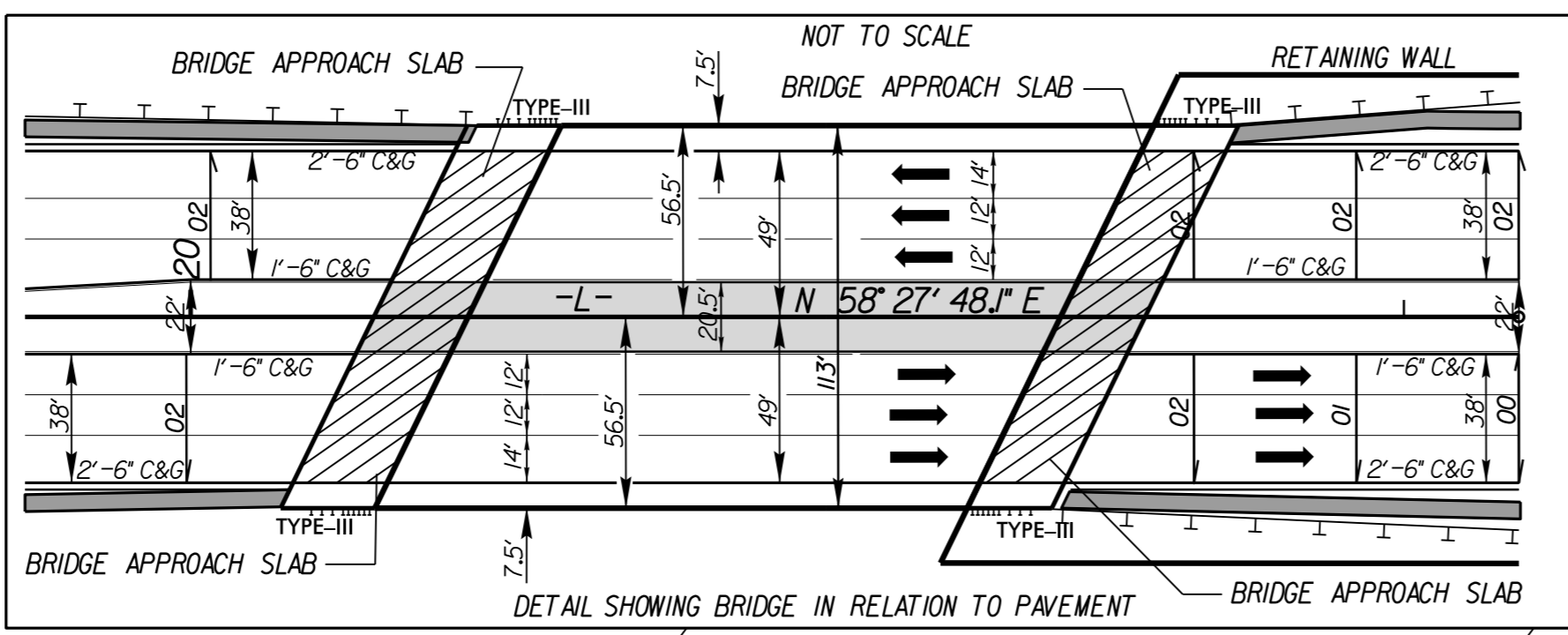
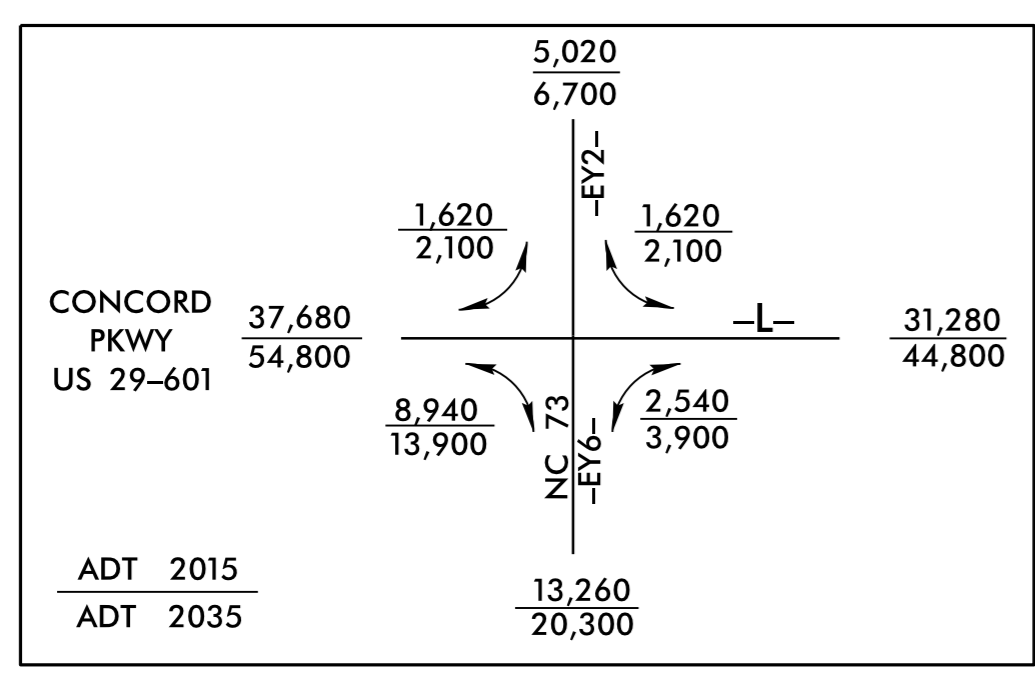
-DRVI- PT 12+39.88

-DRVI- POT 12+67.69

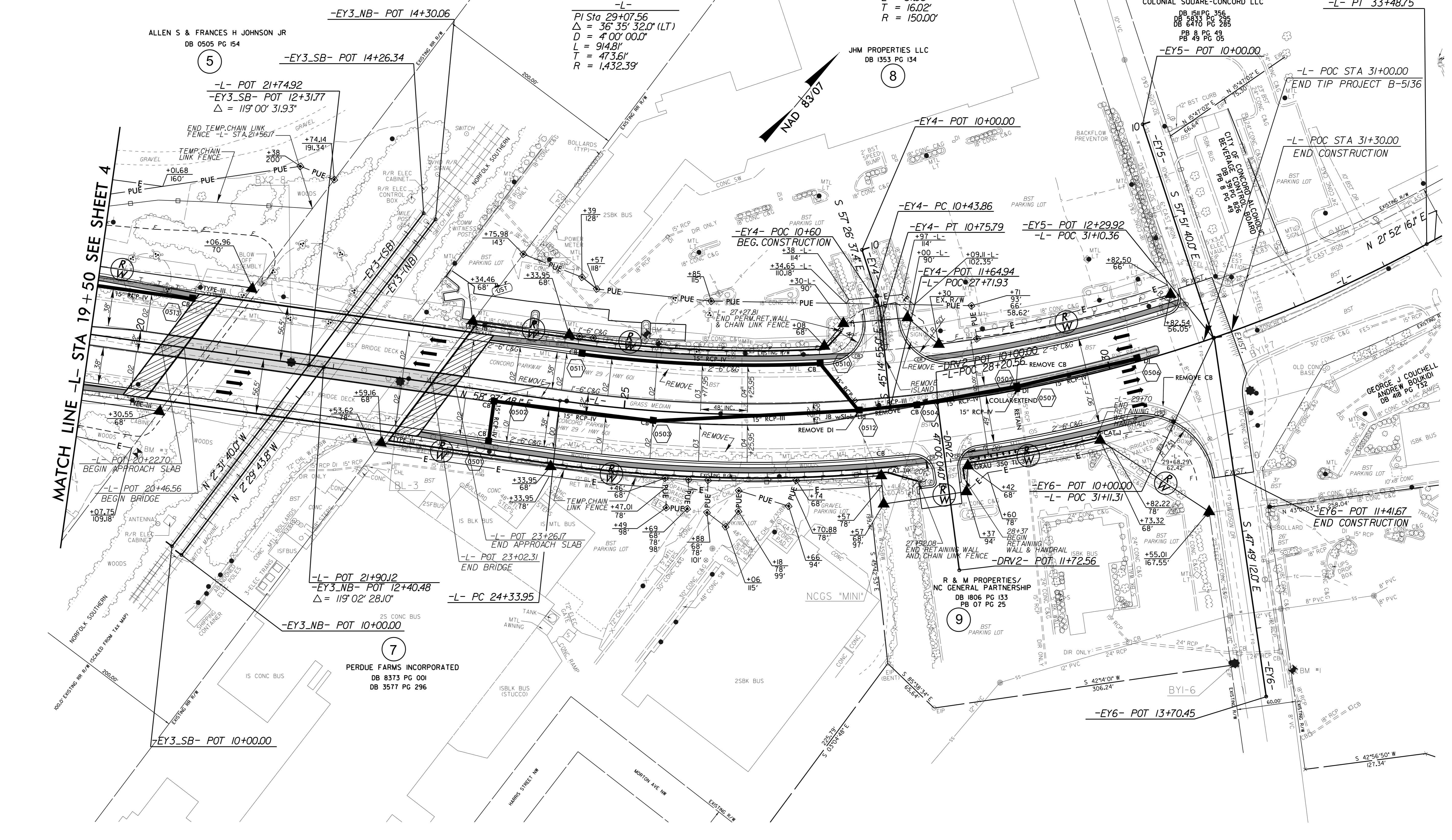
-DRVI-
PI Sta 11+89.67
 $\Delta = 19^\circ 21' 54.9" (RT)$
 $D = 19^\circ 05' 54.9"$
 $L = 101.40'$
 $T = 51.19'$
 $R = 300.00'$

MATCH LINE -L- STA 19+50 SEE SHEET 5

5/14/19

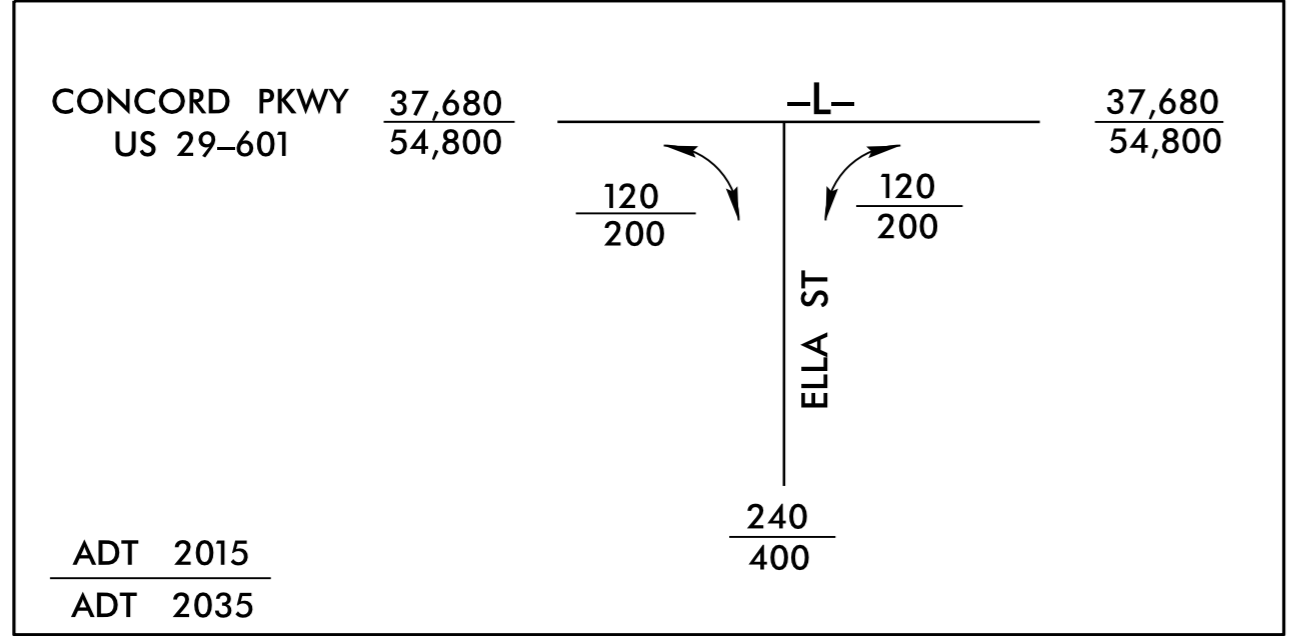
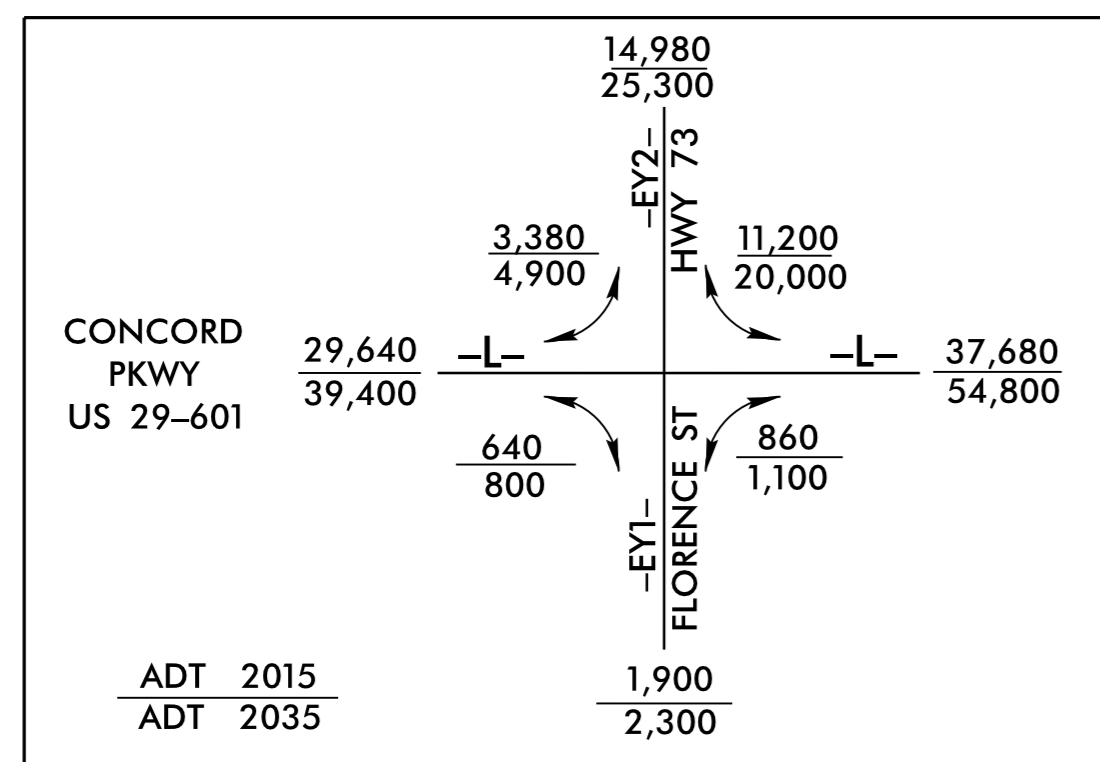


| | |
|---|--|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 5 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| SEE SHEETS 2B-1, 2B-2, 6 AND 7 FOR TEMPORARY DETOUR PLANS | SEE SHEETS S-1 THRU S-72 FOR STRUCTURE PLANS |
| SEE SHEET 2B-3 FOR CHANNELIZATION DETAIL | SEE TMP PLANS FOR TEMPORARY SHORING LOCATIONS |
| SEE SHEETS W-1 THRU W-11 FOR RETAINING WALL PLANS | SEE SHEET 8 FOR PROFILE OF -L- SEE SHEET 9 FOR PROFILE OF -EY4- |



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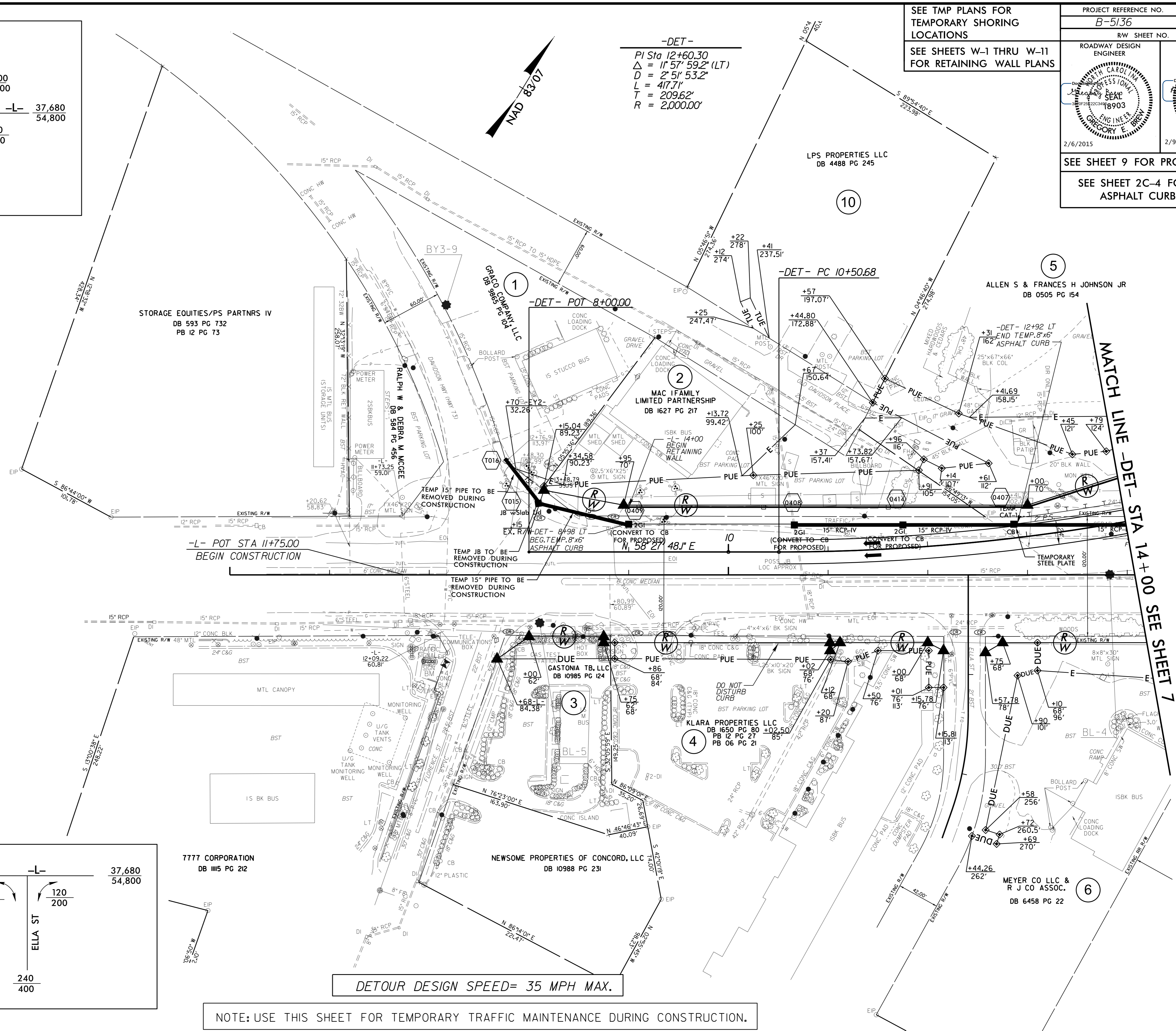
5/14/1999
 05-FEB-2015 16:10 B5136_Rdy_psh.06.edgn
 8633 AUTOCAD/PLT/554



SEE TMP PLANS FOR
 TEMPORARY SHORING
 LOCATIONS
 SEE SHEETS W-1 THRU W-11
 FOR RETAINING WALL PLANS

| | |
|--|-------------------------------------|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 6 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER GREGORY E. BRUN | HYDRAULICS ENGINEER KAREN HEPNER |
| 2/6/2015 | 2/9/2015 |
| SEE SHEET 9 FOR PROFILE OF -DET- | |
| SEE SHEET 2C-4 FOR 8" X 6" ASPHALT CURB DETAIL | |

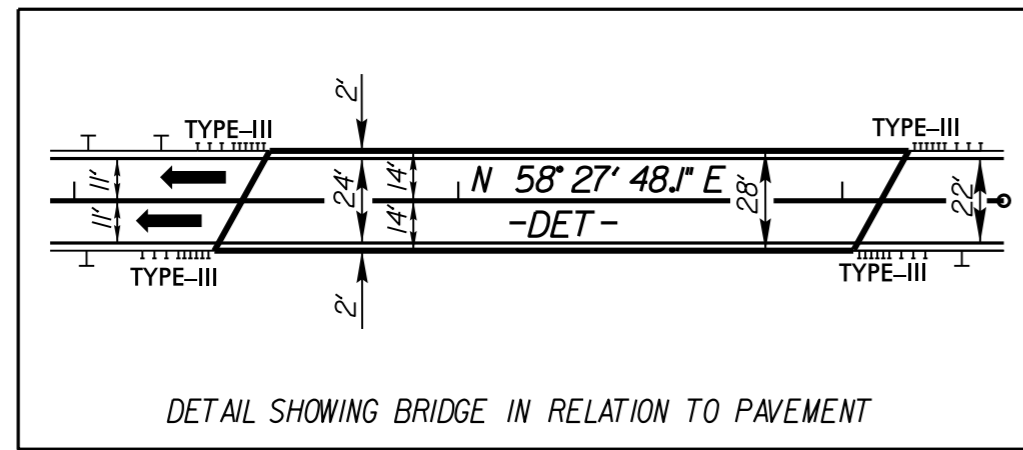
-DET-
 PI Sta 12+60.30
 $\Delta = 11'57''59.2''$ (LT)
 $D = 2'51''53.2''$
 $L = 417.71'$
 $T = 209.62'$
 $R = 2,000.00'$



DETOUR DESIGN SPEED= 35 MPH MAX.

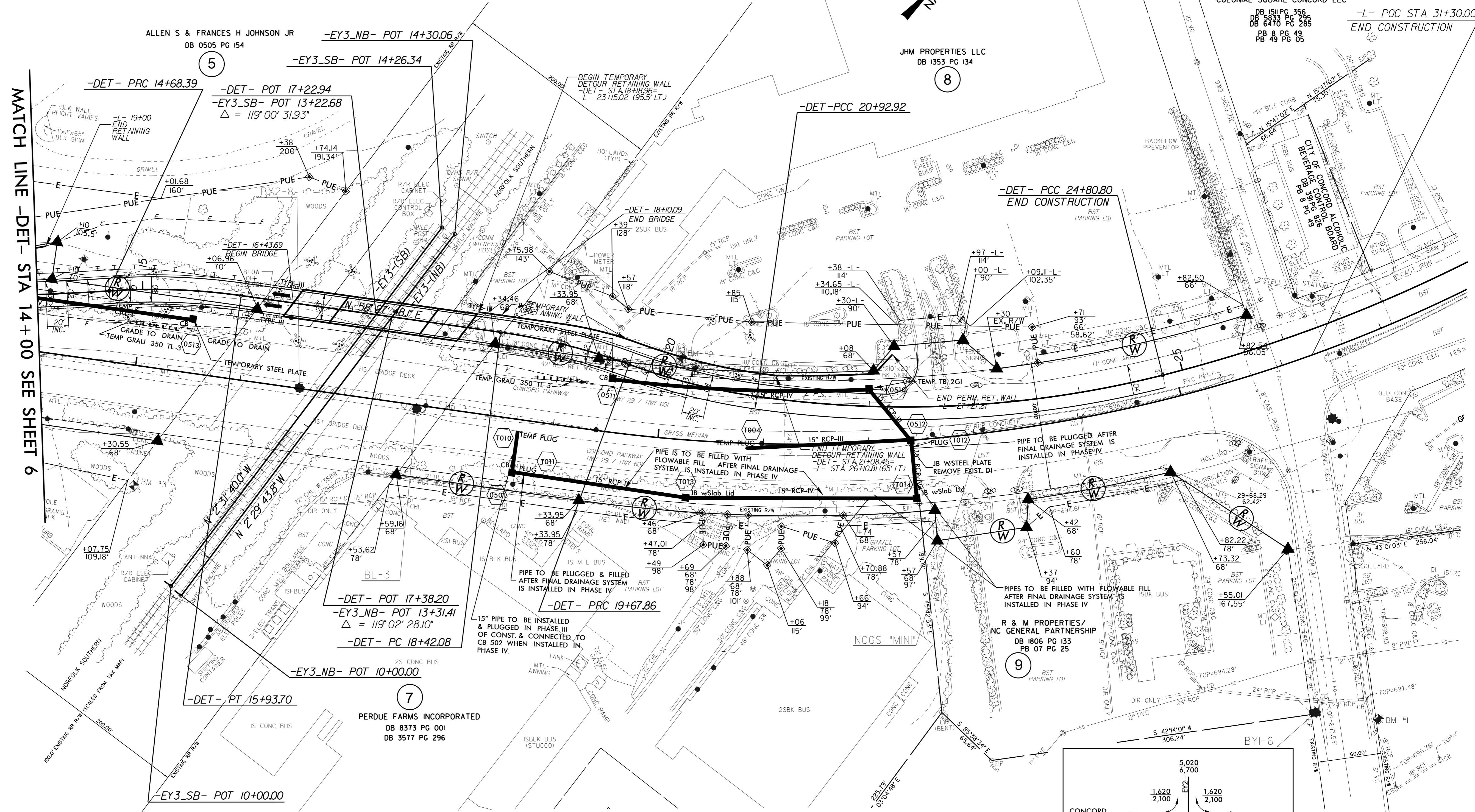
NOTE: USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION.

MATCH LINE -DET- STA 14+00 SEE SHEET 7



| -DET- | | |
|---|---|---|
| PI Sta 12+60.30 $\Delta = 11' 57'' 59.2''$ (LT) D = 2' 51' 53.2" L = 417.71' T = 209.62' R = 2,000.00' | PI Sta 15+31.27 $\Delta = 11' 57'' 59.2''$ (RT) D = 9' 32' 57.5" L = 125.31' T = 62.88' R = 600.00' | PI Sta 19+05.20 $\Delta = 12' 00'' 40.3''$ (RT) D = 9' 32' 57.5" L = 125.31' T = 63.12' R = 600.00' |
| PI Sta 20+30.61 $\Delta = 11' 56'' 32.6''$ (LT) D = 9' 32' 57.5" L = 125.06' T = 62.76' R = 600.00' | PI Sta 22+89.33 $\Delta = 22' 13'' 27.4''$ (LT) D = 5' 43' 46.5" L = 387.89' T = 196.41' R = 1,000.00' | PI Sta 26+59.31 $\Delta = 14' 26'' 12.3''$ (LT) D = 4' 03' 55.0" L = 355.12' T = 178.51' R = 1,409.39' |

SEE TMP PLANS FOR
TEMPORARY SHORING LOCATIONS
SEE TMP PLANS FOR PORTABLE CONC.
BARRIER LOCATIONS NEAR TEMP. BRIDGE



MATCH LINE -DET- STA 14+00 SEE SHEET 6

DETOUR DESIGN SPEED= 35 MPH MAX.

NOTE: USE THIS SHEET FOR TEMPORARY TRAFFIC MAINTENANCE DURING CONSTRUCTION.

| | | | | | | | | | | |
|------------------------|--------|--------|-------|--------|--------|-------|-------|-------|--------|--------|
| CONCORD PKWY US 29-601 | 37,680 | 54,800 | 5,020 | 6,700 | 1,620 | 2,100 | 1,620 | 2,100 | 31,280 | 44,800 |
| ADT 2015 | | | 8,940 | 13,900 | 13,260 | | 2,540 | 3,900 | | |
| ADT 2035 | | | | | 20,300 | | | | | |

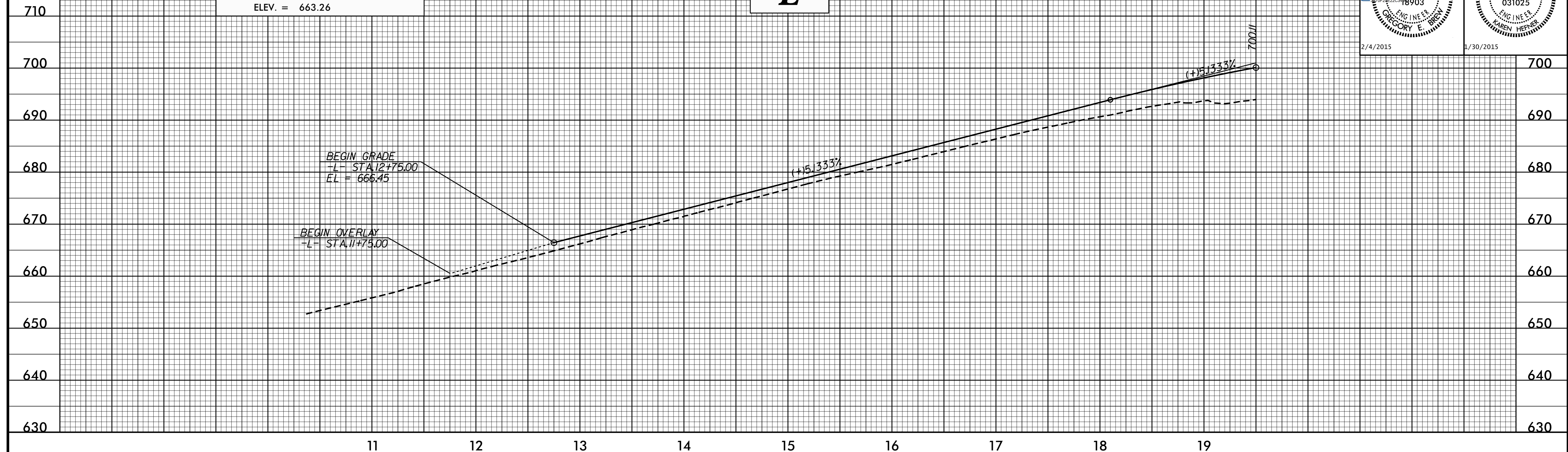
5/28/99

SEE SHEETS 4 & 5 FOR PLANS OF -L-

| | |
|--|---|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 8 |
| ROADWAY DESIGN ENGINEER GREGORY E. BREWSTER 18903 | HYDRAULICS ENGINEER KAREN HEFFNER 031025 |
| 2/4/2015 | 1/30/2015 |

BM-4 RR SPIKE SET IN BASE 24" OAK
NORTH 615032 EAST 1520642
89.10' RT OF -L- STA. 12+16.13
ELEV. = 663.26

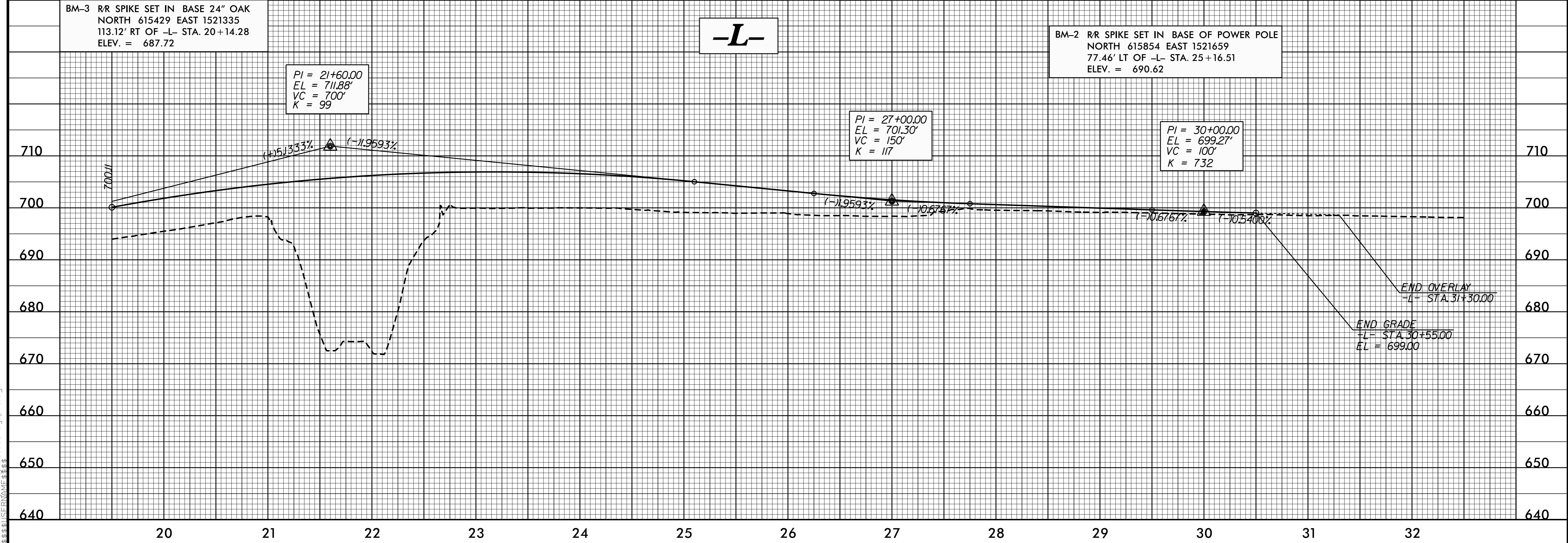
-L-



BM-3 RR SPIKE SET IN BASE 24" OAK
NORTH 615429 EAST 1521335
113.12' RT OF -L- STA. 20+14.28
ELEV. = 687.72

-L-

BM-2 R/R SPIKE SET IN BASE OF POWER POLE
NORTH 615854 EAST 1521659
77.46' LT OF -L- STA. 25+16.51
ELEV. = 690.62



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5/28/99

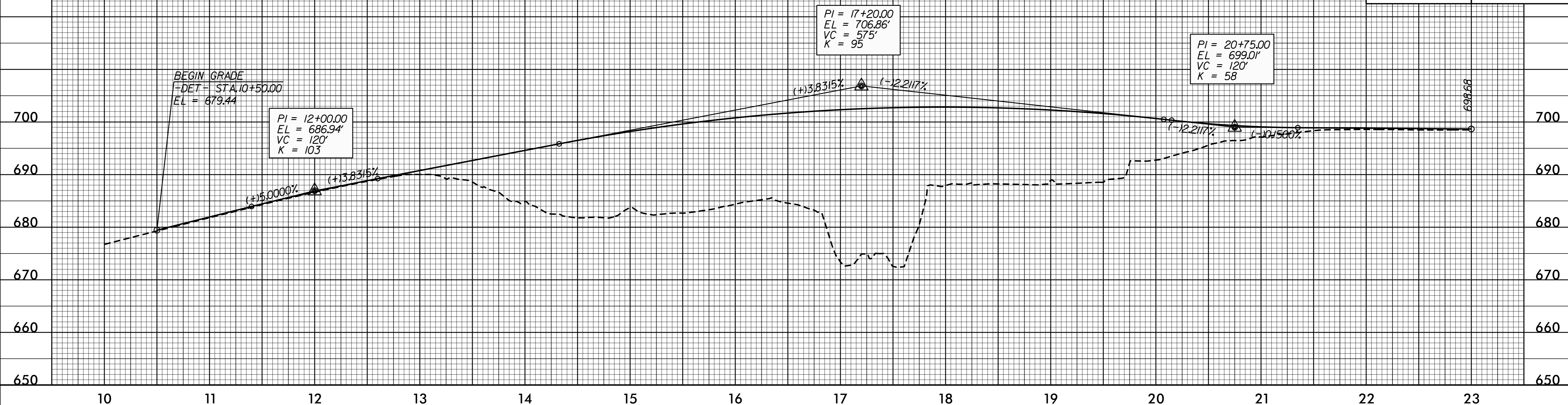
SEE SHEETS 6 & 7 FOR PLANS OF -DET-

| | |
|---|---|
| PROJECT REFERENCE NO. B-5136 | SHEET NO. 9 |
| ROADWAY DESIGN ENGINEER GREGORY E. BREWSTER PROFESSIONAL SEAL 18903 2/4/2015 | HYDRAULICS ENGINEER KAREN HEFFNER PROFESSIONAL SEAL 031025 1/30/2015 |

BM-3 RR SPIKE SET IN BASE 24" OAK
NORTH 615429 EAST 1521335
185.69' RT OF -DET- STA. 14+83.78
ELEV. = 687.72

-DET-

BM-2 RR SPIKE SET IN BASE OF POWER POLE
NORTH 615854 EAST 1521659
21.49' LT OF -DET- STA. 20+14.73
ELEV. = 690.62

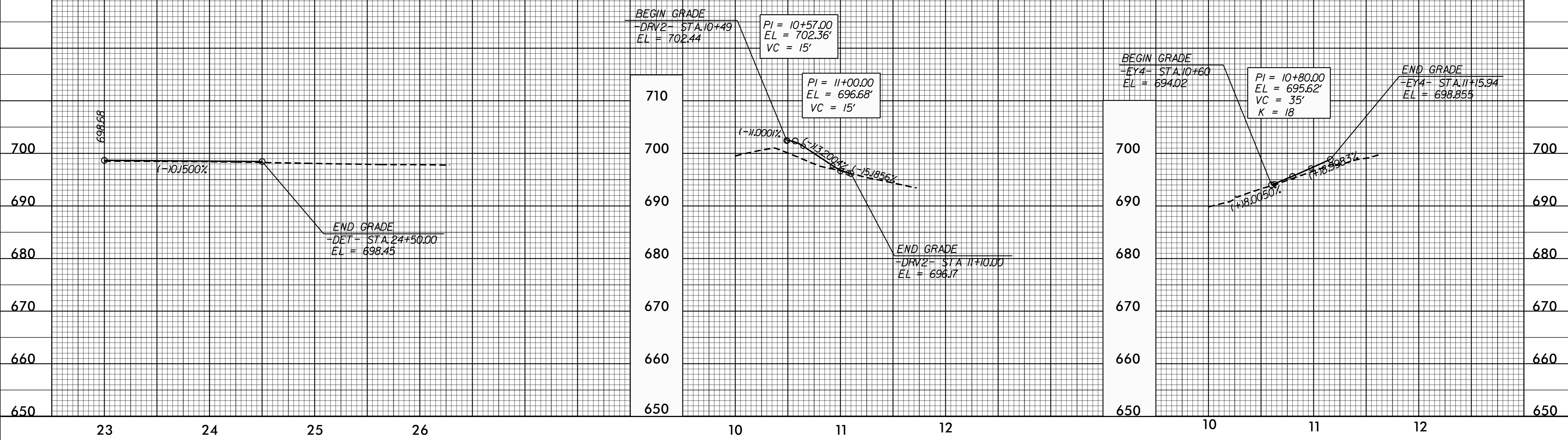


SEE SHEET 5 FOR PLANS OF -DRV2- & -EY4-

-DET-

-DRV2-

-EY4-



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