

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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

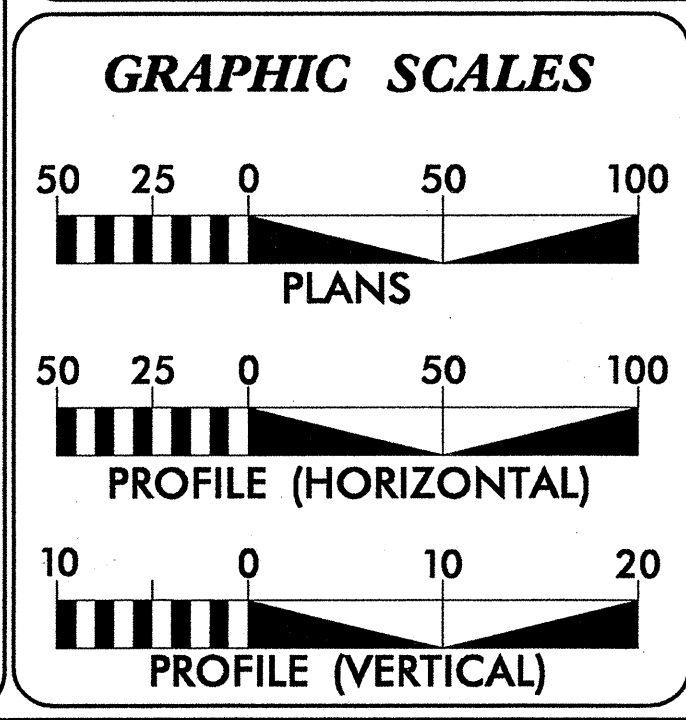
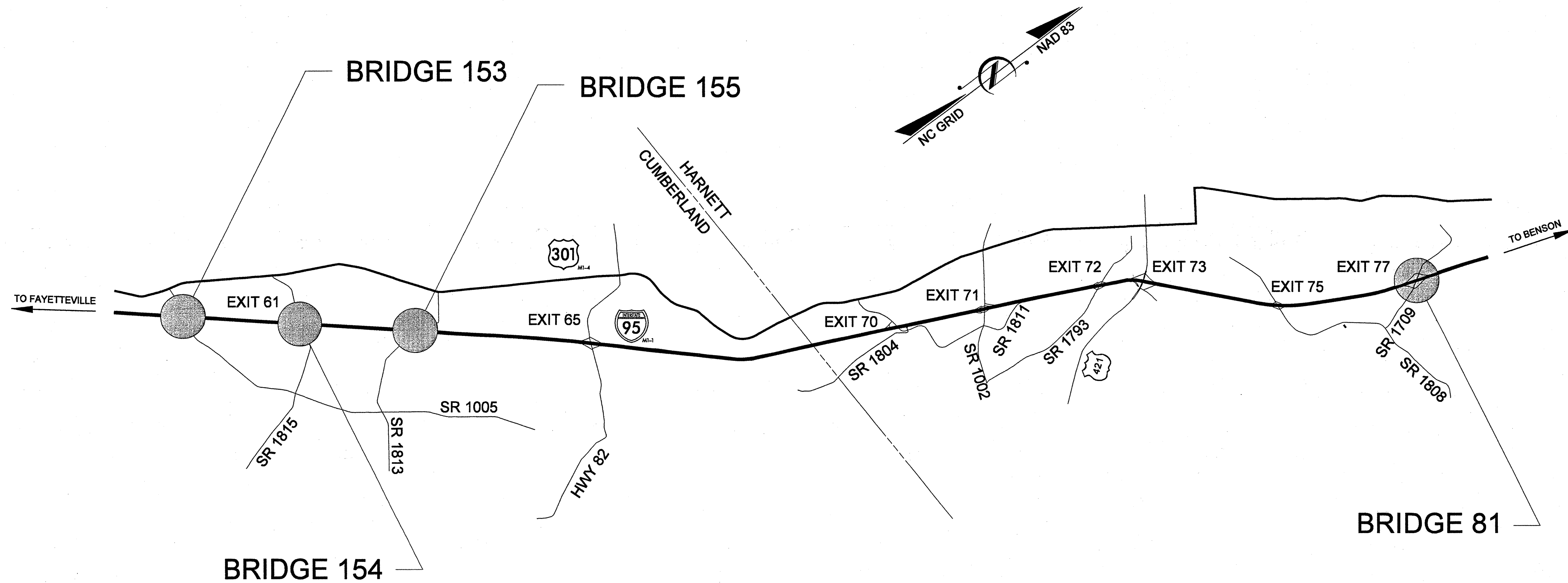
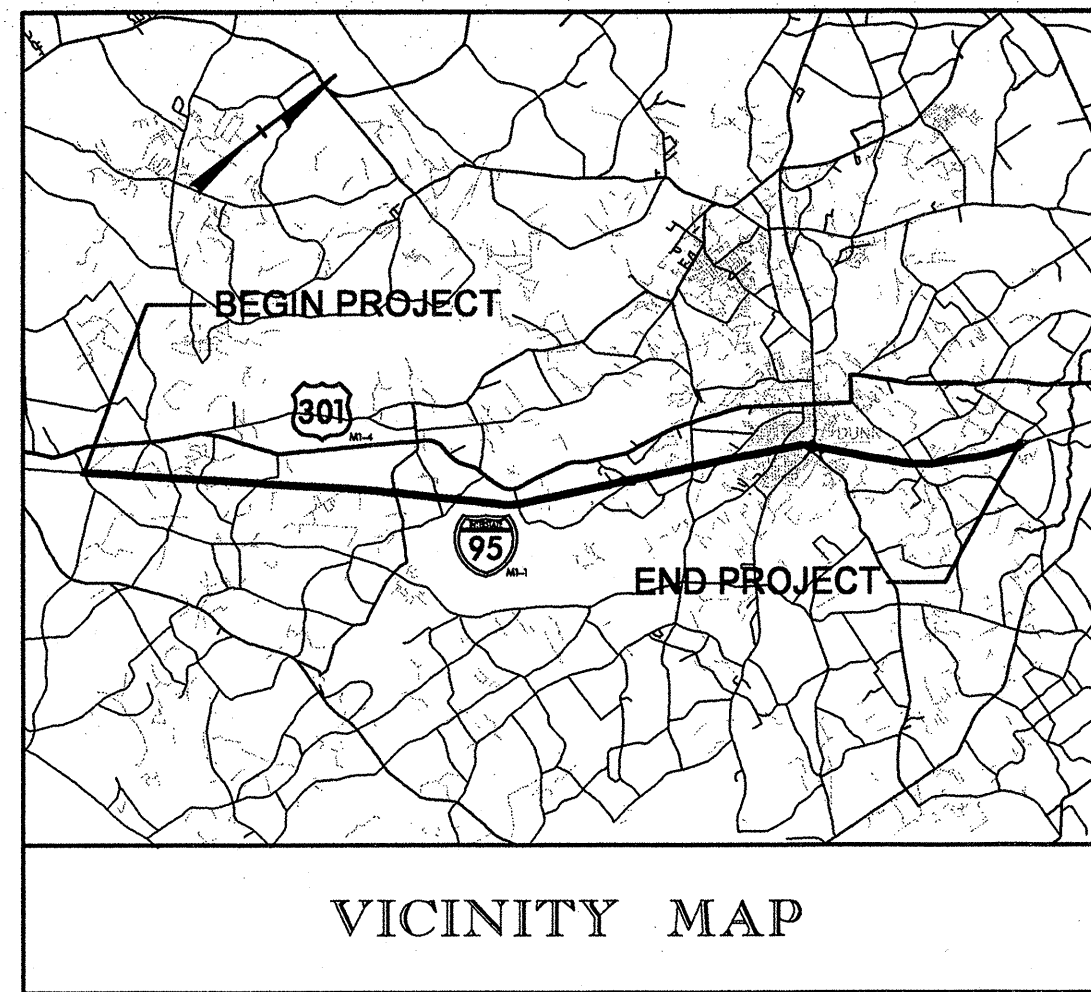
**HARNETT & CUMBERLAND COUNTIES**

LOCATION: BRIDGES 153, 154, 155, AND 81 LOCATED ALONG I-95

TYPE OF WORK: JACK STRUCTURES, SPAN REPLACEMENTS,  
GRADING, PAVING, AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5022	1	
WBS NO.	F.A. PROJ. NO.	DESCRIPTION	
41928.1.1	IMS-95-2(105)59	PE	
41928.2.1		RW & UTILITY	
41928.3.1	IMD-95-2(110)59	CONSTRUCTION	

**CONTRACT: C202078 TIP PROJECT: B-5022**



**DESIGN DATA**

V = 55 MPH

Prepared In the Office of:  
**STV / Ralph Whitehead Associates, Inc.**  
1000 West Morehead St., Ste. 200  
Charlotte, NC 28208

for the North Carolina Department of Transportation

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: \_\_\_\_\_

LETTING DATE:  
**JULY 15, 2008**

**JOHN N. JOHNSON, P.E.**  
PROJECT ENGINEER

**ERIN DAY**  
PROJECT DESIGN ENGINEER

**ROADWAY DESIGN ENGINEER**

5-1-08

*John N. Johnson* P.E.

SIGNATURE: \_\_\_\_\_

**DIVISION OF HIGHWAYS  
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER

05/20/2008 10:47:00 AM \\p01\B-5022.RDY\_TSH.dgn

## GENERAL NOTES

**GENERAL NOTES:** 2006 SPECIFICATIONS EFFECTIVE: 07-18-06

**GRADING:**  
THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. GRADE LINES MAY BE ADJUSTED AT THEIR BEGINNING AND ENDING AND AT STRUCTURES AS DIRECTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

**CLEARING:**  
CLEARING AND GRUBBING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II. (NCDOT STD. 200.02)

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

**SIDE ROADS:**  
THE CONTRACTOR WILL BE REQUIRED TO DO ALL NECESSARY WORK TO PROVIDE SUITABLE CONNECTIONS WITH ALL ROADS, STREETS, AND DRIVES ENTERING THIS PROJECT. THIS WORK WILL BE PAID FOR AT THE CONTRACT UNIT PRICE FOR THE PARTICULAR ITEMS INVOLVED.

**SUBSURFACE PLANS:**  
SUBSURFACE INFORMATION IS NOT AVAILABLE ON THIS PROJECT.

**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.

**MAILBOXES:**  
THE CONTRACTOR SHALL RELOCATE ALL MAIL BOXES AS REQUIRED BY SECTION 107-12 OF THE NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES. COORDINATE THIS WORK WITH THE U.S. POSTAL SERVICE.

**FENCES:**  
THE CONTRACTOR SHALL REMOVE AND RESET ALL FENCES, AS NOTED ON THE PLANS AND/OR AS DIRECTED BY THE ENGINEER. THIS SHALL BE CONSIDERED INCIDENTAL TO CONTRACT ITEMS.

**TREES & SHRUBS:**  
THE CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS OUTSIDE THE CUT/FILL LINES, IN ADDITION TO THOSE THAT RECEIVE TREE/SHRUB PROTECTION BARRIERS. THE CONTRACTOR IS ALSO REQUESTED TO SAVE ALL OTHER EXISTING TREES AND SHRUBS AS DIRECTED BY THE ENGINEER.

**EROSION CONTROL:**  
THE CONTRACTOR SHALL USE ALL REASONABLE EROSION CONTROL MEASURES TO CONTAIN ALL SEDIMENT ON SITE. CONTRACTOR'S OPERATIONS AND METHODS SHALL MINIMIZE THE DURATION OF GRADING AND DRAINAGE OPERATIONS. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED AT THE DIRECTION OF THE ENGINEER. INSTALLING AND MAINTAINING ALL REASONABLE EROSION AND SEDIMENT CONTROL MEASURES SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.

**UTILITIES:**  
THE LOCATION OF EXISTING UTILITIES SHOWN ON THE PLANS IS FOR THE USE OF THE CONTRACTOR IN PROVIDING PROTECTION FOR THESE UTILITIES DURING CONSTRUCTION OPERATIONS. NCDOT AND/OR AGENT SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY OF LOCATION, SIZE, DEPTH, OR COMPLETENESS OF INFORMATION. BEFORE BEGINNING CONSTRUCTION, THE CONTRACTOR SHALL CONTACT EACH OF THE UTILITY OWNERS IN THE AREA OF CONSTRUCTION RELATIVE TO THEIR UTILITY LOCATIONS. THE CONTRACTOR WILL BE REQUIRED TO PROTECT ALL UTILITIES FROM DAMAGE CAUSED BY CONSTRUCTION OPERATIONS AND/OR RELATED WORK OF THE CONTRACTOR OR HIS AGENTS. THE CONTRACTOR SHALL SAVE HARMLESS NCDOT AND THE AGENT FOR ANY INCONVENIENCE OR DELAY CAUSED BY THE OPERATIONS OF OTHERS IN PERFORMING THE ABOVE WORK. NECESSARY ADJUSTMENT OR RELOCATION OF EXISTING UTILITIES, EXCEPT FOR CONTRACT ITEMS, WILL BE PERFORMED BY OTHERS. THE CONTRACTOR SHALL COOPERATE WITH THOSE PERFORMING UNDERGROUND UTILITY CONSTRUCTION AND COORDINATE HIS WORK WITH OTHERS TO PROVIDE SATISFACTORY PROGRESS IN THE PROJECT AREA.

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225.04	METHOD OF OBTAINING SUPERELEVATION - TWO LANE PAVEMENTS

### DIVISION 4 - MAJOR STRUCTURES

422.10	REINFORCED BRIDGE APPROACH FILLS
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### DIVISION 5 - SUBGRADE BASES AND SHOULDERS

560.01	METHOD OF SHOULDER CONSTRUCTION - METHOD 1
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### DIVISION 8 - INCIDENTALS

840.36	TRAFFIC BEARING GRATE DROP INLET
840.37	STEEL GRATE AND FRAME
840.71	CONCRETE AND BRICK PIPE PLUG
846.01	CONCRETE CURB, GUTTER AND CURB & GUTTER
846.04	DROP INLET INSTALLATION IN SHOULDER BERM GUTTER
862.01	GUARDRAIL PLACEMENT
862.02	GUARDRAIL INSTALLATION
862.03	STRUCTURE ANCHOR UNITS
862.04	ANCHORING END OF GUARDRAIL

### DIVISION 11 - WORK ZONE TRAFFIC CONTROL

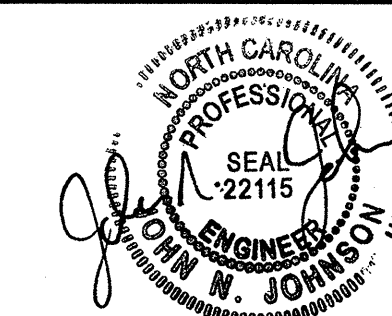
1101.02	TEMPORARY LANE CLOSURES
1101.03	TEMPORARY ROAD CLOSURES
1101.04	TEMPORARY SHOULDER CLOSURES
1101.05	WORK ZONE VEHICLE ACCESSES
1101.11	TRAFFIC CONTROL DESIGN TABLES
1110.01	STATIONARY WORK ZONE SIGNS
1110.02	PORTABLE WORK ZONE SIGNS
1115.01	FLASHING ARROW PANEL
1130.01	DRUMS
1135.01	CONES
1145.01	BARRICADES
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### DIVISION 12 - PAVEMENT MARKINGS

1205.01	PAVEMENT MARKINGS - LINE TYPES AND OFFSETS
1205.02	PAVEMENT MARKINGS - DIVIDED AND UNDIVIDED ROADWAYS
1205.03	PAVEMENT MARKINGS - INTERCHANGE RAMPS
1205.05	PAVEMENT MARKINGS - TURN LANES
1205.08	PAVEMENT MARKINGS - SYMBOLS AND WORD MESSAGES
1205.12	PAVEMENT MARKINGS - BRIDGES
1250.01	PAVEMENT MARKER SPACING
1251.01	RAISED PAVEMENT MARKERS - PERMANENT AND TEMPORARY
1261.01	GUARDRAIL AND BARRIER DELINEATOR SPACING
1261.02	GUARDRAIL AND BARRIER DELINEATOR TYPES

### DIVISION 16 - EROSION CONTROL

1605.01	TEMPORARY SILT FENCE
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PROJECT REFERENCE NO. B-5022	SHEET NO. 1A
 <b>STV / Ralph Whitehead Associates, Inc.</b> 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	



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	× × ×
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

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG 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	▭
False Sump	▭

### RAILROADS:

Standard Gauge	-----
RR Signal Milepost	○
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	○
Proposed Right of Way Line with Concrete or Granite Marker	○
Existing Control of Access	⊗
Proposed Control of Access	⊗
Existing Easement Line	--- E
Proposed Temporary Construction Easement	--- E
Proposed Temporary Drainage Easement	--- TDE
Proposed Permanent Drainage Easement	--- PDE
Proposed Permanent Utility Easement	--- PUE

### ROADS AND RELATED FEATURES:

Existing Edge of Pavement	-----
Existing Curb	-----
Proposed Slope Stakes Cut	--- C
Proposed Slope Stakes Fill	--- F
Proposed Wheel Chair Ramp	⊕ WCR
Proposed Wheel Chair Ramp Curb Cut	⊕ WCC
Curb Cut for Future Wheel Chair Ramp	⊕ CCFR
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	⊕
UG Power Cable Hand Hole	⊕
H-Frame Pole	●
Recorded UG Power Line	--- P
Designated UG Power Line (S.U.E.*)	--- P

### TELEPHONE:

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

### WATER:

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

### TV:

TV Satellite Dish	⊕
TV Pedestal	⊕
TV Tower	⊕
UG TV Cable Hand Hole	⊕
Recorded UG TV Cable	--- TV
Designated UG TV Cable (S.U.E.*)	--- TV
Recorded UG Fiber Optic Cable	--- TV FO
Designated UG Fiber Optic Cable (S.U.E.*)	--- TV FO

### GAS:

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

### SANITARY SEWER:

Sanitary Sewer Manhole	⊕
Sanitary Sewer Cleanout	⊕
UG 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 UG Line	--- UTIL
UG Tank; Water, Gas, Oil	▭
A/G Tank; Water, Gas, Oil	▭
UG Test Hole (S.U.E.*)	⊕
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.





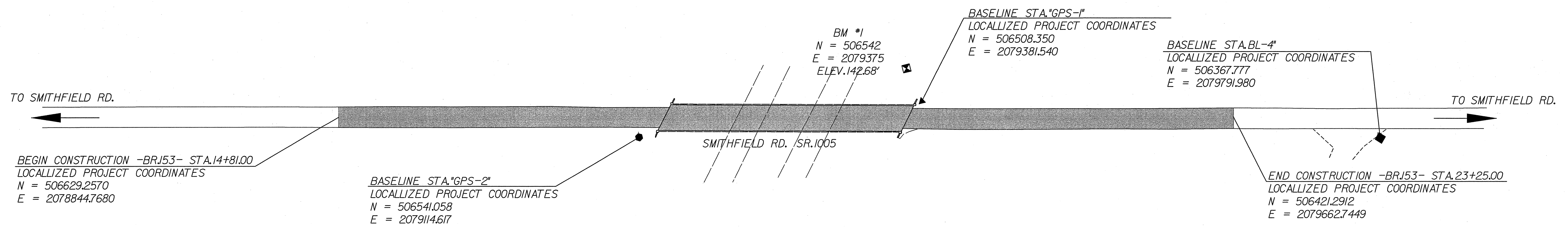


8/17/99

PLAN SCALE  
NOT TO SCALE

PROJECT REFERENCE NO. B-5022	SHEET NO. 1D
LOCATION AND SURVEYS	
STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	

# SURVEY CONTROL SHEET -BRJ53-



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "AREA"

WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF  
NORTHING: 506508.35(±) EASTING: 2079381.54(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987227

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL DISTANCE FROM "AREA" TO -L- STATION 14+81.00 IS  
N 77°18'21.86" W 550.22'

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


POINT	-BRJ53- STATION	OFFSET	NORTHING	EASTING	ELEVATION
GPS-1	20+31.01	15.08' LT.	506508.350	2079381.540	156.17'
GPS-2	17+64.26	18.99' RT.	506541.058	2079114.617	155.33'
BL-4	24+63.44	20.02' RT.	506367.777	2079791.980	143.88'
POINT	-BRJ53- STATION	OFFSET	NORTHING	EASTING	ELEVATION
BM#1	20+16.61	46.04' LT.	506542	2079375	142.68'

REVISIONS

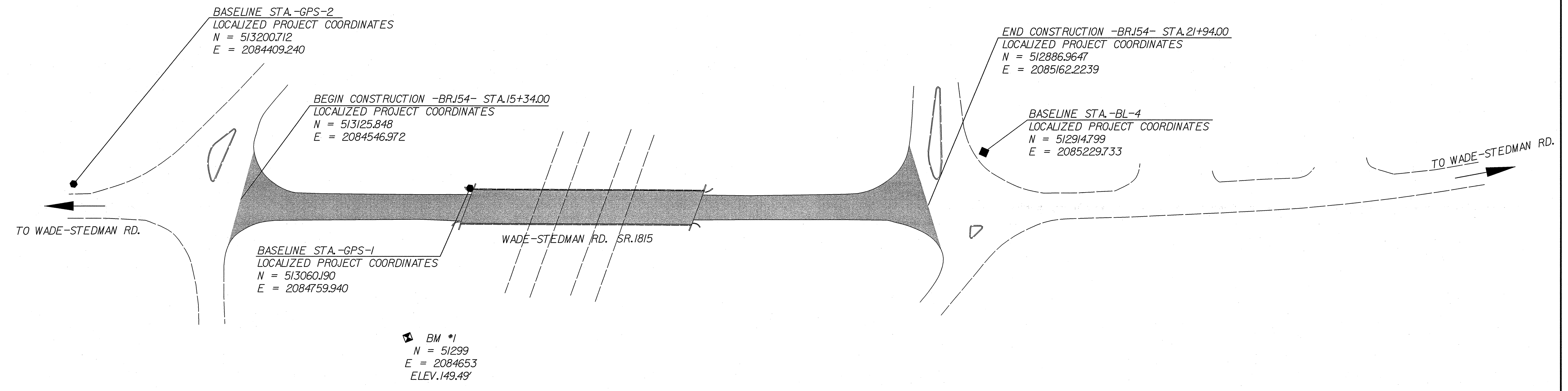
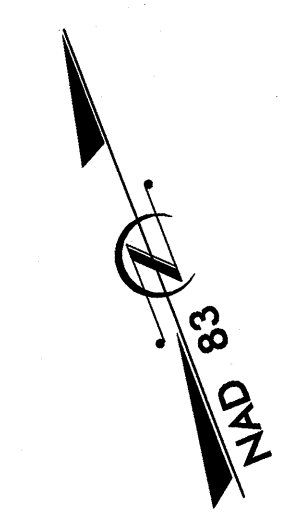
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8/17/99

PLAN SCALE  
NOT TO SCALE

PROJECT REFERENCE NO. B-5022	SHEET NO. 1E
LOCATION AND SURVEYS	
 <b>STV / Ralph Whitehead Associates, Inc.</b> 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	

# SURVEY CONTROL SHEET -BR.154-



REVISIONS

**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PINK" WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF NORTHING: 513060.19(FT) EASTING: 2084759.94(FT) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987108

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PINK" TO L- STATION 15+34.00 IS N72°51'55.31"W 222.86'

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


POINT	-BR.154- STATION	OFFSET	NORTHING	EASTING	ELEVATION
GPS-1	17+56.29	15.88' LT.	513060.190	2084759.940	169.36'
GPS-2	13+78.51	19.94' LT.	513200.712	2084409.240	157.75'
BL-4	22+46.86	50.38' LT.	512914.799	2085229.733	159.33'
POINT	-BR.154- STATION	OFFSET	NORTHING	EASTING	ELEVATION
BM#1	16+97.29	126.33' LT.	512949	2084653	149.49'

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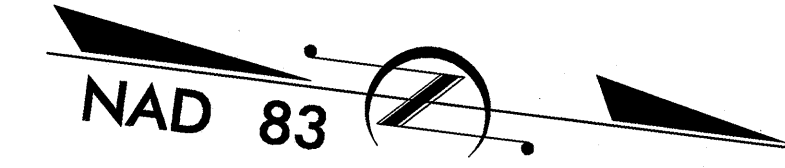


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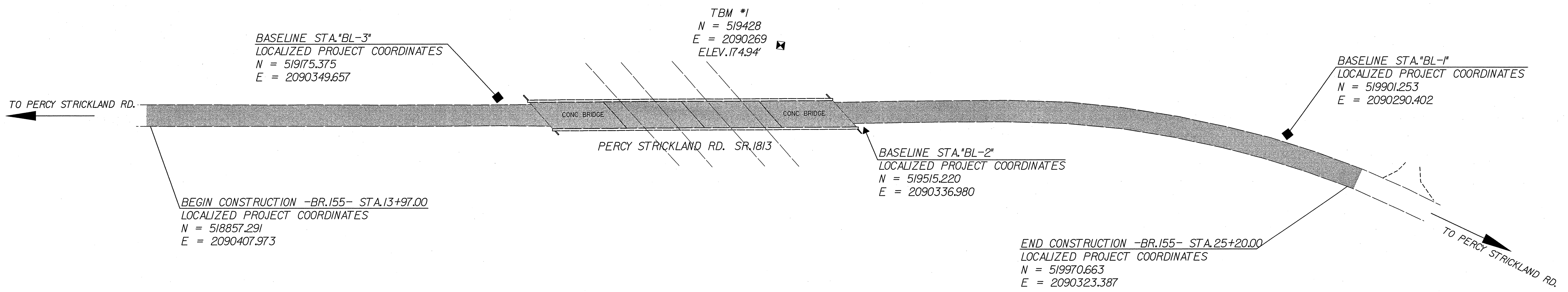
PLAN SCALE  
NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
B-5022	1F
LOCATION AND SURVEYS	
 <b>STV / Ralph Whitehead Associates, Inc.</b> 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	

# SURVEY CONTROL SHEET -BR.155-



REVISIONS



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "LOST"

WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF  
NORTHING: 519515.22(±) EASTING: 2090336.98(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986970

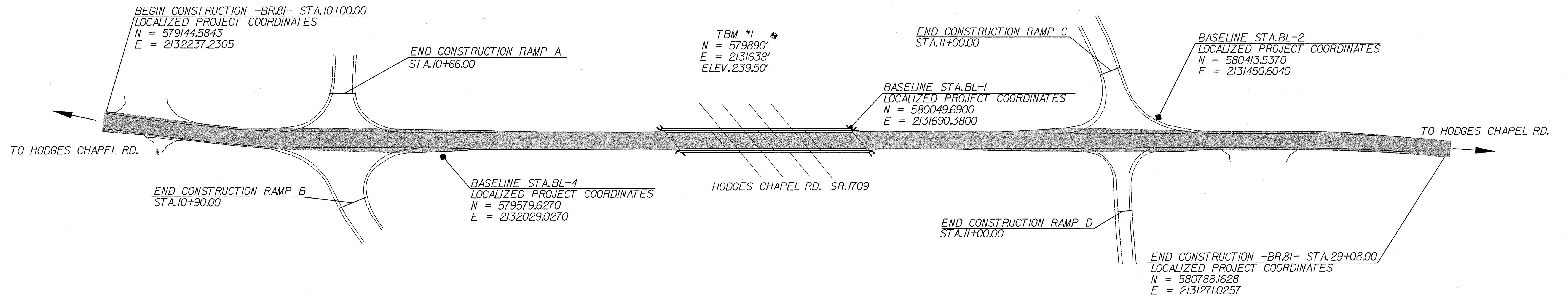
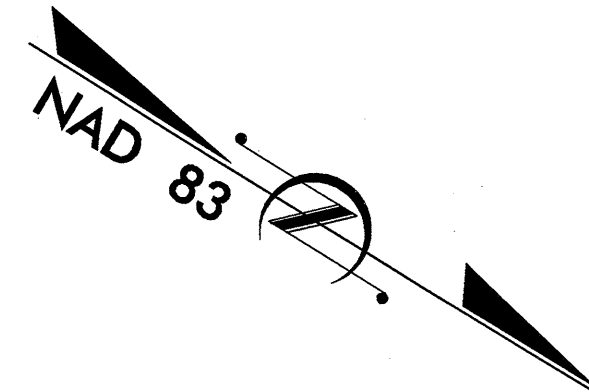
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "LOST" TO L- STATION 13+97.00 IS  
S 6°09'30.90 E 661.75'

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

POINT -BRJ55-	STATION	OFFSET	NORTHING	EASTING	ELEVATION
BL-1	24+46.00	17.95' LT.	519901.253	2090290.402	176.76'
BL-2	20+58.47	16.89' RT.	519515.220	2090336.980	188.98'
BL-3	17+20.08	16.88' RT.	519175.375	2090349.657	188.87'
POINT -BRJ55-	STATION	OFFSET	NORTHING	EASTING	ELEVATION
TBM #1	19+81.34	62.24' LT.	519428	2090269	174.94'

05/08/2008  
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# SURVEY CONTROL SHEET -BR.81-



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "DEN"

WITH NAD 1983/01 STATE PLANE GRID COORDINATES OF  
 NORTHING: 580049.69(±) EASTING: 2131690.38(±)  
 THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99987385

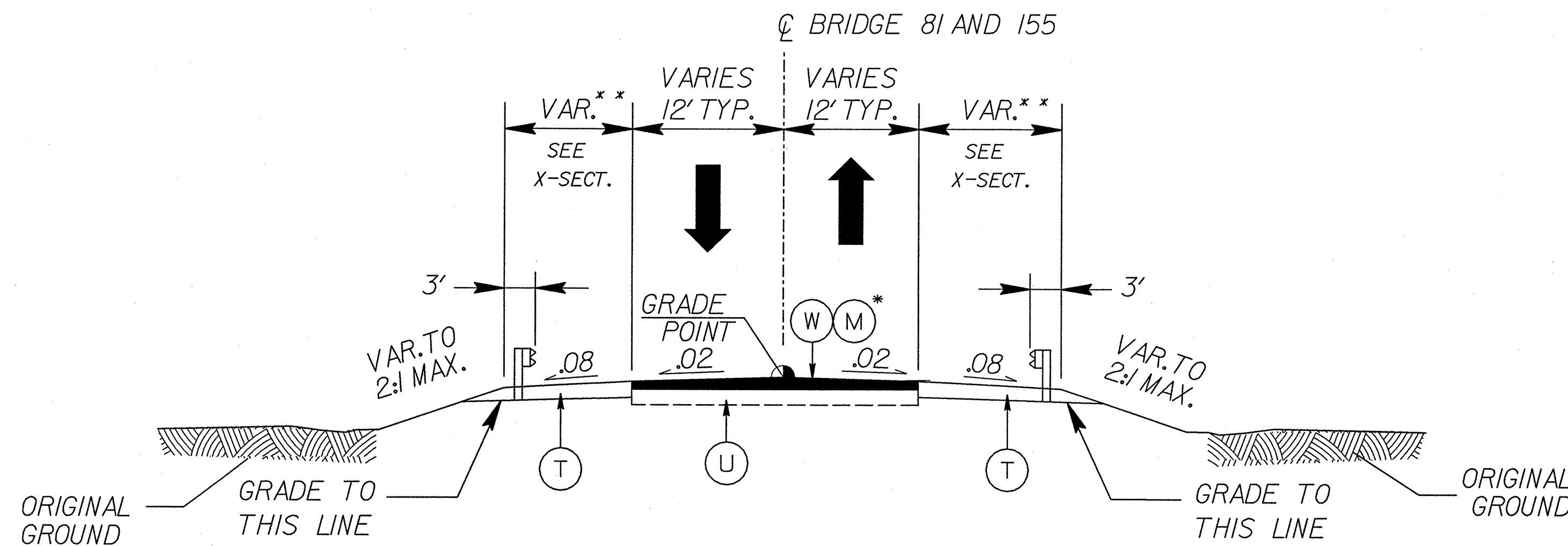
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "DEN" TO -L- STATION 10+00.00 IS  
 S 31°08'22.93" E 1057.48'

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

POINT	-BR.81- STATION	OFFSET	NORTHING	EASTING	ELEVATION
BL-1	20+58.94	19.10' LT.	580049.690	213690.380	260.33'
BL-2	24+94.47	32.89' LT.	580413.537	2131450.604	248.13'
BL-4	14+81.15	23.31' RT.	579579.627	2132029.027	237.92'
POINT	-BR.81- STATION	OFFSET	NORTHING	EASTING	ELEVATION
TBM #1	19+49.90	147.59' LT.	579890	2131638	239.50'



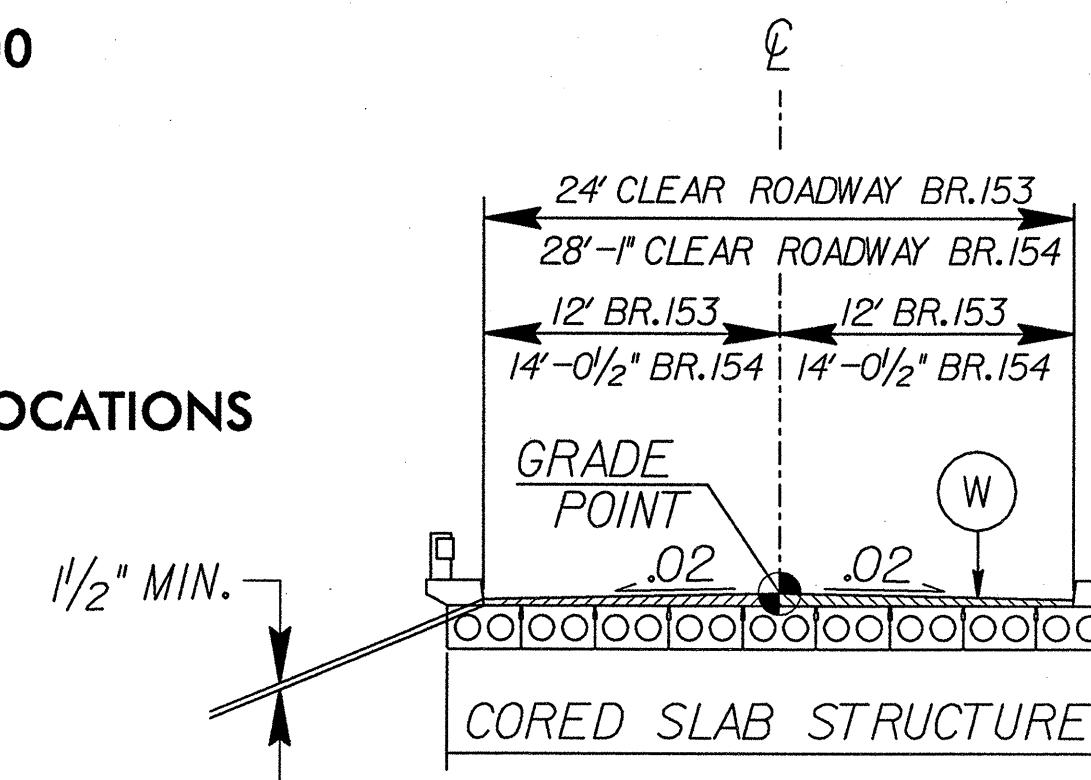
NOTES: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.  
MAIN LINE PAVEMENT STRUCTURE TO BE USED TO THE END OF RADII ON ALL -Y- LINES.



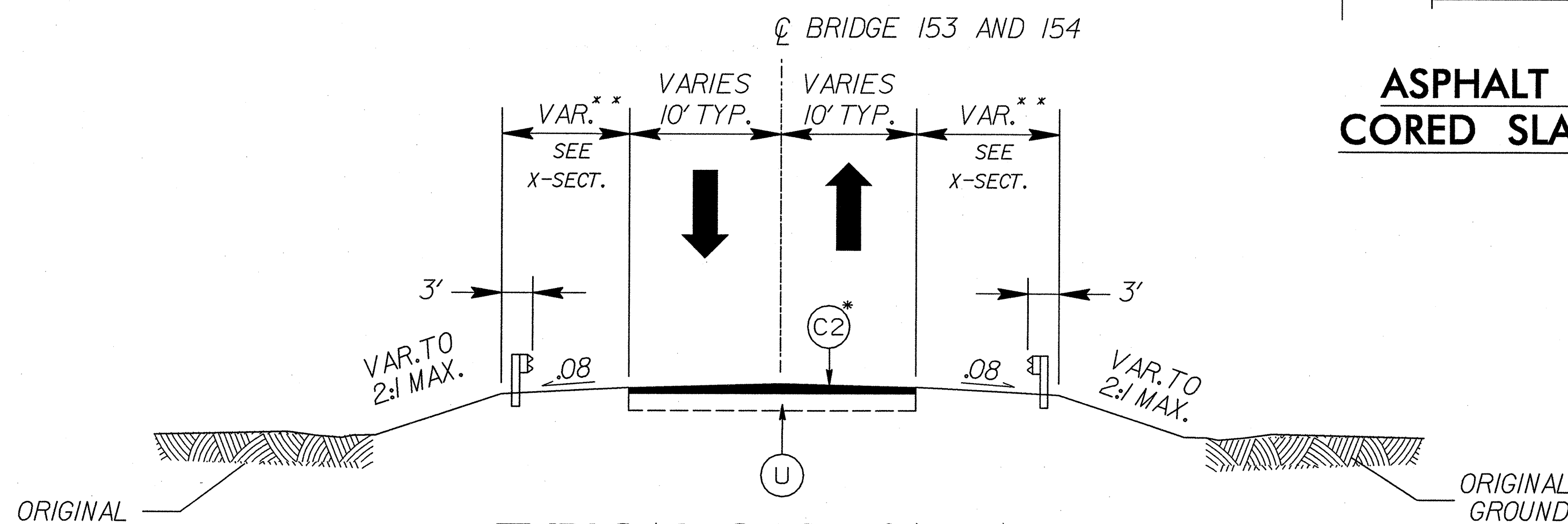
### TYPICAL SECTION NO. 1

BRIDGE -81- STA. 10+00.00 TO STA. 18+05.57 (BRIDGE)  
BRIDGE -81- STA. 20+70.88 (BRIDGE) TO STA. 29+08.00

- \* SEE MILLING DETAIL (SHEET 2-A)
- \*\* SEE PLAN FOR SHOULDER BERM GUTTER LOCATIONS (SEE DETAIL SHEET 2-A)



### ASPHALT DETAIL FOR CORED SLAB STRUCTURES

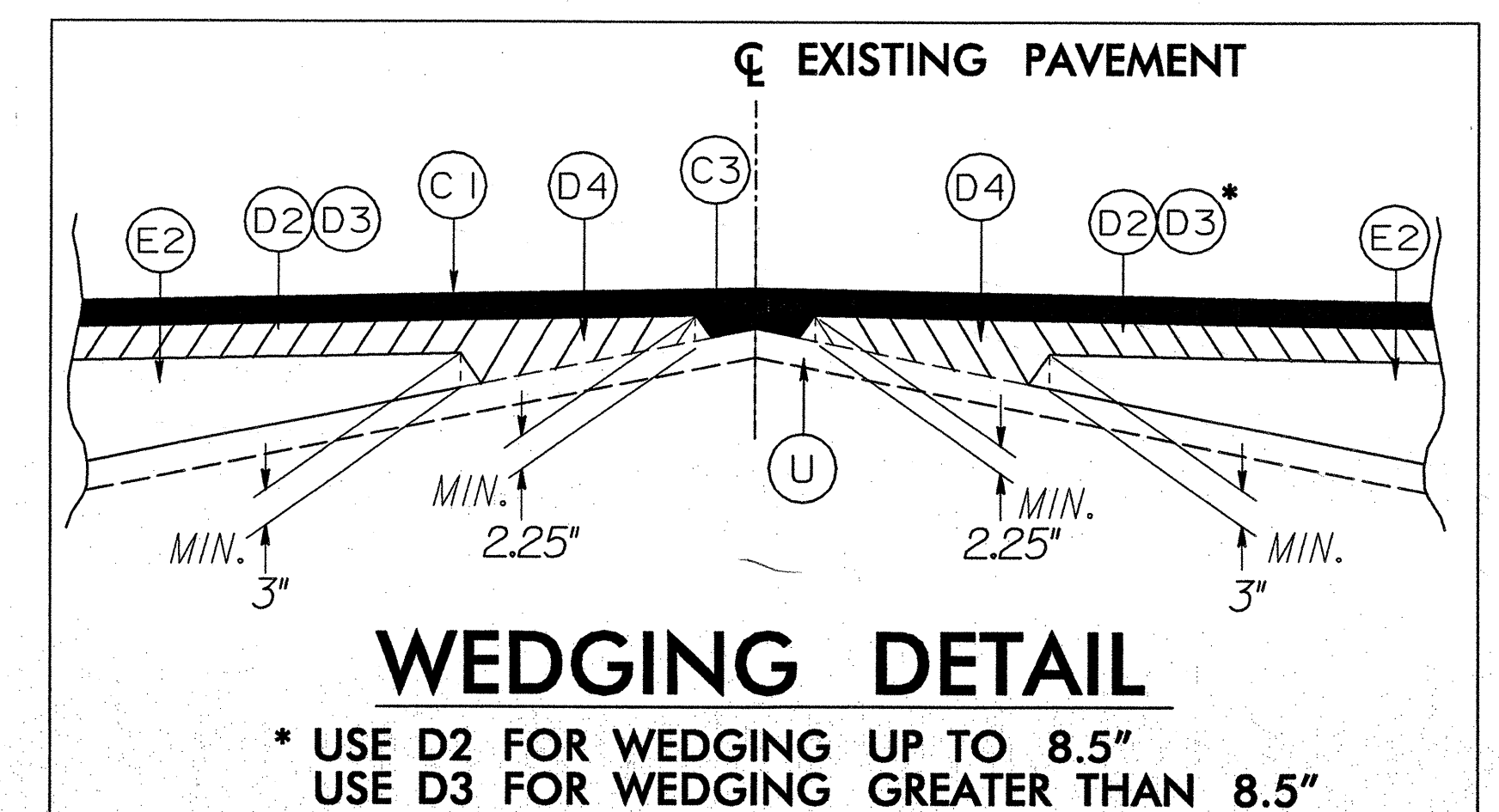


### TYPICAL SECTION NO. 2

BRIDGE -153- STA. 15+32.00 TO STA. 17+88.40 (BRIDGE)  
BRIDGE -153- STA. 20+18.71 (BRIDGE) TO STA. 21+59.00  
BRIDGE -154- STA. 16+21.00 TO STA. 17+53.71 (BRIDGE)  
BRIDGE -154- STA. 19+74.85 (BRIDGE) TO STA. 21+59.00

- \* MILL 25' - 75' AS REQUIRED TO OBTAIN SMOOTH TIE-IN. SEE MILLING DETAIL (SHEET 2-A)
- \*\* SEE PLAN FOR SHOULDER BERM GUTTER LOCATIONS (SEE DETAIL SHEET 2-A)

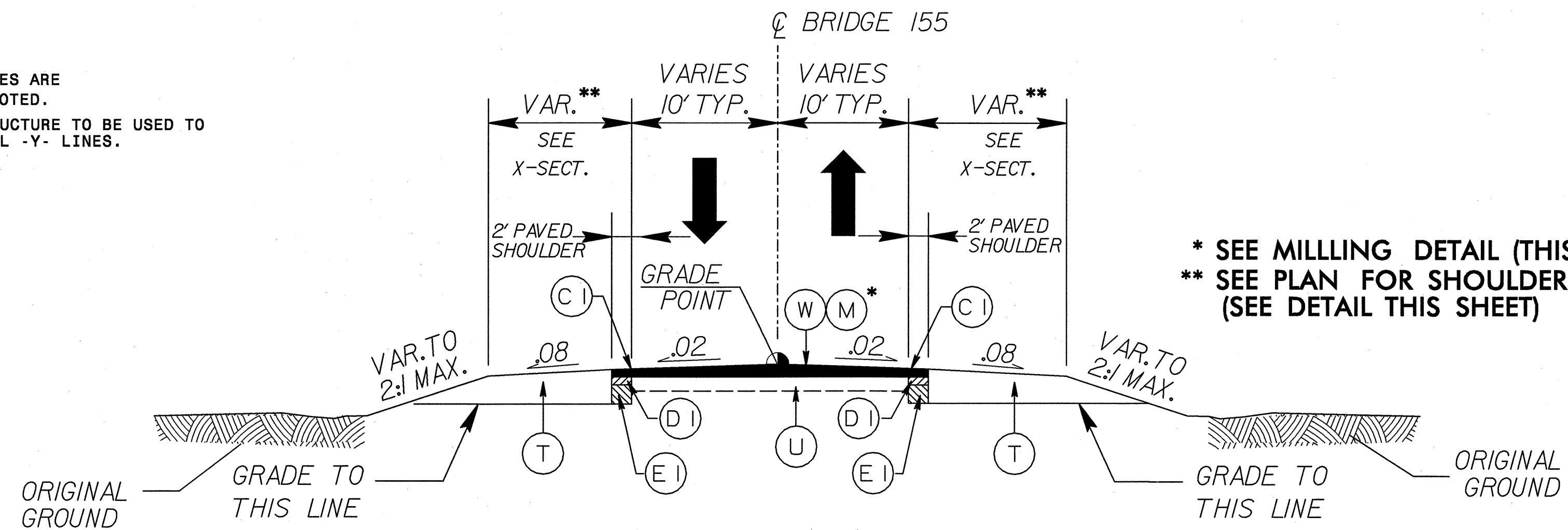
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 3.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD IN EACH OF TWO LAYERS.
C2	PROP. APPROX. 2.0" ASPHALT CONCRETE SURFACE COURSE TYPE S9.5B, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YARD.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 2.0" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0 B, AT AN AVERAGE RATE OF 228 LBS. PER SQ. YARD.
D2	PROP. APPROX. 2.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0 B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YARD.
D3	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0 B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YARD.
D4	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0 B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 4" OR LESS THAN 2.25" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YARD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YARD PER 1" DEPTH TO BE PLACED IN LAYERS NOT GREATER THAN 5.5" IN DEPTH OR LESS THAN 3.0" IN DEPTH.
M	0" - 2" OF MILLING.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT. (SEE WEDGING DETAIL LOCATED ON THIS SHEET)



### WEDGING DETAIL

\* USE D2 FOR WEDGING UP TO 8.5"  
USE D3 FOR WEDGING GREATER THAN 8.5"

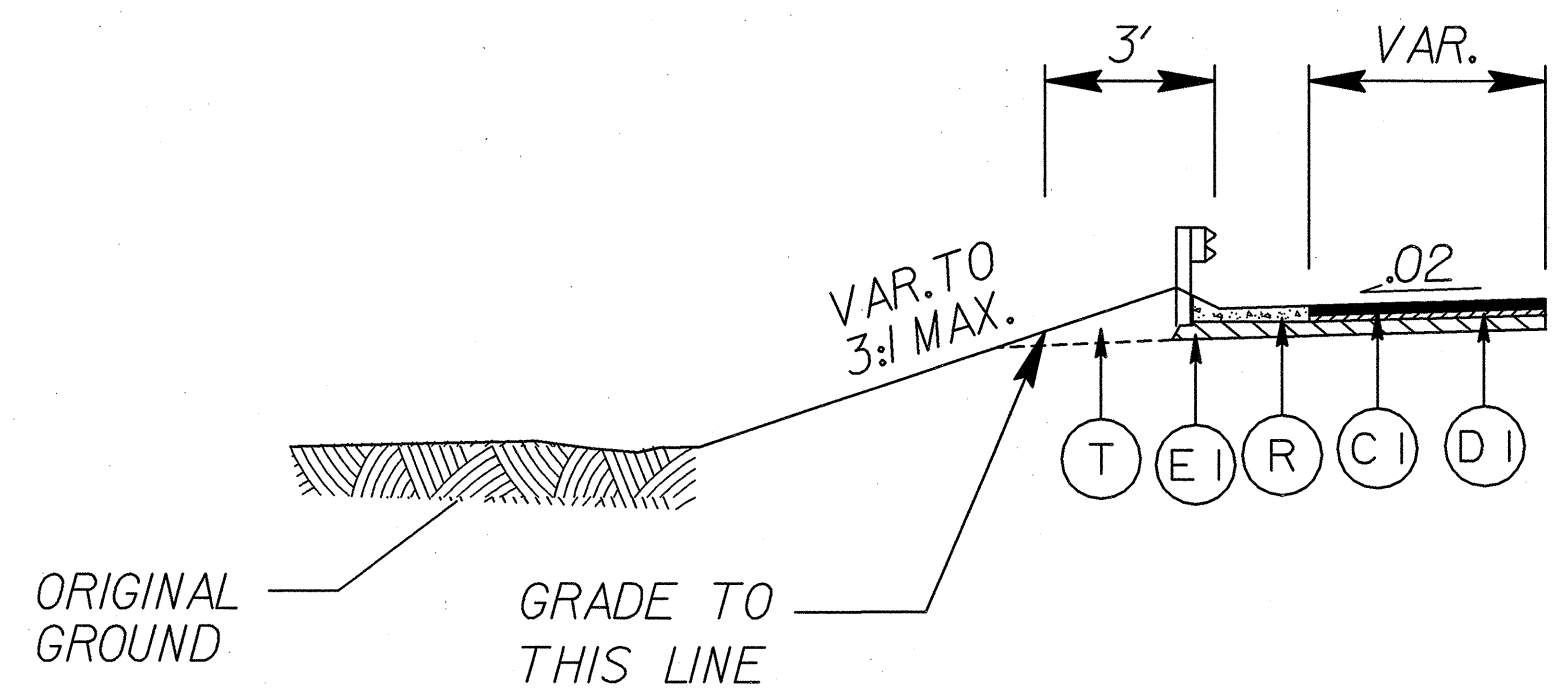
NOTES: ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.  
 MAIN LINE PAVEMENT STRUCTURE TO BE USED TO THE END OF RADII ON ALL -Y- LINES.



\* SEE MILLING DETAIL (THIS SHEET)  
 \*\* SEE PLAN FOR SHOULDER BERM GUTTER LOCATIONS (SEE DETAIL THIS SHEET)

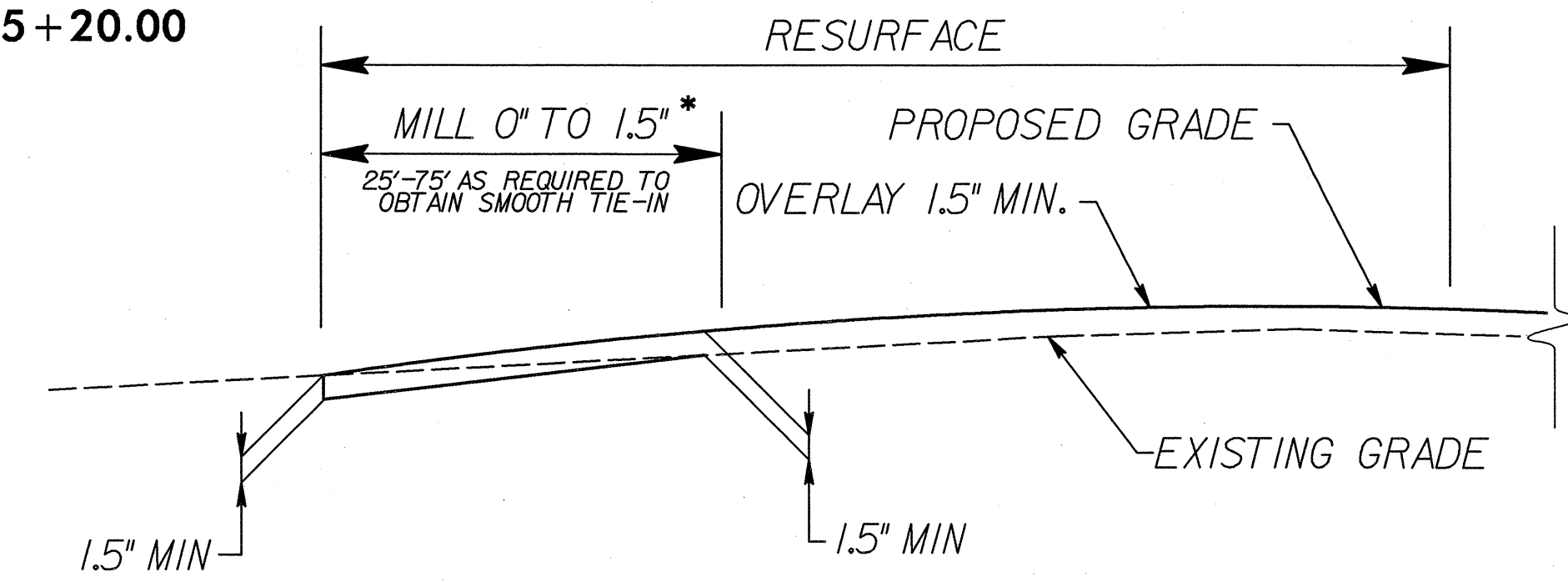
### TYPICAL SECTION NO. 3

BRIDGE -155- STA. 13+97.00 TO STA. 17+59.68 (BRIDGE)  
 BRIDGE -155- STA. 20+38.59 (BRIDGE) TO STA. 25+20.00



### SHOULDER BERM GUTTER DETAIL

SEE PLANS FOR LOCATIONS

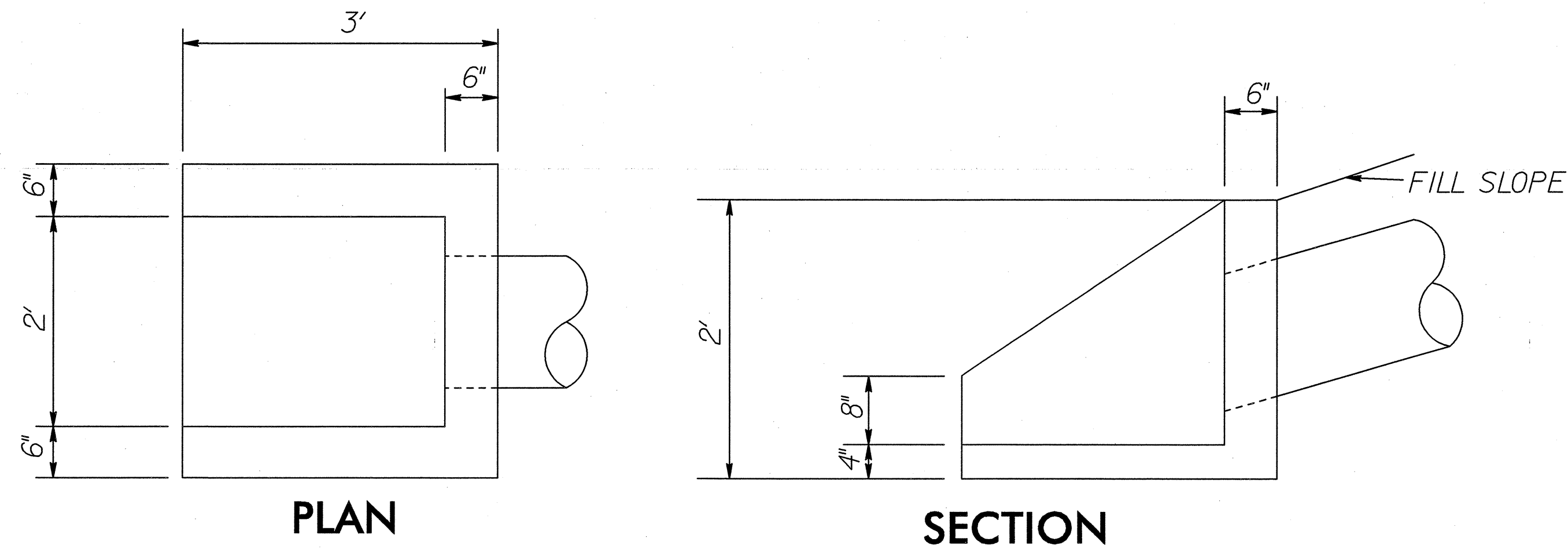


### MILLING AND RESURFACING DETAIL

\* BRIDGES -153- & -154- : MILL 0" TO 2"

BRIDGE -81- STA. 10+00.00 TO STA. 10+30.18      BRIDGE -155- STA. 25+13.71 TO STA. 25+20.00  
 BRIDGE -81- STA. 28+50.00 TO STA. 29+08.00      BRIDGE -153- AS REQUIRED TO OBTAIN SMOOTH TIE-IN  
 BRIDGE -155- STA. 13+97.00 TO STA. 14+22.32      BRIDGE -154- AS REQUIRED TO OBTAIN SMOOTH TIE-IN

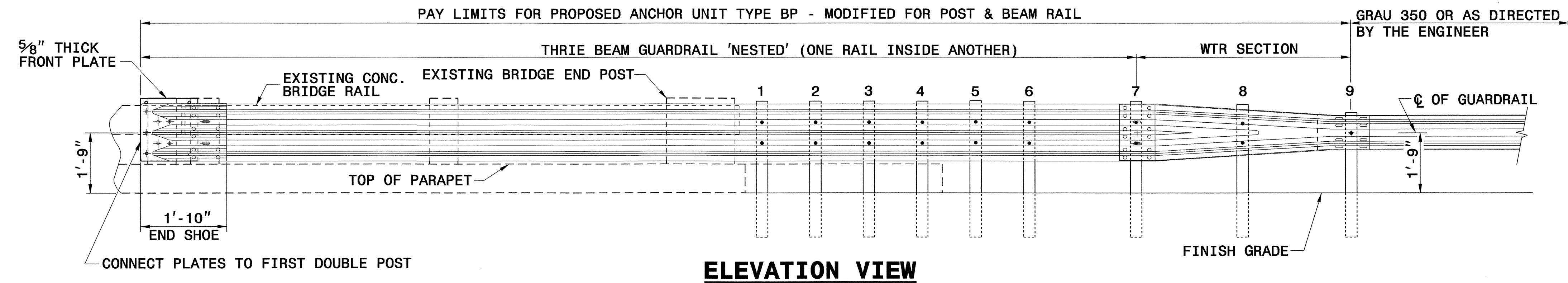
PAVEMENT SCHEDULE	
C1	3.0" S9.5B
D1	2.0" I19.0 B
E1	4.5" B25.0B
M	0"-2" VAR. MILLING.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	WEDGING (SEE SHEET 2)



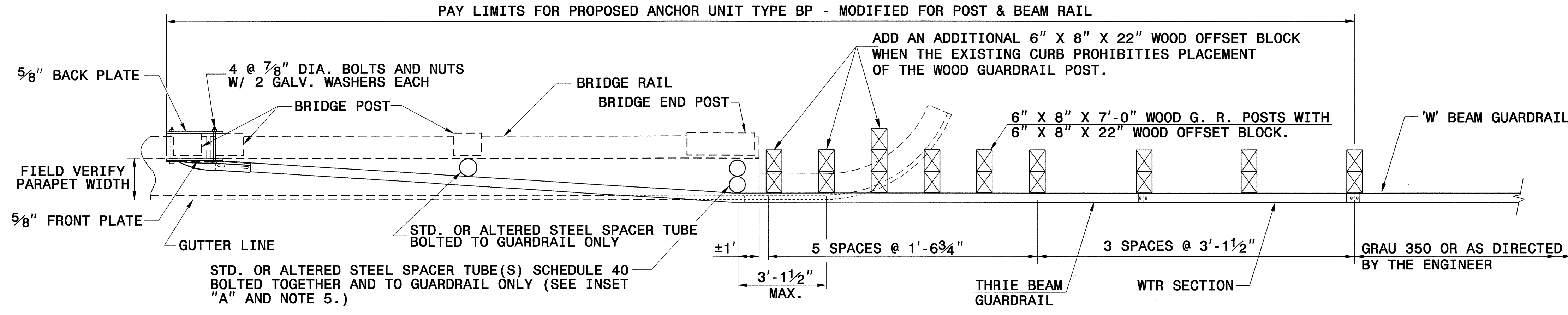
### CONCRETE APRON DETAIL

CLASS B CONCRETE

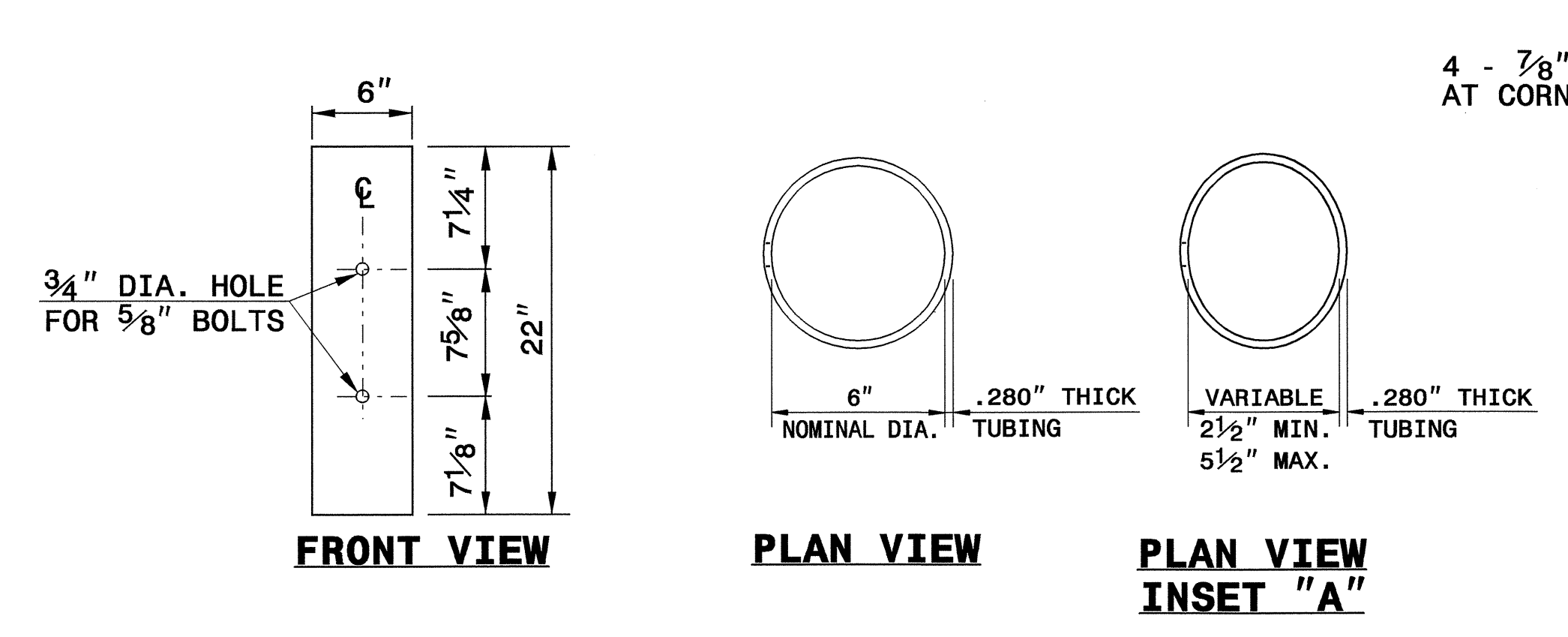




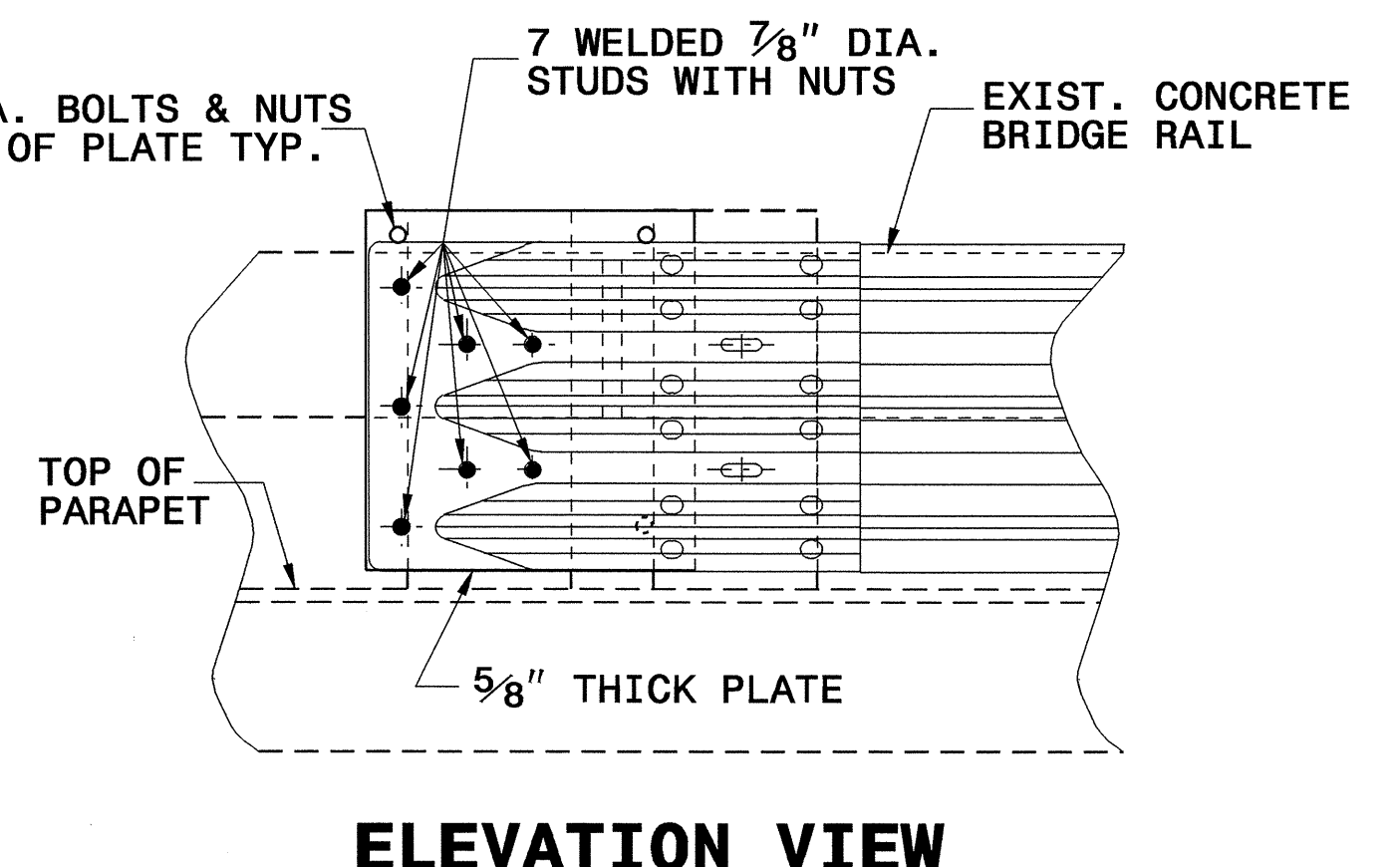
**ELEVATION VIEW**



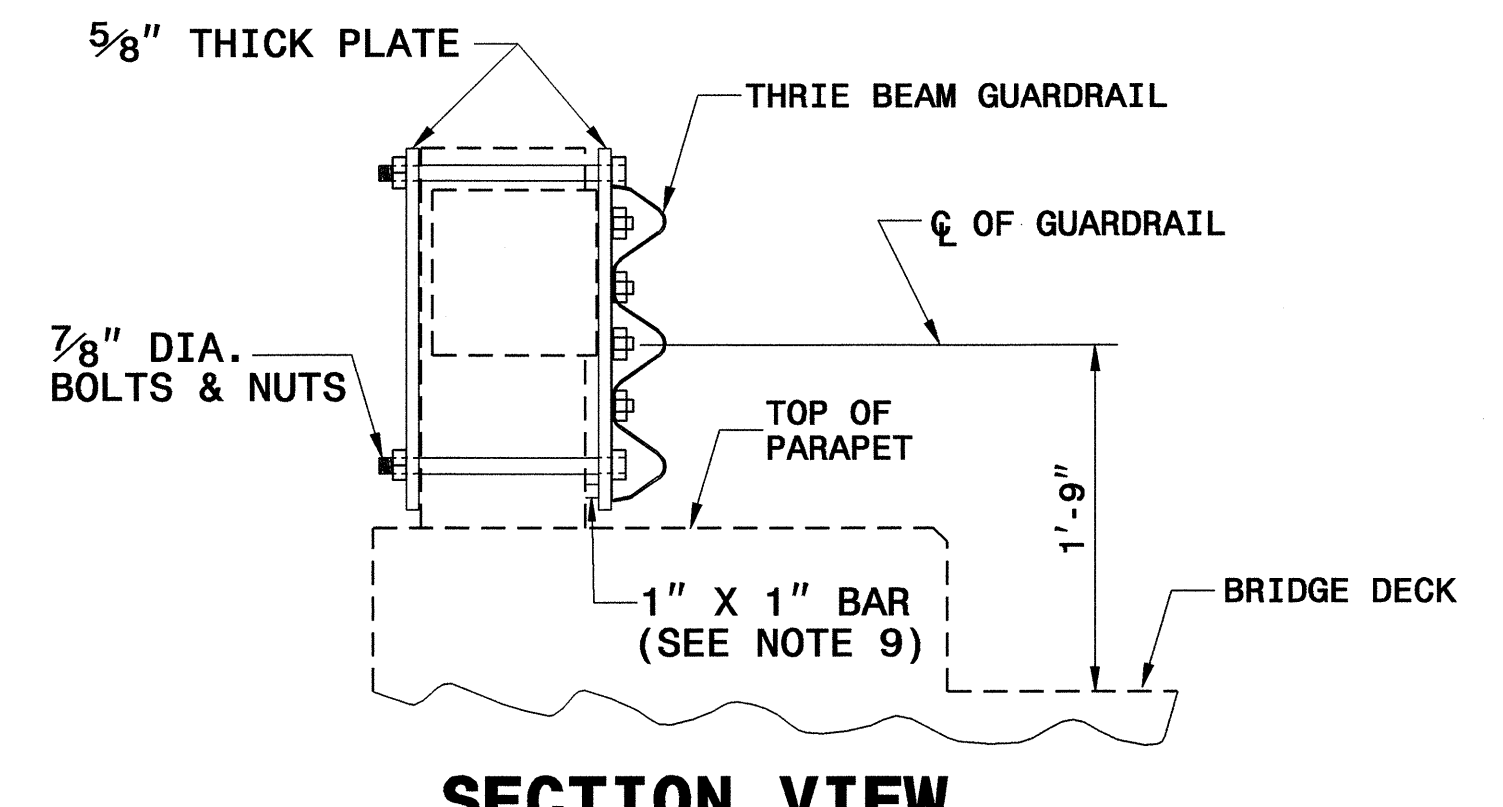
**PLAN VIEW**



**STEEL SPACER TUBE**

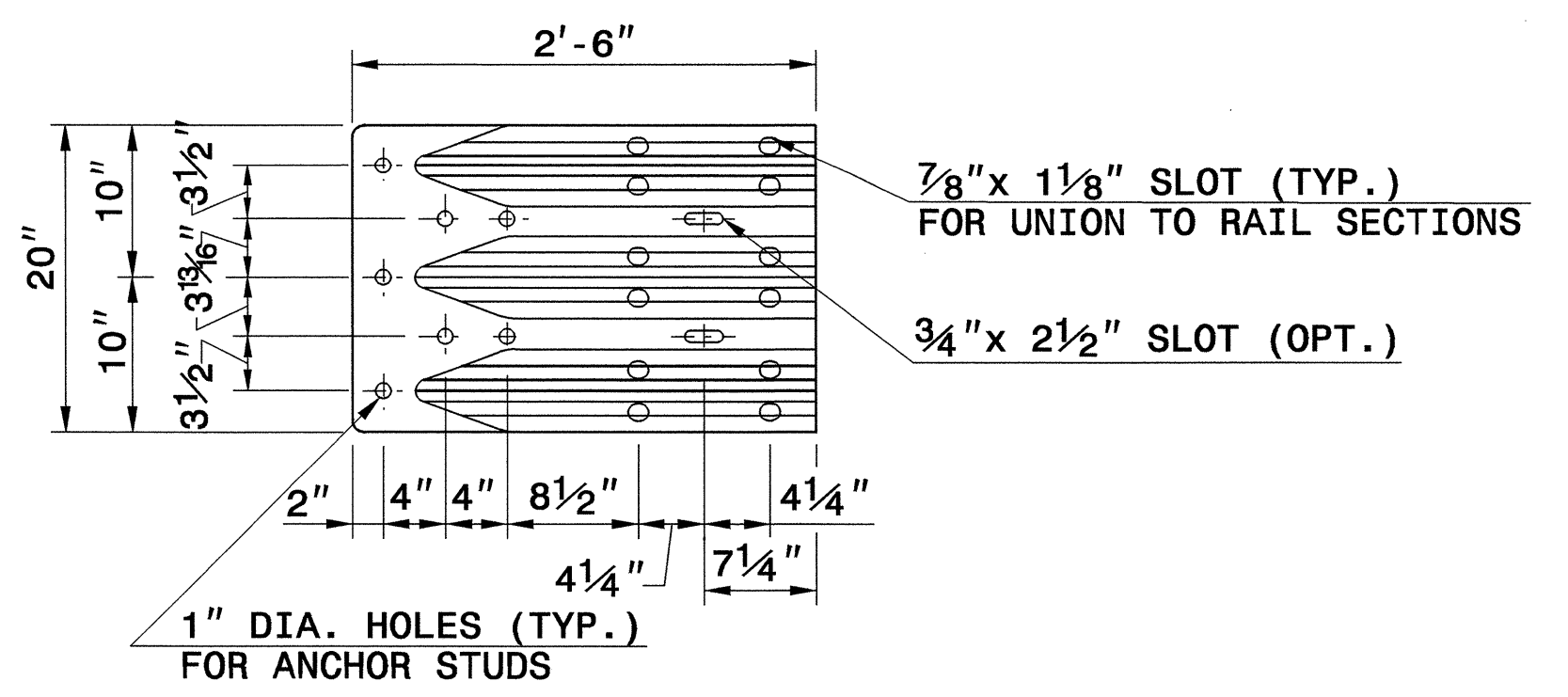


**ELEVATION VIEW**



**SECTION VIEW**

**GUARDRAIL ATTACHMENT TO BRIDGE POST**



**END SHOE**

- GENERAL NOTES:**
1. USE NUTS, BOLTS, AND WASHERS CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-307 AND GALVANIZED IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  2. TAP NUTS FOR THE 7/8" DIA. STUDS AND BOLTS AFTER GALVANIZING SEE A.S.T.M. A-563.
  3. USE PLATES AND TUBES CONFORMING TO THE REQUIREMENTS OF A.S.T.M. A-36 AND GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH SECTION 1076 OF STAND. SPECS.
  4. ADDITIONAL FIELD HOLES MAY BE DRILLED IN STEEL RAIL AS DIRECTED BY THE ENGINEER.
  5. INSTALL FACE OF GUARDRAIL AS NEAR AS POSSIBLE TO PLUMB WITH THE PARAPET FACE AT BRIDGE END POST SPACER TUBE LOCATION BY USING STANDARD OR ALTERED SPACER TUBES OR A COMBINATION THEREOF OR AS DIRECTED BY THE ENGINEER. FOR VERY SMALL PARAPET WIDTHS, GUARDRAIL MAY BE INSTALLED AGAINST BRIDGE RAIL WITHOUT SPACER TUBES.
  6. DO NOT DRILL BRIDGE RAIL IN ORDER TO INSTALL GUARDRAIL ANCHOR UNIT.
  7. USE THIS DETAIL ONLY FOR BRIGES WITH POST AND BEAM TYPE RAIL.
  8. ATTACH 1" X 1" BAR AND THREADED STUDS TO PLATE WITH 1/4" WELDS ALL AROUND.
  9. 1" X 1" BAR MAY NOT BE NEEDED ON BRIDGE RAILS WHERE FACE OF RAIL DOES NOT PROJECT BEYOND FACE OF POST.
  10. PROVIDE SHOP DRAWINGS OF THE PLATES TO THE ENGINEER FOR APPROVAL BEFORE FABRICATING THE PLATES.
  11. LAP JOINTS IN THE DIRECTION OF TRAFFIC FLOW.
  12. SEE ROADWAY STARDARD DRAWING 862.03 SHEET 4 FOR ADDITIONAL INFORMATION ON THE TYPE III ANCHOR UNIT



**PROJECT SERVICES UNIT  
STANDARDS AND SPECIAL DESIGN**  
Office 919-250-4128 FAX 919-250-4119

**GUARDRAIL ANCHOR UNIT  
TYPE BP**

ORIGINAL BY: E.E. WARD DATE: 01-03  
 MODIFIED BY: E.E. WARD DATE: 02-04  
 CHECKED BY: [Signature] DATE: 5/1/08  
 FILE SPEC.: \\usr\details\stand\bp\iii original.dgn









COMPUTED BY: CEG      04/04/08  
 CHECKED BY: JNJ      DATE: 04/04/08

DIVISION OF HIGHWAYS  
 STATE OF NORTH CAROLINA

**GUARDRAIL SUMMARY**

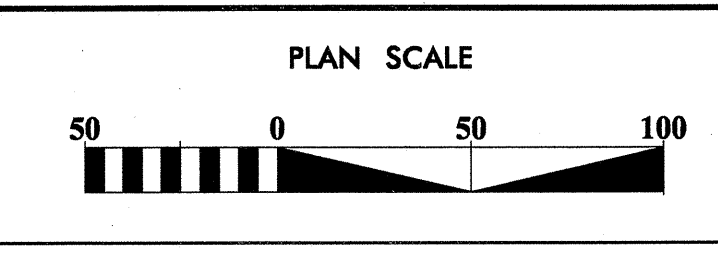
PROJECT REFERENCE NO. B-5022      SHEET NO. 3-B

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

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

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS						IMPACT ATTENUATOR TYPE 350		M-XII BARRIER UNIT	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS			
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	XI MOD	XI	GRAU 350	M-350	AT-1	CAT-1	BP	TYPE B-77					TYPE III	G	NG
BR 153	14+80.70	17+80.70	RT	300			BRIDGE									1											303		
BR 153	15+31.83	17+94.33	LT	262.5				16+75								1													
BR 153	20+25.36	23+25.36	LT	300			BRIDGE									1													
BR 153	20+11.99	21+49.49	RT	175			BRIDGE									1													
BR 154	15+33.97	17+47.78	RT	175	67.7		BRIDGE											1											
BR 154	16+21.11	17+58.61	LT	137.5			BRIDGE									1												833	
BR 154	19+81.42	21+59.00	LT	200	74.1		BRIDGE												1										
BR 154	19+69.88	21+88.00	RT	262.5	50		BRIDGE												1										
BR 155	13+95.88	17+70.58	RT	375			15+00									1												303	
BR 155	13+99.19	17+49.19	LT	350				15+00								1													
BR 155	20+28.85	23+53.85	LT	325			22+50									1													
BR 155	20+50.31	24+00.31	RT	350				23+00								1													
BR 81	15+17.05	18+17.05	RT	300			BRIDGE									1												810	
BR 81	15+91.04	17+91.04	LT	200				17+25								1													
BR 81	20+59.54	23+59.54	LT	300			BRIDGE									1													
BR 81	20+85.80	22+85.80	RT	200			BRIDGE									1													
				SUBTOTAL	4212.5	191.8																							
				LESS DEDUCTIONS																									
				GRAU-350 (13 X 50) =	650																								
				AT-1 (3 X 6.25) =		18.75																							
				BP (8 X 25.0) =	200																								
				SUBTOTAL	850	18.75																							
				TOTALS	3362.5	173.05																							
				SAY	3375	187.5																							
PROJECT TOTAL					3375	187.5	10 Additional Posts										13		3										Total Say 2249 2250 2250

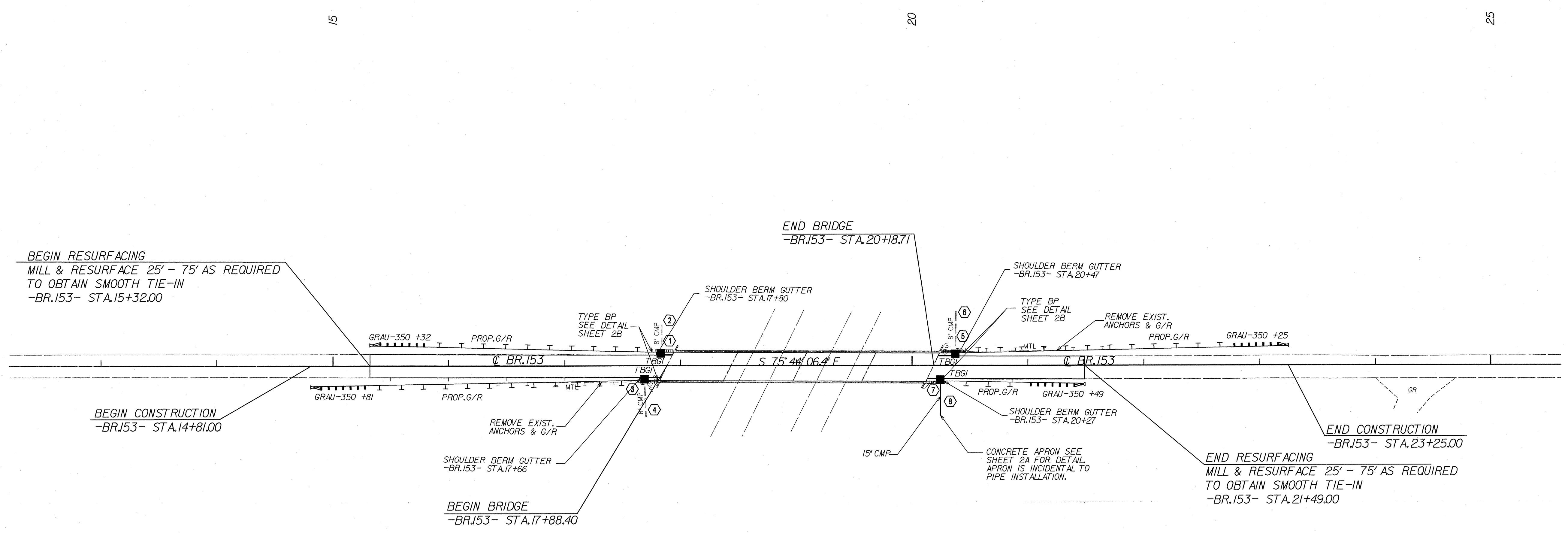




PROJECT REFERENCE NO. <b>B-5022</b>	SHEET NO. <b>4</b>
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	
<b>STV / Ralph Whitehead Associates, Inc.</b> 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	

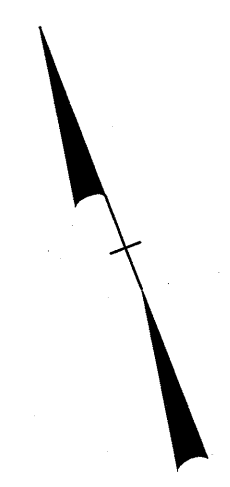
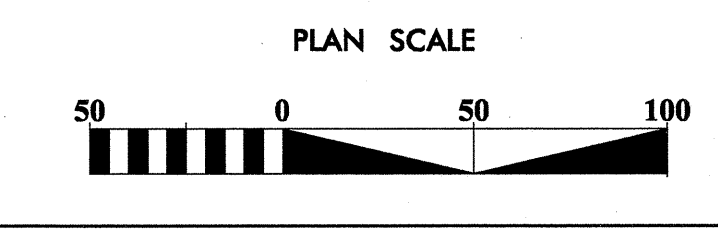
- NOTES:
- CONTRACTOR SHALL GRADE SHOULDERS TO DRAIN AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - WHERE EXISTING PIPE IS TO BE UTILIZED, INSTALL SHOULDER BERM GUTTER, T.B.G.I. AND MODIFY OR REPLACE OUTLET PIPE AS NECESSARY TO TIE INTO EXISTING PIPE. INSTALLATION, PIPE ELBOWS, AND CMP NECESSARY TO TIE PROPOSED T.B.G.I. TO EXISTING CMP SHALL BE CONSIDERED INCIDENTAL TO THE INSTALLATION OF THE T.B.G.I.
  - CONTRACTOR SHALL REPLACE PAVEMENT MARKINGS WITH SAME MATERIAL AS EXISTING WITHIN THE PROJECT LIMITS. PAVEMENT MARKINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL ADJUST FUNNEL DRAINS AS NEEDED WITHIN THE PROJECT LIMITS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REMOVE AND RESET ANY SIGNS AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.

REVISIONS



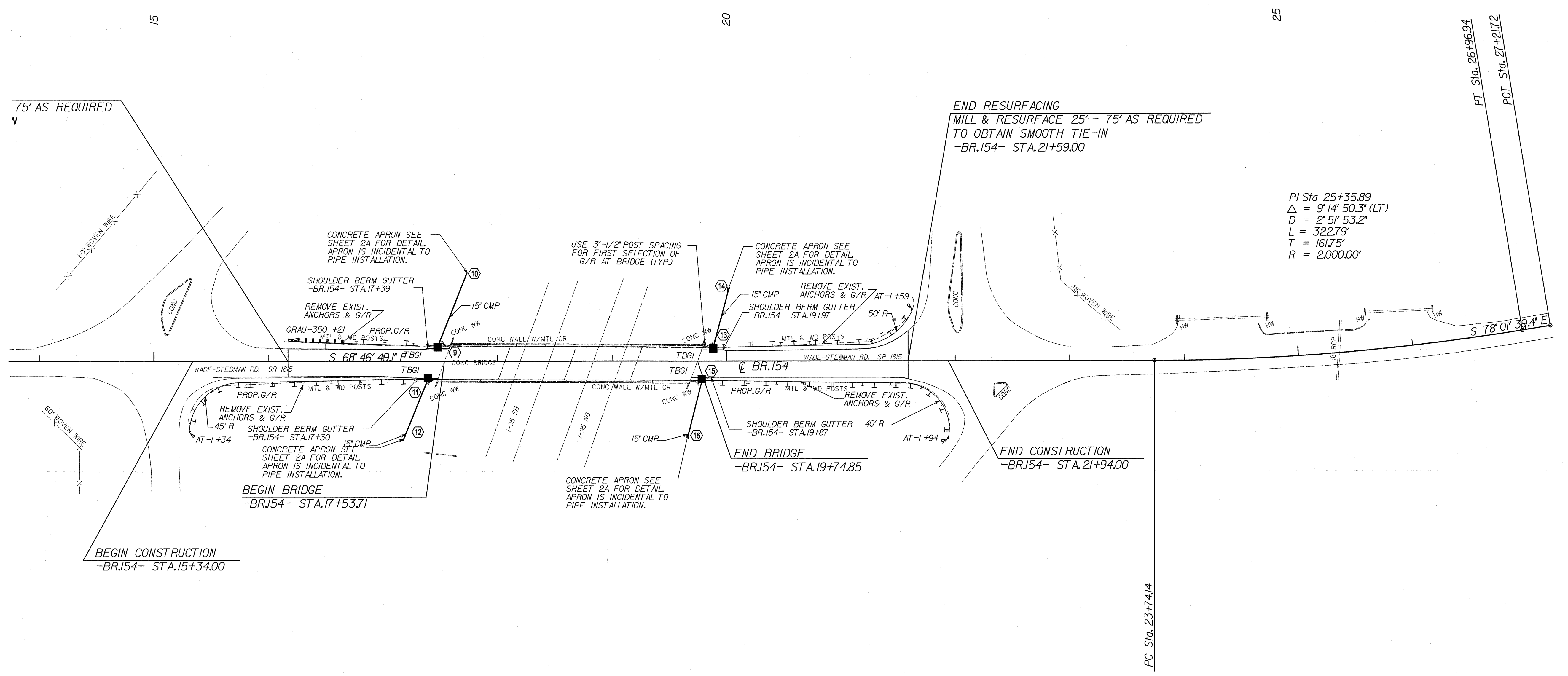
8/17/99

PROJECT REFERENCE NO. B-5022	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
 STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	



- NOTES:
- CONTRACTOR SHALL GRADE SHOULDERS TO DRAIN AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REPLACE PAVEMENT MARKINGS WITH SAME MATERIAL AS EXISTING WITHIN THE PROJECT LIMITS. PAVEMENT MARKINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL ADJUST FUNNEL DRAINS AS NEEDED WITHIN THE PROJECT LIMITS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REMOVE AND RESET ANY SIGNS AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - PROPOSED GUARDRAIL TO TIE TO EXISTING GUARDRAIL AT BRIDGE.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.

REVISIONS



PI Sta 25+35.89  
 $\Delta = 9'14" 50.3" (LT)$   
 $D = 2' 51" 53.2"$   
 $L = 322.79'$   
 $T = 161.75'$   
 $R = 2,000.00'$

05/29/2008  
 j:\p\whitehead\proj\br154\br154-5022\_RDY\_154\_PSH\_5.dgn  
 J. Johnson



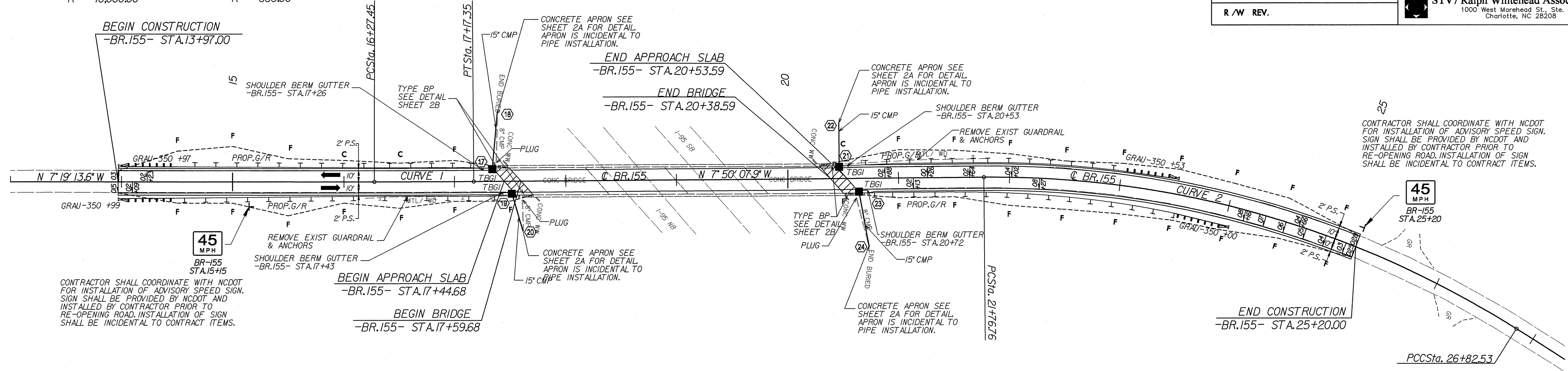
8/17/99

- NOTES:
- CONTRACTOR SHALL GRADE SHOULDERS TO DRAIN AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REPLACE PAVEMENT MARKINGS WITH SAME MATERIAL AS EXISTING WITHIN THE PROJECT LIMITS. PAVEMENT MARKINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL ADJUST FUNNEL DRAINS AS NEEDED WITHIN THE PROJECT LIMITS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REMOVE AND RESET ANY SIGNS AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.

PROJECT REFERENCE NO. B-5022		SHEET NO. 6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER			
CONST. REV.			
R/W REV.			
 1000 West Morehead St., Ste. 200 Charlotte, NC 28208			

**-BR.155- CURVE 1**  
 PI Sta 16+72.40  
 $\Delta = 0^\circ 30' 54.3" (LT)$   
 $D = 0^\circ 34' 22.6"$   
 $L = 89.90'$   
 $T = 44.95'$   
 $R = 10,000.00'$

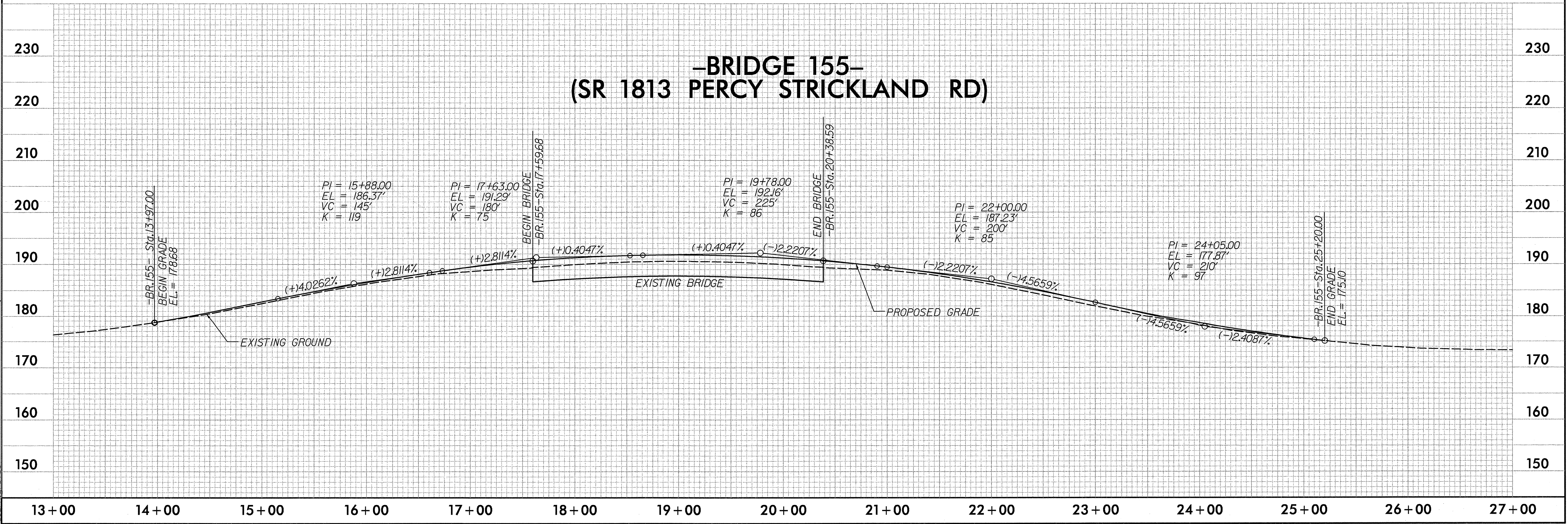
**-BR.155- CURVE 2**  
 PI Sta 24+36.71  
 $\Delta = 32^\circ 38' 00.5" (RT)$   
 $D = 6^\circ 27' 08.0"$   
 $L = 505.77'$   
 $T = 259.95'$   
 $R = 888.00'$



CONTRACTOR SHALL COORDINATE WITH NCDOT FOR INSTALLATION OF ADVISORY SPEED SIGN. SIGN SHALL BE PROVIDED BY NCDOT AND INSTALLED BY CONTRACTOR PRIOR TO RE-OPENING ROAD. INSTALLATION OF SIGN SHALL BE INCIDENTAL TO CONTRACT ITEMS.

CONTRACTOR SHALL COORDINATE WITH NCDOT FOR INSTALLATION OF ADVISORY SPEED SIGN. SIGN SHALL BE PROVIDED BY NCDOT AND INSTALLED BY CONTRACTOR PRIOR TO RE-OPENING ROAD. INSTALLATION OF SIGN SHALL BE INCIDENTAL TO CONTRACT ITEMS.

**-BRIDGE 155-  
(SR 1813 PERCY STRICKLAND RD)**

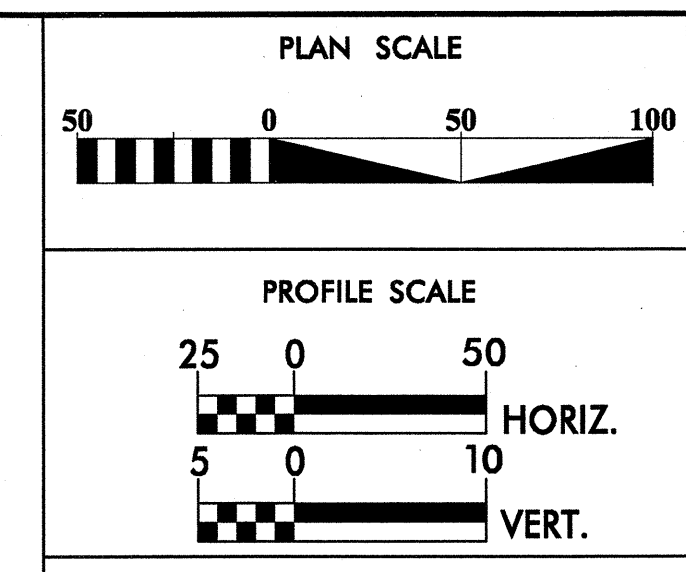


REVISIONS

05/29/2008 P:\Roadway\Proj\Bridges\155\B-5022-RDY\_155\_PSI\_5.dgn



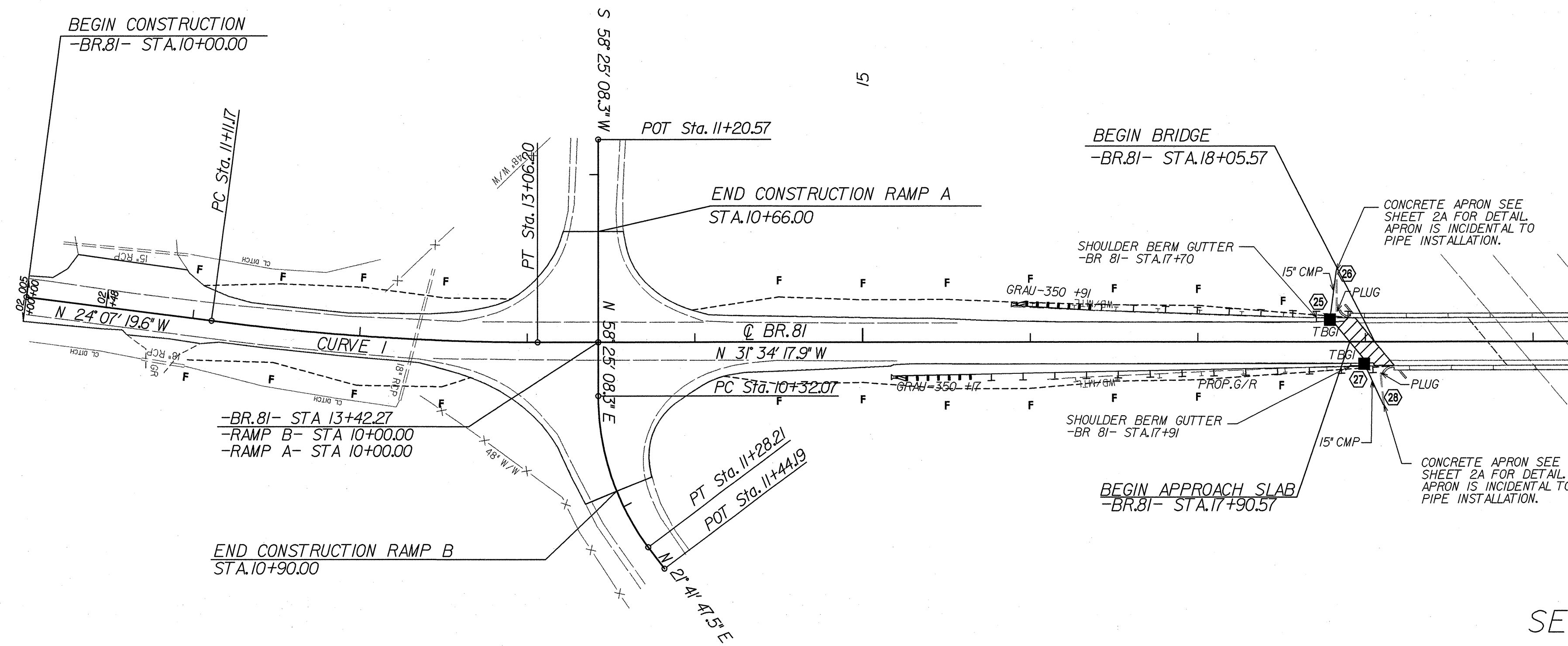
PROJECT REFERENCE NO. B-5022		SHEET NO. 7
RW SHEET NO.		
ROADWAY DESIGN ENGINEER		
STV/Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208		



**-BR.81- CURVE 1**  
 PI Sta 12+08.82  
 $\Delta = 7^{\circ} 26' 58.2''$  (LT)  
 $D = 3^{\circ} 49' 11.0''$   
 $L = 195.03'$   
 $T = 97.65'$   
 $R = 1,500.00'$

**RAMP B CURVE 1**  
 PI Sta 10+81.86  
 $\Delta = 36^{\circ} 43' 20.8''$  (LT)  
 $D = 38^{\circ} 11' 49.9''$   
 $L = 96.14'$   
 $T = 49.79'$   
 $R = 150.00'$

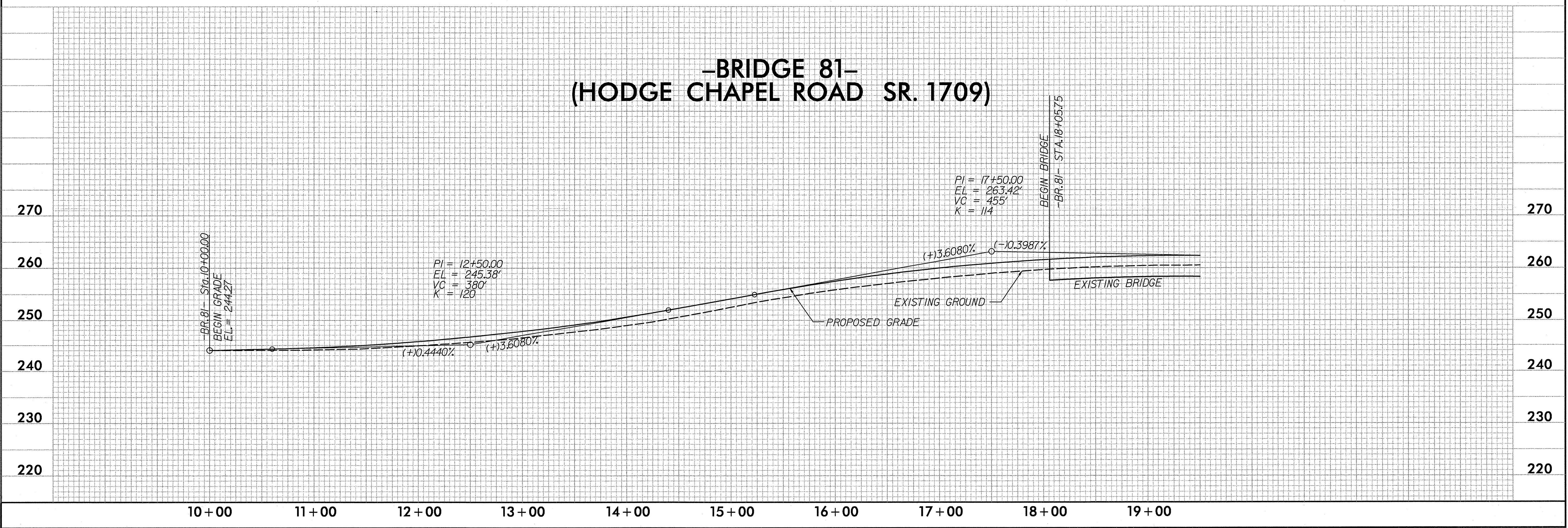
- NOTES:
- CONTRACTOR SHALL GRADE SHOULDERS TO DRAIN AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REPLACE PAVEMENT MARKINGS WITH SAME MATERIAL AS EXISTING WITHIN THE PROJECT LIMITS. PAVEMENT MARKINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL ADJUST FUNNEL DRAINS AS NEEDED WITHIN THE PROJECT LIMITS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REMOVE AND RESET ANY SIGNS AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - PROPOSED GUARDRAIL TO TIE TO EXISTING GUARDRAIL AT BRIDGE.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.



MATCHLINE -BR. 81- STA. 19 + 50.00 SEE SHEET 8

SEE SHEET 9 FOR RAMP PROFILES

**-BRIDGE 81-  
(HODGE CHAPEL ROAD SR. 1709)**



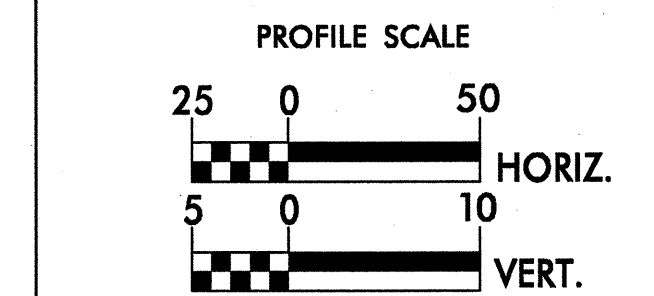
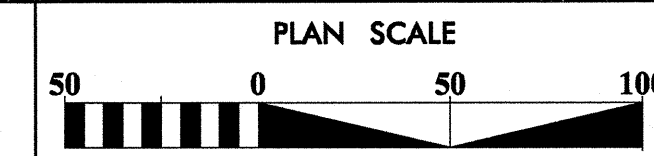
REVISIONS

05/29/2008  
G. Blackmore



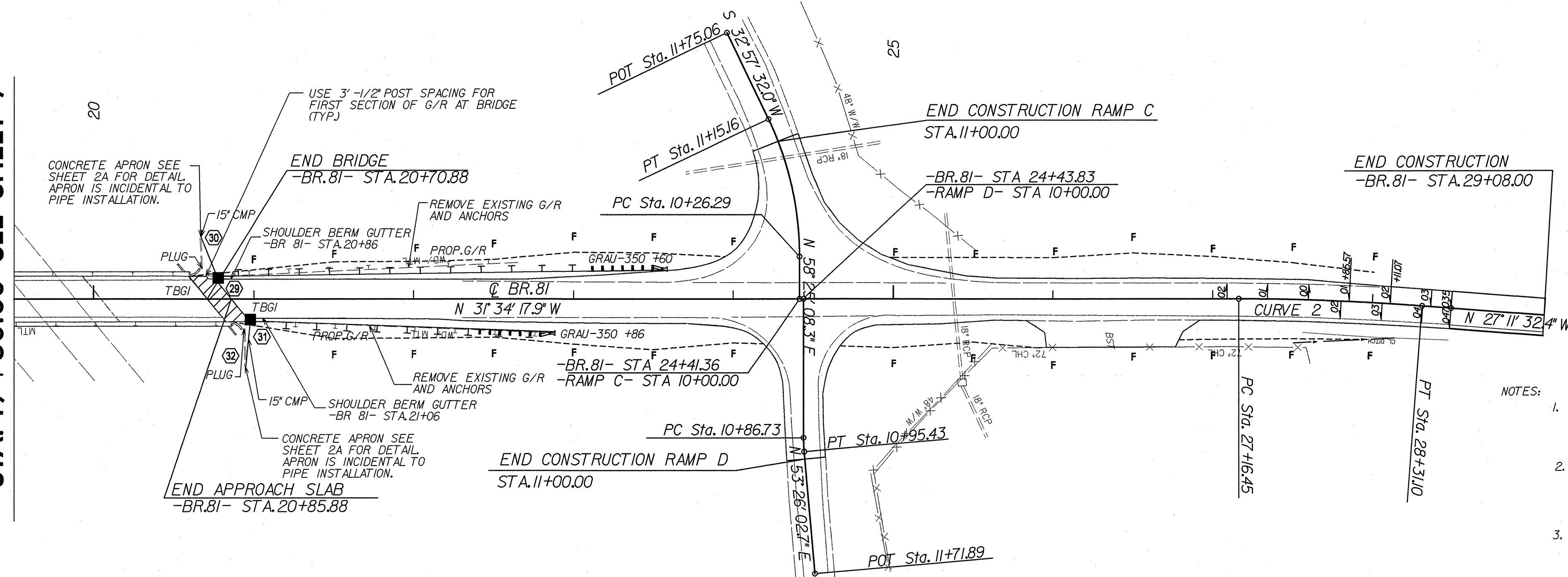
8/17/99

<b>-BR.81- CURVE 2</b>	<b>RAMP C CURVE 1</b>	<b>RAMP D CURVE 1</b>
PI Sta 27+73.81	PI Sta 10+71.47	PI Sta 10+91.08
$\Delta = 4^{\circ} 22' 45.5''$ (RT)	$\Delta = 25^{\circ} 27' 36.3''$ (LT)	$\Delta = 4^{\circ} 59' 05.6''$ (LT)
D = 3' 49' 11.0"	D = 28' 38' 52.4"	D = 57' 17' 44.8"
L = 114.65'	L = 88.87'	L = 8.70'
T = 57.35'	T = 45.18'	T = 4.35'
R = 1,500.00'	R = 200.00'	R = 100.00'



PROJECT REFERENCE NO. <b>B-5022</b>	SHEET NO. <b>8</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	
STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208	

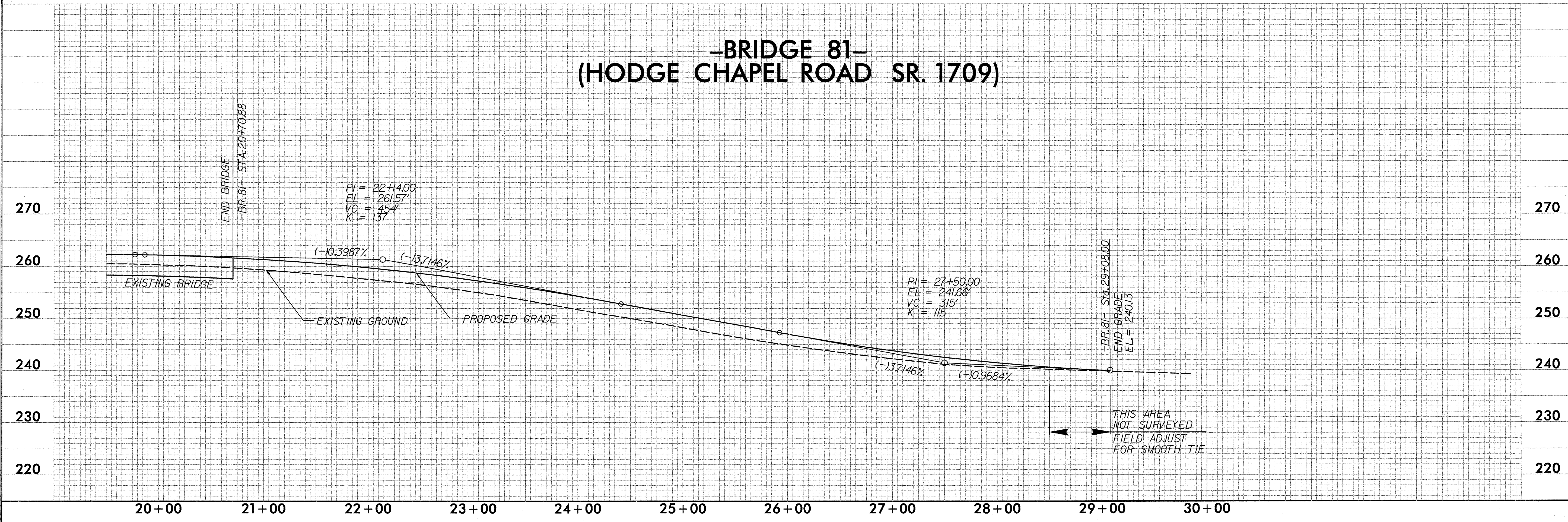
**MATCHLINE -BR. 81-  
STA. 19 + 50.00 SEE SHEET 7**



- NOTES:
- CONTRACTOR SHALL GRADE SHOULDERS TO DRAW AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REPLACE PAVEMENT MARKINGS WITH SAME MATERIAL AS EXISTING WITHIN THE PROJECT LIMITS. PAVEMENT MARKINGS SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL ADJUST FUNNEL DRAINS AS NEEDED WITHIN THE PROJECT LIMITS. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - CONTRACTOR SHALL REMOVE AND RESET ANY SIGNS AS NECESSARY. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT ITEMS.
  - PROPOSED GUARDRAIL TO TIE TO EXISTING GUARDRAIL AT BRIDGE.
  - CONTRACTOR SHALL MAINTAIN ACCESS TO ALL DRIVEWAYS DURING CONSTRUCTION.

SEE SHEET 9 FOR RAMP PROFILES

### -BRIDGE 81- (HODGE CHAPEL ROAD SR. 1709)



05/29/2008



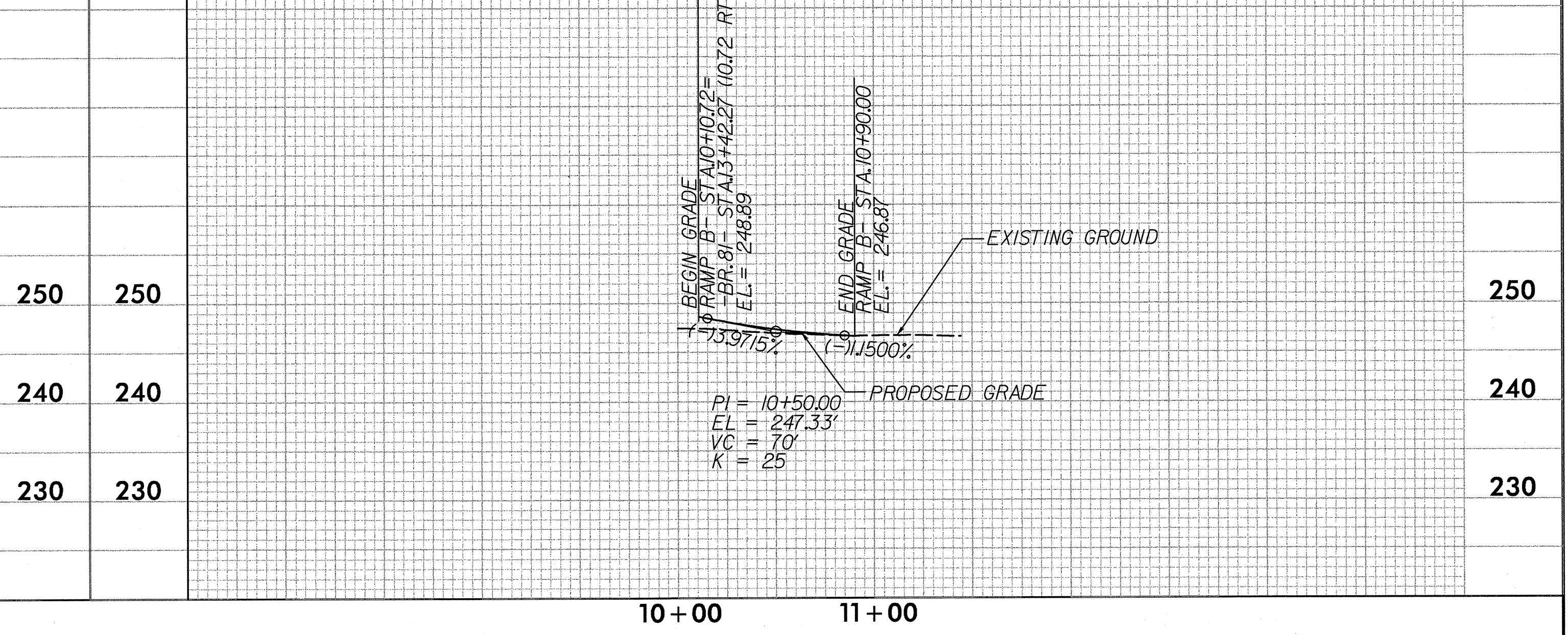
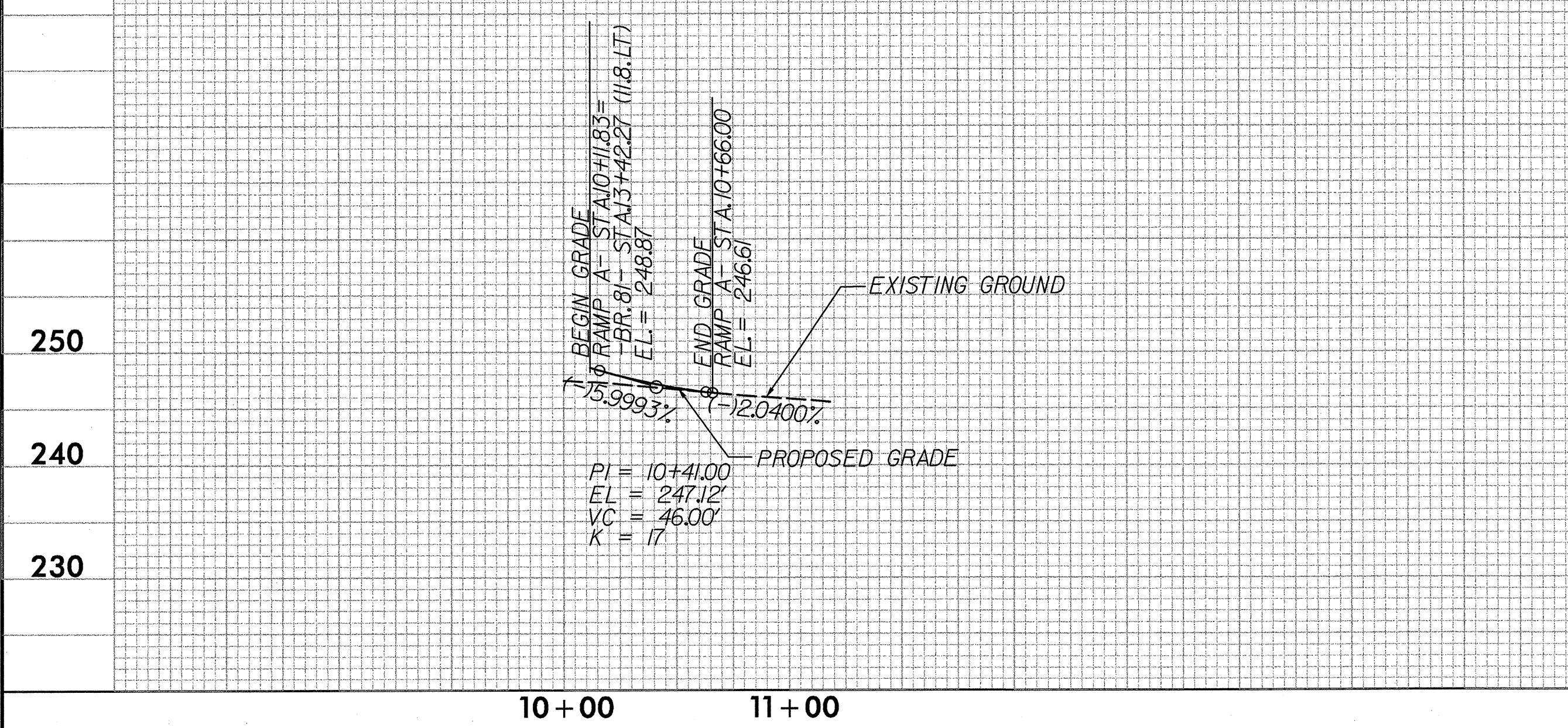
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PROJECT REFERENCE NO. B-5022	SHEET NO. 9
ROADWAY DESIGN ENGINEER	

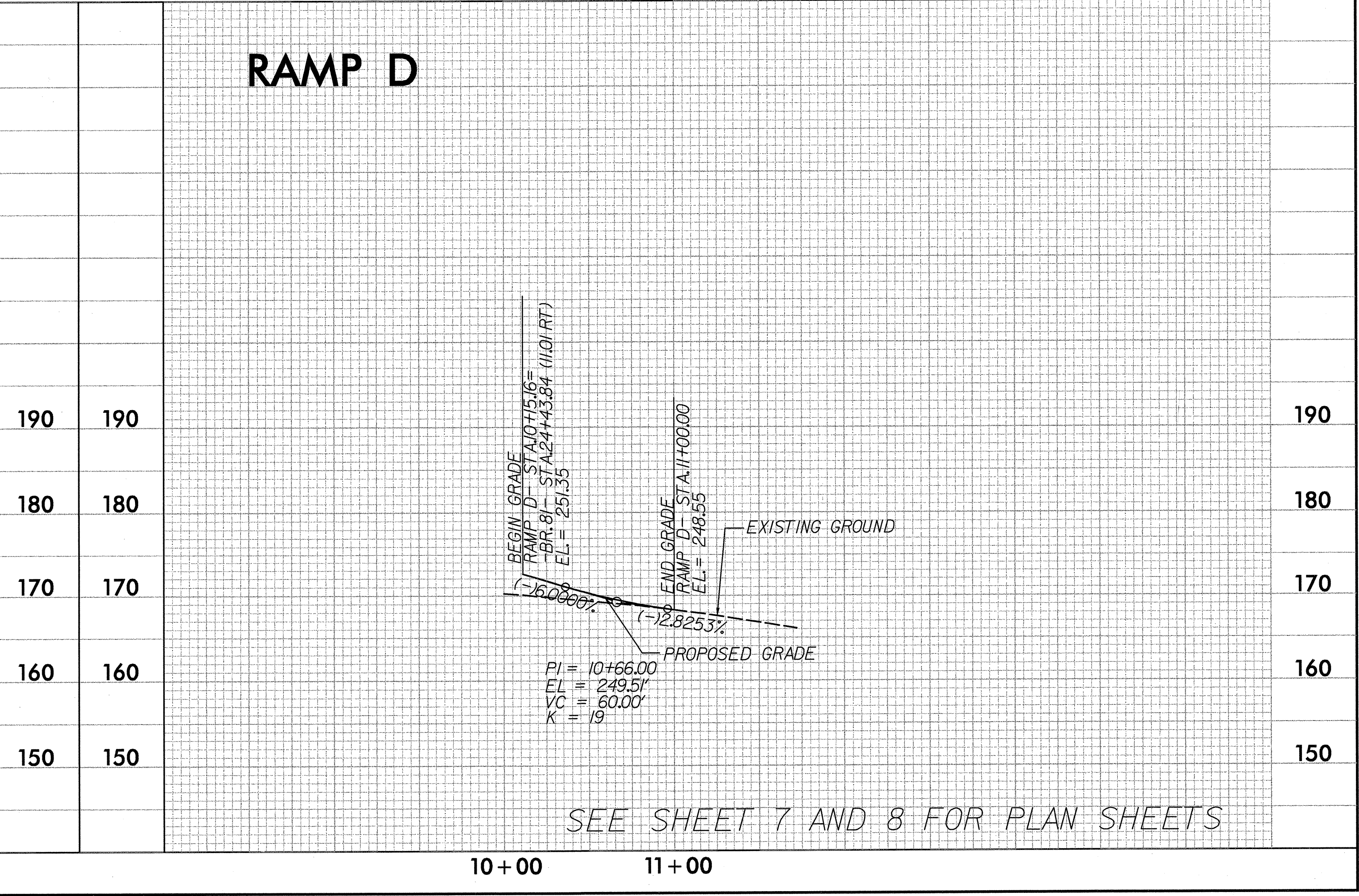
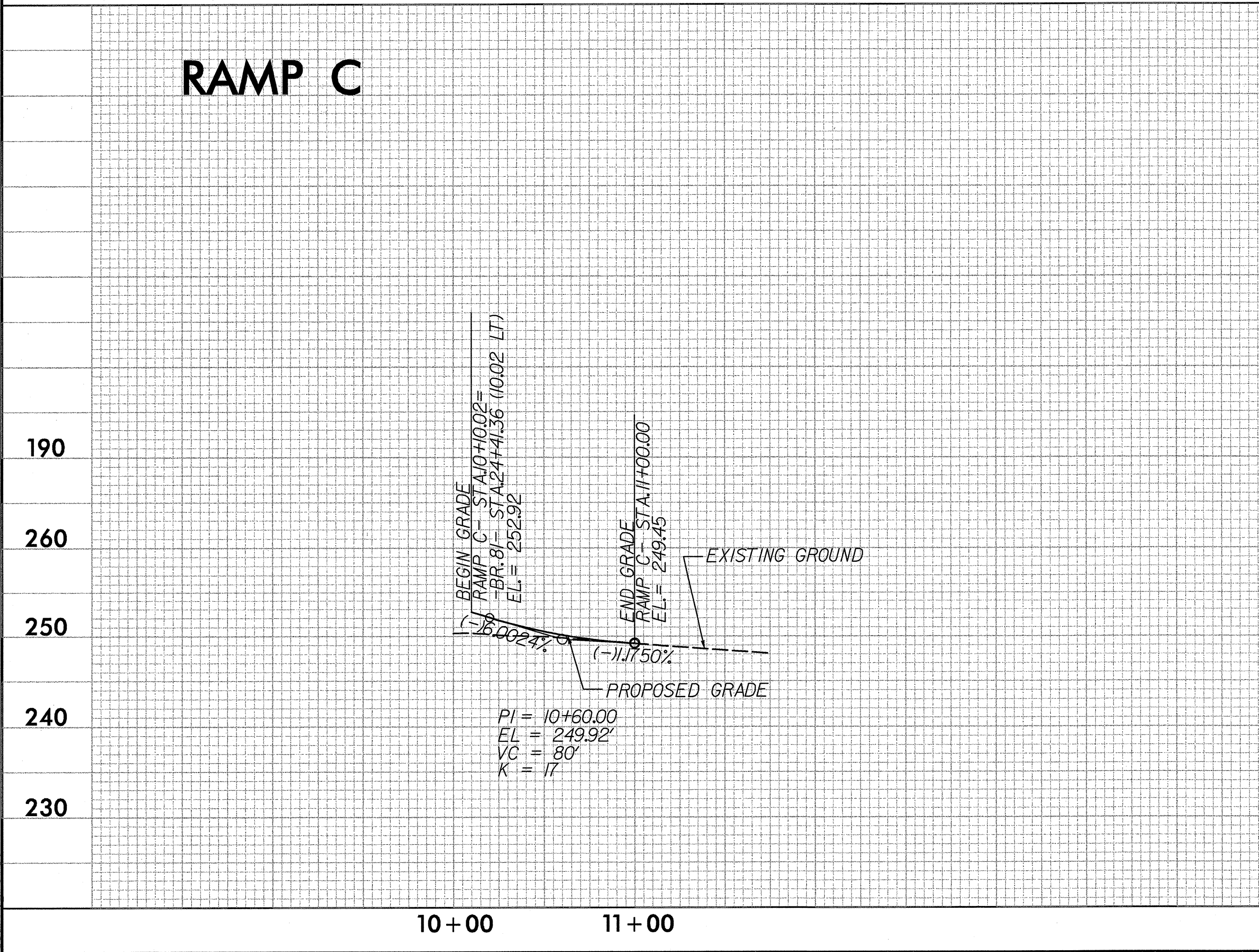
# RAMP A

# RAMP B



# RAMP C

# RAMP D



SEE SHEET 7 AND 8 FOR PLAN SHEETS