

09/08/99

TIP PROJECT: R-5154

CONTRACT: C202362

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

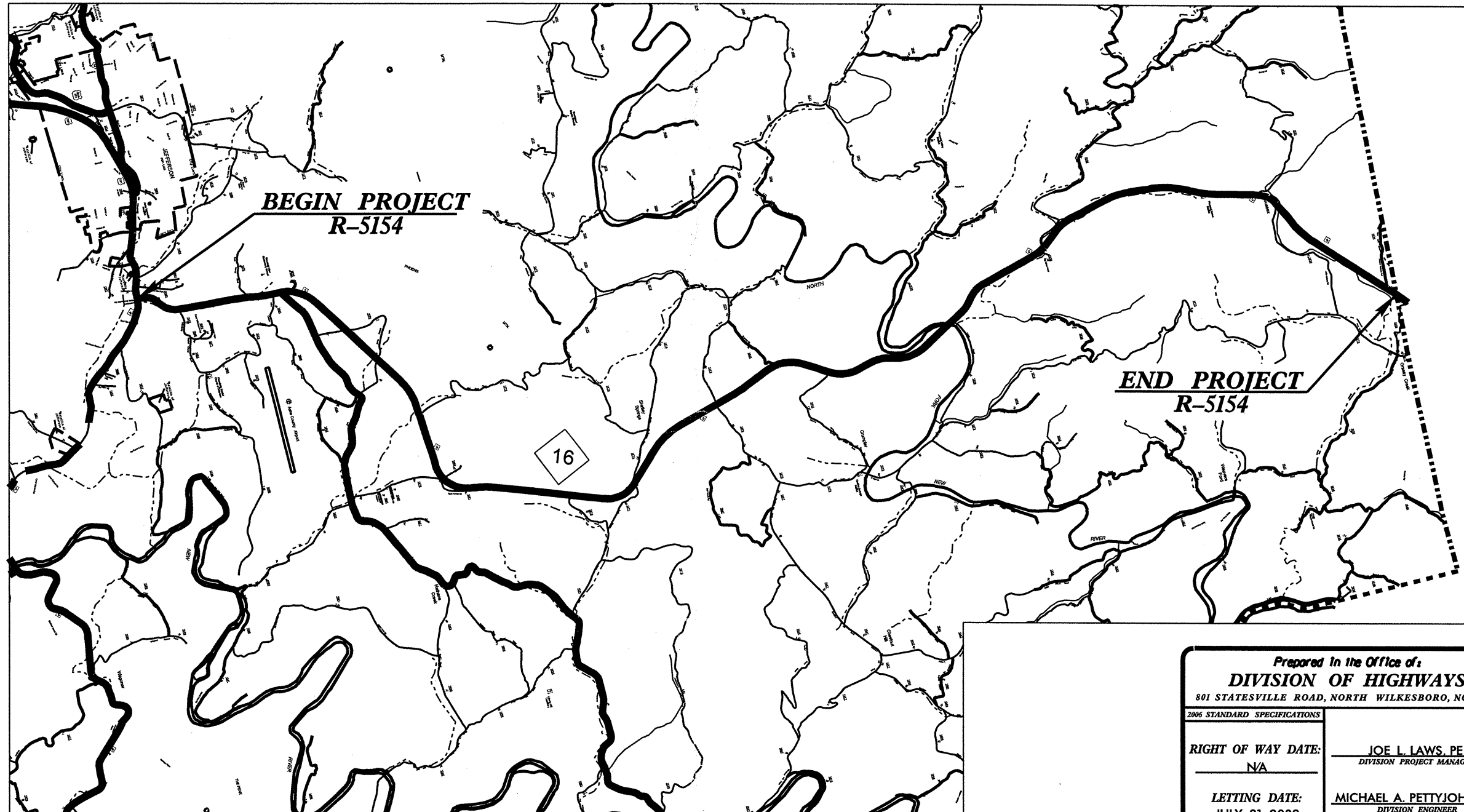
ASHE COUNTY

PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
R-5154	1	
45101.3.ST1		
STM-0016(48)		



LOCATION: NC 16 FROM NC 88 TO VIRGINIA STATE LINE

TYPE OF WORK: MILLING, RESURFACING, SHOULDER RECONSTRUCTION
PAVEMENT MARKINGS & GUARDRAIL



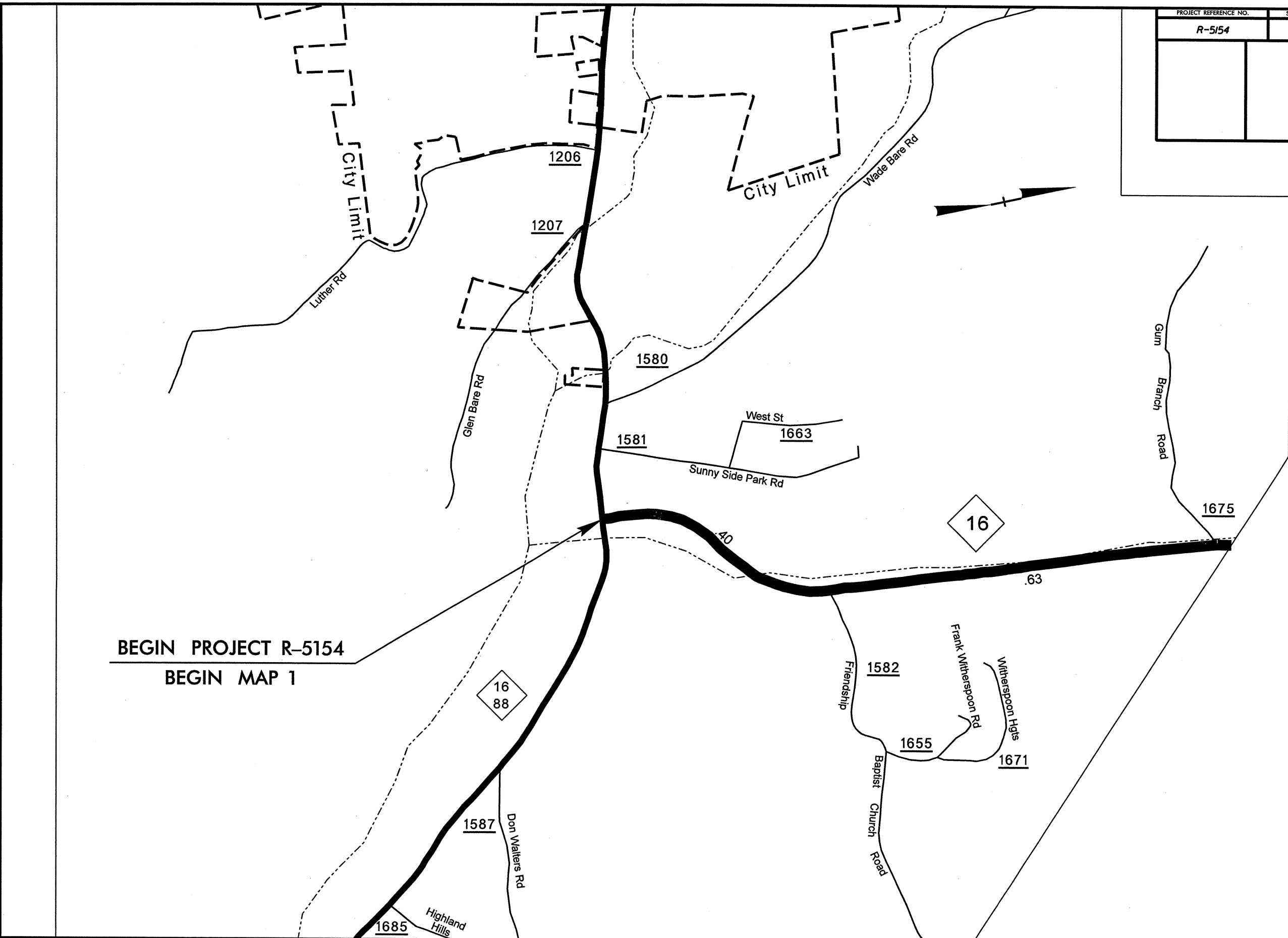
Prepared in the Office of:
DIVISION OF HIGHWAYS
801 STATESVILLE ROAD, NORTH WILKESBORO, NC 28659

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A	JOE L. LAWS, PE DIVISION PROJECT MANAGER
LETTING DATE: JULY 21, 2009	MICHAEL A. PETTYJOHN, PE DIVISION ENGINEER

\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$DCN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

PROJECT REFERENCE NO.	SHEET NO.
R-5154	2



BEGIN PROJECT R-5154
 BEGIN MAP 1

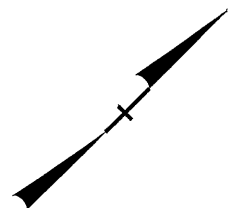
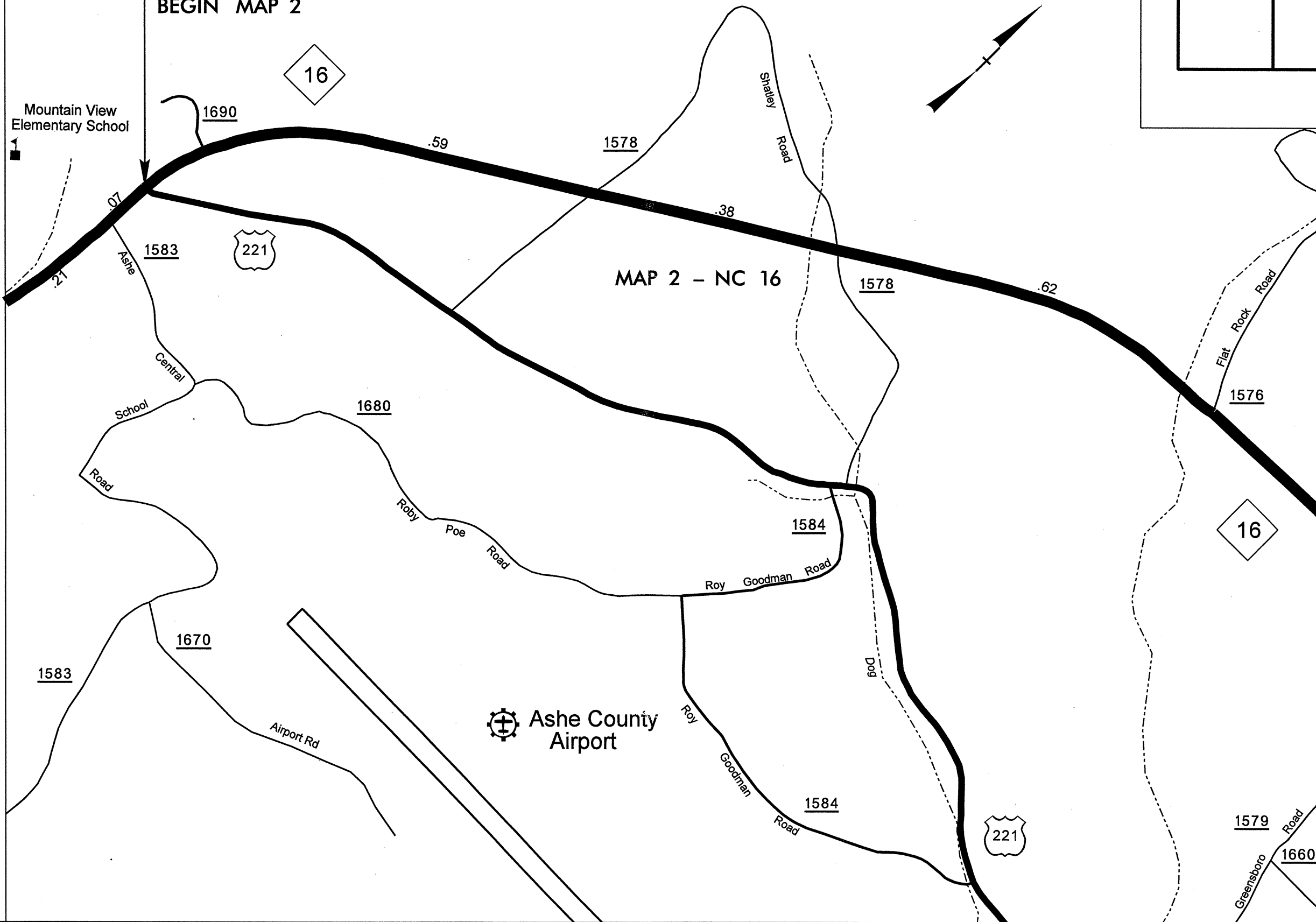
MATCHLINE * SEE SHEET 3 *

PROJECT REFERENCE NO.	SHEET NO.
R-5154	3

END MAP 1
BEGIN MAP 2

MATCHLINE * SEE SHEET 2 *

MATCHLINE * SEE SHEET 4 *



MAP 2 - NC 16

Ashe County Airport

Mountain View Elementary School

16

16

221

221

1583

1670

1680

1584

1584

1579

1660

1690

1578

1578

1576

21

07

Ashe

Central

Road

School

Roby

Poe

Road

Roy

Goodman

Road

Doq

Roy

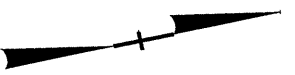
Goodman

Road

Flat Rock Road

Greensboro Road

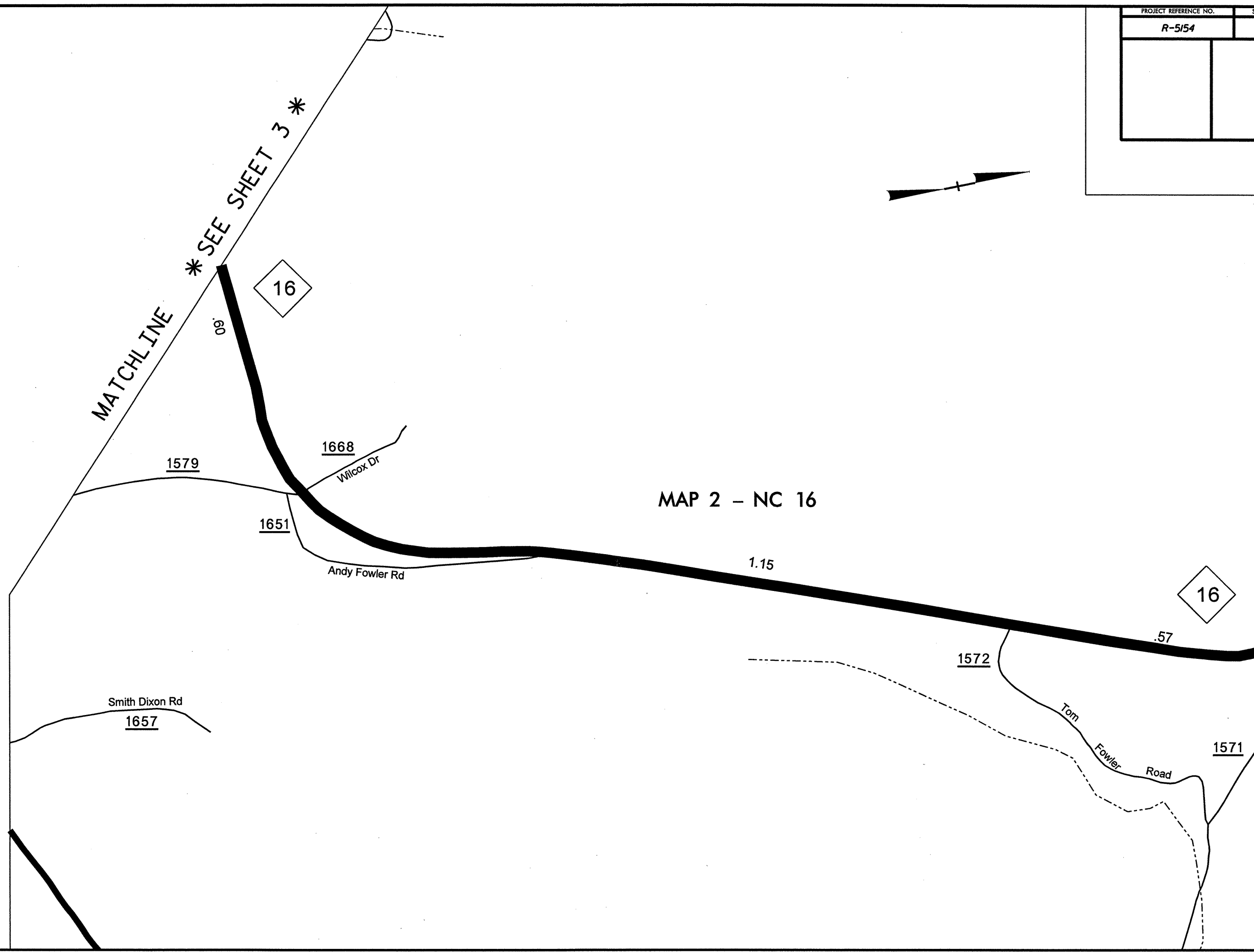
PROJECT REFERENCE NO.	SHEET NO.
R-5154	4



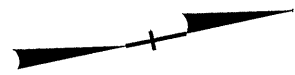
MAP 2 - NC 16

MATCHLINE * SEE SHEET 3 *

MATCHLINE * SEE SHEET 5 *

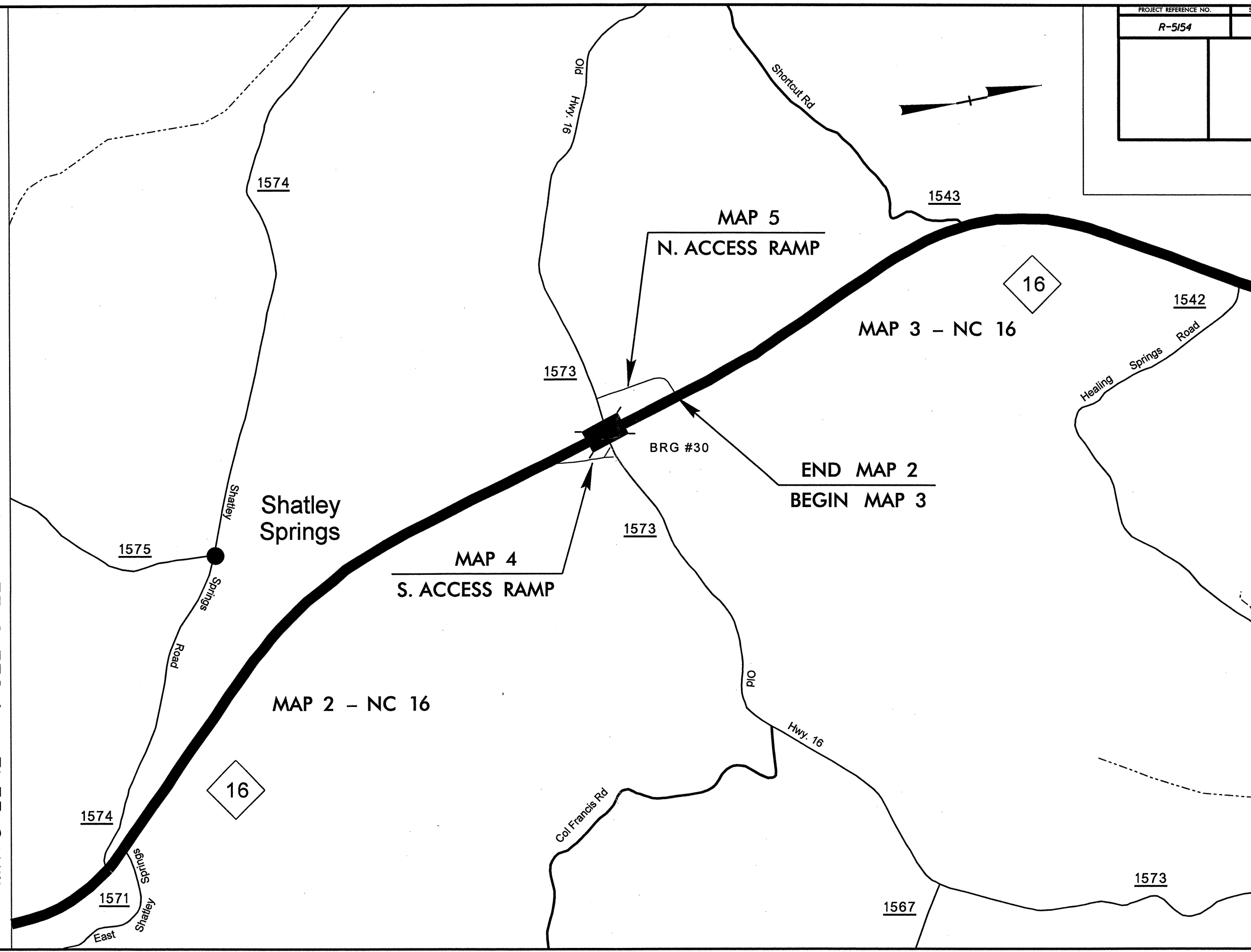


PROJECT REFERENCE NO.	SHEET NO.
R-5154	5



MATCHLINE * SEE SHEET 4 *

MATCHLINE * SEE SHEET 6 *



1574

1571

1575

1574

1573

1573

1543

1542

16

16

1567

1573

MAP 5
N. ACCESS RAMP

MAP 4
S. ACCESS RAMP

END MAP 2
BEGIN MAP 3

MAP 3 - NC 16

MAP 2 - NC 16

Shatley
Springs

Col Francis Rd

Hwy. 16

PIO

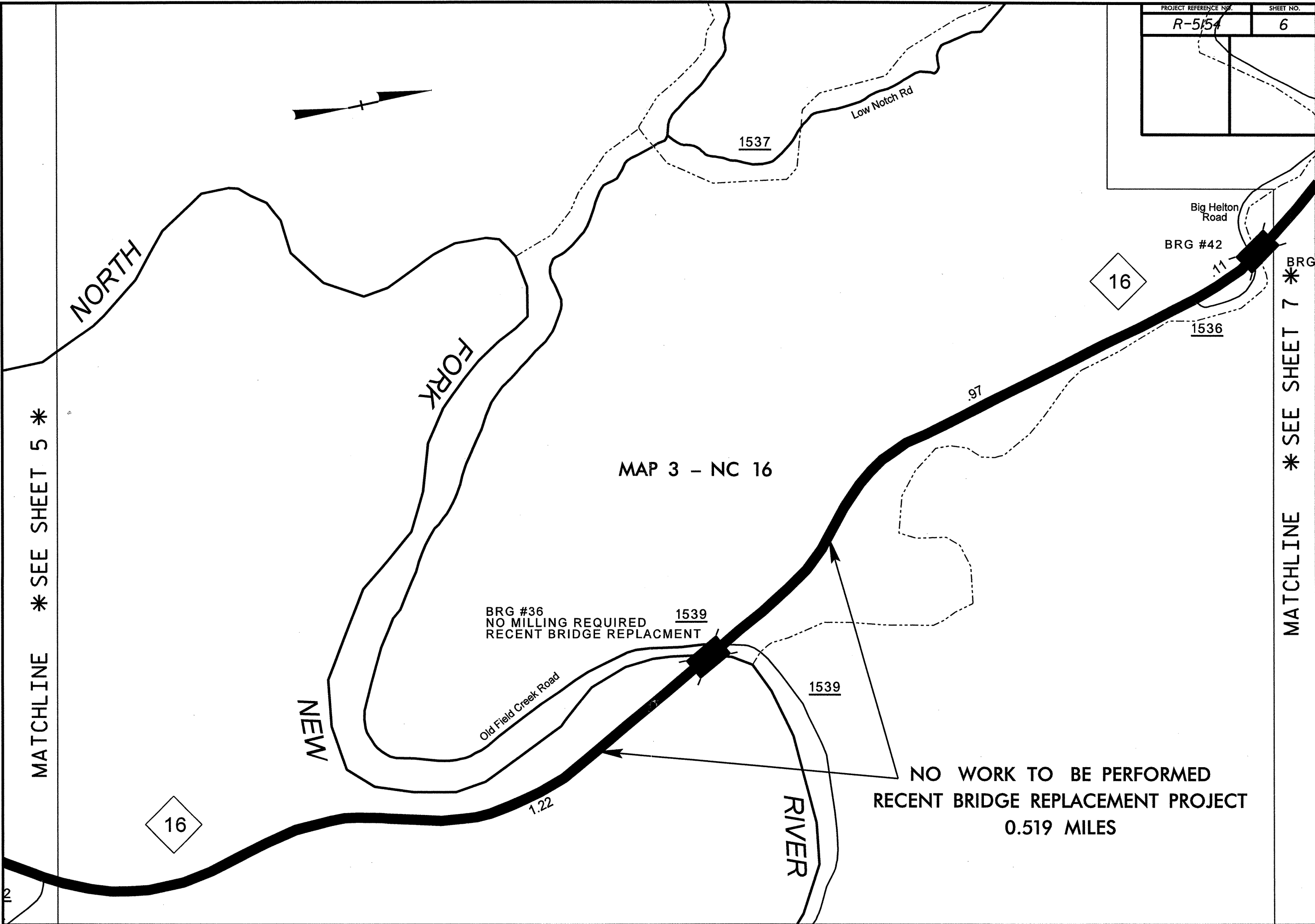
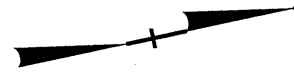
91.4M/H
PIO

Shortcut Rd

Healing
Springs
Road

Shatley
Springs
East

PROJECT REFERENCE NO.	SHEET NO.
R-5154	6



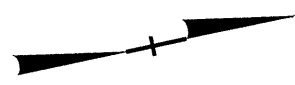
NO WORK TO BE PERFORMED
 RECENT BRIDGE REPLACEMENT PROJECT
 0.519 MILES

MATCHLINE * SEE SHEET 5 *

MATCHLINE * SEE SHEET 7 *

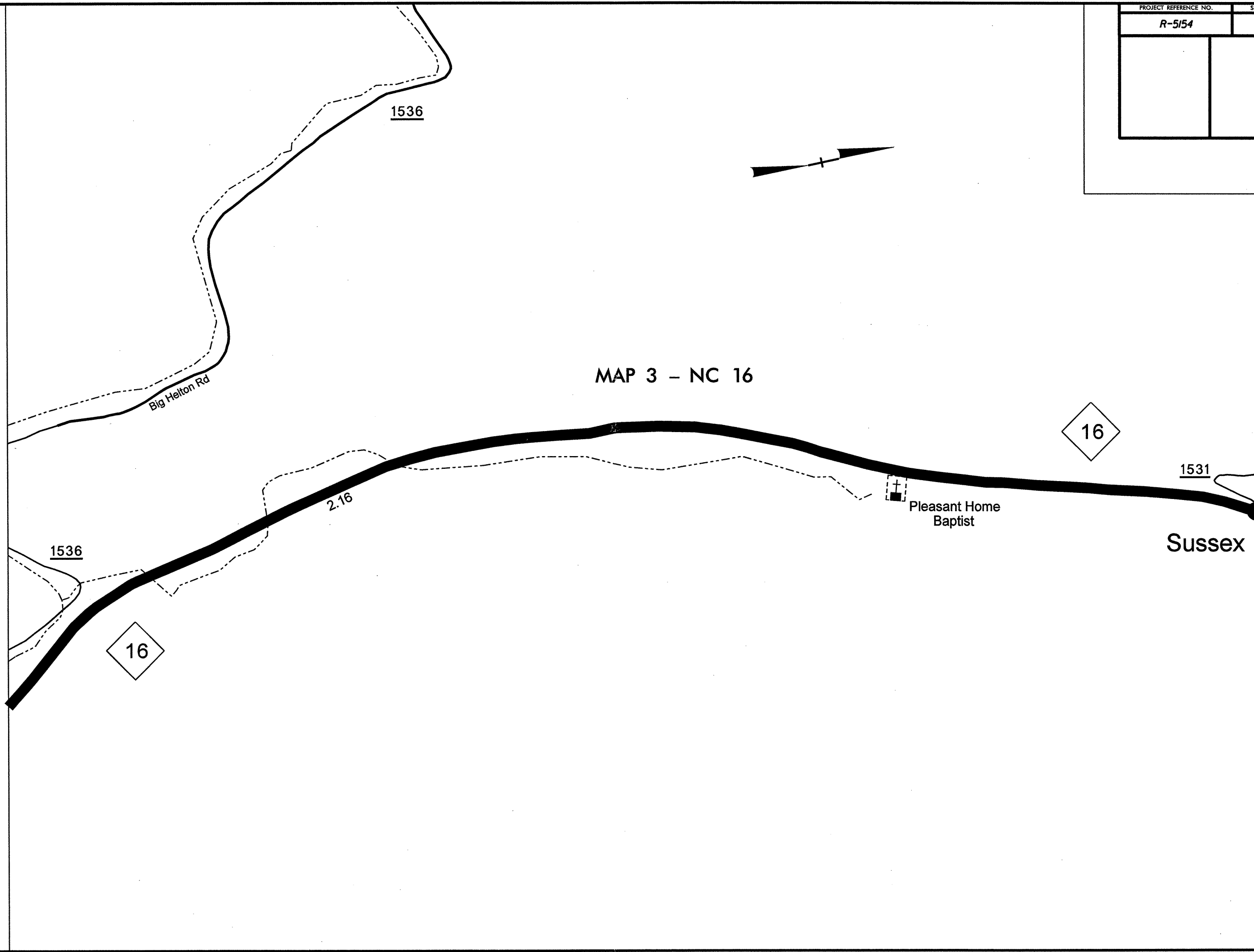
PROJECT REFERENCE NO.	SHEET NO.
R-5154	7

MAP 3 - NC 16



MATCHLINE * SEE SHEET 6 *

MATCHLINE * SEE SHEET 8 *



PROJECT REFERENCE NO.	SHEET NO.
R-5154	8

MATCHLINE * SEE SHEET 7 *

1531
Sussex

16

1533

John Halsey Rd

MAP 3 - NC 16

1.24

1533

16

1573

Old

Hwy. 16 N

1534

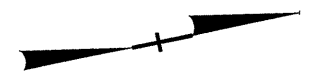
Charles Spencer Rd

1.10

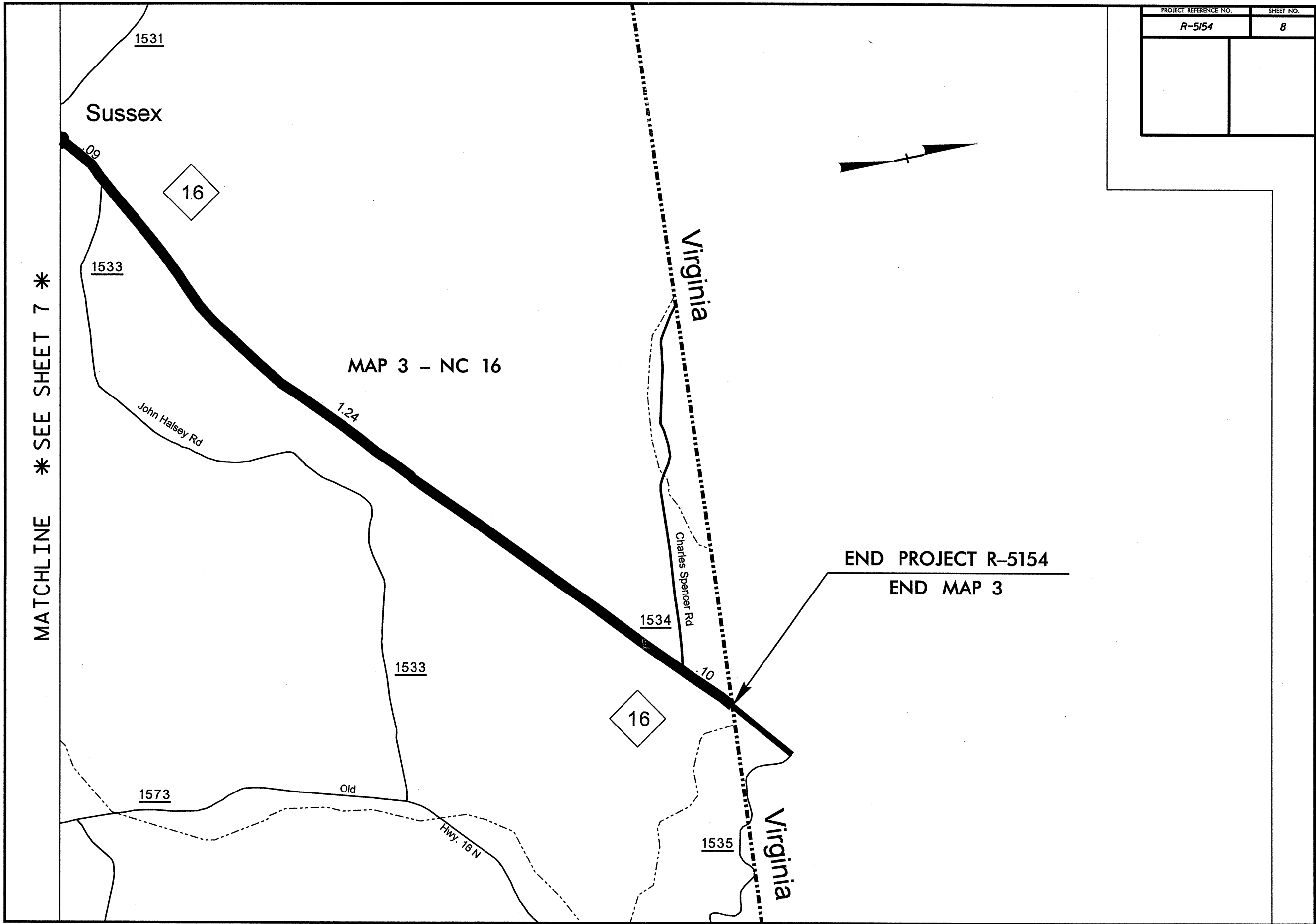
1535

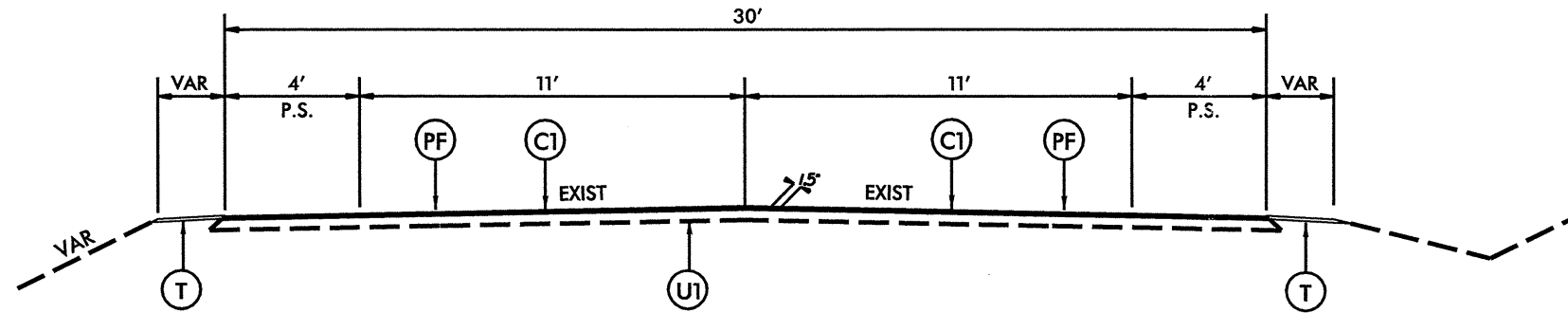
Virginia

Virginia



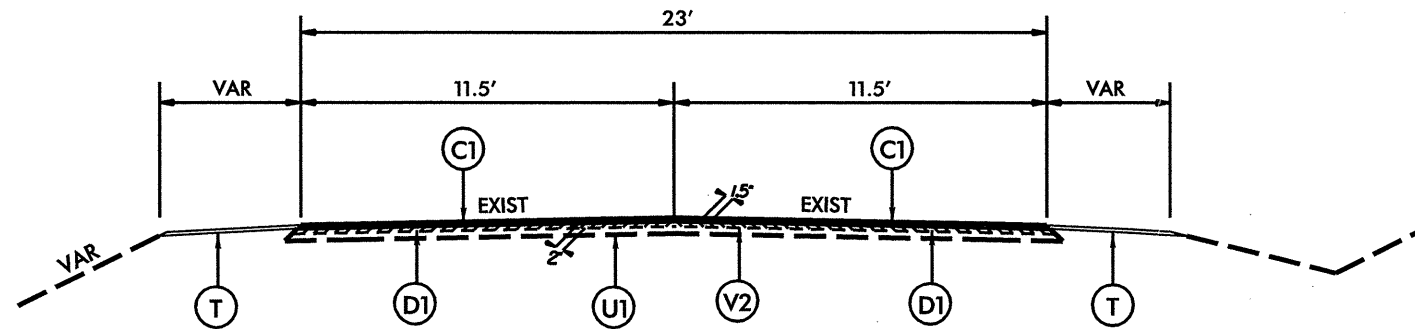
END PROJECT R-5154
END MAP 3





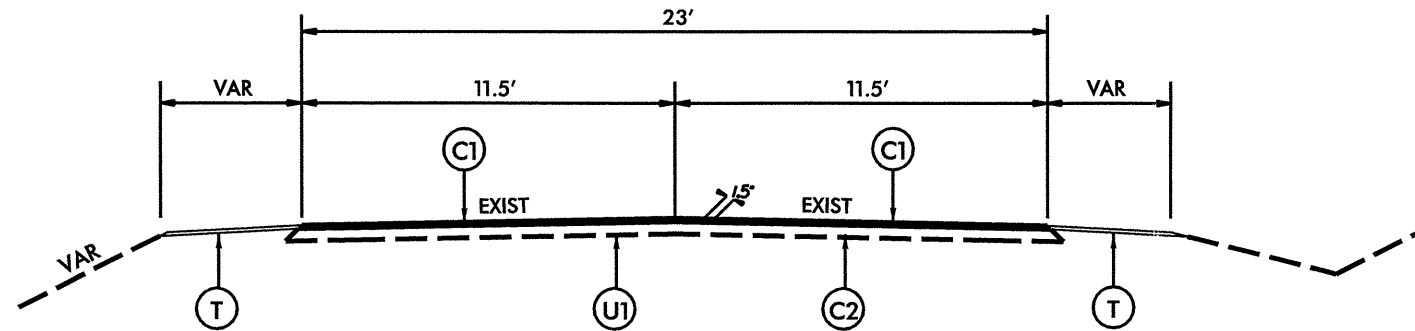
TYPICAL SECTION NO. 1

MAP #1 - NC 16 FROM PAVEMENT JOINT AT NC 88 TO US 221 (1.291 MI)



TYPICAL SECTION NO. 2

MAP #2 - NC 16 FROM US 221 TO 0.356 MI NORTH OF SR 1690 (0.51 MI)

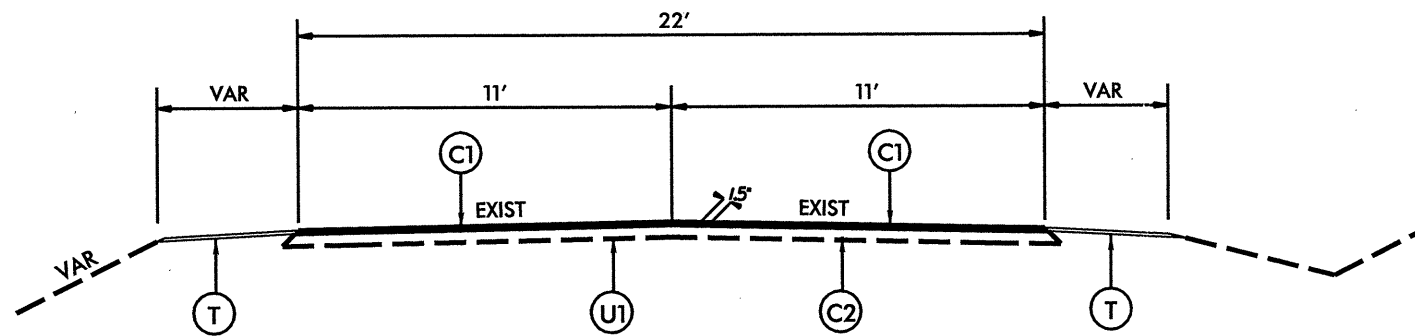


TYPICAL SECTION NO. 3

MAP #2 - NC 16 FROM 0.356 NORTH OF SR 1690 TO N. ACCESS RAMP (TO SR 1573) (4.723 MI)

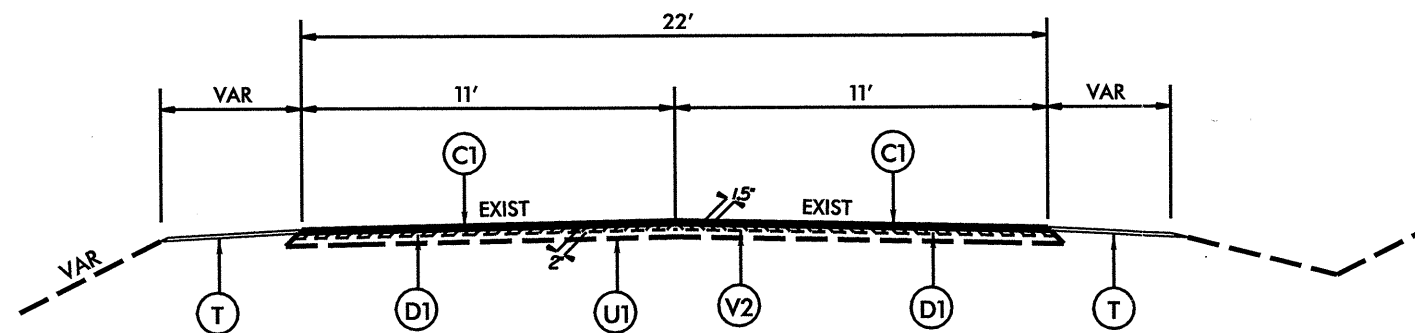
PAVEMENT SCHEDULE	
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PATCH EXISTING PAVEMENT WITH ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B. DEPTH VARIES 0.5" TO 1". WIDTH VARIES TO 4' AND WILL BE AT LOCATIONS AS DETERMINED BY ENGINEER.
D1	2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I 19.0 B, AT AN AVERAGE RATE OF 228 LBS. PER SQ. YD.
PF	PAVEMENT FABRIC PLACED ACCORDING TO PROJECT SPECIAL PROVISIONS. NO FABRIC SHALL BE PLACED ON PAVED SHOULDER AREAS.
T	SHOULDER RECONSTRUCTION
U1	EXISTING ASPHALT PAVEMENT
U2	EXISTING BRIDGE DECK
V1	1½" MILLING
V2	2" MILLING

R-5154: NC 16 FROM NC 88 TO VIRGINIA STATE LINE		
DIVISION II ASHE COUNTY		
REVISIONS	INT.	DATE
SCALE: N/A		DATE: 4/2009
PREPARED BY: J. L. LAWS		REVIEWED BY:
N.C. DEPARTMENT of TRANSPORTATION DIVISION of HIGHWAYS DIVISION ELEVEN		REVIEWED BY:



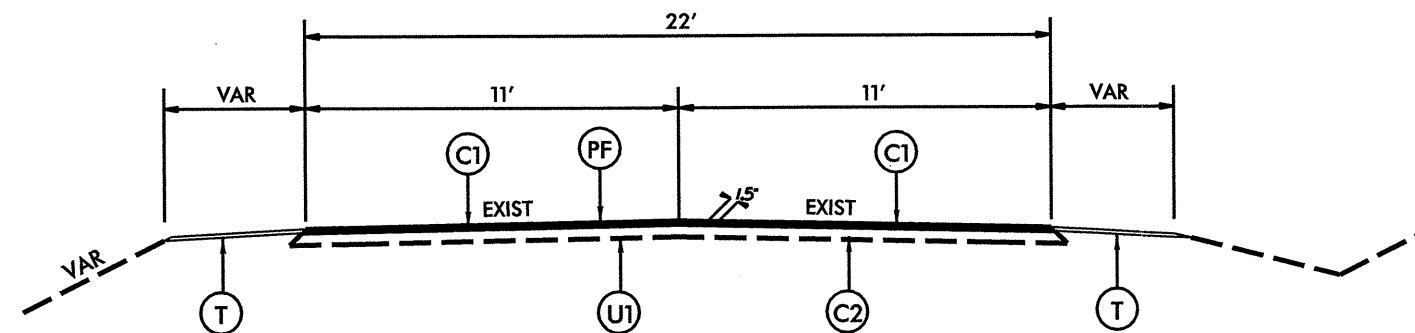
TYPICAL SECTION NO. 4

- MAP #3 - NC 16 FROM N. ACCESS RAMP (TO SR 1573) TO 0.311 MI SOUTH OF N. ACCESS RAMP (TO SR 1539) (1.907 MI)
- MAP #3 - NC 16 FROM 0.208 MI NORTH OF N. ACCESS RAMP (TO SR 1539) TO 0.059 MI SOUTH OF SR 1531 (2.952 MI)
- MAP #3 - NC 16 FROM 0.059 MI NORTH OF SR 1533 TO 0.345 MI NORTH OF SR 1533 (0.286 MI)



TYPICAL SECTION NO. 5


- MAP #3 - NC 16 FROM 0.059 MI SOUTH OF SR 1531 TO 0.059 MI NORTH OF SR 1533 (0.22 MI)

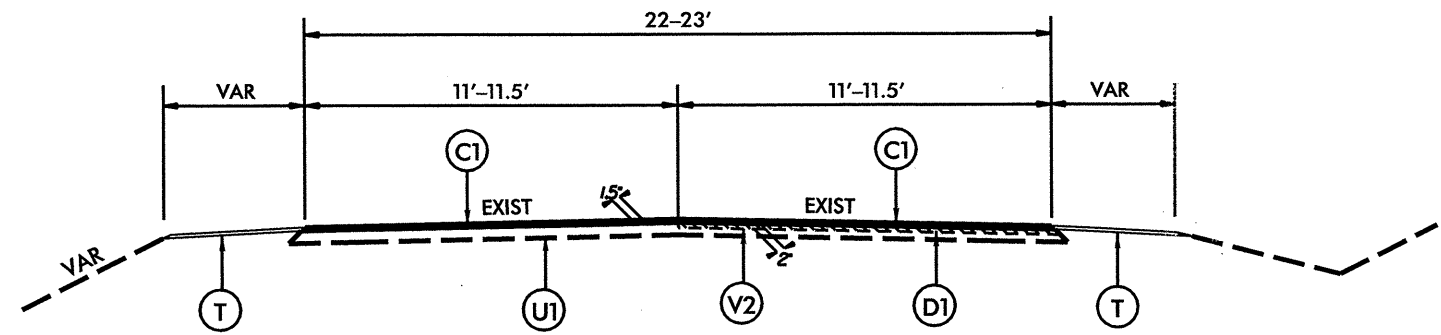


TYPICAL SECTION NO. 6

- MAP #3 - NC 16 FROM 0.345 MI NORTH OF SR 1533 TO THE VIRGINIA STATE LINE

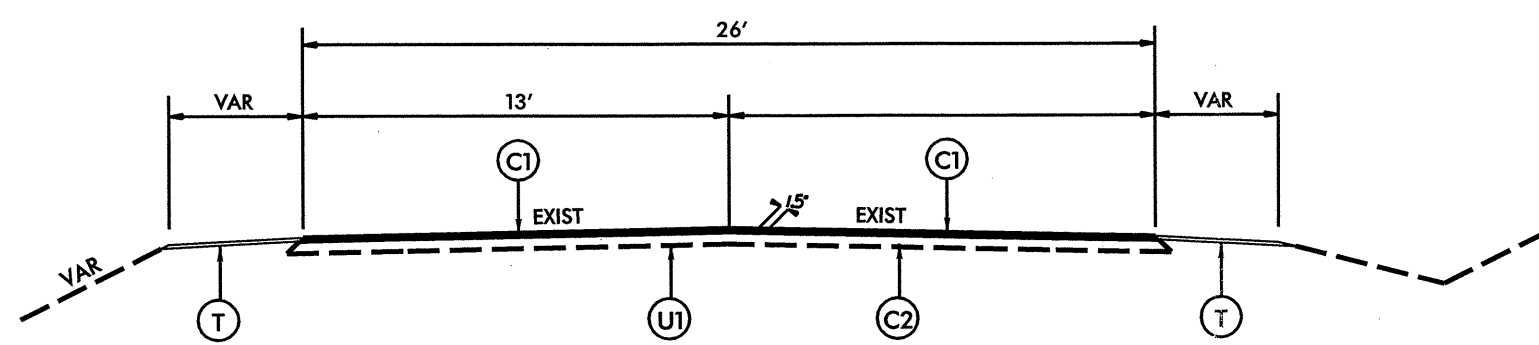
PAVEMENT SCHEDULE	
C1	1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PATCH EXISTING PAVEMENT WITH ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B. DEPTH VARIES 0.5" TO 1". WIDTH VARIES TO 4' AND WILL BE AT LOCATIONS AS DETERMINED BY ENGINEER.
D1	2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I 19.0 B, AT AN AVERAGE RATE OF 228 LBS. PER SQ. YD.
PF	PAVEMENT FABRIC PLACED ACCORDING TO PROJECT SPECIAL PROVISIONS. NO FABRIC SHALL BE PLACED ON PAVED SHOULDER AREAS.
T	SHOULDER RECONSTRUCTION
U1	EXISTING ASPHALT PAVEMENT
U2	EXISTING BRIDGE DECK
V1	1½" MILLING
V2	2" MILLING

R-5154: NC 16 FROM NC 88 TO VIRGINIA STATE LINE		
DIVISION II ASHE COUNTY		
REVISIONS	INT.	DATE
SCALE: N/A		DATE: 4/2009
PREPARED BY: J. L. LAWS		
REVIEWED BY:		
REVIEWED BY:		
N.C. DEPARTMENT OF TRANSPORTATION DIVISION OF HIGHWAYS DIVISION ELEVEN		



TYPICAL SECTION NO. 7

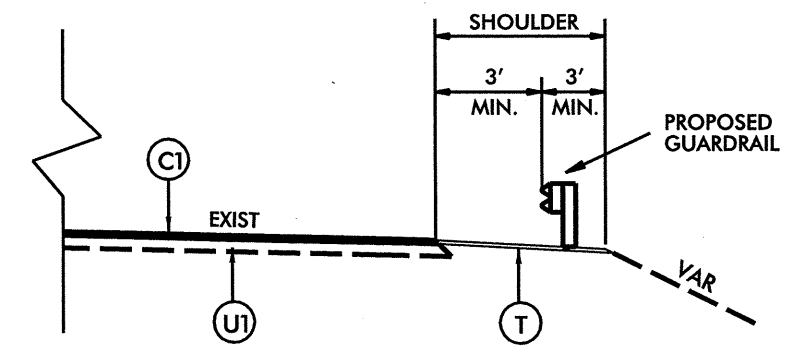
MAP #4 - SOUTH ACCESS RAMP (TO SR 1573) FROM NC 16 TO SR 1573 (0.095 MI)



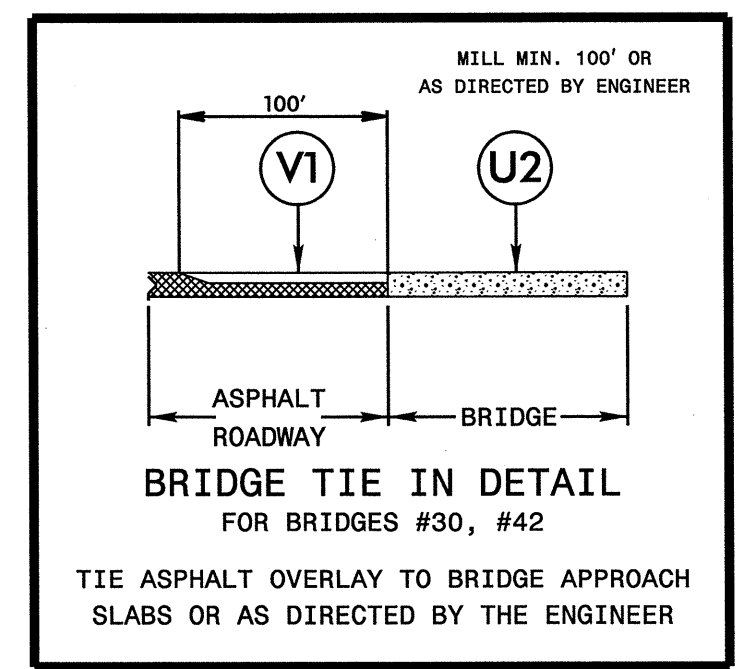
TYPICAL SECTION NO. 8

MAP #5 - NORTH ACCESS RAMP (TO SR 1573) FROM NC 16 TO SR 1573 (0.142 MI)

PAVEMENT SCHEDULE	
C1	1 1/2" ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PATCH EXISTING PAVEMENT WITH ASPHALT CONCRETE SURFACE COURSE, TYPE S 9.5 B. DEPTH VARIES 0.5" TO 1". WIDTH VARIES TO 4' AND WILL BE AT LOCATIONS AS DETERMINED BY ENGINEER.
D1	2" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I 19.0 B, AT AN AVERAGE RATE OF 228 LBS. PER SQ. YD.
PF	PAVEMENT FABRIC PLACED ACCORDING TO PROJECT SPECIAL PROVISIONS. NO FABRIC SHALL BE PLACED ON PAVED SHOULDER AREAS.
T	SHOULDER RECONSTRUCTION
U1	EXISTING ASPHALT PAVEMENT
U2	EXISTING BRIDGE DECK
V1	1 1/2" MILLING
V2	2" MILLING



TYPICAL GUARDRAIL SECTION
(SEE SUMMARY FOR LOCATIONS)



R-5154: NC 16 FROM NC 88 TO VIRGINIA STATE LINE

DIVISION II ASHE COUNTY

REVISIONS	NO.	DATE

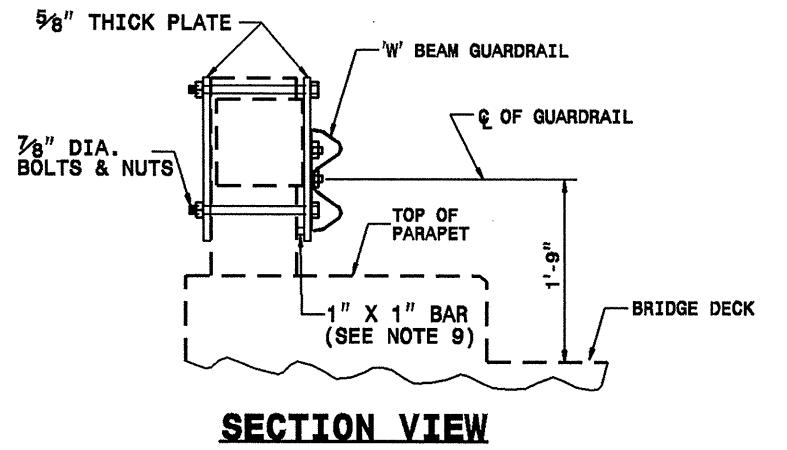
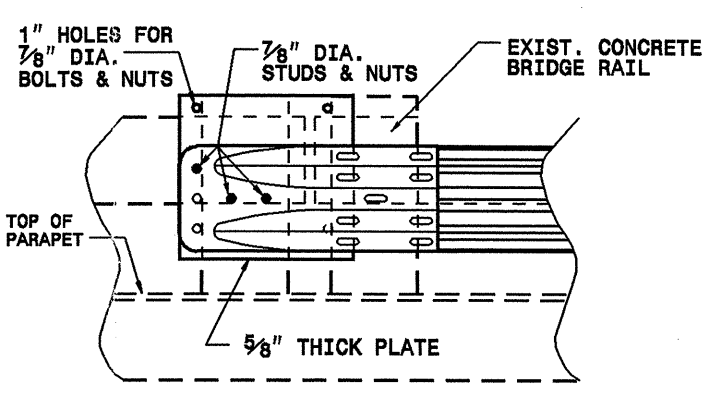
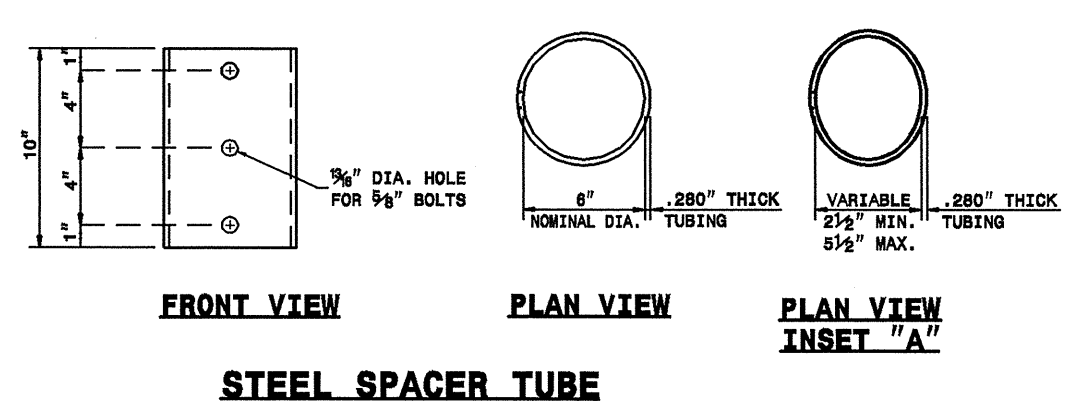
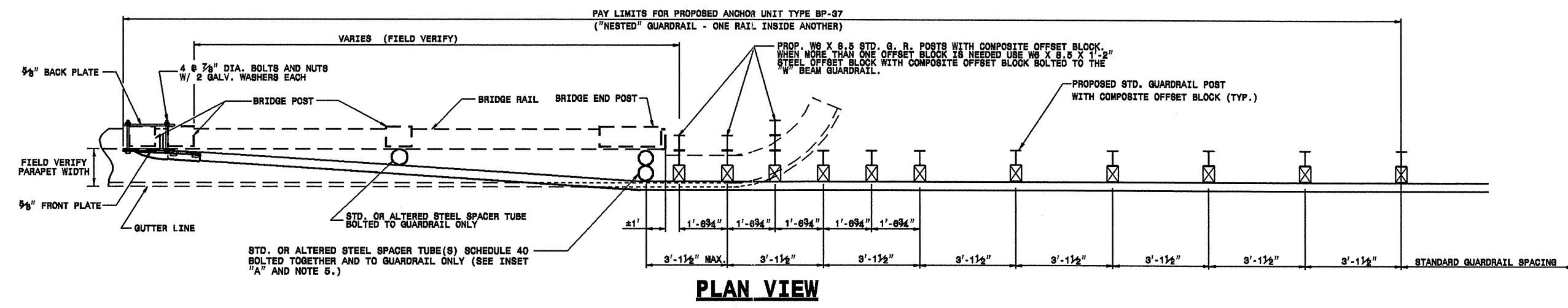
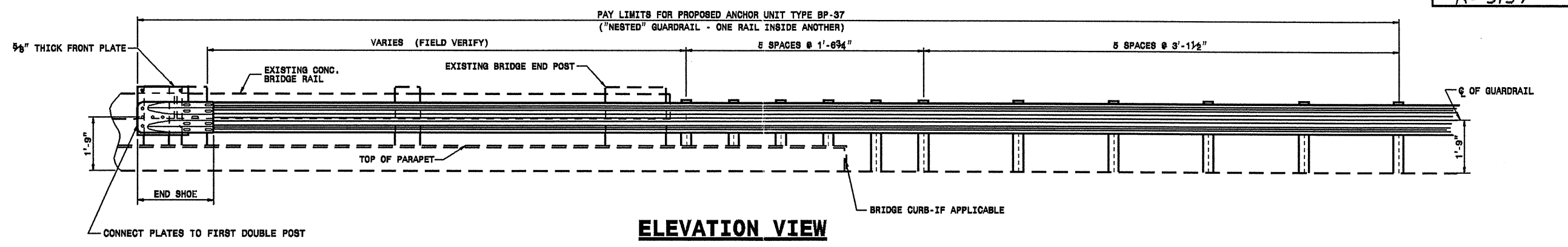
N.C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
DIVISION ELEVEN

SCALE: N/A DATE: 4/2009

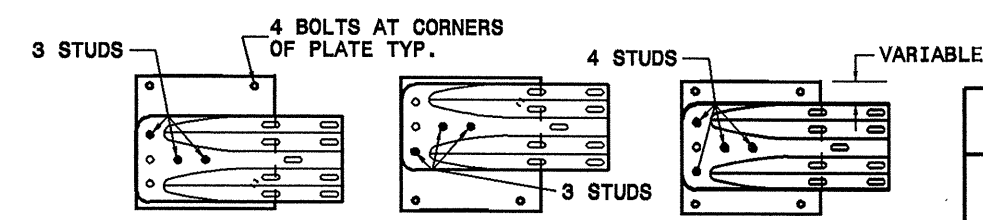
PREPARED BY: J. L. LAWS

REVIEWED BY:

REVIEWED BY:



**GUARDRAIL ATTACHMENT
TO BRIDGE POST**



- 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.

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

**DETAIL OF GUARDRAIL
ANCHOR UNIT TYPE BP-37**

ORIGINAL BY: C.O. CUEVAS	DATE: 12-99
MODIFIED BY:	DATE:
CHECKED BY:	DATE:
FILE SPEC.: bp.dgn	

COMPUTED BY: J. L. Laws, PE
 CHECKED BY: J. L. Laws, PE

DATE: 5/4/2009
 DATE: 5/14/2009

PROJECT REFERENCE NO. R-5154
 SHEET NO. 13

DIVISION OF HIGHWAYS
 STATE OF NORTH CAROLINA

GUARDRAIL SUMMARY

"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

ROUTE	LOCATION	FROM	DISTANCE TO BEGINNING OF SECTION (ft)	DIRECTION	LENGTH			ANCHORS								EXTRA LENGTH POSTS		SINGLE FACED CONCRETE BARRIER	REMOVE EXISTING GUARDRAIL	REMOVE & STOCKPILE EXISTING GUARDRAIL	REMARKS	
					STRAIGHT	SHOP CURVED	DOUBLE FACED	XI MOD	XI	GRAU 350	M-350	XIII	AT-1	VI MOD	BP-37	9 FT (EA)						
NC 16	RT	NC 88	580	NORTH	400.00					2									237.50			
NC 16	RT	US 221	0	NORTH	675.00	50.00				2											SHOP CURVED AT US 221 RADIUS	
NC 16	RT	SR 1578 NORTH	2,735	NORTH	525.00					2												
NC 16	RT	SR 1578 NORTH	5,540	NORTH	800.00					2												
NC 16	RT	SR 1579	875	NORTH	1325.00					2												
NC 16	RT	SR 1651	3,225	NORTH	537.50					2												
S. RAMP (TO SR 1573)	RT	NC 16	0	NORTH	225.00					2												
NC 16	RT	S. RAMP (TO SR 1573)	325	NORTH	75.00					1					1				75.00		BRIDGE APPROACH END	
NC 16	RT	S. RAMP (TO SR 1573)	550	NORTH	50.00					1					1						BRIDGE TRAILING END	
NC 16	RT	SR 1536	435	NORTH	100.00					1					1						BRIDGE APPROACH END	
NC 16	RT	SR 1536	700	NORTH	112.50					1					1				87.50		BRIDGE TRAILING END	
NC 16	LT	SR 1531	10,925	SOUTH	175.00					1					1				150.00		BRIDGE APPROACH END	
NC 16	LT	SR 1531	11,380	SOUTH	75.00					1					1						BRIDGE TRAILING END	
NC 16	LT	N. RAMP (TO SR 1573)	440	SOUTH	125.00					1					1				100.00		BRIDGE APPROACH END	
NC 16	LT	N. RAMP (TO SR 1573)	700	SOUTH	50.00					1					1						BRIDGE TRAILING END	
NC 16	LT	N. RAMP (TO SR 1573)	5,770	SOUTH	600.00	50.00				2											SHOP CURVED AT SR 1574 RADIUS	
NC 16	LT	SR 1690	320	SOUTH	675.00					2							30					
NC 16	LT	SR 1675	1,760	SOUTH	1350.00					2									312.50			
PROJECT SUBTOTAL					7875.00	100.00				28						8	30		962.50			
LESS ANCHOR DEDUCTION GRAU-350@50'					1400.00																	
LESS ANCHOR DEDUCTION BP-37@25'					200.00																	
PROJECT TOTAL					6275.00	100.00				28						8	30		962.50			
SAY					6275.00	100.00				28						8	30		962.50			
ADDITIONAL GUARDRAIL POSTS					10 EACH																	

D11CAD-2

PROJECT NO.	SHEET NO.	TOTAL NO.
R - 5154	14	

SUMMARY OF QUANTITIES

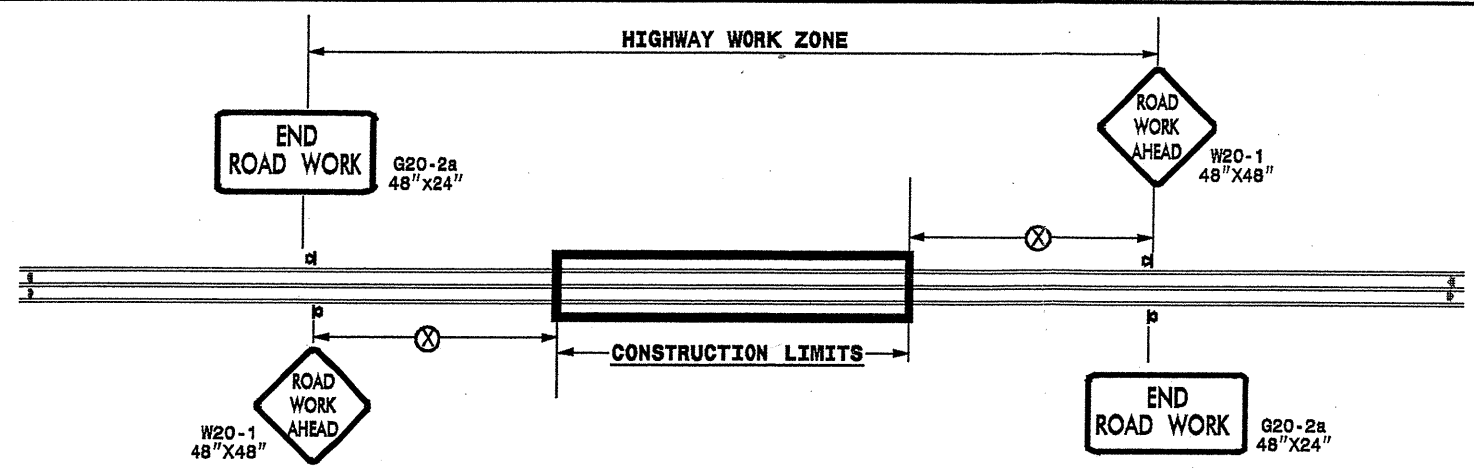
PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	INCIDENTAL STONE BASE TONS	SHOULDER RECONSTRUCTION SMI	1 1/2" MILLING SY	2" MILLING SY	INTERMEDIATE COURSE, 119.0B TONS	SURFACE COURSE, S9.5B TONS	PG 64-22 PLANT MIX TONS	PATCHING EXISTING PAVEMENT TONS	PAVEMENT FABRIC SY	STEEL BM GUARDRAIL LF	STEEL BM GUARDRAIL, SHOP CURVED LF	ADDITIONAL GUARDRAIL POSTS EA	GUARDRAIL ANCHOR UNITS, TYPE 350 EA	REMOVE EXISTING GUARDRAIL LF	GUARDRAIL ANCHOR UNITS, TYPE BP-37 EA	EXTRA LENGTH GUARDRAIL POST (9') EA	SEED & MULCHING AC	FINAL SURFACE TESTING
R - 5154	Ashe	1	NC 16	FROM NC 88 TO US 221	1	1.291	30	40	2.58				2,004	120		17,420	2,125		*	6	550		30	1.25	NO
R - 5154	Ashe	2	NC 16	FROM US 221 TO N. RAMP SR 1573	2 & 3	5.233	23	160	10.47	512	6,882	785	6,228	411	341		3,838	100	*	16	175	4		5.07	NO
R - 5154	Ashe	3	NC 16	FROM N. RAMP SR 1573 TO VA STATE LINE	4, 5, & 6	6.364	22	200	12.73	489	2,839	324	6,654	414	415	12,907	188		*	4	237.5	4		6.17	NO
R - 5154	Ashe	4	SOUTH ACCESS RAMP	FROM NC 16 TO SR 1573	7	0.095	22	5	0.19		611	71	104	10			125		*	2				0.09	NO
R - 5154	Ashe	5	NORTH ACCESS RAMP	FROM NC 16 TO SR 1573	8	0.142	26		0.28				183	11					*					0.14	NO
TOTAL FOR PROJ NO. R - 5154						13.125		405	26.25	1,001	10,332	1,180	15,173	966	756	30,327	6,275	100	10	28	962.5	8	30	12.72	
GRAND TOTAL						13.125		405	26.25	1,001	10,332	1,180	15,173	966	756	30,327	6,275	100	10	28	962.5	8	30	12.72	

* use as needed and as directed by engineer

PAVEMENT MARKING AND MARKER QUANTITIES

PROJECT NO	COUNTY	MAP NO	ROUTE	DESCRIPTION	TYP NO	LENGTH MI	WIDTH FT	4810000000-E		4847000000-E		4710000000-E	4721000000-E	4725000000-E		4905000000-N	4589000000-N
								4" YELLOW PAINT LF	4" WHITE PAINT LF	4" YELLOW POLYUREA LF	4" WHITE POLYUREA LF	WHITE THERMO 24" X 120 M LF	THERMO MSG SCHOOL 120 M EA	THERMO LT ARROW 90M EA	THERMO RT ARROW 90 M EA	SNOW PLOWABLE MARKERS EA	LUMP SUM TRAFFIC CONTROL LS
								STANDARD BEADS									
R - 5154	Ashe	1	NC 16	FROM NC 88 TO US 221	1	1.291	30			11,065	14,830	60	6	9	2	123	*
R - 5154	Ashe	2	NC 16	FROM US 221 TO N. RAMP SR 1573	2 & 3	5.233	23	400	400	39,095	56,284	46	6	2		361	*
R - 5154	Ashe	3	NC 16	FROM N. RAMP SR 1573 TO VA STATE LINE	4, 5, & 6	6.364	22	400	400	45,208	69,164					420	*
R - 5154	Ashe	4	SOUTH ACCESS RAMP	FROM NC 16 TO SR 1573	7	0.095	22			1,000	1,000					7	*
R - 5154	Ashe	5	NORTH ACCESS RAMP	FROM NC 16 TO SR 1573	8	0.142	26			1,500	1,500					10	*
TOTAL FOR PROJ NO. R - 5154						13.125		800	800	97,868	142,778	106	12	11	2	921	1
								1,600		240,646			13				
GRAND TOTAL						13.125		800	800	97,868	142,778	106	12	11	2	921	1
								1,600		240,646			13				

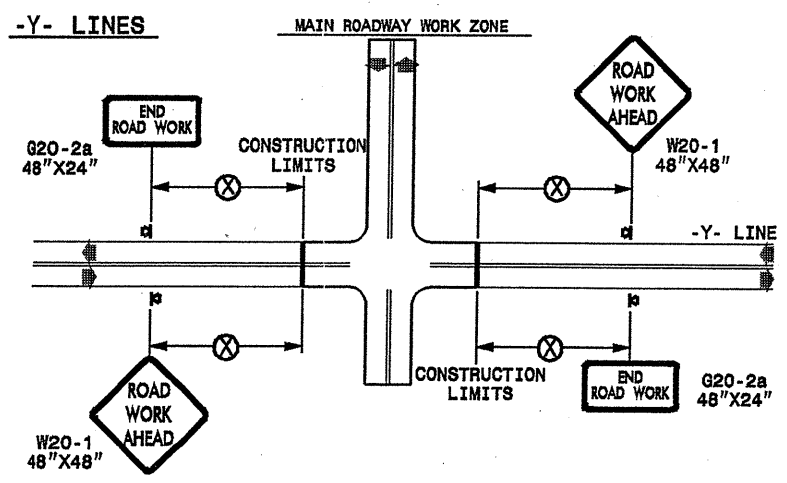
TWO-WAY UNDIVIDED ** (L-LINES)



POSTED SPEED LIMIT (M.P.H.)	RECOMMENDED MINIMUM SIGN SPACING
≤ 50	500'
≥ 55	1000'

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

ROADWAYS INTERSECTING ALONG 2 WAY UNDIVIDED WORK ZONE (Y-LINES)



GENERAL NOTES

- USE FLUORESCENT ORANGE SHEETING (TYPE VII OR HIGHER) ON ALL ADVANCE WORK ZONE SIGNS.
- DO NOT INSTALL ADVANCE WARNING SIGNS MORE THAN 3 DAYS PRIOR TO BEGINNING OF WORK.
- ALL SIGN SPACING DIMENSIONS ARE APPROXIMATE, FIELD ADJUST AS NECESSARY OR AS DIRECTED.
- USE PORTABLE WORK ZONE SIGNS ONLY WITH PORTABLE WORK ZONE SIGN STANDS SPECIFICALLY DESIGNED FOR ONE ANOTHER. PORTABLE WORK ZONE SIGNS MAY BE ROLL UP OR APPROVED COMPOSITE.
- PROVIDE PORTABLE WORK ZONE SIGN STANDS, PORTABLE SIGNS AND SIGN SHEETING WHICH ARE LISTED ON THE NORTH CAROLINA DEPARTMENT OF TRANSPORTATION'S APPROVED PRODUCT LIST OR ACCEPTED AS TRAFFIC QUALIFIED BY THE TRAFFIC CONTROL UNIT.
- ** TWO-WAY UNDIVIDED ADVANCE WARNING SIGN CONFIGURATION MAY BE USED ON URBAN MULTI-LANE FACILITIES WHERE CONDITIONS LIMIT THE USE OF DUAL MOUNTED SIGNS AS DETERMINED BY THE ENGINEER.

LEGEND

▣ PORTABLE SIGN

➔ DIRECTION OF TRAFFIC FLOW

DETAIL DRAWING
FOR TWO-WAY UNDIVIDED
WORK ZONE WARNING SIGNS

SHEET 1 OF 1

APPROVED: _____ DATE: _____	<p>DETAIL DRAWING FOR TWO-WAY UNDIVIDED ADVANCED WORK ZONE WARNING SIGNS</p>	SCALE: NONE		REVISIONS
SEAL		DATE: 7-98 10/01		10-98 03/04
		DWG. BY: _____		
		DESIGN BY: _____		
		REVIEWED BY: _____		

I3-MAY-2009 16:05
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