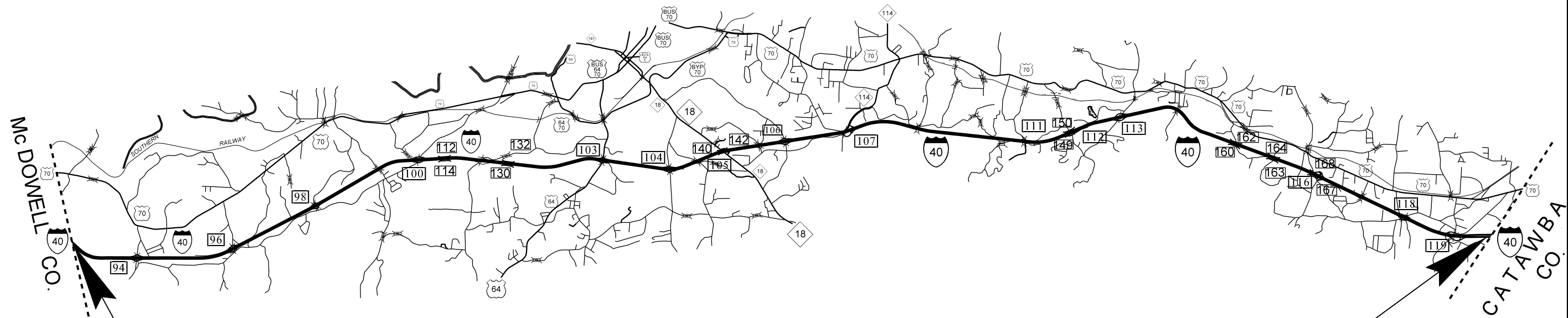


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PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	1	



PROJECT
SITE

BURKE COUNTY

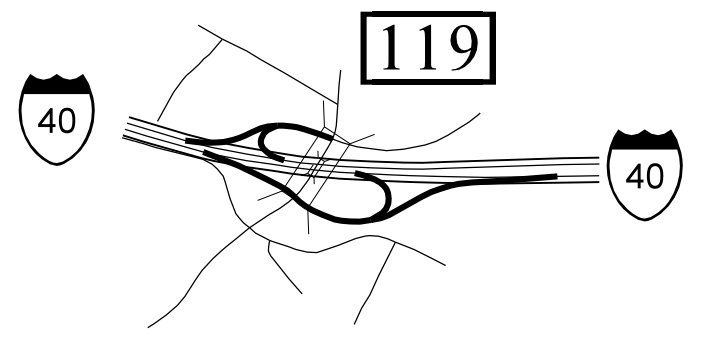
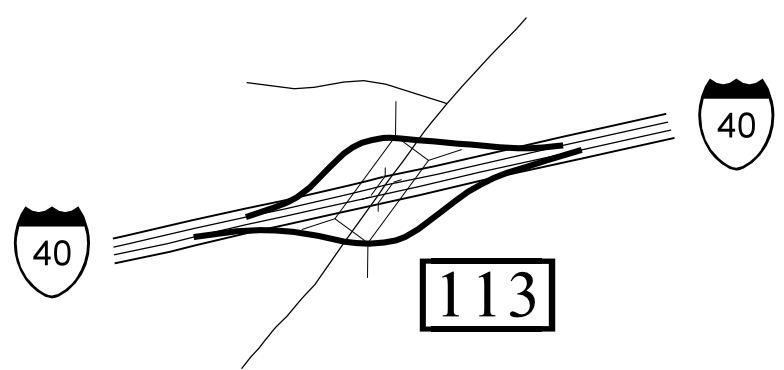
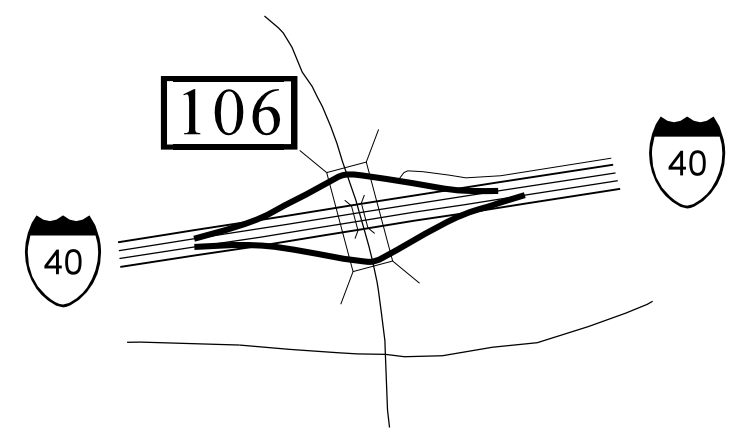
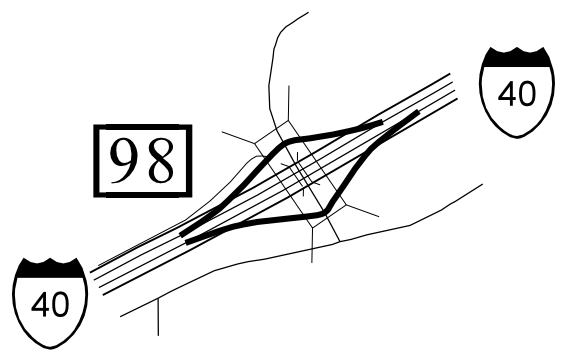
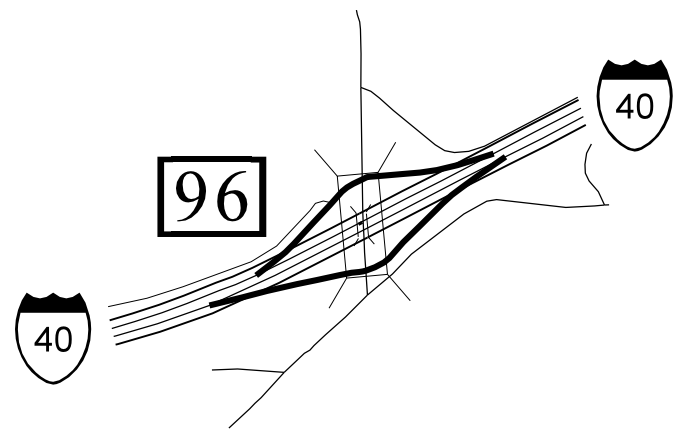
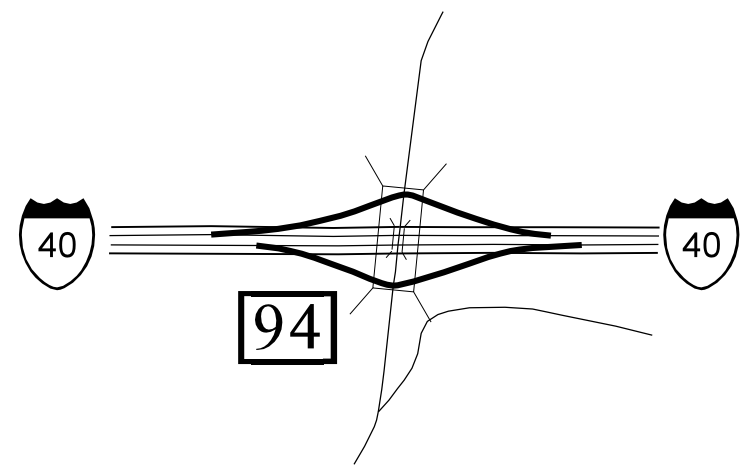
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	2	

FULL LENGTH RAMP REHAB



NOTES:

-USE RAMP TYPICALS #1 AND #1A FOR ALL RAMPS AT EXITS 94, 96, 98, 106, 113, AND 119.



BURKE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	3	

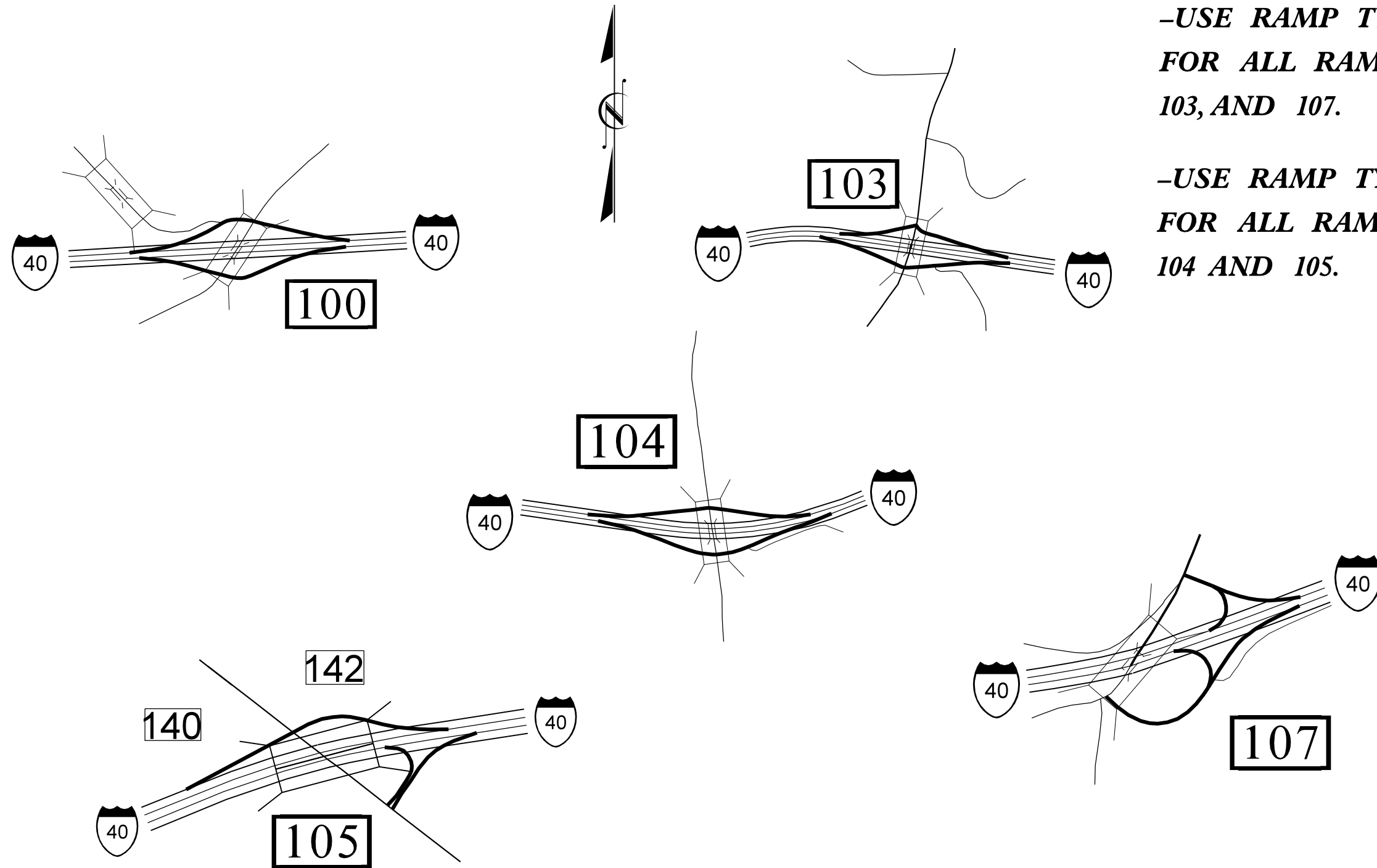
PARTIAL LENGTH RAMP REHAB

(TIE TO EXISTING AT THE END OF THE GORE NEAR EXIT SIGN)

NOTES:

-USE RAMP TYPICALS #1 AND #1A FOR ALL RAMPS AT EXITS 100, 103, AND 107.

-USE RAMP TYPICALS #2 AND #2A FOR ALL RAMPS AT EXITS 104 AND 105.

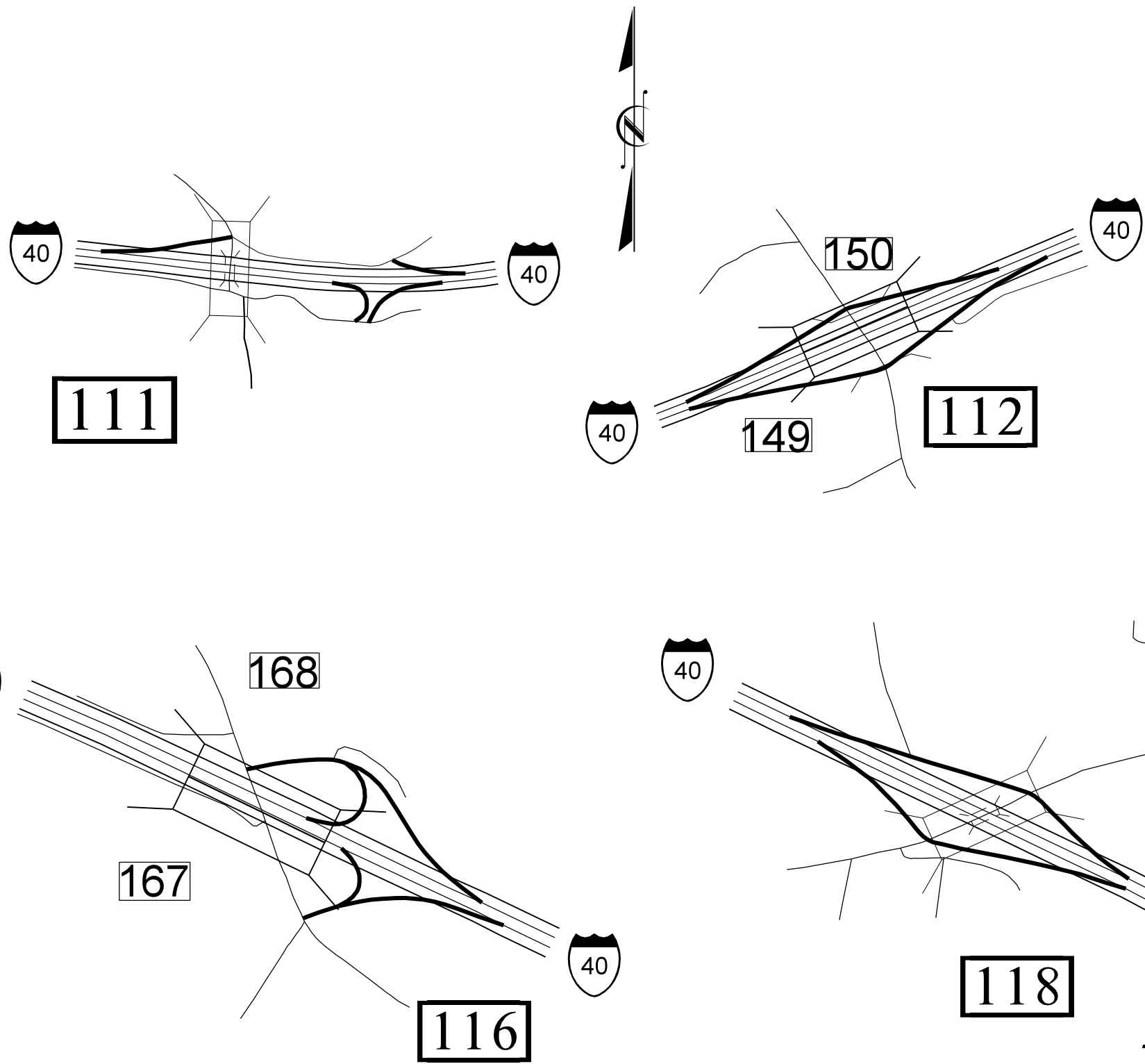


BURKE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	4	

PARTIAL LENGTH RAMP REHAB

(TIE TO EXISTING AT THE END OF THE GORE NEAR EXIT SIGN)

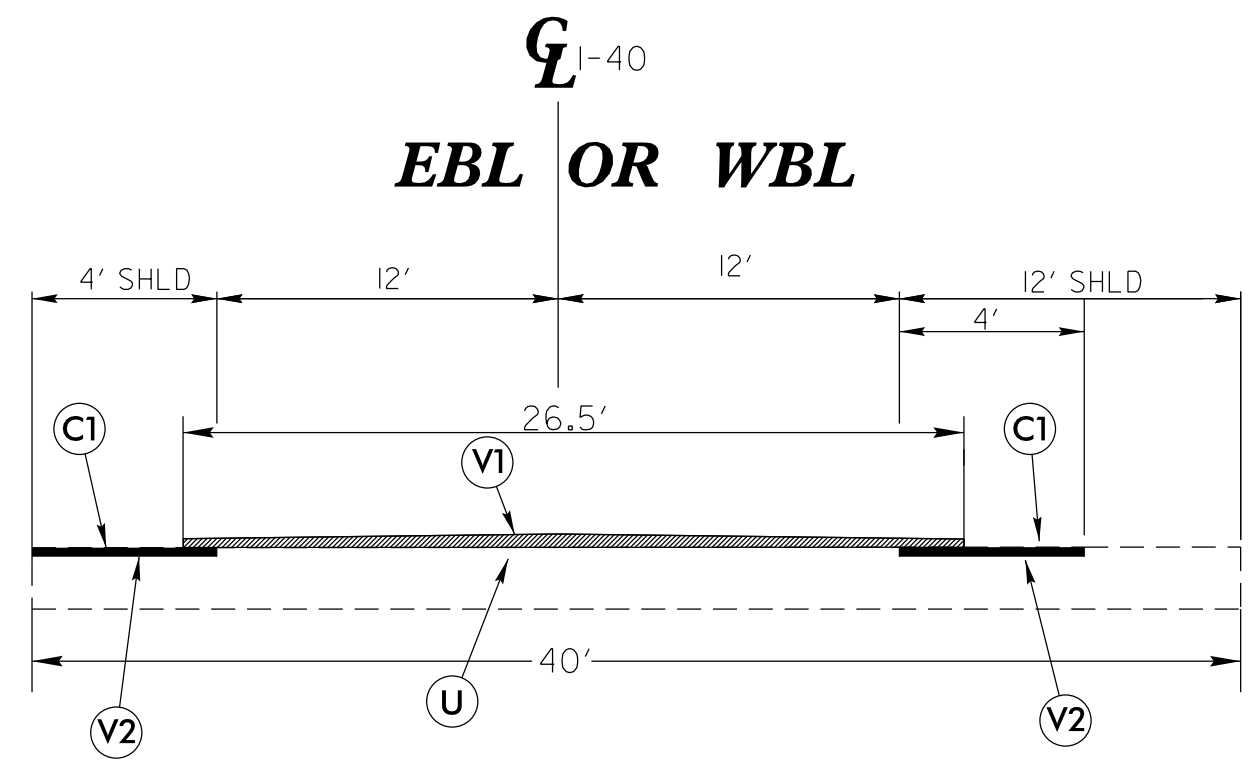


NOTES:

- USE RAMP TYPICALS #1 AND #1A FOR RAMPS AT EXITS 112, 116, AND 118.
- USE RAMP TYPICALS #1 AND #1A FOR BOTH WEST BOUND RAMPS AT EXIT 111.
- USE RAMP TYPICALS #1 AND #1A FOR EAST BOUND ON-RAMP AT EXIT 111 AND USE TYPICAL #2 AND #2B FOR THE EAST BOUND OFF-RAMP AT EXIT 111.

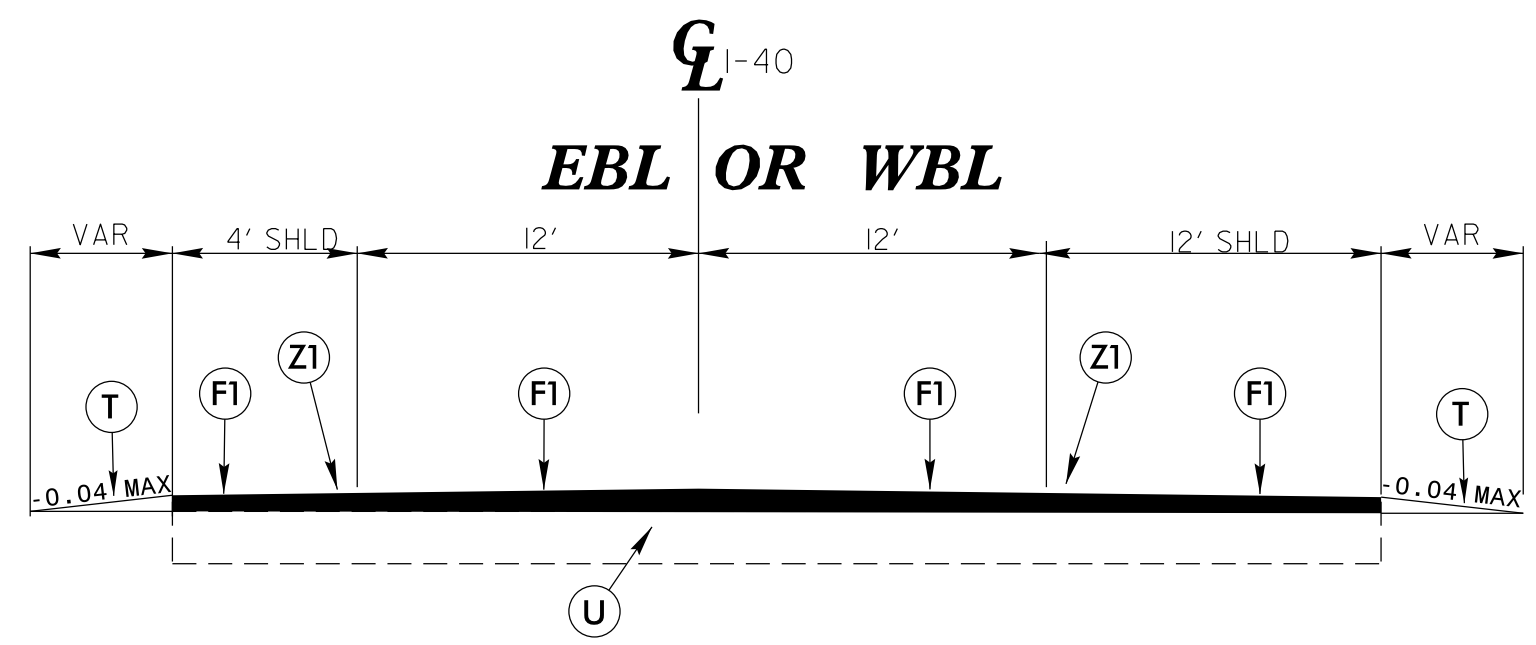
BURKE COUNTY

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	5	



TYPICAL SECTION NO.1 MILLING

NOTE
 I-40 FROM MILE MARKERS
 92.9+/- TO 94.7+/-

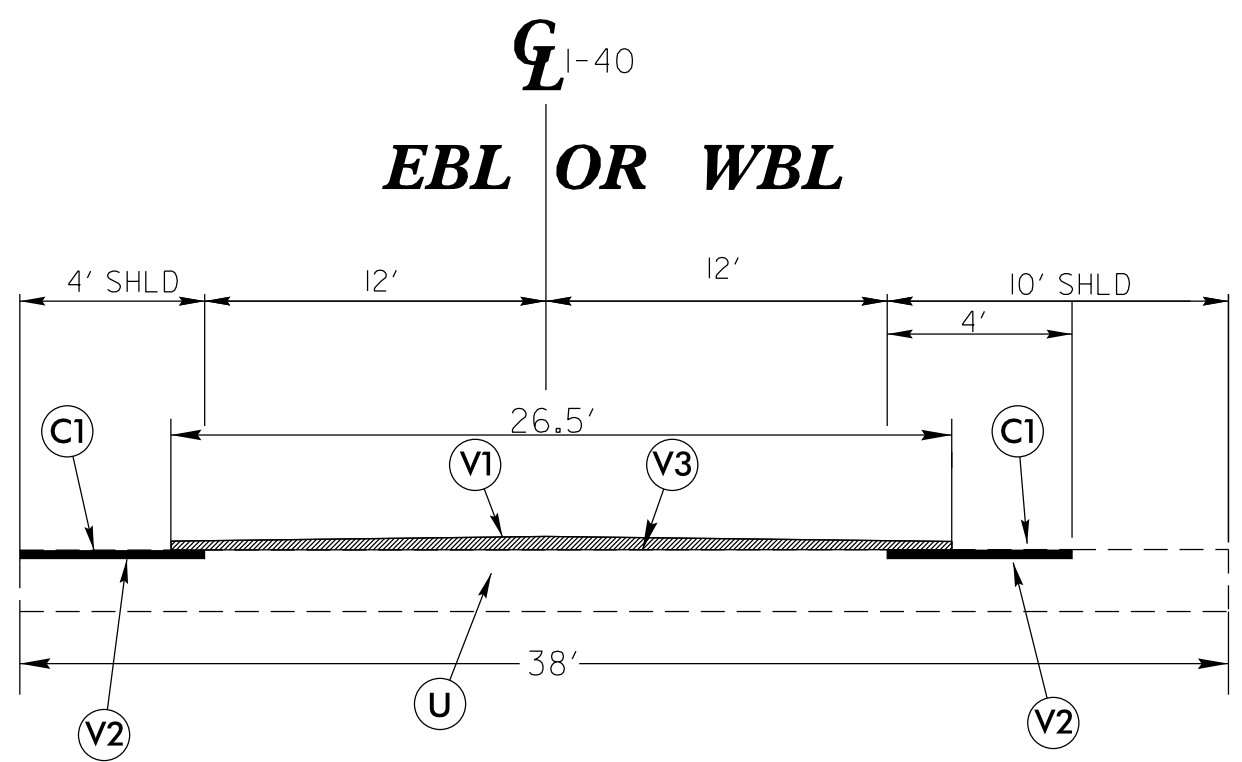


TYPICAL SECTION NO.1A RESURFACING & RUMBLE STRIPS

BURKE COUNTY

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
F1	ULTRA-THIN BONDED WEARING COURSE
V1	FINE MILL ASPHALT PAVEMENT, 5/8" DEPTH
V2	MILL ASPHALT PAVEMENT, 1½" DEPTH
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
Z1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

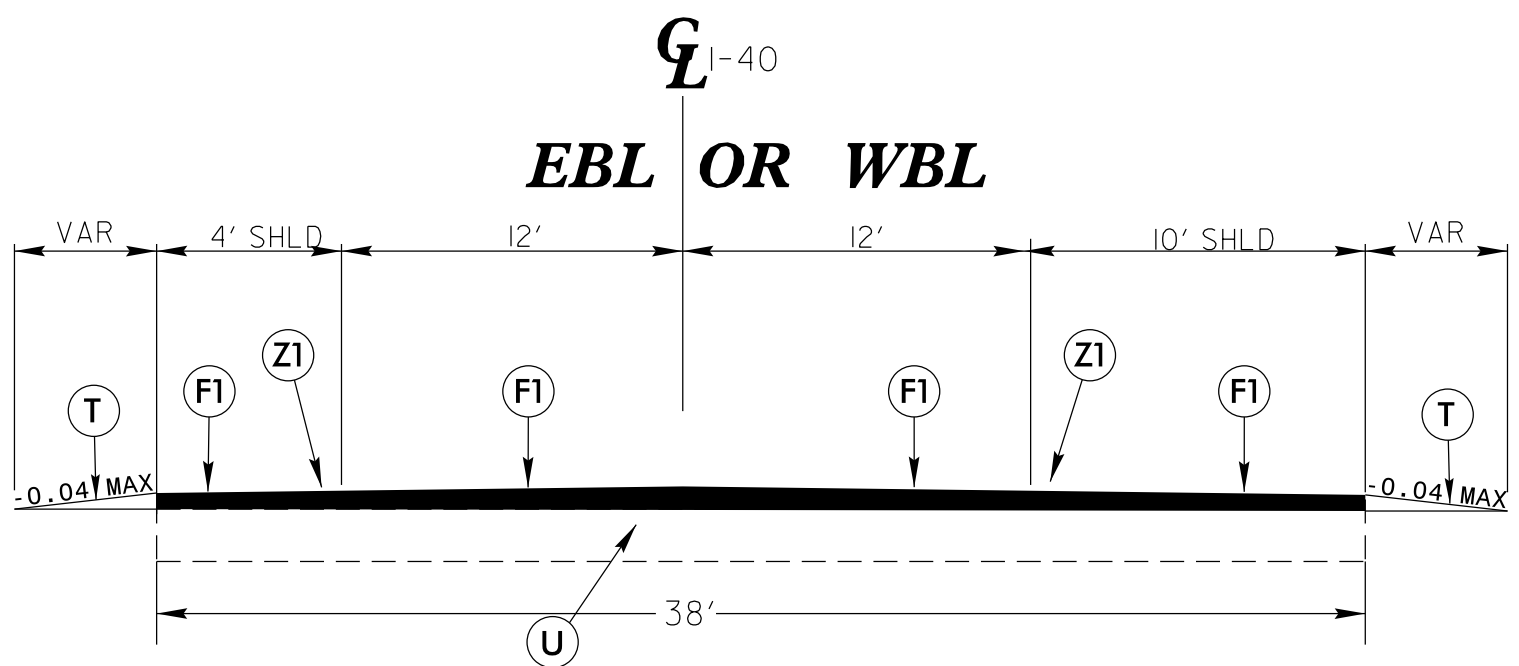
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	6	



TYPICAL SECTION NO. 2 MILLING & DIAMOND GRINDING,

NOTES

1. I-40 FROM MILE MARKERS
94.7+/- TO 95.2+/-
2. REPAIR CONCRETE JOINTED SLABS
AS DIRECTED BY THE ENGINEER,
SEE STD. DRWG. 700.01, 700.02,
700.03, and 700.05
3. BRIDGES TO BE RESURFACED
SAME AS MAIN-LINE

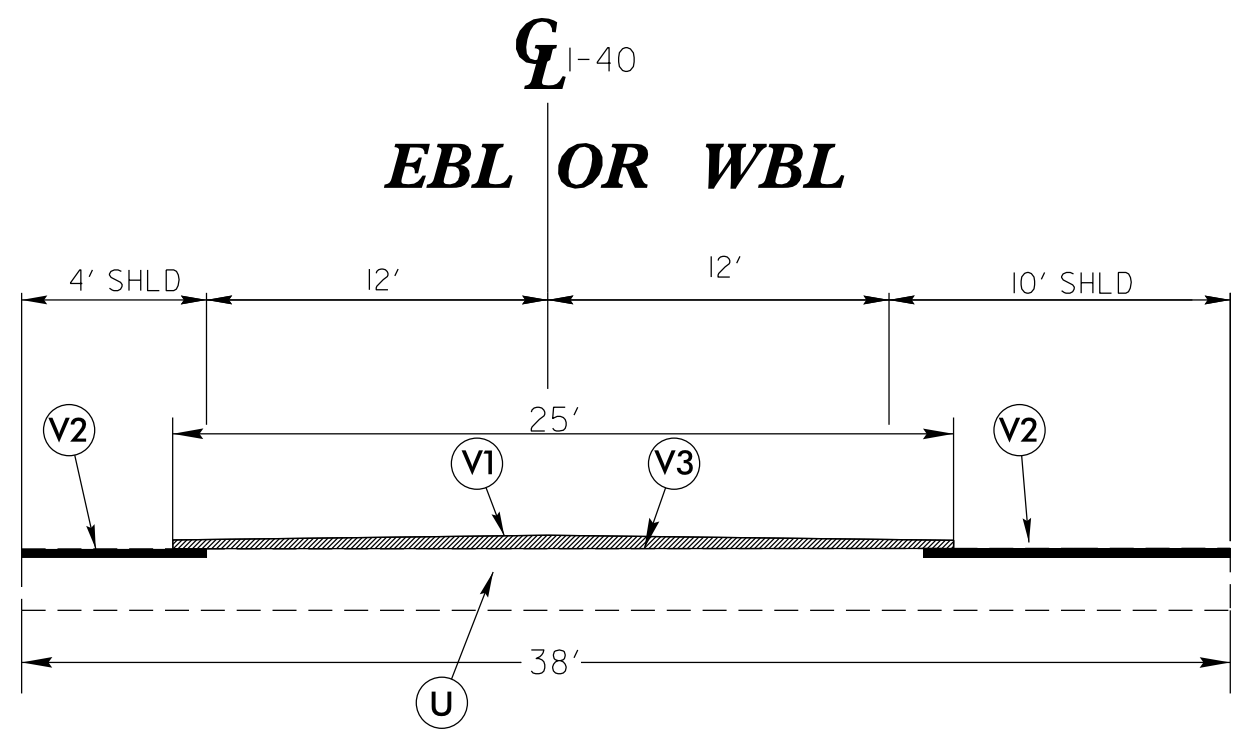


TYPICAL SECTION NO. 2A RESURFACING & RUMBLE STRIPS

BURKE COUNTY

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
F1	ULTRA-THIN BONDED WEARING COURSE
V1	FINE MILL ASPHALT PAVEMENT, 5/8" DEPTH
V2	MILL ASPHALT PAVEMENT, 1½" DEPTH
V3	DIAMOND GRIND CONCRETE PAVEMENT
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
Z1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

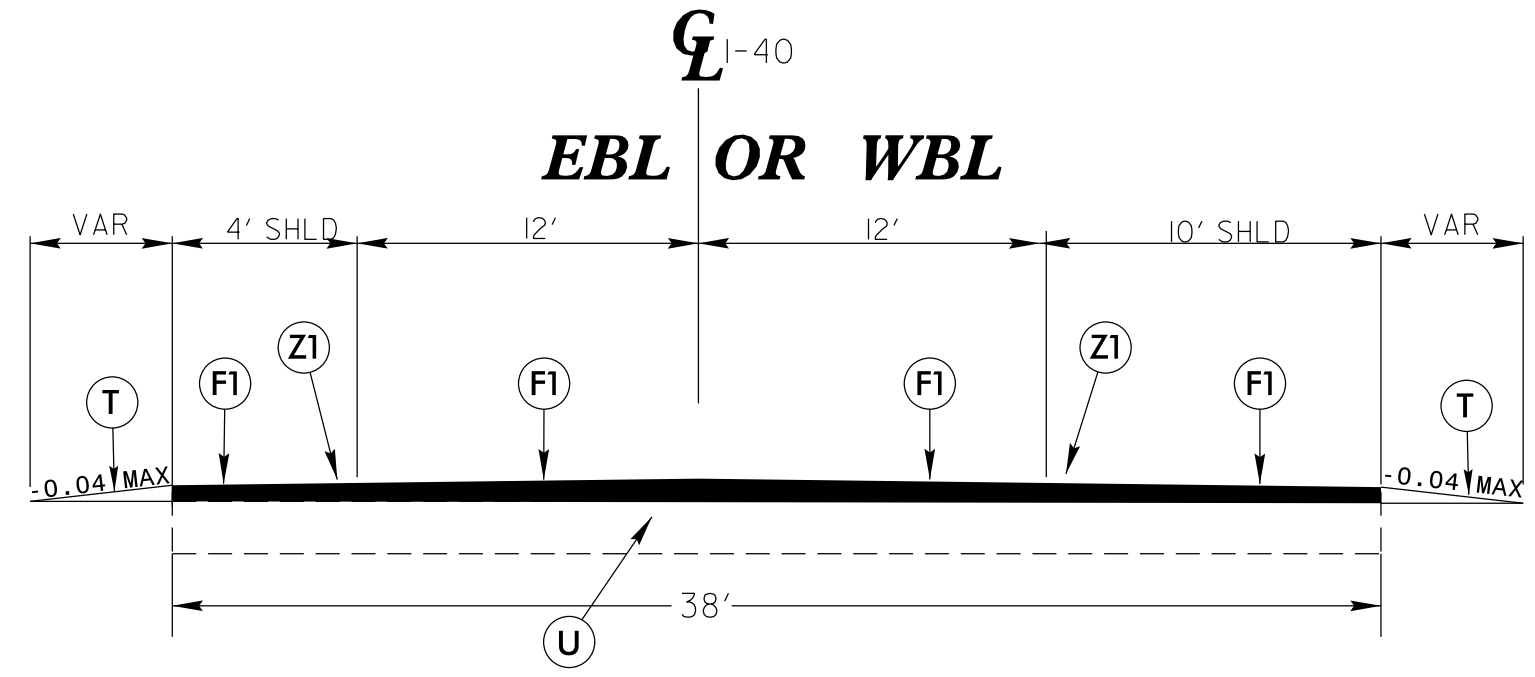
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	7	



TYPICAL SECTION NO. 3 MILLING & DIAMOND GRINDING,

NOTES

- 1-40 MILE MARKERS
95.2+/- TO 104+/- EBL
95.2+/- TO 103.8+/- WBL
105.9+/- TO 119.2+/- EBL
105.5+/- TO 119.2+/- WBL
- REPAIR CONCRETE JOINTED SLABS AS DIRECTED BY THE ENGINEER, SEE STD. DRWG. 700.01, 700.02, 700.03, and 700.05
- BRIDGES TO BE RESURFACED SAME AS MAIN-LINE

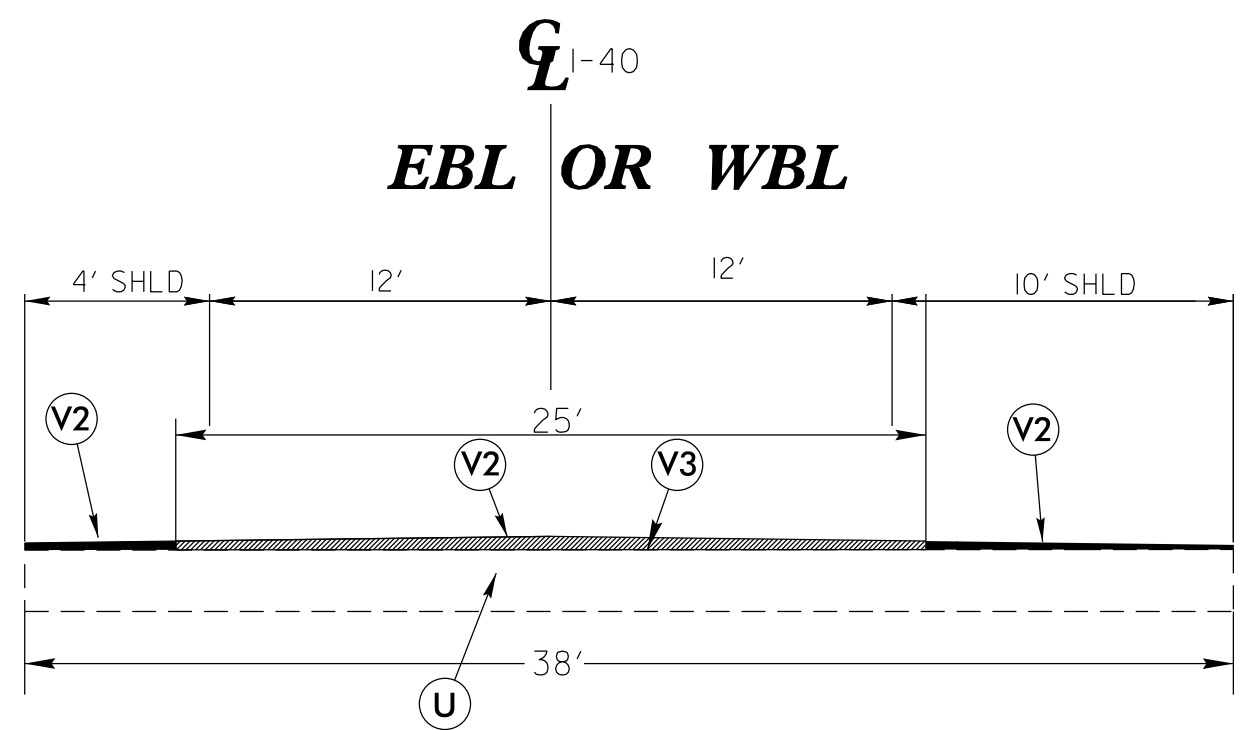


TYPICAL SECTION NO. 3A RESURFACING & RUMBLE STRIPS

BURKE COUNTY

PAVEMENT SCHEDULE	
F1	ULTRA-THIN BONDED WEARING COURSE
V1	FINE MILL ASPHALT PAVEMENT, 1-1/2" DEPTH
V2	FINE MILL ASPHALT PAVEMENT, 5/8" DEPTH
V3	DIAMOND GRIND CONCRETE PAVEMENT
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
Z1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

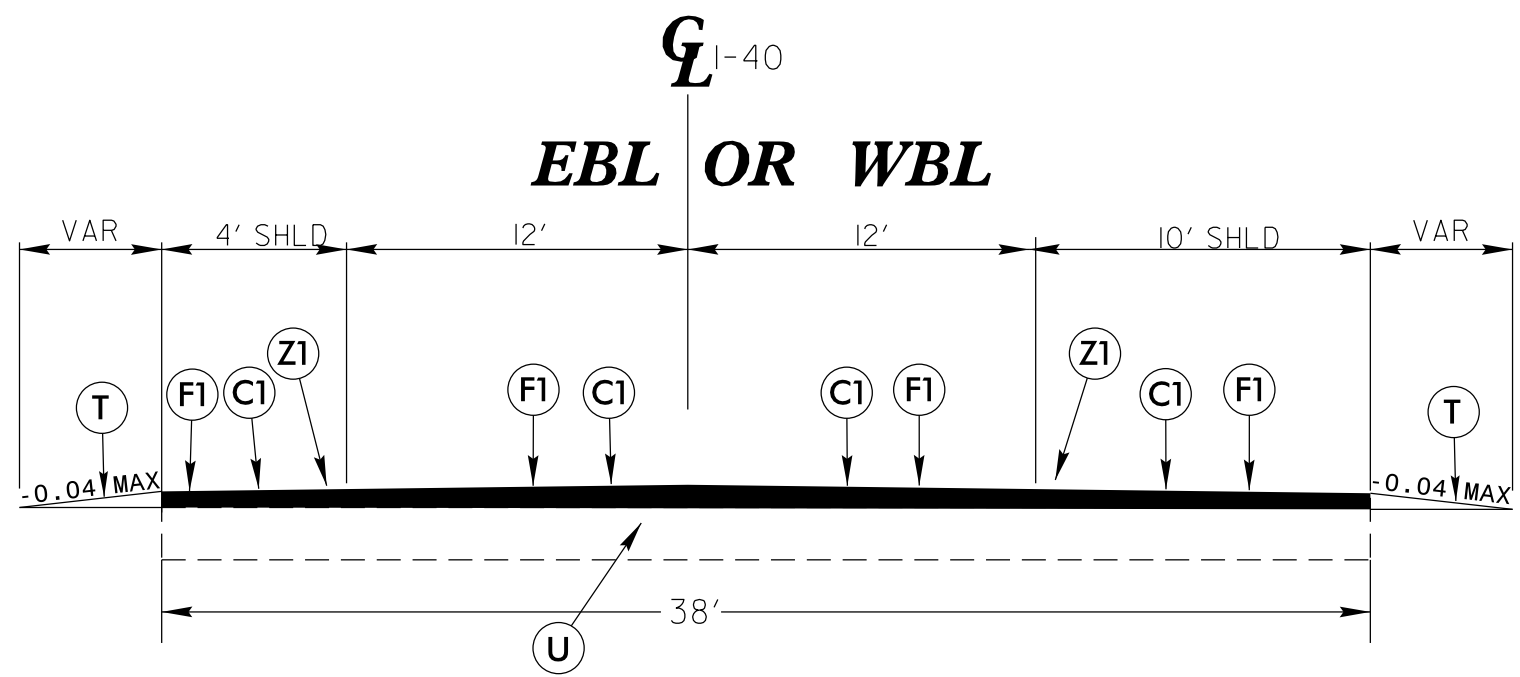
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	8	



TYPICAL SECTION NO. 4 MILLING,

NOTES

- 1-40 MILE MARKERS
 104+/- TO 104.9+/- EBL
 105.5+/- TO 105.9+/- EBL
 103.8+/- TO 104.9+/- WBL
- REPAIR CONCRETE JOINTED SLABS AS DIRECTED BY THE ENGINEER, SEE STD. DRWG. 700.01, 700.02, 700.03, and 700.05
- BRIDGES TO BE RESURFACED SAME AS MAIN-LINE



TYPICAL SECTION NO. 4A RESURFACING & RUMBLE STRIPS

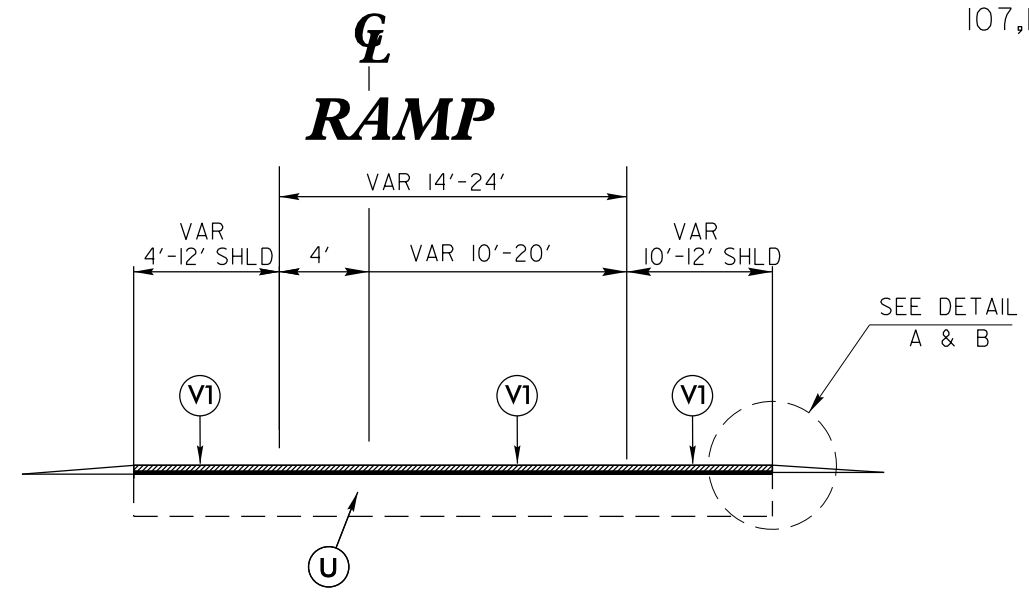
BURKE COUNTY

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
F1	ULTRA-THIN BONDED WEARING COURSE
V2	FINE MILL ASPHALT PAVEMENT, 1-1/2" DEPTH
V3	DIAMOND GRIND CONCRETE PAVEMENT
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
Z1	MILLED RUMBLE STRIPS
U	EXISTING PAVEMENT

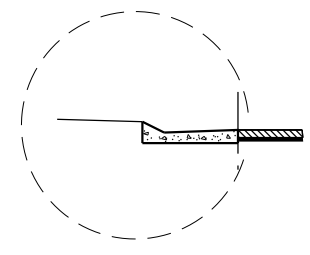
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	10	

NOTES

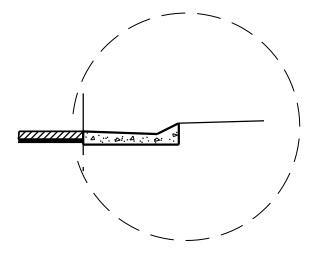
USE AT THE FOLLOWING RAMPS
 94,96,98,100,103,106
 107,111,112,113,116,118,119



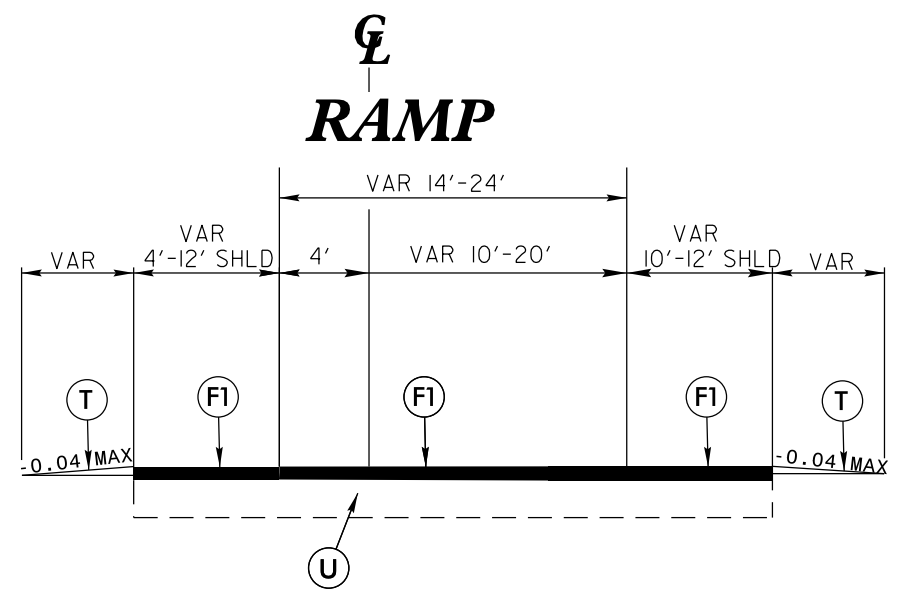
RAMP TYPICAL SECTION NO. 1 MILLING,



DETAIL B
 VARIOUS LOCATIONS



DETAIL A
 VARIOUS LOCATIONS

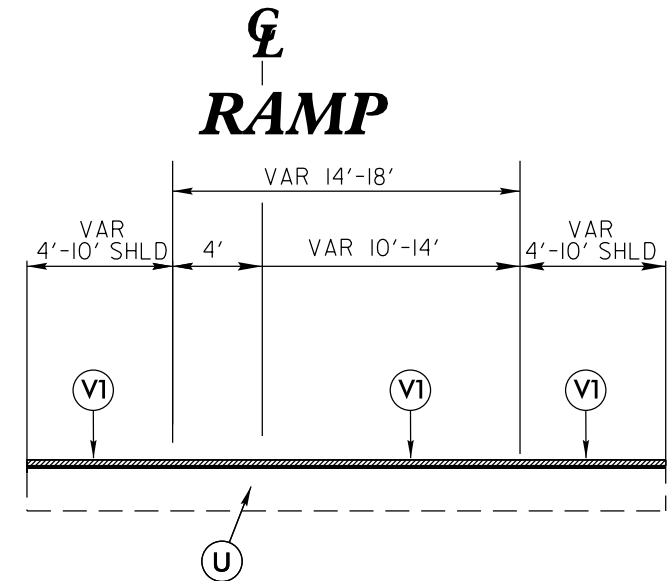


RAMP TYPICAL SECTION NO. 1A RESURFACING,

BURKE COUNTY

PAVEMENT SCHEDULE	
F1	ULTRA-THIN BONDED WEARING COURSE
V1	FINE MILL ULTRA-THIN PAVEMENT, 5/8" DEPTH
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT

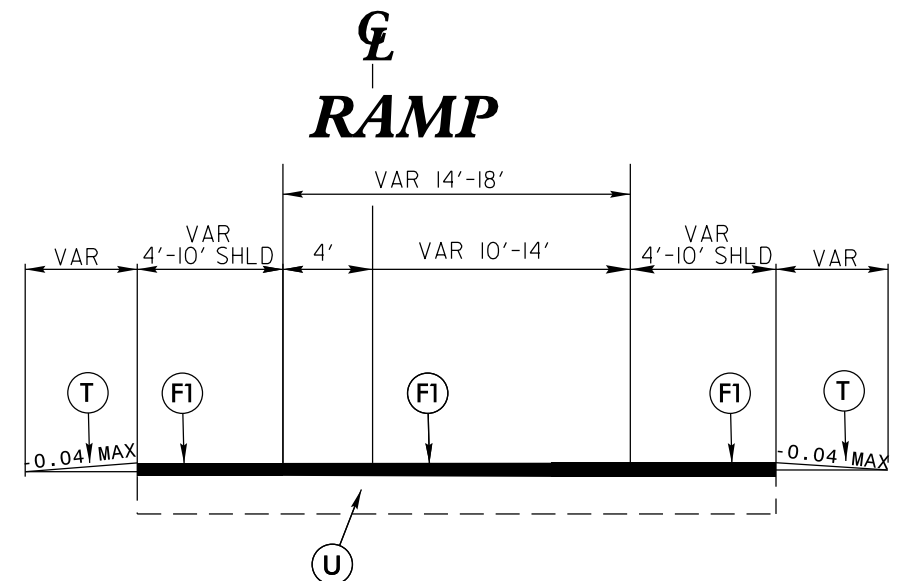
PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	II	



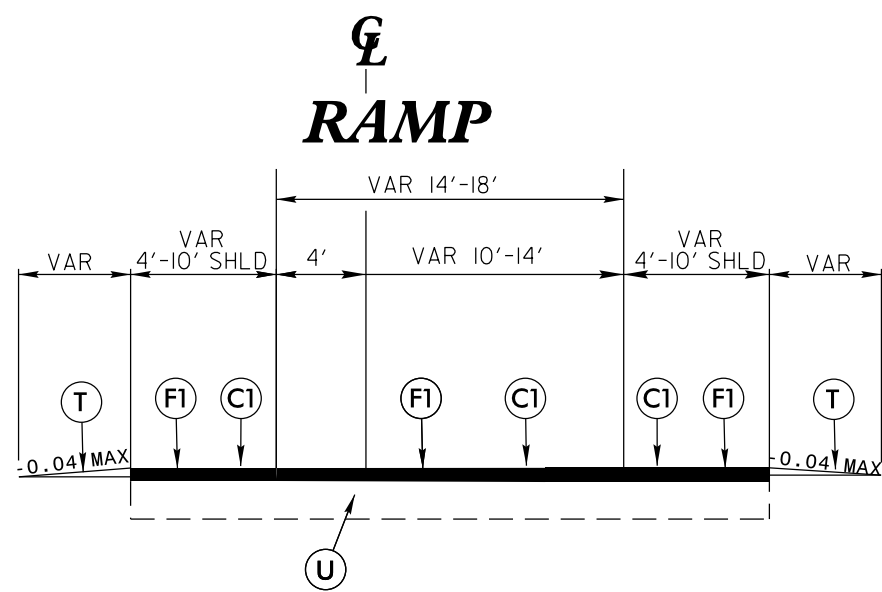
RAMP TYPICAL SECTION NO. 2 MILLING,

NOTES

1. USE RAMP TYPICALS 2 AND 2A AT EXITS 104 AND 105
2. USE RAMP TYPICALS 2 AND 2B AT EXIT III EAST BOUND OFF-RAMP



RAMP TYPICAL SECTION NO. 2B RESURFACING,

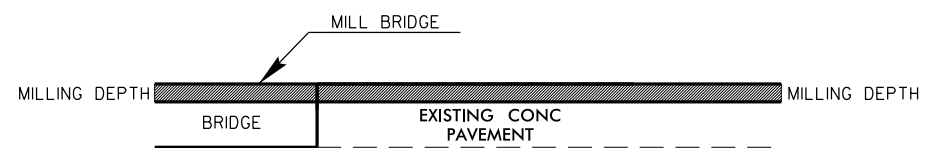


RAMP TYPICAL SECTION NO. 2A RESURFACING,

BURKE COUNTY

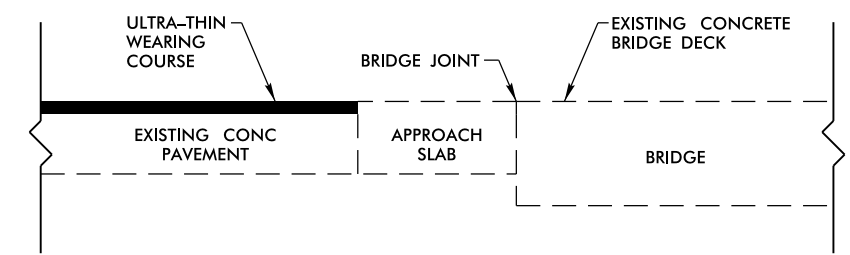
PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 224 LBS. PER SQ. YD.
F1	ULTRA-THIN BONDED WEARING COURSE
V1	FINE MILL ULTRA-THIN PAVEMENT, 1-1/2" DEPTH
T	SHOULDER RECONSTRUCTION AS DIRECTED BY ENGINEER
U	EXISTING PAVEMENT

PROJECT NO.	SHEET NO.	TOTAL SHEETS
I-5891A	12	



MILLING DETAIL AT BRIDGE

**WHERE BRIDGES WILL BE MILLED THEN RESURFACED
MILL 1 1/2 +/-" OFF EXISTING PAVEMENT
OR AS DIRECTED BY ENGINEER
BRIDGE #'s 112,114,130,132,149,150,160,
162,163,164,167,168**

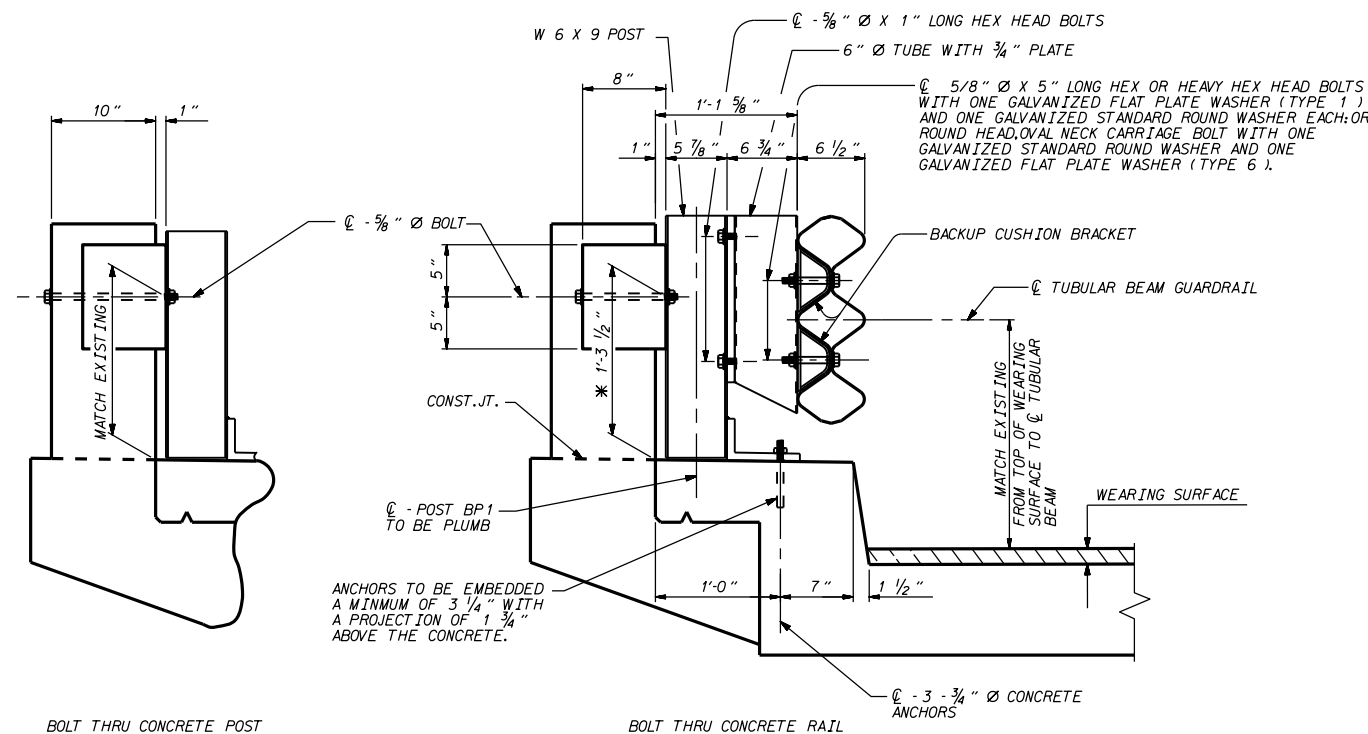


TIE-IN DETAIL AT BRIDGE #s 140 & 142 AT EXIT 105

ACSC MAY BE USED TO WEDGE FOR TIE-IN AT APPROACH
AS APPROVED BY ENGINEER.

BURKE COUNTY

- FIELD VERIFY THIS DIMENSION. MAINTAIN A MINIMUM OF 2' FROM THE CENTER OF THE BOLT HOLE TO THE TOP OF THE POST. THE BOLT HOLE MAY BE CUT INTO THE POST IN THE FIELD IF NEEDED.

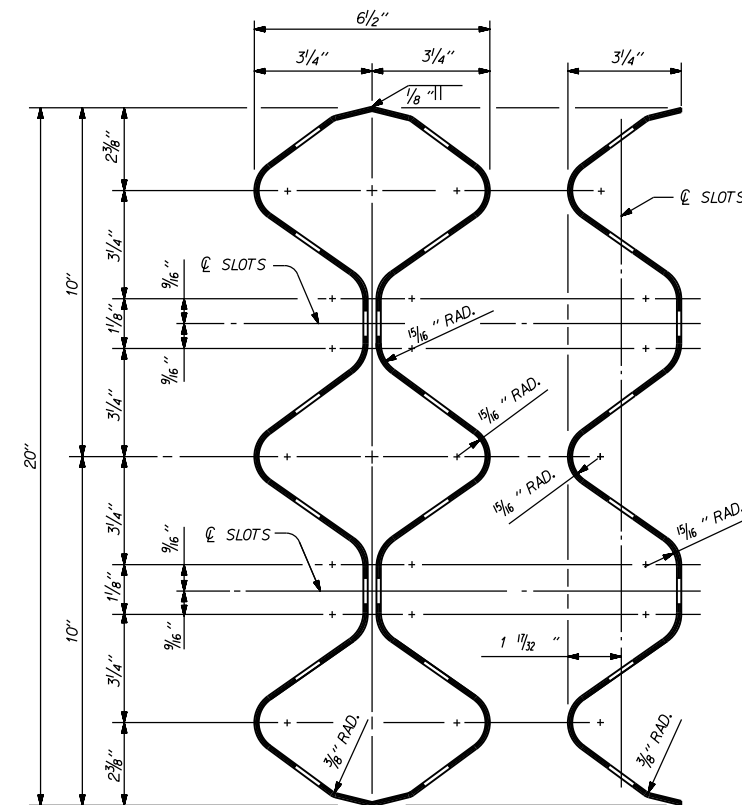


BOLT THRU CONCRETE POST

BOLT THRU CONCRETE RAIL

**RETROFIT EXISTING RAIL WITH TUBULAR BEAM GUARDRAIL
(WITH WEARING SURFACE)**

BP1



SECTION THRU
TUBULAR BEAM

SECTION THRU
20" TRIPLE
CORRUGATED BEAM

GENERAL NOTES :

- THE 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL SECTION SHALL BE FABRICATED BY WELDING TWO (2) 20" TRIPLE CORRUGATED BEAM RAIL ELEMENTS AS SHOWN AND THE GUARDRAIL SHALL CONFORM TO THE NCDOT STANDARD SPECIFICATIONS EXCEPT AS NOTED AND SHOWN ON THE PLANS.
- 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL SHALL BE 10 GAGE.
- POSTS, BASE ANGLES AND/OR BASE PLATES, 6" DIA. TUBES, AND OFFSET BLOCKS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36. SHIMS SHALL MEET THE REQUIREMENTS OF ASTM A-570 GRADE 33 OR A-611 GRADE C.
- POSTS, BASE ANGLES AND/OR BASE PLATES, TUBES, BLOCKS AND SHIMS SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A-123.
- POSTS ARE TO BE PLUMB. SHIMS MAY BE USED BENEATH THE ROADWAY EDGE OF THE BASE ANGLES AND/OR BASE PLATES AS NECESSARY FOR POST ALIGNMENT. PROVIDE ONE 1/8" AND TWO 1/16" STEEL SHIMS FOR 25% OF THE POSTS ON THE BRIDGE.
- "BP" POST HEIGHT TO BE DETERMINED IN THE FIELD BY THE CONTRACTOR.
- PROPOSED RAIL POST MAY BE SHIFTED SLIGHTLY TO CLEAR REINFORCING STEEL. STANDARD SLOTS MAY BE USED IN THE RAIL TO ALLOW ADJUSTMENT.
- HOLES SHALL BE DRILLED HORIZONTAL OR VERTICAL USING A ROTARY DRILL OR A ROTARY IMPACT DRILL. IMPACT TOOLS WILL NOT BE PERMITTED. CARBIDE TIPPED BITS SHALL BE USED UNLESS REINFORCING STEEL IS ENCOUNTERED. AN APPROPRIATE BIT FOR DRILLING THROUGH REINFORCING STEEL SHALL BE USED WHEN NECESSARY. THE CONTRACTOR SHALL BE PREPARED TO DRILL THROUGH REINFORCING STEEL AT TIMES.
- POST SPACINGS AS SHOWN ON THE PLANS SHALL BE CHECKED BEFORE HOLES ARE DRILLED IN THE 20" TRIPLE TUBULAR CORRUGATED BEAM RAIL. STANDARD SLOTS WILL BE ALLOWED. FIELD PUNCHING OF THE HOLES OR SLOTS WILL NOT BE PERMITTED.
- ALL CONCRETE DAMAGED BY THIS WORK SHALL BE REPAIRED TO THE SATISFACTION OF THE ENGINEER.
- VERTICAL SLOTS IN THE 6" TUBE ALLOW FOR SOME VERTICAL ADJUSTMENT OF RAIL HEIGHT IN ORDER TO OBTAIN THE CENTERLINE OF RAIL HEIGHT OF 1'-11" ABOVE RIDING SURFACE.
- THE SIZE OF FILLET WELDS SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES. ELECTROSLAG WELDING WILL NOT BE PERMITTED.
- LAP BEAM RAIL JOINTS IN DIRECTION OF TRAFFIC.

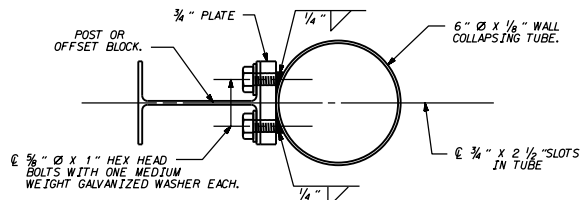
CONCRETE ANCHOR NOTES :

- FOR ADHESIVELY ANCHORED BOLTS OR DOWELS, SEE STANDARD SPECIFICATION FOR ROADS AND BRIDGES.
- EMBEDMENT SHOWN ON THE PLANS IS A MINIMUM, BUT THE MANUFACTURER'S RECOMMENDATIONS SHALL BE FOLLOWED.
- AT THE CONTRACTOR'S OPTION, STAINLESS STEEL ANCHORS MAY BE USED AS AN ALTERNATE FOR THE GALVANIZED CONCRETE ANCHORS. THEY SHALL MEET OR EXCEED THE MECHANICAL REQUIREMENTS FOR THE GALVANIZED ANCHORS. THE USE OF THIS ALTERNATE SHALL BE APPROVED BY THE ENGINEER.
- EXPANSION ANCHORS WILL NOT BE PERMITTED.

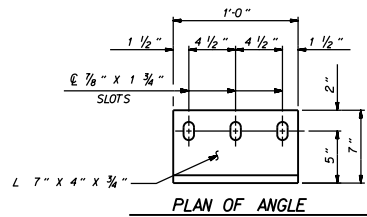
NOTES :

- TUBULAR BEAM POSTS ARE TO BE MOUNTED AGAINST THE EXISTING CONCRETE RAIL. HOLES FOR THE 5/8" DIAMETER BOLTS, THRU THE EXISTING CONCRETE RAIL OR POST, SHALL BE 3/4" DIAMETER.
- 5/8" DIAMETER BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-307 AND SHALL BE GALVANIZED TO CONFORM TO THE REQUIREMENTS OF ASTM A-153.

CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
RETROFIT OF EXISTING BRIDGE RAIL WITH TUBULAR BEAM GUARDRAIL	
ORIGINAL BY: C.O. CUEVAS	DATE: _____
MODIFIED BY: _____	DATE: _____
CHECKED BY: _____	DATE: _____
FILE SPEC.: jhowerton\guardrail\tubularthriebeam	

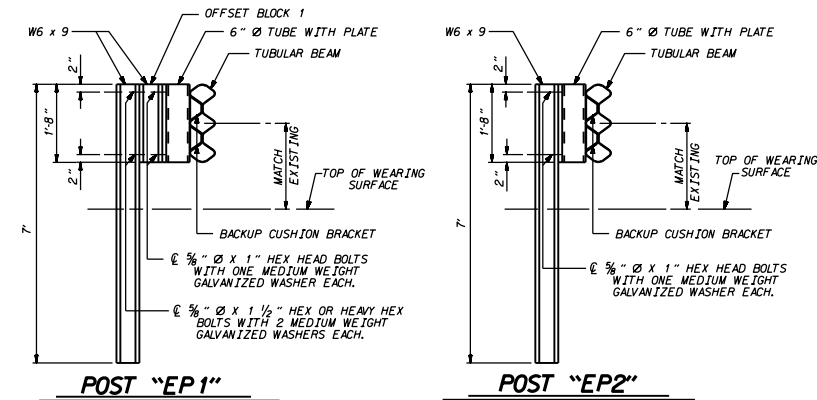


DETAIL SHOWING CONNECTION OF 6" Ø TUBE TO POST OR OFFSET BLOCK



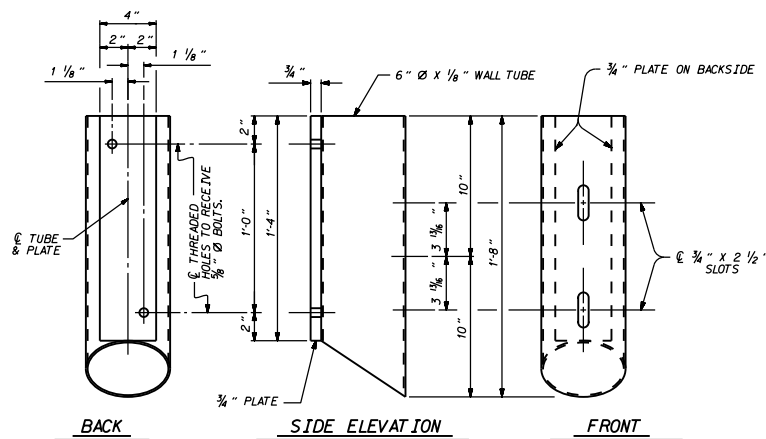
PLAN OF ANGLE

NOTE A: SLOT TO BE DRILLED ON SIDE OF WEB FACING "ONCOMING TRAFFIC".



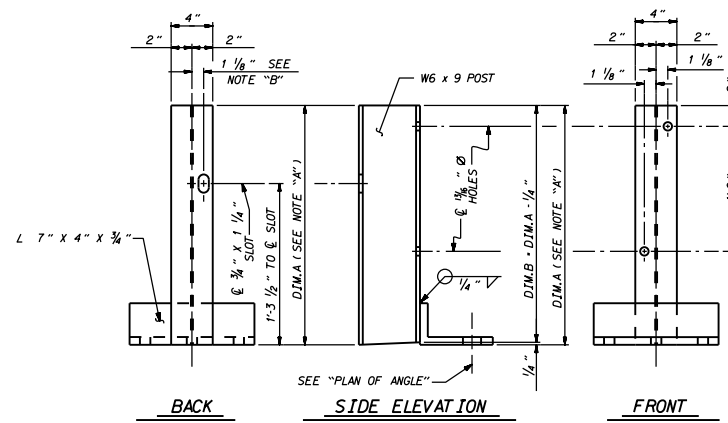
POST "EP1"

POST "EP2"



6" Ø TUBE DETAILS

USE WITH POST "BP1"

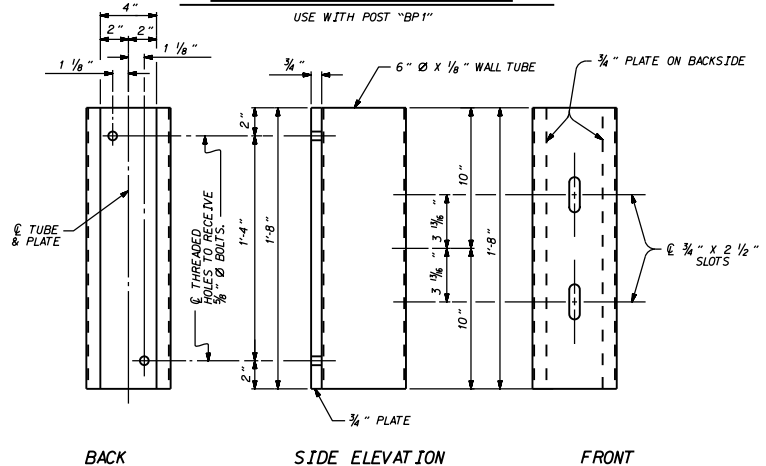


BACK

SIDE ELEVATION

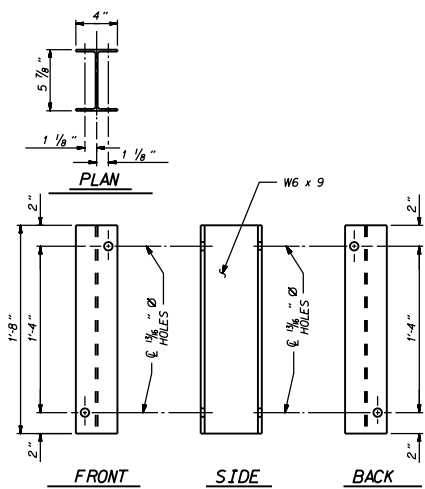
FRONT

BP1 POST DETAILS



6" Ø TUBE DETAILS

USE WITH POST "EP1, EP2, & EP7"

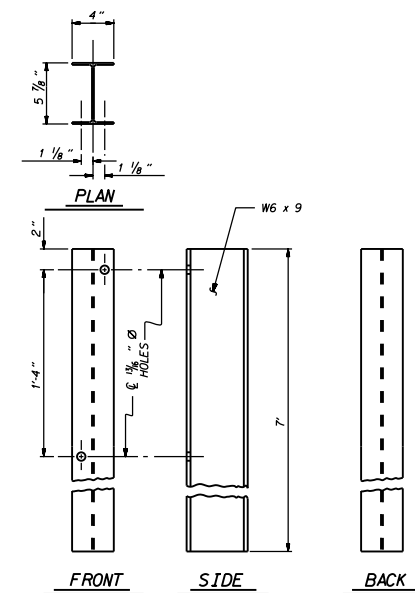


FRONT

SIDE

BACK

DETAILS OF OFFSET BLOCK 1

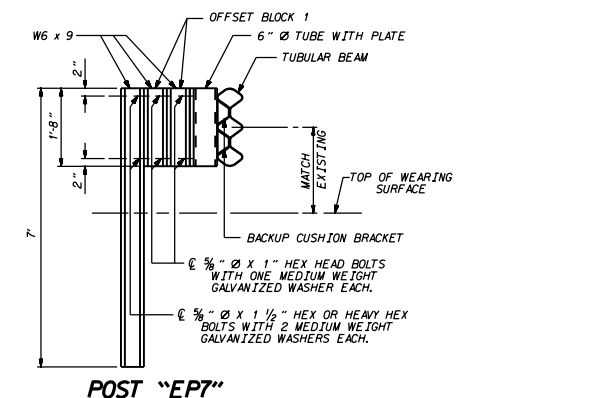


FRONT

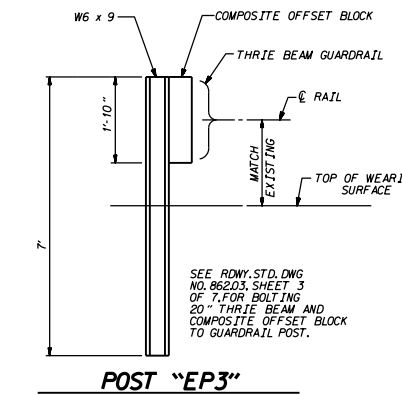
SIDE

BACK

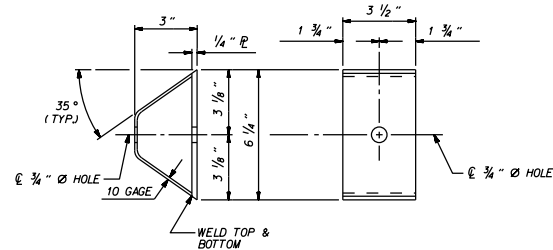
DETAIL OF POST EP1, EP2, & EP7



POST "EP7"

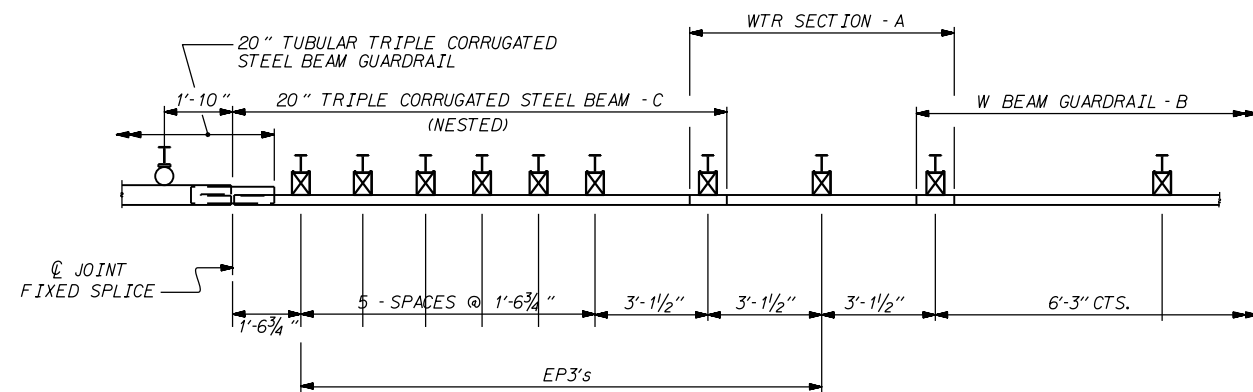


POST "EP3"

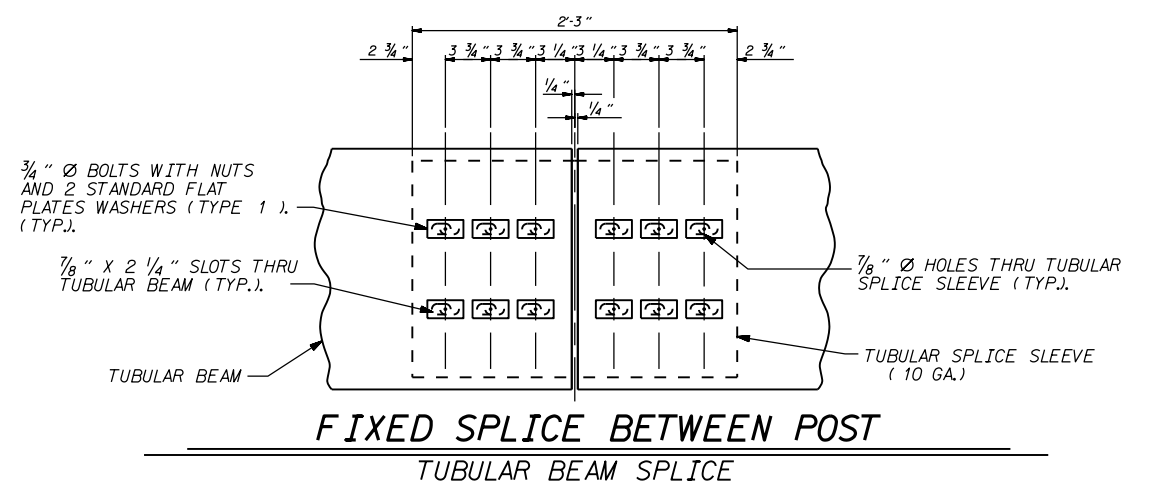


BACKUP CUSHION BRACKET

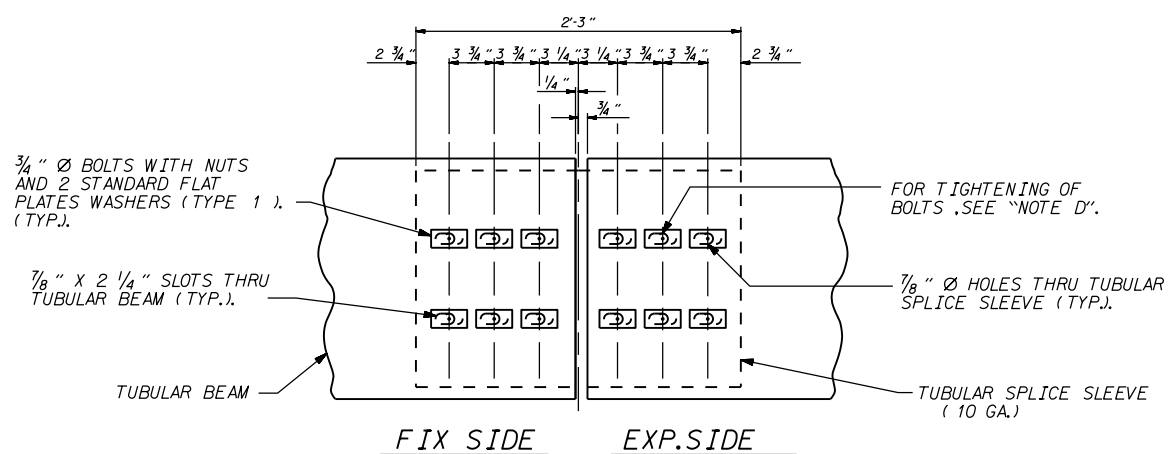
CONTRACT STANDARDS AND DEVELOPMENT UNIT	
Office 919-707-6950 FAX 919-250-4119	
RETROFIT OF EXISTING BRIDGE RAIL WITH TUBULAR BEAM GUARDRAIL	
ORIGINAL BY: C.O. CUEVAS	DATE: 9-1-98
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: ds182:\usr\cesar\english\retrofit.dgn	



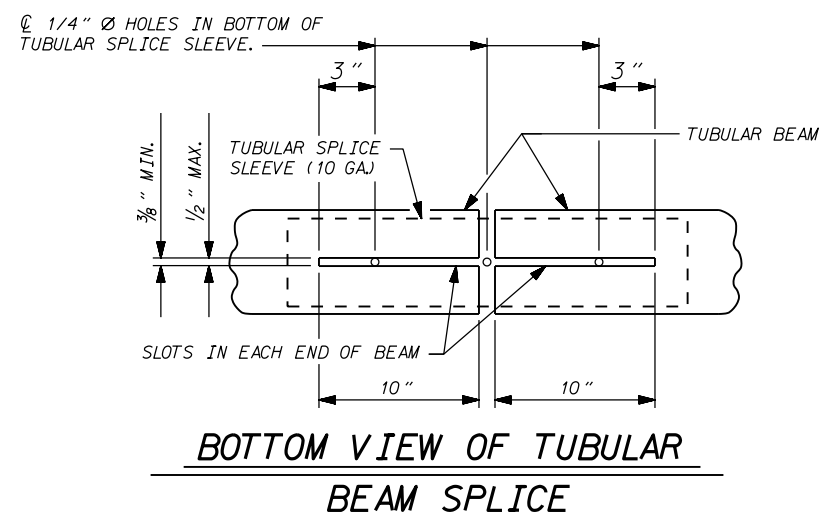
DETAIL "T"



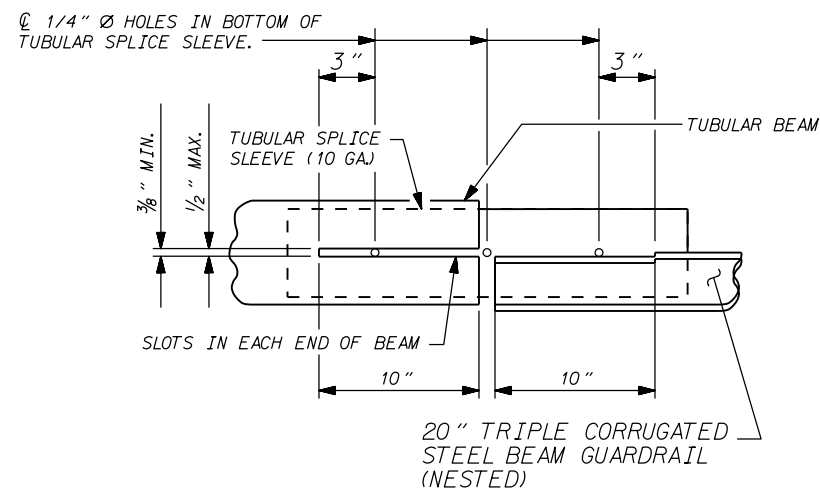
**FIXED SPLICE BETWEEN POST
TUBULAR BEAM SPLICE**



**EXPANSION SPLICE BETWEEN POST (TYPE 1)
TUBULAR BEAM SPLICE**



**BOTTOM VIEW OF TUBULAR
BEAM SPLICE**



**BOTTOM VIEW OF TUBULAR AND
20\"/>TRIPLE CORRUGATED STEEL BEAM SPLICE**

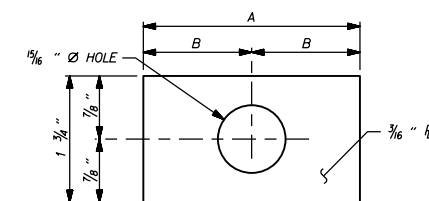
LEGEND

- "A" -- USE W-TR GUARDRAIL TRANSITIONAL SECTION
- "B" -- USE STANDARD GUARDRAIL
- "C" -- USE 20\"/>TRIPLE CORRUGATED STEEL BEAM GUARDRAIL

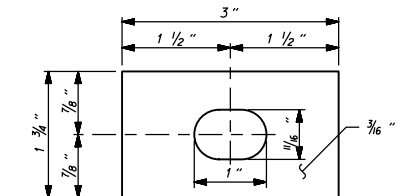
TABLE 2

FLAT PLATE WASHER DIMENSIONS

TYPE	DESCRIPTION	A	B
1	STANDARD WASHER	3"	1 1/2"



FLAT PLATE WASHER - TYPE 6



"NOTE D": BOLTS ON EXPANSION SIDE OF TUBULAR BEAM SPLICE SHALL BE TIGHTENED FINGER TIGHT. DOUBLE NUTS SHALL BE USED AND TIGHTENED AGAINST EACH OTHER TO PREVENT THE NUTS FROM BECOMING LOOSE ON THE BOLT.

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

RETROFIT OF EXISTING BRIDGE RAIL WITH TUBULAR BEAM GUARDRAIL

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