DESIGN DESIGNATION

A.A.D.T. - 2012 = 18000
A.A.D.T. - 2032 = 24000
D.H.V. = 8%
T = 15%
V = 35 M.P.H.
D = 50%

FUNCTIONAL CLASSIFICATION- MAJOR COLLECTOR

NO NEW RIGHT OF WAY

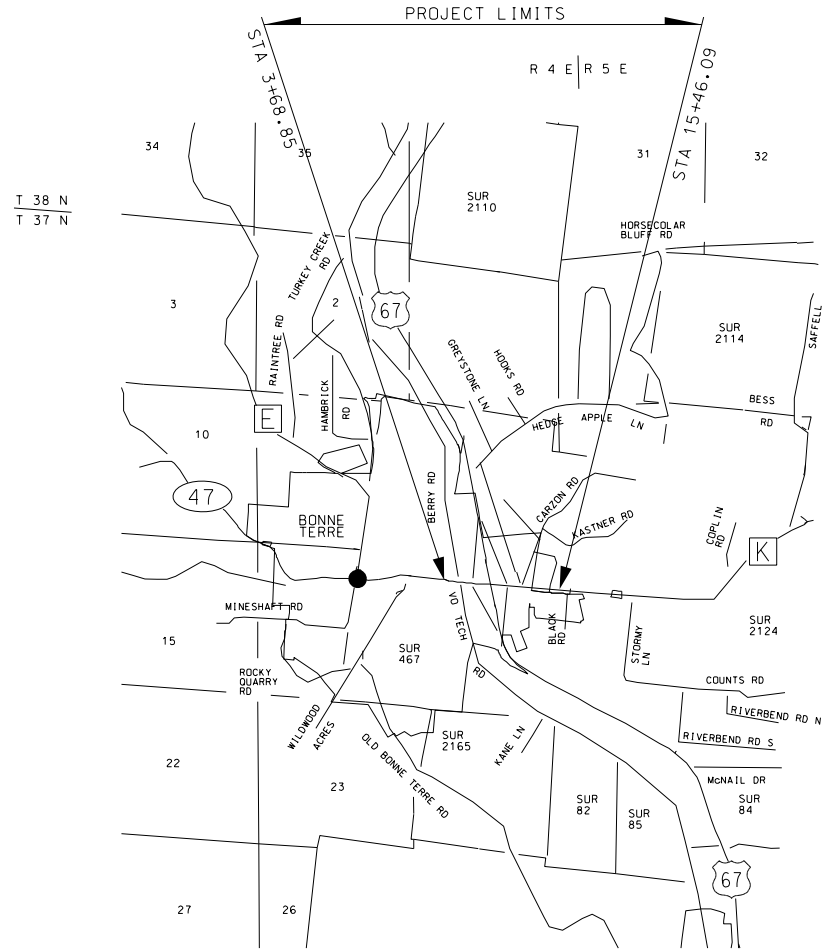
CONVENTIONAL SYMBOLS

(USED IN PLANS)

	EXISTING	NEW
BUILDINGS AND STRUCTURES		
GUARD RAIL		
CONCRETE RIGHT-OF-WAY MARKER		
STEEL RIGHT-OF-WAY MARKER		
LOCATION SURVEY MARKER		
UTILITIES		
FIBER OPTICS	-FO-	-FO-
OVERHEAD TELEPHONE		
UNDERGROUND TELEPHONE	-T-	-T-
OVERHEAD POWER		
UNDERGROUND POWER	-P-	-P-
GAS	-G-	-G-
WATER	-W-	-W-
MANHOLE	SAN	
FIRE HYDRANT	HYD	
WATER VALVE	WV	
WATER METER	WM	
DROP INLET	DI	
DITCH BLOCK		
GROUND MOUNTED SIGN	SIGN	
LIGHT POLE		
H-FRAME POWER POLE		
TELEPHONE PEDESTAL	PED	
FENCE		
CHAIN LINK	-V-	
WOVEN WIRE	-X-	
GATE POST		
BENCHMARK	BM	

NOTE: DASHED OR OPEN SYMBOLS INDICATE EXISTING FEATURES

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
PLANS FOR STATE HIGHWAY
ST FRANCOIS COUNTY



INDEX OF SHEETS

DESCRIPTION	SHEET NUMBER
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QUANTITIES (QU) (5 SHEETS)	3
PLAN-PROFILE (PP)	4
REFERENCE POINTS (RP)	5
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SPECIAL SHEETS (SS)	7-14
SIGNALS (SG)	25-40
SIGNING (SN)	41-46
CULVERT SECTIONS (CS)	52
CROSS SECTIONS (XS)	1-11

LENGTH OF PROJECT

BEGINNING OF PROJECT	STA. 3+68.85	
END OF PROJECT	STA. 15+46.09	
APPARENT LENGTH	1177.24	FEET
RTE 47 STA 10+00.00 BK = RTE K STA 0+00.00 AH		
TOTAL CORRECTIONS	+1000.00	FEET
NET LENGTH OF PROJECT	2177.24	FEET
STATE LENGTH	0.412	MILES

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 2/25/2013
ROUTE: 47 | STATE: MO
DISTRICT: SE | SHEET NO.: 1
COUNTY: ST FRANCOIS
JOB NO.: J0P2209
CONTRACT ID.: 120217-H05
PROJECT NO.: FAF-67-3(116)
BRIDGE NO.:

DESCRIPTION | DATE

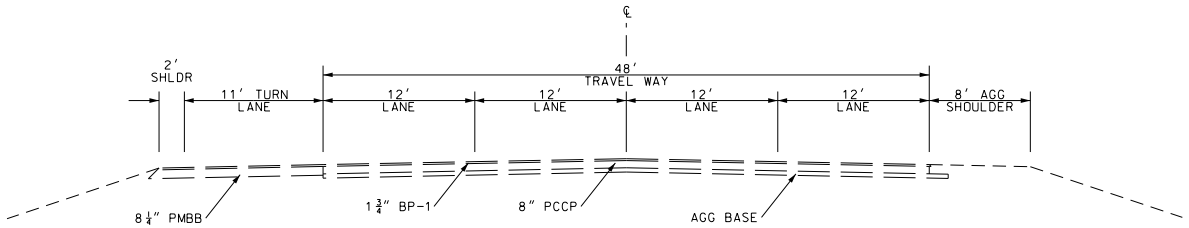
MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

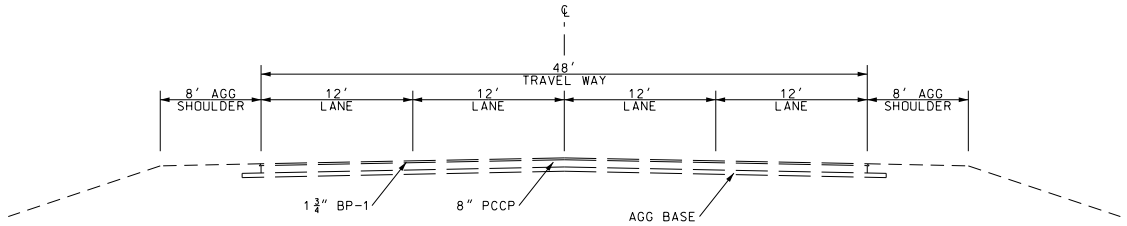
FINAL PLANS

t:\co-proj\st.francois\j0p2209 k and 47\final plans\001_TITLE_J0P2209_t1.dgn 9:45:49 AM 2/25/2013



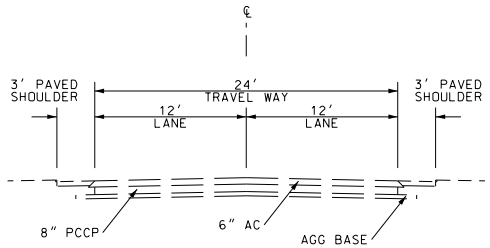
TYPICAL SECTION

EXISTING RTE K
STA 0+00.00 TO STA 2+22.48
STA 8+00.00 TO STA 9+58.45



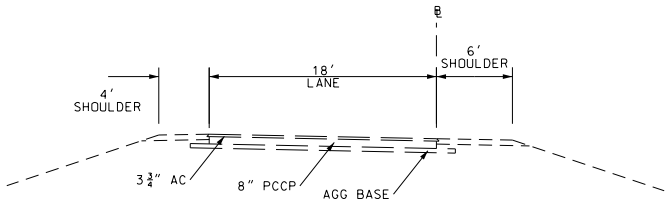
TYPICAL SECTION

EXISTING RTE K
STA 2+27.30 TO STA 8+00.00
STA 9+58.45 TO STA 15+50.00



TYPICAL SECTION

EXISTING RTE 47
STA 3+68.84 TO STA 9+05.94



TYPICAL SECTION

EXISTING RAMPS

NBL OFF RAMP
SBL ON RAMP
SBL OFF RAMP

TYPICAL SECTION
SHEET 1 OF 3
DRAWING NOT TO SCALE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED: 8/5/2013
ROUTE: 47 | STATE: MO
DISTRICT: SE | SHEET NO.: 2
COUNTY: ST FRANCOIS
JOB NO.: J0P2209
CONTRACT ID.: 120217-H05
PROJECT NO.: FAF-67-3(116)
BRIDGE NO.:

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

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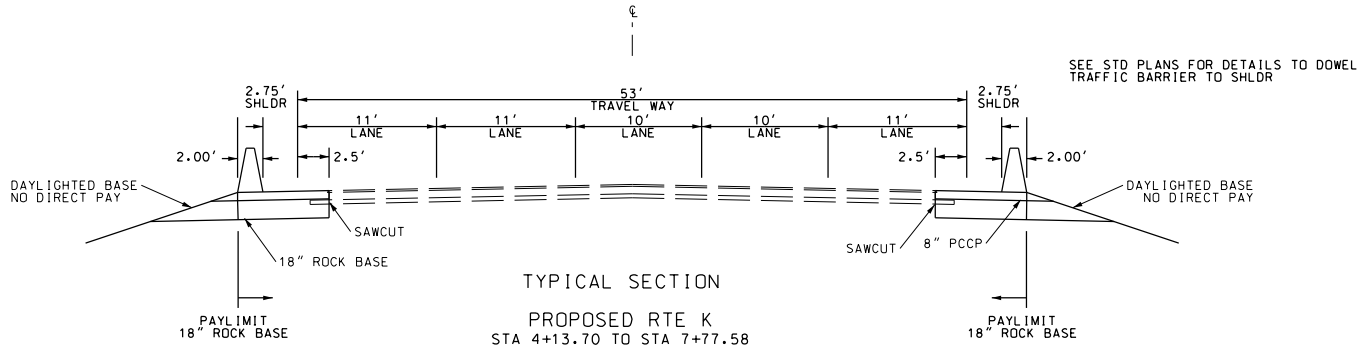
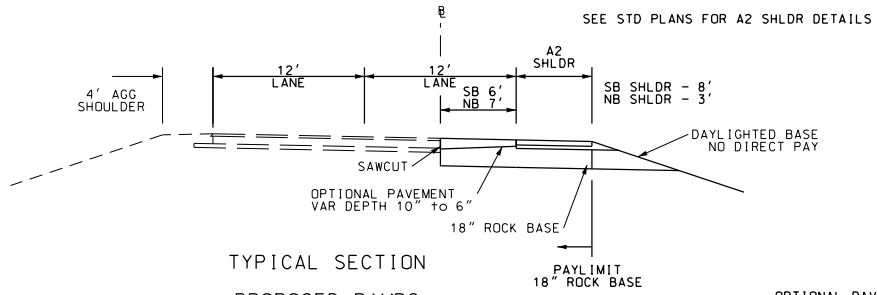


TYPICAL SECTION

PROPOSED RTE K
STA 4+13.70 TO STA 7+77.58

NOTE: SAWCUT FOR REMOVALS ARE CONSIDERED INCIDENTAL TO REMOVAL OF IMPROVEMENTS



TYPICAL SECTION

PROPOSED RAMPS
NBL OFF RAMP
SBL ON RAMP

OPTIONAL PAVEMENT TYPES:
8″ PCCP

$1\frac{3}{4}$″ SP125C PG70-22 OVER
3″ SP250C PG70-22 OVER
$4\frac{1}{4}$″ SP250c PG64-22

TYPICAL SECTION
SHEET 2 OF 3
DRAWING NOT TO SCALE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 2
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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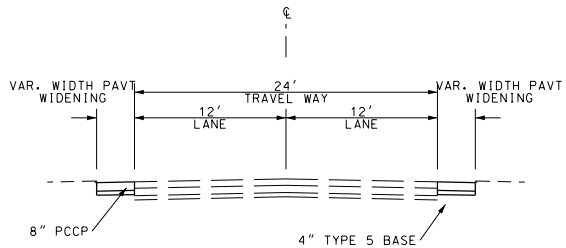
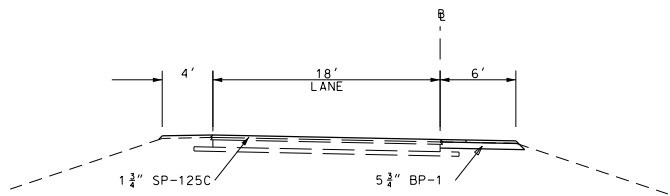
REV.



TYPICAL SECTION

RTE 47

STA 3+68.84 TO STA 9+05.94



TYPICAL SECTION

RAMP

NW RAMP

TYPICAL SECTION
SHEET 3 OF 3
DRAWING NOT TO SCALE

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	2

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

REV. AUGUST 2008

THESE PLANS ACCURATELY DEPICT THE CONFIGURATION AND LOCATION OF THE ROADWAY AND ALL APPURTENANCE FEATURES, INCLUDING MODIFICATIONS DESIGNATED OR AUTHORIZED BY THE ENGINEER OF RECORD.

RESIDENT ENGINEER _____

SUMMARY OF QUANTITIES

SHEET 1 OF 1

LINE NO.	ITEM	DESCRIPTION	UNIT	QUANTITY
	*	ROADWAY ITEMS - JOP2209		
0010	202-20.10	REMOVAL OF IMPROVEMENTS	LS	1
0020	203-50.00	UNCLASSIFIED EXCAVATION	CUYD	9679
0030	203-60.00	COMPACTING EMBANKMENT	CUYD	444
0040	203-70.75	COMPACTING IN CUT	STA	33
0050	206-30.00	CLASS 3 EXCAVATION	CUYD	12
0060	303-06.10A	PLACING ROCK BASE (18 IN. THICK)	SQYD	3179
0070	401-01.05	5 3/4 INCHES, BITUMINOUS PAVEMENT	SQYD	285.6
0080	401-01.50	TYPE A2 SHOULDER	SQYD	1076.4
0090	403-01.03	ASPHALTIC CONCRETE MIXTURE PG 70-22 (SP125C MIX)	TONS	115.6
0100	407-10.05	TACK COAT	GAL	150
0110	502-13.08	CONCRETE PAVEMENT (8 IN. NON-REINFORCED, 15 FT. JOINTS)	SQYD	542
0120	502-99.05	MISC. OPTIONAL PAVEMENT	SQYD	1926.7
0130	603-99.01	WATER METER RELOCATION	LS	0
0140	604-40.11	PIPE COLLAR, TYPE A	EA	2
0150	606-10.10	GUARDRAIL TYPE A	LF	0
0160	606-30.15	TYPE A CRASHWORTHY END TERMINAL	EA	1
0170	608-30.03	3 IN. CONCRETE MEDIAN STRIP	SQYD	21.4
0180	608-30.04	4 IN. CONCRETE MEDIAN STRIP	SQYD	5.4
0190	608-30.06	6 IN. CONCRETE MEDIAN STRIP	SQYD	206.5
0200	609-10.10	CONCRETE CURB (6 IN. HEIGHT AND UNDER) TYPE S	LF	133
0210	616-10.05	CONSTRUCTION SIGNS	SQFT	343
0220	616-10.08	ADVANCED WARNING RAIL SYSTEM	EA	2
0230	616-10.09	FLAG ASSEMBLY	EA	19
0240	616-10.20	CHANNELIZER (DRUM-LIKE)	EA	20
0250	616-10.25	CHANNELIZER (TRIM LINE)	EA	280
0260	616-10.33	DIRECTIONAL INDICATOR BARRICADE	EA	10
0270	616-10.98	CHANGEABLE MESSAGE SIGN, CONTRACTOR FURN, CONTRACTOR RETAIN	EA	4
0280	616-11.20	INSTALLING 'DRIVE SMART' SIGN	EA	0
0290	616-11.33A	INSTALLING 'POINT OF PRESENCE' 96 IN. X 48 IN. SIGN	EA	0
0300	617-30.00	CONCRETE TRAFFIC BARRIER, TYPE C	LF	0
0310	617-36.00D	TEMPORARY TRAFFIC BARRIER, CONTRACTOR FURNISHED / RETAINED	LF	0
0320	617-40.00A	TEMPORARY TRAFFIC BARRIER HEIGHT TRANSITION	EA	0
0330	617-99.02	MISC. TYPE C HEIGHT TRANSITION	EA	0
0340	618-10.00	MOBILIZATION	LS	1
0350	620-04.24	TYPE 1 PREFORMED MARKING TAPE, 24 IN., WHITE	LF	99
0360	620-05.00A	TYPE 1 PREFORMED LEFT/RIGHT ARROW	EA	6
0370	620-15.00	TYPE 1 PREFORMED STRAIGHT ARROW	EA	7
0380	620-50.01B	TYPE 1 PREFORMED MARKING TAPE, 4 IN. WHITE	LF	1191
0390	620-50.03B	TYPE 1 PREFORMED MARKING TAPE, 4 IN. YELLOW	LF	4280
0400	620-51.20	TYPE 2 PREFORMED MARKING TAPE (GROOVED), 24 IN., WHITE	LF	322
0410	620-51.21	TYPE 2 PREFORMED MARKING TAPE (GROOVED), 24 IN., YELLOW	LF	127
0420	620-51.30	TYPE 2 PREFORMED MARKING TAPE (GROOVED), LEFT/RIGHT ARROW	EA	15
0430	620-51.31	TYPE 2 PREFORMED MARKING TAPE (GROOVED), STRAIGHT ARROW	EA	10
0440	620-51.32	TYPE 2 PREFORMED MARK TAPE (GROOVED),COMBIN. STR-RT/LT ARROW	EA	3
0450	620-51.33	TYPE 2 PREFORMED MARKING TAPE (GROOVED), WORD (ONLY)	EA	3
0460	620-51.39A	TYPE 2 PREFORMED MARK TAPE (GROOVED), 16IN. WH, YIELD TRI	EA	11
0470	620-59.00	4 IN. WHITE HIGH BUILD ACRYLIC WATERBORNE PVMT MARKING PAINT	LF	5492
0480	620-59.01	4 IN. YEL HIGH BUILD ACRYLIC WATERBORNE PVMT MARKING PAINT	LF	7050
0490	620-70.01	PAVEMENT MARKING REMOVAL	LF	9684
0500	622-10.01	COLDMILLING BITUMINOUS PAVEMENT (3 IN. OR LESS)	SQYD	1507
0510	726-10.15	15 IN. PIPE GROUP A	LF	76
0520	732-06.15A	15 IN. OR ALLOWED SUBSTITUTE GROUP A FLARED END SECTION	EA	2
0530	805-10.00A	SEEDING - COOL SEASON MIXTURES	ACRE	1.4
0540	806-10.16	SEDIMENT REMOVAL	CUYD	0
0550	806-10.19	SILT FENCE	LF	755
0560	806-10.22	TYPE II DITCH CHECK	EA	10
	*	HIGHWAY LIGHTING ITEMS - JOP2209		
0570	901-10.30	LIGHTING POLE, 30 FT. OR 9.0 M, TYPE AT	EA	2
0580	901-82.30	POLE FOUNDATION (30 FT. OR 9.0 M MOUNTING HEIGHT)	EA	2
0590	901-94.00	TEMPORARY LIGHTING	LS	1
	*	TRAFFIC SIGNAL ITEMS - JOP2209		
0600	902-05.13	SIGNAL HEAD, TYPE 3B	EA	14
0610	902-05.14	SIGNAL HEAD, TYPE 4B	EA	6
0620	902-26.50	150 WATT 120 VOLT HIGH PRESSURE SODIUM LUMINAIRE	EA	8
0630	902-31.25	POST, TYPE CL, 25 FT. ARM OR 7.6 M ARM	EA	1
0640	902-31.30	POST, TYPE CL, 30 FT. ARM OR 9.1 M ARM	EA	2
0650	902-31.35	POST, TYPE CL, 35 FT. ARM OR 10.7 M ARM	EA	1
0660	902-31.40	POST, TYPE CL, 40 FT. ARM OR 12.2 M ARM	EA	1
0670	902-34.40	POST, TYPE BL, LONGEST ARM 40 FT. OR 12.2 M	EA	1
0680	902-42.81	CNTRL ASSEMBLY HOUSING, KEY ENTRY, 8 PHASE NEMA CONTROLLER	EA	2
0690	902-49.75	VIDEO DETECTION SYSTEM	EA	3
0700	902-54.00	CONDUIT, 4 IN., TRENCH	LF	990
0710	902-74.00	CONDUIT, 4 IN., PUSHED	LF	1300
0720	902-81.00	CABLE, 10 AWG 1 CONDUCTOR, POLE AND BRACKET	LF	720
0730	902-82.08	CABLE, 8 AWG 1 CONDUCTOR, POWER	LF	250
0740	902-83.02	CABLE, 12 AWG 2 CONDUCTOR	LF	2190
0750	902-83.11	CABLE, 16 AWG 7 CONDUCTOR	LF	4370
0760	902-86.11	POWER SUPPLY ASSEMBLY, TYPE 1 WITH 120V LIGHT CNTRL CABINET	EA	1
0770	902-88.10	PULL BOX, PREFORMED CLASS 1	EA	4
0780	902-88.11	PULL BOX, PREFORMED CLASS 2	EA	6
0790	902-91.00	BASE, CONCRETE	CUYD	22.7
0800	902-99.01	MISC. POWER SUPPLY RELOCATION	LS	1
	*	HIGHWAY SIGNING ITEMS - JOP2209		
0810	903-10.10	CONCRETE FOOTINGS, EMBEDDED	CUYD	3.2
0820	903-12.10	STRUCTURAL STEEL POSTS	LB	1350
0830	903-12.20	PIPE POSTS	LB	1420
0840	903-12.40	BREAKAWAY ASSEMBLY	EA	16
0850	903-50.04	TYPE SHR2L-1 SIGN	SQFT	192
0860	903-50.11	SIGN, TYPE STR2L-3	SQFT	56
0870	903-50.68	SIGNAL SIGN, TYPE SHR2L-1	SQFT	62
5001	617-20.00	CONCRETE TRAFFIC BARRIER, TYPE B	LF	130
5002	617-99.02	MISC.- TYPE B HIEGHT TRANSITION	EA	4
5003	304-05.04	TYPE 5 AGGREGATE FOR BASE (4 IN. THICK)	SQYD	367
5004	603-99.01	WATER (WATER METER RELOCATION)	LS	1
5006	606-10.11A	GUARDRAIL TYPE A, 7 FT. POST, 3 FT. - 1.5 IN SPACING	LF	250
5007	619-10.00	PAVEMENT EDGE TREATMENT	LF	664
5008	620-99.03	MISC. 4-IN WHITE WET REFLECTIVE HIGH BUILD PAI	LF	1854
5009	620-59.21	4IN. YEL WET REFLECT HI BUILD ACR WATERBORNE PVMT MARK PAINT	LF	1501
5010	617-99.02	MISC. REMOVE AND REPLACE BARRIER TRANSITIONS	EA	10476
5012	620-99.02	MISC. MERGE ARROW	EA	2
5013	216-99.01	MISC. ISLAND REMOVAL	LS	1
5015	902-99.01	MISC. RELOCATING LIGHTING CONTROLLER	LS	1
5016	902-43.00	SYSTEM MASTER	EA	1
5017	616-10.30	TYPE III MOVEABLE BARRICADE	EA	3

PROJ. ACCEPT: 6-4/2013
PREPARED BY: BRIAN OKENFUSS
CHECKED BY: LOU CREAMER
REVIEWED BY: JASON WILLIAMS
DIST. OFFICE: DEBORAH STROBEL
SUPPORT CTR:

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 6/4/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 2A
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SUMMARY OF QUANTITIES

REMOVALS			
STA	STA	LOC	DESCRIPTION
3+68.85	9+13.30	LT OF ℄ RTE 47	229 SQYD 6" AC PAV'T
5+44.18	7+37.14	RT OF ℄ RTE 47	42 SQYD 6" AC PAV'T
4+55.69	5+58.75	LT OF ℄ RTE 47	45 SQYD OF SIDEWALK
5+94.65	6+60.15	LT OF ℄ RTE 47	28 SQYD OF SIDEWALK
6+95.45	7+44.27	LT OF ℄ RTE 47	29 SQYD OF CONC DRVWY
7+44.27	7+95.45	LT OF ℄ RTE 47	22 SQYD OF CONC DRVWY
8+28.64	8+88.55	LT OF ℄ RTE 47	22 SQYD OF CONC DRVWY
7+44.31		LT OF ℄ RTE 47	17' CURB
7+93.39	8+33.92	LT OF ℄ RTE 47	49' CURB
8+83.31	9+29.27	LT OF ℄ RTE 47	99' CURB
10+00.00		LT/RT OF ℄ RTE 47	EXISTING SPAN WIRE SIGNALS
0+27.97	7+40.00	RT OF BL SW RAMP	466 SQYD AC SHLDR
2+92.17	12+42.66	RT OF BL SE RAMP	785 SQYD AC SHLDR
3+79.07		RT OF ℄ RTE K	HEADWALL
3+91.17		LT/RT OF ℄ RTE K	EXISTING SPAN WIRE SIGNALS
7+29.56		RT OF ℄ RTE K	PULLBOX
7+39.48		RT OF ℄ RTE K	LIGHT POLE
8+22.88		RT OF ℄ RTE K	LIGHT POLE
8+26.23		RT OF ℄ RTE K	HEADWALL
8+39.46		LT OF ℄ RTE K	PULLBOX
REMOVAL OF IMPROVEMENTS TOTAL - LUMP SUM 1			

EARTHWORK						
STA	STA	LOC	UNCLASSIFIED EXCAVATION (CY)	COMPACTING EMBANKMENT (CY)	COMPACTING IN CUT (STA)	REMARKS
4+14.00	7+77.12	LT/RT OF ℄ RTE K	744		7.1	
2+92.17	12+92.15	RT OF BL SE RAMP	1220	382	10.5	INCLUDES TURN LANE
0+00.00	7+40.00	RT OF BL SW RAMP	7548	62	8.1	INCLUDES TURN LANE
3+68.84	9+13.30	LT/RT OF ℄ RTE 47	167		7.3	
TOTAL PAY			9679	444	33	

MOBILIZATION
LUMP SUM 1

CONT 5013 MISC REMOVALS
LUMP SUM 1

PAVING AND BASE									
STA	STA	LOC	OPTIONAL PAVEMENT (SQYD)	8" PCCP (SQYD)	18" ROCK BASE (SQYD)	TYPE A2 SHLDR (SQYD)	SP125C (TON)	COLDMILLING 3 IN OR LESS (SY)	TACK COAT (GAL)	REMARKS
3+68.85	9+13.30	LT OF ℄ RTE 47								
5+44.18	7+37.14	RT OF ℄ RTE 47								
0+00.00	7+40.00	RT OF BL SW RAMP								INCLUDES TURN LANE TAPER
2+92.17	10+64.31	RT OF BL SE RAMP								
4+14.00	5+10.00	LT OF ℄ RTE K								
4+39.17	5+33.28	RT OF ℄ RTE K								
5+10.00	6+45.00	LT OF ℄ RTE K								INCLUDES WIDTH TAPERS
5+33.28	6+68.28	RT OF ℄ RTE K								INCLUDES WIDTH TAPERS
6+45.00	7+40.52	LT OF ℄ RTE K								
6+68.28	7+77.12	RT OF ℄ RTE K								
8+26.40	9+71.29	RT OF ℄ RTE K								RIGHT TURN LANE
4+10.00	7+30.67	BL NW RAMP								
TOTAL PAY			1926.7	542	3179	1076.4	115.6	1507	150	

DRIVEWAYS AND SHOULDER				
STA	STA	LOC	5.75" BITUMINOUS PAVEMENT (SQYD)	REMARKS
6+40		LT OF ℄ RTE 47	46.4	DALE ST.
6+95.45	7+44.27	LT OF ℄ RTE 47	28.8	7+19
7+44.27	7+95.45	LT OF ℄ RTE 47	21.7	7+71
8+28.64	8+88.55	LT OF ℄ RTE 47	22.1	8+59
5+00.00	7+00.00	RT OF BL NW RAMP	166.6	SHOULDER REPAIR
TOTAL PAY			285.6	

SUMMARY SHEET
SHEET 1 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SUMMARY OF QUANTITIES

CURBS AND ISLANDS							
STA	STA	LOC	6" TYPE S CURB (LF)	3" CONCRETE MEDIAN STRIP (SQYD)	4" CONCRETE MEDIAN STRIP (SQYD)	6" CONCRETE MEDIAN STRIP (SQYD)	REMARKS
6+92.80	6+98.05	LT OF ℄ RTE 47			2.4		AROUND EXISTING SIGN
7+40.57	7+48.04	LT OF ℄ RTE 47			3.0		
7+93.39	8+33.90	LT OF ℄ RTE 47	88				
8+83.31	9+29.27	LT OF ℄ RTE 47	45				
4+00.00		RT OF ℄ RTE K		21.4			
8+30.00		RT OF ℄ RTE K				206.5	
		TOTAL PAY	133	21.4	5.4	206.5	

SEEDING				
STA	STA	LOC	COOL SEASON MIX (AC)	REMARKS
0.00	740.00	RT OF BL SW RAMP	0.5	
292.17	1064.31	RT OF BL SE RAMP	0.6	
375.00	775.00	LT OF ℄ RTE 47	0.3	
		TOTAL PAY	1.4	

TEMPORARY PAVEMENT MARKING											
				TYPE 1 MARKING TAPE							
SHEET	STA	STA	LOCATION	4" SOLID WHITE (LF)	4" INT WHITE (LF)	4" SOLID YELLOW (LF)	24" SOLID WHITE (LF)	STRAIGHT ARROW (EA)	LT/RT ARROW (EA)	PAVT MARKING REMOVAL (LF)	REMARKS
	3+69	8+84	RTE 47								EXISTING STRIPING ON RTE 47
	520+00	520+65	BERRY RD								EXISTING STRIPING ON BERRY RD
	522+19	523+76	RAIDER RD								EXISTING STRIPING ON RAIDER RD
	0+00	3+92	RTE K								EXISTING STRIPING ON RTE K
	3+92	7+91	RTE K								EXISTING STRIPING ON RTE K
	7+91	10+85	RTE K								EXISTING STRIPING ON RTE K
15	0+54	0+80	LT OF ℄ RTE K								
	0+80	1+44	LT OF ℄ RTE K								
	1+44	1+78	LT OF ℄ RTE K								
	1+78	3+62	LT/RT OF ℄ RTE K								
	3+62	3+87	LT OF ℄ RTE K								
	3+87	3+97	LT OF ℄ RTE K								
	4+55	5+19	LT/RT OF ℄ RTE K								
	5+19	5+69	LT/RT OF ℄ RTE K								
	5+69	6+23	LT/RT OF ℄ RTE K								INCLUDES HASH MARKING
	6+23	6+73	LT/RT OF ℄ RTE K								
	6+73	7+37	LT/RT OF ℄ RTE K								
	8+05	9+56	LT/RT OF ℄ RTE K								
	9+56	10+85	LT/RT OF ℄ RTE K								
18	1+78		RT OF ℄ RTE K								
	8+65		RT OF ℄ RTE K								
19	2+27	9+44	℄ OF RTE 47								STAGE ONE
	9+54		RT OF ℄ RTE 47								STAGE ONE
	2+27	8+83	℄ OF RTE 47								STAGE TWO
			TOTAL PAY	1191		4280	99	7	6	9684	

CONT 5003 TYPE 5 AGGREGATE FOR BASE (4 IN THICK)
367 SQYD

CONT 5004 WATER - UTILITY ITEM (METER RELOCATION)
LUMP SUM 1

CONT 5017 TYPE III MOVEABLE BARRICADE
3 EACH

SUMMARY SHEET
SHEET 2 OF 5

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SUMMARY OF QUANTITIES

PERMAMENT PAVEMENT MARKING

SHEET	STA	STA	LOCATION	HIGHBUILD ACRYLIC WATERBORNE 4" SOLID WHITE (LF)	HIGHBUILD ACRYLIC WATERBORNE 4" INT WHITE (LF)	HIGHBUILD ACRYLIC WATERBORNE 4" SOLID YELLOW (LF)	TYPE 2 PREFORMED TAPE 24" YELLOW (LF)	TYPE 2 PREFORMED TAPE 24" WHITE (LF)	TYPE 2 PREFORMED TAPE STRAIGHT ARROW (EA)	TYPE 2 PREFORMED TAPE STRAIGHT/RT ARROW (EA)	TYPE 2 PREFORMED TAPE LT/RT ARROW (EA)	TYPE 2 PREFORMED TAPE 16" WHITE YIELD LINE TRIANGLES (EA)	TYPE 2 PREFORMED TAPE WORD ONLY (EA)	TYPE 2 PREFORMED TAPE CONT 5012 MERGE ARROW (EA)	WET REFLECTIVE HIGHBUILD PAINT CONT 5008 4" WHITE (LF)	WET REFLECTIVE HIGHBUILD PAINT CONT 5009 4" YELLOW (LF)	REMARKS
47	3+69	6+69	℄ RTE 47			1000											
	6+69	8+19	LT/RT OF ℄ RTE 47		38	600.0											
	8+19	8+65	LT/RT OF ℄ RTE 47		23.0	92.0											
	8+65	9+12	LT/RT OF ℄ RTE 47	47.0	12	94.0											
	9+12	9+50	RT OF ℄ RTE 47	38.0													
	520+00	520+52	LT/ RT OF ℄ BERRY RD	52.0		104.0											
	520+52	520+65	RT OF ℄ BERRY RD	13.0													
48	522+19	522+37	LT OF ℄ BERRY RD	18.0													
	522+37	523+00	LT/ RT OF ℄ BERRY RD	63.0		126.0											
	523+00	523+76	LT/ RT OF ℄ BERRY RD			152.0											
	0+50	0+81	LT OF ℄ RTE K	93.0													
	0+81	1+59	LT/RT OF ℄ RTE K	234.0		156.0											
	1+59	2+23	LT/RT OF ℄ RTE K		32.0	128.0											
	2+23	2+32	LT/RT OF ℄ RTE K		6.8	18.0											
	2+32	2+85	LT/RT OF ℄ RTE K		28	110											
	2+85	2+87	LT/RT OF ℄ RTE K														
	2+87	3+06	LT/RT OF ℄ RTE K		15	38.0											
	3+06	3+40	LT/RT OF ℄ RTE K		26	68.0											
	3+40	3+59	LT/RT OF ℄ RTE K	38	5	38.0											
	3+59	3+92	LT/RT OF ℄ RTE K	66.0	8	66.0											
	3+59		RT OF ℄ RTE K	225													ALONG TURN LANE
	3+92	4+07	RT OF ℄ RTE K	15.0													
	4+15	4+32	LT OF ℄ RTE K														
	4+32	4+35	LT OF ℄ RTE K	9.0													
	4+35	4+40	LT/RT OF ℄ RTE K	15.0													
	4+40	4+75	LT/RT OF ℄ RTE K	140.0													
	4+75	5+65	LT/RT OF ℄ RTE K	270.0	45	180.0											
	5+65	5+86	LT/RT OF ℄ RTE K	84.0	5	42.0											
	5+86	6+96	LT/RT OF ℄ RTE K	330.0	55.0	220.0											
	6+96	7+34	LT/RT OF ℄ RTE K	114.0													
	6+96		LT/RT OF ℄ RTE K		39												DASHED TURN LINE
	7+34	7+67	RT OF ℄ RTE K	66.0													
	7+67	7+83	RT OF ℄ RTE K	16.0													
	8+03	8+86	LT/RT OF ℄ RTE K	83.0	62	166.0											
	8+86	9+58	LT/RT OF ℄ RTE K		54.0	144.0											
	9+58	9+71	LT/RT OF ℄ RTE K		7	26.0											
	9+71	11+00	LT/RT OF ℄ RTE K		65	258.0											
	11+00	11+38	LT/RT OF ℄ RTE K		10	76.0											
	0+28	1+00	LT OF BL SW RAMP	72.0		72.0											
	1+00	5+00	LT/RT OF BL SW RAMP	400.0	100.0	400.0											
	5+00	7+40	RT OF BL SW RAMP	240.0													
	10+50	10+98	LT/RT OF BL SE RAMP	48.0	12.0	48.0											
	10+98	11+87	LT OF BL SE RAMP	89		89.0											
	10+98		RT OF BL SE RAMP	254.3													ALONG TURN LANE
	11+87	12+58	LT/RT OF BL SE RAMP	142.0		71											
	11+87		RT OF BL SE RAMP	111.9													ALONG TURN LANE
	12+58		RT OF BL SE RAMP	10.8													AHEAD OF STOP BAR
49	11+38	12+00	LT/RT OF ℄ RTE K		16	124.0											
	12+00	15+46	LT/RT OF ℄ RTE K			1384.0											
50	2+51	6+75	LT/RT OF BL NW RAMP	510		310											
	6+75		LT/RT OF BL NW RAMP														
51	2+92	4+00	RT OF BL SE RAMP	108.0													
	4+00	10+50	LT/RT OF BL SE RAMP	650.0	163	650.0											
			TOTAL	4665	823												
			TOTAL PAY	5492		7050	127	322	10	3	15	11	3	2	1854	1501	

SUMMARY SHEET
SHEET 3 OF 5

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MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

SUMMARY OF QUANTITIES

BARRIERS										
STA	STA	LOC	TYPE C HEIGHT TRANSITION (EA)	TYPE C TRAFFIC BARRIER (LF)	CONT 5002 TYPE B HEIGHT TRANSITION (EA)	CONT 5001 TYPE B TRAFFIC BARRIER (LF)	CONT 5006 GUARDRAIL TYPE A 7' POST 3' SP (LF)	TYPE A GUARDRAIL (LF)	TYPE A NON-FLARED CRASHWORTHY END TERMINAL (EA)	REMARKS
5+15.00	6+40.00	LT OF ℄ RTE K			2	65.0				
5+38.28	6+63.28	RT OF ℄ RTE K			2	65.0				
6+00.00	9+00.00	RT OF BL SE RAMP					250.0	0	1	
TOTAL PAY			0	0	4	130	250	0	1	

CONT 5010
MISC CONC. TRAFFIC BARRIER
REMOVE AND REPLACE BARRIER TRANSITIONS
10.476 EA

CONT 5007
PAVEMENT EDGE TREATMENT
664 LF

CULVERTS							
STA	LOC	SKEW	15" GROUP A PIPE (LF)	15" FLARED END SECTION (EA)	TYPE A PIPE COLLAR (EA)	EXC CL 3 (CY)	REMARKS
0+54.06	SW RAMP	20° 16' 27" LA	17	1	1	2	
12+41.56	SE RAMP	8° 20' 10" LA	59	1	1	10	
TOTAL PAY			76	2	2	12	

CONT 5015
MISC. LIGHT CONTROLLER RELOCATION
1 LS

CONT 5016
SYSTEM MASTER
1 EA

TEMPORARY EROSION CONTROL				
LOCATION	SILT FENCE (LF)	TYPE II DITCH CHECK (EA)	SEDIMENT REMOVAL (CY)	REMARKS
RTE K		8		
SW RAMP	85			
SE RAMP	670	2		
TOTAL PAY	755	10	0	

WATER METER RELOCATION		
STA	OFFSET	REMARKS
7+88.00	23-0	SEE CONTINGENT ITEM 5004

SEE CONTINGENT ITEM 5004

SUMMARY SHEET
SHEET 4 OF 5

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EFFECTIVE: 08-01-2009

SIGN	SIZE (IN.)	AREA (SQ. FT.)	QTY	TOTAL AREA	QTY RELOC	TOTAL RELOC AREA	DESCRIPTION
				WARNING SIGNS			
W01-1L	48X48	16.00					TURN (SYMBOL LEFT ARROW)
W01-1R	48X48	16.00					TURN (SYMBOL RIGHT ARROW)
W01-2L	48X48	16.00					CURVE (SYMBOL LEFT ARROW)
W01-2R	48X48	16.00					CURVE (SYMBOL RIGHT ARROW)
W01-3L	48X48	16.00					REVERSE TURN (SYMBOL LEFT ARROW)
W01-3R	48X48	16.00					REVERSE TURN (SYMBOL RIGHT ARROW)
W01-4L	48X48	16.00					REVERSE CURVE (SYMBOL LEFT ARROW)
W01-4R	48X48	16.00					REVERSE CURVE (SYMBOL RIGHT ARROW)
W01-4bL	48X48	16.00					DOUBLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS)
W01-4bR	48X48	16.00					DOUBLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS)
W01-4cL	48X48	16.00					TRIPLE ARROW REVERSE CURVE (SYMBOL LEFT ARROWS)
W01-4cR	48X48	16.00					TRIPLE ARROW REVERSE CURVE (SYMBOL RIGHT ARROWS)
W01-6	48X24	8.00					HORIZONTAL ARROW (SYMBOL)
W01-6a	72X36	18.00					HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE)
W01-7	48X24	8.00					DOUBLE HEAD HORIZONTAL ARROW (SYMBOL)
W01-7a	72X36	18.00					DOUBLE HEAD HORIZONTAL ARROW (SYMBOL ON PERMANENT BARRICADE)
W01-8	18X24	3.00					CHEVRON (SYMBOL)
W01-8a	36X48	12.00					CHEVRON (SYMBOL FOR DIVIDED HIGHWAYS)
W03-1a	48X48	16.00					STOP AHEAD (SYMBOL)
W03-2a	48X48	16.00					YIELD AHEAD (SYMBOL)
W03-3	48X48	16.00					SIGNAL AHEAD (SYMBOL)
W03-4	48X48	16.00					BE PREPARED TO STOP
W03-5	48X48	16.00					SPEED LIMIT XX AHEAD (SYMBOL)
W04-1L	48X48	16.00					MERGE (SYMBOL FROM LEFT)
W04-1R	48X48	16.00					MERGE (SYMBOL FROM RIGHT)
W05-1	48X48	16.00	3	48.00			ROAD/BRIDGE/RAMP NARROWS
W05-3	48X48	16.00					ONE LANE BRIDGE
W05-5	48X48	16.00					NARROW LANES
W06-1	48X48	16.00					DIVIDED HIGHWAY (SYMBOL)
W06-2	48X48	16.00					DIVIDED HIGHWAY END (SYMBOL)
W06-3	48X48	16.00					TWO WAY TRAFFIC (SYMBOL)
W07-3a	30X24	5.00					NEXT XX MILES (PLAQUE) 6 MILES
W08-1	48X48	16.00					BUMP
W08-2	48X48	16.00					DIP
W08-3	48X48	16.00					PAVEMENT ENDS
W08-4	48X48	16.00					SOFT SHOULDER
W08-5	48X48	16.00					SLIPPERY WHEN WET (SYMBOL)
W08-6	48X48	16.00					TRUCK CROSSING WITH FLAGS
W08-6c	48X48	16.00					TRUCK ENTRANCE
W08-7	36X36	9.00					LOOSE GRAVEL
W08-9	48X48	16.00					LOW SHOULDER
W08-9a	48X48	16.00	2	32.00			SHOULDER DROP-OFF
W08-11	48X48	16.00					UNEVEN LANES
W08-12	36X36	9.00					NO CENTER STRIPE
W10-1	42 RND.	9.62					RAILROAD CROSSING
W012-1	24X24	4.00					DOUBLE DOWN ARROW (SYMBOL)
W012-2	48X48	16.00					LOW CLEARANCE (SYMBOL)
W012-2x	24X18	3.00					LOW CLEARANCE (PLAQUE)
W012-3a,b	144X24	24.00					OVERHEAD LOW CLEARANCE (FEET AND INCHES)
SPECIAL	120X60	50.00					LOW CLEARANCE XX FT XX IN XX MILES AHEAD
SPECIAL	120X60	50.00					WIDTH RESTRICTION XX FT XX IN XX MILES AHEAD
W013-1	30X30	6.25	3	18.75			ADVISORY SPEED (PLAQUE) 1@ 35
W016-2	30X24	5.00					XXX FEET (PLAQUE)
W016-3	30X24	5.00					X MILE (PLAQUE)
W020-1	48X48	16.00	7	112.0			ROAD/BRIDGE/RAMP WORK AHEAD
W020-2	48X48	16.00					DETOUR AHEAD
W020-3	48X48	16.00					ROAD CLOSED AHEAD
W020-4	48X48	16.00					ONE LANE ROAD AHEAD
W020-5	48X48	16.00					RIGHT/CENTER/LEFT LANE CLOSED AHEAD

SIGN	SIZE (IN.)	AREA (SQ. FT.)	QTY	TOTAL AREA	QTY RELOC	TOTAL RELOC AREA	DESCRIPTION
W020-5a	48X48	16.00					RIGHT/CENTER/LEFT TWO LANES CLOSED AHEAD
W020-6a	48X48	16.00					RIGHT/CENTER/LEFT LANE CLOSED
W020-7a	48X48	16.00	2	32.00			FLAGGER (SYMBOL) WITH FLAGS
W021-2	36X36	9.00					FRESH OIL
W021-5b	48X48	16.00					SHOULDER WORK AHEAD
W022-1	48X48	16.00					BLASTING ZONE AHEAD
W022-2	42X36	10.50					TURN OFF 2-WAY RADIO AND PHONE
W022-3	42X36	10.50					END BLASTING ZONE
W022-6e	21X15	2.19					WET PAINT (ARROW PIVOTS)
				GUIDE SIGNS			
SPECIAL	36X36	9.00					FRESH OIL/LOOSE GRAVEL
E05-1	36X48	12.00					GORE EXIT
E05-2	48X36	12.00					EXIT OPEN
E05-2a	48X36	12.00					EXIT CLOSED
G020-1	60X24	10.00					ROAD WORK NEXT 6 MILES
G020-2	48X24	8.00					END ROAD WORK
G020-4	36X18	4.50					PILOT CAR FOLLOW ME
SPECIAL	42X30	8.75					PLEASE WAIT FOR PILOT CAR
G023-1	36X12	3.00	6	18.00			WORK ZONE (PLAQUE)
M04-8a	24X18	3.00					END DETOUR
M04-9L	48X36	12.00					DETOUR (LEFT ARROW)
M04-9R	48X36	12.00					DETOUR (RIGHT ARROW)
M04-10L	48X18	6.00					DETOUR (ARROW LEFT)
M04-10R	48X18	6.00					DETOUR (ARROW RIGHT)
				REGULATORY SIGNS			
R1-1	48X48	13.25					STOP
R1-2	48 TRI.	6.93					YIELD
R1-2a	36X36	9.00					TO ONCOMING TRAFFIC (PLAQUE)
R1-3	20X9	1.25					X-WAY (PLAQUE)
R2-1	36X48	12.00	6	72.00			SPEED LIMIT 4@ 30, 2@ 35
R3-1	48X48	16.00					NO RIGHT TURN (SYMBOL)
R3-2	48X48	16.00					NO LEFT TURN (SYMBOL)
R3-3	36X36	9.00					NO TURNS
R3-4	48X48	16.00					NO U-TURN (SYMBOL)
R3-7L	30X30	6.25					LEFT LANE MUST TURN LEFT
R3-7R	30X30	6.25					RIGHT LANE MUST TURN RIGHT
R4-1	36X48	12.00					DO NOT PASS
R4-2	36X48	12.00					PASS WITH CARE
R4-7aL	36X48	12.00					KEEP LEFT (HORIZONTAL ARROW)
R4-7a	36X48	12.00					KEEP RIGHT (HORIZONTAL ARROW)
R5-1	30X30	6.25					DO NOT ENTER
R5-1a	36X24	6.00					WRONG WAY
R6-1L	48X18	6.00					ONE WAY ARROW (LEFT)
R6-1R	48X18	6.00					ONE WAY ARROW (RIGHT)
R6-2L	24X30	5.00					ONE WAY (LEFT)
R6-2R	24X30	5.00					ONE WAY (RIGHT)
R10-6	24X36	6.00					STOP HERE ON RED (45° ARROW)
R11-2	48X30	10.00	1	10.00			ROAD CLOSED
R11-3a	60X30	12.50					ROAD CLOSED XX MILES AHEAD LOCAL TRAFFIC ONLY
R11-4	60X30	12.50					ROAD CLOSED TO THRU TRAFFIC
S4-4	36X15	3.75					WHEN FLASHING
CONST-3A	60X48	20.00					FINE SIGN
CONST-3X	56X12	4.67					SPEEDING/PASSING (PLATE)
				MISCELLANEOUS SIGNS			
W021-5aR	48X48	16.00					RIGHT SHOULDER CLOSED
616-10.05 CONSTRUCTION SIGNS TOTAL				343			
616-10.10 RELOCATED SIGNS TOTAL							

ITEM NUMBER	TOTAL QTY	DESCRIPTION
612-20.08		IMPACT ATTENUATOR (8 SAND BARRELS)
612-20.09		IMPACT ATTENUATOR (9 SAND BARRELS)
612-20.10		IMPACT ATTENUATOR (10 SAND BARRELS)
612-20.12		IMPACT ATTENUATOR (12 SAND BARRELS)
612-20.14		IMPACT ATTENUATOR (14 SAND BARRELS)
612-20.17		IMPACT ATTENUATOR (17 SAND BARRELS)
612-20.19		IMPACT ATTENUATOR (19 SAND BARRELS)
612-20.20		REPLACEMENT SAND BARREL
612-20.30		IMPACT ATTENUATOR ARRAY (RELOCATION)
612-30.00A		TRUCK OR TRAILER MOUNTED ATTENUATOR (TMA)
616-10.07		SPEED LIMIT AND STROBE LIGHT ASSEMBLY
616-10.08	2	ADVANCED WARNING RAIL SYSTEM
616-10.09	19	FLAG ASSEMBLY
616-10.20	20	CHANNELIZER (DRUM-LIKE)
616-10.22		CHANNELIZER (CONES)
616-10.24		CHANNELIZER (TRIM LINE) WITH LIGHT
616-10.25	280	CHANNELIZER (TRIM LINE)
616-10.26		CHANNELIZER (VERTICAL PANEL)
616-10.27		CHANNELIZER (VERTICAL PANEL) WITH LIGHT
616-10.28		CHANNELIZER
616-10.30		TYPE III MOVEABLE BARRICADE
616-10.31		TYPE III MOVEABLE BARRICADE WITH LIGHT
616-10.33	10	DIRECTION INDICATOR BARRICADE
616-10.34		DIRECTION INDICATOR BARRICADE, WITH LIGHT
616-10.40		FLASHING ARROW PANEL
616-10.47		TYPE III OBJECT MARKER
616-10.51		WARNING LIGHT, TYPE A
616-10.52		WARNING LIGHT, TYPE B
616-10.53		WARNING LIGHT, TYPE C
616-10.70		TUBULAR MARKER
616-10.95		RADAR SPEED ADVISORY SYSTEM
616-10.96		CHANGEABLE MESSAGE SIGN, COMMISSION FURNISHED/RETAINED
616-10.98	4	CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED/RETAINED
616-11.00		CHANGEABLE MESSAGE SIGN, CONTRACTOR FURNISHED/COMMISSION RETAINED
616-11.20	0	INSTALLING "DRIVE SMART", 48 IN. X 48 IN. SIGN
616-11.33A	0	INSTALLING "POINT OF PRESENCE", 96 IN. X 48 IN. SIGN
616-11.34		INSTALLING "POINT OF PRESENCE", 36 IN. X 48 IN. SIGN
617-36.00D	0	CONTRACTOR FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER
617-36.02B		CONTRACTOR FURNISHED/COMMISSION RETAINED TEMPORARY TRAFFIC BARRIER
617-40.00A	0	TEMPORARY TRAFFIC BARRIER HEIGHT TRANSITION
617-50.10A		RELOCATING TEMPORARY TRAFFIC BARRIER
617-60.00B		COMMISSION FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER
617-70.00B		COMMISSION FURNISHED/RETAINED TEMPORARY TRAFFIC BARRIER HEIGHT TRANSITION
901-94.00	1	TEMPORARY LIGHTING
902-94.00		TEMPORARY TRAFFIC SIGNALS
902-94.01		TEMPORARY TRAFFIC SIGNALS AND LIGHTING

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 3
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

UTILITIES

ELECTRIC DISTRIBUTION:
AMEREN UE
10 EAST CHURCH ST
PARK HILLS, MO 63601
CONTACT: DAN YUTZY
TEL: 573-431-8266

NATURAL GAS:
MISSOURI NATURAL GAS COMPANY
111 S. WASHINGTON
FARMINGTON, MO 63340
CONTACT: BRAD PAUL
TEL: 573-756-6607

TELEPHONE:
AT&T
222 WEST MAIN ST.
PARK HILLS, MO 63601
CONTACT: GARY BOYER
TEL: 573-431-9850

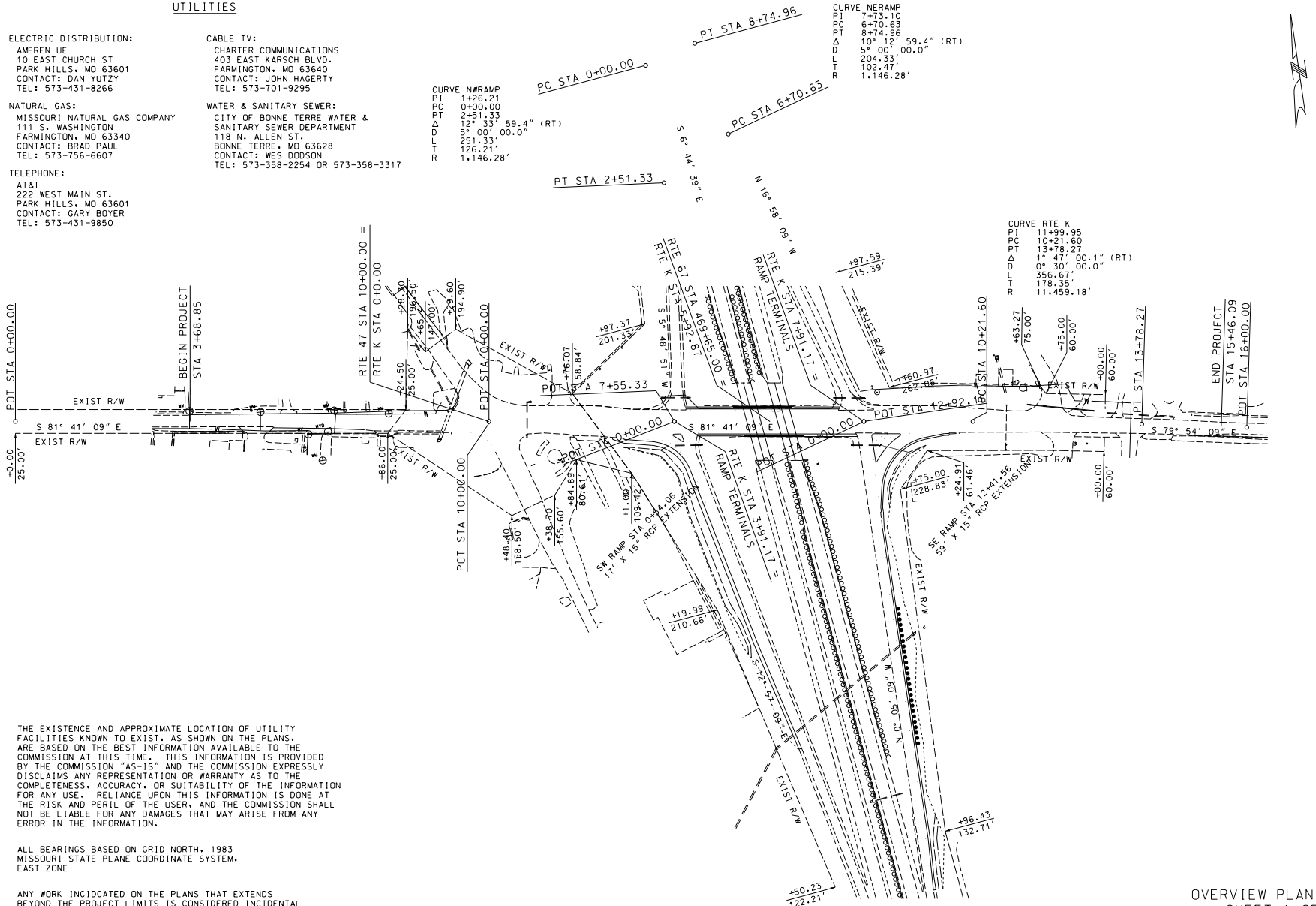
CABLE TV:
CHARTER COMMUNICATIONS
403 EAST KARSCH BLVD.
FARMINGTON, MO 63640
CONTACT: JOHN HAGERTY
TEL: 573-701-9295

WATER & SANITARY SEWER:
CITY OF BONNE TERRE WATER &
SANITARY SEWER DEPARTMENT
118 N. ALLEN ST.
BONNE TERRE, MO 63628
CONTACT: WES DODSON
TEL: 573-358-2254 OR 573-358-3317

CURVE NWRAMP
PI 1+26.21
PC 0+00.00
PT 2+51.33
Δ 12° 33' 59.4" (RT)
D 5° 00' 00.0"
L 251.33'
T 126.21'
R 1,146.28'

CURVE NERAMP
PI 7+73.10
PC 6+70.63
PT 8+74.96
Δ 10° 12' 59.4" (RT)
D 5° 00' 00.0"
L 204.33'
T 102.47'
R 1,146.28'

CURVE RTE K
PI 11+99.95
PC 10+21.60
PT 13+78.27
Δ 1° 47' 00.1" (RT)
D 0° 30' 00.0"
L 356.67'
T 178.35'
R 11,459.18'



THE EXISTENCE AND APPROXIMATE LOCATION OF UTILITY FACILITIES KNOWN TO EXIST, AS SHOWN ON THE PLANS, ARE BASED ON THE BEST INFORMATION AVAILABLE TO THE COMMISSION AT THIS TIME. THIS INFORMATION IS PROVIDED BY THE COMMISSION "AS-IS" AND THE COMMISSION EXPRESSLY DISCLAIMS ANY REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS, ACCURACY, OR SUITABILITY OF THE INFORMATION FOR ANY USE. RELIANCE UPON THIS INFORMATION IS DONE AT THE RISK AND PERIL OF THE USER, AND THE COMMISSION SHALL NOT BE LIABLE FOR ANY DAMAGES THAT MAY ARISE FROM ANY ERROR IN THE INFORMATION.

ALL BEARINGS BASED ON GRID NORTH, 1983 MISSOURI STATE PLANE COORDINATE SYSTEM, EAST ZONE

ANY WORK INCIDCATED ON THE PLANS THAT EXTENDS BEYOND THE PROJECT LIMITS IS CONSIDERED INCIDENTAL TO AND A PART OF THE CONSTRUCTION OF THIS PROJECT.

OVERVIEW PLAN SHEET
SHEET 1 OF 1

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 4
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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FINAL PLANS

REV.

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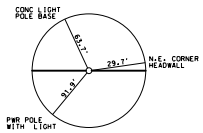
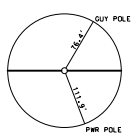


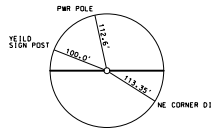
RTE K
CONTROL PT #100
STA 0+81.48
OFFSET 58.40 LT

X 808716.14579
Y 760683.06183



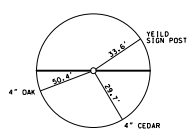
RTE K
CONTROL PT #101

X 810400.60222
Y 760400.01760



RTE 67
CONTROL PT #102
STA 464+46.65
OFFSET 57.55 LT

X 809209.98845
Y 761072.85520



RTE 67
CONTROL PT #103
STA 479+70.95
OFFSET 104.73 RT

X 809227.84615
Y 759540.05065

REFERENCE POINTS
SHEET 1 OF 1

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	5

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MODIFIED STATE PLANE COORDINATE SYSTEM
PROJ FACTOR = 1.000100773308999

ALIGNMENT COORDINATE POINTS (EXCLMED67)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
EXCL-C1	408+79.95	807975.32959	766486.16694	PC
	412+94.49	808178.89860	766125.04965	PI
	417+03.28	808271.75725	765721.04062	PT
		805479.62484	765079.28847	CC
EXCL-C2	444+32.99	808883.21881	763060.69638	PC
	447+43.30	808952.72827	762758.27492	PI
	450+52.99	808989.16985	762450.11536	PT
		803299.16661	761777.24095	CC
	484+88.00	809392.56818	759038.87276	POT

ALIGNMENT COORDINATE POINTS (BENHAM)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
	0+00.00	807637.58528	760781.66392	POT
				STA 10+00.00 (BK) = STA 0+00.00 (AH)
	0+00.00	808627.07539	760637.06335	POT

ALIGNMENT COORDINATE POINTS (EXCLK)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
	0+00.00	808627.07539	760637.06335	POT
CUR1	10+21.60	809637.93749	760489.33955	PC
	11+99.95	809814.41284	760463.55007	PI
	13+78.27	809990.00014	760432.28112	PT
		807980.93337	749150.59329	CC
	16+00.00	810208.29561	760393.40660	POT

ALIGNMENT COORDINATE POINTS (EXCLOLD67)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
	515+00.00	808327.57872	761208.71727	POT
CUR2	519+42.70	808539.54280	760820.06043	PC
	521+35.02	808631.62429	760651.22003	PI
	523+26.00	808688.19907	760467.41203	PT
		806862.64045	759905.51826	CC
	525+00.00	808739.38522	760301.11135	POT

ALIGNMENT COORDINATE POINTS (NERAMP)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
	0+00.00	809409.92951	760522.65983	POT
RMPCUR4	6+70.63	809214.20143	761164.09123	PC
	7+73.10	809184.29511	761262.09889	PI
	8+74.96	809172.24641	761363.85702	PT
		810310.57278	761498.64089	CC

ALIGNMENT COORDINATE POINTS (NWRAMP)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
RMPCUR2	0+00.00	809063.13578	761332.80430	PC
	1+26.21	809077.97544	761207.46864	PI
	2+51.33	809065.19001	761081.90679	PT
		807924.80863	761198.02705	CC
	7+55.33	809014.13385	760580.50000	POT

ALIGNMENT COORDINATE POINTS (SERAMP)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
RMPC1	0+00.00	809424.77990	759231.00638	PC
	1+11.25	809411.69935	759341.48293	PI
	2+22.22	809411.53266	759452.73103	PT
		811321.60801	759455.59303	CC
	12+92.15	809409.92951	760522.65983	POT

ALIGNMENT COORDINATE POINTS (SWRAMP)				
CURVE NAME	STATION	EASTING / X	NORTHING / Y	DESCRIPTION
	0+00.00	809014.13385	760580.50000	POT
RMPCUR1	11+66.24	809275.53869	759443.93475	PC
	12+69.69	809298.72581	759343.11918	PI
	13+72.91	809310.88911	759240.38908	PT
		807414.06273	759015.80375	CC

COORDINATE POINTS
SHEET 1 OF 1

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 6
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

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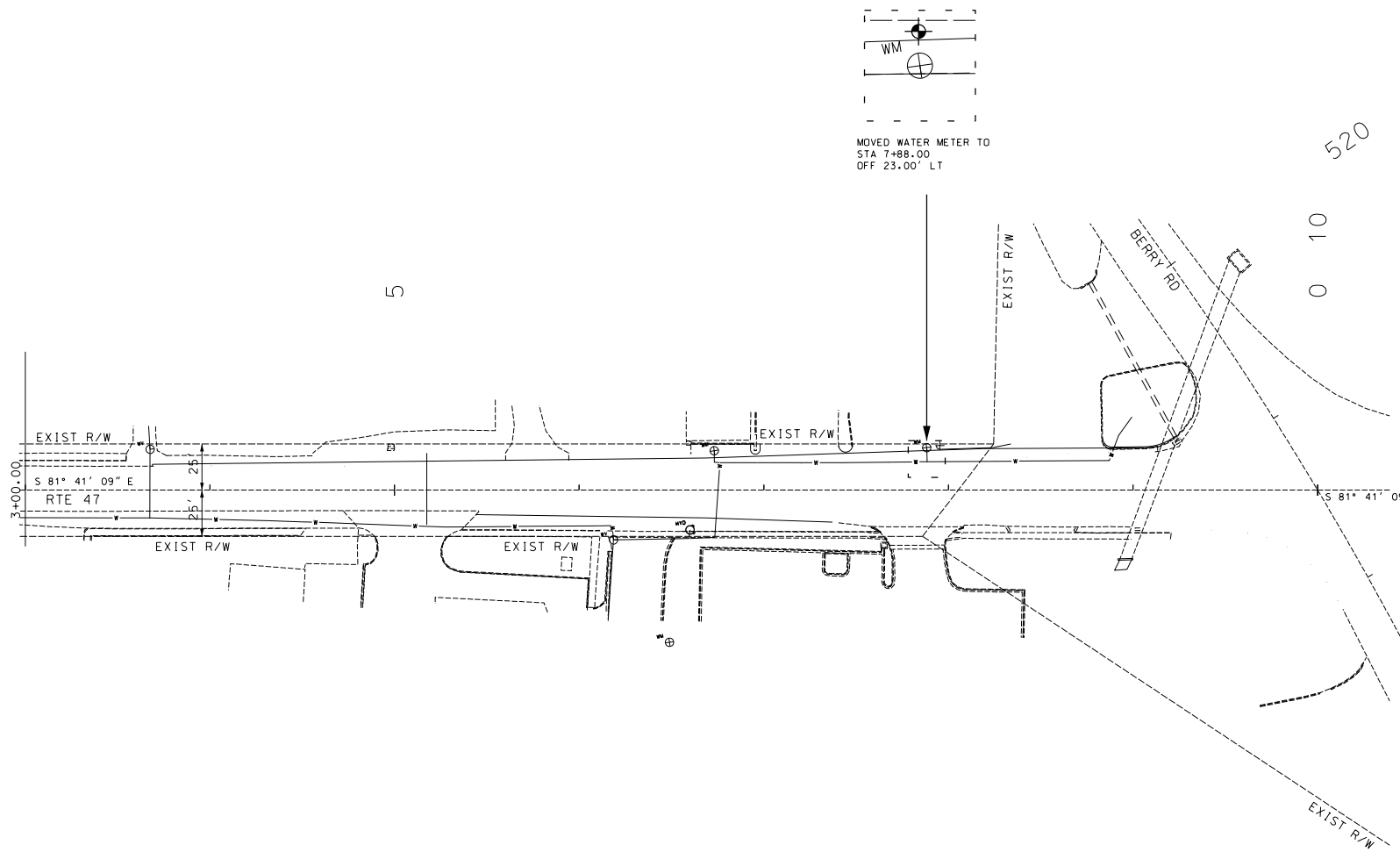

SCALE

0 30 60 90

NOTE: ALL STATIONS AND OFFSETS REFERENCED FROM ℄ RTE 47

SPECIAL SHEET
WATER METER RELOCATION
SHEET 1 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	7

COUNTY: ST FRANCOIS
JOB NO.: J0P2209
CONTRACT ID.: 120217-H05
PROJECT NO.: FAF-67-3(116)
BRIDGE NO.:

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

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REV.

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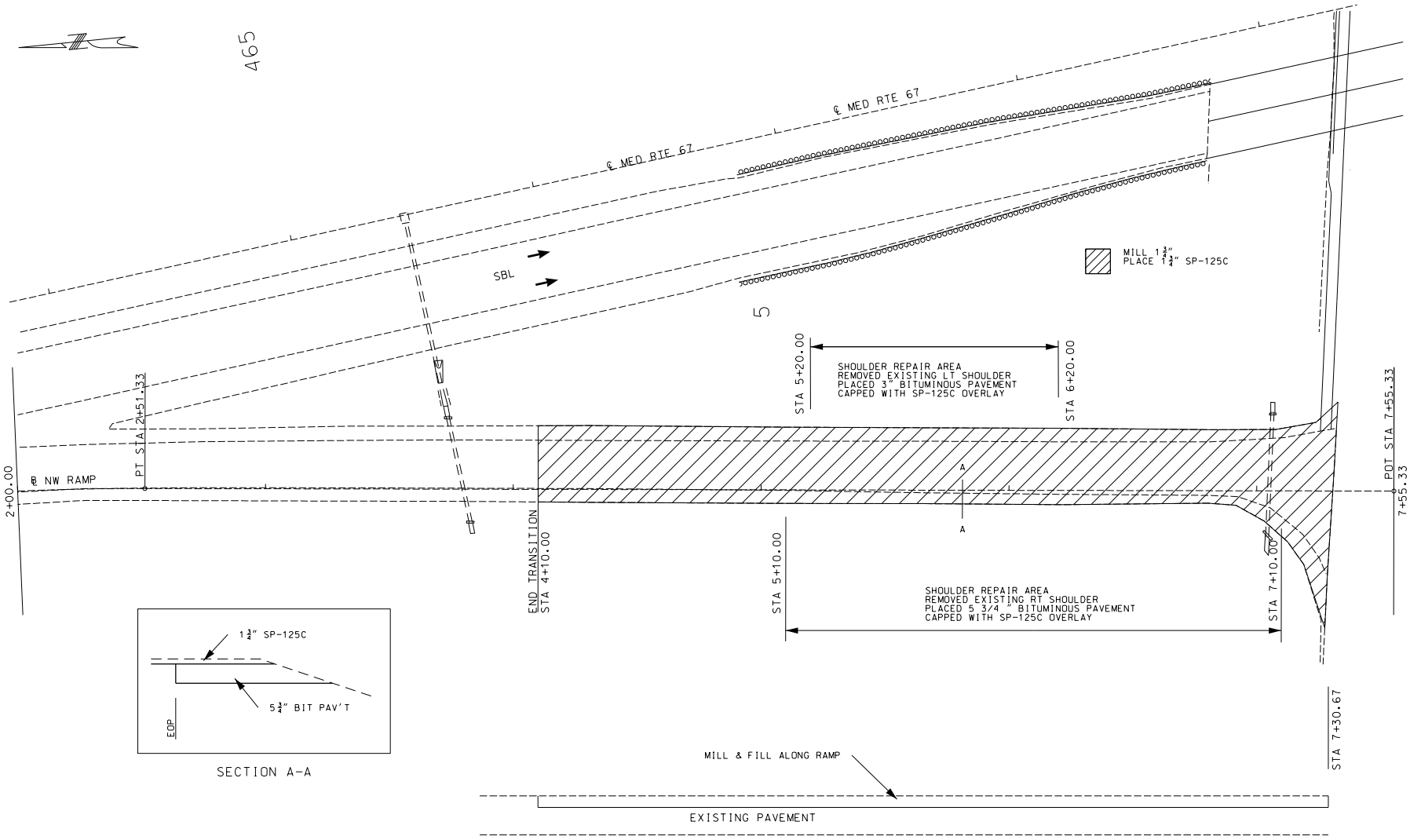

SPECIAL SHEET
NW RAMP OVERLAY
SHEET 2 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	8

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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FINAL PLANS

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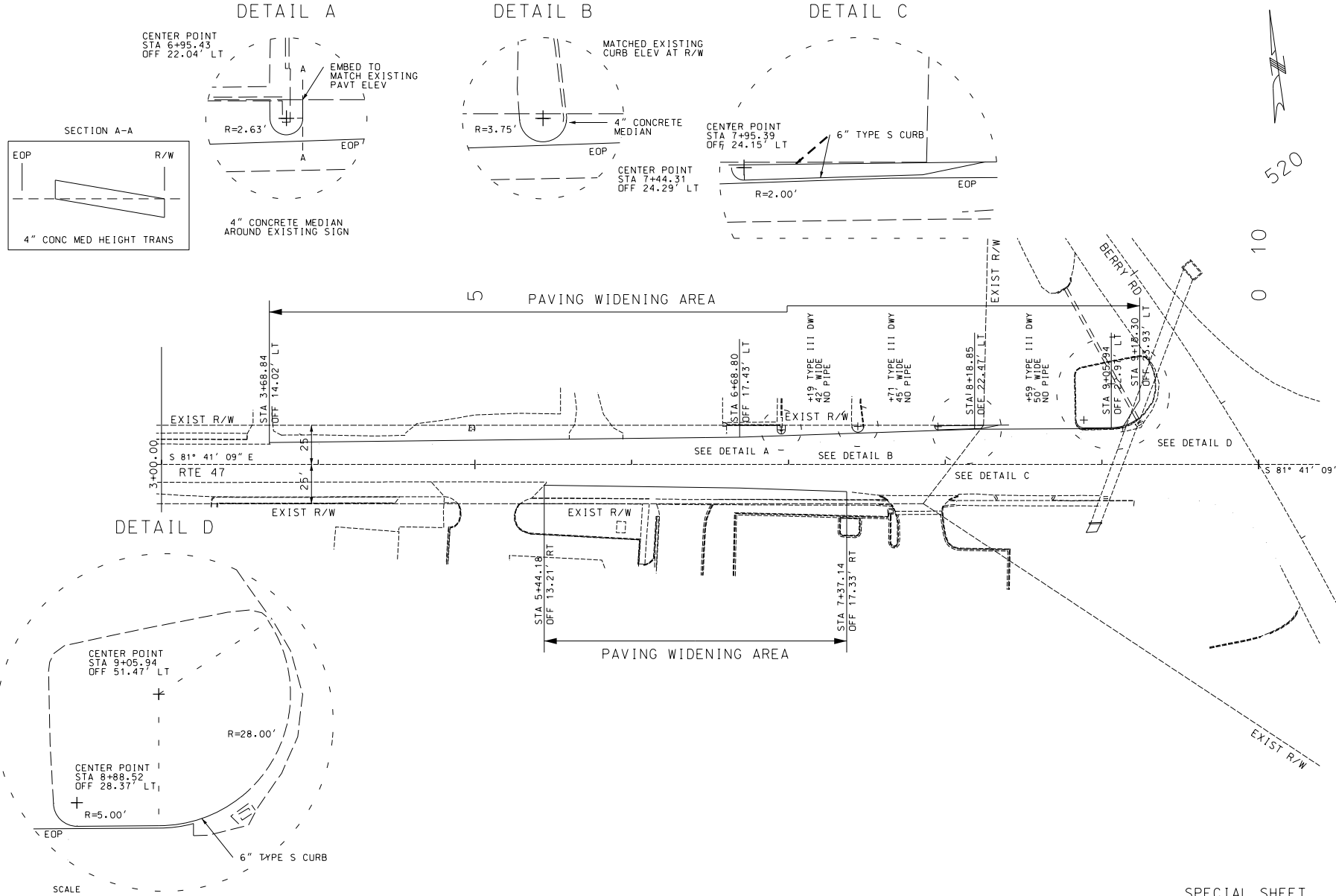

NOTE: ALL STATIONS AND OFFSETS REFERENCED FROM ℄ RTE 47

SPECIAL SHEET
RTE 47
SHEET 3 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	9
COUNTY	ST FRANCOIS
JOB NO.	J0P2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

DESCRIPTION | DATE | REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

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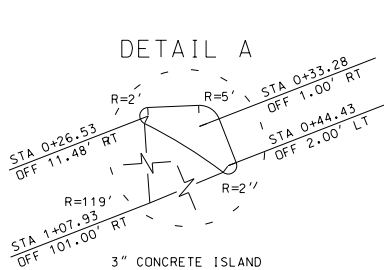

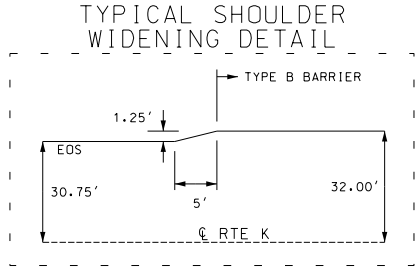

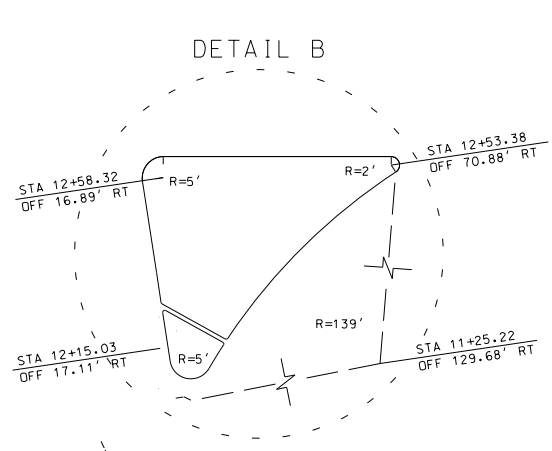

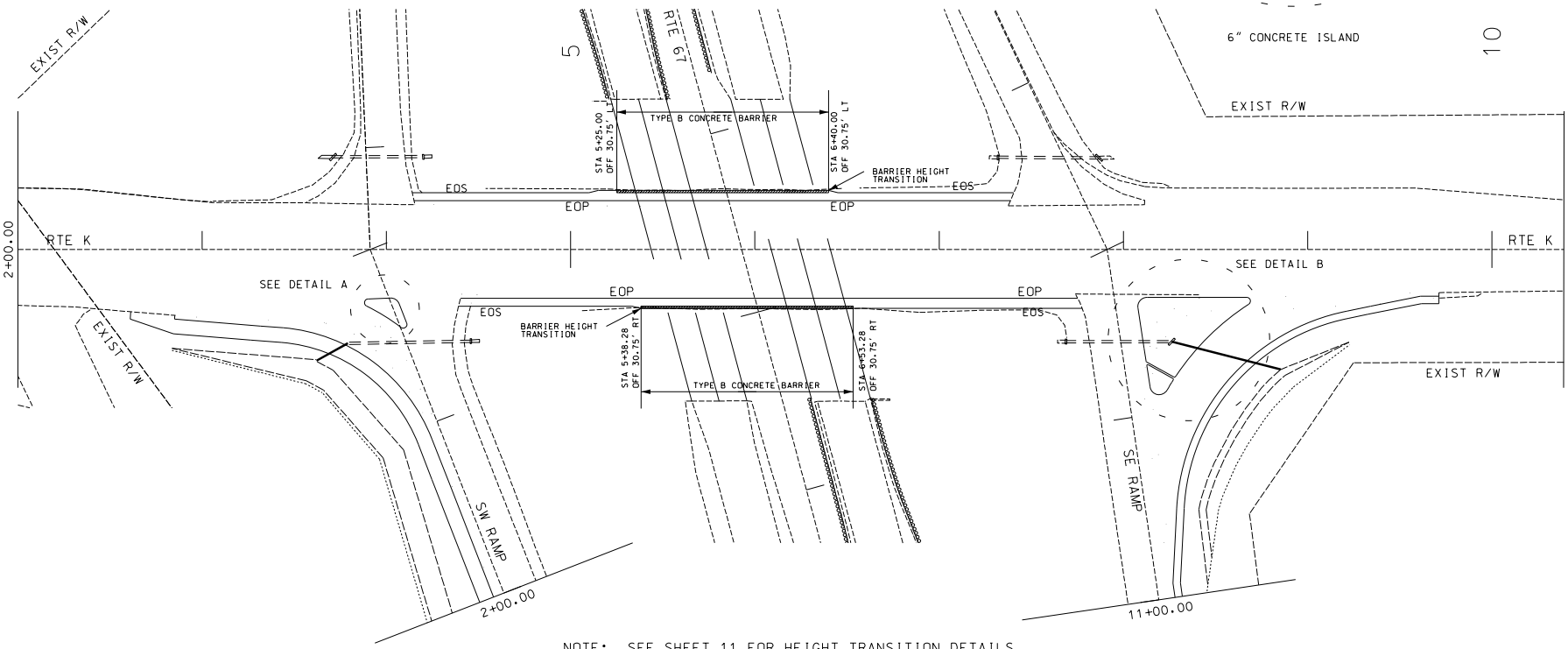

NOTE: SEE SHEET 11 FOR HEIGHT TRANSITION DETAILS

SCALE
0 30 60 90

SPECIAL SHEET
RTE K WIDENING
SHEET 4 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013
ROUTE 47
STATE MO
DISTRICT SE
SHEET NO. 10
COUNTY
ST FRANCOIS
JOB NO.
J0P2209
CONTRACT ID.
120217-H05
PROJECT NO.
FAF-67-3(116)
BRIDGE NO.

DESCRIPTION
DATE
REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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FINAL PLANS

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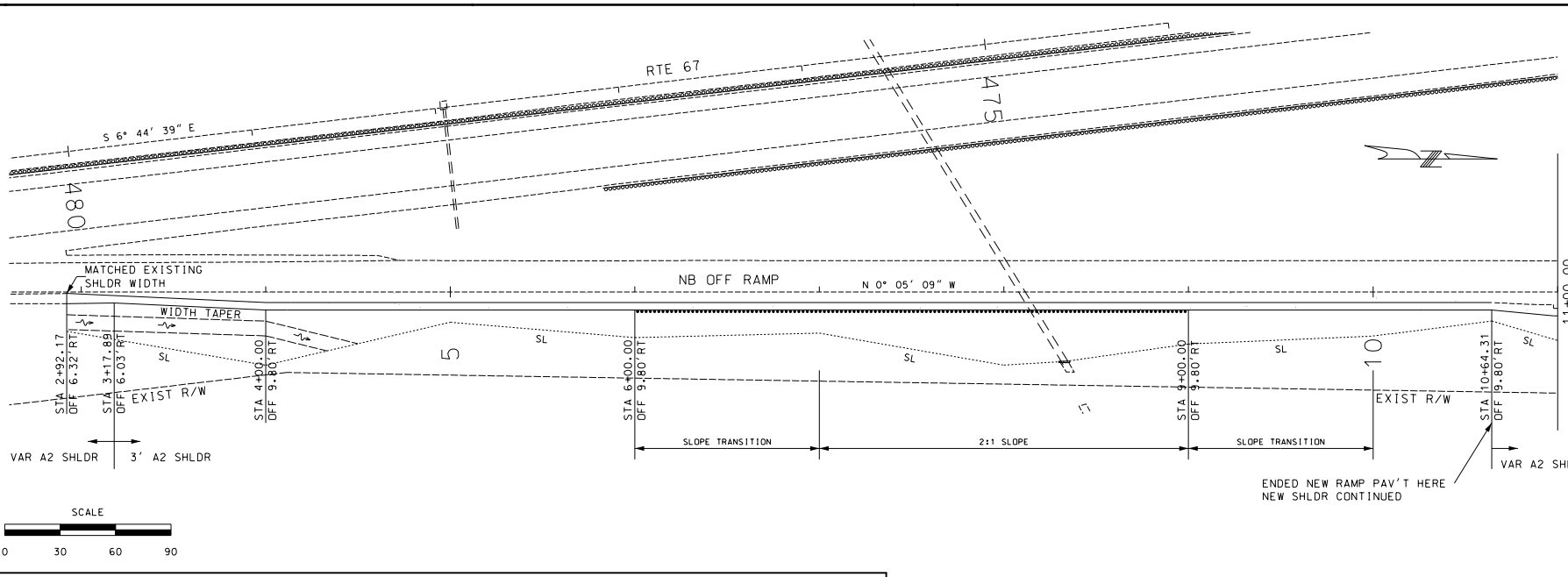

SCALE

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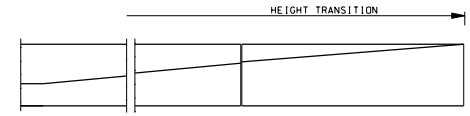
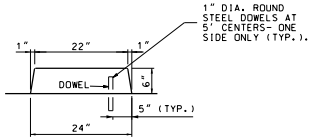
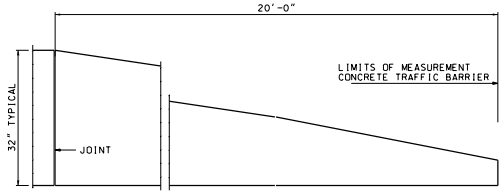
TYPE B BARRIER HEIGHT TRANSITION



WHERE CONCRETE MEDIAN IS NOT CARRIED AHEAD

PLAN





ELEVATION

NOT TO SCALE

SPECIAL SHEET
SE RAMP WIDENING
SHEET 5 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013

ROUTE 47 | STATE MO

DISTRICT SE | SHEET NO. 11

COUNTY ST FRANCOIS

JOB NO. J0P2209

CONTRACT ID. 120217-H05

PROJECT NO. FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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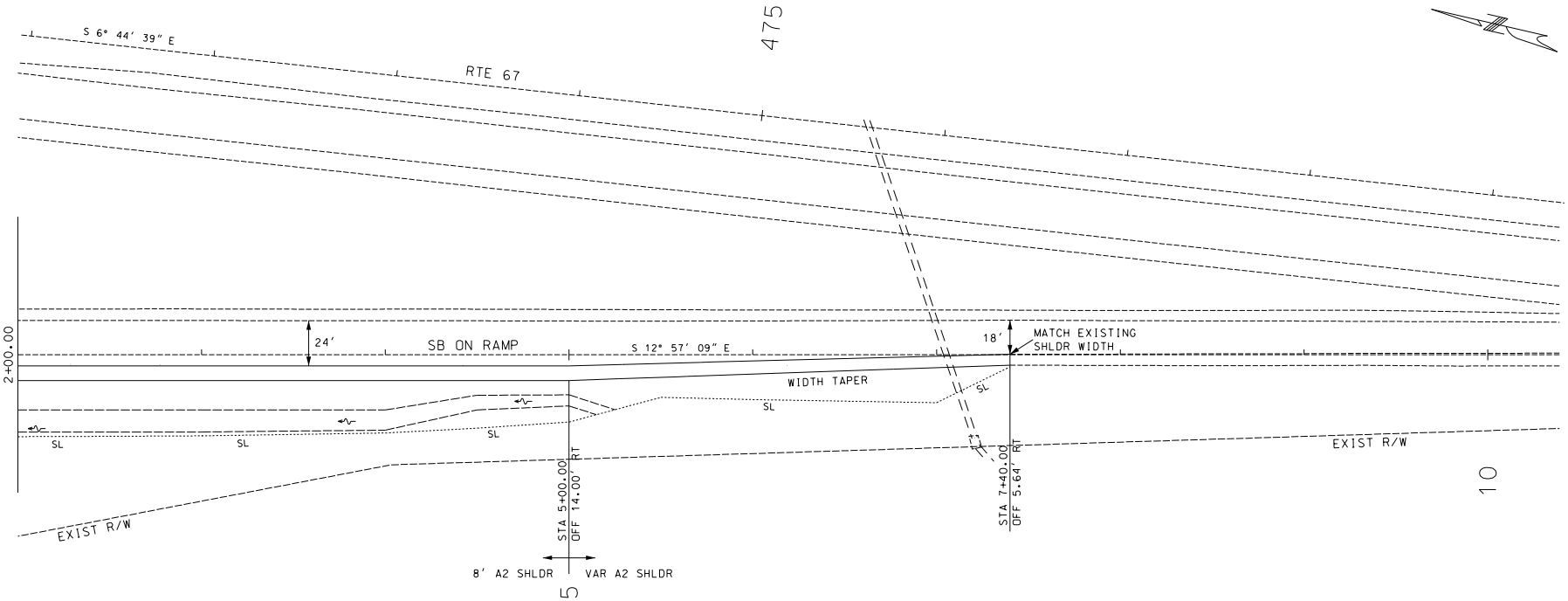

SCALE

0 30 60 90

SPECIAL SHEET
SW RAMP WIDENING
SHEET 6 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	12
COUNTY	ST FRANCOIS
JOB NO.	J0P2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

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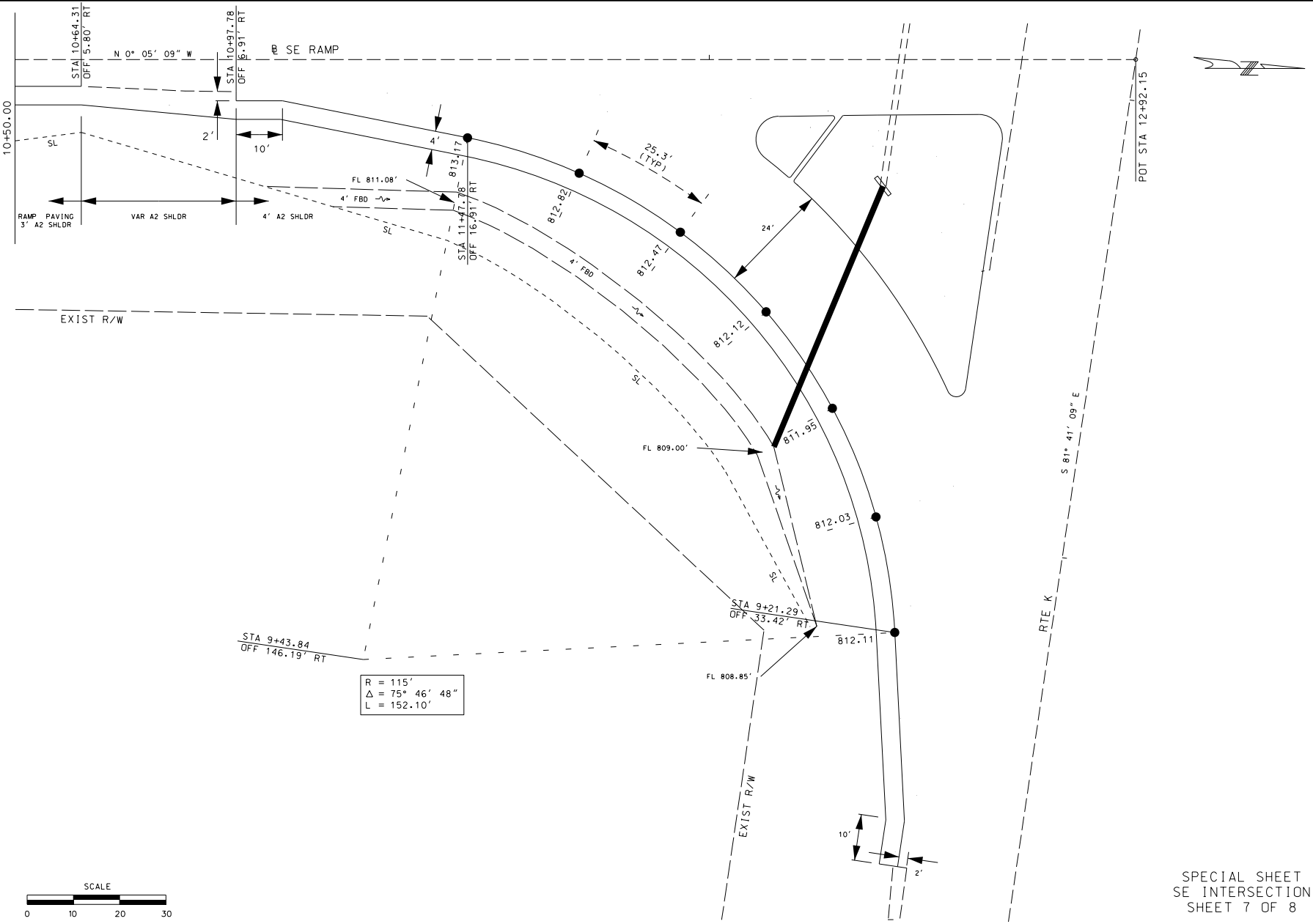

SPECIAL SHEET
SE INTERSECTION
SHEET 7 OF 8

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	13

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

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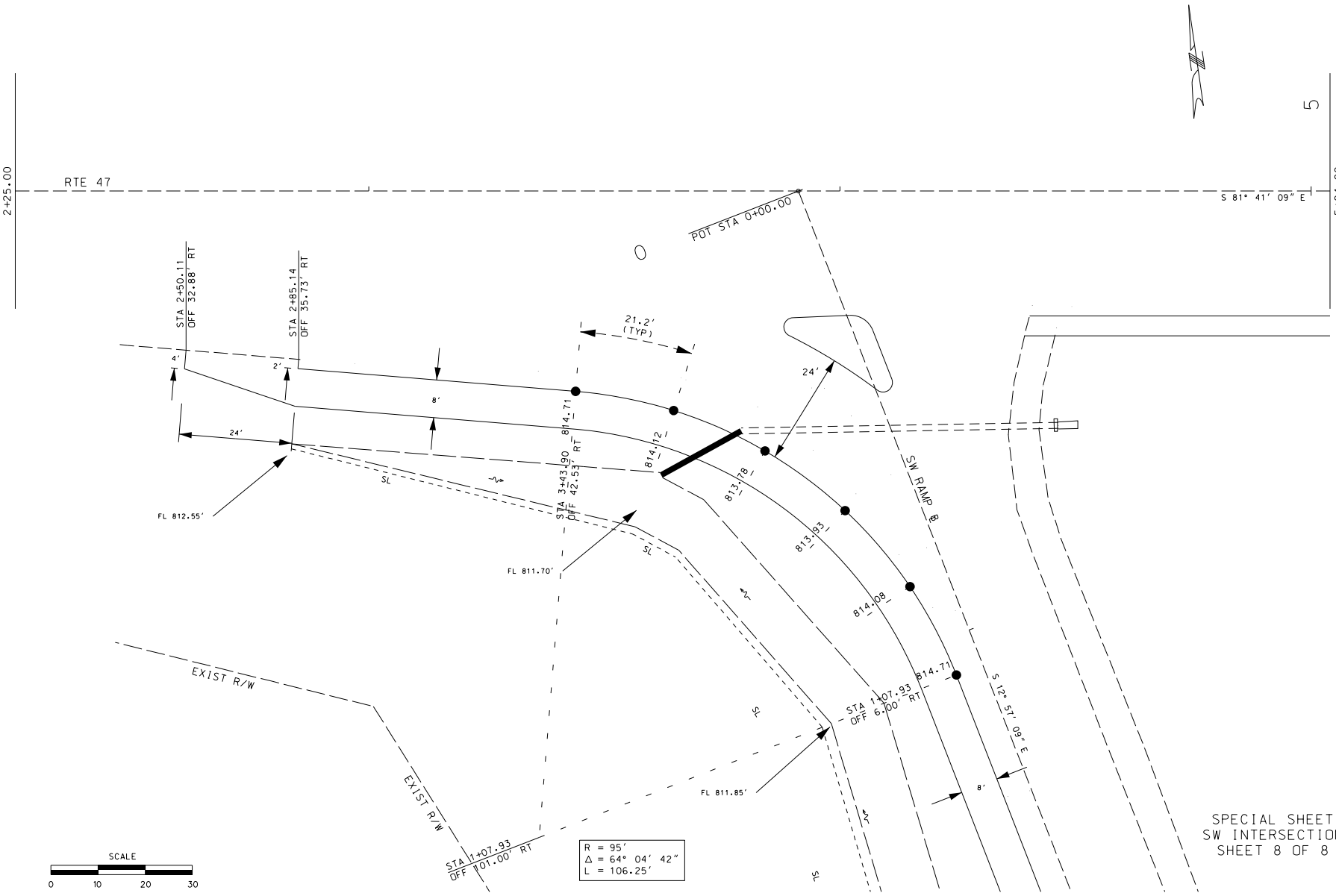

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DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	14
COUNTY	ST FRANCOIS
JOB NO.	J0P2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

REV.

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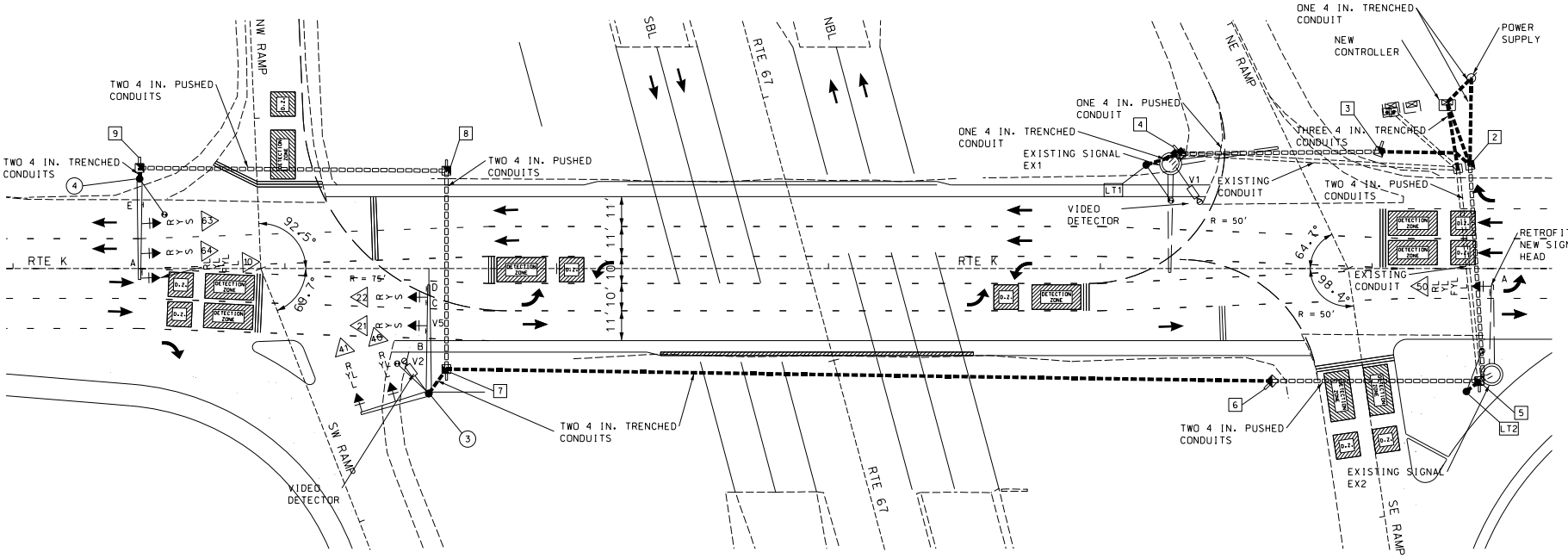
RAMP SIGNAL OVERVIEW

SEE FOLLOWING SHEETS
FOR LOCATION DETAILS

TRAFFIC SIGNALS LEGEND

- CONTROLLER
- SIGNAL HEAD (STANDARD)
- TYPE C MAST ARM A BASE
- TYPE B MAST ARM A BASE
- VIDEO DETECTOR
- EXISTING PULL BOX
- PREFORMED PULL BOX TYPE 2
- POWER SUPPLY
- 150 W LUMINAIRE
- EXISTING CONDUIT
- VIDEO DETECTION CAMERA
- TRENCHED CONDUIT
- PUSHED CONDUIT



NOTE: SALVAGE AND REUSE EXISTING RADIO INTERCONNECTION. THIS WORK SHALL BE INCIDENTAL TO THE COST OF CONTROLLERS.

SCALE
0 20 40 60

SIGNAL SHEET
RTE K & RAMPS
SHEET 1 OF 16

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DATE PREPARED	
8/5/2013	
ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	25
COUNTY	
ST. FRANCOIS	
JOB NO.	
J0P2209	
CONTRACT ID.	
120217-H05	
PROJECT NO.	
FAF-67-3(116)	
BRIDGE NO.	

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

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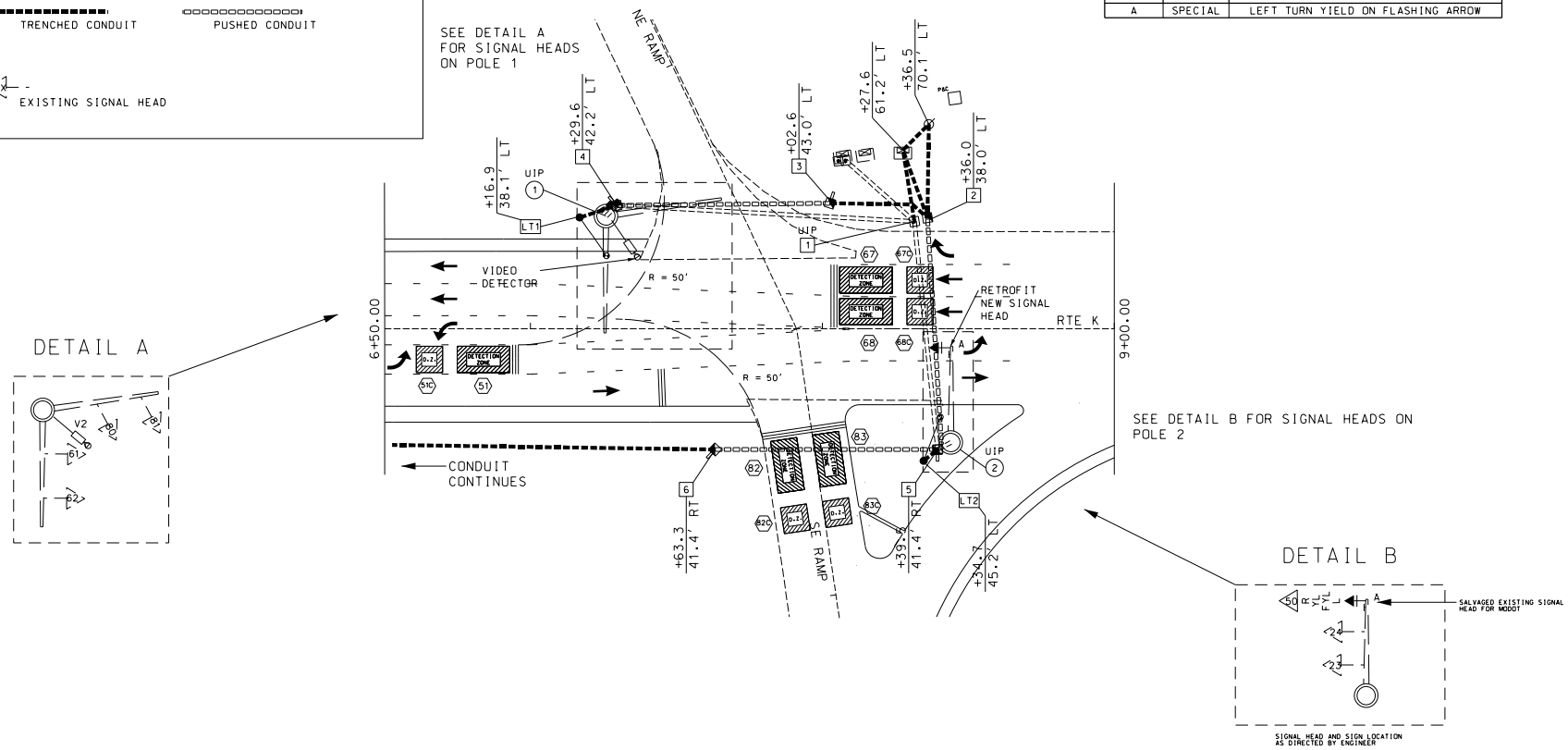
TRAFFIC SIGNALS LEGEND

- CONTROLLER
- SIGNAL HEAD (STANDARD)
- TYPE C MAST ARM A BASE
- TYPE B MAST ARM A BASE
- TRENCHED CONDUIT
- EXISTING SIGNAL HEAD
- VIDEO DETECTOR
- EXISTING PULL BOX
- PREFORMED PULL BOX TYPE 2
- POWER SUPPLY
- EXISTING CONDUIT
- PUSHED CONDUIT

NOTE: WIRING FOR SIGNALS AND LIGHTING WAS INSTALLED IN SEPARATE CONDUITS.

SALVAGED EXISTING POWER SUPPLY. USED FOR SIGNAL INSTALLATION AT BERRY RD.

SIGN LEGEND		
CODE	SIGN #	DESCRIPTION
A	SPECIAL	LEFT TURN YIELD ON FLASHING ARROW



SCALE
0 20 40 60

SIGNAL SHEET
SHEET 2 OF 16

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 26
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

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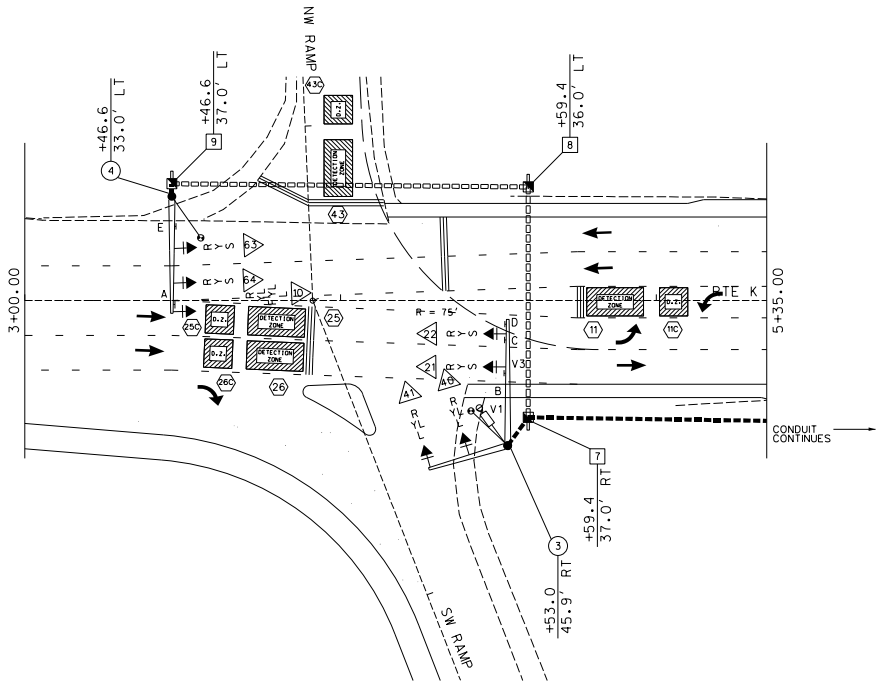
TRAFFIC SIGNALS LEGEND

- CONTROLLER
- SIGNAL HEAD (STANDARD)
- TYPE C MAST ARM A BASE
- TYPE B MAST ARM A BASE
- TRENCHED CONDUIT
- 150 W LUMINAIRE
- VIDEO DETECTOR
- EXISTING PULL BOX
- PREFORMED PULL BOX TYPE 2
- POWER SUPPLY
- EXISTING CONDUIT
- PUSHED CONDUIT

NOTE: WIRING FOR SIGNALS AND LIGHTING WAS INSTALLED IN SEPARATE CONDUITS.

SIGN LEGEND		
CODE	SIGN #	DESCRIPTION
A	SPECIAL	LEFT TURN YIELD ON FLASHING ARROW
B	M1-5	STATE LETTERED RTE SHIELD (K)
	M6-3	DIRECTIONAL ARROW STRAIGHT
C	M3-1	NORTH
	M1-5	US NUMBERED RTE SHIELD (67)
	M6-3	DIRECTIONAL ARROW STRAIGHT
D	R3-2	NO LEFT TURN (SYMBOL)
E	R3-1	NO RIGHT TURN (SYMBOL)



SCALE
0 20 40 60

SIGNAL SHEET
SHEET 3 OF 16

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 27
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

EFFECTIVE: 11/01/2009

LOCATION / BASE / PULL BOX / POST

POST NUMBER	PULL BOX NUMBER	APPROACH	STATION	OFFSET	BASE A (9 / 9.5 / 10 / 10.5 / 11 / 12)	BASE F (9 / 9.5 / 10 / 10.5 / 11 / 12)	BASE C CONCRETE (CU. YDS.)	PULL BOX PREFORMED CONCRETE CLASS 1	CLASS 2	CLASS 3	CLASS 5	STANDARD	DOUBLE, TYPE A	DOUBLE, TYPE B	DRAIN TYPE I	DRAIN TYPE II A	II B	II C	TOP MOUNT POST 8 FT.	TOP MOUNT POST 15 FT.	TYPE C & CL ARM LENGTH A	A	A	A	SIGNAL SPACING B	C	D	D'	SIGN SPACING B	C	D	D'	TYPE B & BL ARM LENGTH E	K	E	K	E	K	LEFT ARM E SIGNAL SPACING F	G	H	H'	LEFT ARM E SIGN SPACING F	G	H	H'	RIGHT ARM K SIGNAL SPACING L	M	N	N'	RIGHT ARM K SIGN SPACING L	M	N	N'	INCLUDED ANGLE	LUMINAIRE BRACKET ARM** 4 FT.	6 FT.	8 FT.	10 FT.	12 FT.	15 FT.
			CONTROLLER	(AS REQ'D)																																																				
	2	RTE K	8+36	38' LT					X								X																																					
	3	RTE K	8+02	43' LT				X									X																																					
	4	RTE K	7+30	42' LT				X									X																																					
	5	RTE K	8+39	41' RT					X								X																																					
	6	RTE K	7+63	41' RT					X								X																																					
	7	RTE K	4+59	37' RT					X								X																																					
	8	RTE K	4+59	36' LT				X									X																																					
	9	RTE K	3+47	37' LT				X									X																																					
3		RTE K	4+53	46' RT		X	3.67													36.5				16	11	9		9	24.7			39.5	25.5					24.4	10.5			22.4	10.5	5.1		12.1	12.9						106.4						1
4		RTE K	3+47	33' LT		X	3.27													36.5				16	11	9		9	24.7			39.5	25.5					24.4	10.5			22.4	10.5	5.1		12.1	12.9						106.4						1
				SUBTOTAL			6.94	4	4								36.5			36.5												39.5	25.5					24.4	10.5			22.4	10.5	5.1		12.1	12.9						106.4						1
				TOTAL			6.9	4	4								36.5			36.5												39.5	25.5					24.4	10.5			22.4	10.5	5.1		12.1	12.9						106.4						1

SIGNAL HEADS

SPAN NUMBER	POST NUMBER	FACE NUMBER	LUMINAIRE 150W SODIUM	INDICATIONS * 12" LENS CONVENTIONAL R	RL	Y	YL	YR†	YL‡	YR‡	G	S	L	INDICATIONS * 12" LENS OPTICAL LIMITING R	Y	YL	YR†	YL‡	YR‡	G	S	L	R†	VISORS * 12" LENS	PED.	LOUVERS * A	B	C	D	E	F	BACKPLATE* LENSES 1	2	3	4	5	BRACKET* TYPE I	II	III	ONE-FACE SECTION 1- T	S	C	B	3- T	S	C	B	4- T	S	C	B	5- T	S	C	B	TWO-FACE SECTIONS 11- T	S	B	33- T	S	C	B	34- S	B	35- S	B	44- S	B	45- S	B
	2	50			1		1		1			1											4								1			1		1																																										
	3	21	1	1		1					1												3								1					1																																										
	3	22		1		1					1												3								1					1																																										
	3	40		1			1					1											3								1					1																																										
	3	41		1			1					1											3								1					1																																										
	4	63	1	1		1					1												3								1					1																																										
	4	64		1		1					1												3								1					1																																										
	4	10			1		1		1			1											4									1				1																																										
	LT1		1																		

EFFECTIVE: 07-01-2008

SIGNAL SHEET
SHEET 5 OF 16

CONDUIT

FROM	TO	CENTER TO CENTER DISTANCE	LOOP DET.	TRENCH				PUSHED			MEDIAN			ON STRUCTURE			REMARKS
			1"	2"	3"	4"		2"	3"	4"	2"	3"	4"	2"	3"		
Ø	✉	13				19											
Ø	2	32				33											LIGHTING CONDUIT
✉	1	25				28											1 CONDUIT
✉	2	25				28											1 CONDUITS
2	3	35				33											1 CONDUIT
3	4	73								71							1 CONDUIT
2	5	79								154							2 CONDUITS
5	6	76								148							2 CONDUITS
6	7	304				604											2 CONDUITS
7	8	73								142							2 CONDUITS
8	9	113								222							2 CONDUITS
4	①	5				8											1 CONDUIT
5	②	5				8											1 CONDUIT
7	③	11				28											2 CONDUITS
9	④	4				14											2 CONDUITS
4	LT1	13				16											
5	T2	6				9											
SUBTOTALS						828				737							
TOTALS						830				740							

CABLE

FROM	TO	CENTER TO CENTER DISTANCE	POWER		CONTROL					CLOSED LOOP INTERCONNECT	LUMINAIRE		DETECTOR		FIBER		REMARKS
			1C #8		2c #16	5c #16	7c #16	3c #16	3 PAIR #16		CONTROL 2c #12	POLE & BRACKET 1c #10	1c #14 IN DUCT	2c #14 LEAD-IN CABLE	SINGLE-MODE	MULTI-MODE	
Ø	✉	13	176														3 POWER CABLES
Ø	③	503									558.6	90					LIGHTING
Ø	④	681									758.1	90					LIGHTING
✉	③	495					626.7										1 SIGNAL CABLE
✉	③	495					618.9										1 SIGNAL CABLE
✉	④	675					820.6										1 SIGNAL CABLE
✉	④	675					812.2										1 SIGNAL CABLE
Ø	LT1	154									179.6	90					LIGHTING
Ø	T2	118									148.1	90					LIGHTING
SUBTOTALS			176				2878.4				1644.4	360					
TOTALS			180				2880				1640	360					

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DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 29
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

INTERSECTION RTE K AND RAMPS | D-37B | FINAL PLANS

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EFFECTIVE 0401-2002

SIGNALS SHEET
SHEET 6 OF 16

POWER SUPPLY

LOCATION			POWER SUPPLY ASSEMBLY		CIRCUIT BREAKER TRIP RATING*				LIGHTING CONTROL * (ON POWER SUPPLY)		SERVICE POLE	
					CONTROLLER		POWER SUPPLY DISCONNECT					
APPROACH	STATION	OFFSET	DRAWING 902.15	DRAWING	AUXILIARY BREAKER	CONT & SIGNAL LAMPS	MAIN BREAKER		120 VOLT CONTROL CABINET	MAIN BREAKER	CONTRACT FURNISH	UTILITY COMPANY
							SIGNALS	LIGHTING				
RTE K	8+37	70' LT	Type 1		15 Amps	15 Amps	40 Amps	40 Amps	1	15 Amps	Ci. Ft.	
			Type		15 Amps	Amps	Amps	Amps		Amps	Ci. Ft.	

CONTROLLER ASSEMBLY AND AUXILIARY EQUIPMENT

LOCATION			BASE CONCRETE	SYSTEM MASTER (CLOSED LOOP)		ACTUATED		ON-OFF* SWITCH TYPE		COORDINATION INTERFACE *						TIME * CLOCK	NEMA CABINET TYPE *			170 CABINET TYPE *		170 SOFTWARE *	
										12C/7C HARDWIRE (1)		TIME BASE	CLOSED LOOP		FIBER								
APPROACH	STATION	OFFSET	CY	NEMA	170	NEMA	170	I	II	MASTER	LOCAL		NEMA	170			E	EV	DOUBLE	332	336S	BITRAN	WAPITI
RTE K	8+28	61' LT	1.9	1		1												1					

DETECTOR SCHEDULE

DETECTOR NUMBER	APPROACH	TYPE				
		PUSH BUTTON	INDUCTION LOOP (2)			VIDEO
			STANDARD	DELAY/ EXTEND *	CALL UNIT *	
11, 11C	MO47 NBLT					1
25, 25C 26, 26C	MO47 SBTH					1
43, 43C	SBRMP US67 TO MO47					1
51, 51C	MO47 SBLT					2
67, 67C, 68, 68C	MO47 NBTH					2
82, 82C, 83, 83C	NBRMP US67 TO MO47					2
TOTAL						

* ITEMS FOR WHICH SEPARATE PAYMENT WAS NOT MADE.

(1) MoDOT "D" PLUG WAS WIRED INTO ALL NEMA CONTROLLERS WITH 7C HARDWIRE INTERCONNECT.

(2) PAYMENT WAS MADE FOR THE NUMBER OF 2-CHANNEL DETECTOR CARDS AS SHOWN BELOW THE ASSIGNMENT CHART.

VIDEO DETECTION

DETECTOR NUMBER	VIDEO CAMERA (EA)	CABLE (LF)	VIDEO DETECTION SYSTEM (EA)
V1	1	-	1
V2	1	-	1
		TOTAL	2

NEMA LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
Ø 1 WB	Ø 2 EB		Ø 4 SB	Ø 5 EB	Ø 6 WB		Ø 8 NB	OVLA EB	OVLB WB		

RTE K AND RAMPS
INTERSECTION

D-37C

FINAL PLANS

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DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 30
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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EFFECTIVE 04-01-99

SIGNAL SHEET
SHEET 7 OF 16

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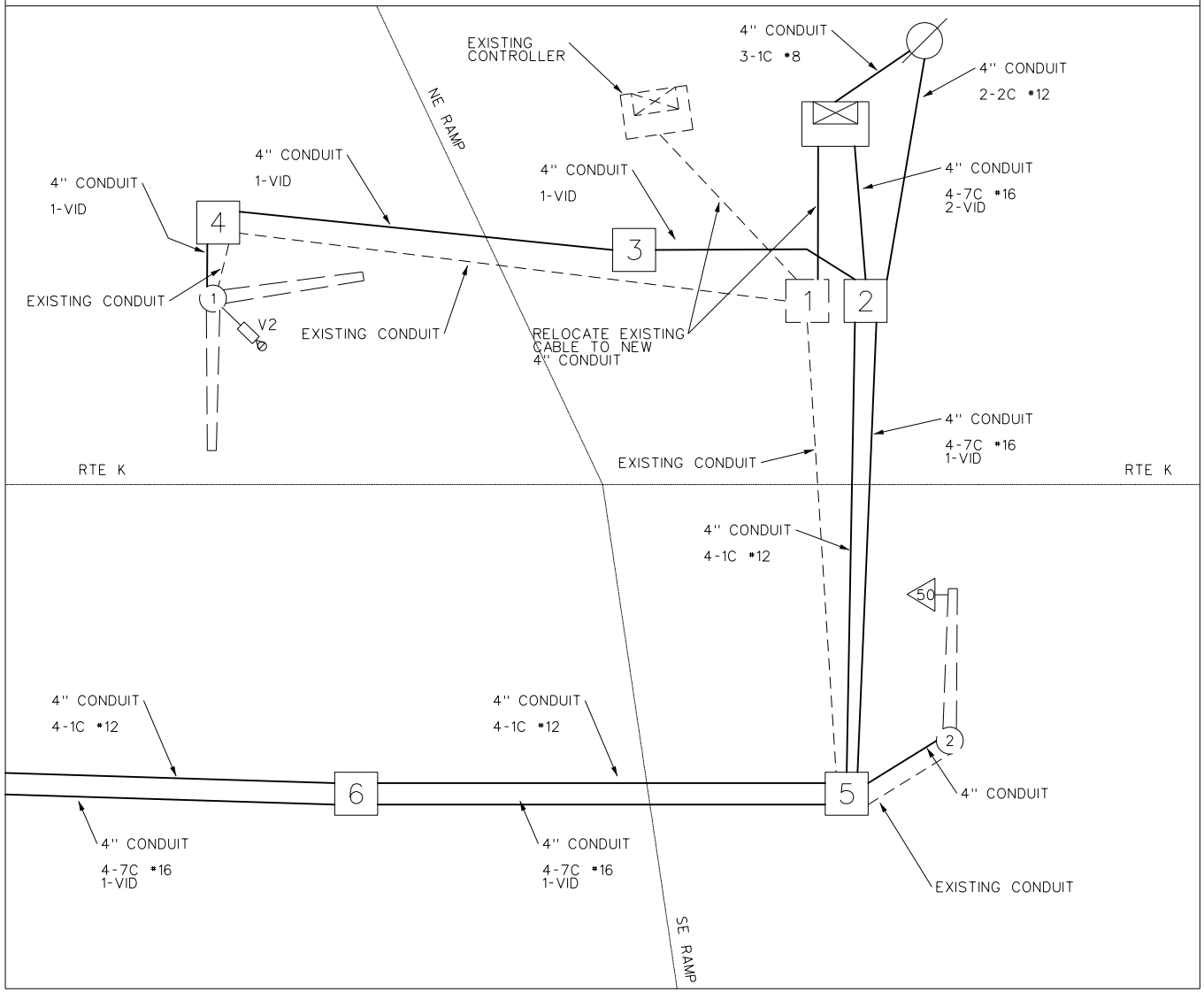
WIRING DIAGRAM



LEGEND

- 3" CONDUIT CONTAINING CABLE WITH SIZE
- CABLE
- X-Xc MULTI-CONDUCTOR CABLE #12 AWG (UNLESS OTHERWISE INDICATED)
- LIC #14 AWG DETECTOR LEAD-IN CABLE (2C TWISTED SHIELDED)
- X PULL BOX WITH NUMBER
- (X) POST WITH NUMBER
- (X) POST WITH MAST ARM
- (X) POST WITH MAST ARM AND LUMINAIRE
- (X) DETECTOR WITH NUMBER
- X SIGNAL HEAD WITH NUMBER
- SIGNAL CONTROLLER
- POWER SUPPLY
- LIGHTING CONTROLLER

RTE K AND EAST RAMPS

INTERSECTION

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 31
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

D-37D | FINAL PLANS

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EFFECTIVE 04-01-99

SIGNAL SHEET
SHEET 8 OF 16

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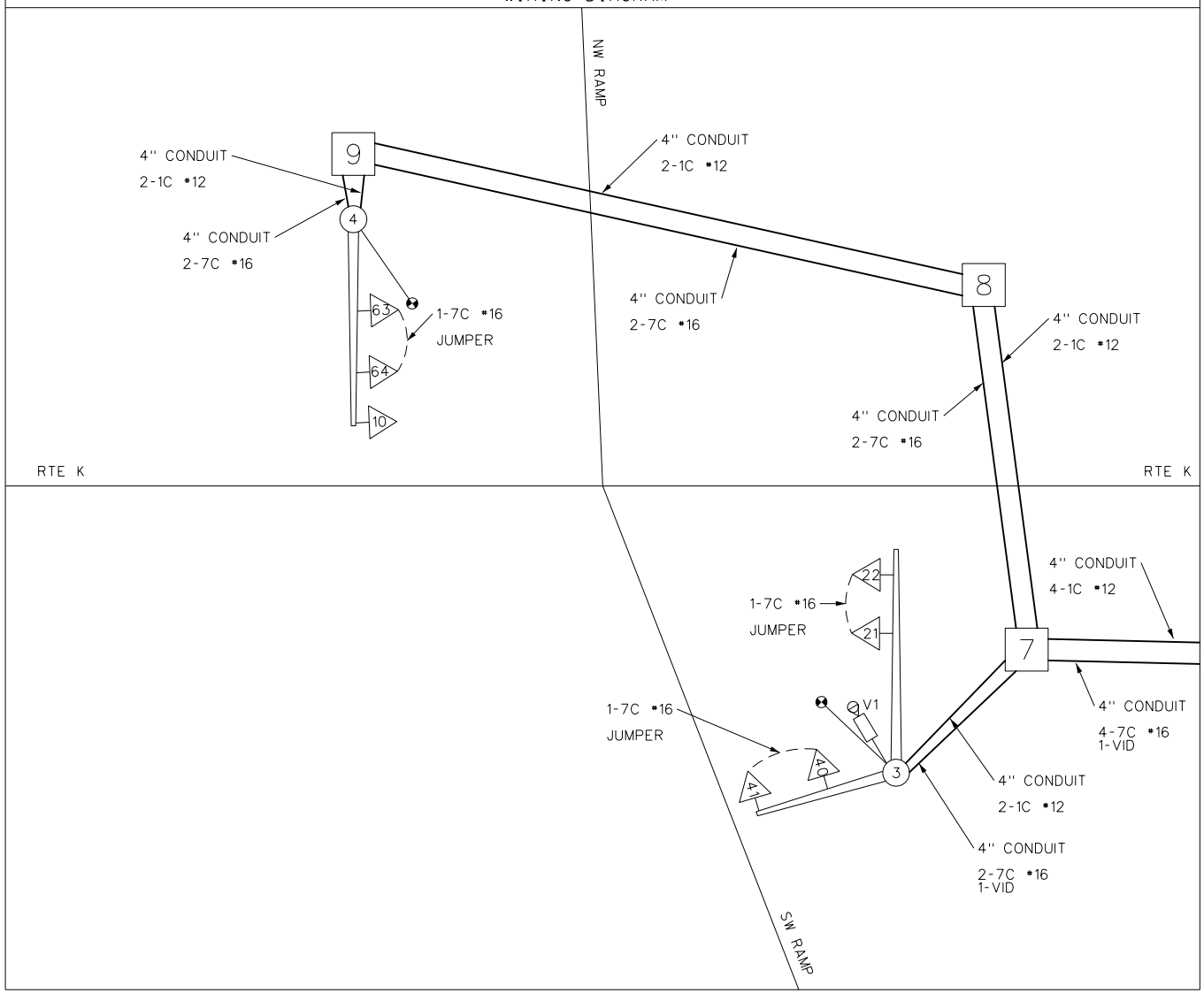
WIRING DIAGRAM



LEGEND

3"	CONDUIT CONTAINING CABLE WITH SIZE
	CABLE
X-Xc	MULTI-CONDUCTOR CABLE #12 AWG (UNLESS OTHERWISE INDICATED)
LIC	#14 AWG DETECTOR LEAD-IN CABLE (2C TWISTED SHIELDED)
X	PULL BOX WITH NUMBER
X	POST WITH NUMBER
X	POST WITH MAST ARM
X	POST WITH MAST ARM AND LUMINAIRE
X	DETECTOR WITH NUMBER
X	SIGNAL HEAD WITH NUMBER
	SIGNAL CONTROLLER
	POWER SUPPLY
	LIGHTING CONTROLLER

RTE K AND WEST RAMPS

INTERSECTION

D-37D

FINAL PLANS

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO

DISTRICT	SHEET NO.
SE	32

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

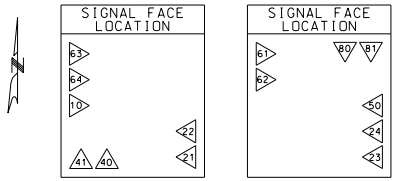
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

EFFECTIVE 09/08/2009



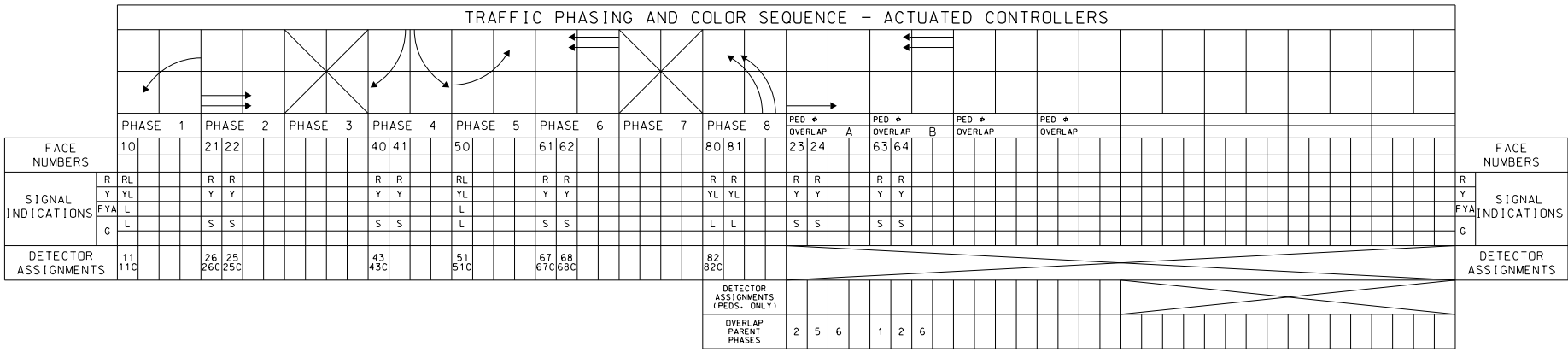
SIGNAL SHEET
SHEET 9 OF 16

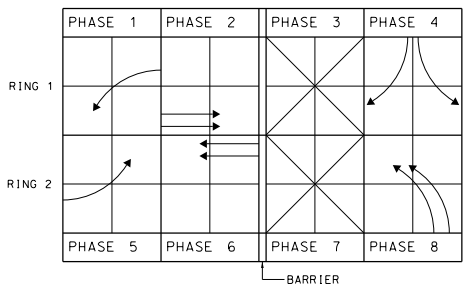
"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 33
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

TRAFFIC PHASING AND COLOR SEQUENCE – ACTUATED CONTROLLERS





RING STRUCTURE

IF CALLED. ALL NON-CONFLICTING PHASES SHALL COMBINE AND TIME CONCURRENTLY. TIME WAS DETERMINED BY THE ENGINEER AT SIGNAL TURN ON AND SET IN THE CONTROLLER BY THE CONTRACTOR.

LEGEND

- ACTUATED VEHICULAR MOVEMENT
- PARTIALLY RESTRICTED ACTUATED VEHICULAR MOVEMENT
- NON-ACTUATED VEHICULAR MOVEMENT
- PARTIALLY RESTRICTED NON-ACTUATED VEHICULAR MOVEMENT
- ACTUATED PEDESTRIAN MOVEMENT
- NON-ACTUATED PEDESTRIAN MOVEMENT
- VEHICLE STOPPED

FDW – FLASHING DON'T WALK
R/W – RIGHT OF WAY INTERVAL
DW – DON'T WALK
YR† – YELLOW RIGHT ARROW
RT. – GREEN RIGHT ARROW
W – WALK
LY –YL – YELLOW LEFT ARROW
L – GREEN LEFT ARROW
S – GREEN STRAIGHT AHEAD ARROW
G – CIRCULAR GREEN
Y – CIRCULAR YELLOW
R – CIRCULAR RED
RL – RED LEFT ARROW
Ø – TRAFFIC PHASE
AO – ALL OTHERS
FR – FLASHING RED
FY – FLASHING CIRCULARE YELLOW
FYA – FLASHING YELLOW ARROW
FYL – FLASHING YELLOW LEFT ARROW
FYR – FLASHING YELLOW RIGHT ARROW

FLASHING OPERATION	
ALL	FR
	FY

CONTROLLER TYPE	NEMA

TRAFFIC SIGNAL CONTROL OPERATION

INTERSECTION OF RTE K
WITH RAMPS

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

D-38A FINAL PLANS

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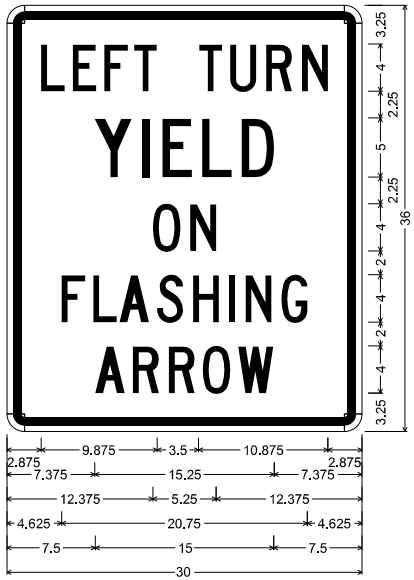

SHR2L1;
1.500" Radius, 0.750" Border, 0.500" Indent, Black on White;
[LEFT TURN] C; [YIELD] C; [ON] C;
[FLASHING] C; [ARROW] C;
Table of letter and object lefts.

L 2.875	E 5.500	F 8.250	T 10.750
T 16.250	U 18.875	R 21.875	N 24.875
Y 7.375	I 11.375	E 13.125	L 16.500	D 19.875
O 12.375	N 15.500		
F 4.625	L 7.250	A 9.500	S 12.750	H 15.750	I 18.750	N 20.125	G 23.250
A 7.500	R 10.625	R 13.625	O 16.500	W 19.500			

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 34
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

REV.

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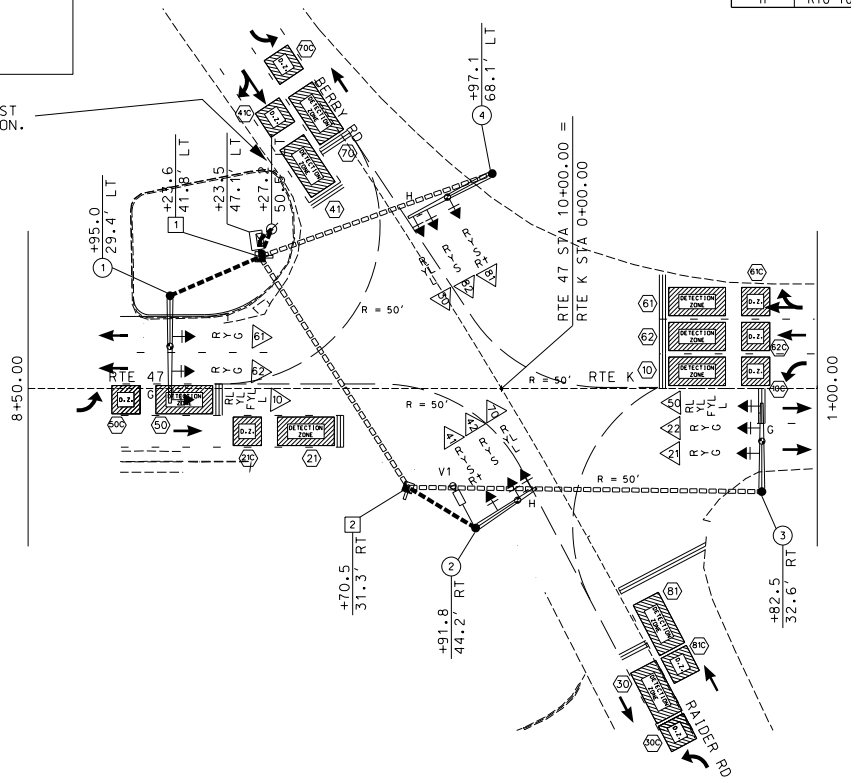
SIGNALS AT BERRY RD

TRAFFIC SIGNALS LEGEND	
CONTROLLER	VIDEO DETECTOR
SIGNAL HEAD (STANDARD)	EXISTING PULL BOX
	PREFORMED PULL BOX TYPE 2
TYPE C MAST ARM A BASE	POWER SUPPLY
	150 W LUMINAIRE
TYPE B MAST ARM A BASE	EXISTING CONDUIT
TRENCHED CONDUIT	PUSHED CONDUIT

NOTE: USED POWER SUPPLY SALVAGED FROM EAST SIDE OF INTERCHANGE IN THIS LOCATION.

SIGN LEGEND		
CODE	SIGN #	DESCRIPTION
G	SPECIAL	LEFT TURN YIELD ON FLASHING ARROW
H	R10-10	LEFT TURN SIGNAL



NOTE: WIRING FOR SIGNALS AND LIGHTING WAS INSTALLED IN SEPARATE CONDUITS.

SALVAGED AND REUSED EXISTING RADIO INTERCONNECTION. THIS WORK WAS INCIDENTAL TO THE COST OF CONTROLLERS.

SIGNAL SHEET
SHEET 11 OF 16

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 35
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

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EFFECTIVE: 11/01/2009

SIGNAL SHEET
SHEET 12 OF 16

| POST NUMBER | PULL BOX NUMBER | LOCATION APPROACH | STATION | OFFSET | BASE A 9 | A 9.5 | A 10 | A 10.5 | A 11 | A 12 | F 9 | F 9.5 | F 10 | F 10.5 | F 11 | F 12 | C CONCRETE** (CU. YDS.) | PULL BOX PREFORMED CLASS 1 | PREFORMED CLASS 2 | PREFORMED CLASS 3 | PREFORMED CLASS 5 | CONCRETE STANDARD | CONCRETE DOUBLE, TYPE A | CONCRETE DOUBLE, TYPE B | DRAIN TYPE* I A | DRAIN TYPE* I B | DRAIN TYPE* I C | DRAIN TYPE* II | POST TOP MOUNT POST 8 FT. | TOP MOUNT POST 15 FT. | TYPE C & CL ARM LENGTH A | SIGNAL SPACING A | SIGNAL SPACING A | SIGNAL SPACING A | SIGN SPACING B | SIGN SPACING C | SIGN SPACING D | SIGN SPACING D' | TYPE B & BL ARM LENGTH B | SIGN SPACING C | SIGN SPACING D | SIGN SPACING D' | LEFT ARM E ARM LENGTH E | LEFT ARM E SIGNAL SPACING K | LEFT ARM E SIGN SPACING E | LEFT ARM E SIGN SPACING K | RIGHT ARM K SIGNAL SPACING F | RIGHT ARM K SIGN SPACING G | RIGHT ARM K SIGN SPACING H | RIGHT ARM K SIGN SPACING H' | INCLUDED ANGLE SIGNAL SPACING F | INCLUDED ANGLE SIGN SPACING G | INCLUDED ANGLE SIGN SPACING H | INCLUDED ANGLE SIGN SPACING H' | LUMINAIRE BRACKET ARM** SIGNAL SPACING L | LUMINAIRE BRACKET ARM** SIGN SPACING M | LUMINAIRE BRACKET ARM** SIGN SPACING N | LUMINAIRE BRACKET ARM** SIGN SPACING N' | LUMINAIRE BRACKET ARM** INCLUDED ANGLE SIGNAL SPACING L | LUMINAIRE BRACKET ARM** INCLUDED ANGLE SIGN SPACING M | LUMINAIRE BRACKET ARM** INCLUDED ANGLE SIGN SPACING N | LUMINAIRE BRACKET ARM** INCLUDED ANGLE SIGN SPACING N' | 4 FT. | 6 FT. | 8 FT. | 10 FT. | 12 FT. | 15 FT. |
|---|---|---

EFFECTIVE: 07-01-2008

SIGNAL SHEET
SHEET 13 OF 16

CONDUIT

FROM	TO	CENTER TO CENTER DISTANCE	LOOP DET.	TRENCH				PUSHED			MEDIAN			ON STRUCTURE			REMARKS
			1"	2"	3"	4"		2"	3"	4"	2"	3"	4"	2"	3"		
∅	✉	5				11											
∅	1	9				10											LIGHTING CONDUIT
✉	1	5				16											1 CONDUITS
1	2	87								170							2 CONDUITS
																	2 CONDUITS
1	①	31				68											2 CONDUITS
2	②	25				56											2 CONDUITS
2	③	112								230							2 CONDUITS
1	④	78								162							2 CONDUITS
SUBTOTALS						161				562							
TOTALS						160				560							

CABLE

FROM	TO	CENTER TO CENTER DISTANCE	POWER		CONTROL				CLOSED LOOP INTERCONNECT	LUMINAIRE		DETECTOR		FIBER		REMARKS
			1C #8		2c #16	5c #16	7c #16	3c #16	3 PAIR #16	CONTROL 2c #12	POLE & BRACKET 1c #10	1c #14 IN DUCT	2c #14 LEAD-IN CABLE	SINGLE-MODE	MULTI-MODE	
∅	✉	5	66													3 POWER CABLES
∅	1	41								57.8	90					LIGHTING
∅	2	121								148.1	90					LIGHTING
∅	3	208								239.4	90					LIGHTING
∅	4	88								107.1	90					LIGHTING
✉	①	36					117.5									1 SIGNAL CABLE
✉	1	36					109.1									1 SIGNAL CABLE
✉	②	117					198.3									1 SIGNAL CABLE
✉	2	117					188.7									1 SIGNAL CABLE
✉	③	204					293.1									1 SIGNAL CABLE
✉	3	204					285.7									1 SIGNAL CABLE
✉	④	83					163.5									1 SIGNAL CABLE
✉	4	83					131.8									1 SIGNAL CABLE
SUBTOTALS			66				1487.7			552.3	360.0					
TOTALS			70				1490			550	360					

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DATE PREPARED 8/5/2013

ROUTE 47 | STATE MO

DISTRICT SE | SHEET NO. 37

COUNTY ST FRANCOIS

JOB NO. J0P2209

CONTRACT ID. 120217-H05

PROJECT NO. FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

INTERSECTION RTE K AND BERRY RD

D-37B

FINAL PLANS

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EFFECTIVE 0401-2002

POWER SUPPLY

RELOCATE EXISTING TYPE II POWER SUPPLY AND LIGHTING CONTROLLER FROM RTE K STA 8+19 AND INSTALL AT RTE 47 STA 9+27.20 50.5 LT PER DRAWING 902.15.

CONCRETE FOOTING SHALL BE INCIDENTAL TO THE COST OF MOVING EXISTING POWER SUPPLY.

LUMP SUM 1

SIGNAL SHEET
SHEET 14 OF 16

CONTROLLER ASSEMBLY AND AUXILIARY EQUIPMENT

LOCATION			BASE CONCRETE	SYSTEM MASTER (CLOSED LOOP)		ACTUATED		ON-OFF* SWITCH TYPE		COORDINATION INTERFACE *						TIME * CLOCK	NEMA CABINET TYPE *			170 CABINET TYPE *		170 SOFTWARE *	
										12C/7C HARDWIRE (1)		TIME BASE	CLOSED LOOP		FIBER								
APPROACH	STATION	OFFSET	CY	NEMA	170	NEMA	170	I	II	MASTER	LOCAL		NEMA	170			E	EV	DOUBLE	332	336S	BITRAN	WAPITI
HWY 47	9+23	47' LT	2.0			1												1					

DETECTOR SCHEDULE

DETECTOR NUMBER	APPROACH	TYPE				
		PUSH BUTTON	INDUCTION LOOP (2)			VIDEO
			STANDARD	DELAY/ EXTEND *	CALL UNIT *	
10, 10C	MO47 WBLT					1
61, 61C, 62, 62C	MO47 WBTH					1
50, 50C	MO47 EBLT					2
21, 21C	MO47 EBTH/RT					2
30, 30C	RAIDER RD NBLT					3
81, 81C	RAIDER RD NBTH/RT					3
70, 70C	BERRY RD SBLT					4
41, 41C	BERRY RD SBTH/RT					4
TOTAL						

* ITEMS FOR WHICH SEPARATE PAYMENT WILL NOT BE MADE.

(1) MoDOT "D" PLUG SHALL BE WIRED INTO ALL NEMA CONTROLLERS WITH 7C HARDWIRE INTERCONNECT.

(2) PAYMENT IS MADE FOR THE NUMBER OF 2-CHANNEL DETECTOR CARDS AS SHOWN BELOW THE ASSIGNMENT CHART.

VIDEO DETECTION

DETECTOR NUMBER	VIDEO CAMERA (EA)	CABLE (LF)	VIDEO DETECTION SYSTEM (EA)
V1	1	–	1
		TOTAL	1

NEMA LOAD SWITCH ASSIGNMENTS

1	2	3	4	5	6	7	8	9	10	11	12
Ø1 WBLT	Ø2 EBTH	Ø3 NBLT	Ø4 SBTH	Ø5 EBLT	Ø6 WBTH	Ø8 SBLT	Ø8 NBTH				

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DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 38
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

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RTE K AND BERRY RD
INTERSECTION

D-37C | FINAL PLANS

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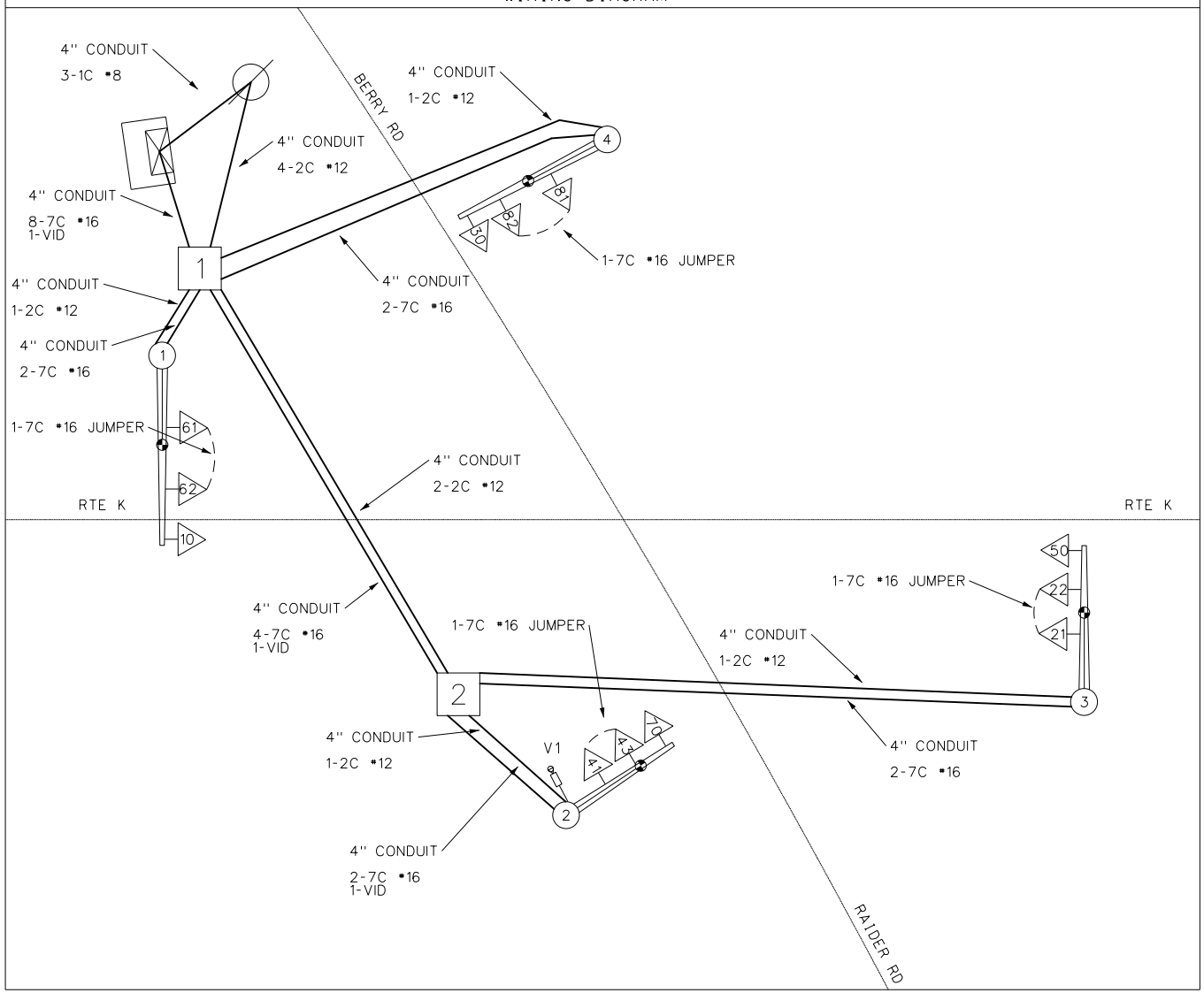
EFFECTIVE 04-01-99

SIGNAL SHEET
SHEET 15 OF 16

WIRING DIAGRAM



LEGEND

- 3" CONDUIT CONTAINING CABLE WITH SIZE
- CABLE
- X-Xc MULTI-CONDUCTOR CABLE #12 AWG (UNLESS OTHERWISE INDICATED)
- LIC #14 AWG DETECTOR LEAD-IN CABLE (2C TWISTED SHIELDED)
- PULL BOX WITH NUMBER
- POST WITH NUMBER
- POST WITH MAST ARM
- POST WITH MAST ARM AND LUMINAIRE
- DETECTOR WITH NUMBER
- SIGNAL HEAD WITH NUMBER
- SIGNAL CONTROLLER
- POWER SUPPLY
- LIGHTING CONTROLLER

RTE K AND BERRY RD

INTERSECTION

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DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 39
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

D-37D

FINAL PLANS

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8/5/2013

EFFECTIVE 09/08/2009

SIGNAL SHEET
SHEET 16 OF 16

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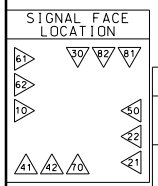
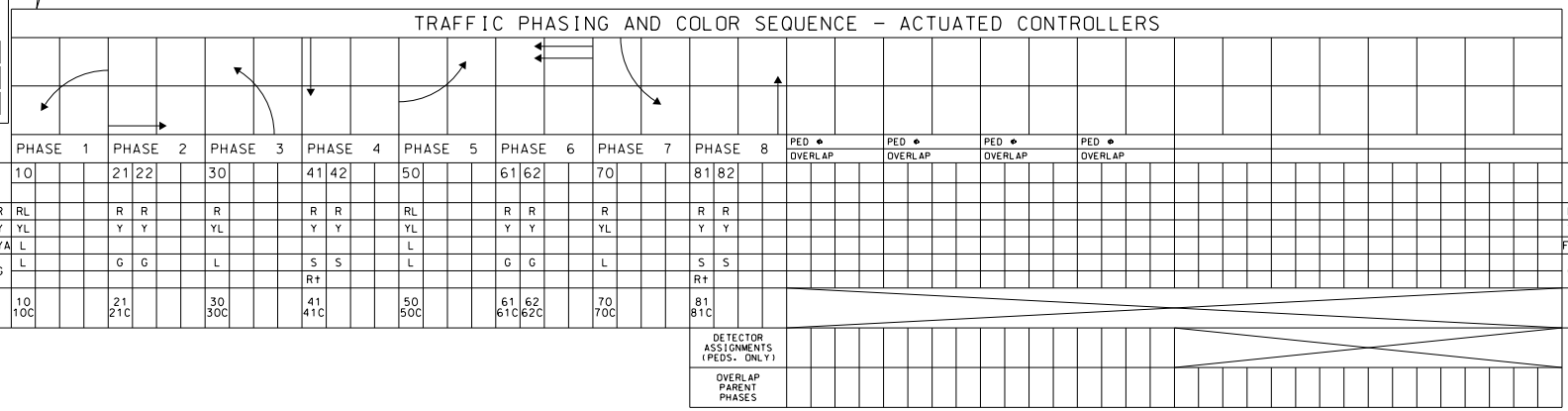
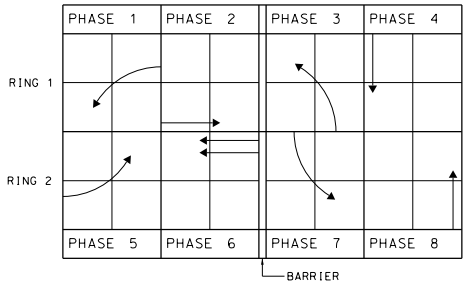
SIGNAL FACE LOCATION



TRAFFIC PHASING AND COLOR SEQUENCE – ACTUATED CONTROLLERS





RING STRUCTURE

IF CALLED. ALL NON-CONFLICTING PHASES SHALL COMBINE AND TIME CONCURRENTLY. TIME WAS DETERMINED BY THE ENGINEER AT SIGNAL TURN ON AND SET IN THE CONTROLLER BY THE CONTRACTOR.

LEGEND

- ——► — ACTUATED VEHICULAR MOVEMENT
- - - -► — PARTIALLY RESTRICTED ACTUATED VEHICULAR MOVEMENT
- ——▷ — NON-ACTUATED VEHICULAR MOVEMENT
- - - -⇢ — PARTIALLY RESTRICTED NON-ACTUATED VEHICULAR MOVEMENT
- ——► — ACTUATED PEDESTRIAN MOVEMENT
- ——▷ — NON-ACTUATED PEDESTRIAN MOVEMENT
- —⊣ — VEHICLE STOPPED

FDW	FLASHING DON'T WALK
R/W	RIGHT OF WAY INTERVAL
DW	DON'T WALK
YR†	YELLOW RIGHT ARROW
RT.	GREEN RIGHT ARROW
W	WALK
LY –YL	YELLOW LEFT ARROW
L	GREEN LEFT ARROW
S	GREEN STRAIGHT AHEAD ARROW
G	CIRCULAR GREEN
Y	CIRCULAR YELLOW
R	CIRCULAR RED
Ø	TRAFFIC PHASE
AO	ALL OTHERS
FR	FLASHING RED
FY	FLASHING CIRCULARE YELLOW
FYA	FLASHING YELLOW ARROW
FYL	FLASHING YELLOW LEFT ARROW
FYR	FLASHING YELLOW RIGHT ARROW

RL — RED LEFT ARROW

FLASHING OPERATION	
ALL	FR
	FY

CONTROLLER TYPE	NEMA

TRAFFIC SIGNAL CONTROL OPERATION	
INTERSECTION OF	RTE K
WITH	BERRY

DATE PREPARED 8/5/2013
ROUTE 47 | STATE MO
DISTRICT SE | SHEET NO. 40
COUNTY ST FRANCOIS
JOB NO. J0P2209
CONTRACT ID. 120217-H05
PROJECT NO. FAF-67-3(116)
BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

D-38A | FINAL PLANS

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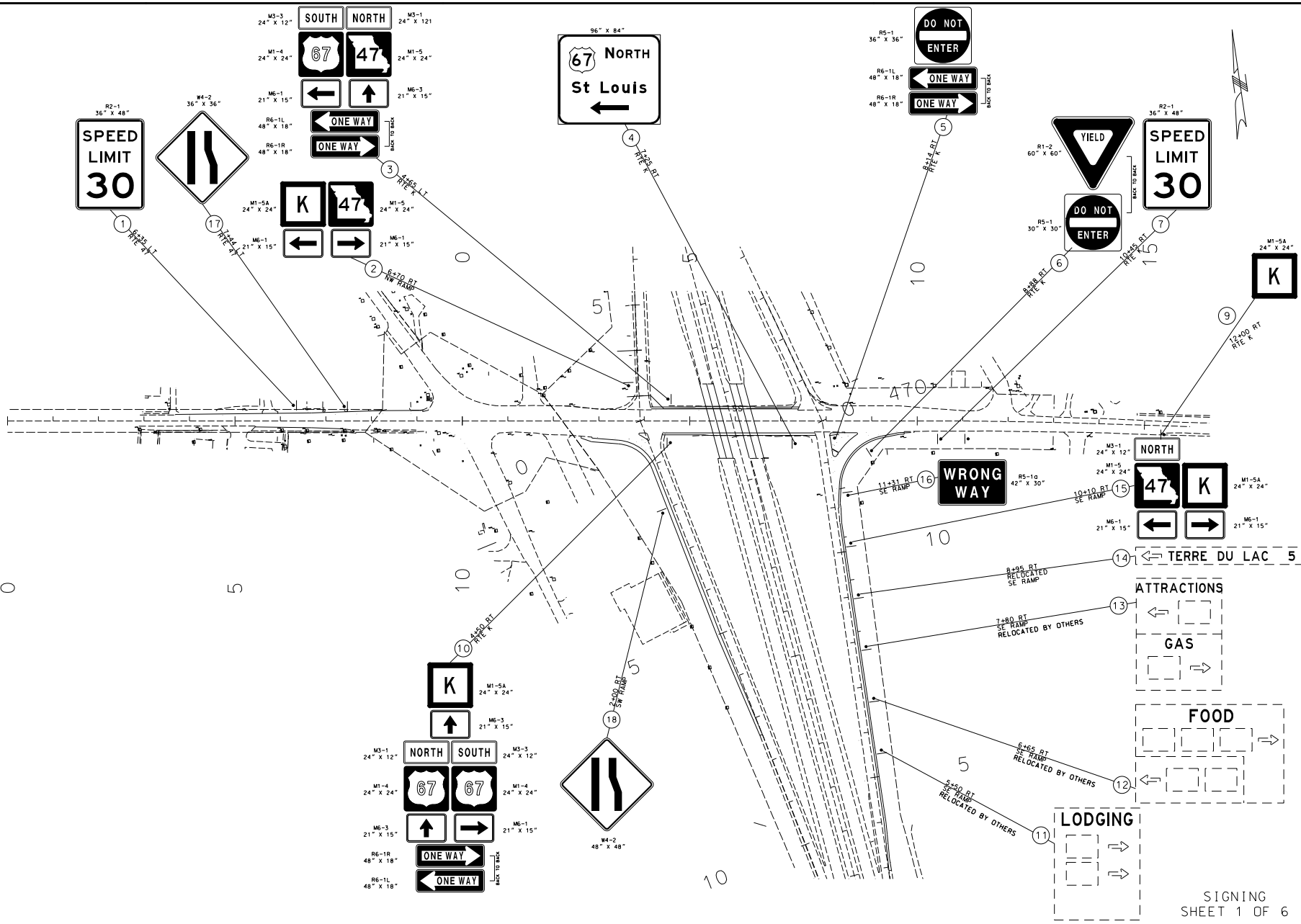

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DATE

DATE PREPARED 8/5/2013

ROUTE 47 | STATE MO

DISTRICT SE | SHEET NO. 41

COUNTY ST FRANCOIS

JOB NO. J0P2209

CONTRACT ID. 120217-H05

PROJECT NO. FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

REV.

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EFFECTIVE 01-01-2003

SIGNS					PIPE POST					STRUCTURAL STEEL POSTS						BACKING BARS 2" X ¾" BARS @ 2.55 LBS PER LIN FT				TOTAL ITEM NO. 903-12.10	U-CHANNEL POST ITEM NO. 903-12.50	WOOD POSTS			PERF. STEEL SQ.		BREAKAWAY ASSEMBLY ITEM NO. 903-12.40	CONC FTG'S EMBD ITEM NO. 903-10.10	CONC FTG'S BOLT DOWN ITEM NO. 903-10.20	HORZ CLEAR IF NOT STD	DELINEATORS, MILEPOSTS, CONDUIT, CONDUCTOR CABLE, TRENCHING AND BACKFILLING. CONTROL STATION, PULL BOXES AND OTHER REQUIRED ITEMS.
SIGN NO.	STATION	SIGN DTL. SHT. NO.	LOCATION	SIGN SIZE	PIPE SIZE	POST NO. 1	POST NO. 2	LBS PER FT	TOTAL ITEM NO. 903-12.20	POST DES NO.	POST NO. 1	POST NO. 2	POST NO. 3	LBS PER FT	TOTAL	NO. EACH	LGTH IN.	TOTAL LIN FT	TOTAL LBS	LBS	LIN FT	4"X4" ITEM NO. 903-12.60 LIN FT	4"X6" ITEM NO. 903-12.61 LIN FT	6"X6" ITEM NO. 903-12.62 LIN FT	POSTS ITEM NO. 903-12.70 LIN FT	ANCHOR SLEEVE ITEM NO. 903-12.71 LIN FT	EACH	CU YDS	CU YDS		
					IN.	LIN FT	LIN FT		LBS		LIN FT	LIN FT	LIN FT		LBS				LBS												
1	6+35	1	RTE 47 LT	36"X48"	3	15.25		7.58	116							2	26	4.33	11	11							1	0.13			
17	7+44	1	RTE 47 LT	36"X36"	3	15.50		7.58	118																		1	0.13			
2	6+70	1	NW RAMP RT	ASSEM	4	16.75		10.79	181							4	50	16.67	43	43							1	0.36			
3	4+65	1	RTE K LT	ASSEM						1	17.00			9.0	153	6	50	25.00	64	217							1	0.17			
																4	32	10.67	27	27											
4	7+25	1	RTE K RT	96"X84"						1	18.50	20.25		9.0	349					349						2	0.34			
5	8+14	1	RTE K RT	ASSEM	3	16.00		7.58	121							2	26	4.33	11	11							1	0.13			
																4	32	10.67	27	27											
6	8+88	1	RTE K RT	ASSEM	4	18.75		10.79	202							2	17	2.83	7	7							1	0.36			
7	10+45	1	RTE K RT	36"X48"	3	16.25		7.58	123							2	26	4.33	11	11							1	0.13			
9	12+00	1	RTE K RT	24"X24"	2.5	13.75		5.79	80																		1	0.13			
10	4+50	1	RTE K RT	ASSEM						1	18.50			9.0	167	6	50	25.00	64	231							1	0.17			
																4	32	10.67	27	27											
18	2+00	1	SW RAMP RT	48"X48"	4	20.50		10.79	221							2	32	5.33	14	14							1	0.36			
14	8+95	1	SE RAMP RT	144"X24"						1	15.25	19.00		9.0	308					308						2	0.34			
15	10+10	1	SE RAMP RT	ASSEM	4	16.25		10.79	175							4	50	16.67	43	43							1	0.36			
																1	36	3.00	8	8											
16	11+31	1	SE RAMP RT	42"X30"	2.5	14.50		5.79	84							2	32	5.33	14	14							1	0.13			
				SUBTOTAL					1421						977				371	1348							16	3.2			
				PAY TOTAL					1420											1380							16	3.2			
RELOCATED BY OTHERS																															
11	5+50	1	SE RAMP RT	60"X90"						2	20.50	21.50		15.0	630					630						2	1.08			
12	6+65	1	SE RAMP RT	108"X72"						2	20.00	22.75		15.0	641					641						2	1.08			
13	7+80	1	SE RAMP RT	72"X84"						1	19.75	21.50		9.0	371					371						2	0.34			

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DATE PREPARED 8/5/2013

ROUTE 47 | STATE MO

DISTRICT SE | SHEET NO. 42

COUNTY ST FRANCOIS

JOB NO. J0P2209

CONTRACT ID. 120217-H05

PROJECT NO. FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGNING
SHEET 2 OF 6

FINAL PLANS

EFFECTIVE 07-01-2010

STANDARD SIGN ASSEMBLIES

SIGN NUMBER	STATION	LOCATION	TYPE: SIGN DESCRIPTION, SIZES & NUMBER OF EACH														
			M1-4	M1-5	M1-5A	M3-1	M3-3	M6-1	M6-3	R1-2	R2-1	R5-1	R5-1a	R6-1L	R6-1R	W4-2
			67	47	K	NORTH	SOUTH	←	↑	YIELD	SPEED LIMIT 30	25 MPH	WRONG WAY	ONE WAY	ONE WAY	
1	6+35	RTE 47 LT									1					
17	7+44	RTE 47 LT														1
2	6+70	NW RAMP RT		1	1			2								
3	4+65	RTE K LT	1	1		1	1	1	1					1	1	
5	8+14	RTE K RT										1		1	1	
6	8+88	RTE K RT								1		1				
7	10+45	RTE K RT									1					
9	12+00	RTE K RT			1											
10	4+50	RTE K RT	2		1	1	1	1	2					1	1	
18	2+00	SW RAMP RT														1
15	10+10	SE RAMP RT		1	1	1		2								
16	11+31	SE RAMP RT											1			
		TOTAL	3	3	4	3	2	6	3	1	2	2	1	3	3	2

SIGN SUMMARY

STANDARD SIGN OR SPECIAL SIGN NUMBER	SIGN DETAIL SHEET NO.	NO. EACH	SIZE, TYPE & SQUARE FEET: SIZE	SHR2L-1 ITEM NO. 903-50.04	STR2L-1 ITEM NO. 903-50.64	SHR2L-3 ITEM NO. 903-50.65	STR2L-3 ITEM NO. 903-50.11	SHR4L-1 ITEM NO. 903-50.69	STR4L-1 ITEM NO. 903-50.71	SHR4L-3 ITEM NO. 903-50.70	STR4L-3 ITEM NO. 903-50.72	48" STOP EACH	36" STOP EACH
4 - NORTH 67 ST LOUIS	D-31	1	96"X84"				56.0						
US 67	STD	3	24"X24"	12.0									
MO 47	STD	3	24"X24"	12.0									
RTE K	STD	4	24"X24"	16.0									
NORTH	STD	3	24"X12"	6.0									
SOUTH	STD	2	24"X12"	4.0									
DIRECTIONAL ARROW LT/RT	STD	6	21"X15"	13.2									
DIRECTIONAL ARROW STRAIGHT	STD	3	21"X15"	6.6									
YIELD	STD	1	60"X60"	12.5									
SPEED LIMIT 30	STD	2	36"X48"	24.0									
DO NOT ENTER	STD	1	30"X30"	6.3									
DO NOT ENTER	STD	1	36"X36"	9.0									
WRONG WAY	STD	1	42"x30"	9.0									
ONE WAY ARROW LEFT	STD	3	48"X18"	18.0									
ONE WAY ARROW RIGHT	STD	3	48"X18"	18.0									
LANE REDUCTION	STD	1	36"X36"	9.0									
LANE REDUCTION	STD	1	48"X48"	16.0									
TOTAL				192			56						

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED 8/5/2013

ROUTE 47 | STATE MO

DISTRICT SE | SHEET NO. 43

COUNTY ST FRANCOIS

JOB NO. JOP2209

CONTRACT ID. 120217-H05

PROJECT NO. FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGNING
SHEET 3 OF 6

D-30

FINAL PLANS

SIGN NO.	4
STATION	7+25
ROADWAY	RTE K RT



E4-3ST STR2L3; 9.000" Radius, 2.000" Border, White on Green;
[NORTH] E Mod; [St Louis] E Mod;
Standard Arrow Custom 36.000" X 12.125" 180°;
Table of letter and object lefts.

■	N	O	R	T	H
10.500	44.500	54.750	63.500	71.500	79.125

S	t	L	o	u	l	s
13.125	23.875	39.875	50.000	60.250	71.125	76.125

↑
30.000

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	44
COUNTY	ST FRANCOIS
JOB NO.	J0P2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGNING
SHEET 4 OF 6

REV.

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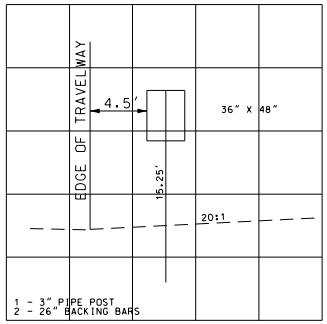
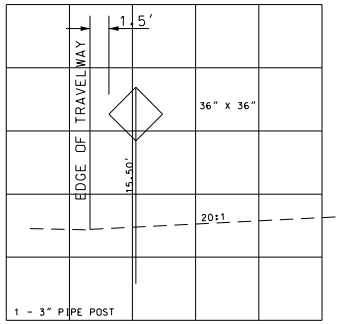
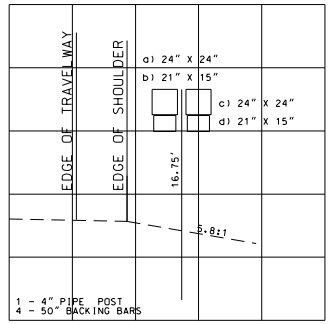
(1) 6+35 LT
RTE 47



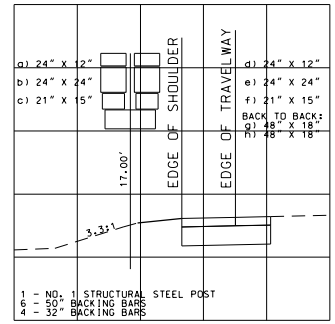
(17) 7+44 LT
RTE 47



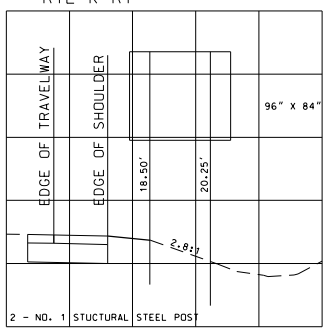
(2) 6+70 RT
NW RAMP



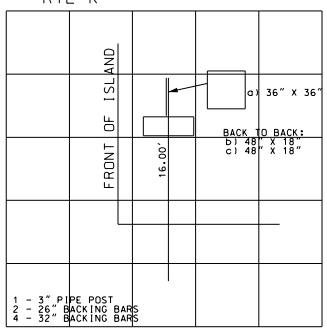
(3) 4+65
RTE K LT



(4) 7+25
RTE K RT



(5) 8+14 RT
RTE K



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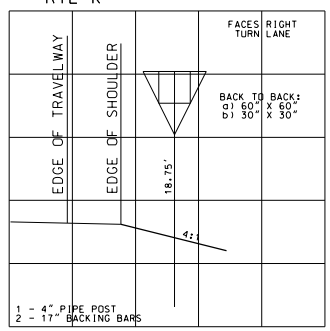
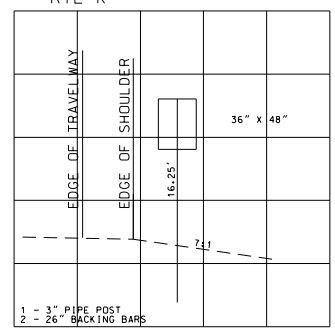
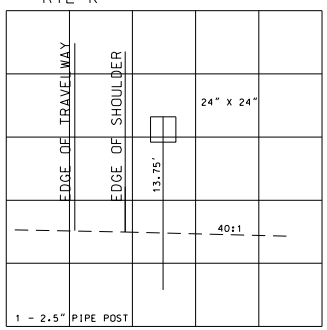
RTE K



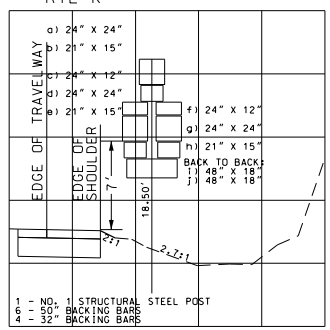
(7) 10+45 RT
RTE K



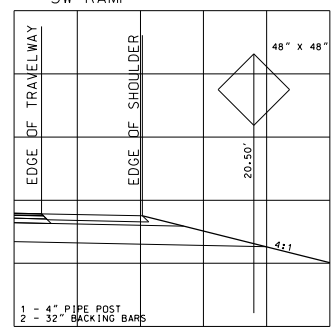
(9) 12+00 RT
RTE K



(10) 4+50 RT
RTE K



(18) 2+00 RT
SW RAMP



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO

DISTRICT	SHEET NO.
SE	45

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

SIGNING
SHEET 5 OF 6

FINAL PLANS

REV.

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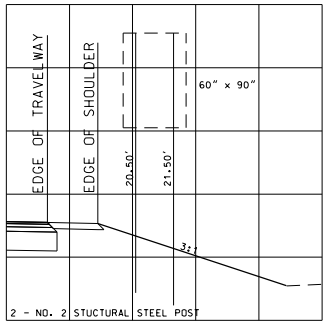
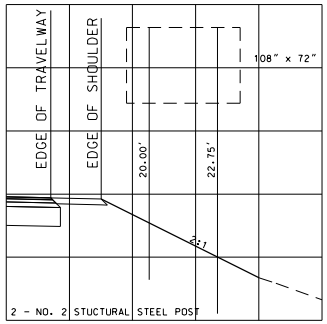
RELOCATED BY OTHERS

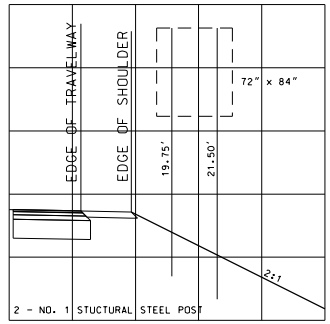
(11) 5+50 RT
SE RAMP



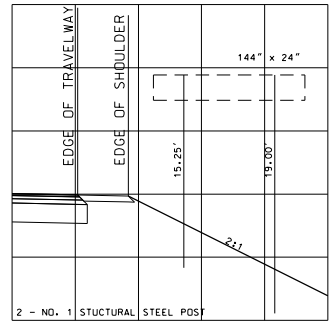
(12) 6+65 RT
SE RAMP



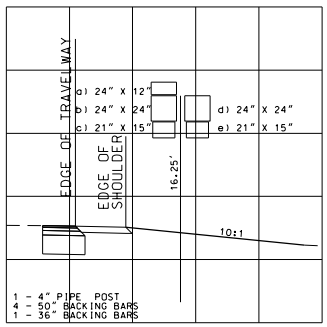
(13) 7+80 RT
SE RAMP



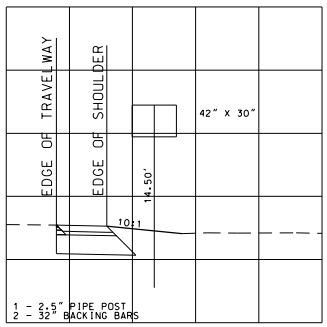
(14) 8+95 RT
SE RAMP



(15) 10+10 RT
SE RAMP



(16) 11+31 RT
SE RAMP



SIGNING
SHEET 6 OF 6

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	46

COUNTY
ST FRANCOIS

JOB NO.
JOP2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

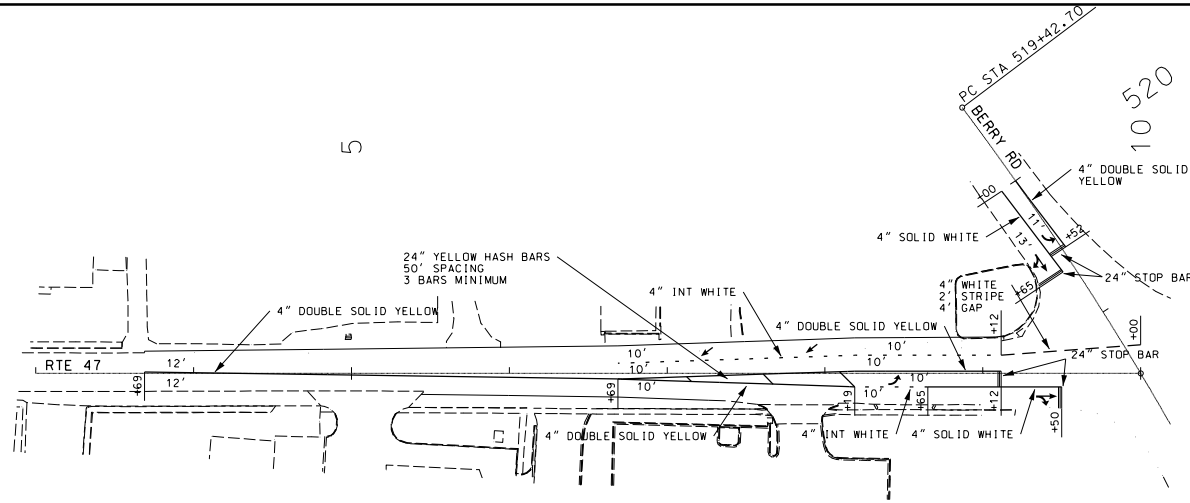
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



5

10 520

SCALE

0 40 80 120

PAVEMENT MARKING
SHEET 1 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	
8/5/2013	
ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	47

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

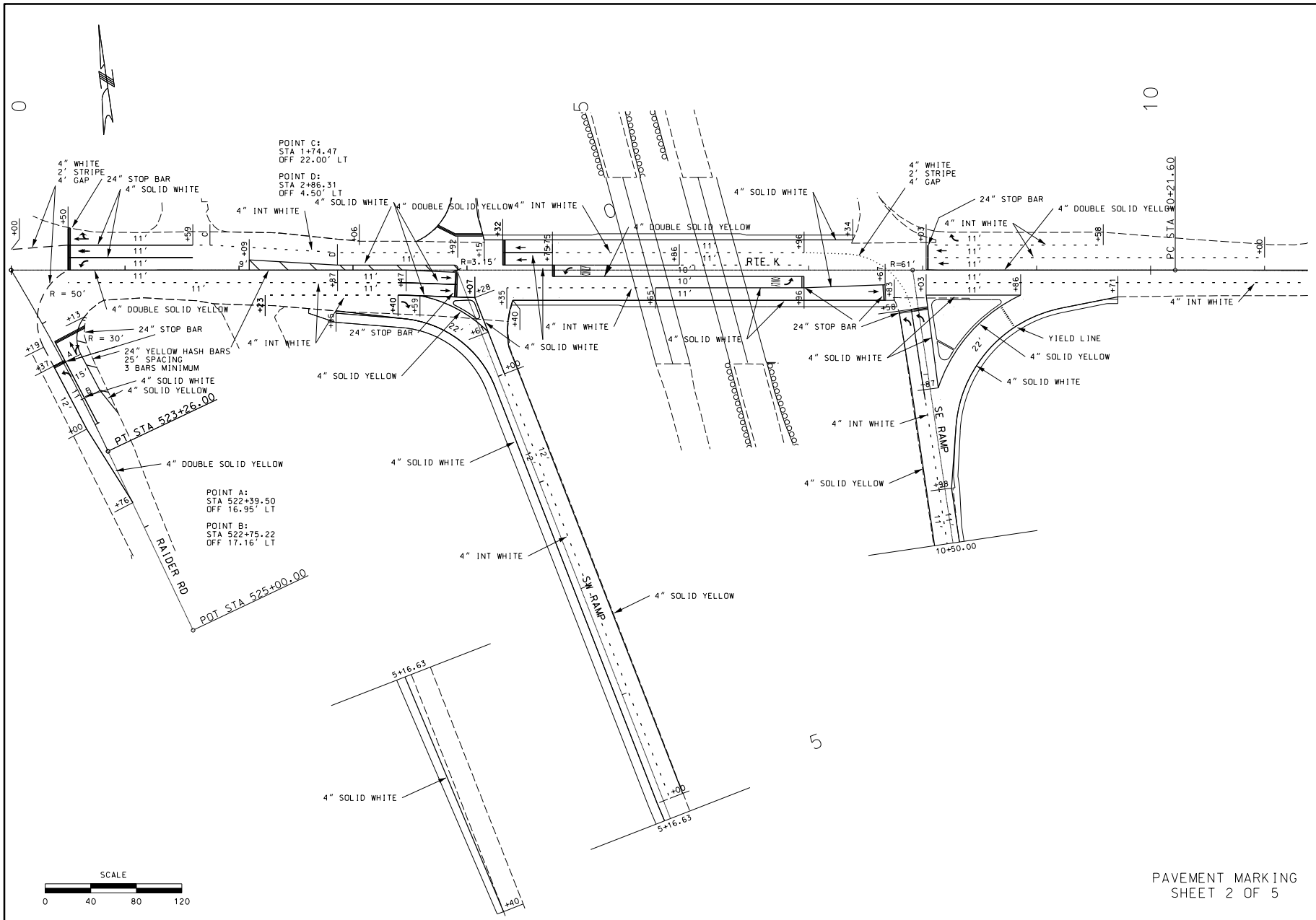
BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



PAVEMENT MARKING
SHEET 2 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	48
COUNTY	ST FRANCOIS
JOB NO.	J0P2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

DESCRIPTION | DATE | REV.

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

FINAL PLANS

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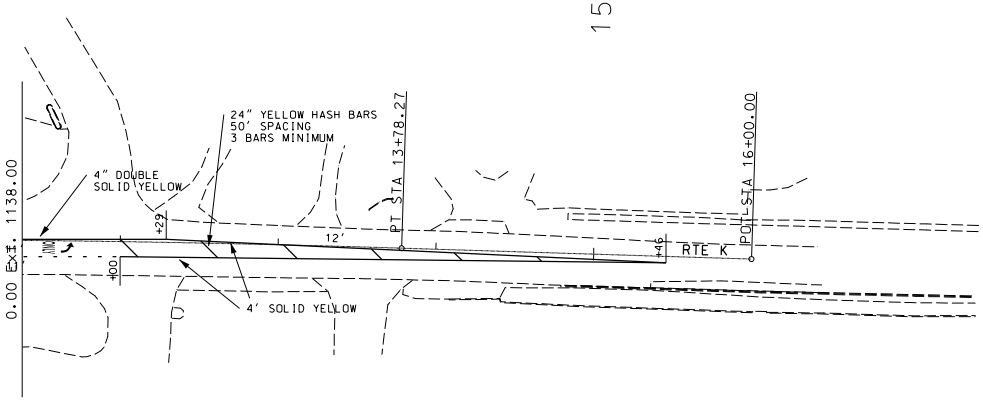


SCALE

0 40 80 120

PAVEMENT MARKING
SHEET 3 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO

DISTRICT	SHEET NO.
SE	49

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

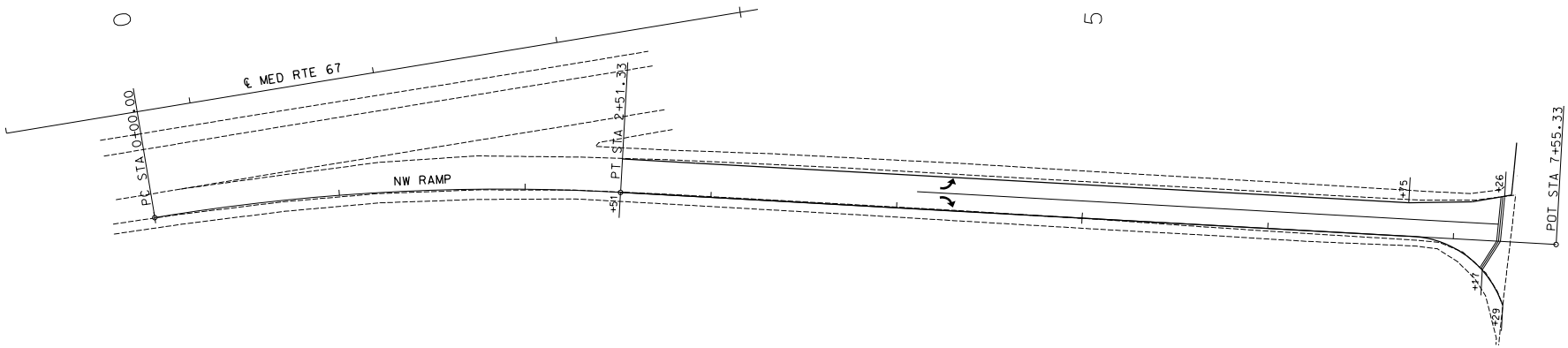
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



SCALE

0 30 60 90

PAVEMENT MARKING
SHEET 4 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED	8/5/2013
ROUTE	47
STATE	MO
DISTRICT	SE
SHEET NO.	50
COUNTY	ST FRANCOIS
JOB NO.	JOP2209
CONTRACT ID.	120217-H05
PROJECT NO.	FAF-67-3(116)
BRIDGE NO.	

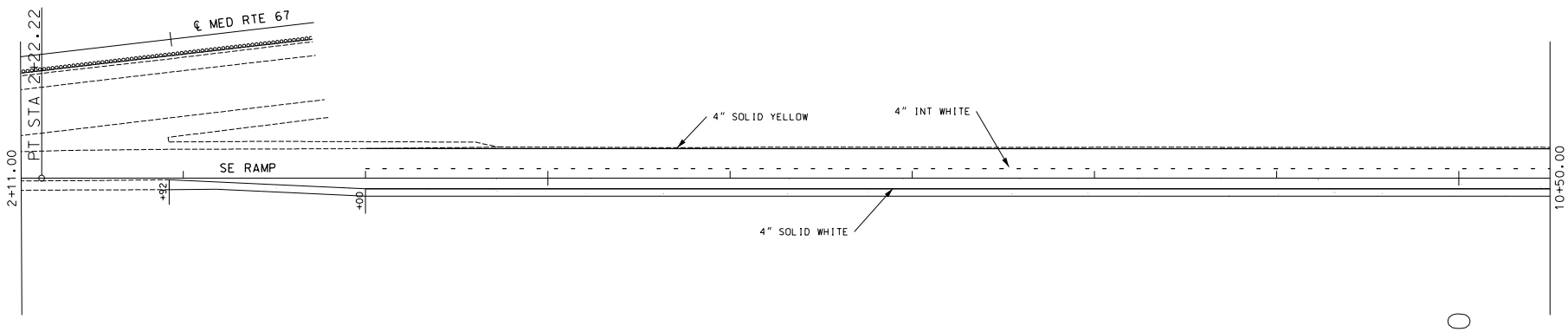
DESCRIPTION | DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



5

10

SCALE

0 30 60 90

PAVEMENT MARKING
SHEET 5 OF 5

"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO

DISTRICT	SHEET NO.
SE	51

COUNTY
ST FRANCOIS

JOB NO.
JOP2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

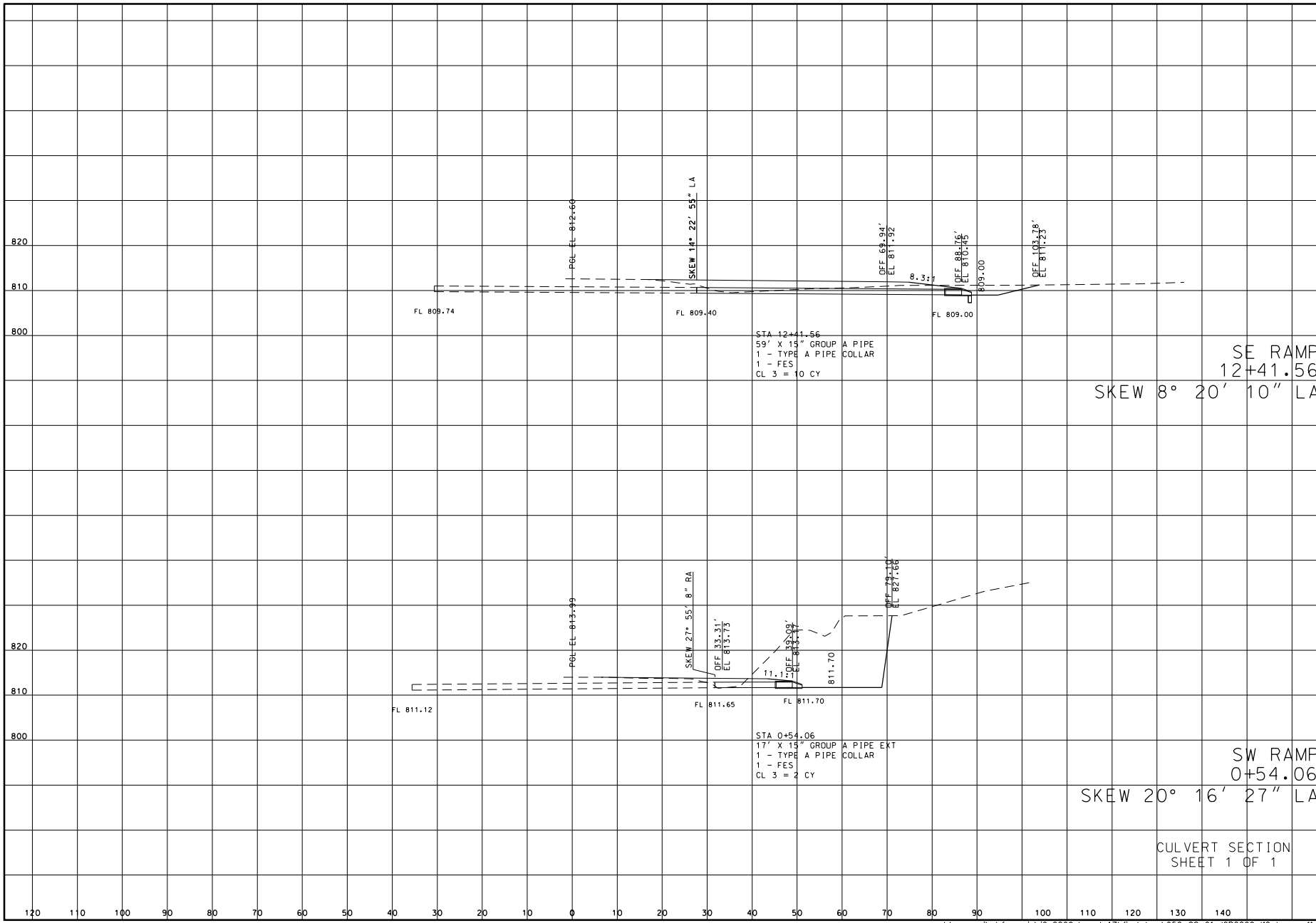
DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.



"THIS MEDIA SHOULD NOT BE CONSIDERED A CERTIFIED DOCUMENT."

DATE PREPARED
8/5/2013

ROUTE	STATE
47	MO
DISTRICT	SHEET NO.
SE	52

COUNTY
ST FRANCOIS

JOB NO.
J0P2209

CONTRACT ID.
120217-H05

PROJECT NO.
FAF-67-3(116)

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

FINAL PLANS

REV.

IF A SEAL IS PRESENT ON THIS SHEET IT HAS BEEN ELECTRONICALLY SEALED AND DATED.

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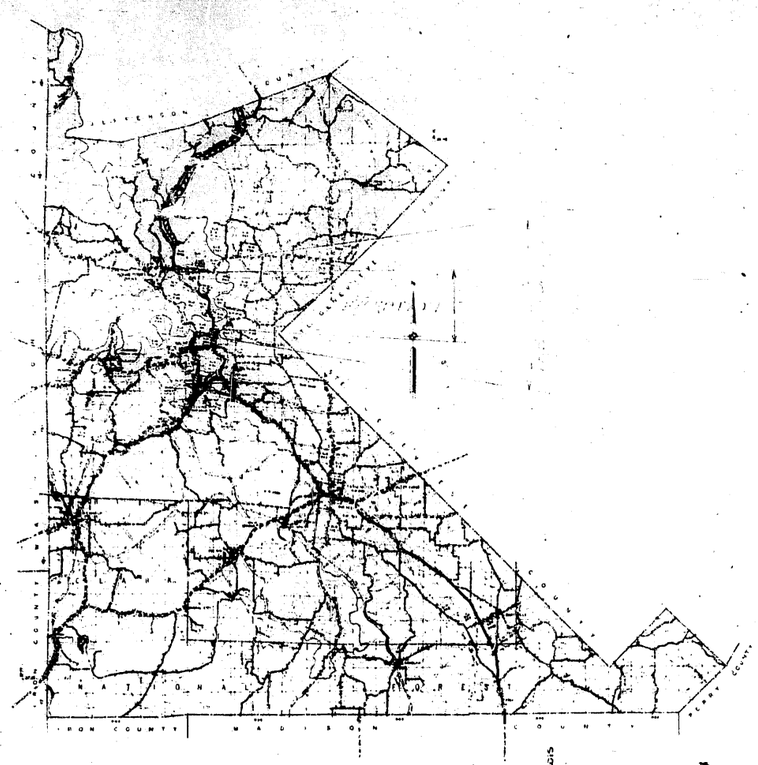
COUNTY
ST FRANCOIS
STATE ROUTE NO.
67
PROJECT NO.
F-254(20)

LOCATION MAP



MISSOURI
STATE HIGHWAY COMMISSION
PLAN AND PROFILE
OF PROPOSED
STATE ROAD

FEDERAL AID PROJECT
ST. FRANCOIS COUNTY

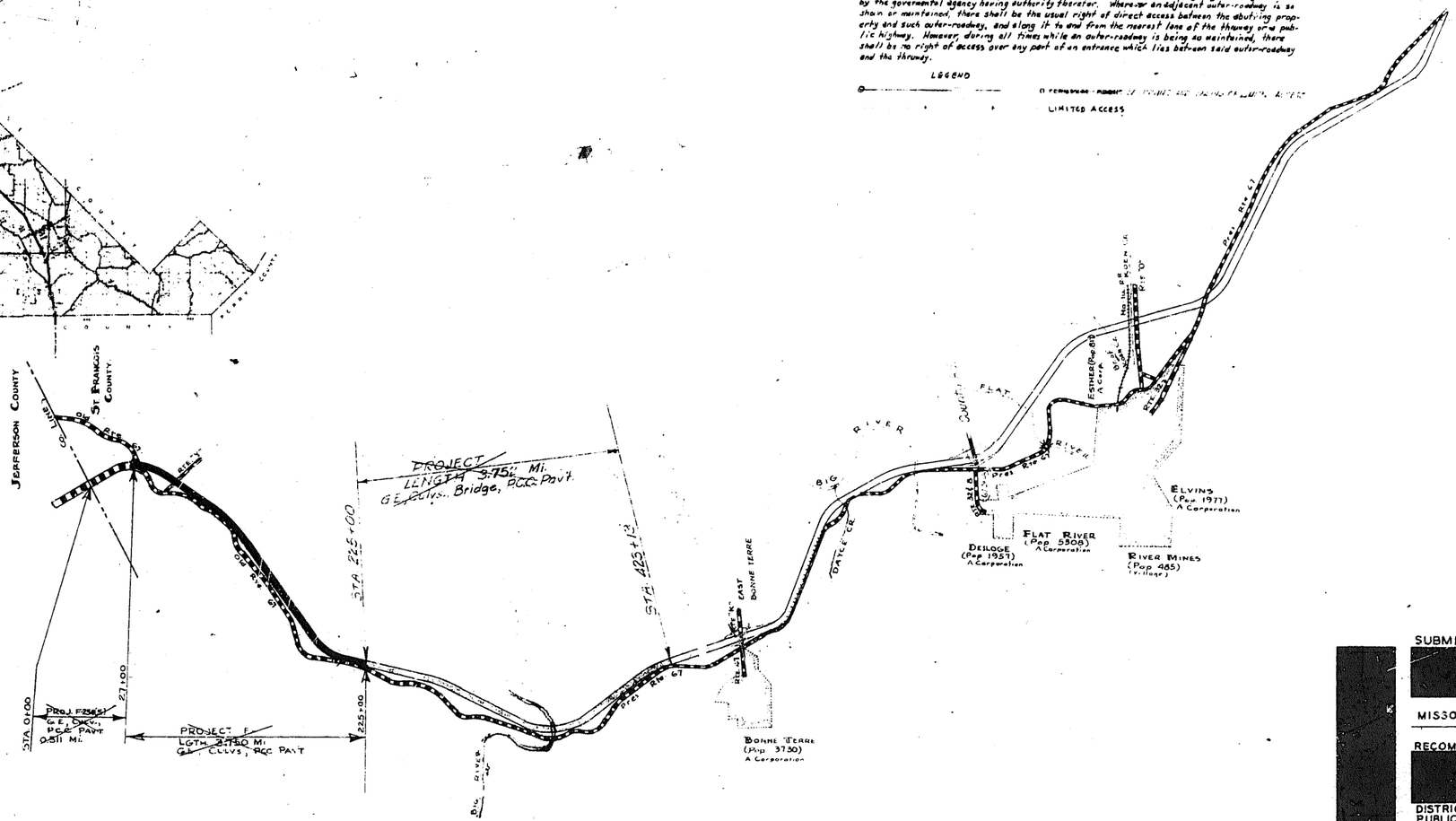
SCALE: 1" = 4000'

LIMITED ACCESS HIGHWAY

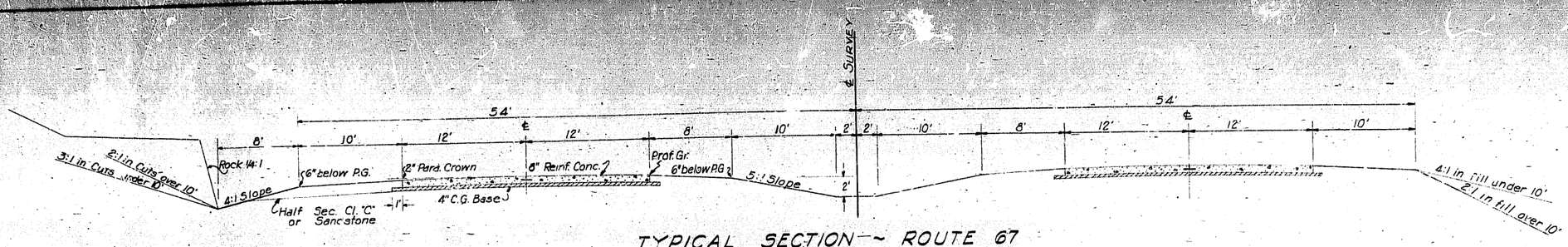
This shall be a limited-access highway between station 467+00 and station 660+33. Except at locations and as otherwise specifically shown on these plans, no abutter's rights in, or of direct access to, from, or across the highway or its right of way shall attach or belong to any property abutting on said section of highway, or to any person merely because of ownership of such abutting property. There shall be the usual right of access over any location either (1) shown on these plans as a property entrance (P.E.), field entrance (F.E.), or private underpass, or (2) where and when any such entrance, underpass, or an open public highway is being maintained by the governmental agency having authority thereover. Where or an adjacent outer-roadway is so shown or maintained, there shall be the usual right of direct access between the abutting property and such outer-roadway, and along it to and from the nearest lane of the thruway or public highway. However, during all times while an outer-roadway is being so maintained, there shall be no right of access over any part of an entrance which lies between said outer-roadway and the thruway.

LEGEND

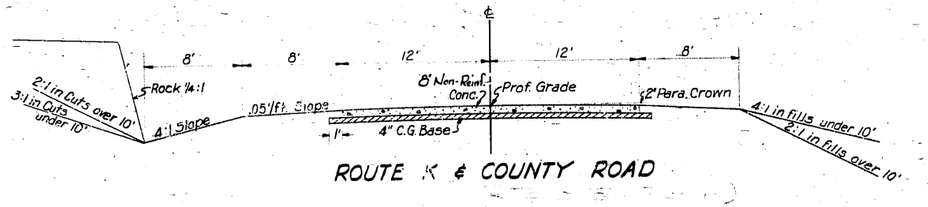
LIMITED ACCESS


JEFFERSON COUNTY
ST FRANCOIS COUNTY
LINE
STA 0+00
PROJ F254(5)
G.E. DSGN
PCC PAVT
0.511 Mi.
27+00
PROJECT F
LGTH 3.750 Mi.
GE CLVTS, PCC PAVT
STA 225+00
225+00
STA 425+33
PROJECT
LENGTH 3.75± Mi.
GE Clvts., Bridge, PCC Pavt.
BIG RIVER
DIVIDED HWY
DIVIDED HWY
DIVIDED HWY

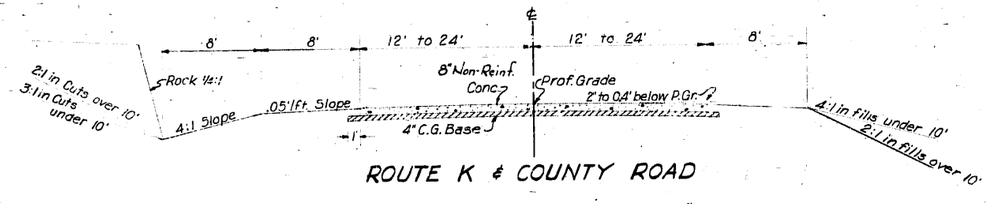
SHEET NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.
3	MO.	F-254(20)		
DIST. NO.	COUNTY	ROUTE	SEC.	
6	ST. FRANCOIS	67		



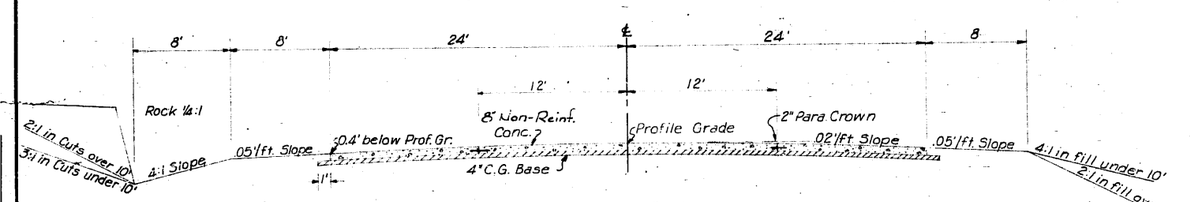
TYPICAL SECTION ~ ROUTE 67



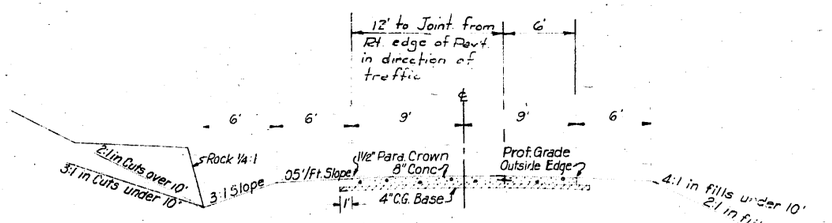
ROUTE K & COUNTY ROAD



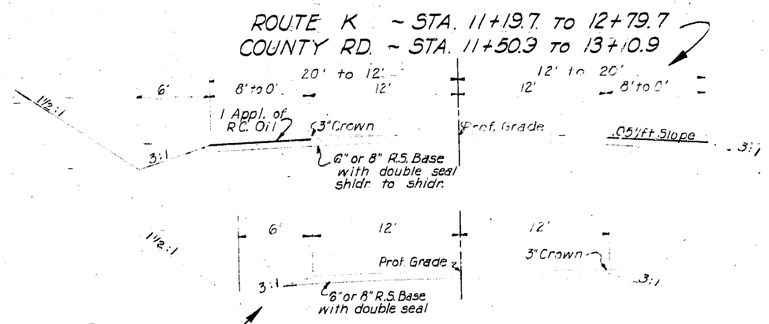
ROUTE K & COUNTY ROAD

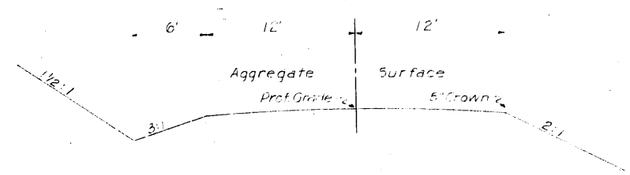


ROUTE - K & COUNTY ROAD

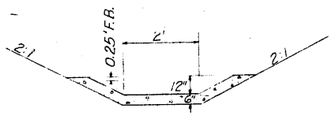


RAMP SECTION
ROUTE K AND COUNTY ROAD

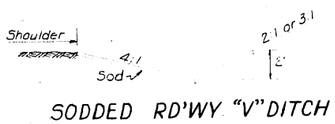




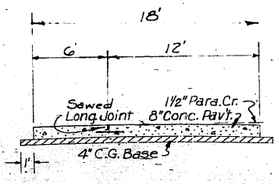
TEMPORARY BY-PASS
&
OUTER ROADWAY

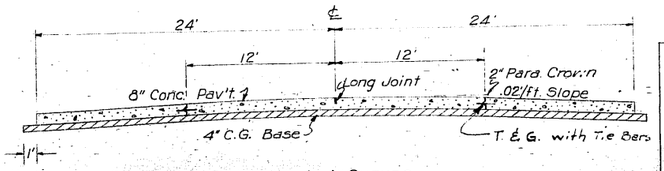


PAVED DITCH



SODDED RD'WY "V" DITCH





NOTE: Crown to be eliminated on all Superelevated Curves

DETAILS OF PAVEMENT SECTIONS

TYPICAL SECTIONS
FOR
2-24' CONCRETE PAVEMENTS
ON
42' ROADBEDS WITH 40' MEDIAN
AND
18' RAMP PAVTS. AND 24' & 48' MINOR RD. PAVTS.

LOCATION INTERCHANGES AT RTE. 67 E. OF BONNE TERRE AND AT RTE. 8 E. OF DESLOGE

TYPE GRADED EARTH, CULVERTS, BRIDGES, CONC. PVMT., VAR. WIDTH

MISSOURI STATE HIGHWAY COMMISSION

SUMMARY OF QUANTITIES

1 of 2

FED. ROAD DIST. No.	STATE	PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
8	MO.	F-254 (10)		2A	91
DIST. No.	COUNTY			ROUTE	SEC. No.
6	ST. FRANCOIS			67	

STATION	CL. A	CL. C	CONC. CUT	CONC. EMB.	OVERHAUL (M. Sta. Yd.)	MG CL. 2	REMARKS
455+00					(4.MS Yd.)		
464+00	497						
464+00							
463+80	4940	2167			4393		N.W. RAMP
468+00							
469+70	4737				17200		N.E. RAMP
0+20							
7+20	24742	16587			100513	21.6	RTE K * TEMP. BY-PASS (INCLUDES GRAD.)
14+35	5119						" "
469+65							
476+00	15957	9166			53300		S.W. RAMP
470+60							
476+00	4862						S.E. RAMP
481+55	1977	6434					
643+00							
656+00	3208						
654+00							
658+15	6930	5251					N.W. RAMP
654+00							
658+70	6895	13574					N.E. RAMP
8+00							
10+50	219	8					Addition to Plan-Co. Road
9+50							
231+35	12784	50922			67880	17.5	Co Road * TEMP BY-PASS (INCLUDES GRAD.)
651+00							
667+00	5446	7737				1.7	S.W. RAMP OUTER ROADWAY
651+50							
647+00	5727	21569					S.E. RAMP
677+00	1854	119					
1+00							
12+90	1546						OUTER ROADWAY IN N.E. QUADRANT
SUB TOTAL	107,497	133,534	0		243,686	40.8	
	1,364						ROUNDING (Plan)
TOTAL	108,861	133,534	0		243,686	40.8	

MISCELLANEOUS ITEMS — TABULATED ON P&P SHEETS

SHEET No.	CLEARING	GRUBBING	C.A.U.D.	4" MARK	DR. MARK	SEED & MULCH	FERT.	SODDING
3				5		256,569	1,267,125	
4			217		5			
5								
6	718	119		9		316,569		680
7	13	13	89		2			
TOTALS	731	132	306	14	7	573,138	1,267,125	680
PAY	84 Ac.	1.5 Ac.	306	14	7	132 Ac.	29.1 Ac.	680 SY.

DROP INLETS

STATION	LOC.	STD. TYPE	SIZE	DEPTH	TYPE COVER	No. OPENINGS	PIPE OPENING	CL. B	GRATE STEEL	CL. 3
471+00	℄	366	3'x2'	2'-6"	A	1	1-15"	0.94	79	2
660+00	℄	366	3'x2'	2'-6"	A	1	1-15"	0.94	79	3
TOTALS								7.88	158	5

SURFACE DRAINS & DRAIN BASINS

STATION	LOCATION	SIDE	DR. BASINS	SURF. DRAINS	REMARKS
468+59	Rt. LANE	RT.	1	32.1	SURF. DR. FIELD MEAS.
468+67	Rt. LANE	LT.	1	12.0	SURF. DR. FIELD MEAS.
468+76	Lt. LANE	RT.	1	12.1	SURF. DR. FIELD MEAS.
468+83	Lt. LANE	LT.	1	91.8	SURF. DR. FIELD MEAS.
657+94	Rt. LANE	RT.	1	12.0	SURF. DR. FIELD MEAS.
657+98	Rt. LANE	LT.	1	11.6	SURF. DR. FIELD MEAS.
658+04	Lt. LANE	RT.	1	11.5	SURF. DR. FIELD MEAS.
658+08	Lt. LANE	LT.	1	59.5	SURF. DR. FIELD MEAS.
TOTAL			8	290.6	
PAY			8	290.6	

8" REINFORCED P.C.C. PAVEMENT

Plan Quantity	9705.6 SY.	Orig. Computations Checked. Areas built to plan size.
TOTAL	9705.6 SY.	
PAY	9705.6 SY.	

LENGTH OF PROJECT

End of Project	Station	660+33	
Beginning of Project	Station	468+18	
Apparent Length		1921.5.0	Feet
Equations and Exceptions:			
STA. 471+18 To 657+33		-18615'	
Total Corrections		-18615.0'	Feet
Net Length of Project		600.0	Feet
State Length =		0.114	Miles
Federal Length =		0.114	Miles

BOX CULVERTS

STATION	LOCATION	STANDARD	SIZE	SKEW	LENGTH	CL. B	REINF.	CL. 3	FILL	% SLOPE	REMARKS
461+50	℄	C-820	6'x5'	-	84'	12.57	1980	45.5	9'	2:1	Ext. On Rt. & Lt.
10+91½	Rt. K	C-530	4'x4'	-	67'	29.56	3318	75.0	7'	2:1	Removals Incl. in CL. 3 Exc.
TOTALS						42.13	52.68	120.5			
PAY						42.1	52.68	120.5			

CROSS ROAD PIPE CULVERTS (R.C.P.)

STATION	LOCATION	SKEW	15"	18"	30"	36"	C-220 Wall
3+77	NW. Rp. K	12°24' R.A.	43				
471+00		18°00' R.A.	76				
475+64		25°00 P.A.				118	
470+00							
0+80	Rt. K		57				
7+05	NW. Rp. K		49				
0+53	S.W. Rp. K		54				
0+55	N.E. Rp. K		55				
12+42	S.E. Rp. K		57				
645+36		30°00 L.A.			10		
650+00				8			
660+00			65				
673+00					8		
674+00				4			
8+42	NW. Rp. Co. Rd.		48				
0+52	S.W. Rp. Co. Rd.		52				
0+52	N.E. Rp. Co. Rd.		56				
10+73	S.E. Rp. Co. Rd.		48				
TOTALS			660	12	18	118	

STATION	LOCATION	SKEW	CL. B	REINF.	CL. 3	REMARKS
2 R.C.		10°00'	1.38	122	13.0	EXTENSION
1 R.B. Lt.		15°00'	0.59	54	67.0	Econ. Dr.
1 R.B. Lt.		30°00'	4.45	367	54.0	EXTENSION
1 R.C. Lt.			0.64	52	5.0	5' of PIPE & HDWLL Rem.
1 R.C.P. Lt.		SQUARE	1.65	128	31.0	
1 R.C.P. Rt.		SQUARE	1.75	136	16.0	50' Lt. & PARALLEL TO RTE. K
1 R.C.P. Rt.		45°00' SQUARE	1.75	136	18.0	50' Rt. & PARALLEL TO RTE. K
1 R.C.P. Rt.		45°00' SQUARE	1.75	136	9.0	50' Lt. & PARALLEL TO RTE. K
1 R.C.P. Rt.		45°00' SQUARE	1.75	136	8.0	50' Rt. & PARALLEL TO RTE. K
1 R.C. Lt.		30°00'	2.31	196	3.0	EXT. On Lt.
1 R.C. Lt.		-	0.83	69	2.0	EXT. On Lt.
1 R.C. Lt.		-	0.64	52	36.0	
1 R.B. Lt.		-	1.35	122	4.5	EXT. On Lt. Only
1 R.C. Lt.		-	0.83	69	2.0	EXT. On Lt.
1 R.C.P. Lt.		SQUARE	1.75	136	12.0	PARALLEL Co. Road
1 R.C.P. Lt.		SQUARE	1.75	136	14.0	PARALLEL Co. Road
1 R.C.P. Rt.		45°00' SQUARE	1.75	136	12.0	PARALLEL Co. Road
1 R.C.P. Rt.		45°00' SQUARE	1.75	136	13.0	PARALLEL Co. Road
TOTALS					28.67	2307	319.5

ENTRANCES AND SIDE ROADS (C.M.P.)

STATION	LOCATION	12"	15"	18"	24"	36"	PIPE ARCH 18"	CL. 3	REMARKS
0+85	BY-PASS		36					2	Lt. Rte. K
5+24	BY-PASS	32						2	Lt. Rte. K (In Rd side DA)
5+97	BY-PASS	32						2	Lt. Rte. K (In Median DA)
11+31	BY-PASS					36		4	Lt. Rte. K
2+50	OUTER RDWY.				38			4	Lt. Sta. 650+00
8+00	CO-ROAD				12			12	145' Lt. (Across P.E.)
8+20	CO-ROAD						40		Existing Pipe (X-Road)
9+68	CO-ROAD				22			8	99' Lt. (Across P.E.)
7+28	CO-ROAD			22					R.E. Rt.
11+00	CO-ROAD			44					S.R. Rt.
11+00	CO-ROAD			44					S.R. Lt.
21+15	CO-ROAD			28					P.E. Rt.
21+48	CO-ROAD			26					P.E. Rt.
0+00	BY-PASS			20				2	Extend Exist. Pipe Rt.
1+82	OUTER RDWY.	34						4.5	Lt. Co. Road (See Sh. #5)
5+45	BY-PASS	34						3	Lt. Co. Road
4+07	BY-PASS	32						3	Lt. Co. Road
10+82	BY-PASS	32						3	Lt. Co. Road
TOTALS		196	90	130	82	36	40	49.5	

REMOVING GUTTER

STATION	STATION	LOCATION	SIDE	L.F.	REMARKS
476+50	478+00	Lt. Lane	Lt.	150	FIELD MEAS.
TOTAL				150 L.F.	

REMOVING CONC. SIDEWALK

STATION	STATION	LOCATION	WIDTH	SQ. YDS.	REMARKS
0+25	2+00	Lt. Rte. K	4'	90.67	
6+90	12+40	Lt. Rte. K	4'	246.67	
TOTAL				337.34	S.Y.
PAY				337	S.Y.

PLUG PIPE CULVERT

STATION	SIZE PIPE	CL. B	REMARKS
667+80	18"	0.2	Both Ends Plugged
TOTAL		0.2	CY.

RELAY 4" WATER MAIN

STATION	LOCATION	REL. AY EXIST. 4" Main & Casing	RELAY 4" MAIN	12" STEEL PIPE	18" C.M. JACKED PIPE	CL. B Conc.	CL. 3
470+70	℄	122	127	106	20	0.2	300

8" NON-REINFORCED P.C.C. PAVEMENT

Plan Quantity (13.25 x 18) ÷ 9 =	23,497.8 SY.	Orig. Computations Checked. Areas built to plan size.
	26.6 SY.	Replacement in N.E. Ramp Opposite Sta. 651+28.72
TOTAL	23,524.3 SY.	
PAY	23,524.3 SY.	

DEFICIENT PAVEMENT THICKNESS

DEDUCT $ 59.10

GENERAL SUMMARY — FINAL PLANS

ITEM NO.	DESCRIPTION	UNIT	TOTAL UNITS	NO. UNITS FED. AID ONLY
1-A	Clearing	acre	84	
1-B	Grubbing	acre	1.5	
1-D	Class A Excavation	C.Y.	108861	
1-AD	Site Grading	L.S.	1	
1-E	Class C Excavation	C.Y.	193,534	
1-I	Class B Excavation for Structures	C.Y.	794.6	
1-K	Compacting Embankments	C.Y.	25401	
1-L	Compacting in Cuts	C.Y.	0	
1-N	Overhaul	½ mi-Yd.	243,686	
1A-DD	Machine Grading (Class 2)	Sta.	48.8	
1-T	Removing Gutter	L.F.	150	
1-V	Removing Concrete Sidewalk	S.Y.	337	
1-Z	Removing (3) Misc. Items	L.S.	1	
13-D	Crushed Stone (8) Surface	C.Y.	820	
15-A	Concrete Pavement (8" Reinforced)	S.Y.	9705.6	
15-A	Concrete Pavement (8" Non-Reinforced)	S.Y.	23524.3	
15-A	Approach Slab for Bridge	S.Y.	585.4	
16-B	Class B Concrete (Box Culverts)	C.Y.	42.1	
16-B	Class B Conc. (Other than Box Culverts)	C.Y.	31.0	
18-B	12" C.M. Culv. Pipe (Ext. & S.R.)	L.F.	19.6	
18-B	15" C.M. Culv. Pipe (Ext. & S.R.)	L.F.	20	
18-B	18" C.M. Culv. Pipe (Ext. & S.R.)	L.F.	130	
18-B	24" C.M. Culv. Pipe (Ext. & S.R.)	L.F.	82	
18-B	36" C.M. Culv. Pipe (Ext. & S.R.)	L.F.	36	
18-C	15" Reinf. Conc. Culv. Pipe	L.F.	660	
18-C	18" Reinf. Conc. Culv. Pipe	L.F.	12	
18-C	30" Reinf. Conc. Culv. Pipe	L.F.	18	
18-C	36 Reinf. Conc. Culv. Pipe	L.F.	118	
18-JA	Relay Existing 4" Water Main & 12" Casing	L.F.	122	
18-JB	Relay Existing 4" Water Main	L.F.	127	
18-JC	12" Steel Pipe	L.F.	106	
18-JD	4" Cast Iron Water Pipe	L.F.	20	
19-A	Reinf. Steel	Lbs.	7730	
24-A	Class A Type 1 Underdrains	L.F.	306	
25-H	Surface Drain Basins	Each	8	
25-I	Surface Drains	L.F.	230.6	
25-M	Paved Ditch	L.F.	1471	
27-A	Guard Rail (Type A)	L.F.	1438	
28-C	Std. Signs, Flags & Flagging	L.S.	1	
28-E	Movable Barricades	Each	4	
29-C	Right of way Markers	Each	14	
29-D	Drain Markers	Each	7	
33-A	Removal of (8) Exist. Structures	L.S.	1	
37-A	Fertilizing & Mulching	Acre	13.2	
37-AA	Fertilizing	Acre	21.1	
37-B	Sodding	S.Y.	680	
39-C	2" Rigid Steel Conduit (In trench)	L.F.	402	

ROLLED STONE BASE

1-BA	Water	1000 gal.	45
2-A	Aggregate for R.S. Base	Ton	1054
2-B	Spreading, Shaping, & Compacting (6")	mile	0.10
2-B	Spreading, Shaping, & Compacting (8")	mile	0.06

Comp. Granular Base For Conc. Pvmt.

1-BA	Water	1000 gal.	150
3C-A	Granular Base Material	Ton	8071
3C-B	Spreading, Shaping & Compacting	mile	3.02

Double Seal Coat

4C-A	Primer (MC-0)	gal.	960
10B-A	Bituminous Material (MC-4)	gal.	1660
10B-B	Cover Material (S)-110 Gr. #10)	Ton	73

Contingent Items (Roadway)

Removing Conc. Pavement	F.A.	$160.69
Relaid C.M. Culv. Pipe	L.F.	40

RECEIVED DEC 19 1960 BUREAU OF PUBLIC ROADS DIVISION OF CONSTRUCTION

FINAL PLANS

Proj. Accepted 9-29-60 Prepared By R.M. Illins Date November 19 60 Checked in Dist. Office By R. Tauchel Date 13 December 19 60 Checked in Central Office By J.J. Tobin 19 Date 1 — 19 61 Revised By Date 19

LOCATION INTERCHANGES AT RTE. 67 E. OF BONNE TERRE AND AT RTE. 8 E. OF DESLOGE

TYPE GRADED EARTH, CULVERTS, BRIDGES, CONC. PVMT, VAR. WIDTH

MISSOURI STATE HIGHWAY COMMISSION

SUMMARY OF QUANTITIES

2 OF 2

FED. ROAD DIST. No.	STATE	PROJECT	FISCAL YEAR	SHEET No.	TOTAL SHEETS
5	MO.	F-254 (20)		2A	
DIST. No.	COUNTY			ROUTE	SEC. No.
6	ST. FRANCOIS			67	

APPROACH SLABS FOR BRIDGES

Station	Station	SY.	Remarks
468+51.73	468+75.21	70.48	Rt. Lane
468+68.95	468+92.43	70.44	Lt. Lane
470+68.91	470+68.91	70.44	Rt. Lane
470+62.13	470+85.61	70.44	Lt. Lane
657+87	658+08.87	65.91	Rt. Lane
657+96.68	658+18.57	65.91	Lt. Lane
659+48.23	659+70.12	65.91	Rt. Lane
659+57.91	659+79.80	65.91	Lt. Lane
TOTAL		545.40	SY.
PAY		545.4	SY.

PAVED DITCH 2' F.B.

Station	Station	Location	Side	L.F.	Remarks
465+50		Rt. Lane	Rt.	9'	DI. outlet to Culv. Inlet
468+83		Lt. Lane	Lt.	10'	At end of Sur. drain in Rp. Dr.
470+62		Lt. Lane	Lt.	16'	To Rte. K Ditch Line
470+82		Lt. Lane	Lt.	80'	DI. outlet to Culv. Inlet
470+62	478+00	Lt. Lane	Lt.	743'	DI. outlet to Culv. Inlet
473+50	478+00	Rt. Lane	Rt.	460'	DI. outlet to Culv. Inlet
8+15	9+65	Co. Road	Lt.	149'	From Culv. To Culv.
657+99		Rt. Lane	Rt.	10'	End of Drain (Surface) in Rt. Dr.
TOTAL				1471'	L.F.

2" RIGID STEEL CONDUIT

Station	Location	Lin. Ft.
3+33	S.E. RP. (K)	24
2+65	N.W. RP. (K)	24
0+80	S.W. RP. (K)	24
0+86	N.E. RP. (K)	24
3+11	RTE (K)	53
8+82	RTE (K)	51
2+86	N.W. RP. Cond.	24
0+82	S.W. RP. Cond.	24
3+38	S.E. RP. Cond.	24
0+82	N.E. RP. Cond.	24
15+49	Co. Road	53
20+66	Co. Road	53
TOTAL		402 L.F.

GUARD RAIL, TYPE A

Station	Station	Location	Side	L.F.	Remarks
467+58	468+70	Rt. Lane	Rt.	113'	To Bridge End
468+51	468+76	Rt. Lane	Lt.	25'	To Bridge End
470+60	470+85	Lt. Lane	Rt.	25'	To Bridge End
470+68	477+18	Lt. Lane	Lt.	650'	To Bridge End
656+92	658+04	Rt. Lane	Rt.	113'	To Bridge End
657+83	658+08	Rt. Lane	Lt.	25'	To Bridge End
659+58	659+83	Lt. Lane	Rt.	25'	To Bridge End
659+63	660+75	Lt. Lane	Lt.	112'	To Bridge End
662+10	663+10	Rt. Lane	Rt.	100'	On Outer Roadway (Rt. S.W. Rp.)
667+50	670+15	Lt. Lane	Lt.	250'	On Outer Roadway
TOTAL				1438'	

LENGTH OF PROJECT

End of Project	Station	
Beginning of Project	Station	
Apparent Length		Feet
Equations and Exceptions:		
Total Corrections		Feet
Net Length of Project		Feet
State Length =		Miles
Federal Length =		Miles

GENERAL SUMMARY FINAL PLANS

ITEM NO.	DESCRIPTION	UNIT	TOTAL UNITS	NO. UNITS FED. AID ONLY
	TWIN BRIDGE STA. 468+83.82 (DWG. NO. A-658)			
1-G	Class 1 Excavation for Structures	C.Y.	315.6	
16-B-1	Class B-1 Concrete (Superstr.)	C.Y.	259.2	
16-B	Class B Concrete (Sub.-Str.)	C.Y.	192.0	
17-B	Fab. Struct. Steel (M-Spans)	Lb.	242,270	
17-C	Steel Castings	Lb.	10,420	
19-A	Reinforcing Steel	Lb.	102,540	
	CONTINGENT ITEMS - BRIDGE			
	Class 1 Exc. for Struct. +25%	C.Y.	8.5	
	Test Holes	L.F.	80	
	TWIN BRIDGE STA. 658+13.73 (DWG. NO. A-658)			
1-G	Class 1 Excavation for Structures	C.Y.	262.0	
16-B-1	Class B-1 Concrete (Superstr.)	C.Y.	200.3	
16-B	Class B Concrete (Sub.-str.)	C.Y.	172.5	
17-B	Fab. Struct. Steel (I-BM-Spans)	Lb.	255,120	
17-C	Steel Castings	Lb.	6,860	
17-E	Gray Iron Alloy Castings	Lb.	2,300	
19-A	Reinforcing Steel	Lb.	60,370	
	CONTINGENT ITEMS - BRIDGE			
	Class 1 Exc. for struct. + 25%	C.Y.	2.5	
	Test Holes	L.F.	96	
	Exc. & Fill Footing Crevice	F.A.	$292.29	

RECEIVED

FINAL PLANS

13 December 1960 Checked in Central Office By J. T. Jabson Date 1-20-1961 Revised By Date 19

	STATE	FEDERAL PROJECT NO. & SH.	
5	MO.	F. 254 (20)	3
6	ST. FRANCOIS	67	

T 37N R 4E

FINAL PLANS

1924.78 to N.E. Cor. U.S. Surv. #467

THE BONNE TERRE FARMING & CATTLE CO.

THE BONNE TERRE FARMING & CATTLE CO

STA. 468+18
BEGIN PROJ. F-254(20)
A point approx 1965' West and 145' North of NE corner of US Surv. #467, T37N, R4E

P.I. 7+73.10
Δ 10°13'
D 5°00'
T 102.47
L 204.33
R 1146.28

Rte. K
P.I. 12+00
Δ 1°47' Rt
D 0°30'
T 178.40
L 356.67
R 11459.2

Sta. 10+91.6 (Rte. K)
C-5-30
4'x4'x67.1'
No Skew

Sta. 12+43 (SE-Ramp)
57'x15" RCP
2xC-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° Skew

Sta. 0+55.3 (NE-Ramp)
55'x15" RCP
2xC-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° Skew

7+91.17 Rte. K = 0+00 N.E. Ramp = 12+92.15 S.E. Ramp

Sta. 478+00
1xC-230 Hdwl.
RC-Lt, No Skew

P.I. 1+11.24
Δ 6°40'
D 3°00'
T 111.24
L 222.22
R 1910.08

455+07.36
457+57.36 Rte 67
460+72.96 Ramp
459+49.11
460+50.32
455+25.32
457+75.32
461+75.32 Rte 67
0+00 Ramp
455
460
465
470
475
480
485
10
5

6'X5'X8' Ext.
69' Ext.
99' Ext.
2 Paved Ditch J
2 Paved Ditch, 460'
Paved Ditch 2' FB x 9' (465+20)
Drain. Esmt.
Constr. Esmt.
Exist R/W
Exist 67
To St. Louis
To Farmington
RC
T.S.
S.C.
C.C.
E.C.
L.C.
P.C.
P.T.
R/W

End Taper at 489+55.06
End Taper at 489+32.28
OHDD Ramp 483+05.08 Rte 67
486+72.95 on Tang.
406+94.42 on Tang
P.T. 2+22.22
P.C. 11+66.24
P.T. 13+72.91 Ramp 482+82.28 Rte 67
P.I. 12+69.68
Δ 6°12'
D 3°00'
T 103.44
L 206.67
R 1910.08

Sta. 461+50
C-820, 6'x5' Culv.
8' Ext. Rt. & Lt.
No Skew

Sta. 3+79.7
49'x15" RCP, 12°34' RA
2xC-230 Hdwl. 10° Skew
RC-Lt & Rt.

3+91.17 Rte K = 7+55.35 N.W. Ramp = 0+00 S.W. Ramp

U.S. Surv. #3099

Sta. 0+80 (Rte. K)
57'x15" RCP
2'C-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 40° Skew

U.S. Surv. #467

Sta. 475+64
69'x36" Ext. Lt; 49'x36" Ext. Rt.
Pipe Skew 25° RA
2xC-230 Hdwl.
RB-Lt. 30°; RB-Rt. 20°

STA 471+18 BEGIN
EXCEPTION TO PROJ. F-254 (20)

Sta. 471+00
76'x15" RCP, 15° RA
1xC-230 Hdwl.
RB-Lt, 15° Skew

Sta. 7+05.3 (NW-Ramp)
49'x15" RCP
2'xC-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° Skew

0+00 Rte. K = 521+45.65, Exist. Rte. 67

Sta. 0+53.7 (SW Ramp)
54'x15" RCP
2xC-230 Hdwl.
1'C-Lt, Sq.
RC-Rt, 45° Skew

469+68.67 & Survey = 5+91.17 Rte. K

467+00 200.37 R/W

473+20 209.62 R/W

P.I. 1+26.22
Δ 12°34'
D 5°00'
T 126.22
L 251.33
R 1146.28

NOTE: All items of work shown on these plans between Sta 455+07.36 and Sta 489+55.06 were performed under Project F-254(20)

NOTE: For additional design details see Sheet #4.

See Spec. Snt #3 for details of adjustment of 4" Water Main.

2" RIGID STEEL CONDUIT		
Sta.	Location	Lin. Ft.
3+33	S.E. Ramp	24
2+65	N.W. Ramp	24
0+80	S.W. Ramp	24
0+86	N.E. Ramp	24
3+11	Rte. K	53
8+82	Rte. K	51
Total		200

Right of Way Markers 5

FINAL PLANS

GENERAL PLAN
INTERCHANGE
AT
ROUTE K

SCALE 0 100 200 300

5 MO. F-254(20) 4

6 ST. FRANCOIS 67

T 37 N R 4 E

FINAL PLANS

Sta 521+45.65 Rte 67 = Sta 0+00 Rte K

P.C. 519+42.7

P.T. 523+26.0

Do not disturb Legion Monument

Exist. R/W

Constr. Easement 2

Exist. R/W

Prop. R/W

Exist. R/W

Exist. R/W

Exist. R/W

Prop. R/W

RTE. K

RTE. 67

467+00 200.33 R/W

468+83 2' F.B. Paved Ditch 10'

Std. 25 K Dr. Basin & Drain Rt. & Lt. Lane

Special "V" Ditch 2

Special "V" Ditch

5' F.B. Ditch 7

20:1 Taper

20:1 Taper

20:1 Taper

20:1 Taper

15' x 69' R.C.P.

15' x 54' R.C.P.

15' x 55' R.C.P.

15' x 51' R.C.P.

15' x 67' R.C.P.

Sta. 0+00 Rte K

7+55.35 N.W. Ramp = 3+91.17 Route K = 0+00 SW Ramp

469+68.67 Rte. 67 = 5+91.17 Rte. K

0+00 N.E. Ramp = 7+91.17 Route K = 12+92.15 S.E. Ramp

P.C. 10+21.60

Sta. 10+91.6 67' Long C-530 4'x4' R.C. Box Culv. @ 90° D.A. 70 Ac., 0.6 Ld.

Sta. 11+19.7 to 14+35, Route K. 8" Rolled Stone Base and Double Seal Coat

Exist. 4' Conc. Sidewalk (U.I.P. from Sta. 12+0 Rte K)

14+35 End Construction

P.T. 13+78.27

Sidr. Line

Exist. R/W

Rte "K" P.I. 12+00.00 Δ 1°47' Rt. D C°30' T 178.40 L 356.67 R 1911.32 No S.E.

1197 Sod Pavt.

6547

G 5.40%

+1.39%

300' V.C. M.O. 2.90 K 39

100' V.C. M.O. 0.05

+1.22%

-0.17%

+0.40%

-0.40%

+0.40%

+1.39%

+0.40%

+1.39%

+0.40%

+1.39

5 MO. F-254(20) 5

6 St. Francois 67

FINAL PLANS

PROFILE - ROUTE 67

480' V.C.
M.O. 2.59'
K-100

+2.25%

1497' Paving Exception

1100' V.C.
M.O. 6.35'
530' N.P.S.D.

-3.54%

GRADE LINE - NE RAMP

Warp Grade

+2.11%

-1.23%

220' V.C.
M.O. 1.31'
K 38

420' V.C.
M.O. 3.56'
315' N.P.S.D.

GRADE LINE - SE RAMP

Warp Grade

-0.72%

380' V.C.
M.O. 2.51'
525' N.P.S.D.

-6.00%

+1.80%

260' V.C.
M.O. 2.37'
K 37

GRADE LINE - NW RAMP

Warp Grade

+2.07%

-3.12%

-1.25%

200' V.C.
M.O. 1.11'
K 43

360' V.C.
M.O. 2.36'
315' N.P.S.D.

GRADE LINE - SW RAMP

Warp Grade

+0.80%

+5.1%

250' V.C.
M.O. 1.98'
K - 35

300' V.C.
M.O. 1.61'
320' N.P.S.D.

RAMP GRADES
INTERCHANGE
AT
ROUTE K

FINAL PLANS

BRUNING No. 501

PLATE 3 CROSS SECTION O. P. R. & R. E.
"DUG" RAG PAPER MADE AND PRINTED IN U. S. A.
CHARLES BRUNING COMPANY, INC.

SEC. ROAD DIV. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.
5	MO.	F 254 (20)		6
DIST. NO.	COUNTY		NO. OF SHTS.	
6	ST. FRANCOIS		67	

T. 37 N., R. 5 E.

FINAL PLANS

JAMES S. FRANCIS

Sta. 645+36
10'x30" RCP Ext. Lt.
Pipe Skew 30° LA
1-C-230 Hdwl.
RC-Lt, 30° Skew

N.E. RAMP
PI 8+38.28
Δ 3°22'
D 4°00'
T 104.80'
L 209.17'
R 1432.69'

649+70 Rte 67 = 1+00 Outer Rdwy.

CARL MURPHY, ET AL

30' Drain Esmt

10'X30' Exten.

647+00.19

647+52.08

Exist. R/W

U.S. Survey #80

649+73.15 Rte 67 = PC 0+00 Ramp

PT 2+14.81

NE Cor. Lot 4

658+83.40 Rte 67 = 18+08.00 County Rd.

BIRDIE LAROSE

IRVIN GREEN

LAWRENCE GREEN

OUTER ROADWAY

14+10.00 County Rd = 12+25.00 Outer Rdwy

649+16.15 Rte 67 PT 9+42.65 Ramp

Sta. 0+72 (NE. Rp.)
56'x15" RCP
2-C-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° skew

Sta. 10+73 (S.E. Rp.)
48'x15" RCP
2-C-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° skew

10+70 115' RW

+00 60' RW

+85 60' RW

1+82 34"x12" CMP

Outer Roadway constructed Proj. F-254 (7)

0+00 N.E. Ramp = 16+28 County Rd = 11+22.74 S.E. Ramp

S.E. RAMP
PI 1+80.19
Δ 21°21'45"
D 6°00'
T 180.19'
L 356.04
R 955.37

Lot 8

Lot 9

Lot 2

Lot 3

600.2

Note: Area See Typical Sheet #6

CLARENCE W. CUNNINGHAM

Sta. 673+00
8'x30" Ext. Lt.
1-C-230 Hdwl.
RB-Lt, Sq.

Exist R/W

8'X30" Extension

Sta. 674+00
4'x19" Ext. Lt.
1-C-230 Hdwl.
RC-Lt, Sq.

Special V Ditch

670+00 Ramp = 670+45.67 Rte 67

666+44.56 P.C. = 665+56.04 P.T.

WASHINGTON AVE.

Sodded Ditch

90°27'E

36'E-3'x2' D.I.

E.R. ANDREWS, JR.

STA. 657+33 END
EXCEPTION TO PROJ. F-254 (20)

40'x67' Corner Esmt

N.W. RAMP
PI 1+07.70
Δ 9°40'
D 4°30'
T 101.70'
L 214.81'
R 1273.57'

Sta. 650+00
8'x18" RCP Ext. Lt.
1-C-230 Hdwl.
RC-Lt, Sq.

8+92.41 N.W. Ramp = 19+98 County Rd. = 0+00 S.W. Ramp

COWLING AVE

U.S. Survey #1864

Sta. 660+00
36'E-3'x2' D.I.
65'x15" RCP Lt.
1-C-230 Hdwl.
RC-Lt, Sq.

Sta. 0+52 (SW Rp.)
52'x15" RCP
2-C-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° skew

STA. 660+33
END PROJ. F-254 (20)
A point approximately 985 West & 145' South of S.E. Cor. U.S. Surv. #80 T. 37 N., R. 5 E.

Sta. 8+42 (NW Rp.)
48'x15" RCP
2-C-230 Hdwl.
RC-Lt, Sq.
RC-Rt, 45° skew

23+46.8 County Rd = 713+70.35 Exist Rte 67

Exist Rte 67

60' R/W

8" Gas Line (Abandoned Gas Co.) (Encased)

2" Water Line (Encased) Loop Bell Water Co.

P.U.E. Guy

C.P. Gas Line

NOTE: All items of work shown on these plans between station 649+23.15 and station 676+95.67 were performed under Proj. F-254 (20).

NOTE: For additional design details see sheet #7.

2" RIGID STEEL CONDUIT		
Sta.	Location	Lin. Ft.
2+86	N.W. Ramp	24
0+92	S.W. Ramp	24
0+82	N.E. Ramp	24
3+38	S.E. Ramp	24
15+49	Co. Road	53
20+66	Co. Road	53
Total		202

Right of Way Markers 9

GENERAL PLAN
INTERCHANGE
AT
COUNTY ROAD

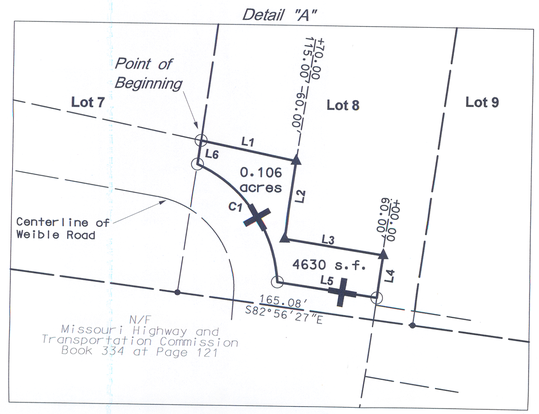
SCALE 0 50 100 200 300

FINAL PLANS

Plat of Survey

To set out a new 0.106 acre tract of Excess Property

Being a Part of
Wells Subdivision in Fractional Section 29, Township 37 North,
Range 5 East of the Fifth Principal Meridian,
County of St. Francois, State of Missouri



Property Description from Survey:

All of that part of Lot 8 of Wells Subdivision of a portion of Fractional Section 29, Township 37 North, Range 5 East of the Fifth Principal Meridian, St. Francois County, Missouri being more particularly described as follows:
Commencing at a 5"x5" Concrete Monument found marking the Northeast Corner of Lot 6 of said Wells Subdivision: thence S 07 deg. 47 min. 47 sec. W a distance of 929.13 feet to a found Drill Steel: thence continuing along said East line S 57 deg. 52 min. 10 sec. W a distance of 276.27 feet to a found Drill Steel on the Northerly boundary line of the County Road as shown on MHTC project F254 (20): thence along said Northerly boundary line S 78 deg. 38 min. 44 sec. E a distance of 165.24 feet to a Set #5 Rebar w/ Cap at point 165.24 feet right of County Road station 11+38.32 at the POINT OF BEGINNING: thence S 78 deg. 38 min. 44 sec. E a distance of 67.62 feet to a found Steel MHTC Boundary Marker: thence S 07 deg. 40 min. 09 sec. W a distance of 54.62 feet to a found Steel MHTC Boundary Marker: thence S 81 deg. 29 min. 10 sec. E a distance of 70.26 feet to a found Steel MHTC Boundary Marker: thence S 08 deg. 01 min. 18 sec. W a distance of 29.91 feet to a set #5 Rebar w/ Cap: thence, departing said boundary N 81 deg. 52 min. 09 sec. W a distance of 70.57 feet to a set #5 Rebar w/ Cap, said point being the beginning of a non-tangential curve to the left having a radius of 95.00 feet: thence along said curve a length of 104.04 feet (chord bears N 34 deg. 58 min. 06 sec. W a distance of 98.92 feet), to a set #5 Rebar w/ Cap: thence N 07 deg. 44 min. 06 sec. E a distance of 16.57 feet to the POINT OF BEGINNING, containing 0.106 acres (4630 square feet) and being subject to easements and rights-of-way of record or not of record if any.

Element	Direction	Distance
L1	S 78° 38' 44" E	67.62'
L2	S 07° 40' 09" W	54.62'
L3	S 81° 29' 10" E	70.26'
L4	S 08° 01' 18" W	29.91'
L5	N 81° 52' 09" W	70.57'
L6	N 07° 44' 06" E	16.57'

Element	Delta	Radius	Length	Chord Bearing	Chord Dist.
C2	62° 44'53"	95.00'	104.04'	N 34° 58'6" W	98.92'

LEGEND

- ● – CALCULATED CORNER POSITION
- ▲ – FOUND STEEL MHTC BOUNDARY MARKER
- ○ – SET MONUMENT, 5/8" x 24" REBAR WITH MODOT CAP
- ● – FOUND MONUMENT AS DESCRIBED
- N/F – NOW OR FORMERLY
- MHTC – MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
- ——— – NEW BOUNDARY LINE
- ——+——+—— – NEW BOUNDARY LINE LIMITED ACCESS
- ~~MHTC~~ – EXISTING MHTC BOUNDARY
- /\/\/\ – LINE NOT TO SCALE
- ——— – LOT LINE

SURVEY NOTES:

This survey reflects multiple tracts of land previously acquired by Missouri Highways and Transportation Commission.

1. Basis of Bearings – Grid North, 1983 Missouri State Plane Coordinate System, East Zone.
2. Apparent ownership as shown is based on information provided by others and does not represents opinion as to title.
3. Subject to all easements of record.
4. Covenants, limits of access, and rights retained by grantor of the hereon shown property are not shown, but may be disclosed by a full title search.

Surveyor's Certification:

I, Bryan James Ferguson, Missouri Professional Land Surveyor number 2004017828, hereby certfy that I did at the request of the Missouri Highways and Transportation Commission in the month of April 2016, complete a survey in Wells Subdivision, Fractional Section 29, Township 37 North, Range 5 East of the 5th Principal Meridian, St. Francois County, Missouri. Said Survey was completed in accordance with the current Misssouri Minimum Standards for Property Boundary Surveys, 10 CSR 30-2 (suburban property) and the results are correctly represented hereon. In witness thereof, I hereunto set my seal and signature, this 2nd day of May 2016.

Bryan J. Ferguson, MO PLS2004017828

2016R-05897
REC FEE: 969.00
PAGES: 1

STEVE GRIDER, RECORDER OF DEEDS, ST FRANCOIS COUNTY, MO CERTIFY THAT THIS DOCUMENT WAS FILED FOR RECORD AT 08:49:55AM AND OFFICIAL SEAL AFFIXED AT FARMINGTON, MO 07/12/2016

STEVE GRIDER
RECORDER OF DEEDS
Beatty Coleman
DEPUTY

OFFICE OF RECORDER OF DEEDS ST FRANCOIS COUNTY, MO

STATE OF MISSOURI
BRYAN JAMES FERGUSON
NUMBER
PLS-2004017828
PROFESSIONAL LAND SURVEYOR
5/2/2016

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

DISTRICT:	Southeast
SCALE:	1" = 100'
DATE PREPARED:	5/2/2016
SHEET:	1 of 1
ROUTE:	67
PROJECT:	SE0841
COUNTY:	St. Francois
TOWNSHIP:	37N
RANGE:	5E
PROJECT SURVEYOR:	Bryan J Ferguson

SURVEY FOR: MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

5 MO F254(20) 7
6 ST. FRANCOIS 67

T. 37 N., R. 5 E.

FINAL PLANS

Sta. 9+50 to 13+10.9, County Road.
6" Rolled Stone Base and Double Seal Coat.

Outer Roadway

Existing R.O.W.

Special 'V' Ditch

18"x44' C.M.P.

Shlar Line

20:1 Slope

COUNTY RD.

13+10.9 End Pavt

Outer Roadway

Existing R.O.W.

11+22.74 S.E. Ramp = 16+28 County Rd. = 0+00 N.E. Ramp

BRIDGES

Prop. R/W

Sta 658+08.76 Begin Br. Rt Lane
Sta 658+18.44 Begin Br. Lt Lane
el. 34-68:34' I. Beam Spans, Center Span Composite
Skew 8°36' L.A. See Br. Dwg. A-654 (Dual)
Paving Exception Rt Lane 139.60'
Paving Exception Lt Lane 139.60'

660

657

Std 25k Dr. Basin & Drain Rt of Lt. Lane

658+83.4 Rte. 67 = 18+08 County Rd.

660+50 ℄ Rte. 67 = 6+07 ℄ By-Pass

to Farmington

to Bonne Terre

Rte. 67

Existing R.O.W. 20' W Alley

Existing R.O.W.

20:1 Slope

Existing R.O.W. 40'x27' Const. Esmt.

1 Story Stucco Res.

0+00 SW Ramp = 19+98 County Rd. = 8+92.41 NW Ramp

13+70.35 Exist. Rte. 67 = 23+46.8 County Rd

SCALE 1" = 50'

CL. A UNDERDRAINS

STATION	TYPE LOC.	LIN. FT.	DR. MARK
659+70	Lat. Rt. Lane	45'	1
659+80	Lat. Lt. Lane	44'	1
TOTAL		89'	2

200' V.C.
M.O. 0.26

+0.40%

+1.45%

0.0%

+2.86

300' V.C.
M.O. 0.32
450' N.P.S.D.

200' V.C.
M.O. 0.36
600' N.P.S.D

BENCH MARKS (U.S.G.S. DATUM)

B.M. #87 Spike in trunk of 18" ℇ/m 200' Lt.
Sta. 654+70 (Sur. ℄) Elev. 763.85

B.M. #88 ⌀ on top porch step, 300' Rt.
Sta. 663+25 (Sur. ℄) Elev. 768.21

COUNTY ROAD
STA. 658+83.40

9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24

FINAL PLANS

FED. ROAD DIV. No.	STATE	FEDERAL PROJECT No. & SEC.	FISCAL YEAR	SHEET No.
5	MO.	F-254(20)		8
DIST. No.	COUNTY		ROUTE	
6	ST. FRANCOIS		67	

FINAL PLANS

GRADE LINE ~ ROOTE 67

600' V.C.
M.O. 1.16'
770' N.P.S.D.

600' V.C.
M.O. 2.91'
475' N.P.S.D.

PROFILE & GRADE LINE ~ N.E. RAMP

440' V.C.
M.O. 3.55'
315' N.P.S.D.

230' V.C.
M.O. 1.64'
K 40

PROFILE & GRADE LINE ~ S.E. RAMP

250' V.C.
M.O. 1.95'
K 40

360' V.C.
M.O. 2.36'
315' N.P.S.D.

PROFILE & GRADE LINE ~ N.W. RAMP

430' V.C.
M.O. 3.12'
325' N.P.S.D.

230' V.C.
M.O. 1.56'
K 42

PROFILE & GRADE LINE ~ S.W. RAMP

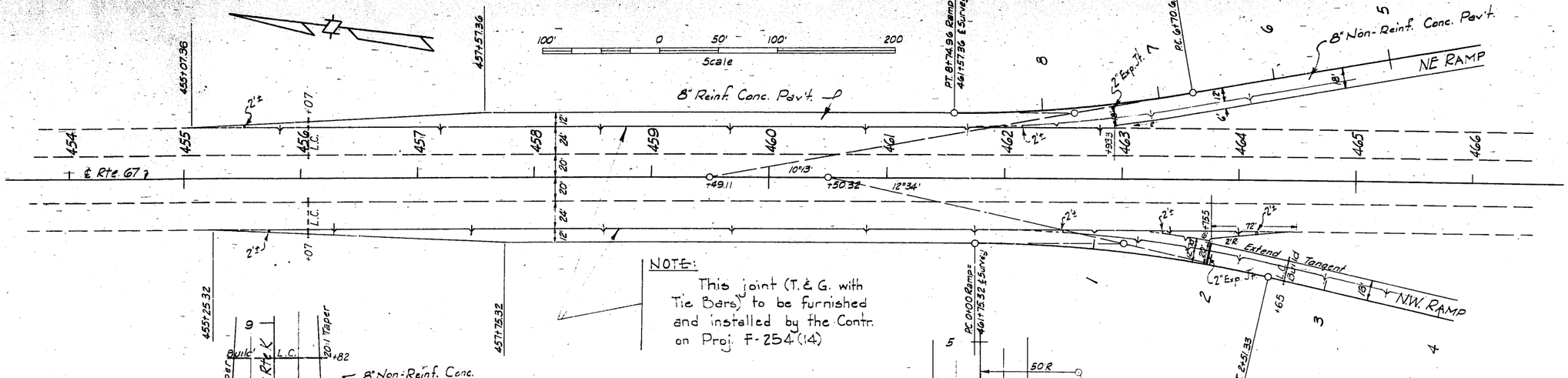
250' V.C.
M.O. 2.01'
K 39

400' V.C.
M.O. 2.90'
315' N.P.S.D.

RAMP GRADES
INTERCHANGE
AT
COUNTY ROAD
STA. 658+83.40

FED. ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	STREET NO.
5	MO.	F254(20)		
DIST. NO.	COUNTY		ROUTE	SEC.
6	ST. FRANCOIS		67	

9



LEGEND

- Longitudinal Jt. with tie bars
- Longitudinal Jt. without tie bars
- Longitudinal Jt. (Sawed) without tie bars
- Monolithic Construction

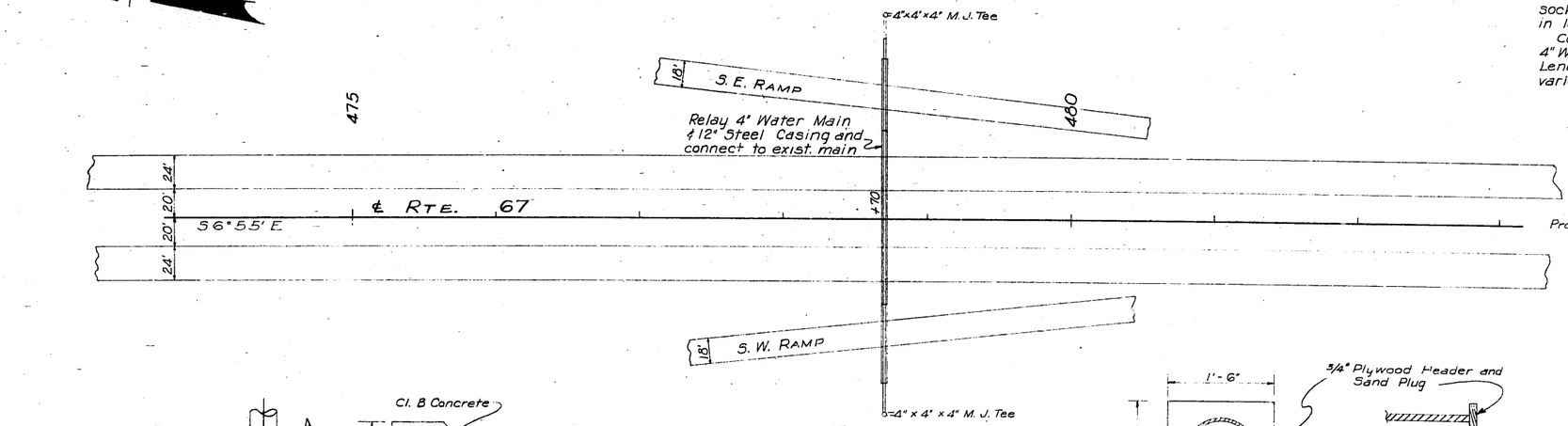
L.C. = 2" Rigid Steel Conduit

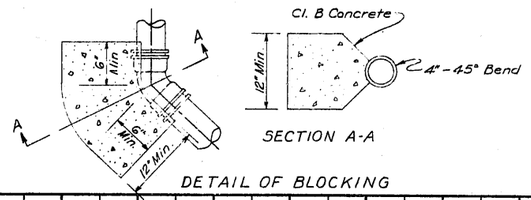
JOINT LAYOUT INTERCHANGE STA. 469+68.67

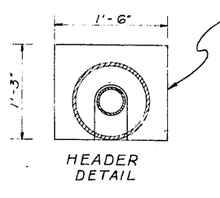
SPECIAL SHEET NO. 2

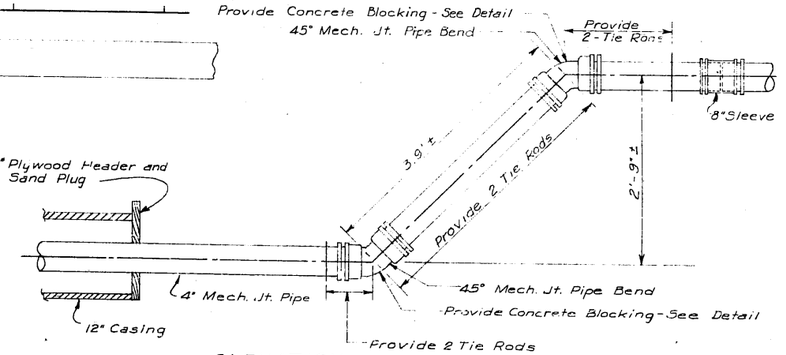
10

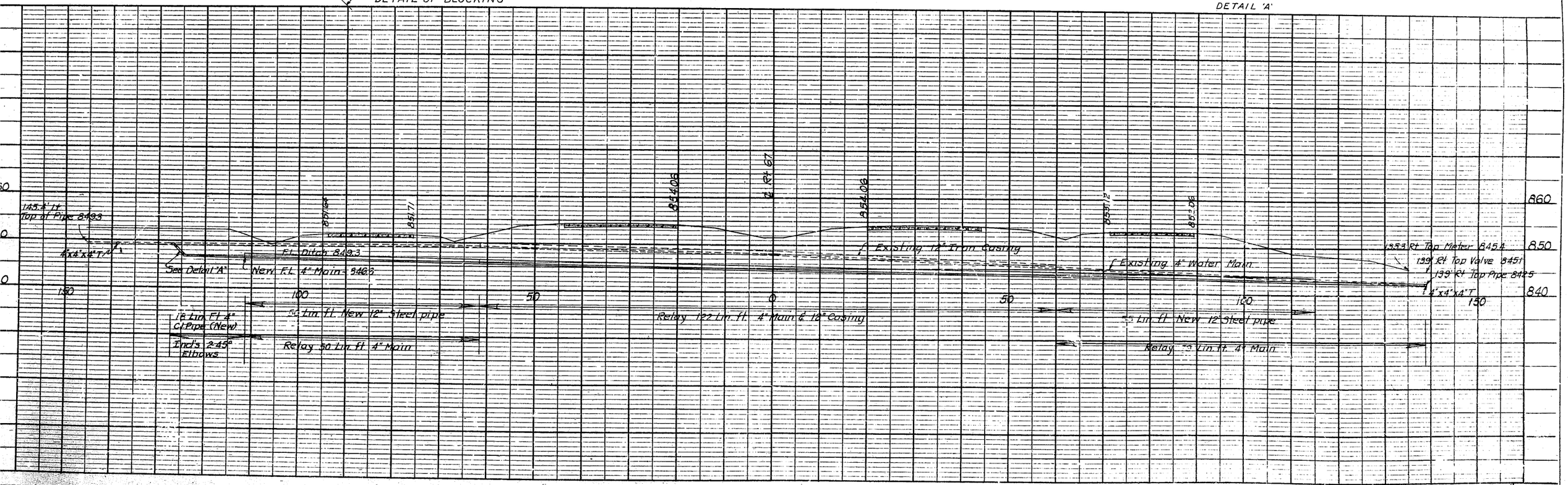
Pipe bends shall be provided with lugs for tie rods and the necessary tie rod's and socket clamps shall be furnished and installed in locations indicated on the plans
Contractor shall verify location of existing 4" Water Mains and determine Joint locations. Length of pipe removed and replaced shall be varied to fit actual locations.











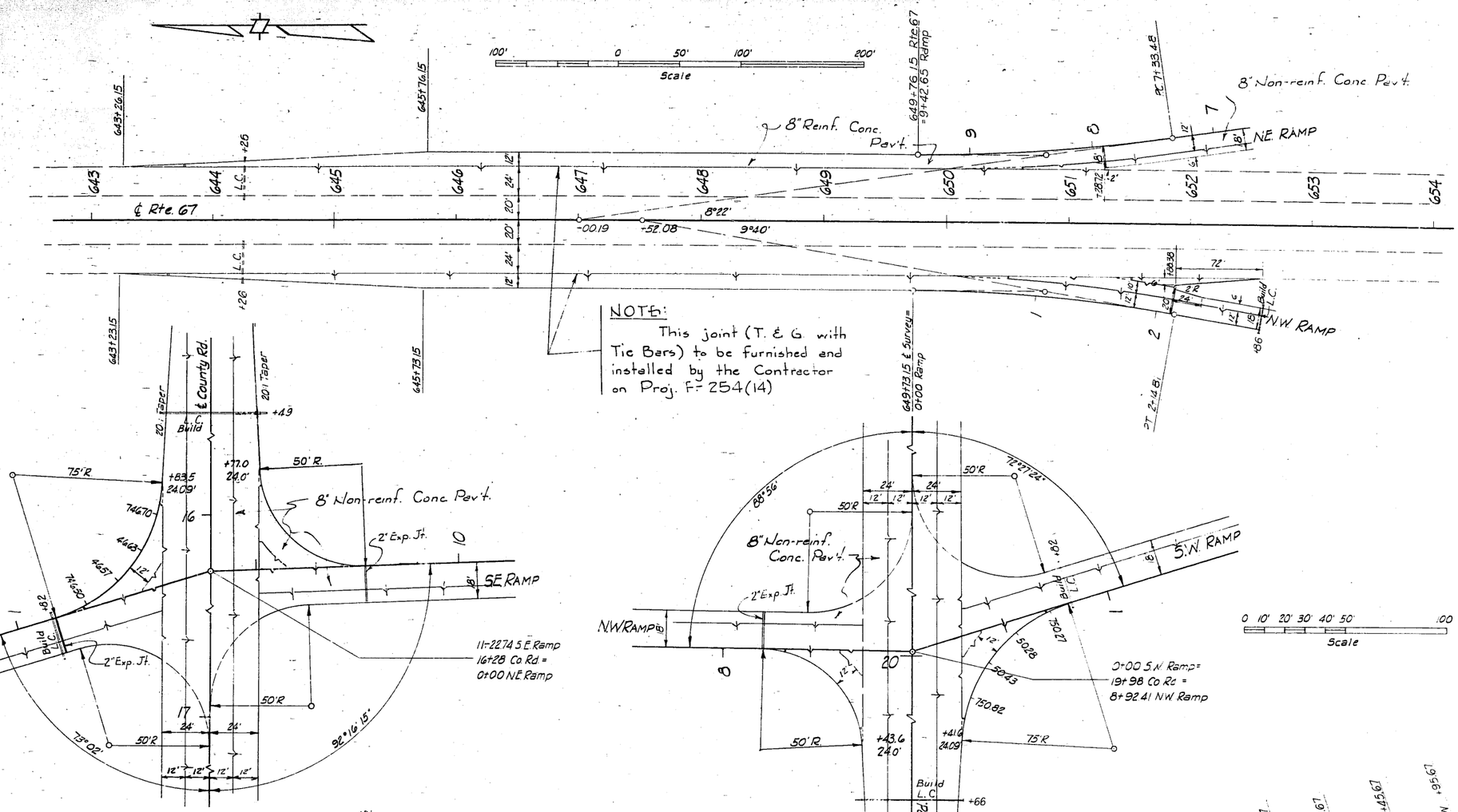
SPECIAL SHEET #3

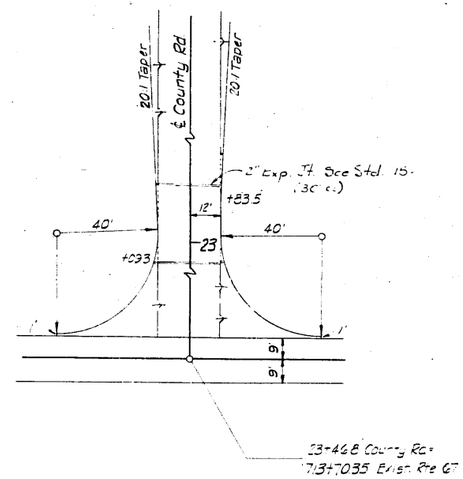
PLATE 1-PLAN-PROFILE O.D.P. R. & R. E. STANDARD
U. S. BLUE PRINT PAPER CO. - CHICAGO

PER ROAD DIST. NO.	STATE	FEDERAL PROJECT NO. & SEC.	FISCAL YEAR	SHEET NO.
5	MO.	F 254(20)		
DIST. NO.	COUNTY		ROUTE	SEC.
6	ST. FRANCOIS		67	

T. 37 N., R. 5 E.

11





NOTE:
See Spl. Sheet No. 2 for Joint legend.

I.C. = 2" Rigid Steel Conduit

JOINT LAYOUT INTERCHANGE STA. 658+83.4

SPECIAL SHEET NO. 4

LIST OF STANDARD PLANS

PROJ.	SHEET
F-254(20)	12
CO.	RTE.
ST FRANCOIS	67

1AD-7		(9-57)
1BA-4		(6-9-54)
1BB-3		(6-1-54)
15AB-9		(3-57)
15CN-2		(3-57)
15CR-3		(10-58)
15DE-9		
15E-20		(4-59)
24A-5		(4-22-55)
24D-5		
25K-11		
27A-20		(11-58)
28B-2		
36E-11		(2-26-57)
C-230R2		(3-56)
C-820	1 OF 3	(4-23-59)
C-820	2 OF 3	
C-820	3 OF 3	
C-530		(4-24-59)
C110R7		
C112R1		

5	MO.	F-254(20)	
6	ST. FRANCOIS	67	

PP-3 & 4

8+28.3
196.5' R/W

8+65.4
1470' R/W

9+29.6
194.9' R/W

520

R/W

1+25
60' R/W

10+00 Bk Rte 47 =
0+00 Ahd Rte 47 =
521+45.65 Rte 67

Rte 47
Signed

0+06

Over City
Street

8+24.5
25' R/W

R/W

1

2

2+20

3

℄ RTE. 47

8

9

10

NOT ON SYSTEM
0.037 Mi.

ON SYSTEM
0.042 Mi.

3+91.17 =
Rte 67 Ramps
= New Highway

7+86
25' R/W

Old Rte 67
Abandoned

R/W

1+85
80' R/W

R/W

523

67

RTE.

℄ OLD

Old Rte 67
Conveyed to City of Bonne Terre
by Quitclaim Deed
Length 0.075 Mi.

Rte 47
Conveyed to
City of Bonne Terre
by Quitclaim Deed
Length 0.079 Mi.

3+00
108.1' R/W

1+38.7
155.6' R/W

524

0+48.4
198.5' R/W

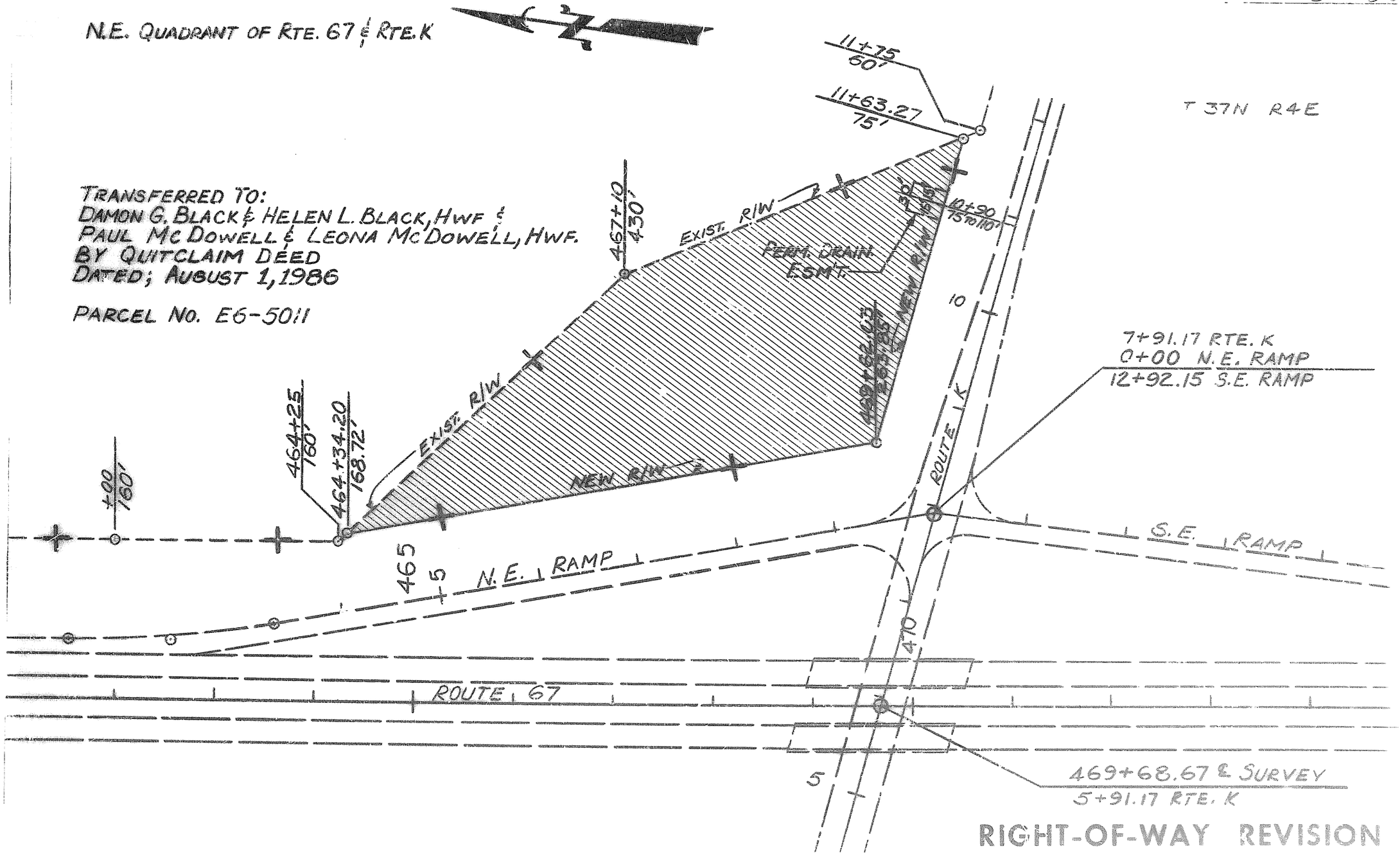
Exist. Maint. by
St. Francois Co.

MO			ST.
DIST. NO.	PROJECT NO.		ROUTE
0	COUNTY	ST. FRANCOIS	67
SF-3		FAU	
AF-3		229	

N.E. QUADRANT OF RTE. 67 & RTE. K

TRANSFERRED TO:
DAMON G. BLACK & HELEN L. BLACK, HWF &
PAUL MC DOWELL & LEONA MC DOWELL, HWF.
BY QUITCLAIM DEED
DATED; AUGUST 1, 1986

PARCEL NO. E6-5011



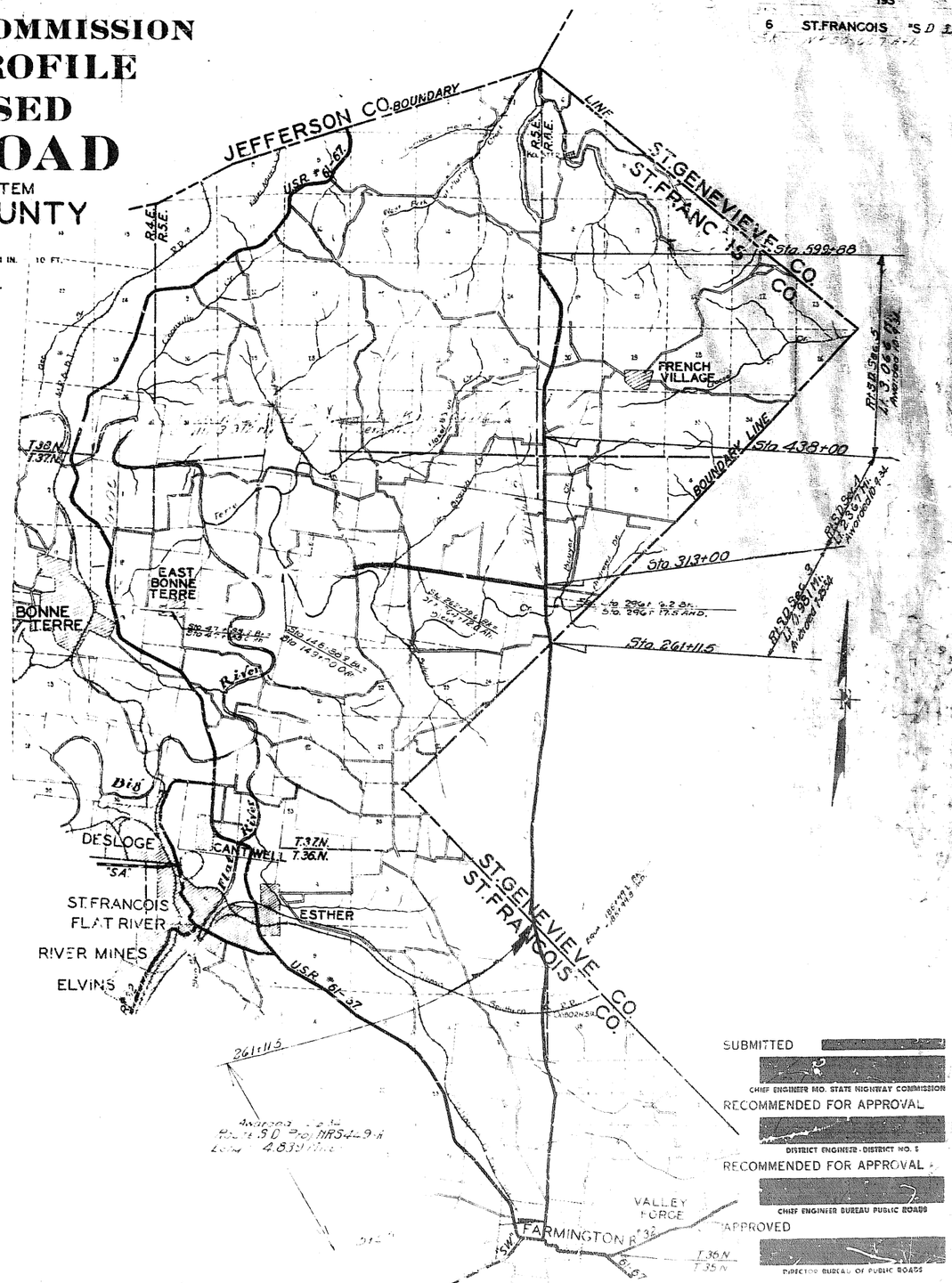
RIGHT-OF-WAY REVISION

MISSOURI
STATE HIGHWAY COMMISSION
PLAN AND PROFILE
OF PROPOSED
STATE ROAD
SUPPLEMENTARY SYSTEM
ST. FRANCOIS COUNTY

SCALES. PLAN 1 IN. = 100 FT.
PROFILE. HOR. 1 IN. = 100 FT. VERT. 1 IN. = 10 FT.
CROSS-SECTIONS 1 IN = 5 FT.
LAYOUT: 1 IN.=1MI. APPROX.

U.S. WORKS PROGRAM
HIGHWAY PROJ. NO. W.P.S.O. 667 A - B

MI 193
6 ST. FRANCOIS "S D 3.1.5



CONVENTIONAL SIGNS

STATE AND NATIONAL LINE	LEVEE
COUNTY LINE	CULVERTS
CITY, VILLAGE OR BOROUGH	DROP INLET
TOWNSHIP LINE	TROLLEY POLE
SECTION LINE	POWER POLE
GRANT LINE	TELEPHONE OR TELEGRAPH POLE
FENCE LINE	MARSH
GUARD RAIL	HEDGE
UNFENCED PROPERTY	
RIGHT OF WAY LINE	GROUND ELEVATION
TRAVELED WAY	
RAILROADS	GRADE ELEVATION
RETAINING WALL	SURFACE LINE
BASE OR SURVEY LINE	GRADE LINE

704

Name of Road BONNE TERRE EAST TO ROUTE D

Type of Improvement 20' GR. EARTH & GRAVEL SURFACE

MISSOURI STATE HIGHWAY COMMISSION

ESTIMATE SHEET

SHEET 2 of 2

County of ST. FRANCOIS

Length 3.972 Mil.

FED. ROAD DIST. No.	STATE	FED. AID PROJECT No.	TOTAL SHEETS FOR PROJ.	SHEET No.	TOTAL SHEETS
5	MO.				
DIV. No.	COUNTY				
6	ST. FRANCOIS				

EXCAVATION

STATION	C. & B.	CL. C.	CL. A BOR.	FILL	B.S. F.&L.	% M. TO O-HAUL
0+00						
3+50	176			138		
10+94	278			217		
18+44	339	162		432		
25+00	457	102		496		
31+00	604	180		784	92	
37+00	283	676	2135	1421	821	19
39+53	150	44	74	170	66	
42+50	239			203		
47+62	537	34		508	24	
76+50	178	1	152	275		
87+50	260	228	903	859	417	
92+00	384			414		
95+50	283	8		231		
103+78	484			399		
111+28	416			331		
118+17	310			259		
Bridge						
124+54						
127+13	850	1402		734	391	
130+74	698	623	71	820	410	
134+47						
141+78						
144+20				232		
147+00	10	120		108		
152+35	22	1141		213		
156+00	16	106		110		
160+00	377	1005		480	155	
167+50	122	538		794	149	
177+30	502	3178		944	130	
201+75	1072			1043		
209+85	866			784		
Subtotal	11388	11888	3336	13420	2655	19
Add for Bridge						
Add for Culverts		232				93
Add for Subgrade		180				
153+06 Pier #2						
176+00					2252	
Pier #3			2695			718
Pier #3 to Pier #4	261	108	81	823	37	
TOTALS	11388	4328	6111	14243	4944	1002

REINFORCED CONCRETE BOX CULVERTS

STATION	STANDARD	SIZE	LENGTH	CONCRETE	REINF.	EXCAV.	REMARKS
36+55	C-424	5 X 2	32	13.41	1283	45	3% Sk. 22° Rt. Fwd.
146+15				2.93			Seal Sink Hole
199+38	Special	4 X 6	32.32	15.41	1400	39	Orig. No. T-500
TOTALS				31.75	2683	84	

CORRUGATED METAL PIPE CULVERTS

STATION	15"	18"	24"	30"	36"	Culv. Excav.	% M. to O-Haul	REMARKS
37+57	34					6		
39+62				38		29		
59+53			34			19		
83+00		38				13		3% 22° Rt. Fwd.
87+90				36		11		
93+20		32				2		
100+00			34			4	8	
110+83		32				1		
121+23			48			51		3% 30° Lt. Fwd.
143+75		34				6		
147+74					32	33		
167+67		34				11		
167+77		34				9		
171+20		38				13		
173+58			34			12		
178+41				38		22		
190+86		46				9		
198+10			40			5		3% 20° Rt. Fwd.
203+00		38				2		
208+13				36		4		
TOTALS	34	326	190	148	38	262	8	

CULVERT REMOVALS

STA.	SIDE	Culv. Excav.
47+60	Lt.	4
49+08	Lt.	3
128+50	Lt.	6
154+85	Rt.	3
TOTALS		16

CLEARING & GRUBBING

SHEET #	UNITS CLEARING	UNITS GRUBBING
3	6	0
4	3	3
5	17	46
6	32	22
7	64	65
8	162	96
9	82	78
UNITS	366	310
ACRES	4.2	3.6

RANGE RUBBLE ROCK WALL

STATION	STATION	SIDE	LIN. FT.
124+54	126+00	Rt.	130
TOTALS			130

SUBGRADE SCARIFYING

STATION	STATION	STATIONS
0+22	19+50	19.3
30+00	35+00	5.1
39+50	44+00	4.7
45+00	45+50	.5
50+00	53+50	3.5
56+00	57+50	1.5
60+50	73+50	13.0
74+50	80+00	5.5
115+50	118+17	2.7
153+06	172+00	18.9
TOTALS		75.3

LENGTH OF PROJECT

End of Project	Station	209+85		
Beginning of Project	Station	0+00		
Apparent Length		209.85	Feet	
Equations and Exceptions:				
STA 47+88.3 Bk. = STA 47+85 Ahd.	Eqn. =	+0.3		
STA 148+88.3 Bk. = STA 149+00 Ahd.	Eqn. =	-11.7		
Total Corrections		-11.4	Feet	
Net Length of Project		209.736	Feet	
20973.6 Feet : 5280 =		3.972	Miles	

GRAVEL SURFACE

Book #	STA.	STA	Cu. Yds.
1	0+00	23+10	300
2	23+10	41+54	252.5
3	41+54	64+61	300
4	64+61	87+69	300
5	87+69	110+61	300
6	110+61 Pier #2	133+69 Pier #3	300
7	192+23	170+38	300
8	170+38	144+23	300
9	E. End 182+15	172+54	
10	161+38	138+17	266
TOTALS			2618.5

FORCE ACCOUNT

Excavate To Seal Sink Hole

STA. 146+15

Amount 129.27

SUMMARY

ITEM NO.	DESCRIPTION	UNIT	TOTAL UNITS	TOTAL AMOUNT

405

Prepared By R.A. Date 5-11 1936 Checked in Div. Office By Date 193

Checked in Central Office By Date 193

Name of Road BONNE TERRE EAST TO ROUTE D

Type of Improvement 20' GR. EARTH & 6 GVEL. SURFACE

MISSOURI STATE HIGHWAY COMMISSION

ESTIMATE SHEET

SHEET 1 of 2

County of ST. FRANCOIS

Length 3.972 Miles

FED. ROAD DIST. NO.	STATE	FED. AID PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	6F26	36	20	20
DIST. NO.	COUNTY				
6	ST. FRANCOIS				

STATION	N. OR S.	TRANCE 15"	SIDE 18"	ROADS CL'D ENT.	ROADS CL'D EXIT	CULVERTS	EXCAVATION FILL	EXCAVATION BORROW	EXCAVATION CHANNEL & SLOPE	ETC. PIPE CURVES	ETC. GUARDRAIL
5+38	N. LA.			3			4			FE.	
19+23	N. PT.	20		2.5		2	6		5.0	FE	
21+91	N. LT.	20			1	2	6		1.0	FE	
23+29	N. LT.	20			1	2	6		1.0	FE	
23+77	N. LT.	20			1	2	5		1.0	FE	
25+37	N. LT.			2			16		3.0	S.R.	17
27+42	N. LT.	14					53		6.0	S.R.	64
28+28	N. LT.	28					12		1.0	FE	
30+12	N. LT.	60					15		3.0	FE	
30+90	N. LT.	28					12		2.0	FE	
37+17	N. LT.						64		6.0	S.R.	
37+27	N. PT.						7		1.0	FE	
39+50	N. PT.	20					7		1.0	FE	
39+90	N. PT.	20					7		1.0	FE	
40+50	N. LT.						14		1.50	FE	
42+27	N. PT.	20					3		1.50	FE.	
44+00	N. PT.	20		6		2	5		1.50	FE	
44+08	N. LT.	20		1			5		1.0	FE	
44+75	N. LT.	20		3			6		1.0	FE.	
44+77	N. PT.	8								Under Pipes	
45+78	N. LT.	20		1			9		1.0	FE.	
46+82	N. PT.	22		1			16		1.75	FE.	
47+42	N. LT.	24					77		3.0	STREET	
48+16	N. LT.	20					6			FE	
51+04	N. LT.	28		1			8		1.50	Alley	
52+46	N. PT.	20		1			9		1.25	FE	
53+12	N. LT.	20		6			4		1.0	FE.	
53+67	N. PT.	28		1			22		1.75	S.R.	
55+28	N. LT.						15		1.25	FE.	
57+42	N. PT.						5			Baffle	
64+00	N. LT.	20		1		2	8		1.50	FE.	
69+24	N. PT.	20		9			8		1.50	FE	
71+00	N. PT.	20					9		1.50	FE	
81+13	N. PT.	20		1			9		1.50	FE.	
83+24	N. LT.						4			Baffle	
86+82	N. PT.	20		1			7			FE.	
86+85	N. PT.						10			FE	
88+30	N. LT.	20					11		1.50	FE	
89+19	N. PT.			1			5			Baffle	
89+42	N. LT.			34		35	11			S.R.	
105+58	N. PT.			6			3			FE.	
105+91	N. LT.			1			4			FE	
112+37	N. PT.			1			11		1.50	FE.	
112+52	N. LT.			9			4			FE	
128+57	N. LT.	28				60		37	3.0	S.R.	
129+18	N. PT.	40					106		2.0	S.R.	
137+80	N. PT.			12			2			FE	
137+80	N. LT.			7			3			FE.	
142+25	N. PT.	20		2			6		1.50	S.R.	
143+86	N. LT.						7			Baffle	
146+56	N. PT.	20		1			9		1.0	FE.	
146+56	N. LT.	20					11		1.0	FE.	
154+56	N. LT.	24					36		3.0	FE	
156+14	N. PT.	20					11		1.0	FE	
163+86	N. PT.						4			Baffle	
173+45	N. LT.						7			Baffle	
175+35	N. PT.						9		2.0	FE	
176+00	N. LT.	20		16			4		1.0	FE	
186+66	N. PT.						24		2.0	FE	
188+77	N. PT.	28		3			7			FE	
188+86	N. LT.	20		7		2	4		1.0	S.R.	
195+04	N. PT.						35			S.R.	
199+41	N. LT.			10		10				Gutter	
201+53	N. PT.			4			4			FE.	
201+79	N. LT.	20		76			8		3.0	FE.	
TOTALS		930		253	108	14	823	37	81.5		81

406

LENGTH OF PROJECT

End of Project			Station	209+85	
Beginning of Project			Station	0+00	
Apparent Length				209+85	Feet
Equations and Exceptions:					
STA 2+74.88 BK =	STA 47+88 AHD			+1.3	
STA 148+88 BK =	STA 149+00 AHD			-11.7	
Total Corrections				-11.4	Feet
Net Length of Project				20973.6	Feet
	20973.6	Feet ÷	5280 =	3.972	Miles

SUMMARY

ITEM NO.	DESCRIPTION	UNIT	TOTAL UNITS	
1-A	CLEARING	ACRE	4.2	
1-B	GRUBBING	ACRE	4.2	
1-D	CLASS 'A' EXCAVATION	CU. YDS.	17499	
1-F	CLASS 'C' EXCAVATION	CU. YDS.	4928	
1-J	CULVERT EXCAVATION	CU. YDS.	376	
1-Y	OVERHAUL	STA. YD.	1008	
1-5	SUBGRADE SCARIFYING	STATION	793	
16-I	GRAVEL SURFACE (D)	CU. YDS.	2700	
16-B	CLASS 'B' CONCRETE MASONRY	CU. YDS.	317	
18	15" C.M. PIPE CULVERTS	LIN. FT.	96	
18	18" C.M. PIPE CULVERTS	LIN. FT.	356	
18	24" C.M. PIPE CULVERTS	LIN. FT.	190	
18	30" C.M. PIPE CULVERTS	LIN. FT.	148	
18	36" C.M. PIPE CULVERTS	LIN. FT.	36	
19-A	REINF. FOR CONCRETE STRUCTURES	LBS.	2683	
20-F	RANGE RUBBLE STONE MASONRY	LIN. FT.	130	
	CONTINGENT ITEMS FORCE ACCOUNT	$	129.27	

Prepared By C.R. Date 5-27 1936 Checked in Dist. Office By Date 193

Checked in Central Office By Date 193

SURVEY #3099 EAST BONNE TERRE

BONNE TERRE FARMING & CATTLE CO.

C.C. BESS | JOE LOIDA | GORDON AUBUCHON | BONNE TERRE

SURVEY #71

PI 121+00.0
Δ 1°-47'-21"

PI 181+44.0
Δ 1°16'-11"

PI 261+0.
Δ 8°-17'
D 2°
T 207.
L 414.
SE=0.08' per ft. of ofset
R 2864
E 7.5

Use in place

Use in place
6"x16"x3'-4" c.c.
Iron Bar in Place
10" Conc. Headwall
D.A. 55 Ac. @ 0.5

581°-35'E

579°-48'E

581°-04'E

589°-21'E

(Approx Survey Line)
CITY LIMITS LINE

Sta 25+50 to 38+00 Cut Spec ditch on Lt. Exc. incl. in Roadway quant.

Sta 0+00. Build Spec. Intersection with Rt #61. See spec Sht #1

SURVEY # 467

Sta. 2+00 to 10+75 Use 24' Roadway.

PRIMARY STRUCTURES

STATION	SIDE	SKEW	SPAN	REMARKS

ENTRANCES

STA	SIDE	SIZE	LGTH	Exc. cl.	FILL	REMARKS	Gravel
5+38	FE Lt						
10+20	FE Rt	15"	20'				
21+40	FE Lt	15"	20'				
23+20	FE Lt	15"	20'				
25+34	SE Lt	—	—	12"	2.5	Turn water down Slope	
27+10	SE Lt	15"	20'		1.0		

SURVEY #73

TYPICAL SECTION

ON TANGENT

ON CURVE

NOTE:- This typical Section to be used throughout except as indicated by notes on plan & X-Section sheets. In solid rock cuts, excavate 12" below grade and back fill with earth. The standard O.H. unit for this project shall be 1½ mi/Yd.

Bm #1 "X" on N.E. Cor. Dr. Basin 100' N. of Sta 9+00 Elev 1242.32

Bm #2 "X" on N.E. Cor. Lt. Wing Sta 17+43.3 Elev 1208.84

B.M. #3 "X" on N.E. Cor. P.P. 30-2 Sta 27+80 Elev 1231.79

B.M. #4 S.E. Cor. Bottom Step of Channel 100' N. Sta 27+30 Elev 1295.02

Subgrade Scarification 19.5 Sta's

Borrow Pit #1 — Sta 3+31

Borrow Pit #2 — Sta 19+00

Borrow Pit #3 — Sta 30+00

PLOT PLAN - PROFILE

EAST BONNE TERRE

Paper Location
PI 39+32.7
Δ 8° 47' Rt
D 3°
T 146.7
L 292.8
E 5.6'
R 1910.1'
S.E. .0483 Pen. Fr.

Paper Location 2
PI 43+31.9
Δ 0° 44' Rt

PI 47+82.3 Bk } EQN.
= PI 47+88.0 Fwd }
Δ 0° 48' Lt

PI 54+07.7
Δ 25°-20' Lt
D 6°
T 214.7
L 422.2
E 23.5
R 955.4
S.E. .0273 Pen. Fr.

PI 59+69.3
Δ 24° 21' Rt
D 5°
T 247.3
L 487.0
E 26.4
R 1146.3
S.E. .0716' Pen. Fr.

MO

NOTE: Use paper location from station 32+86.0 to 47+38.3 as shown by dash line.

SURVEY #71

BONNE TERRE FARMING & CATTLE CO.

T.M. SIKES

W.B. HENDRICKS

GEO. HIOES

T.S. AUBUCHON

C.S. POSTERNAK

M.E. ASBRIDGE

L.J. DAVIS

BONNE TERRE FKC CO.
Sta. 52+53 and 100 S.E. run off, & begin 100 S.E. run on

SCHOOL PROP

Approx. Survey Line

Remove

Sta 38+55 Remove Gas Pump on right by R/W agreement

Sta 44+75 Relay Stone Steps on right, cost to be included in the unit price bid for roadway Excavation, per Cu. Yd.

Sta 47+83 Use 105' Lt. Cut Slope Ratio 2:1 & 4:1 Cut to drain to proposed Ditch. Channel Change Up Str. from -CH CH 250 - (1.50 CY/LF)

Sta 43+00 to 53+00 Use 1:1 Backslopes.

Sta. 38+00 to 44+00 Cut Special 3'x1' ditch on right.

Sta 43+65 to 44+20 do not disturb rock wall on right

Sta. 48+00 to 48+00 Widen Fill shoulder on Rt 2'

Row around the Spring House. Do not disturb

Remove Sta 59+53 - 6 Pipe Box and 4' arch in place.

S80°-34'E

S80°-29'E

S80°-38'E

N74°-02'E

S81°-37'E

PC 5+11.93

PT 5+60.16

PC 51+22.0

H. NEUBEAND

City Limits Line

Survey Line

SEC #18

A.A. BAYLES

FRED FINGERS

E. ROUX

MRS. WILSON

S.B. BYINGTON

SURVEY #73

DRAINAGE STRUCTURES

STATION	SKEW	SIZE	LENGTH	REMARKS
34+55	Cmpl. Skc	30"	32' 39-6	
37+67	P	18"	34'	
51+53	P	24"	34' 9-6	
39+62.8	P	30"	38'	

ENTRANCES

STA	SIDE	SIZE	LGTH	EXC	FILL	REMARKS
30+4	RE Lt	15"	60			
36+	RE Lt	"	28		2'	
37+44	RE Lt	"	24		1'	In Rt 4 / Skewed back
37+62	RE Rt	"	22		1'	
38+50	RE Rt	"	22	19		
39+50	RE Rt	"	20			
42+	RE Rt	"	20			
42+	RE Lt					
42+75	RE Rt	"	20			
43+	RE Lt	"	20			
44+75	RE Rt	"	22			
45+82	RE Rt	"	22			
47+6	RE Lt	"	24			
48+	RE Lt	"	20			
49+	RE Lt	"	22			
52+	RE Lt	"	22			
53+	RE Lt	"	22			
44+75	Steps Rt		8			Steps to pipe road under Stone Steps
49+	RE Lt	"	20			

Clearing Grubbing

Channel Excavation 45.9 Sta.

Sta 39+00 Elev 764.96
BM #2 NEW in trunk 36" Maple 20 Lt
Sta 50+00 Elev 752.08
BM #3 NEW in trunk 6" Black Walnut
60' Rt Sta 56+12 Elev 785.31

Sta 32+00 Elev 764.96
BM #2 NEW in trunk 36" Maple 20 Lt
Sta 50+00 Elev 752.08
BM #3 NEW in trunk 6" Black Walnut
60' Rt Sta 56+12 Elev 785.31

408

STATE	PROJECT	YEAR
S	MO.	S
FN. NO.	COUNTY	ROUTE
—	S	

P.O.T. 65+19.9

P.O.T. 74+72.8

PI 84+31.2
Δ 58°-02' Lt.
D 6°
T 529.9
L 967.2
S.E. 0.0855 per 100 ft.
E 37.1
R 955.4

P.O.T. 90.26'

P.O.T. 84+00.0

BONNE TERRE M&C CO.

FRANCIS HEIRS

CHARLES NEUBRAND

HERMAN NEUBRAND

SURVEY # 72

SURVEY # 71

Sta. 78+00 to 80+00 Use 1:1 Backslopes

Sta. 66+65 turn Water out on Lt.

Sta. 67+36 Turn Water out on Lt.

Sta. 70+50 turns Water out on Lt.

Sta. 71+50 turn Water out on Lt.

P.T. 62+09.0

P.C. 79+01.3

Bor. Pit Esmt #2

Top East Line Survey 71 Use

S81°37'E

S.E.C. 18

S.E.C. 17

F.P. COUNTS

S83°E - Surv Line

Approx. Surv Line

N40°-E

DRAINAGE STRUCTURES

STATION	STA'D	SIZE	SKEW	LENGTH	GRADE	REMARKS
83+00	P	18"	20°Rt	36'	G-6	
87+90	P	30"		36'	B-6	

ENTRANCES

STA	SIDE	SIZE	SKEW	EXC.	FILL	REMARKS
66+00	FC Rt.	15"	20	10	10	
RC "	RC Rt.			60		7
71+00	RE Rt.	15"	20		5	3
81+	RE Rt.	15"	20		10	
8	EE 2	15"	20			
88+13	RE Lt.	15"	20		11	15
89+1	SR Lt.	—	—	5		Skew int. was rad
89+	FA Rt.	—	—		13	

Clear Grade

Sta. cycle Scarifying 13.0 Sta's.

O.M.#10 N.W. in root 14" Silver Maple 80' Rt. Sta 64+30 Elev 783.33

O.M.#9 N.W. in trunk 60+8.0 23' Lt. Sta 72+25 Elev 772.62

O.M.#10 N.W. in root 18" Root Oak 40' Rt. Sta 82+90 Elev 746.34

A 2.32
C 6.8
Fill 42.9

A 9.5
C 36
Bor. 2.4 (Bor Pit #2)
Fill 222

A 9.5
C 40.0
Fill 16.6

A 7.5
C 11.5
Bor. 4.7 (Bor Pit #2)
Fill 23.5

A 7.5
C 11.5
Bor. 2.2 Bor Pit #2
Fill 2.0

Total Est. 4.7

4-09

FEDERAL AID DIST. NO.	STATE	STATE ROAD PROJECT	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
5	MO.	[illegible]	[illegible]	6	
DIV. NO.	COUNTY			ROUTE SEC. NO.	
5	[illegible]			[illegible]	

SURVEY 72

F.E. COUNTS

PI 1+24+83.3
Δ 10°-50'-21"
D 3°
T 181.1
L 361.1
S.E. = 0.0409
E. 8.6
R. 1910.1

P.T. 114+83.3

Sta 91+00 to 93+00 Use 1:1 Backslopes

USE Bridge in place

N 40°21' E

P.C. 111+02.2

P.T. 114+83.3

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	SKEW	LENGTH	AREA	REMARKS
92+20	R	18"		52'	3.4	
100+00	R	24"		34'	7.6	
110+86	R	18"		22'	2.6	3.3

ENTRANCES

STA.	SIDE	SIZE	WIDTH	EXC.	FILL	REMARKS
103+-,	RT. R&L			1.5 m	3	
112+75	RT. RIGHT			15 m	16	

Sta 91+00 to 93+00 Use 1:1 Backslopes

T.B.M. N 44° W in trunk of 18" Elm. 20.84
Sta 112+22.0 Elev 694.89
T.B.M. 35° W in 14" Sycamore 100.44
Sta 112+75 Elev 692.31

Existing Ground Line

Profile Projection

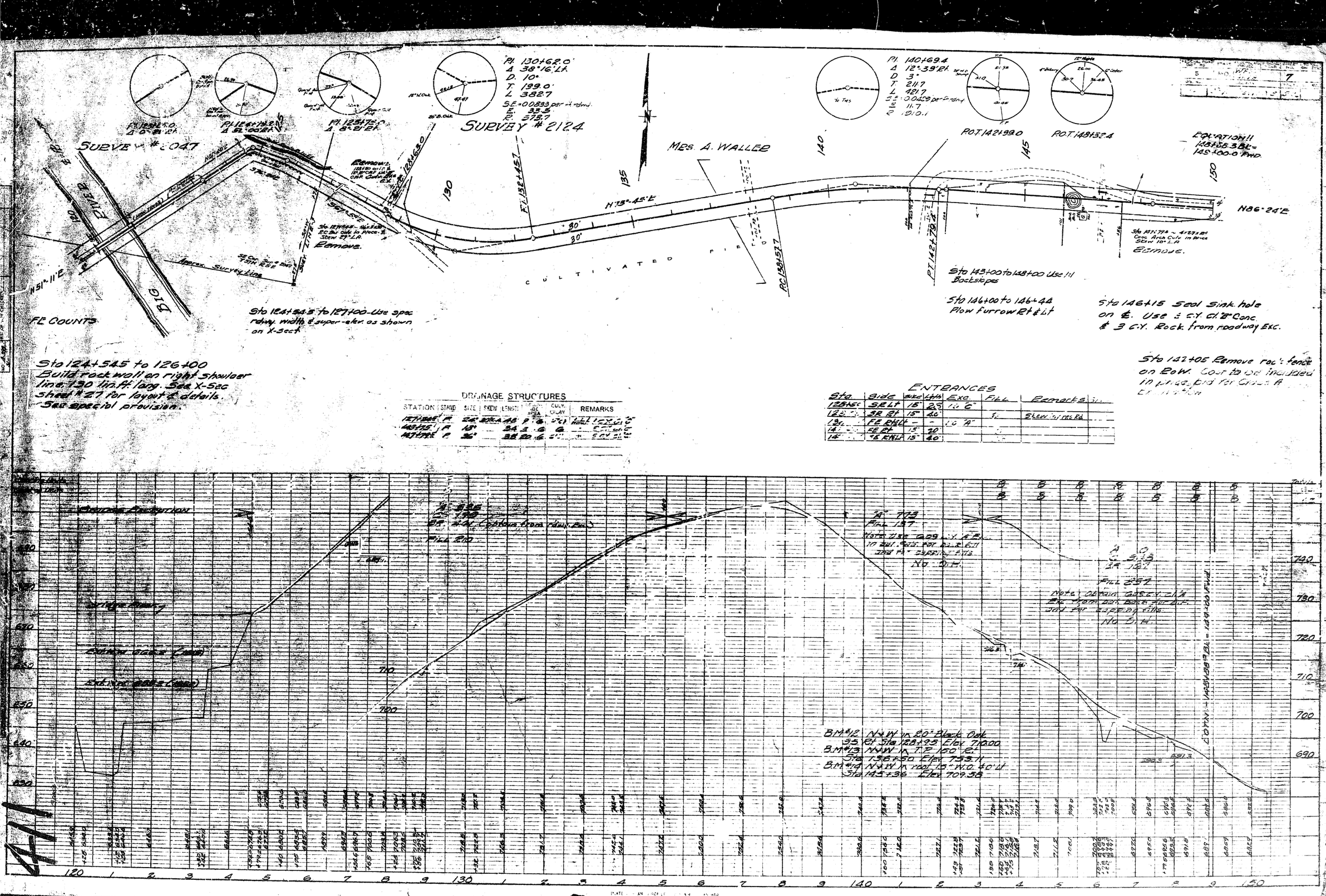
Sta 114+83.3

Sta 91+00

Sta 93+00

410

PLATE I - PLAN-PROFILE



Sta 124+54.5 to 126+00
Build rock wall on right shoulder line 130 lin. ft. long. See X-Sec sheet #27 for layout & details.
See special provision.

DRAINAGE STRUCTURES

STATION	STAND	SIZE	SKEW	LENGTH	INLET AREA	INLET GRATE	CULV. CLASS	REMARKS
127+00.5	P	24"	EXTRA	48'	P	C	76	1.1 FCY CL C
143+15	P	15"	—	24'	A	C	C	— FCY CL C
147+75	P	36"	—	38'	D	C	[illegible]	5 FCY CL C

ENTRANCES

Sta	Side	Size	Length	Exc.	Fill	Remarks
123+45	SE Lt	15"	20'	1.0 C.Y.		
122+	SE Rt	15"	40'		5	Skew to Rt. Rd.
131+	FE Entr.	—	—	1.0 C.Y.		
14+	FE Rt.	15"	20'			
14+	FE Entr.	15"	40'			

FED. ROAD DIST. NO.	STATE	FED. OR STATE PROJ. NO.
5	MO.	[illegible]
SHT. NO.	COUNTY	PURPOSE SECTION
[illegible]	[illegible]	[illegible]

P.I. 155+00.0
Δ 6°-20'-21"
D 4°
T 166.7
L 332.8
S.E. = 0.0886 per ft. rdwy.
E. 2.2
R. 1432.0'

P.I. 161+50.0
Δ 3°-36'-21"
D 2°
T 140.1
L 280.0
S.E. = 0.0286 per ft. rdwy.
E.S.M.
R. 2864.9'

P.O.T. 164+87.5

P.O.T. 173+00.0

SURVEY #2124

MRS. A. WALLER

MRS. W.C. ASHBURN

SURVEY #2106

A.C. McHENRY

Use in Place
Sta 157+00 — 6'x2'x12" Conc. Box, in fill on Lt.
10 Wells 6' Long

Remove
Sta 157+60 — 6'x2'x12" Conc. Box in fill

Remove
Sta 159+00 — 6'x2'x12" Conc. Box in fill

Remove
Sta 159+60 — 6'x2'x12" Conc. Box in fill

Remove
Sta 160+40 — 6'x2'x12" Conc. Box in fill

Remove
Sta 170+40 — 6'x2'x20" Conc. Box in fill

Sta 168+00 to 171+00 Use 1:1 Backslopes on Lt.

Sta 168+08 to 181+00 Remove Rock Wall on Lt. If C.Y. Piles are in it To be disposed of as directed by the Engineer

Bor. Pit Permit #3

Bor. Pit Permit #2

Bay Wood Piling Rock Piling

TEBBE BLAKE D.B. 482 Pg. 111

CREEK

N86°-24'E

S86°-56'E

PC 153+46.6

PT 153+68.8

PC 161+09.9

PT 161+40.8

SURVEY LINE

DRAINAGE STRUCTURES

STATION	SIDE	SIZE	LENGTH	SKEW	REMARKS
167+67	R	18"	34' 4-6	5°	Inlet Box & Outlet
169+77	R	18"	34' 2-6	0°	Inlet
171+20	R	18"	38' 4-6	5°	Inlet & Outlet
173+58	R	24"	34' 6-6	0°	Inlet Box & Outlet
178+41	R	30"	38' 16-6	5°	Inlet Box & Outlet

ENTRANCES

STA	SIDE	SIZE	LENGTH	EXC.	FILL	REMARKS	G 2% L
154	RE. Lt.	15"	24'		4'		
161+42	RE. Rt.	15"	20'	1.5'			
157+26	RE. Lt.	—	—		—	Use Exc. in place	—
17[illegible]	RE. Lt.	15"	20'		1'	Pipe on Lt.	

BENCH MARK
Nail & Washer in root 15" Post Elm
60 Ft. 159+40 Lt. Sta. 159+00
Elev. 760.58
BM #2 Nail & Washer in root 15" Post Elm
60 Ft. 159+40 Lt. Sta. 159+00
Elev. 760.58

Bridge

1" 20
C 92
Borrow 427 (Bor Pit #3)
Fill 427
OH 425 (4% Int.)

2" 40
Borrow 307 (Bor Pit #2)
Fill 5.59
OH 120 - 4% Int.

2" 40
C 140
Borrow 460 Bor Pit #3
Fill 52.9
OH 2.4

2" 40
C 250
Borrow 2235 (Bor Pit #3)
Fill 520
OH 2.4

Existing Structure
18.9 Sta.

Bridge 681.2

Elevations

412

FED. ROAD DIV. NO.	STATE	FED. AID PROJ.	SHEET NO.
5	MO	RRS-1	9
DIV. NO.	COUNTY		ROUTE

P.O.T. 185+66.0

P.O.B.T. 189+00.0

P.I. 189+15.5
Δ 25°-39' Lt.
D 5°
T 261.0
L 513.0
SE. 0.0716 per 1 ft. rdius
E. 29.3
R. 1146.3

P.O.F.T. 24.26'

P.O.T. 192+69.1

P.O.T. 193+69.1

P.O.T. 198+58.8

P.O.T. 200+86.0

SURVEY # 2106

MRS. W.C. ASHBURN

A.C. McHENRY

P.C. 186+54.5

P.T. 191+67.5

STA. 209+85 END P.W.S.O. 667.4
BEG. P.W.S.O. 667B

N73°-11' E

Sta 191+50 to 193+82
Const 3'x2' ditch Lt.

Sta. 192+85 to 193+00
Const 3'x2' ditch Rt.

N.E. Cor. of AC McHenry's Farm - Survey # 2106
T51N - R5E

Quarry

Stone

ENTRANCES

Sta.	Side	Pipe Diameter	Length	Exc.	Fill	Remarks	Grade
185+	Lt.	15"	20'	12"			
187+	Lt.	15"	22'	1'-9"			
189+	Lt.	15"	22'	1'-9"			

DRAINAGE STRUCTURES

190-86	18"	46.5	C
198+10	24"	20 ER 40.9	C
198-38	Spec. 4.1 6.3 DIA	70	C
208+00	15"	38.3	C
208+13	30"	36' 12"	C

* Drain forward in ROW to Sta 198+20
** See Dwg No I 500 No 1 con.

BM#17 N. W. In 14" Cedar 4.5' Rt
Sta 183+20 Elev 772.26
BM#18 N. W. In 11" Maple 90 Rt
Sta 195+30 Elev 772.12
BM#19 N. W. In 8" Walnut 50' Rt
Sta 201+00 Elev 771.28

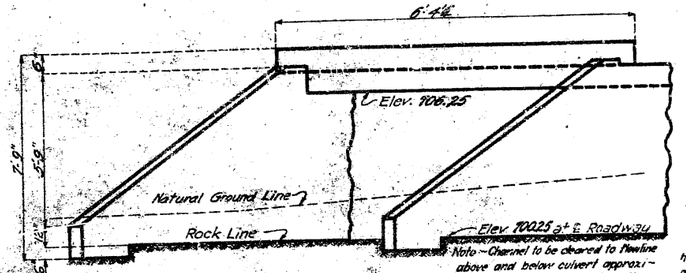
See Preceding Sheet for Continuation

413

180 1 2 3 4 5 6 7 8 9 190 1 2 3 4 5 6 7 8 9 200 1 2 3 4 5 6 7 8 9 210

MISSOURI STATE HIGHWAY DEPARTMENT

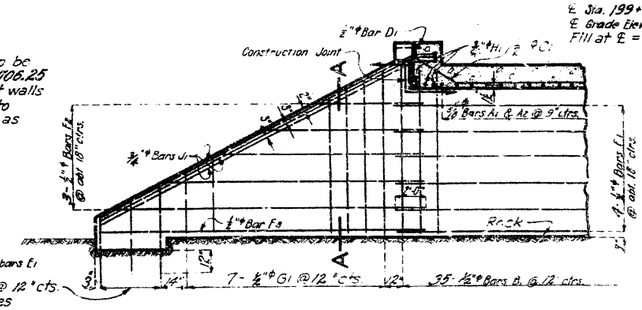
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	MO.	BRO 68(A)(5)	192		



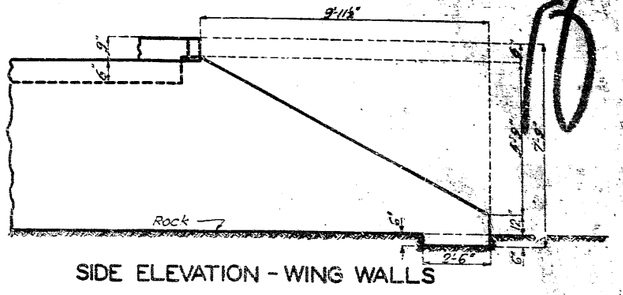
END ELEVATION

Note Bottom of slab to be placed level at Elev. 706.25 and height of culvert walls varied as necessary to extend walls to rock as specified.

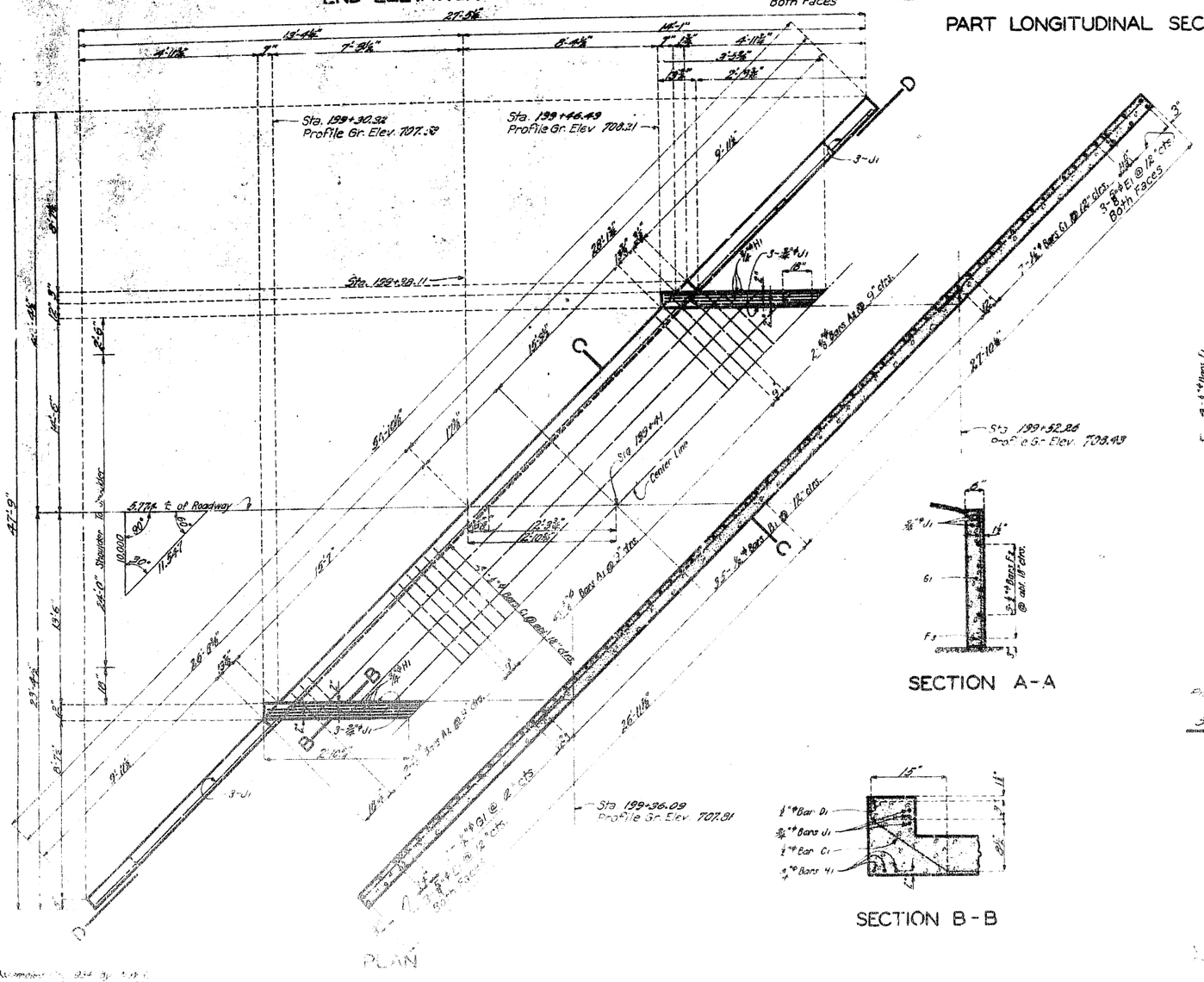
Note—Channel to be cleared to flowline above and below culvert approximately as shown in End Elevation.



PART LONGITUDINAL SECTION D-D



SIDE ELEVATION - WING WALLS



PLAN

SECTION C-C

SECTION A-A

SECTION B-B

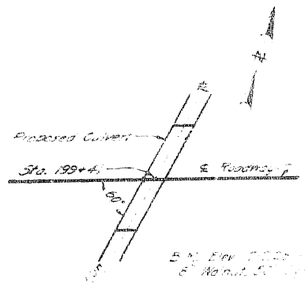
BILL OF REINFORCING STEEL

NO	SIZE	LENGTH	MARK	CUTTING DIAGRAMS
43	⅝"ϕ	4'-9"	A1	2-BARS A2, CUT 2
"	"	6'-0"	A2	
70	½"ϕ	6'-3"	B	
4	½"ϕ	35'-3"	C	
2	½"ϕ	6'-0"	D1	
12	⅝"ϕ	6'-3"	E1	
8	½"ϕ	34'-3"	F1	7-BARS G1, CUT 14
6	½"ϕ	42'-3"	F3	
2	½"ϕ	12'-0"	F3	
14	½"ϕ	2'-0"	G1	3-BARS F2, CUT 6 / 3-BARS E1, CUT 12
6	¾"ϕ	5'-6"	H1	
12	¾"ϕ	16'-6"	J1	

Note: Reinforcing bars ¾" or over in diameter, which are bent to an angle greater than 90° shall be of structural grade.

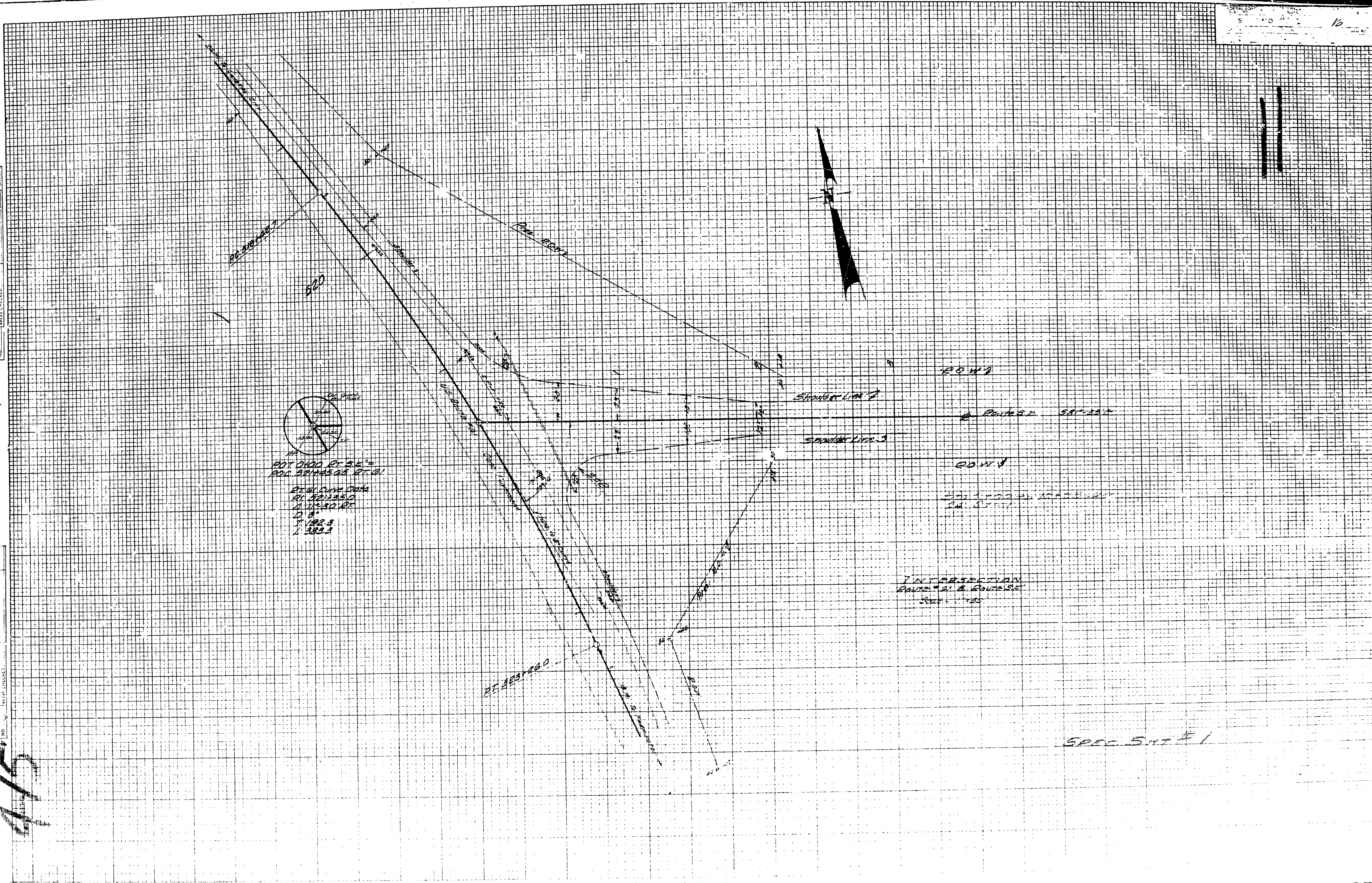
ESTIMATED QUANTITIES

Concrete for Wing Walls, Class "S"	C. Yds.	4
Reinforcing Steel	lbs.	1477
Excavation for Culvert	Yds.	45



LOCATION SKETCH

GENERAL NOTES:


P.C. 518+42.7
520
P.O.T. 0+00 Rt. 5E =
P.O.C. 521+45.65 Rt. 61
Rt. 61 Curve Data
P.I. 521+35.0
D 3°
T 192.3
L 383.3
P.T. 523+28.0
Shoulder Line 4
Shoulder Line 3
Route 5E
INTERSECTION
SPEC SHT # 1

S. Hazards

Typ Sec & Earthwork

Route
Job Proj(s)
County SJ

Sheet# 1

Surf. Curb & Gutter & P

P14A

Drainage

C24

C424

Conc-Reinf Apports
Finish etc.

Bridges

Misc.

5	MO.	FEDERAL PROJECT NO. & SEC.	SHEET NO.
		WPSO-667(A)	
6	ST. FRANCOIS	K	

PP-3

8+28.3
196.5' R/W

8+24.5
25' R/W

R/W

8+65.4
147.0' R/W

9+29.6
194.9'
R/W

520

Rte 47
Signed
Over City
Street

8+05

10+00 Bk Rte 47 =
0+00 Ahd Rte 47 =
521+45.65 Rte 67

1+73
60' R/W

1

2

2+20

3

℄ RTE. 47

8

9

10

NOT ON SYSTEM
0.037 Mi.

ON SYSTEM
0.042 Mi.

7+86
25' R/W

3+91.17 =
Rte 67 Ramps
= New Highway

R/W

1+85
60' R/W

R/W

523

67

℄ RTE.

℄ OLD

524

3+00
109.1' R/W

1+38.7
155.6' R/W

Rte 47
Conveyed to
City of Bonne Terre
by Quitclaim Deed
Length 0.079 Mi.

Old Rte 67
Abandoned

Old Rte 67
Conveyed to City of Bonne Terre
by Quitclaim Deed
Length 0.075 Mi.

0+48.4
198.5' R/W

Exist. Maint. by
St. Francois Co.

Traffic Safety and Operations Report

DRAFT

Route K & Northwood Drive

Bonne Terre, Missouri

Prepared For:

Missouri Department of Transportation

Date:

October 2026

Kimley»Horn

Traffic Safety and Operations Report

Route K & Northwood Drive

Bonne Terre, Missouri

Prepared for:
Missouri Department of Transportation
Southeast District
2675 North Main St., Sikeston, Missouri 63801

Prepared by:
Kimley-Horn and Associates, Inc.
805 Pennsylvania Avenue, Suite 150
Kansas City, Missouri 64105

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EXHIBITS (SEE APPENDIX A)

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EXHIBIT 2: STUDY AREA
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EXHIBIT 4: EXISTING GEOMETRY AND INTERSECTION CONTROL
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1.0 INTRODUCTION

Kimley-Horn has prepared the following Traffic Safety and Operations (TS&O) report for the portion of Route K/Route 47 from Berry Road to Hillcrest Drive in Bonne Terre, Missouri. The purpose of this TS&O study is to develop potential intersection improvement alternatives for the Route K & Northwood Drive intersection in conjunction with potential improvements along the Route 47/Route K corridor that enhance safety and operations.

1.1 PROJECT BACKGROUND

Route 47/Route K is the major east-west corridor through Bonne Terre. There is congestion on the corridor near the US-67 interchange during peak times. The congestion is related to closely spaced intersections and driveways near the interchange. Three of the closely spaced intersections are signalized. The Route K & Northwood Drive intersection is unsignalized and located approximately 400 feet east of the interchange.

The Route K & Northwood Drive intersection is the only access point for a large area of developed land which is illustrated in **Exhibit 1** in **Appendix A**. This land north of Route K includes commercial businesses along Northwood Drive, such as retail stores, restaurants, a motel, equipment sales, and storage. The Bonne Terre Drag Strip is located just north of the commercial businesses. A small apartment complex is located near the drag strip. Around 100 single-family homes are situated on large lots to the north of the drag strip. The homes previously had direct access to US-67 approximately one mile north of the US-67 & Route K interchange, but the at-grade access point along US-67 was closed in 2011 and Northwood Drive was extended north to provide access to the residential area. This change in the road network directed more traffic to the Route K & Northwood Drive intersection.

There is a private driveway that aligns with Northwood Drive to become the south leg of the Route K & Northwood Drive intersection. The private driveway is a shared access for a Circle K gas station and convenience store, a motel, and an auto sales business. These developments are shown in **Figure 1** on the next page. Drivers experience delays when exiting this driveway to turn left and travel westbound on Route K. There have also been angle crashes associated with this movement.

A single-lane roundabout had previously been discussed as a potential improvement alternative for the Route K & Northwood Drive intersection. It was also discussed that a roundabout could require the wastewater lift station in the northeast corner of the intersection to be relocated. Costs for this work were estimated and included in the unfunded needs list for the Southeast District. Since that time, construction costs for roundabouts have increased. It is expected that the improvements that were previously identified would now have a substantially higher construction cost than originally estimated.

This TS&O report will evaluate alternative intersection improvements for the Route K & Northwood Drive intersection to address safety and operational concerns. The report will also study the Route 47/Route K corridor to ensure that improvements identified for the Route K & Northwood Drive intersection are compatible with the ultimate improvements needed for the corridor. The construction (build) year for the improvements identified in this report is assumed to be 2029.



Figure 1: Northwood Drive Area

1.2 STUDY AREA

The limits of the study area include Route K/Route 47, from Berry Road to Hillcrest Drive. The list of study area intersections is provided below. The list provides the existing intersection control for each of the study intersections. A study area map is shown in **Exhibit 2**.

1. Route 47 & Berry Road (Signalized)
2. Route 47 & US-67 Highway southbound ramps (Signalized)
3. Route 47 & US-67 Highway northbound ramps (Signalized)
4. Route K & Northwood Drive (Side Street Stop)
5. Route K & Hillcrest Drive (Side Street Stop)

The study area map illustrates the close spacing between study intersections. The three signalized intersections are spaced approximately 400 feet apart. The Northwood Drive intersection is also spaced approximately 400 feet east of the US-67 northbound ramps intersection.

The existing street network within the study area includes US-67 Highway, Route 47, Route K, Berry Road, Northwood Drive, and Hillcrest Drive. Each of these roadways are part of one or more of the study intersections. The following provides a summary of the characteristics of the existing streets within the study area:

US-67 Highway is a four-lane divided freeway with a grass median and paved shoulders. The posted speed limit is 65 miles per hour (mph). According to the 2025 Missouri Department of Transportation (MoDOT) Traffic Volume Map, the Annual Average Daily Traffic (AADT) volume on this segment of US-67 Highway is approximately 37,000 vehicles per day.

There is a diamond interchange on US-67 at Route 47/Route K. US-67 is carried on two separate bridges over Route 47/Route K at the interchange.

Route 47 is generally a two-lane major collector with narrow paved shoulders and a posted speed limit of 30 mph. Shoulder widths vary from 1 to 6 feet. There are some intermittent segments of curb and many private driveways. There is a sidewalk on the south side of Route 47 to the west from the Berry Road intersection. Route 47 widens to provide left-turn lanes at the intersection with Berry Road. East of Berry Road, there are two through lanes in the eastbound and westbound directions. The second westbound through lane terminates as a westbound right-turn lane at Berry Road. The roadway is designated as Route K to the east of the US-67 interchange. According to the MoDOT Traffic Volume Map, the AADT along Route 47 is approximately 15,200 vehicles per day.

Route K is generally a two-lane major collector with turf slopes to ditches along both sides. The posted speed limit is 30 mph to the west of Hillcrest Drive and 45 mph to the east of Hillcrest Drive. Route K widens to provide two through lanes in the eastbound and westbound directions at the US-67 interchange. The second eastbound through lane terminates as a left-turn lane at the intersection with Northwood Drive. The vertical alignment of Route K is fairly level near the interchange, but there is a crest vertical curve near Hillcrest Drive that has steep grades of 8% or more leading up to the crest. According to the MoDOT Traffic Volume Map, the AADT along Route K is approximately 6,300 vehicles per day.

Berry Road is a two-lane local street that widens to provide left-turn lanes at Route 47. South of Route 47, the street is named Raider Road. There are some segments of curb and gutter near the intersection to control stormwater drainage. The posted speed limit along Berry Road and Raider Road is 30 mph.

Northwood Drive is a two-lane local street that widens to provide a turn lane at Route K. There are curbs and gutters along certain segments of Northwood Drive. The posted speed limit is 30 mph.

Hillcrest Drive is a two-lane local street that provides access to several businesses and residential areas. North of Route K, the street name changes to Carzon Road.

1.3 PROBLEM DEFINITION

There are several concerns at the Route K & Northwood Drive intersection that this project aims to address. The intersection currently operates with stop-control for the northbound and southbound approaches, while Route K is allowed uninterrupted flow. The northbound approach to the intersection currently operates with longer delays and is nearing capacity during the peak hours. There have been a number of crashes reported at the Route K & Northwood intersection as well. Many of these collisions are angle type crashes, which tend to be more severe than other intersection crash types. The intersection is of particular importance because Northwood Drive is the only access point for many businesses and residences to the north of Route K.

The Route K & Northwood Drive intersection is in close proximity to the US-67 interchange. Operations at the interchange need to be considered when planning improvements at the intersection. The US-67 bridges at the interchange are also showing signs of deterioration, as are other bridges along US-67 that were constructed within the same general timeframe. These bridges may need to be replaced in upcoming years. When the bridges are replaced, operations at the ramp intersections are typically reviewed to ensure the new bridge design is compatible with future traffic demands at the interchange. For these reasons, the project includes study of the Route 47/Route K corridor from Berry Road to Hillcrest Drive.

There are existing sidewalks to the east and west of the study area, but there are no pedestrian facilities along Route 47/Route K between Berry Road and Northwood Drive. There are no pedestrian signals or crosswalks at the intersections.

A kick-off meeting for this project was conducted on July 7, 2026. The following goals for the project were identified at the meeting:

1. Identify a Preferred Alternative at the Route K & Northwood Drive intersection that is economical, reduces congestion, and addresses drainage concerns.
2. Consider potential future improvements for the entire corridor.
3. Enhance safety and visibility at intersections within the corridor.
4. Stakeholders are engaged in the project and provide input.

1.4 DESIGN ALTERNATIVES

Several design alternatives were evaluated for the Route 47/Route K corridor within the study area. Since three of the study intersections are currently signalized, the first design alternative evaluates a corridor of signalized intersections. This alternative includes installing a traffic signal at the Route K & Northwood Drive intersection.

Roundabouts can be an effective solution to improve safety and reduce intersection delays for minor street traffic. All vehicles circulate through a roundabout in the same direction which eliminates the potential for angle crashes. As a result, crashes that occur at roundabouts are generally less severe than crashes at traditional signalized or uncontrolled intersections. The circular flow of roundabouts typically results in reduced delay, stopping, and queueing when compared to signalized and stop-control intersections.

It is generally undesirable to have roundabouts in a network of coordinated signalized intersections for several reasons. All vehicles entering a roundabout must slow and yield upon entry. Roundabout departures are random as vehicles are continuously circulating and exiting from the roundabout. These entry and exiting characteristics do not allow for platoons of vehicles to progress through roundabouts. Additionally, if queues from a signal spill back far enough, traffic flow within an adjacent roundabout can be gridlocked.

The second design alternative includes constructing roundabouts at the three existing signalized study intersections. This alternative also includes constructing a roundabout at the Route K & Northwood Drive intersection. The existing signalized intersections were converted to roundabouts for this alternative since it is generally not desirable to have roundabouts and signalized intersections in close proximity.

In summary, the design alternatives evaluated in this report include:

1. Signalized Corridor
2. Roundabout Corridor

Other alternatives were considered for the study intersections, but initial screening determined the options were not advanced for further consideration. The traffic volumes and crash data at the Route K & Northwood Drive intersection satisfy warrants listed in in MoDOT's *Engineering Policy Guide* (EPG) 903.2.12 and 903.2.15 for all-way stop control. The EPG also states that meeting a warrant is not conclusive justification to install or not install all-way stop control. All-way stop control was not deemed appropriate for this intersection for several reasons. First, familiar drivers on Route K are not accustomed to stopping at the Northwood Drive intersection, and installing a stop sign would require them to change their routine driving patterns. Second, westbound drivers approaching the intersection would be approaching a stop sign while the traffic signal at the nearby US-67 northbound ramps intersection is also in their field of view. Drivers may focus on the traffic signal and inadvertently fail to recognize the stop sign. Lastly, all-way stop control would result in delays of more than 20 seconds for eastbound and westbound traffic on Route K at peak times, with queues of 5 or more vehicles.

Alternatives that restrict certain movements at an intersection and require an upstream and/or downstream U-Turn or crossover intersection were not considered for the study corridor. Since the existing study intersections are already closely spaced, it is not possible to provide additional intersections for U-Turn or crossover movements. For these reasons, J-turns, Median U-turn (MUT) or Displaced Left-Turn (DLT) intersections were not evaluated.

For the interchange itself, several alternatives were considered but were not advanced for further evaluation. The existing interchange could be converted to a diverging diamond interchange (DDI). However, the signal cycle length for a DDI is much shorter than for a traditional intersection. The difference in signal cycles would make signal coordination difficult along the corridor, which may be detrimental to operations. A single-point urban interchange (SPUI) requires bridges to have large clear spans of 200 feet or more, which have significant construction costs. A SPUI would not meaningfully increase the spacing to the adjacent intersections because the existing diamond interchange ramps are already closely spaced. Therefore, the additional costs related to the SPUI would not provide any additional benefits to the corridor.

2.0 EXISTING & DESIGN YEAR NO-BUILD CONDITIONS

2.1 EXISTING (YEAR 2026) TRAFFIC VOLUMES

Turning movement counts were collected at the study intersections on Thursday, April 23, 2026. The turning movement count data collected is included in **Appendix B**. The AM peak hour occurred between 7:00 AM and 8:00 AM, and the PM peak hour occurred between 4:30 PM and 5:30 PM. The Existing Conditions peak hour turning movement volumes are shown in **Exhibit 3**. The existing geometry with lane configurations and intersection control at the study intersections is shown in **Exhibit 4**.

Due to events at the Bonne Terre Drag Strip, additional counts were collected at the Route K & Northwood Drive intersection during the evening hours on Friday, May 15 and Saturday, May 16, 2026. The Thursday and Friday counts were found to be very similar in total volume, while the Saturday count showed lower volumes than the weekday PM peak hour counts. No analysis was performed using the Friday and Saturday counts at the Route K & Northwood Drive intersection.

2.2 FUTURE VOLUME FORECASTING

For future year traffic forecasts, background traffic growth was added to the existing traffic volumes. To estimate background traffic growth, the existing traffic volumes were assumed to increase at a rate of 1.18% for a 3-year and 23-year planning horizon to reflect conditions in years 2029 and 2049. The Build (Year 2029) Conditions peak hour turning movement volumes are shown in **Exhibit 5**, and the Design (Year 2049) Conditions peak hour turning movement volumes are shown in **Exhibit 6**.

The annual growth rate was provided by MoDOT. The estimated AADT for Route K is shown in **Table 1**. The Traffic Forecast Report that was provided by MoDOT is included in **Appendix C**.

TABLE 1: ANNUAL AVERAGE DAILY TRAFFIC FORECASTS

Roadway	AADT			Growth Rate
	Existing Year 2026	Build Year 2029	Design Year 2049	
Route K	6,312	6,641	8,398	1.18%

2.3 TRAFFIC OPERATIONS

Intersection capacity analysis was performed at the study intersections for the following scenarios:

- Existing (Year 2026) Conditions
- Build (Year 2029) Conditions
- Design (Year 2049) Conditions

Level of service (LOS) is a qualitative measure used by traffic engineers to describe the operations of an intersection. It ranges from A to F, with A being the best and F being the worst level of operation. LOS A conditions are characterized by minimal vehicle delay and free-flow conditions, while LOS F is characterized by long vehicle delay – usually when demand exceeds available roadway capacity. **Table 2** on the next page shows the definition of LOS for unsignalized and signalized intersections.

TABLE 2: LEVEL OF SERVICE

Level of Service	Average Control Delay (seconds/vehicle) at:	
	Unsignalized Intersections & Roundabouts	Signalized Intersections
A	0 – 10	0 – 10
B	> 10 – 15	> 10 – 20
C	> 15 – 25	> 20 – 35
D	> 25 – 35	> 35 – 55
E	> 35 – 50	> 55 – 80
F	> 50	> 80

Levels of service are evaluated based on the movement groupings which are required to yield to other traffic. Typically, these are left turns off the major street and the side street approaches for two-way stop-controlled intersections. For signalized intersections each movement grouping is evaluated, and LOS is evaluated for the intersection as a whole.

Although LOS E is defined as at-capacity, LOS D is generally considered the minimum acceptable level of service at an intersection, although in areas with lower population density, LOS C is often found to be more desirable. At unsignalized intersections, LOS E or even F may be considered acceptable for low to moderate traffic volumes where the installation of a traffic signal is not warranted by the conditions at the intersection, or the location has been deemed undesirable for signalization.

The volume-to-capacity (v/c) ratio is a secondary measure of intersection performance. The v/c ratio represents the sufficiency of an intersection to accommodate the vehicular demand. A v/c ratio less than 0.85 generally indicates that adequate capacity is available, and vehicles are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow is unstable and excessive delay and queuing is expected.

Traffic queues were also evaluated as part of the analyses. Long traffic queues which extend beyond the amount of storage available, either between intersections or within turn lanes, can have significant impacts on operations. The 95th percentile vehicular queues were analyzed to ensure the analyses are reflective of the physical constraints of the study intersections and to identify if additional storage is needed for turn lanes. The 95th percentile queue represents the queue length that has only a 5% chance of being exceeded during the analysis period.

The capacity analysis was performed for the weekday AM and PM peak hours using Synchro traffic modeling software to determine intersection delay and level of service. Calculations were performed based on the methodologies outlined in the *Highway Capacity Manual* (HCM), 7th Edition. The US-67 Highway ramp terminal intersections were evaluated based on the 2000 Edition of the HCM because the 7th Edition will not evaluate clustered intersections. Existing signal timing and coordination plans were provided by MoDOT and used for this analysis and are included in **Appendix D**. The analysis was performed based on the traffic volumes, lane configurations, and traffic controls shown in **Exhibits 3** through **6**. The Synchro reports are provided in **Appendix E**.

Table 3 on the next page provides a summary of the capacity analysis at the study intersections for No-Build Conditions during the AM peak hour.

TABLE 3: NO BUILD AM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results											
			Existing (Year 2026)				Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Traffic Signal	EBL	7.4	A	< 50'	0.03	7.5	A	< 50'	0.03	8.3	A	< 50'	0.04
		EBT/R	18.1	C	615'	0.72	19.4	B	648'	0.75	47.3	D	887'	0.99
		WBL	10.7	A	< 50'	0.05	11.2	B	< 50'	0.06	18.4	B	< 50'	0.15
		WBT	0.8	A	209'	0.31	0.9	A	137'	0.32	1.4	A	150'	0.43
		WBR	0.2	A	< 50'	0.10	0.2	A	< 50'	0.10	0.3	A	< 50'	0.14
		NBL	40.0	D	51'	0.44	40.0	D	52'	0.44	39.8	D	62'	0.50
		NBT/R	44.4	D	< 50'	0.48	44.5	D	< 50'	0.48	44.9	D	< 50'	0.54
		SBL	51.3	D	125'	0.76	53.9	D	130'	0.78	64.2	E	171'	0.83
		SBT/R	40.4	C	43'	0.60	40.6	C	< 50'	0.45	39.8	D	51'	0.49
		Overall	**17.8**	**B**	--	--	**18.7**	**B**	--	--	**33.9**	**C**	--	--
Route 47 & US-67 SB Ramps	Traffic Signal	EBT	10.0	B	88'	0.21	11.6	B	84'	0.22	10.8	B	73'	0.28
		EBR	0.2	A	< 50'	0.20	0.2	A	< 50'	0.21	0.2	A	< 50'	0.27
		WBL	3.4	A	< 50'	0.23	3.7	A	< 50'	0.24	7.4	A	60'	0.37
		WBT	3.3	A	< 50'	0.14	3.4	A	< 50'	0.14	3.3	A	54'	0.20
		SBL	32.7	C	80'	0.35	32.7	C	82'	0.36	32.5	C	97'	0.42
		SBR	29.6	C	< 50'	0.05	29.6	C	< 50'	0.05	28.8	C	< 50'	0.06
		Overall	**7.4**	**A**	--	--	**7.9**	**A**	--	--	**8.1**	**A**	--	--
Route 47 & US-67 NB Ramps	Traffic Signal	EBL	3.2	A	< 50'	0.19	3.2	A	< 50'	0.20	3.0	A	< 50'	0.25
		EBT	2.3	A	53'	0.30	2.6	A	55'	0.31	3.2	A	68'	0.39
		WBT	7.8	A	78'	0.19	8.1	A	86'	0.20	10.7	B	125'	0.28
		WBR	7.2	A	< 50'	0.08	7.5	A	< 50'	0.08	9.6	A	< 50'	0.10
		NBL	31.6	C	65'	0.34	31.6	C	67'	0.35	31.2	C	80'	0.40
		NBR	0.1	A	< 50'	0.07	0.1	A	< 50'	0.07	0.1	A	< 50'	0.09
		Overall	**8.0**	**A**	--	--	**8.2**	**A**	--	--	**9.3**	**A**	--	--
Route K & Northwood Drive	Side Street Stop	EBL	8.1	A	< 50'	0.08	8.1	A	< 50'	0.08	8.4	A	< 50'	0.11
		WBL	8.3	A	< 50'	0.04	8.3	A	< 50'	0.04	8.6	A	< 50'	0.04
		NB	50.2	F	105'	0.68	56.9	F	115'	0.72	191.5	F	220'	1.15
		SBT/L	24.9	C	< 50'	0.17	26.2	D	< 50'	0.19	43.0	E	< 50'	0.35
		SBR	10.7	B	< 50'	0.17	10.9	B	< 50'	0.18	12.1	B	< 50'	0.25
Route K & Hillcrest Drive	Side Street Stop	EBL	7.8	A	< 50'	0.01	7.8	A	< 50'	0.01	8.0	A	< 50'	0.01
		WBL	8.0	A	< 50'	0.01	8.0	A	< 50'	0.01	8.3	A	< 50'	0.01
		NB	15.3	C	< 50'	0.13	15.7	C	< 50'	0.13	20.7	C	< 50'	0.22
		SB	10.2	B	< 50'	0.03	10.3	B	< 50'	0.03	10.9	B	< 50'	0.04

As shown in **Table 3**, the Route 47 & Berry Road intersection operates at an overall LOS C or better across all three analysis scenarios. The analysis indicates that several movements have longer queues and capacity constraints. In the analysis of Existing (Year 2026) Conditions, the eastbound through movement has a 95th percentile queue length that extends west through adjacent intersections and driveways. In the analysis of Design (Year 2049) Conditions, the volume-to-capacity ratio indicates that the eastbound through movement will be approaching capacity. The southbound left-turn movement is projected to operate at LOS E, but the movement is projected to be under capacity. It is not uncommon for minor street approaches to operate at lower levels of service along coordinated corridors during peak times.

The Route 47 & US-67 southbound ramps intersection is projected to operate at LOS A overall across all three analysis scenarios during the AM peak hour. All 95th percentile queues are projected to be less than 100 feet and do not block adjacent intersections.

The Route 47 & US-67 northbound ramps intersection is projected to operate at LOS A overall across all three analysis scenarios during the AM peak hour. All 95th percentile queues are projected to be less than 100 feet and do not block adjacent intersections.

The northbound approach at the Route K & Northwood Drive intersection is projected to operate at LOS F across all three analysis scenarios. In the analysis of Design (Year 2049) Conditions, the traffic volume for the northbound approach is projected to exceed capacity. The shared southbound through/left-turn movement is projected to operate at LOS E during the analysis of Design (Year 2049) Conditions. Most southbound drivers turn right at the intersection using the separate right-turn lane and they experience short delays and minimal queueing across all three analysis scenarios.

The Route K & Hillcrest Drive intersection is projected to operate at acceptable levels of service with minimal queueing across all three analysis scenarios.

Table 4 on the next page provides a summary of the capacity analysis at the study intersections for No-Build Conditions during the PM peak hour.

TABLE 4: NO BUILD PM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results											
			Existing (Year 2026)				Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Traffic Signal	EBL	9.3	A	< 50'	0.10	9.6	A	< 50'	0.10	20.0	C	< 50'	0.30
		EBT/R	17.6	B	390'	0.52	18.5	B	410'	0.55	28.2	C	654'	0.76
		WBL	10.4	B	< 50'	0.12	10.9	B	< 50'	0.11	15.6	B	< 50'	0.21
		WBT	3.6	A	626'	0.67	4.2	A	663'	0.71	28.5	C	948'	0.98
		WBR	0.2	A	< 50'	0.08	0.2	A	< 50'	0.09	1.9	A	< 50'	0.12
		NBL	55.6	**E**	120'	0.79	55.7	**E**	124'	0.79	61.8	**E**	170'	0.82
		NBT/R	44.4	D	60'	0.37	44.1	D	61'	0.37	42.2	D	70'	0.39
		SBL	54.4	D	129'	0.80	54.1	D	133'	0.80	58.3	**E**	163'	0.83
		SBT/R	59.1	**E**	73'	0.80	59.2	**E**	76'	0.80	62.0	**E**	87'	0.83
		Overall	**20.3**	**C**	--	--	**20.8**	**C**	--	--	**33.9**	**C**	--	--
Route 47 & US-67 SB Ramps	Traffic Signal	EBT	16.4	B	107'	0.19	17.0	B	110'	0.20	18.4	B	98'	0.26
		EBR	0.1	A	< 50'	0.14	0.1	A	< 50'	0.15	0.2	A	< 50'	0.19
		WBL	0.6	A	< 50'	0.17	0.7	A	< 50'	0.18	1.6	A	< 50'	0.24
		WBT	7.7	A	144'	0.22	7.8	A	148'	0.23	8.7	A	183'	0.29
		SBL	45.4	D	155'	0.59	46.0	D	159'	0.61	54.0	D	225'	0.75
		SBR	38.0	D	67'	0.15	38.0	D	69'	0.16	39.0	D	96'	0.27
		Overall	**14.8**	**B**	--	--	**15.1**	**B**	--	--	**16.5**	**B**	--	--
Route 47 & US-67 NB Ramps	Traffic Signal	EBL	6.9	A	< 50'	0.20	7.2	A	< 50'	0.21	8.5	A	< 50'	0.30
		EBT	5.0	A	132'	0.30	5.2	A	135'	0.31	6.1	A	291'	0.39
		WBT	8.5	A	92'	0.22	8.6	A	95'	0.22	9.4	A	119'	0.29
		WBR	7.5	A	< 50'	0.06	7.6	A	< 50'	0.06	8.0	A	< 50'	0.08
		NBL	44.3	D	148'	0.65	44.9	D	154'	0.67	52.7	D	213'	0.82
		NBR	0.1	A	< 50'	0.09	0.1	A	< 50'	0.09	0.1	A	< 50'	0.11
		Overall	**14.2**	**B**	--	--	**14.4**	**B**	--	--	**16.6**	**B**	--	--
Route K & Northwood Drive	Side Street Stop	EBL	8.3	A	< 50'	0.14	8.4	A	< 50'	0.14	8.8	A	< 50'	0.19
		WBL	8.1	A	< 50'	0.02	8.1	A	< 50'	0.03	8.3	A	< 50'	0.03
		NB	90.7	**F**	150'	0.86	109.2	**F**	165'	0.92	> 200	**F**	295'	1.68
		SBT/L	30.3	D	< 50'	0.22	32.6	D	< 50'	0.24	65.4	**F**	53'	0.48
		SBR	11.1	B	< 50'	0.21	11.3	B	< 50'	0.22	12.9	B	< 50'	0.32
Route K & Hillcrest Drive	Side Street Stop	EBL	7.7	A	< 50'	0.02	7.7	A	< 50'	0.02	7.9	A	< 50'	0.03
		WBL	7.8	A	< 50'	0.01	7.8	A	< 50'	0.01	8.0	A	< 50'	0.01
		NB	13.2	B	< 50'	0.03	13.5	B	< 50'	0.03	16.1	C	< 50'	0.05
		SB	10.1	A	< 50'	0.05	10.2	A	< 50'	0.04	10.7	B	< 50'	0.06

As shown in **Table 4**, the Route 47 & Berry Road signalized intersection operates at LOS C overall across all three analysis scenarios. In the analysis of Existing (Year 2026) Conditions, the westbound through movement has a 95th percentile queue that extends through the US-67 southbound ramps intersection to the east. These long queues were confirmed with observation of peak hour traffic. The northbound left and shared southbound through/right-turn movements are projected to operate at LOS E across all three analysis scenarios which is not uncommon for minor street approaches at peak times along coordinated corridors.

The Route 47 & US-67 southbound ramps intersection is projected to operate at LOS B overall across all three analysis scenarios. The 95th percentile queues for the eastbound and westbound through movements are not projected to block adjacent intersections.

The Route 47 & US-67 northbound ramps intersection is projected to operate at LOS B overall across all three analysis scenarios. The 95th percentile queues for the eastbound and westbound through movements are not projected to block adjacent intersections. The northbound left-turn movement has a projected 95th percentile queue length of approximately 150 feet or more, which would prevent drivers from making the northbound right-turn movement when long queues are present.

The northbound approach at the Route K & Northwood Drive intersection is projected to operate at LOS F across all three analysis scenarios. In the analysis of Design (Year 2049) Conditions, the traffic volume for the northbound approach is projected to exceed capacity. The shared southbound through/left-turn movement is projected to operate at LOS F in the analysis of Design (Year 2049) Conditions.

The Route K & Hillcrest Drive intersection is projected to operate at acceptable levels of service with minimal queueing across all three analysis scenarios.

2.4 SAFETY ANALYSIS

MoDOT provided crash reports for the study area. From January 1, 2020, to December 31, 2024, a total of 98 intersection crashes were reported. **Table 5** summarizes the type of crashes reported at study intersections along the corridor during the analysis period.

TABLE 5: SUMMARY OF CRASH TYPES

Crash Type	Route 47 & Berry Road	Route 47 & US-67 SB Ramps	Route 47 & US-67 NB Ramps	Route K & Northwood Drive	Route K & Hillcrest Drive
Angle	5	7	3	11	2
Fixed Object	1	--	--	--	--
Head On	--	1	2	1	1
Out of Control	1	--	--	3	--
Other	--	--	--	1	--
Passing	1	1	2	1	--
Pedestrian	--	--	--	--	1
Rear End	24	7	16	4	--
Sideswipe	--	1	--	--	1
Total	**32**	**17**	**23**	**21**	**5**

The most frequent crash type listed in **Table 5** is rear end crashes. Rear end crashes are often the most common crash type at signalized intersections. At the Route 47 & Berry Road intersection a number of the rear end crashes reported occurred during peak times when long queues typically form. Rear ends may have also been related to the many driveways located near the intersection. Through drivers may be expecting a vehicle with a turn signal on to be turning at the intersection and not at a driveway just in advance of or beyond the intersection. Access management could be beneficial near the Route 47 & Berry Road intersection to reduce the number of potential conflicts.

Several angle crashes were also reported at the study intersections. At the Route 47 & US-67 southbound ramps intersection, the left-turn crashes involved westbound left-turn traffic. No further patterns or tendencies could be discerned from the crash data. Some crashes at Route 47 & Berry Road also involved left-turn traffic. The eastbound and westbound left-turn lanes do not align across the intersection. A vehicle or vehicles in the opposing left-turn lane may obstruct visibility of approaching through traffic. The west leg of the intersection could be restriped to better align the left-turn lanes by eliminating a portion of the westbound left-turn lane to the west of the intersection.

At the Route K & Northwood Drive intersection, the angle crashes were all related to the northbound left-turn movement. In the crash reports, several of the drivers indicated that they had difficulty judging gaps in traffic or did not see the approaching vehicle even though sight lines are more than adequate at the intersection. There are many vehicular movements that are within a driver's field of vision when stopped at the northbound approach to the intersection. The US-67 northbound ramps intersection is visible, as well as the Pointview Drive intersection and several private driveways in the area. Drivers are observing many potential conflicts before making their maneuvers. Access management could help to reduce the number of potential conflicts in the area and simplify operations for drivers.

The channelized right-turn movement from the US-67 northbound ramp has a large sweeping radius before intersecting with Route K. Drivers can make this movement at speeds that are higher than a typical right turn. This could be a contributing factor in some of the crash reports where a driver stopped at Northwood Drive did not see an approaching vehicle. Reconfiguring the right-turn lane to have a higher angle of intersection will reduce the speed of turning traffic, and better position right-turning drivers to see oncoming traffic.

Table 6 shows the number of injury and property damage only crashes that have occurred at each of the study intersections. There were no fatality crashes at the intersections.

TABLE 6: SUMMARY OF CRASH SEVERITY

Crash Severity	Route 47 & Berry Road	Route 47 & US-67 SB Ramps	Route 47 & US-67 NB Ramps	Route K & Northwood Drive	Route K & Hillcrest Drive
Property Damage Only	24	12	22	17	3
Injury	8	5	1	4	2
Total	**32**	**17**	**23**	**21**	**5**

Most of the injury crashes that occurred at the study intersections were angle collisions. Angle collisions are generally one of the most severe intersection crash types. Some of the rear end collisions also resulted in a personal injury. The design alternatives for the corridor should aim to reduce the frequency of these crash types.

Crash rates factor the volume of traffic at the intersection with the crash frequency. The crash rate per million entering vehicles (MEV) at the study intersections is shown in **Table 7**.

TABLE 7: INTERSECTION CRASH STATISTICS

Intersection	Crashes	Crash Rate (MEV)
Route 47 & Berry Road	32	1.08
Route 47 & US-67 SB Ramps	17	0.59
Route 47 & US-67 NB Ramps	23	0.89
Route K & Northwood Drive	21	1.03
Route K & Hillcrest Drive	5	0.54

The crash rates indicate that the Route 47 & Berry Road intersection has the highest crash rate of the study intersections. The Route K & Northwood intersection has the second highest crash rate, even though the volume of traffic east of the US-67 interchange is much lower than the volume to the west of the interchange.

2.5 SIGHT DISTANCE

There are sight distance concerns at several intersections through the study area due to the crest vertical curve on Route K. Sight distances were measured at these intersections and are provided in **Table 8**. The measured sight distances were compared to the recommended stopping and intersection sight distances from *A Policy on Geometric Design of Highways and Streets*, 7th Edition, which is also referred to as the Green Book, published by the American Association of State Highway and Transportation Officials in 2018. The recommended sight distances for 30 mph are shown in the table, except for the left-turn at Hillcrest Drive. The speed limit is 30 mph to the west of Hillcrest Drive and 45 mph to the east.

TABLE 8: SIGHT DISTANCES

Intersection	Direction Looking	Intersection Sight Distance (feet)		Stopping Sight Distance (feet)	
		Field Measurement	Recommended	Field Measurement	Recommended
Route K & Pointview Drive	East	450	350	425	200
	West	> 1,000	290	> 1,000	200
Route K & Dollar General driveway	East	***240***	335	***190***	200
	West	> 1,000	290	> 1,000	200
Route K & Hillcrest Drive	East	> 1,000	500	> 1,000	360
	West	***250***	290	***180***	200

The measurements in **Table 8** indicate that several of the intersections have limited sight distances. The driveway for Dollar General is located just west of a crest vertical curve which restricts the available sight distance for vehicles turning left out of the driveway.

Sight distance for the northbound right-turn looking to the west is limited at the Route K & Hillcrest Drive intersection. The limited intersection and stopping sight distance is due to the crest vertical curve located just west of the intersection. During the field visit in which sight distances were measured, it was observed that an existing Cross Road warning sign (MUTCD No. W2-1, size 36” x 36”) for vehicles traveling eastbound in advance of the Dollar General driveway had been knocked down. It is presumed this sign was posted to warn drivers in advance of the Hillcrest Drive intersection.

The recommended intersection sight distance for the northbound left-turn looking to the east at Pointview Drive was adjusted to account for the striped median along Route K. Both intersection and stopping sight distances are adequate at the Route K & Pointview Drive intersection.

2.6 FIELD OBSERVATIONS

Several other pertinent observations were made during a field visit on August 6, 2026. These observations are described in the following paragraphs.



Worn path in the grass along the north side of Route K

Some drivers leaving the Circle K gas station were observed cutting through the auto sales property to turn right and travel eastbound on Route K.

Rain had recently fallen before the field visit. A large puddle had formed in the southwest corner of the Route K & Northwood Drive intersection. Drivers making the westbound right-turn movement did so at a low rate of speed to avoid the standing water. Law enforcement staff commented that the puddle can encroach on the westbound through lane of Route K during heavy rain events.

Pedestrians were regularly observed in the area during the field visit even though sidewalks are not continuous. Pedestrians were observed walking along the north side of Route K throughout the study area. This appears to be a regular pedestrian route as a path had been worn through the grass area under the US-67 bridges. Several pedestrians were also observed crossing Route K at the Northwood Drive intersection.

There is no curb along the south side of Route K adjacent to the Auto Sales business in the southeast corner of the Route K & Northwood Drive intersection. The entire frontage of the business is paved along Route K from Pointview Drive to the Northwood Drive intersection.



Puddle in the southwest corner of Route K & Northwood Drive



Rocked ditch along the south side of Route K

3.0 DESIGN ALTERNATIVES TRAFFIC OPERATIONS & SAFETY ANALYSIS

The analysis of No-Build Conditions identified several safety and operational concerns, which include the following:

Route 47 & Berry Road

- Eastbound through queues are long during the AM peak hour and the single lane for this movement is projected to be at capacity by the Design Year.
- Westbound through queues currently extend through the adjacent US-67 southbound ramps intersection during the PM peak hour. There is less than 300 feet of queue storage available between these intersections.
- A number of angle and rear end collisions have occurred at the intersection.

Route K & Northwood Drive

- The northbound approach currently operates at LOS F during both peak hours. The southbound left-turn/through movement is also projected to operate at LOS F by the Design Year.
- A pattern of angle crashes has developed at the northbound intersection approach.

Route K & Hillcrest Drive

- A crest vertical curve near the intersection limits sight distances when looking along Route K at the Hillcrest Drive intersection and at the adjacent Dollar General driveway.

Design alternatives that address these concerns are described in the following sections of this report.

3.1 FUTURE VOLUME FORECASTING

The traffic volumes that were used to evaluate the design alternatives remain the same as the volumes used in the Existing No-Build Conditions analysis that was discussed in Section 2.0 of this report.

3.2 SIGNALIZED CORRIDOR ALTERNATIVE

For the signalized corridor alternative, a traffic signal is assumed to be installed at the Route K & Northwood Drive intersection. The three existing signalized intersections would remain signalized. This alternative does result in four closely spaced signalized intersections that will need to be coordinated to provide progression for through traffic along the Route 47/Route K corridor.

Signal warrant analysis was conducted at the Route K & Northwood Drive intersection to determine if a signal is warranted. The Existing (Year 2026), Build (Year 2029), and Design (Year 2049) Conditions traffic volumes were compared to the minimum volume threshold of the Eight-Hour Vehicular Volume Signal Warrant in EPG 902.3.2. The signal warrant analysis is included in **Appendix F**. The volumes from each analysis scenario do not satisfy the Eight-Hour Vehicular Volume Warrant criteria.

The number of crashes at the Route K & Northwood Drive intersection were compared to the minimum thresholds of Crash Experience Signal Warrant in EPG 902.3.8. Tables 902.3.8.3 and 902.3.8.4 were used for the comparison as the City of Bonne Terre has a population that is less than 10,000 according to 2025 data from the United States Census Bureau. The number of angle crashes exceeds the minimum thresholds in Tables 902.3.8.3 and 902.3.8.4. Thus, a traffic signal at the Route K & Northwood Drive intersection is warranted based on the Crash Experience Warrant criteria, and it is appropriate to consider a traffic signal at the study intersection.

Intersection capacity analysis was performed to evaluate the signalized corridor alternative for the following scenarios:

- Build (Year 2029) Conditions
- Design (Year 2049) Conditions

The following improvements were identified at the study intersections for the signalized corridor alternative:

Route 47 & Berry Road

- Provide two through lanes for westbound traffic that continue west of the intersection for a sufficient distance to allow drivers to merge into a single lane.
- Provide a second through lane for eastbound traffic that begins 300 feet west of Berry Road.

Route K & Northwood Drive

- Install a traffic signal.
- Modify the existing pavement markings to provide a westbound left-turn lane.
- Modify the existing pavement markings to provide a southbound left-turn lane and a shared southbound through-right lane.
- Modify the existing pavement markings to provide a northbound left-turn lane and a shared northbound through-right lane.

A second westbound through lane is needed at the Route 47 & Berry Road. Without the second through lane, long queues are projected that would extend through the US-67 southbound ramps intersection as they currently do during the PM peak hour. The additional lane is needed to alleviate this congestion.

The length of the second lane will need to be long enough that drivers will use both lanes to travel westbound through the intersection, then merge into a single lane of traffic farther to the west of Berry Road. A previous project added a second westbound lane for a distance of roughly 300 feet beyond the intersection before tapering to a single lane. Drivers did not use the second lane and several years later the pavement markings at the intersection were modified to eliminate the second lane. Based on this previous experience, the second lane would need to continue farther to the west. There are a number of driveways along the north side of Route 47 to the west of Berry Road. It is not desirable to have driveways within a lane reduction taper. The Route 47 corridor is constrained by retaining walls and utility poles farther to the west of Berry Road, which will make it difficult to extend the additional lane.

The capacity analysis was performed for the weekday AM and PM peak hours using Synchro traffic modeling software to determine intersection delay and level of service. The US-67 Highway ramp terminal intersections were evaluated based on the 2000 Edition of the HCM because the 7th Edition will not evaluate clustered intersections. The signal timings at the study intersections were optimized for the design alternatives scenario. The analysis was performed based on the traffic volumes, lane configurations, and traffic controls shown in **Exhibits 5, 6,** and **7**. The Synchro reports are provided in **Appendix E**.

Table 9 on the next page provides a summary of the capacity analysis at the study intersections for the signalized corridor alternative during the AM peak hour.

TABLE 9: SIGNALIZED CORRIDOR ALTERNATIVE - AM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Traffic Signal	EBL	7.5	A	< 50'	0.03	8.5	A	< 50'	0.04
		EBT/R	11.9	B	204'	0.38	15.2	B	276'	0.51
		WBL	7.9	A	< 50'	0.04	9.5	A	< 50'	0.07
		WBT/R	0.5	A	< 50'	0.22	0.9	A	< 50'	0.30
		NBL	40.0	D	52'	0.44	39.8	D	62'	0.50
		NBT/R	44.5	D	< 50'	0.48	44.9	D	< 50'	0.54
		SBL	44.9	D	102'	0.78	45.6	D	124'	0.80
		SBT/R	40.6	D	< 50'	0.45	38.9	D	51'	0.47
		Overall	**14.1**	**B**	--	--	**15.9**	**B**	--	--
Route 47 & US-67 SB Ramps	Traffic Signal	EBT	11.7	B	80'	0.22	13.5	B	99'	0.29
		EBR	0.3	A	< 50'	0.21	0.2	A	< 50'	0.27
		WBL	3.2	A	< 50'	0.23	5.8	A	60'	0.34
		WBT	3.4	A	< 50'	0.14	3.5	A	54'	0.18
		SBL	32.7	C	82'	0.36	32.5	C	97'	0.42
		SBR	29.6	C	< 50'	0.05	28.8	C	< 50'	0.06
		Overall	**7.9**	**A**	--	--	**8.6**	**A**	--	--
Route 47 & US-67 NB Ramps	Traffic Signal	EBL	5.1	A	< 50'	0.23	6.0	A	< 50'	0.32
		EBT	2.2	A	55'	0.31	2.6	A	68'	0.40
		WBT/R	8.3	A	95'	0.25	10.3	B	130'	0.34
		NBL	31.6	C	67'	0.35	31.2	C	80'	0.40
		NBR	0.1	A	< 50'	0.07	0.1	A	< 50'	0.09
		Overall	**8.4**	**A**	--	--	**9.4**	**A**	--	--
Route K & Northwood Drive	Traffic Signal	EBL	9.7	A	< 50'	0.16	11.6	B	55'	0.23
		EBT/R	14.5	B	274'	0.43	17.7	B	331'	0.53
		WBL	10.2	B	< 50'	0.08	12.3	B	< 50'	0.10
		WBT/R	13.6	B	198'	0.31	16.6	B	248'	0.41
		NBL	38.4	D	96'	0.49	36.4	D	105'	0.49
		NBT/R	39.8	D	< 50'	0.20	37.4	D	< 50'	0.17
		SBL	35.6	D	< 50'	0.09	33.7	C	< 50'	0.11
		SBT/R	50.2	D	63'	0.78	48.7	D	72'	0.81
		Overall	**21.5**	**C**	--	--	**23.0**	**C**	--	--

The analysis results in **Table 9** indicate that the Route K & Northwood Drive intersection is projected to operate acceptably overall during the AM peak hour as a signalized intersection. However, there are projected 95th percentile queues for certain movements that would block adjacent intersections. The eastbound through movement has a 95th percentile queue that would extend through the location of the channelized northbound right-turn movement at the Route 47 & US-67 Highway NB Ramps intersection to the west. The northbound left-turn movement has 95th percentile queue length projections of approximately four vehicles in both scenarios, which exceeds the short throat length of the driveway. The shared southbound through/right-turn movement also has a projected 95th percentile queue length that would block access points to the developments on the east and west sides of the approach.

The 95th percentile queue for the westbound through movement is projected to extend through the adjacent intersection at Pointview Drive during both analysis scenarios. The westbound queue length of 248 feet in the design year will extend toward the crest vertical curve on Route K. The crest of the curve will be approximately 300 feet from the back of the queue. There is adequate stopping sight distance for westbound drivers traveling at the 30 mph posted speed limit to stop in advance of the queue. The speed

limit change from 45 to 30 mph occurs near the crest. If westbound drivers are exceeding the posted speed limit, they may not have adequate sight distance to stop before reaching the back of the queue.

Table 10 on the next page provides a summary of the capacity analysis at the study intersections for the signalized corridor alternative during the PM peak hour.

TABLE 10: SIGNALIZED CORRIDOR ALTERNATIVE - PM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Traffic Signal	EBL	9.5	A	< 50'	0.10	11.7	B	< 50'	0.16
		EBT/R	14.3	B	169'	0.28	18.4	B	222'	0.39
		WBL	9.3	A	< 50'	0.09	11.6	B	< 50'	0.14
		WBT/R	1.3	A	115'	0.41	4.1	A	373'	0.56
		NBL	55.0	**E**	119'	0.79	54.1	D	147'	0.81
		NBT/R	44.3	D	60'	0.38	42.4	D	70'	0.40
		SBL	54.0	D	131'	0.80	53.8	D	159'	0.82
		SBT/R	62.5	**E**	76'	0.81	65.8	**E**	88'	0.85
		Overall	**18.7**	**B**	--	--	**21.4**	**C**	--	--
Route 47 & US-67 SB Ramps	Traffic Signal	EBT	12.8	B	72'	0.22	14.2	B	62'	0.30
		EBR	0.2	A	< 50'	0.15	0.2	A	< 50'	0.19
		WBL	0.5	A	< 50'	0.18	1.4	A	< 50'	0.26
		WBT	9.1	A	148'	0.24	10.8	B	183'	0.31
		SBL	40.4	D	145'	0.51	39.6	D	171'	0.56
		SBR	35.7	D	62'	0.16	37.5	D	136'	0.45
		Overall	**13.9**	**B**	--	--	**15.0**	**B**	--	--
Route 47 & US-67 NB Ramps	Traffic Signal	EBL	7.2	A	< 50'	0.24	6.7	A	< 50'	0.37
		EBT	5.7	A	136'	0.32	7.0	A	245'	0.42
		WBT/R	9.1	A	96'	0.28	9.1	A	118'	0.37
		NBL	39.9	D	140'	0.56	39.0	D	167'	0.62
		NBR	0.1	A	< 50'	0.09	0.1	A	< 50'	0.11
		Overall	**13.7**	**B**	--	--	**13.8**	**B**	--	--
Route K & Northwood Drive	Traffic Signal	EBL	10.9	B	76'	0.29	12.3	B	80'	0.42
		EBT/R	3.9	A	152'	0.40	1.8	A	160'	0.49
		WBL	11.8	B	< 50'	0.05	14.0	B	< 50'	0.05
		WBT/R	16.6	B	237'	0.34	21.2	C	307'	0.48
		NBL	36.2	D	87'	0.46	35.0	D	90'	0.49
		NBT/R	35.3	D	< 50'	0.14	33.7	C	< 50'	0.13
		SBL	35.9	D	< 50'	0.09	33.4	C	< 50'	0.10
		SBT/R	51.8	D	71'	0.83	64.7	**E**	81'	0.88
		Overall	**19.5**	**B**	--	--	**22.0**	**C**	--	--

The analysis results in **Table 10** indicate that the Route K & Northwood Drive intersection is projected to operate acceptably overall during the PM peak hour as a signalized intersection. Similarly to the AM peak hour analysis results, there are several movements with 95th percentile queues that are projected to block adjacent intersections. The most significant example of this is at Route 47 & Berry Road, queues in the westbound direction in the Design Year are projected to extend back into the US-67 southbound ramps intersection, even with two through lanes in the westbound direction. However, it should be noted that microsimulation in SimTraffic indicates that queues in the westbound direction do not extend back into the US-67 southbound ramps intersection. Therefore the potential for queues blocking the intersection may be able to be mitigated with traffic signal coordination.

The signalized corridor alternative is expected to provide acceptable overall levels of service at the study intersections. Some of the longer queues may be a concern as they block adjacent driveways and intersections. It would be appropriate to remove some of these driveways or restrict these drives to right-in/right-out access. These changes would minimize conflict points and congestion close to the signalized intersections.

3.3 ROUNDABOUT CORRIDOR ALTERNATIVE

The roundabout alternative includes constructing roundabouts at four study intersections. Some of the approaches and exits would require two lanes. The following improvements were identified at the study intersections for the roundabout corridor alternative:

Route 47 & Berry Road

- Construct a multilane roundabout with two through lanes on the eastbound and westbound approaches and exits. The second through lane for eastbound traffic begins 100 feet west of Berry Road. The two lanes for westbound traffic continue west of the intersection for a sufficient distance to allow drivers to merge into a single lane.
- Construct the Berry Road and Raider Road approaches as single-lane approaches and exits.

Route 47 & US-67 southbound ramps

- Construct a multilane roundabout with two through lanes on the westbound approach and exit.
- Construct the southbound approach with a single lane entering the roundabout and separate yielding bypass lane for the right-turn movement.
- Construct the eastbound approach with a single lane entering the roundabout and separate free-flow bypass lane for the right-turn movement.

Route 47 & US-67 northbound ramps

- Construct a multilane roundabout with two through lanes on the westbound approach and exit.
- Construct the northbound approach with two lanes entering the roundabout and separate yielding bypass lane for the right-turn movement.
- Construct the eastbound approach with a single lane entering the roundabout.

Route K & Northwood Drive

- Construct a single-lane roundabout with one lane on each approach and each exit to the roundabout.

A second westbound through lane is needed at the exit for the Route 47 & Berry Road roundabout. Without the second through lane, long queues are projected that would extend through the US-67 southbound ramps intersection which could gridlock the roundabout.

As in the signalized corridor alternative, the length of the second lane will need to be long enough that drivers will use both lanes, then merge into a single lane of traffic farther to the west of Berry Road. Roundabouts will result in slower traffic overall when compared to signalized intersections. Merging is easier for drivers at lower speeds. Therefore, the length of the second westbound through lane may not need to be as long for the roundabout alternative than it is for the signalized corridor alternative.

Intersection capacity analysis was performed to evaluate the study intersections as roundabouts for the same scenarios that were analyzed for the previous alternative. The capacity analysis was performed for the weekday AM and PM peak hours using SIDRA traffic modeling software to determine intersection delay and level of service. **Tables 11** and **12** provide a summary of the capacity analysis at the study intersections.

The analysis was performed based on the traffic volumes, lane configurations, and traffic controls shown in **Exhibits 5, 6,** and **8**. The SIDRA reports are provided in **Appendix G**.

TABLE 11: ROUNDABOUT CORRIDOR ALTERNATIVE - AM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Roundabout	EBT/L	6.0	A	< 50'	0.32	7.4	A	60'	0.42
		EBT/R	6.0	A	< 50'	0.32	7.4	A	60'	0.42
		WBT/L	4.1	A	< 50'	0.17	4.7	A	< 50'	0.22
		WBT/R	4.1	A	< 50'	0.17	4.7	A	< 50'	0.22
		NB	6.9	A	< 50'	0.13	9.3	B	< 50'	0.21
		SB	5.4	A	< 50'	0.18	6.6	A	< 50'	0.24
Route 47 & US-67 SB Ramps	Roundabout	EBT/L	7.0	A	51'	0.34	10.2	B	102'	0.53
		EBR	5.3	A	< 50'	0.24	8.7	A	< 50'	0.47
		WBT/L	4.0	A	< 50'	0.28	3.9	A	< 50'	0.26
		WBT	4.0	A	< 50'	0.28	3.9	A	< 50'	0.26
		SBT/L	8.8	A	< 50'	0.28	6.8	A	< 50'	0.16
		SBR	7.9	A	< 50'	0.28	5.1	A	< 50'	0.11
Route 47 & US-67 NB Ramps	Roundabout	EBT/L	4.6	A	< 50'	0.38	5.1	A	< 50'	0.49
		WBT	5.9	A	< 50'	0.25	7.4	A	< 50'	0.35
		WBT/R	5.9	A	< 50'	0.25	7.4	A	< 50'	0.35
		NBL	5.6	A	< 50'	0.11	6.9	A	< 50'	0.15
		NBL/T	5.2	A	< 50'	0.11	6.4	A	< 50'	0.15
		NBR	5.6	A	< 50'	0.15	6.9	A	< 50'	0.22
Route K & Northwood Drive	Roundabout	EB	7.0	A	71'	0.42	8.4	A	102'	0.52
		WB	6.5	A	< 50'	0.33	7.8	A	61'	0.44
		NB	6.3	A	< 50'	0.18	7.3	A	< 50'	0.21
		SB	6.4	A	< 50'	0.21	7.8	A	< 50'	0.28

The analysis results presented in **Table 11** indicate that all movements are projected to operate at LOS A or B during the AM peak hour with minimal queueing and volume-to-capacity ratios that indicate the movements are under capacity.

TABLE 12: ROUNDABOUT CORRIDOR ALTERNATIVE - PM PEAK HOUR CONDITIONS

Intersection	Control	Movement	Operational Analysis Results							
			Build (Year 2029)				Design (Year 2049)			
			Delay (sec/veh)	LOS	95% Queue	V/C	Delay (sec/veh)	LOS	95% Queue	V/C
Route 47 & Berry Road	Roundabout	EBT/L	5.5	A	< 50'	0.26	6.8	A	< 50'	0.34
		EBT/R	5.5	A	< 50'	0.26	6.8	A	< 50'	0.34
		WBT/L	6.6	A	< 50'	0.35	8.5	A	69'	0.47
		WBT/R	6.6	A	< 50'	0.35	8.5	A	69'	0.47
		NB	7.4	A	< 50'	0.24	10.3	B	< 50'	0.35
		SB	12.0	B	51'	0.43	23.3	C	100'	0.67
Route 47 & US-67 SB Ramps	Roundabout	EBT/L	7.0	A	< 50'	0.34	9.4	A	73'	0.47
		EBR	5.3	A	< 50'	0.24	6.4	A	< 50'	0.31
		WBT/L	4.0	A	< 50'	0.29	4.4	A	< 50'	0.36
		WBT	4.0	A	< 50'	0.29	4.4	A	< 50'	0.36
		SBT/L	8.8	A	< 50'	0.28	13.2	B	< 50'	0.41
		SBR	7.9	A	< 50'	0.28	11.5	B	< 50'	0.41
Route 47 & US-67 NB Ramps	Roundabout	EBT/L	4.6	A	< 50'	0.39	5.1	A	< 50'	0.49
		WBT	7.5	A	< 50'	0.32	10.5	B	67'	0.45
		WBT/R	7.5	A	< 50'	0.32	10.5	B	67'	0.45
		NBL	6.7	A	< 50'	0.20	8.8	A	< 50'	0.29
		NBL/T	6.3	A	< 50'	0.20	8.2	A	< 50'	0.29
		NBR	6.0	A	< 50'	0.19	7.6	A	< 50'	0.26
Route K & Northwood Drive	Roundabout	EB	7.1	A	79'	0.45	8.7	A	114'	0.55
		WB	7.3	A	< 50'	0.35	9.2	A	71'	0.46
		NB	6.3	A	< 50'	0.18	7.5	A	< 50'	0.21
		SB	6.8	A	< 50'	0.24	8.6	A	< 50'	0.34

The analysis results presented in **Table 12** indicate that all movements are projected to operate at acceptable levels of service during the PM peak hour with minimal queueing and volume-to-capacity ratios that indicate the movements are under capacity.

The roundabout corridor is expected to provide excellent operations at all study intersections. Queue lengths are generally short and do not block adjacent intersections. Adequate capacity is available for the design year traffic volumes. Westbound queues at the Route K & Northwood Drive intersection are shorter than in the signalized corridor alternative, which provides more distance from the crest vertical curve to the back of the queue.

Roundabouts provide opportunities for access management along the corridor. Some of the driveways located close to the roundabouts may need to be closed or reconfigured. The splitter islands of the roundabouts could be continuous medians between roundabouts. This would restrict the driveways along the corridor to right-in/right-out access.

3.4 SAFETY ANALYSIS

Both alternatives are expected to address the pattern of angle crashes that have occurred at the Route K & Northwood Drive intersection. A traffic signal will assign the right-of-way at the intersection to better control conflicts between opposing approaches. A roundabout will eliminate the potential for angle crashes because there are no crossing movements when all traffic is circulating in the same direction.

The roundabout corridor alternative is likely to have the greatest potential to reduce the frequency of rear end collisions. The analysis results indicate that queues are generally shorter for the roundabout alternative

resulting in fewer stops and congestion overall. The signalized corridor alternative does reduce some of the longer queue lengths that were observed, which could somewhat reduce the frequency rear end crashes but not to the extent of the roundabout corridor alternative.

Predictive average crash frequency projections were developed for the study intersections using the Safety Performance for Intersection Control Evaluation (SPICE) Tool. The SPICE Tool was developed by the Federal Highway Administration (FHWA) as a supporting implementation tool for the *Highway Safety Manual* (HSM), published by the American Association of State Highway Transportation Officials.

Safety analysis was performed at the study intersections using Build (Year 2029) and Design (Year 2049) Conditions traffic volumes. **Table 13** summarizes the predicted crash frequencies for the study intersections using the SPICE tool.

TABLE 13: PREDICTED CRASH FREQUENCIES (2029-2049)

Intersection	Signalized Corridor Alternative		Roundabout Corridor Alternative	
	Fatal and Injury	Total	Fatal and Injury	Total
Route 47 & Berry Road	6.3	19.5	1.8	15.8
Route 47 & US-67 SB Ramps	6.4	19.6	1.8	15.8
Route 47 & US-67 NB Ramps	5.8	17.8	1.7	14.4
Route K & Northwood Drive	7.2	22.3	3.2	8.4
Corridor-wide	**25.7**	**79.2**	**8.5**	**54.4**

The results in **Table 13** show significant safety benefits for the roundabout corridor alternative when compared to the signalized corridor alternative. The roundabout corridor alternative is expected to result in 31% fewer total crashes. Most importantly, the roundabout corridor alternative is expected to result in 75% fewer fatal and injury crashes.

4.0 PREFERRED DESIGN ALTERNATIVE

Based on the information discussed in Section 3.0, the roundabout corridor is the preferred design alternative. The roundabout corridor alternative includes multi-lane roundabouts at all of the study intersections except the Route K & Northwood intersection, which was evaluated as a single-lane roundabout. The analysis results project excellent operations with minimal queueing in the Design Year. The roundabout corridor alternative is also projected to provide the greatest safety benefit of the two alternatives evaluated, as it is expected to reduce the frequency of the two types of crashes that are most frequently occurring at the study intersections.

The roundabout alternative may allow for shorter spans when the US-67 bridges are replaced at the interchange. With this alternative, only two lanes are needed in each direction of Route 47/Route K with a median between them. Shorter bridge spans can reduce the cost of bridge construction.

4.1 OTHER CONSIDERATIONS

While not evaluated as a capacity improvement in either scenario, as shown in **Exhibit 3** of **Appendix H,** the vertical profile of Route K should be improved near Hillcrest Drive to improve sight distances for the posted 30 mph speed limit.

All proposed improvements should consider drainage improvements in and around the Route K and Northwood Drive intersection. Multiple existing drainage structures were observed to be improperly draining or damaged during a site visit. Further investigation is needed during design to improve the drainage that outlets to a U.S. Army Corps of Engineers detention pond via a pipe that runs north under Northwood drive and multiple commercial properties.

Accommodations for Oversized/Overweight (OSOW) vehicles should be incorporated into any improvement. Roundabouts can become problematic for OSOW vehicles to traverse through if not properly designed for. The District has implemented roundabouts that required subsequent modifications to account for these OSOW vehicles.

5.0 INTERIM IMPROVEMENTS

At the time of this study, funding for the preferred design alternative discussed in Section 4.0 has not been identified. Construction cost for one roundabout can exceed $2 million, which would result in a corridor-wide cost that far exceeds the budgeted $2.378M ($1.676M construction, $0.702M ROW) for this project.

Using the Design Criteria developed and found in **Appendix I**, Kimley-Horn evaluated different interim improvements to improve conditions at the Route K & Northwood Drive intersection until the preferred alternative can be implemented for the corridor. One interim improvement evaluated is to construct a mini-roundabout at the intersection. Mini-roundabouts offer most of the benefits of single-lane roundabouts with the added benefit of a smaller footprint. The reason for the smaller diameter is a mini-roundabout has a central island and splitter islands that are traversable. This allows large trucks to drive over these features instead of navigating around them. The smaller diameter of the mini-roundabout will minimize property impacts and avoid the lift station in the northeast corner of the intersection. An illustration of a mini-roundabout at the intersection is shown in **Exhibit 1** of **Appendix H**.

A mini-roundabout would operate the same as the single-lane roundabout analyzed for the Route K & Northwood Drive intersection in the roundabout corridor alternative. All approaches are projected to operate with minimal delays and manageable queue lengths. The eastbound queues from the roundabout are not expected to reach the US-67 northbound ramps intersection. As a signalized intersection, queues from the US-67 northbound ramps intersection are not projected to be less than 110 feet, which would not reach the mini-roundabout.

The mini-roundabout concept does include some modifications to accesses near the intersection. The south leg of the intersection is to be reconstructed to develop more throat length and to create a more defined access route for the Circle K gas station. This access route continues in an east/west alignment to Pointview Drive. This route provides a connection from Pointview Drive to the mini-roundabout but would require acquisition from the auto sales business in the southeast corner of the Route K & Northwood Drive intersection. The splitter island from the roundabout would restrict the Route K & Pointview Drive intersection to right-in/right-out access.

On the north leg of the intersection, the driveway to the Family Center Farm & Ranch would be relocated farther to the north along Northwood Drive. This would require potential easements agreements or purchase of ROW to accommodate this change. The accesses to the businesses closest to Route K on the east and west sides of Northwood Drive would also be closed. These properties have other access points that provide more separation from the intersection with Route K.

New curbs are to be constructed on each approach and exit to the mini-roundabout. The curbs assist with speed control at the mini-roundabout. Curbs will also better manage access along the auto sales business property.

The addition of a sidewalk along the north side of Route 47/Route K would enhance safety for pedestrians and close a gap in the existing sidewalk network. The interim improvements in **Exhibit 2** of **Appendix H** illustrate crosswalk on the west leg of the Route 47 & Berry Road intersection. A new sidewalk would then continue east along the north side of the corridor to connect to the existing sidewalk just east of Northwood Drive. At the US-67 bridges, the new sidewalk would be routed north of the bridge columns. Drainage improvements may be needed under the bridge and in other areas to construct the sidewalk in areas that are currently open ditches. Between Northwood Drive and the US-67 northbound ramp, the westbound right-turn lane is not needed from an operational standpoint and could be removed to provide a location for the sidewalk. New curb ramps, pedestrian signals, and push buttons will be needed where the sidewalk crosses a signalized intersection.

To improve the alignment of the eastbound and westbound left-turn lanes, pavement marking modifications are shown on the west leg of the Route 47 & Berry Road intersection. These modifications offset the eastbound left-turn lane to improve sight lines. This may require a new longer mast arm to be installed for eastbound traffic. The longer arm will allow the signal head for the left-turn movement to be located in alignment with the offset turn lane.

The mini-roundabout shown does have an impact on drainage in the area. There is an existing corrugated metal pipe in the northwest corner of the Route K & Northwood Drive intersection that is in poor condition. The pipe runs north for nearly 700 feet under Northwood Drive and under private parking lots for commercial businesses. A study prepared by the U.S. Army Corps of Engineers recommended replacing this pipe with a box culvert. Replacing the culvert will be a significant expense and may not be feasible with this project.

In the event that construction costs for the mini-roundabout and culvert replacement exceed the project budget, there are interim improvements that could be made to improve safety at the Route K & Northwood Drive intersection. The second interim improvement concept includes turn lane and access management improvements. A westbound left-turn lane is to be constructed on Route K at the Northwood Drive intersection. The south leg of the intersection is to be reconstructed to develop more throat length and to create a more defined access route for the Circle K gas station. On the north leg of the intersection, the driveway to the Family Center Farm & Ranch would be relocated farther to the north along Northwood Drive. The accesses to the businesses closest to Route K on the east and west sides of Northwood Drive would also be closed. These properties have other access points that provide more separation from the intersection with Route K.

An improvement is also shown for the northbound right-turn movement at the US-67 northbound ramps. The turn lane and channelizing island are to be reconfigured to have a higher angle of intersection with Route 47/Route K as was noted in the safety analysis section of this report. This change will reduce the speed of turning traffic, and better position right-turning drivers to see oncoming traffic. This improvement can also benefit the Northwood Drive intersection if right-turn traffic does not approach the intersection as quickly as is possible with the current configuration.

The interim improvements for sidewalks and for pavement marking modifications at Route 47 & Berry Road that were previously identified would still be included in the second interim improvement project.

It should be noted that while the second interim improvements concept will have safety benefits, a change in the form of intersection control is needed to improve operations for the northbound approach.

Conceptual cost estimates for the interim improvements have been developed for the corridor, one with the mini-roundabout at Route K & Northwood Drive, and one with the simpler turn lanes and access management improvements at the intersection. These estimates can be found in **Exhibit J**.

5.1 DESIGN EXCEPTIONS

No known design exceptions are required for the preferred corridor improvements, assuming the vertical curve improvements are made at Route K and Hillcrest Drive. Intermediate improvements are not expected to extend far enough east for the vertical curve to be considered part of the project.

5.2 COORDINATION WITH DEVELOPMENT

A redevelopment project is being considered in the study area. A fast-food restaurant is being proposed to replace an existing restaurant along the north side of Route 47, west of Berry Road. The location of the redevelopment site is shown on the next page in **Figure 2**.



Figure 2: Redevelopment Site Location

The project is still in the planning stages, but it is not expected to have a significant impact on traffic operations since the fast-food would replace an existing restaurant that is currently in operation. The site should be configured to allow an eventual second westbound through lane to be constructed on Route 47. It would also be beneficial to allow for sidewalk to be constructed from the site to the northwest corner of Route 47 & Berry Road. This sidewalk will provide a connection to the overall sidewalk network that will be constructed as part of the interim improvements.

5.3 COORDINATION WITH NEPA PROCESS

Based on initial investigations by MoDOT environmental staff, significant environmental impacts are not expected with the preferred alternative and would likely fall under the Categorical Exclusion (CE) category.

The Federal Highway Administration (FHWA) requires environmental review under the National Environmental Policy Act (NEPA) before a federally funded or federally approved transportation project can advance to construction. For a project classified as a Categorical Exclusion, the environmental review documents that the proposed improvements will not result in significant impacts to the human or natural environment. Missouri Department of Transportation (MoDOT) Environmental and Historic Preservation staff review projects and coordinate with FHWA, as appropriate, to establish the NEPA classification and required documentation.

For the preferred alternative, environmental investigations typically evaluate wetlands and streams, threatened and endangered species, cultural and historic resources, Section 4(f) and Section 6(f) properties, floodplains and floodways, hazardous materials, farmland, community impacts, traffic noise, air quality, and water quality, as applicable to the project. The level of investigation depends on the resources present and the anticipated impacts, and may range from desktop screening to field investigations, agency consultation, or permitting. Applicable requirements such as Section 106 of the National Historic Preservation Act, Section 7 of the Endangered Species Act, Section 404 of the Clean Water Act, and Section 4(f) of the U.S. Department of Transportation Act must still be addressed even when the project qualifies for a CE. Once the necessary environmental reviews, coordination, and CE documentation are completed and environmental clearance is obtained, the preferred alternative may advance toward final design and construction, subject to any associated environmental commitments and permits.

6.0 CONCLUSION

Kimley-Horn has prepared this Traffic Safety and Operations report for the portion of Route K/Route 47 from Berry Road to Hillcrest Drive in Bonne Terre, Missouri. The purpose of this TS&O study was to develop potential intersection improvement alternatives for the Route K & Northwood Drive intersection in conjunction with potential improvements along the Route 47/Route K corridor that enhance safety and operations.

While a previous study identified a single-lane roundabout as the preferred improvement alternative, increased construction costs and the potential need to relocate a wastewater lift station have raised concerns regarding its feasibility. This TS&O study evaluated alternative improvements to address existing congestion, delays, and crash patterns at the intersection while considering the long-term needs of the Route 47/Route K corridor. The findings and recommendations are intended to improve safety and operations, provide cost-effective solutions, and ensure compatibility with future corridor improvements anticipated by the 2029 build year.

Intersection capacity analysis was performed at the study intersections for the following scenarios:

- Existing (Year 2026) Conditions
- Build (Year 2029) Conditions
- Design (Year 2049) Conditions

For future year traffic forecasts, background traffic growth was added to the existing traffic volumes. To estimate background traffic growth, the existing traffic volumes were assumed to increase at a rate of 1.18% for a 3-year and 23-year planning horizon to reflect conditions in years 2029 and 2049.

The analysis was performed for weekday AM and PM peak hours. Existing signal timing and coordination plans were provided by MoDOT and used for the analysis. Based on the analysis of No-Build Conditions, all the signalized intersections operate at acceptable levels of service overall across all scenarios. There are several intersections that are projected to have long 95th percentile queue lengths for the eastbound and westbound through movements. These queues extend back into adjacent intersections for several movements. At the Route K & Northwood Drive intersection, the northbound and southbound approaches are expected to operate at lower levels of service.

Several design alternatives were evaluated for the Route 47/Route K corridor within the study area. Since three of the study intersections are currently signalized, the first design alternative evaluates a corridor of signalized intersections. This alternative includes installing a traffic signal at the Route K & Northwood Drive intersection. The analysis results indicate that the Route K & Northwood Drive intersection is projected to operate acceptably overall as a signalized intersection. However, there are projected 95th percentile queues for certain movements that would block adjacent intersections.

The second design alternative includes constructing multi-lane roundabouts at the three existing signalized study intersections. This alternative also includes constructing a single-lane roundabout at the Route K & Northwood Drive intersection. The existing signalized intersections were converted to roundabouts for this alternative since it is generally not desirable to have roundabouts and signalized intersections in close proximity. The roundabout corridor is expected to provide excellent operations at all study intersections. Queue lengths are generally short and do not block adjacent intersections. Adequate capacity is available for the design year traffic volumes.

A safety analysis was conducted for both alternatives using Build (Year 2029) and Design (Year 2049) traffic volumes, which found that the roundabout corridor alternative is expected to result in 31% fewer total

crashes. Most importantly, the roundabout corridor alternative is expected to result in 75% fewer fatal and injury crashes.

Based on the analysis results, a roundabout corridor was identified as the preferred design alternative for the corridor. However, at the time of this study, funding for the full corridor preferred design alternative has not been identified. Currently, $2.378M in construction and ROW funds have been programmed in FY 2029. Kimley-Horn evaluated different interim improvements, from a mini-roundabout to minor lane striping and curb additions, to improve conditions at the Route K & Northwood Drive intersection until the preferred alternative can be implemented for the corridor.

APPENDIX

Appendix A: EXHIBITS

Appendix B: TURNING MOVEMENT COUNTS

Appendix C: MODOT TRAFFIC FORECAST

Appendix D: MODOT TRAFFIC SIGNAL TIMINGS

Appendix E: SYNCHRO REPORTS

Appendix F: TRAFFIC SIGNAL WARRANT ANALYSIS

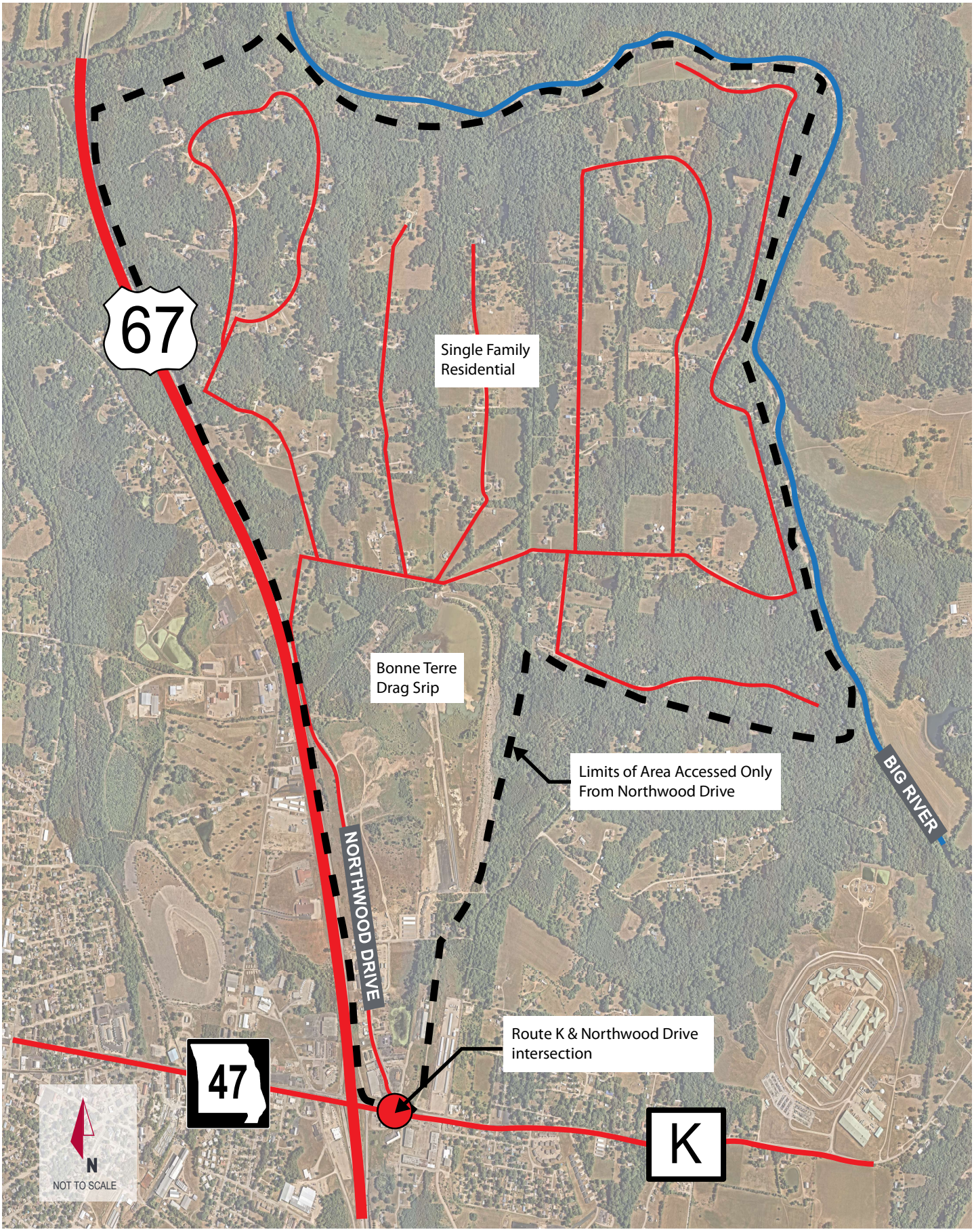
Appendix G: SIDRA REPORTS

Appendix H: INTERIM IMPROVEMENTS CONCEPTS

Appendix I: DESIGN CRITERIA

Appendix J: CONCEPTUAL COST ESTIMATES

Appendix A: Exhibits



Kimley»Horn

EXHIBIT 1

NORTHWOOD DRIVE ACCESS

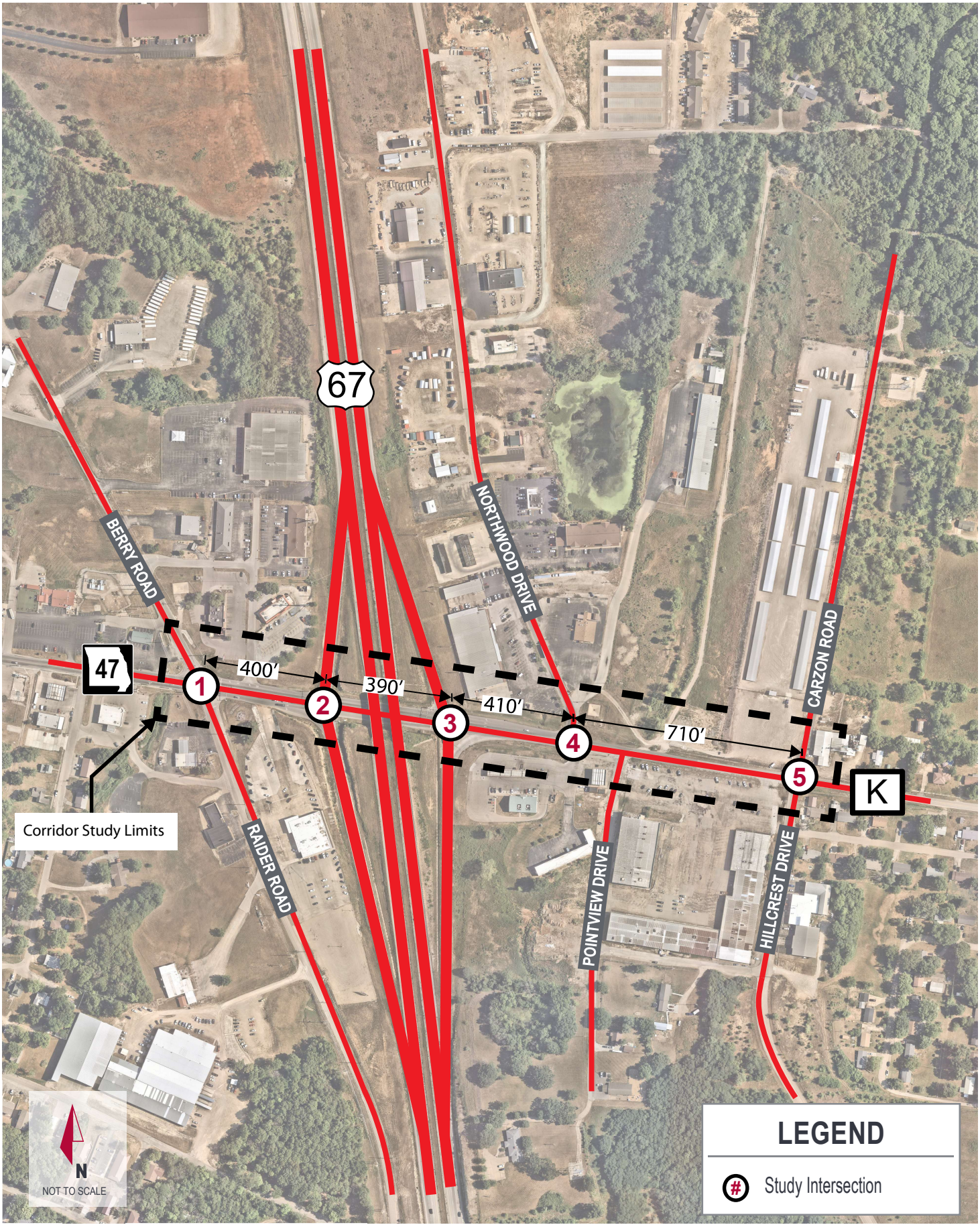


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EXHIBIT 2
STUDY AREA

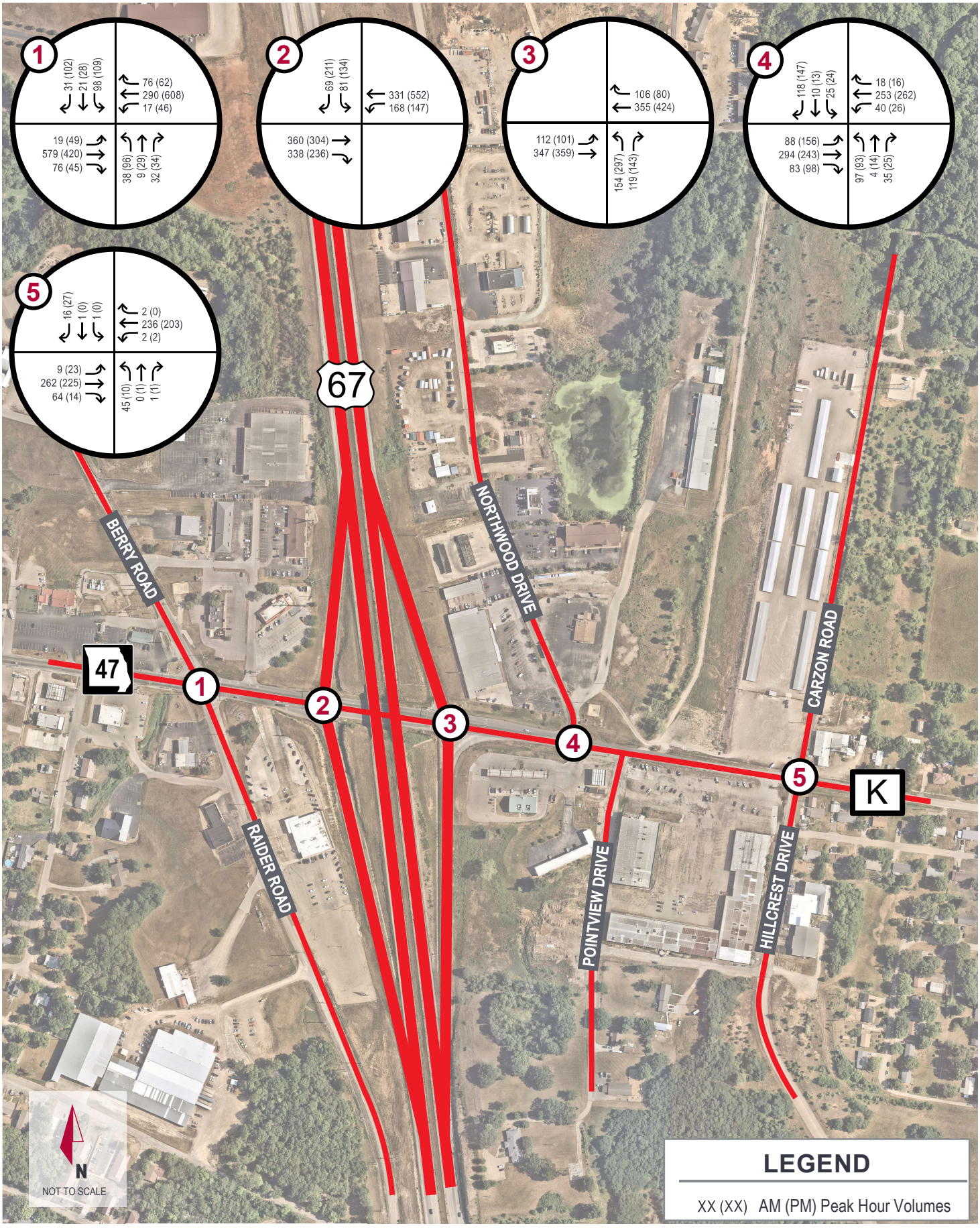

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EXHIBIT 3

EXISTING CONDITIONS (YEAR 2026) PEAK HOUR TRAFFIC VOLUMES

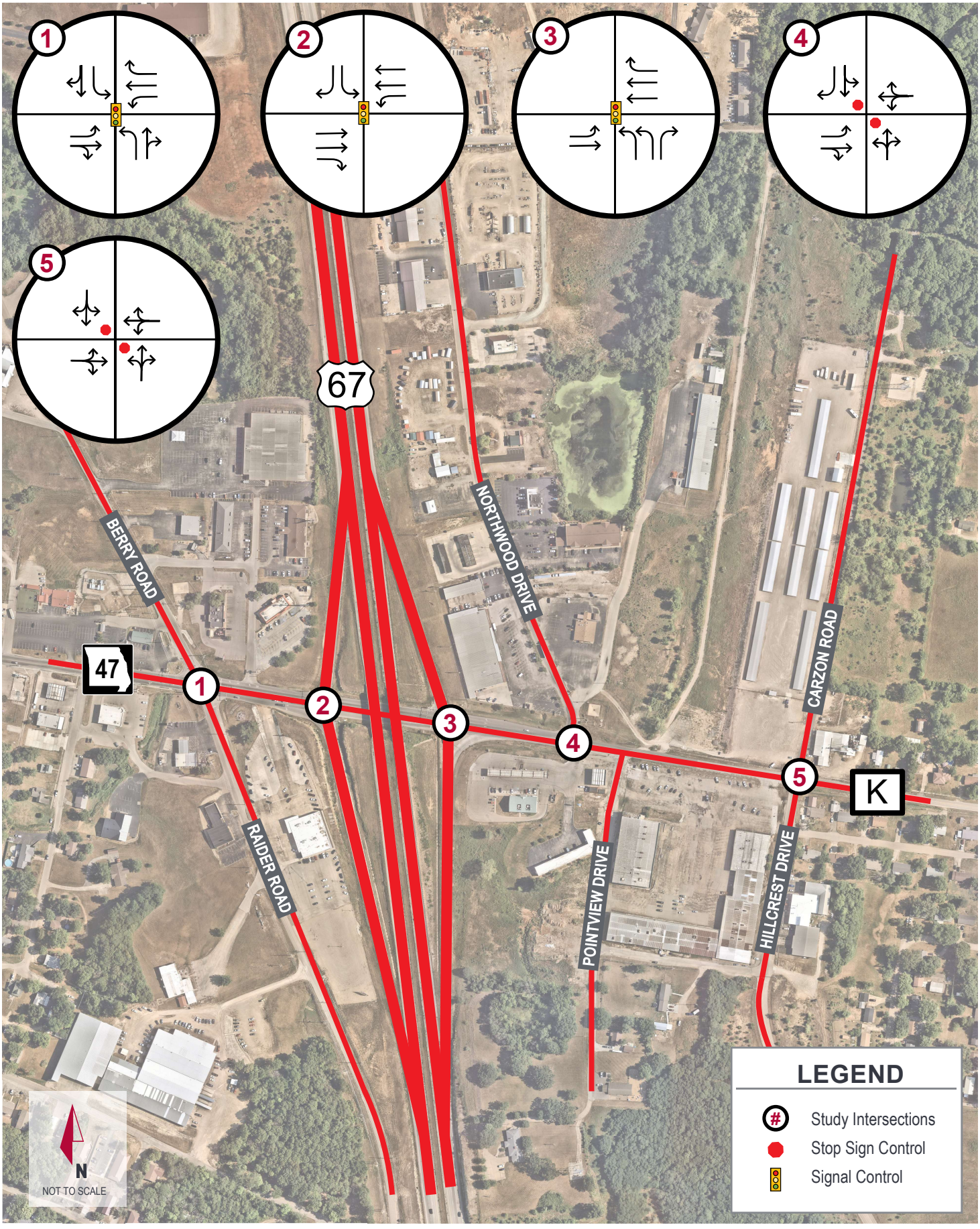

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EXHIBIT 4

EXISTING GEOMETRY AND INTERSECTION CONTROL

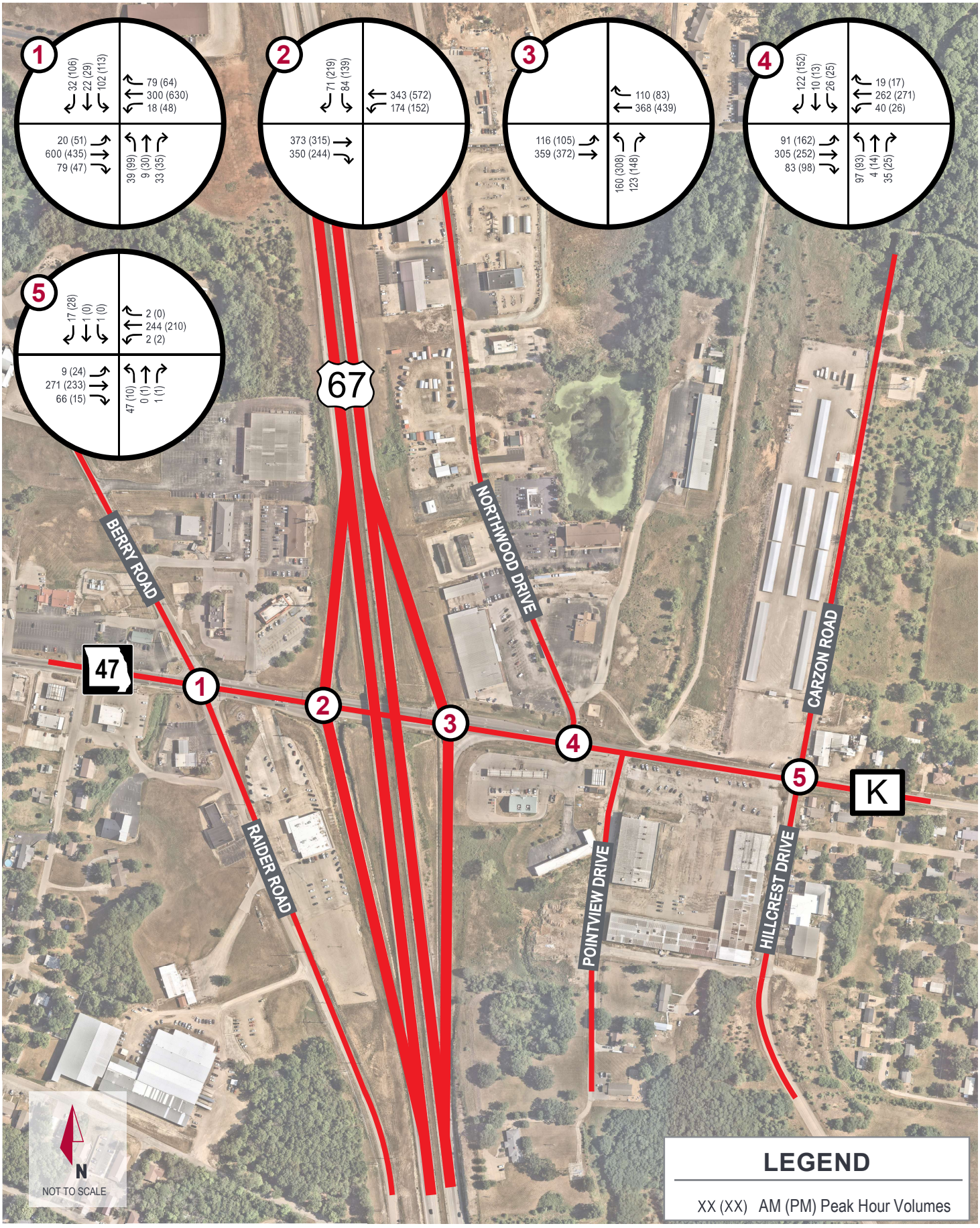

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EXHIBIT 5

BUILD CONDITIONS (YEAR 2029) PEAK HOUR TRAFFIC VOLUMES

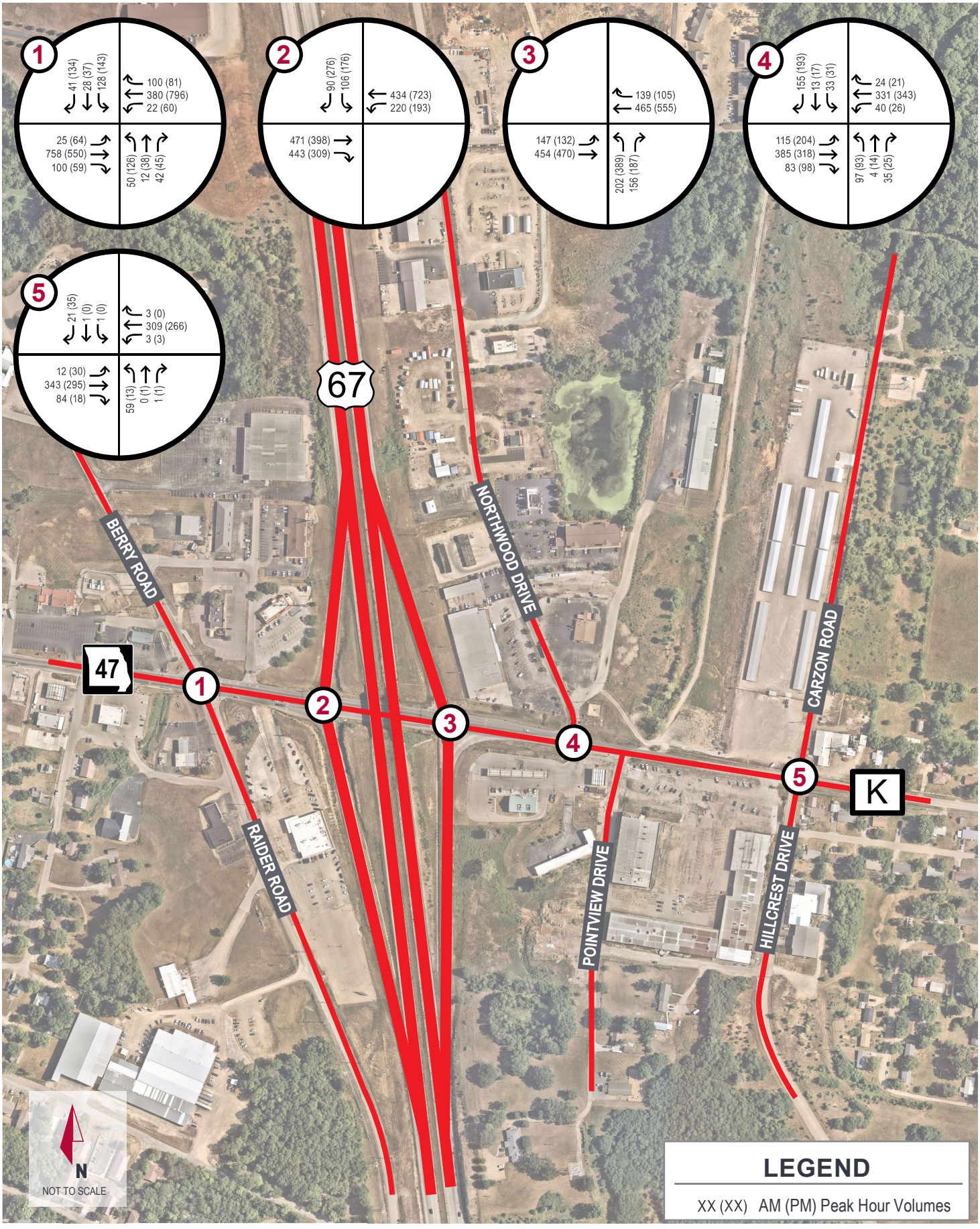

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EXHIBIT 6

DESIGN CONDITIONS (YEAR 2049) PEAK HOUR TRAFFIC VOLUMES

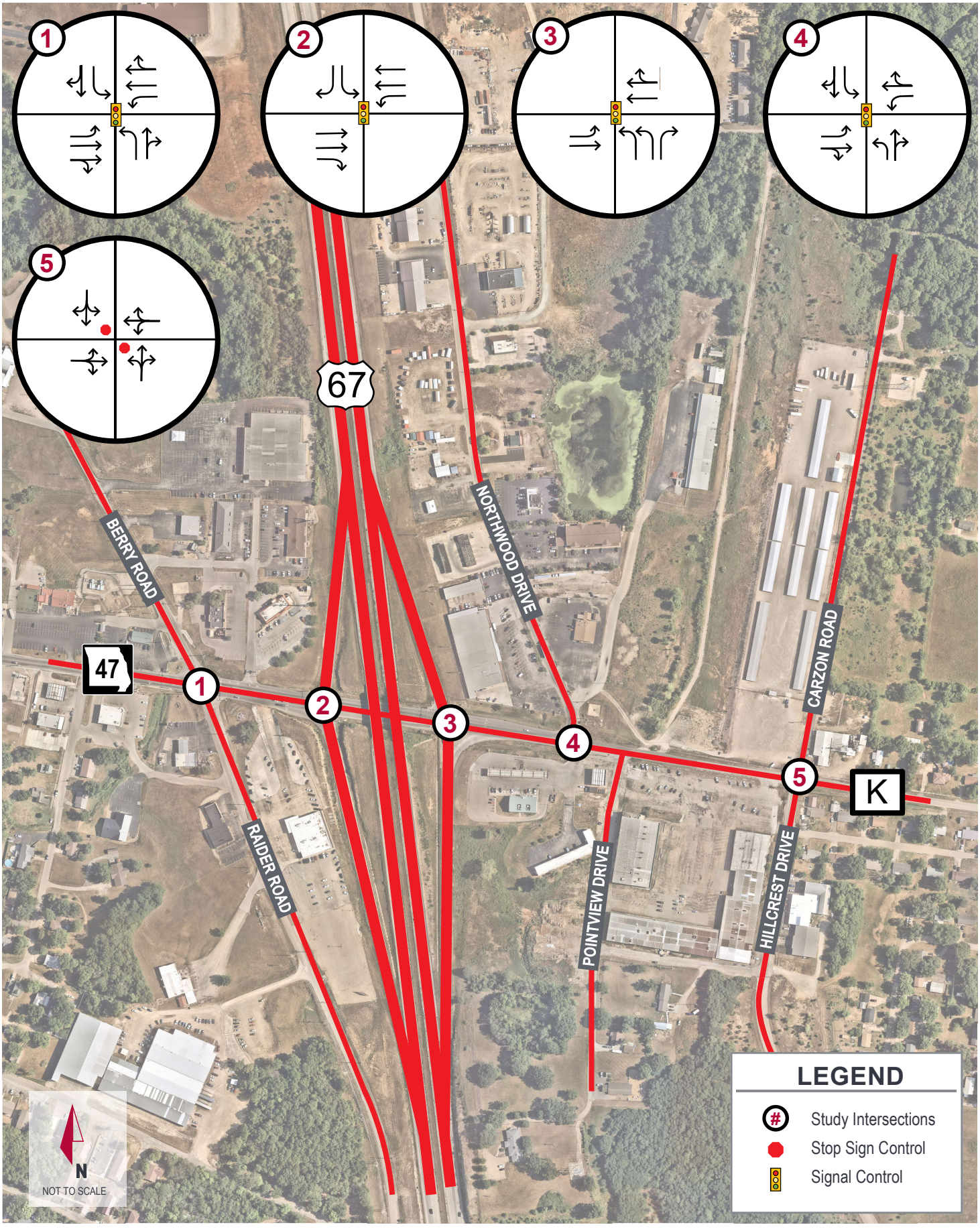

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EXHIBIT 7

SIGNALIZED CORRIDOR GEOMETRY AND INTERSECTION CONTROL

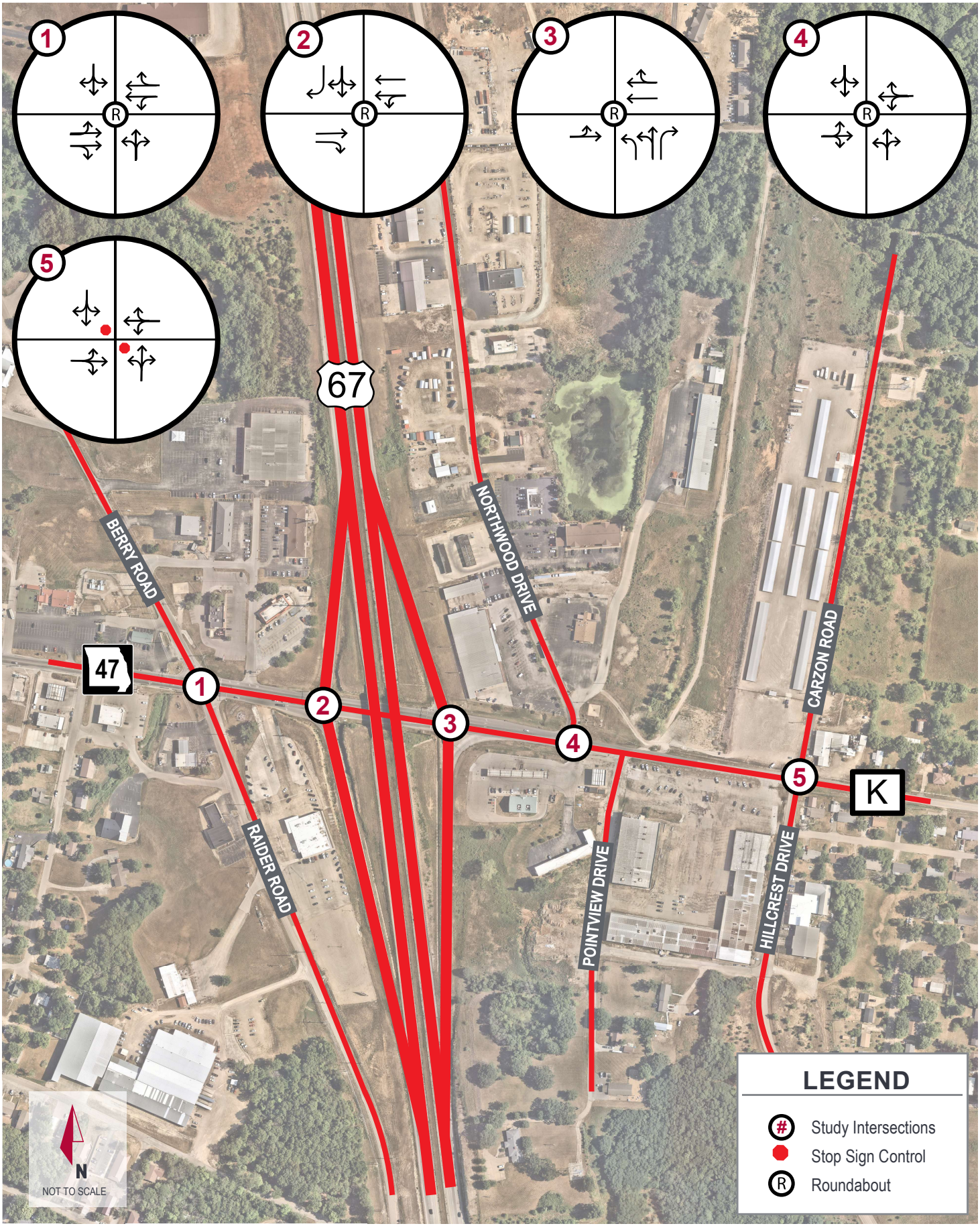

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EXHIBIT 8

ROUNDABOUT CORRIDOR GEOMETRY AND INTERSECTION CONTROL

Appendix B: Turning Movement Counts

MO 47 at Berry Rd/Raider Rd - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396436, Location: 37.922446, -90.540406



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Berry Rd					MO 47					Raider Rd					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	16	17	49	0	**82**	32	171	30	0	**233**	25	5	11	0	**41**	45	433	8	0	**486**	**842**
7:00AM	31	21	98	0	**150**	76	290	17	0	**383**	32	9	38	0	**79**	76	579	19	0	**674**	**1286**
8:00AM	30	16	66	0	**112**	36	289	33	0	**358**	31	19	29	0	**79**	38	359	22	0	**419**	**968**
9:00AM	34	14	70	0	**118**	41	275	23	0	**339**	36	18	18	0	**72**	33	338	23	0	**394**	**923**
10:00AM	35	12	75	0	**122**	39	295	29	0	**363**	39	16	46	0	**101**	38	338	32	0	**408**	**994**
11:00AM	53	21	111	0	**185**	55	368	31	0	**454**	46	18	55	0	**119**	40	345	35	0	**420**	**1178**
12:00PM	52	31	122	0	**205**	46	375	34	0	**455**	44	27	54	0	**125**	35	393	56	0	**484**	**1269**
1:00PM	57	19	93	0	**169**	49	393	27	0	**469**	35	26	54	0	**115**	29	356	34	0	**419**	**1172**
2:00PM	51	28	132	0	**211**	57	444	42	0	**543**	37	39	64	0	**140**	47	463	43	0	**553**	**1447**
3:00PM	96	28	139	0	**263**	59	599	42	0	**700**	64	46	106	0	**216**	34	384	47	0	**465**	**1644**
4:00PM	94	33	130	0	**257**	67	568	41	0	**676**	35	31	84	0	**150**	62	426	52	0	**540**	**1623**
5:00PM	91	36	105	0	**232**	50	534	42	0	**626**	37	20	89	0	**146**	53	402	46	0	**501**	**1505**
6:00PM	75	21	92	0	**188**	31	360	24	0	**415**	42	35	80	0	**157**	74	298	53	0	**425**	**1185**
Total	715	297	1282	0	**2294**	638	4961	415	0	**6014**	503	309	728	0	**1540**	604	5114	470	0	**6188**	**16036**
% Approach	31.2%	12.9%	55.9%	0%	-	10.6%	82.5%	6.9%	0%	-	32.7%	20.1%	47.3%	0%	-	9.8%	82.6%	7.6%	0%	-	-
% Total	4.5%	1.9%	8.0%	0%	**14.3%**	4.0%	30.9%	2.6%	0%	**37.5%**	3.1%	1.9%	4.5%	0%	**9.6%**	3.8%	31.9%	2.9%	0%	**38.6%**	-
Lights and Motorcycles	704	291	1203	0	**2198**	570	4759	401	0	**5730**	485	301	712	0	**1498**	586	4915	459	0	**5960**	15386
% Lights and Motorcycles	98.5%	98.0%	93.8%	0%	**95.8%**	89.3%	95.9%	96.6%	0%	**95.3%**	96.4%	97.4%	97.8%	0%	**97.3%**	97.0%	96.1%	97.7%	0%	**96.3%**	95.9%
Heavy	11	6	79	0	**96**	68	202	14	0	**284**	18	8	16	0	**42**	18	199	11	0	**228**	650
% Heavy	1.5%	2.0%	6.2%	0%	**4.2%**	10.7%	4.1%	3.4%	0%	**4.7%**	3.6%	2.6%	2.2%	0%	**2.7%**	3.0%	3.9%	2.3%	0%	**3.7%**	4.1%

*L: Left, R: Right, T: Thru, U: U-Turn

MO 47 at Berry Rd/Raider Rd - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396436, Location: 37.922446, -90.540406



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Berry Rd					MO 47					Raider Rd					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	5	2	12	0	**19**	2	31	6	0	**39**	4	1	5	0	**10**	7	88	0	0	**95**	**163**
6:15AM	8	4	12	0	**24**	3	41	9	0	**53**	4	1	1	0	**6**	10	113	1	0	**124**	**207**
6:30AM	1	4	10	0	**15**	12	45	9	0	**66**	7	2	2	0	**11**	15	117	3	0	**135**	**227**
6:45AM	2	7	15	0	**24**	15	54	6	0	**75**	10	1	3	0	**14**	13	115	4	0	**132**	**245**
Hourly Total	16	17	49	0	**82**	32	171	30	0	**233**	25	5	11	0	**41**	45	433	8	0	**486**	**842**
7:00AM	3	7	17	0	**27**	10	57	3	0	**70**	10	1	5	0	**16**	19	146	5	0	**170**	**283**
7:15AM	6	9	23	0	**38**	29	58	8	0	**95**	8	3	12	0	**23**	38	152	4	0	**194**	**350**
7:30AM	13	3	29	0	**45**	19	69	2	0	**90**	9	2	15	0	**26**	10	168	5	0	**183**	**344**
7:45AM	9	2	29	0	**40**	18	106	4	0	**128**	5	3	6	0	**14**	9	113	5	0	**127**	**309**
Hourly Total	31	21	98	0	**150**	76	290	17	0	**383**	32	9	38	0	**79**	76	579	19	0	**674**	**1286**
8:00AM	9	6	21	0	**36**	9	62	8	0	**79**	9	3	6	0	**18**	16	98	6	0	**120**	**253**
8:15AM	6	2	16	0	**24**	10	78	9	0	**97**	7	5	7	0	**19**	8	82	3	0	**93**	**233**
8:30AM	5	4	9	0	**18**	5	85	7	0	**97**	5	2	5	0	**12**	9	89	5	0	**103**	**230**
8:45AM	10	4	20	0	**34**	12	64	9	0	**85**	10	9	11	0	**30**	5	90	8	0	**103**	**252**
Hourly Total	30	16	66	0	**112**	36	289	33	0	**358**	31	19	29	0	**79**	38	359	22	0	**419**	**968**
9:00AM	8	4	14	0	**26**	15	63	7	0	**85**	8	4	5	0	**17**	9	80	5	0	**94**	**222**
9:15AM	6	2	19	0	**27**	5	54	9	0	**68**	11	2	4	0	**17**	4	85	7	0	**96**	**208**
9:30AM	10	2	13	0	**25**	7	79	3	0	**89**	7	8	5	0	**20**	10	84	2	0	**96**	**230**
9:45AM	10	6	24	0	**40**	14	79	4	0	**97**	10	4	4	0	**18**	10	89	9	0	**108**	**263**
Hourly Total	34	14	70	0	**118**	41	275	23	0	**339**	36	18	18	0	**72**	33	338	23	0	**394**	**923**
10:00AM	13	3	23	0	**39**	8	55	5	0	**68**	4	3	12	0	**19**	13	82	5	0	**100**	**226**
10:15AM	4	4	20	0	**28**	13	77	8	0	**98**	9	6	12	0	**27**	7	98	5	0	**110**	**263**
10:30AM	11	1	16	0	**28**	8	74	7	0	**89**	13	6	12	0	**31**	7	89	9	0	**105**	**253**
10:45AM	7	4	16	0	**27**	10	89	9	0	**108**	13	1	10	0	**24**	11	69	13	0	**93**	**252**
Hourly Total	35	12	75	0	**122**	39	295	29	0	**363**	39	16	46	0	**101**	38	338	32	0	**408**	**994**
11:00AM	14	9	20	0	**43**	10	83	9	0	**102**	4	4	19	0	**27**	7	92	12	0	**111**	**283**
11:15AM	16	4	27	0	**47**	16	90	4	0	**110**	15	4	9	0	**28**	10	87	3	0	**100**	**285**
11:30AM	10	4	30	0	**44**	13	97	8	0	**118**	14	5	10	0	**29**	11	69	9	0	**89**	**280**
11:45AM	13	4	34	0	**51**	16	98	10	0	**124**	13	5	17	0	**35**	12	97	11	0	**120**	**330**
Hourly Total	53	21	111	0	**185**	55	368	31	0	**454**	46	18	55	0	**119**	40	345	35	0	**420**	**1178**
12:00PM	10	5	28	0	**43**	8	107	9	0	**124**	8	5	12	0	**25**	13	108	17	0	**138**	**330**
12:15PM	9	4	26	0	**39**	8	79	8	0	**95**	11	6	14	0	**31**	8	89	10	0	**107**	**272**
12:30PM	20	10	33	0	**63**	14	91	12	0	**117**	20	8	15	0	**43**	8	105	13	0	**126**	**349**
12:45PM	13	12	35	0	**60**	16	98	5	0	**119**	5	8	13	0	**26**	6	91	16	0	**113**	**318**
Hourly Total	52	31	122	0	**205**	46	375	34	0	**455**	44	27	54	0	**125**	35	393	56	0	**484**	**1269**
1:00PM	15	1	29	0	**45**	11	103	6	0	**120**	7	8	16	0	**31**	8	90	2	0	**100**	**296**
1:15PM	10	3	20	0	**33**	10	99	6	0	**115**	6	2	17	0	**25**	12	95	12	0	**119**	**292**
1:30PM	18	10	16	0	**44**	13	102	8	0	**123**	11	7	5	0	**23**	5	95	9	0	**109**	**299**

Leg	Berry Rd					MO 47					Raider Rd					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
1:45PM	14	5	28	0	**47**	15	89	7	0	**111**	11	9	16	0	**36**	4	76	11	0	**91**	**285**
Hourly Total	57	19	93	0	**169**	49	393	27	0	**469**	35	26	54	0	**115**	29	356	34	0	**419**	**1172**
2:00PM	9	6	29	0	**44**	9	91	9	0	**109**	10	7	16	0	**33**	11	123	6	0	**140**	**326**
2:15PM	16	5	31	0	**52**	16	106	10	0	**132**	9	8	12	0	**29**	13	97	17	0	**127**	**340**
2:30PM	13	8	42	0	**63**	10	115	13	0	**138**	9	11	12	0	**32**	17	129	12	0	**158**	**391**
2:45PM	13	9	30	0	**52**	22	132	10	0	**164**	9	13	24	0	**46**	6	114	8	0	**128**	**390**
Hourly Total	51	28	132	0	**211**	57	444	42	0	**543**	37	39	64	0	**140**	47	463	43	0	**553**	**1447**
3:00PM	29	5	49	0	**83**	15	158	8	0	**181**	12	15	32	0	**59**	4	84	10	0	**98**	**421**
3:15PM	22	5	28	0	**55**	12	153	6	0	**171**	11	6	18	0	**35**	10	102	14	0	**126**	**387**
3:30PM	20	9	40	0	**69**	15	135	10	0	**160**	27	11	38	0	**76**	8	102	12	0	**122**	**427**
3:45PM	25	9	22	0	**56**	17	153	18	0	**188**	14	14	18	0	**46**	12	96	11	0	**119**	**409**
Hourly Total	96	28	139	0	**263**	59	599	42	0	**700**	64	46	106	0	**216**	34	384	47	0	**465**	**1644**
4:00PM	25	15	47	0	**87**	19	141	7	0	**167**	14	5	20	0	**39**	11	107	19	0	**137**	**430**
4:15PM	23	6	33	0	**62**	16	139	9	0	**164**	6	7	17	0	**30**	23	96	8	0	**127**	**383**
4:30PM	21	9	27	0	**57**	14	150	7	0	**171**	10	7	28	0	**45**	15	106	14	0	**135**	**408**
4:45PM	25	3	23	0	**51**	18	138	18	0	**174**	5	12	19	0	**36**	13	117	11	0	**141**	**402**
Hourly Total	94	33	130	0	**257**	67	568	41	0	**676**	35	31	84	0	**150**	62	426	52	0	**540**	**1623**
5:00PM	31	9	37	0	**77**	17	148	5	0	**170**	8	7	32	0	**47**	9	102	14	0	**125**	**419**
5:15PM	25	7	22	0	**54**	13	172	16	0	**201**	11	3	17	0	**31**	8	95	10	0	**113**	**399**
5:30PM	22	13	26	0	**61**	12	109	10	0	**131**	7	6	19	0	**32**	25	115	9	0	**149**	**373**
5:45PM	13	7	20	0	**40**	8	105	11	0	**124**	11	4	21	0	**36**	11	90	13	0	**114**	**314**
Hourly Total	91	36	105	0	**232**	50	534	42	0	**626**	37	20	89	0	**146**	53	402	46	0	**501**	**1505**
6:00PM	18	3	25	0	**46**	8	96	7	0	**111**	13	13	28	0	**54**	12	84	15	0	**111**	**322**
6:15PM	21	11	26	0	**58**	5	104	7	0	**116**	10	6	12	0	**28**	16	76	11	0	**103**	**305**
6:30PM	15	5	26	0	**46**	9	79	5	0	**93**	14	8	27	0	**49**	36	81	10	0	**127**	**315**
6:45PM	21	2	15	0	**38**	9	81	5	0	**95**	5	8	13	0	**26**	10	57	17	0	**84**	**243**
Hourly Total	75	21	92	0	**188**	31	360	24	0	**415**	42	35	80	0	**157**	74	298	53	0	**425**	**1185**
Total	715	297	1282	0	**2294**	638	4961	415	0	**6014**	503	309	728	0	**1540**	604	5114	470	0	**6188**	**16036**
% Approach	31.2%	12.9%	55.9%	0%	**-**	10.6%	82.5%	6.9%	0%	**-**	32.7%	20.1%	47.3%	0%	**-**	9.8%	82.6%	7.6%	0%	**-**	**-**
% Total	4.5%	1.9%	8.0%	0%	**14.3%**	4.0%	30.9%	2.6%	0%	**37.5%**	3.1%	1.9%	4.5%	0%	**9.6%**	3.8%	31.9%	2.9%	0%	**38.6%**	**-**
Lights and Motorcycles	704	291	1203	0	**2198**	570	4759	401	0	**5730**	485	301	712	0	**1498**	586	4915	459	0	**5960**	15386
% Lights and Motorcycles	98.5%	98.0%	93.8%	0%	**95.8%**	89.3%	95.9%	96.6%	0%	**95.3%**	96.4%	97.4%	97.8%	0%	**97.3%**	97.0%	96.1%	97.7%	0%	**96.3%**	95.9%
Heavy	11	6	79	0	**96**	68	202	14	0	**284**	18	8	16	0	**42**	18	199	11	0	**228**	650
% Heavy	1.5%	2.0%	6.2%	0%	**4.2%**	10.7%	4.1%	3.4%	0%	**4.7%**	3.6%	2.6%	2.2%	0%	**2.7%**	3.0%	3.9%	2.3%	0%	**3.7%**	4.1%

*L: Left, R: Right, T: Thru, U: U-Turn

US 67 SB Exit Rmp at MO 47 - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396437, Location: 37.838833, -90.485112

Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	US 67 SB Exit Ramp					MO 47					US 67 SB Entrance Rmp					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	53	1	47	0	**101**	0	190	64	0	**254**	0	0	0	0	**0**	205	307	0	0	**512**	**867**
7:00AM	69	0	81	0	**150**	0	331	168	0	**499**	0	0	0	0	**0**	338	360	0	0	**698**	**1347**
8:00AM	85	0	40	0	**125**	0	292	87	0	**379**	0	0	0	0	**0**	225	208	0	0	**433**	**937**
9:00AM	76	0	31	0	**107**	0	290	90	0	**380**	0	0	0	0	**0**	221	215	0	0	**436**	**923**
10:00AM	81	0	40	0	**121**	0	329	87	0	**416**	0	0	0	0	**0**	225	225	0	0	**450**	**987**
11:00AM	93	0	37	0	**130**	0	399	82	0	**481**	0	0	0	0	**0**	234	270	0	0	**504**	**1115**
12:00PM	104	0	46	0	**150**	0	394	101	0	**495**	0	0	0	0	**0**	272	288	0	0	**560**	**1205**
1:00PM	108	0	51	0	**159**	0	411	102	0	**513**	0	0	0	0	**0**	237	239	0	0	**476**	**1148**
2:00PM	152	1	68	0	**221**	0	440	116	0	**556**	0	0	0	0	**0**	260	313	0	0	**573**	**1350**
3:00PM	195	0	92	0	**287**	0	574	128	0	**702**	0	0	0	0	**0**	277	301	0	0	**578**	**1567**
4:00PM	215	0	125	0	**340**	0	495	162	0	**657**	0	0	0	0	**0**	266	309	0	0	**575**	**1572**
5:00PM	188	0	124	0	**312**	0	487	105	0	**592**	0	0	0	0	**0**	255	278	0	0	**533**	**1437**
6:00PM	109	0	76	0	**185**	0	333	95	0	**428**	0	0	0	0	**0**	191	226	0	0	**417**	**1030**
Total	1528	2	858	0	**2388**	0	4965	1387	0	**6352**	0	0	0	0	**0**	3206	3539	0	0	**6745**	**15485**
% Approach	64.0%	0.1%	35.9%	0%	-	0%	78.2%	21.8%	0%	-	0%	0%	0%	0%	-	47.5%	52.5%	0%	0%	-	-
% Total	9.9%	0%	5.5%	0%	**15.4%**	0%	32.1%	9.0%	0%	**41.0%**	0%	0%	0%	0%	**0%**	20.7%	22.9%	0%	0%	**43.6%**	-
Lights and Motorcycles	1460	0	802	0	**2262**	0	4745	1325	0	**6070**	0	0	0	0	**0**	3082	3370	0	0	**6452**	14784
% Lights and Motorcycles	95.5%	0%	93.5%	0%	**94.7%**	0%	95.6%	95.5%	0%	**95.6%**	0%	0%	0%	0%	-	96.1%	95.2%	0%	0%	**95.7%**	95.5%
Heavy	68	2	56	0	**126**	0	220	62	0	**282**	0	0	0	0	**0**	124	169	0	0	**293**	701
% Heavy	4.5%	100%	6.5%	0%	**5.3%**	0%	4.4%	4.5%	0%	**4.4%**	0%	0%	0%	0%	-	3.9%	4.8%	0%	0%	**4.3%**	4.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 67 SB Exit Rmp at MO 47 - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396437, Location: 37.838833, -90.485112



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	US 67 SB Exit Ramp					MO 47					US 67 SB Entrance Rmp					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	5	0	5	0	**10**	0	35	10	0	**45**	0	0	0	0	**0**	38	67	0	0	**105**	**160**
6:15AM	18	0	9	0	**27**	0	43	14	0	**57**	0	0	0	0	**0**	40	85	0	0	**125**	**209**
6:30AM	16	1	18	0	**35**	0	52	23	0	**75**	0	0	0	0	**0**	65	63	0	0	**128**	**238**
6:45AM	14	0	15	0	**29**	0	60	17	0	**77**	0	0	0	0	**0**	62	92	0	0	**154**	**260**
Hourly Total	53	1	47	0	**101**	0	190	64	0	**254**	0	0	0	0	**0**	205	307	0	0	**512**	**867**
7:00AM	18	0	15	0	**33**	0	63	43	0	**106**	0	0	0	0	**0**	92	71	0	0	**163**	**302**
7:15AM	17	0	19	0	**36**	0	78	53	0	**131**	0	0	0	0	**0**	72	106	0	0	**178**	**345**
7:30AM	11	0	29	0	**40**	0	95	45	0	**140**	0	0	0	0	**0**	103	109	0	0	**212**	**392**
7:45AM	23	0	18	0	**41**	0	95	27	0	**122**	0	0	0	0	**0**	71	74	0	0	**145**	**308**
Hourly Total	69	0	81	0	**150**	0	331	168	0	**499**	0	0	0	0	**0**	338	360	0	0	**698**	**1347**
8:00AM	18	0	7	0	**25**	0	70	26	0	**96**	0	0	0	0	**0**	49	67	0	0	**116**	**237**
8:15AM	19	0	14	0	**33**	0	72	21	0	**93**	0	0	0	0	**0**	57	48	0	0	**105**	**231**
8:30AM	30	0	9	0	**39**	0	75	22	0	**97**	0	0	0	0	**0**	63	41	0	0	**104**	**240**
8:45AM	18	0	10	0	**28**	0	75	18	0	**93**	0	0	0	0	**0**	56	52	0	0	**108**	**229**
Hourly Total	85	0	40	0	**125**	0	292	87	0	**379**	0	0	0	0	**0**	225	208	0	0	**433**	**937**
9:00AM	16	0	9	0	**25**	0	72	30	0	**102**	0	0	0	0	**0**	52	55	0	0	**107**	**234**
9:15AM	14	0	5	0	**19**	0	62	20	0	**82**	0	0	0	0	**0**	56	55	0	0	**111**	**212**
9:30AM	23	0	6	0	**29**	0	77	18	0	**95**	0	0	0	0	**0**	51	56	0	0	**107**	**231**
9:45AM	23	0	11	0	**34**	0	79	22	0	**101**	0	0	0	0	**0**	62	49	0	0	**111**	**246**
Hourly Total	76	0	31	0	**107**	0	290	90	0	**380**	0	0	0	0	**0**	221	215	0	0	**436**	**923**
10:00AM	13	0	12	0	**25**	0	73	21	0	**94**	0	0	0	0	**0**	59	62	0	0	**121**	**240**
10:15AM	20	0	10	0	**30**	0	79	12	0	**91**	0	0	0	0	**0**	55	66	0	0	**121**	**242**
10:30AM	22	0	9	0	**31**	0	81	22	0	**103**	0	0	0	0	**0**	66	47	0	0	**113**	**247**
10:45AM	26	0	9	0	**35**	0	96	32	0	**128**	0	0	0	0	**0**	45	50	0	0	**95**	**258**
Hourly Total	81	0	40	0	**121**	0	329	87	0	**416**	0	0	0	0	**0**	225	225	0	0	**450**	**987**
11:00AM	17	0	5	0	**22**	0	99	22	0	**121**	0	0	0	0	**0**	62	54	0	0	**116**	**259**
11:15AM	27	0	10	0	**37**	0	88	17	0	**105**	0	0	0	0	**0**	64	70	0	0	**134**	**276**
11:30AM	18	0	10	0	**28**	0	114	23	0	**137**	0	0	0	0	**0**	45	67	0	0	**112**	**277**
11:45AM	31	0	12	0	**43**	0	98	20	0	**118**	0	0	0	0	**0**	63	79	0	0	**142**	**303**
Hourly Total	93	0	37	0	**130**	0	399	82	0	**481**	0	0	0	0	**0**	234	270	0	0	**504**	**1115**
12:00PM	32	0	18	0	**50**	0	105	27	0	**132**	0	0	0	0	**0**	70	72	0	0	**142**	**324**
12:15PM	17	0	12	0	**29**	0	87	27	0	**114**	0	0	0	0	**0**	61	66	0	0	**127**	**270**
12:30PM	26	0	12	0	**38**	0	107	25	0	**132**	0	0	0	0	**0**	76	82	0	0	**158**	**328**
12:45PM	29	0	4	0	**33**	0	95	22	0	**117**	0	0	0	0	**0**	65	68	0	0	**133**	**283**
Hourly Total	104	0	46	0	**150**	0	394	101	0	**495**	0	0	0	0	**0**	272	288	0	0	**560**	**1205**
1:00PM	26	0	12	0	**38**	0	103	28	0	**131**	0	0	0	0	**0**	56	62	0	0	**118**	**287**
1:15PM	29	0	15	0	**44**	0	106	21	0	**127**	0	0	0	0	**0**	68	54	0	0	**122**	**293**
1:30PM	31	0	14	0	**45**	0	99	23	0	**122**	0	0	0	0	**0**	54	62	0	0	**116**	**283**

Leg	US 67 SB Exit Ramp					MO 47					US 67 SB Entrance Rmp					MO 47					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
1:45PM	22	0	10	0	**32**	0	103	30	0	**133**	0	0	0	0	**0**	59	61	0	0	**120**	**285**
Hourly Total	108	0	51	0	**159**	0	411	102	0	**513**	0	0	0	0	**0**	237	239	0	0	**476**	**1148**
2:00PM	39	0	16	0	**55**	0	84	23	0	**107**	0	0	0	0	**0**	70	73	0	0	**143**	**305**
2:15PM	33	0	13	0	**46**	0	116	34	0	**150**	0	0	0	0	**0**	54	76	0	0	**130**	**326**
2:30PM	39	0	17	0	**56**	0	104	32	0	**136**	0	0	0	0	**0**	71	85	0	0	**156**	**348**
2:45PM	41	1	22	0	**64**	0	136	27	0	**163**	0	0	0	0	**0**	65	79	0	0	**144**	**371**
Hourly Total	152	1	68	0	**221**	0	440	116	0	**556**	0	0	0	0	**0**	260	313	0	0	**573**	**1350**
3:00PM	44	0	16	0	**60**	0	165	31	0	**196**	0	0	0	0	**0**	69	71	0	0	**140**	**396**
3:15PM	50	0	29	0	**79**	0	136	34	0	**170**	0	0	0	0	**0**	60	82	0	0	**142**	**391**
3:30PM	47	0	21	0	**68**	0	122	27	0	**149**	0	0	0	0	**0**	81	80	0	0	**161**	**378**
3:45PM	54	0	26	0	**80**	0	151	36	0	**187**	0	0	0	0	**0**	67	68	0	0	**135**	**402**
Hourly Total	195	0	92	0	**287**	0	574	128	0	**702**	0	0	0	0	**0**	277	301	0	0	**578**	**1567**
4:00PM	52	0	28	0	**80**	0	127	41	0	**168**	0	0	0	0	**0**	79	81	0	0	**160**	**408**
4:15PM	58	0	29	0	**87**	0	119	37	0	**156**	0	0	0	0	**0**	68	72	0	0	**140**	**383**
4:30PM	45	0	31	0	**76**	0	142	40	0	**182**	0	0	0	0	**0**	59	72	0	0	**131**	**389**
4:45PM	60	0	37	0	**97**	0	107	44	0	**151**	0	0	0	0	**0**	60	84	0	0	**144**	**392**
Hourly Total	215	0	125	0	**340**	0	495	162	0	**657**	0	0	0	0	**0**	266	309	0	0	**575**	**1572**
5:00PM	52	0	36	0	**88**	0	147	27	0	**174**	0	0	0	0	**0**	60	78	0	0	**138**	**400**
5:15PM	54	0	30	0	**84**	0	156	36	0	**192**	0	0	0	0	**0**	57	70	0	0	**127**	**403**
5:30PM	43	0	29	0	**72**	0	89	27	0	**116**	0	0	0	0	**0**	91	60	0	0	**151**	**339**
5:45PM	39	0	29	0	**68**	0	95	15	0	**110**	0	0	0	0	**0**	47	70	0	0	**117**	**295**
Hourly Total	188	0	124	0	**312**	0	487	105	0	**592**	0	0	0	0	**0**	255	278	0	0	**533**	**1437**
6:00PM	30	0	20	0	**50**	0	95	22	0	**117**	0	0	0	0	**0**	61	62	0	0	**123**	**290**
6:15PM	35	0	22	0	**57**	0	84	25	0	**109**	0	0	0	0	**0**	52	56	0	0	**108**	**274**
6:30PM	26	0	17	0	**43**	0	74	34	0	**108**	0	0	0	0	**0**	44	65	0	0	**109**	**260**
6:45PM	18	0	17	0	**35**	0	80	14	0	**94**	0	0	0	0	**0**	34	43	0	0	**77**	**206**
Hourly Total	109	0	76	0	**185**	0	333	95	0	**428**	0	0	0	0	**0**	191	226	0	0	**417**	**1030**
Total	1528	2	858	0	**2388**	0	4965	1387	0	**6352**	0	0	0	0	**0**	3206	3539	0	0	**6745**	**15485**
% Approach	64.0%	0.1%	35.9%	0%	-	0%	78.2%	21.8%	0%	-	0%	0%	0%	0%	-	47.5%	52.5%	0%	0%	-	-
% Total	9.9%	0%	5.5%	0%	**15.4%**	0%	32.1%	9.0%	0%	**41.0%**	0%	0%	0%	0%	**0%**	20.7%	22.9%	0%	0%	**43.6%**	-
Lights and Motorcycles	1460	0	802	0	**2262**	0	4745	1325	0	**6070**	0	0	0	0	**0**	3082	3370	0	0	**6452**	14784
% Lights and Motorcycles	95.5%	0%	93.5%	0%	**94.7%**	0%	95.6%	95.5%	0%	**95.6%**	0%	0%	0%	0%	-	96.1%	95.2%	0%	0%	**95.7%**	95.5%
Heavy	68	2	56	0	**126**	0	220	62	0	**282**	0	0	0	0	**0**	124	169	0	0	**293**	701
% Heavy	4.5%	100%	6.5%	0%	**5.3%**	0%	4.4%	4.5%	0%	**4.4%**	0%	0%	0%	0%	-	3.9%	4.8%	0%	0%	**4.3%**	4.5%

*L: Left, R: Right, T: Thru, U: U-Turn

US 67 NB Ramps at MO 47/Rte K - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396448, Location: 37.922109, -90.537775



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	US 67 NB Entrance					Rte K					US 67 NB Exit					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	0	0	0	0	**0**	91	151	0	0	**242**	82	1	101	0	**184**	0	169	174	0	**343**	**769**
7:00AM	0	0	0	0	**0**	106	355	0	0	**461**	119	0	154	0	**273**	0	347	112	0	**459**	**1193**
8:00AM	0	0	0	0	**0**	65	218	0	0	**283**	94	0	168	0	**262**	0	173	81	0	**254**	**799**
9:00AM	0	0	0	0	**0**	44	213	0	0	**257**	77	0	170	0	**247**	0	163	85	0	**248**	**752**
10:00AM	0	0	0	0	**0**	42	253	0	0	**295**	108	1	150	0	**259**	0	177	79	0	**256**	**810**
11:00AM	0	0	0	0	**0**	45	282	0	0	**327**	108	2	206	0	**316**	0	233	84	0	**317**	**960**
12:00PM	0	0	0	0	**0**	48	309	0	0	**357**	90	3	193	0	**286**	0	247	83	0	**330**	**973**
1:00PM	0	0	0	0	**0**	53	285	0	0	**338**	97	0	219	0	**316**	0	219	70	0	**289**	**943**
2:00PM	0	0	0	0	**0**	53	314	0	0	**367**	118	0	232	0	**350**	0	310	77	0	**387**	**1104**
3:00PM	0	0	0	0	**0**	69	424	0	0	**493**	151	1	284	0	**436**	0	305	101	0	**406**	**1335**
4:00PM	0	0	0	0	**0**	87	407	0	0	**494**	138	0	276	0	**414**	0	339	101	0	**440**	**1348**
5:00PM	0	0	0	0	**0**	62	345	0	0	**407**	134	0	273	0	**407**	0	329	81	0	**410**	**1224**
6:00PM	0	0	0	0	**0**	52	239	0	0	**291**	103	0	201	0	**304**	0	243	66	0	**309**	**904**
Total	0	0	0	0	**0**	817	3795	0	0	**4612**	1419	8	2627	0	**4054**	0	3254	1194	0	**4448**	**13114**
% Approach	0%	0%	0%	0%	-	17.7%	82.3%	0%	0%	-	35.0%	0.2%	64.8%	0%	-	0%	73.2%	26.8%	0%	-	-
% Total	0%	0%	0%	0%	**0%**	6.2%	28.9%	0%	0%	**35.2%**	10.8%	0.1%	20.0%	0%	**30.9%**	0%	24.8%	9.1%	0%	**33.9%**	-
Lights and Motorcycles	0	0	0	0	**0**	763	3599	0	0	**4362**	1347	5	2513	0	**3865**	0	3075	1134	0	**4209**	12436
% Lights and Motorcycles	0%	0%	0%	0%	-	93.4%	94.8%	0%	0%	**94.6%**	94.9%	62.5%	95.7%	0%	**95.3%**	0%	94.5%	95.0%	0%	**94.6%**	94.8%
Heavy	0	0	0	0	**0**	54	196	0	0	**250**	72	3	114	0	**189**	0	179	60	0	**239**	678
% Heavy	0%	0%	0%	0%	-	6.6%	5.2%	0%	0%	**5.4%**	5.1%	37.5%	4.3%	0%	**4.7%**	0%	5.5%	5.0%	0%	**5.4%**	5.2%

*L: Left, R: Right, T: Thru, U: U-Turn

US 67 NB Ramps at MO 47/Rte K - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396448, Location: 37.922109, -90.537775



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	US 67 NB Entrance					Rte K					US 67 NB Exit					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	0	0	0	0	**0**	25	28	0	0	**53**	17	0	17	0	**34**	0	32	38	0	**70**	**157**
6:15AM	0	0	0	0	**0**	23	33	0	0	**56**	21	0	17	0	**38**	0	31	51	0	**82**	**176**
6:30AM	0	0	0	0	**0**	23	47	0	0	**70**	25	1	27	0	**53**	0	45	48	0	**93**	**216**
6:45AM	0	0	0	0	**0**	20	43	0	0	**63**	19	0	40	0	**59**	0	61	37	0	**98**	**220**
Hourly Total	0	0	0	0	**0**	91	151	0	0	**242**	82	1	101	0	**184**	0	169	174	0	**343**	**769**
7:00AM	0	0	0	0	**0**	20	67	0	0	**87**	24	0	26	0	**50**	0	72	22	0	**94**	**231**
7:15AM	0	0	0	0	**0**	24	97	0	0	**121**	23	0	46	0	**69**	0	75	31	0	**106**	**296**
7:30AM	0	0	0	0	**0**	33	88	0	0	**121**	40	0	40	0	**80**	0	122	37	0	**159**	**360**
7:45AM	0	0	0	0	**0**	29	103	0	0	**132**	32	0	42	0	**74**	0	78	22	0	**100**	**306**
Hourly Total	0	0	0	0	**0**	106	355	0	0	**461**	119	0	154	0	**273**	0	347	112	0	**459**	**1193**
8:00AM	0	0	0	0	**0**	23	60	0	0	**83**	32	0	32	0	**64**	0	53	24	0	**77**	**224**
8:15AM	0	0	0	0	**0**	19	62	0	0	**81**	30	0	41	0	**71**	0	45	18	0	**63**	**215**
8:30AM	0	0	0	0	**0**	9	50	0	0	**59**	18	0	41	0	**59**	0	36	13	0	**49**	**167**
8:45AM	0	0	0	0	**0**	14	46	0	0	**60**	14	0	54	0	**68**	0	39	26	0	**65**	**193**
Hourly Total	0	0	0	0	**0**	65	218	0	0	**283**	94	0	168	0	**262**	0	173	81	0	**254**	**799**
9:00AM	0	0	0	0	**0**	17	54	0	0	**71**	22	0	40	0	**62**	0	41	22	0	**63**	**196**
9:15AM	0	0	0	0	**0**	17	48	0	0	**65**	23	0	35	0	**58**	0	39	21	0	**60**	**183**
9:30AM	0	0	0	0	**0**	4	59	0	0	**63**	12	0	39	0	**51**	0	44	19	0	**63**	**177**
9:45AM	0	0	0	0	**0**	6	52	0	0	**58**	20	0	56	0	**76**	0	39	23	0	**62**	**196**
Hourly Total	0	0	0	0	**0**	44	213	0	0	**257**	77	0	170	0	**247**	0	163	85	0	**248**	**752**
10:00AM	0	0	0	0	**0**	8	55	0	0	**63**	26	0	30	0	**56**	0	46	18	0	**64**	**183**
10:15AM	0	0	0	0	**0**	15	54	0	0	**69**	26	0	38	0	**64**	0	52	27	0	**79**	**212**
10:30AM	0	0	0	0	**0**	10	71	0	0	**81**	31	0	40	0	**71**	0	49	12	0	**61**	**213**
10:45AM	0	0	0	0	**0**	9	73	0	0	**82**	25	1	42	0	**68**	0	30	22	0	**52**	**202**
Hourly Total	0	0	0	0	**0**	42	253	0	0	**295**	108	1	150	0	**259**	0	177	79	0	**256**	**810**
11:00AM	0	0	0	0	**0**	8	65	0	0	**73**	27	1	59	0	**87**	0	59	18	0	**77**	**237**
11:15AM	0	0	0	0	**0**	11	66	0	0	**77**	22	0	46	0	**68**	0	54	21	0	**75**	**220**
11:30AM	0	0	0	0	**0**	15	72	0	0	**87**	33	1	55	0	**89**	0	51	25	0	**76**	**252**
11:45AM	0	0	0	0	**0**	11	79	0	0	**90**	26	0	46	0	**72**	0	69	20	0	**89**	**251**
Hourly Total	0	0	0	0	**0**	45	282	0	0	**327**	108	2	206	0	**316**	0	233	84	0	**317**	**960**
12:00PM	0	0	0	0	**0**	6	91	0	0	**97**	21	2	43	0	**66**	0	59	25	0	**84**	**247**
12:15PM	0	0	0	0	**0**	14	76	0	0	**90**	23	0	37	0	**60**	0	61	24	0	**85**	**235**
12:30PM	0	0	0	0	**0**	14	76	0	0	**90**	24	0	49	0	**73**	0	65	15	0	**80**	**243**
12:45PM	0	0	0	0	**0**	14	66	0	0	**80**	22	1	64	0	**87**	0	62	19	0	**81**	**248**
Hourly Total	0	0	0	0	**0**	48	309	0	0	**357**	90	3	193	0	**286**	0	247	83	0	**330**	**973**
1:00PM	0	0	0	0	**0**	12	68	0	0	**80**	26	0	62	0	**88**	0	51	18	0	**69**	**237**
1:15PM	0	0	0	0	**0**	14	78	0	0	**92**	24	0	46	0	**70**	0	56	20	0	**76**	**238**
1:30PM	0	0	0	0	**0**	15	69	0	0	**84**	23	0	55	0	**78**	0	59	19	0	**78**	**240**

Leg	US 67 NB Entrance					Rte K					US 67 NB Exit					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
1:45PM	0	0	0	0	**0**	12	70	0	0	**82**	24	0	56	0	**80**	0	53	13	0	**66**	**228**
Hourly Total	0	0	0	0	**0**	53	285	0	0	**338**	97	0	219	0	**316**	0	219	70	0	**289**	**943**
2:00PM	0	0	0	0	**0**	15	67	0	0	**82**	26	0	39	0	**65**	0	68	23	0	**91**	**238**
2:15PM	0	0	0	0	**0**	9	73	0	0	**82**	33	0	65	0	**98**	0	82	15	0	**97**	**277**
2:30PM	0	0	0	0	**0**	19	85	0	0	**104**	37	0	62	0	**99**	0	85	21	0	**106**	**309**
2:45PM	0	0	0	0	**0**	10	89	0	0	**99**	22	0	66	0	**88**	0	75	18	0	**93**	**280**
Hourly Total	0	0	0	0	**0**	53	314	0	0	**367**	118	0	232	0	**350**	0	310	77	0	**387**	**1104**
3:00PM	0	0	0	0	**0**	18	124	0	0	**142**	47	1	74	0	**122**	0	77	25	0	**102**	**366**
3:15PM	0	0	0	0	**0**	21	111	0	0	**132**	39	0	62	0	**101**	0	73	25	0	**98**	**331**
3:30PM	0	0	0	0	**0**	14	91	0	0	**105**	29	0	67	0	**96**	0	82	30	0	**112**	**313**
3:45PM	0	0	0	0	**0**	16	98	0	0	**114**	36	0	81	0	**117**	0	73	21	0	**94**	**325**
Hourly Total	0	0	0	0	**0**	69	424	0	0	**493**	151	1	284	0	**436**	0	305	101	0	**406**	**1335**
4:00PM	0	0	0	0	**0**	21	116	0	0	**137**	47	0	68	0	**115**	0	78	26	0	**104**	**356**
4:15PM	0	0	0	0	**0**	21	73	0	0	**94**	34	0	74	0	**108**	0	69	26	0	**95**	**297**
4:30PM	0	0	0	0	**0**	29	116	0	0	**145**	32	0	69	0	**101**	0	91	31	0	**122**	**368**
4:45PM	0	0	0	0	**0**	16	102	0	0	**118**	25	0	65	0	**90**	0	101	18	0	**119**	**327**
Hourly Total	0	0	0	0	**0**	87	407	0	0	**494**	138	0	276	0	**414**	0	339	101	0	**440**	**1348**
5:00PM	0	0	0	0	**0**	17	92	0	0	**109**	50	0	75	0	**125**	0	90	32	0	**122**	**356**
5:15PM	0	0	0	0	**0**	18	114	0	0	**132**	36	0	88	0	**124**	0	77	20	0	**97**	**353**
5:30PM	0	0	0	0	**0**	17	83	0	0	**100**	24	0	54	0	**78**	0	90	11	0	**101**	**279**
5:45PM	0	0	0	0	**0**	10	56	0	0	**66**	24	0	56	0	**80**	0	72	18	0	**90**	**236**
Hourly Total	0	0	0	0	**0**	62	345	0	0	**407**	134	0	273	0	**407**	0	329	81	0	**410**	**1224**
6:00PM	0	0	0	0	**0**	18	60	0	0	**78**	20	0	56	0	**76**	0	67	18	0	**85**	**239**
6:15PM	0	0	0	0	**0**	7	66	0	0	**73**	27	0	57	0	**84**	0	60	20	0	**80**	**237**
6:30PM	0	0	0	0	**0**	10	66	0	0	**76**	31	0	46	0	**77**	0	68	19	0	**87**	**240**
6:45PM	0	0	0	0	**0**	17	47	0	0	**64**	25	0	42	0	**67**	0	48	9	0	**57**	**188**
Hourly Total	0	0	0	0	**0**	52	239	0	0	**291**	103	0	201	0	**304**	0	243	66	0	**309**	**904**
Total	0	0	0	0	**0**	817	3795	0	0	**4612**	1419	8	2627	0	**4054**	0	3254	1194	0	**4448**	**13114**
% Approach	0%	0%	0%	0%	-	17.7%	82.3%	0%	0%	-	35.0%	0.2%	64.8%	0%	-	0%	73.2%	26.8%	0%	-	-
% Total	0%	0%	0%	0%	**0%**	6.2%	28.9%	0%	0%	**35.2%**	10.8%	0.1%	20.0%	0%	**30.9%**	0%	24.8%	9.1%	0%	**33.9%**	-
Lights and Motorcycles	0	0	0	0	**0**	763	3599	0	0	**4362**	1347	5	2513	0	**3865**	0	3075	1134	0	**4209**	12436
% Lights and Motorcycles	0%	0%	0%	0%	-	93.4%	94.8%	0%	0%	**94.6%**	94.9%	62.5%	95.7%	0%	**95.3%**	0%	94.5%	95.0%	0%	**94.6%**	94.8%
Heavy	0	0	0	0	**0**	54	196	0	0	**250**	72	3	114	0	**189**	0	179	60	0	**239**	678
% Heavy	0%	0%	0%	0%	-	6.6%	5.2%	0%	0%	**5.4%**	5.1%	37.5%	4.3%	0%	**4.7%**	0%	5.5%	5.0%	0%	**5.4%**	5.2%

*L: Left, R: Right, T: Thru, U: U-Turn

Rte K at Northwood Dr - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396442, Location: 37.921904, -90.536351

Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Northwood Dr					Rte K					Circle K Entrance					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	61	11	6	0	**78**	11	98	25	0	**134**	28	6	83	0	**117**	79	117	49	1	**246**	**575**
7:00AM	118	10	25	0	**153**	18	253	40	0	**311**	35	4	97	0	**136**	83	294	88	0	**465**	**1065**
8:00AM	87	8	7	0	**102**	10	149	11	0	**170**	15	5	45	0	**65**	58	159	66	0	**283**	**620**
9:00AM	89	10	10	0	**109**	15	103	15	0	**133**	17	8	64	0	**89**	56	106	76	0	**238**	**569**
10:00AM	109	6	12	0	**127**	23	134	14	0	**171**	20	11	48	0	**79**	57	119	106	0	**282**	**659**
11:00AM	110	8	21	0	**139**	27	175	19	0	**221**	20	11	58	0	**89**	62	155	123	0	**340**	**789**
12:00PM	129	13	25	0	**167**	33	144	24	0	**201**	31	8	82	0	**121**	82	143	109	0	**334**	**823**
1:00PM	129	10	22	0	**161**	26	150	14	0	**190**	18	7	59	0	**84**	59	143	109	0	**311**	**746**
2:00PM	110	9	26	0	**145**	25	201	24	0	**250**	23	7	60	0	**90**	71	232	132	0	**435**	**920**
3:00PM	160	8	20	0	**188**	41	254	17	0	**312**	25	11	86	1	**123**	103	187	159	0	**449**	**1072**
4:00PM	141	8	23	0	**172**	24	263	26	0	**313**	28	12	84	0	**124**	83	250	140	0	**473**	**1082**
5:00PM	127	12	20	0	**159**	16	177	20	0	**213**	28	15	85	0	**128**	94	218	149	0	**461**	**961**
6:00PM	117	15	14	0	**146**	9	120	18	0	**147**	31	12	55	0	**98**	57	168	123	0	**348**	**739**
Total	1487	128	231	0	**1846**	278	2221	267	0	**2766**	319	117	906	1	**1343**	944	2291	1429	1	**4665**	**10620**
% Approach	80.6%	6.9%	12.5%	0%	-	10.1%	80.3%	9.7%	0%	-	23.8%	8.7%	67.5%	0.1%	-	20.2%	49.1%	30.6%	0%	-	-
% Total	14.0%	1.2%	2.2%	0%	**17.4%**	2.6%	20.9%	2.5%	0%	**26.0%**	3.0%	1.1%	8.5%	0%	**12.6%**	8.9%	21.6%	13.5%	0%	**43.9%**	-
Lights and Motorcycles	1368	111	223	0	**1702**	271	2136	260	0	**2667**	310	114	867	1	**1292**	918	2208	1299	1	**4426**	10087
% Lights and Motorcycles	92.0%	86.7%	96.5%	0%	**92.2%**	97.5%	96.2%	97.4%	0%	**96.4%**	97.2%	97.4%	95.7%	100%	**96.2%**	97.2%	96.4%	90.9%	100%	**94.9%**	95.0%
Heavy	119	17	8	0	**144**	7	85	7	0	**99**	9	3	39	0	**51**	26	83	130	0	**239**	533
% Heavy	8.0%	13.3%	3.5%	0%	**7.8%**	2.5%	3.8%	2.6%	0%	**3.6%**	2.8%	2.6%	4.3%	0%	**3.8%**	2.8%	3.6%	9.1%	0%	**5.1%**	5.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Rte K at Northwood Dr - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396442, Location: 37.921904, -90.536351



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Northwood Dr					Rte K					Circle K Entrance					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	9	4	1	0	**14**	2	18	8	0	**28**	2	0	24	0	**26**	14	21	9	1	**45**	**113**
6:15AM	9	2	0	0	**11**	0	27	5	0	**32**	5	2	23	0	**30**	29	21	5	0	**55**	**128**
6:30AM	28	2	2	0	**32**	5	21	5	0	**31**	14	1	19	0	**34**	23	35	10	0	**68**	**165**
6:45AM	15	3	3	0	**21**	4	32	7	0	**43**	7	3	17	0	**27**	13	40	25	0	**78**	**169**
Hourly Total	61	11	6	0	**78**	11	98	25	0	**134**	28	6	83	0	**117**	79	117	49	1	**246**	**575**
7:00AM	32	2	6	0	**40**	0	46	5	0	**51**	8	1	14	0	**23**	21	64	12	0	**97**	**211**
7:15AM	28	4	9	0	**41**	7	64	16	0	**87**	12	0	25	0	**37**	19	55	23	0	**97**	**262**
7:30AM	30	3	9	0	**42**	7	68	9	0	**84**	8	1	25	0	**34**	27	105	29	0	**161**	**321**
7:45AM	28	1	1	0	**30**	4	75	10	0	**89**	7	2	33	0	**42**	16	70	24	0	**110**	**271**
Hourly Total	118	10	25	0	**153**	18	253	40	0	**311**	35	4	97	0	**136**	83	294	88	0	**465**	**1065**
8:00AM	25	1	0	0	**26**	1	44	1	0	**46**	4	2	11	0	**17**	15	62	16	0	**93**	**182**
8:15AM	26	0	1	0	**27**	1	42	5	0	**48**	1	0	14	0	**15**	11	44	21	0	**76**	**166**
8:30AM	17	4	3	0	**24**	4	31	2	0	**37**	5	2	9	0	**16**	13	24	17	0	**54**	**131**
8:45AM	19	3	3	0	**25**	4	32	3	0	**39**	5	1	11	0	**17**	19	29	12	0	**60**	**141**
Hourly Total	87	8	7	0	**102**	10	149	11	0	**170**	15	5	45	0	**65**	58	159	66	0	**283**	**620**
9:00AM	22	3	3	0	**28**	2	27	1	0	**30**	3	0	20	0	**23**	14	27	18	0	**59**	**140**
9:15AM	30	3	3	0	**36**	6	24	7	0	**37**	3	5	18	0	**26**	16	20	26	0	**62**	**161**
9:30AM	19	2	2	0	**23**	3	28	4	0	**35**	5	2	12	0	**19**	12	32	12	0	**56**	**133**
9:45AM	18	2	2	0	**22**	4	24	3	0	**31**	6	1	14	0	**21**	14	27	20	0	**61**	**135**
Hourly Total	89	10	10	0	**109**	15	103	15	0	**133**	17	8	64	0	**89**	56	106	76	0	**238**	**569**
10:00AM	22	3	2	0	**27**	9	26	3	0	**38**	7	1	16	0	**24**	22	34	19	0	**75**	**164**
10:15AM	19	0	2	0	**21**	4	38	7	0	**49**	5	0	14	0	**19**	10	41	22	0	**73**	**162**
10:30AM	35	2	3	0	**40**	8	35	2	0	**45**	5	7	9	0	**21**	14	29	32	0	**75**	**181**
10:45AM	33	1	5	0	**39**	2	35	2	0	**39**	3	3	9	0	**15**	11	15	33	0	**59**	**152**
Hourly Total	109	6	12	0	**127**	23	134	14	0	**171**	20	11	48	0	**79**	57	119	106	0	**282**	**659**
11:00AM	23	3	4	0	**30**	8	36	5	0	**49**	3	4	16	0	**23**	16	36	35	0	**87**	**189**
11:15AM	30	2	6	0	**38**	8	31	7	0	**46**	2	1	21	0	**24**	11	41	23	0	**75**	**183**
11:30AM	28	2	5	0	**35**	9	57	4	0	**70**	9	0	10	0	**19**	14	37	29	0	**80**	**204**
11:45AM	29	1	6	0	**36**	2	51	3	0	**56**	6	6	11	0	**23**	21	41	36	0	**98**	**213**
Hourly Total	110	8	21	0	**139**	27	175	19	0	**221**	20	11	58	0	**89**	62	155	123	0	**340**	**789**
12:00PM	32	1	6	0	**39**	11	49	5	0	**65**	7	3	15	0	**25**	21	36	23	0	**80**	**209**
12:15PM	37	3	4	0	**44**	9	38	8	0	**55**	6	2	17	0	**25**	19	35	28	0	**82**	**206**
12:30PM	33	7	10	0	**50**	5	31	8	0	**44**	12	2	24	0	**38**	26	31	30	0	**87**	**219**
12:45PM	27	2	5	0	**34**	8	26	3	0	**37**	6	1	26	0	**33**	16	41	28	0	**85**	**189**
Hourly Total	129	13	25	0	**167**	33	144	24	0	**201**	31	8	82	0	**121**	82	143	109	0	**334**	**823**
1:00PM	24	2	11	0	**37**	5	42	7	0	**54**	2	0	18	0	**20**	22	29	26	0	**77**	**188**
1:15PM	36	1	1	0	**38**	7	38	1	0	**46**	5	2	16	0	**23**	13	39	30	0	**82**	**189**
1:30PM	33	4	5	0	**42**	8	41	1	0	**50**	1	4	10	0	**15**	11	43	27	0	**81**	**188**

Leg	Northwood Dr					Rte K					Circle K Entrance					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
1:45PM	36	3	5	0	**44**	6	29	5	0	**40**	10	1	15	0	**26**	13	32	26	0	**71**	**181**
Hourly Total	129	10	22	0	**161**	26	150	14	0	**190**	18	7	59	0	**84**	59	143	109	0	**311**	**746**
2:00PM	27	2	7	0	**36**	4	38	4	0	**46**	3	3	13	0	**19**	16	50	34	0	**100**	**201**
2:15PM	27	2	7	0	**36**	6	48	4	0	**58**	7	2	14	0	**23**	19	65	29	0	**113**	**230**
2:30PM	33	4	6	0	**43**	5	48	6	0	**59**	8	2	19	0	**29**	16	72	37	0	**125**	**256**
2:45PM	23	1	6	0	**30**	10	67	10	0	**87**	5	0	14	0	**19**	20	45	32	0	**97**	**233**
Hourly Total	110	9	26	0	**145**	25	201	24	0	**250**	23	7	60	0	**90**	71	232	132	0	**435**	**920**
3:00PM	37	0	4	0	**41**	13	82	2	0	**97**	6	3	22	0	**31**	27	50	42	0	**119**	**288**
3:15PM	41	0	4	0	**45**	14	72	6	0	**92**	7	3	22	0	**32**	26	42	47	0	**115**	**284**
3:30PM	35	4	10	0	**49**	9	45	2	0	**56**	5	0	22	1	**28**	24	56	33	0	**113**	**246**
3:45PM	47	4	2	0	**53**	5	55	7	0	**67**	7	5	20	0	**32**	26	39	37	0	**102**	**254**
Hourly Total	160	8	20	0	**188**	41	254	17	0	**312**	25	11	86	1	**123**	103	187	159	0	**449**	**1072**
4:00PM	36	3	7	0	**46**	5	59	5	0	**69**	7	3	27	0	**37**	22	63	40	0	**125**	**277**
4:15PM	28	1	2	0	**31**	9	58	6	0	**73**	6	2	11	0	**19**	14	63	23	0	**100**	**223**
4:30PM	34	4	7	0	**45**	6	82	13	0	**101**	7	4	23	0	**34**	20	64	38	0	**122**	**302**
4:45PM	43	0	7	0	**50**	4	64	2	0	**70**	8	3	23	0	**34**	27	60	39	0	**126**	**280**
Hourly Total	141	8	23	0	**172**	24	263	26	0	**313**	28	12	84	0	**124**	83	250	140	0	**473**	**1082**
5:00PM	33	3	6	0	**42**	4	47	5	0	**56**	5	1	20	0	**26**	23	65	46	0	**134**	**258**
5:15PM	37	6	4	0	**47**	2	69	6	0	**77**	5	6	27	0	**38**	28	54	33	0	**115**	**277**
5:30PM	40	3	4	0	**47**	8	27	3	0	**38**	10	6	27	0	**43**	24	50	42	0	**116**	**244**
5:45PM	17	0	6	0	**23**	2	34	6	0	**42**	8	2	11	0	**21**	19	49	28	0	**96**	**182**
Hourly Total	127	12	20	0	**159**	16	177	20	0	**213**	28	15	85	0	**128**	94	218	149	0	**461**	**961**
6:00PM	26	5	1	0	**32**	3	32	7	0	**42**	9	2	19	0	**30**	10	44	32	0	**86**	**190**
6:15PM	30	6	4	0	**40**	4	35	5	0	**44**	9	6	6	0	**21**	16	48	26	0	**90**	**195**
6:30PM	30	2	3	0	**35**	1	26	6	0	**33**	7	1	19	0	**27**	16	46	34	0	**96**	**191**
6:45PM	31	2	6	0	**39**	1	27	0	0	**28**	6	3	11	0	**20**	15	30	31	0	**76**	**163**
Hourly Total	117	15	14	0	**146**	9	120	18	0	**147**	31	12	55	0	**98**	57	168	123	0	**348**	**739**
Total	1487	128	231	0	**1846**	278	2221	267	0	**2766**	319	117	906	1	**1343**	944	2291	1429	1	**4665**	**10620**
% Approach	80.6%	6.9%	12.5%	0%	-	10.1%	80.3%	9.7%	0%	-	23.8%	8.7%	67.5%	0.1%	-	20.2%	49.1%	30.6%	0%	-	-
% Total	14.0%	1.2%	2.2%	0%	**17.4%**	2.6%	20.9%	2.5%	0%	**26.0%**	3.0%	1.1%	8.5%	0%	**12.6%**	8.9%	21.6%	13.5%	0%	**43.9%**	-
Lights and Motorcycles	1368	111	223	0	**1702**	271	2136	260	0	**2667**	310	114	867	1	**1292**	918	2208	1299	1	**4426**	10087
% Lights and Motorcycles	92.0%	86.7%	96.5%	0%	**92.2%**	97.5%	96.2%	97.4%	0%	**96.4%**	97.2%	97.4%	95.7%	100%	**96.2%**	97.2%	96.4%	90.9%	100%	**94.9%**	95.0%
Heavy	119	17	8	0	**144**	7	85	7	0	**99**	9	3	39	0	**51**	26	83	130	0	**239**	533
% Heavy	8.0%	13.3%	3.5%	0%	**7.8%**	2.5%	3.8%	2.6%	0%	**3.6%**	2.8%	2.6%	4.3%	0%	**3.8%**	2.8%	3.6%	9.1%	0%	**5.1%**	5.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Rte K at Carzon/Hillcrest - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396445, Location: 37.921575, -90.533918



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Carzon					Rte K					Hillcrest					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	8	1	5	0	**14**	0	113	0	0	**113**	0	0	5	0	**5**	18	120	2	0	**140**	**272**
7:00AM	16	1	1	0	**18**	2	236	2	0	**240**	1	0	45	0	**46**	64	262	9	0	**335**	**639**
8:00AM	11	2	2	0	**15**	0	114	0	0	**114**	0	1	13	0	**14**	6	111	13	0	**130**	**273**
9:00AM	18	1	0	0	**19**	3	88	0	0	**91**	0	2	8	0	**10**	7	76	11	0	**94**	**214**
10:00AM	19	2	1	0	**22**	2	113	0	0	**115**	0	2	9	0	**11**	6	96	15	0	**117**	**265**
11:00AM	18	1	2	0	**21**	1	142	0	0	**143**	2	0	8	0	**10**	12	116	15	0	**143**	**317**
12:00PM	22	0	1	0	**23**	0	132	1	0	**133**	2	0	8	0	**10**	8	131	17	0	**156**	**322**
1:00PM	16	1	1	0	**18**	2	124	0	0	**126**	0	1	7	0	**8**	6	114	19	0	**139**	**291**
2:00PM	27	1	2	0	**30**	3	142	5	0	**150**	6	2	34	0	**42**	47	166	24	0	**237**	**459**
3:00PM	13	1	6	0	**20**	2	195	0	0	**197**	1	0	46	0	**47**	11	171	19	0	**201**	**465**
4:00PM	24	1	1	0	**26**	0	220	3	0	**223**	4	1	8	0	**13**	17	211	26	0	**254**	**516**
5:00PM	19	1	0	0	**20**	0	151	1	0	**152**	1	0	8	0	**9**	10	215	21	0	**246**	**427**
6:00PM	16	0	1	0	**17**	0	105	0	0	**105**	1	0	8	0	**9**	9	155	19	0	**183**	**314**
Total	227	13	23	0	**263**	15	1875	12	0	**1902**	18	9	207	0	**234**	221	1944	210	0	**2375**	**4774**
% Approach	86.3%	4.9%	8.7%	0%	-	0.8%	98.6%	0.6%	0%	-	7.7%	3.8%	88.5%	0%	-	9.3%	81.9%	8.8%	0%	-	-
% Total	4.8%	0.3%	0.5%	0%	**5.5%**	0.3%	39.3%	0.3%	0%	**39.8%**	0.4%	0.2%	4.3%	0%	**4.9%**	4.6%	40.7%	4.4%	0%	**49.7%**	-
Lights and Motorcycles	217	12	21	0	**250**	15	1804	12	0	**1831**	18	9	202	0	**229**	211	1860	201	0	**2272**	4582
% Lights and Motorcycles	95.6%	92.3%	91.3%	0%	**95.1%**	100%	96.2%	100%	0%	**96.3%**	100%	100%	97.6%	0%	**97.9%**	95.5%	95.7%	95.7%	0%	**95.7%**	96.0%
Heavy	10	1	2	0	**13**	0	71	0	0	**71**	0	0	5	0	**5**	10	84	9	0	**103**	192
% Heavy	4.4%	7.7%	8.7%	0%	**4.9%**	0%	3.8%	0%	0%	**3.7%**	0%	0%	2.4%	0%	**2.1%**	4.5%	4.3%	4.3%	0%	**4.3%**	4.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Rte K at Carzon/Hillcrest - TMC

Thu Apr 23, 2026
Full Length (6 AM-7 PM)
All Classes (Lights and Motorcycles, Heavy)
All Movements
ID: 1396445, Location: 37.921575, -90.533918



Provided by: MoDOT SE District
2675 North Main St, Sikeston, MO, 63801, US

Leg	Carzon					Rte K					Hillcrest					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
2026-04-23 6:00AM	3	0	1	0	**4**	0	18	0	0	**18**	0	0	3	0	**3**	1	17	1	0	**19**	**44**
6:15AM	2	0	1	0	**3**	0	26	0	0	**26**	0	0	1	0	**1**	4	21	0	0	**25**	**55**
6:30AM	2	1	2	0	**5**	0	27	0	0	**27**	0	0	0	0	**0**	3	44	1	0	**48**	**80**
6:45AM	1	0	1	0	**2**	0	42	0	0	**42**	0	0	1	0	**1**	10	38	0	0	**48**	**93**
Hourly Total	8	1	5	0	**14**	0	113	0	0	**113**	0	0	5	0	**5**	18	120	2	0	**140**	**272**
7:00AM	6	0	0	0	**6**	0	39	1	0	**40**	0	0	6	0	**6**	13	59	3	0	**75**	**127**
7:15AM	4	1	1	0	**6**	1	74	0	0	**75**	0	0	7	0	**7**	18	60	3	0	**81**	**169**
7:30AM	5	0	0	0	**5**	0	63	1	0	**64**	1	0	15	0	**16**	22	90	1	0	**113**	**198**
7:45AM	1	0	0	0	**1**	1	60	0	0	**61**	0	0	17	0	**17**	11	53	2	0	**66**	**145**
Hourly Total	16	1	1	0	**18**	2	236	2	0	**240**	1	0	45	0	**46**	64	262	9	0	**335**	**639**
8:00AM	5	0	1	0	**6**	0	20	0	0	**20**	0	1	4	0	**5**	2	31	5	0	**38**	**69**
8:15AM	2	1	1	0	**4**	0	34	0	0	**34**	0	0	5	0	**5**	0	27	2	0	**29**	**72**
8:30AM	1	0	0	0	**1**	0	33	0	0	**33**	0	0	1	0	**1**	2	24	2	0	**28**	**63**
8:45AM	3	1	0	0	**4**	0	27	0	0	**27**	0	0	3	0	**3**	2	29	4	0	**35**	**69**
Hourly Total	11	2	2	0	**15**	0	114	0	0	**114**	0	1	13	0	**14**	6	111	13	0	**130**	**273**
9:00AM	5	0	0	0	**5**	2	22	0	0	**24**	0	0	3	0	**3**	3	20	3	0	**26**	**58**
9:15AM	4	0	0	0	**4**	0	25	0	0	**25**	0	1	3	0	**4**	2	18	2	0	**22**	**55**
9:30AM	4	0	0	0	**4**	1	21	0	0	**22**	0	0	1	0	**1**	2	20	4	0	**26**	**53**
9:45AM	5	1	0	0	**6**	0	20	0	0	**20**	0	1	1	0	**2**	0	18	2	0	**20**	**48**
Hourly Total	18	1	0	0	**19**	3	88	0	0	**91**	0	2	8	0	**10**	7	76	11	0	**94**	**214**
10:00AM	4	1	1	0	**6**	1	20	0	0	**21**	0	1	2	0	**3**	1	29	4	0	**34**	**64**
10:15AM	7	1	0	0	**8**	0	36	0	0	**36**	0	1	0	0	**1**	3	26	8	0	**37**	**82**
10:30AM	4	0	0	0	**4**	0	25	0	0	**25**	0	0	6	0	**6**	2	21	3	0	**26**	**61**
10:45AM	4	0	0	0	**4**	1	32	0	0	**33**	0	0	1	0	**1**	0	20	0	0	**20**	**58**
Hourly Total	19	2	1	0	**22**	2	113	0	0	**115**	0	2	9	0	**11**	6	96	15	0	**117**	**265**
11:00AM	7	0	0	0	**7**	0	29	0	0	**29**	0	0	2	0	**2**	3	27	2	0	**32**	**70**
11:15AM	2	0	1	0	**3**	0	36	0	0	**36**	0	0	2	0	**2**	2	26	7	0	**35**	**76**
11:30AM	7	1	0	0	**8**	1	45	0	0	**46**	1	0	3	0	**4**	4	34	4	0	**42**	**100**
11:45AM	2	0	1	0	**3**	0	32	0	0	**32**	1	0	1	0	**2**	3	29	2	0	**34**	**71**
Hourly Total	18	1	2	0	**21**	1	142	0	0	**143**	2	0	8	0	**10**	12	116	15	0	**143**	**317**
12:00PM	7	0	0	0	**7**	0	43	0	0	**43**	0	0	1	0	**1**	2	39	3	0	**44**	**95**
12:15PM	6	0	1	0	**7**	0	35	0	0	**35**	1	0	2	0	**3**	2	25	4	0	**31**	**76**
12:30PM	3	0	0	0	**3**	0	31	0	0	**31**	1	0	4	0	**5**	2	32	6	0	**40**	**79**
12:45PM	6	0	0	0	**6**	0	23	1	0	**24**	0	0	1	0	**1**	2	35	4	0	**41**	**72**
Hourly Total	22	0	1	0	**23**	0	132	1	0	**133**	2	0	8	0	**10**	8	131	17	0	**156**	**322**
1:00PM	4	0	0	0	**4**	0	31	0	0	**31**	0	0	3	0	**3**	2	27	5	0	**34**	**72**
1:15PM	3	1	0	0	**4**	0	35	0	0	**35**	0	1	0	0	**1**	1	24	3	0	**28**	**68**
1:30PM	4	0	0	0	**4**	0	31	0	0	**31**	0	0	3	0	**3**	1	34	4	0	**39**	**77**

Leg	Carzon					Rte K					Hillcrest					Rte K					
Direction	Southbound					Westbound					Northbound					Eastbound					
Time	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	R	T	L	U	App	Int
1:45PM	5	0	1	0	**6**	2	27	0	0	**29**	0	0	1	0	**1**	2	29	7	0	**38**	**74**
Hourly Total	16	1	1	0	**18**	2	124	0	0	**126**	0	1	7	0	**8**	6	114	19	0	**139**	**291**
2:00PM	7	1	2	0	**10**	1	25	0	0	**26**	2	0	5	0	**7**	8	29	6	0	**43**	**86**
2:15PM	6	0	0	0	**6**	1	39	4	0	**44**	0	1	2	0	**3**	9	51	5	0	**65**	**118**
2:30PM	8	0	0	0	**8**	0	35	1	0	**36**	2	1	4	0	**7**	15	53	10	0	**78**	**129**
2:45PM	6	0	0	0	**6**	1	43	0	0	**44**	2	0	23	0	**25**	15	33	3	0	**51**	**126**
Hourly Total	27	1	2	0	**30**	3	142	5	0	**150**	6	2	34	0	**42**	47	166	24	0	**237**	**459**
3:00PM	3	1	4	0	**8**	0	52	0	0	**52**	1	0	30	0	**31**	5	40	4	0	**49**	**140**
3:15PM	5	0	1	0	**6**	1	56	0	0	**57**	0	0	13	0	**13**	1	38	8	0	**47**	**123**
3:30PM	0	0	1	0	**1**	0	37	0	0	**37**	0	0	2	0	**2**	3	54	6	0	**63**	**103**
3:45PM	5	0	0	0	**5**	1	50	0	0	**51**	0	0	1	0	**1**	2	39	1	0	**42**	**99**
Hourly Total	13	1	6	0	**20**	2	195	0	0	**197**	1	0	46	0	**47**	11	171	19	0	**201**	**465**
4:00PM	6	0	0	0	**6**	0	48	0	0	**48**	1	0	1	0	**2**	2	56	9	0	**67**	**123**
4:15PM	6	1	1	0	**8**	0	61	2	0	**63**	2	0	1	0	**3**	4	43	5	0	**52**	**126**
4:30PM	5	0	0	0	**5**	0	66	1	0	**67**	1	1	3	0	**5**	6	59	5	0	**70**	**147**
4:45PM	7	0	0	0	**7**	0	45	0	0	**45**	0	0	3	0	**3**	5	53	7	0	**65**	**120**
Hourly Total	24	1	1	0	**26**	0	220	3	0	**223**	4	1	8	0	**13**	17	211	26	0	**254**	**516**
5:00PM	7	0	0	0	**7**	0	45	1	0	**46**	0	0	1	0	**1**	1	64	5	0	**70**	**124**
5:15PM	8	0	0	0	**8**	0	47	0	0	**47**	0	0	3	0	**3**	2	49	6	0	**57**	**115**
5:30PM	3	0	0	0	**3**	0	30	0	0	**30**	0	0	3	0	**3**	4	48	7	0	**59**	**95**
5:45PM	1	1	0	0	**2**	0	29	0	0	**29**	1	0	1	0	**2**	3	54	3	0	**60**	**93**
Hourly Total	19	1	0	0	**20**	0	151	1	0	**152**	1	0	8	0	**9**	10	215	21	0	**246**	**427**
6:00PM	3	0	1	0	**4**	0	33	0	0	**33**	0	0	3	0	**3**	1	41	4	0	**46**	**86**
6:15PM	8	0	0	0	**8**	0	30	0	0	**30**	1	0	2	0	**3**	2	45	6	0	**53**	**94**
6:30PM	2	0	0	0	**2**	0	23	0	0	**23**	0	0	1	0	**1**	4	39	6	0	**49**	**75**
6:45PM	3	0	0	0	**3**	0	19	0	0	**19**	0	0	2	0	**2**	2	30	3	0	**35**	**59**
Hourly Total	16	0	1	0	**17**	0	105	0	0	**105**	1	0	8	0	**9**	9	155	19	0	**183**	**314**
Total	227	13	23	0	**263**	15	1875	12	0	**1902**	18	9	207	0	**234**	221	1944	210	0	**2375**	**4774**
% Approach	86.3%	4.9%	8.7%	0%	**-**	0.8%	98.6%	0.6%	0%	**-**	7.7%	3.8%	88.5%	0%	**-**	9.3%	81.9%	8.8%	0%	**-**	**-**
% Total	4.8%	0.3%	0.5%	0%	**5.5%**	0.3%	39.3%	0.3%	0%	**39.8%**	0.4%	0.2%	4.3%	0%	**4.9%**	4.6%	40.7%	4.4%	0%	**49.7%**	**-**
Lights and Motorcycles	217	12	21	0	**250**	15	1804	12	0	**1831**	18	9	202	0	**229**	211	1860	201	0	**2272**	4582
% Lights and Motorcycles	95.6%	92.3%	91.3%	0%	**95.1%**	100%	96.2%	100%	0%	**96.3%**	100%	100%	97.6%	0%	**97.9%**	95.5%	95.7%	95.7%	0%	**95.7%**	96.0%
Heavy	10	1	2	0	**13**	0	71	0	0	**71**	0	0	5	0	**5**	10	84	9	0	**103**	192
% Heavy	4.4%	7.7%	8.7%	0%	**4.9%**	0%	3.8%	0%	0%	**3.7%**	0%	0%	2.4%	0%	**2.1%**	4.5%	4.3%	4.3%	0%	**4.3%**	4.0%

*L: Left, R: Right, T: Thru, U: U-Turn

Appendix C: MoDOT Traffic Forecast

MEMORANDUM

Missouri Department of Transportation
Transportation Planning
105 West Capitol Avenue

TO: Jeff Wachter, SE-DE

FROM: Jennifer Prenger
Senior Transportation Planner

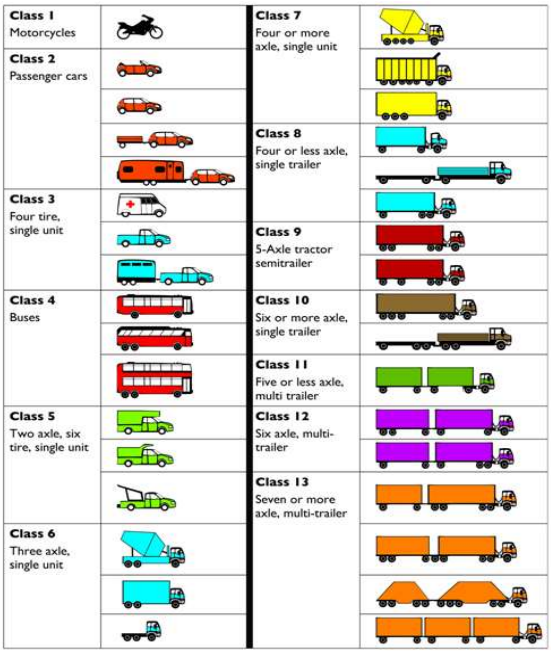
DATE: June 4, 2026

SUBJECT: Design Traffic
RT K, St. Francois County
Job No. JSE0154

We are providing estimates of average daily traffic for the above project as requested.

	ADT
AADT (2025)	6,312
Construction Year (2029)	6,641
Design Year (2049)	8,398
Directional Distribution (E/W)	49.1% / 50.9%
Peak Hour—	9.09%
Percent Trucks—	11.01%
Growth Rate—	1.18%

Truck Distribution		
Class	AADT	%
4	13	1%
5	369	40%
6		
7		
8	543	59%
9		
10		
11		
12		
13		
Total	925	100%



Missouri Department of Transportation

Division of Transportation Planning – Traffic Monitoring – Analysis and Reporting

Traffic Forecast Request Form

105 W Capitol, P.O. Box 270, Jefferson City, MO 65102 Tel.: (573) 526-4906 Fax: (573) 526-8052

Use this form to submit a request for Traffic Forecasts. Please provide all information. You may email, mail or fax the form to:

Attention – COTP-Traffic-Data

REQUESTOR:	Jeff Wachter	**Date**	5/28/26
Title	TPT	**Phone**	573-258-3080
Division	SE District Design	**Fax**	
Signature		**Email**	jeffery.wachter@modot.mo.gov

Project Details:

Job No.	JSE0154	**District**	SE	**County**	St. Francois
Route	K	**Log Point From:**	0.087	**To:**	0.222

Project boundaries and any other relevant information

Construction Year	2029	**Design Year**	2049

Select Required Design Designations

[X]	ADT	[X]	Truck Percentage
[X]	Peak Hour Percentage	[ ]	Truck Distribution/Classification
[ ]	Directional Distribution	[X]	Growth Rate
[ ]	Turning Movement(s)*	**Date Needed By:**	6/28/26

*Note, we no longer collect turning movement data. If you would like Turning Movements to be included in your forecast, please contact your local district traffic office and request an intersection study. Send in the intersection study results with your Traffic Forecast Request Form and we will grow the numbers and include them in our Traffic Forecast Report.

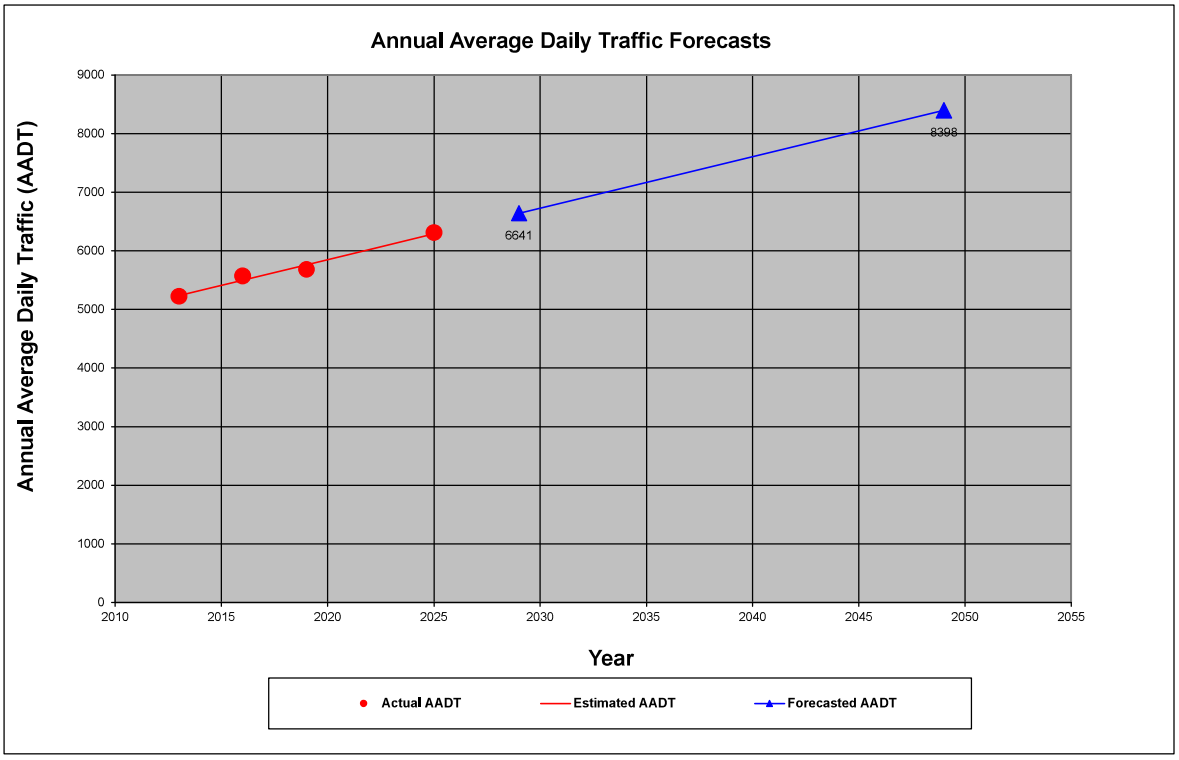
Missouri Department of Transportation, Transportation Planning
Traffic Forecasts

Job Information		Observation Number	Actual Year	Actual AADT	Estimated AADT
District:	SE	1	2013	5222	5235
County:	St. Francois	2	2016	5570	5499
Route:	RT K	3	2019	5682	5762
Job Number:	JSE0154	4	2025	6312	6290
Construction Year:	2029	5			
Design Year:	2049	6			
Construction AADT:	6641	7			
Desgin AADT:	8398	8			
		9			
		10			
	Construction Year and Estimated AADT:		2029		6641
	Design Year and Estimated AADT:		2049		8398

Estimated Annual Compound Growth Rate from Construction Year to Design Year: 1.0118

Date: **6/4/2026**
Time: **8:57 AM**

Note: **Use a minimum of 4 data points for regression.**
Use a maximum of 10 data points for regression.
Enter the actual year from lowest to highest.
Enter AADT for each year.





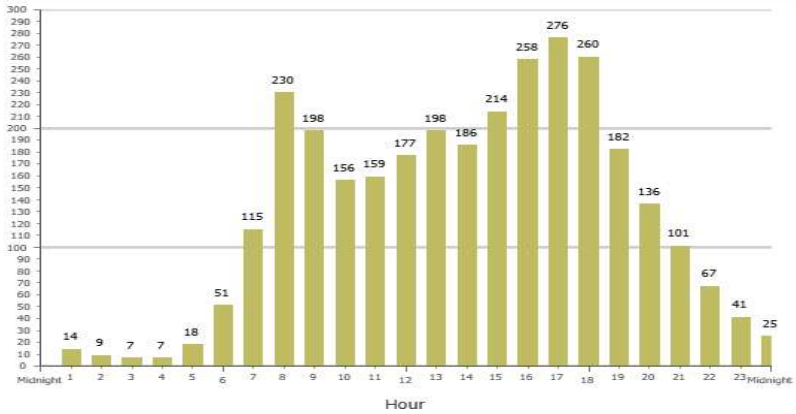
RT K E (Year: 2025)

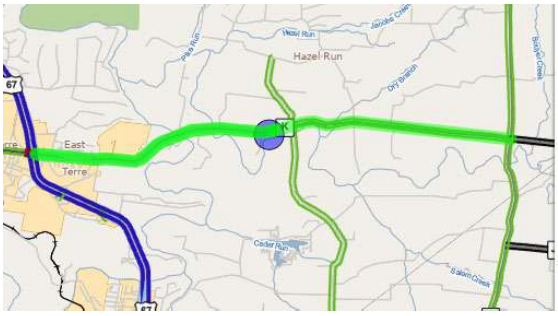
Name	Quantity
AADT	3102
AAWDT	3139
MOTORCYCLE VOLUME	11
PASSENGER CAR VOLUME	1859
PU/PANEL TRUCK VOLUME	890
BUS VOLUME	5
SINGLE UNIT TRUCK VOLUME	136
COMB SEMI TRAILER VOLUME	200
PEAK HOUR VOLUME PM	333

Show Traffic Daily Volume

Note:Volumes represent one direction only.
Select other direction to see opposing volumes.

Traffic Daily Volume





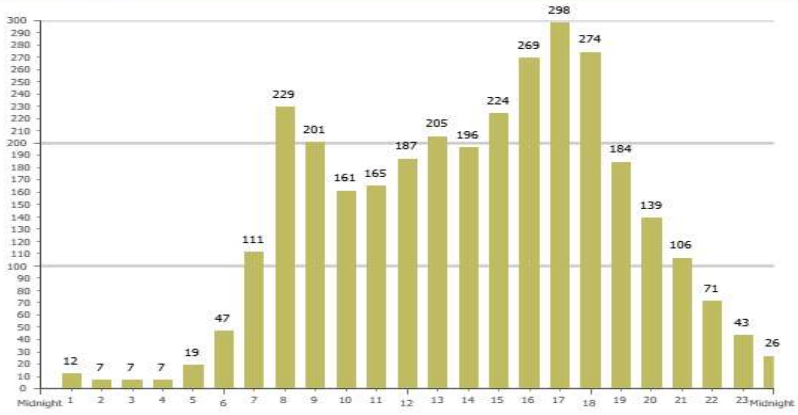
RT K W (Year: 2025)

Name	Quantity
AADT	3210
AAWDT	3249
MOTORCYCLE VOLUME	11
PASSENGER CAR VOLUME	1924
PU/PANEL TRUCK VOLUME	921
BUS VOLUME	5
SINGLE UNIT TRUCK VOLUME	141
COMB SEMI TRAILER VOLUME	208
PEAK HOUR VOLUME PM	333

Show Traffic Daily Volume

Note:Volumes represent one direction only.
Select other direction to see opposing volumes.

Traffic Daily Volume



2025 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2025	6,312

2024 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2024	6,206

2023 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2023	7,262

2022 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2022	6,825

2021 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2021	6,737

2019 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2019	5,682

2018 AADT

ST. FRANCOIS COUNTY

District = SE and Designation = RT and County = ST. FRANCOIS and Direction = E and Travelway Name = K and Cont Begin Log = 0.087 and Exclude Traffic Years = 2020 and Traffic Group By = Year/Traffic Info Name and Cont End Log = 0.222 and Traffic Info Types = AADT

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2018	5,632

2017 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2017	5,742

2016 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2016	5,570

2015 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2015	5,408

2014 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2014	5,250

2013 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2013	5,222

2012 AADT

ST. FRANCOIS COUNTY

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2012	5,468

2011 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	COL	1	2011	5,580

2010 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	COL	1	2010	5,936

2009 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	COL	1	2009	5,612

2008 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	COL	1	2008	5,792

2007 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	COL	1	2007	5,876

2006 AADT

ST. FRANCOIS COUNTY

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2006	5,856

2005 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2005	5,816

2004 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2004	5,816

2003 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2003	5,206

2002 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2002	5,232

2001 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2001	5,650

2000 AADT

ST. FRANCOIS COUNTY

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	2000	5,678

1999 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
US 67	P	0.072	3.598	U		SUP	MAC	1	1999	4,756

1998 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1998	4,658

1997 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1997A	4,522

1996 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1996	4,436

1995 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1995	12,028

1994 AADT

ST. FRANCOIS COUNTY

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1994	10,166

1993 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1993	9,718

1992 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1992	9,556

1991 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1991	10,946

1990 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1990	10,858

1989 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1989	10,472

1988 AADT

ST. FRANCOIS COUNTY

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RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1988	10,030

1987 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1987	9,796

1986 AADT

ST. FRANCOIS COUNTY

RT K E (Travelway Id : 352)

Traffic Information (TR50)
Sort : Year

Description	Overlapping Indicator	Continuous Beg Log	Continuous End Log	Dir	Site ID	St Sys	FC	Section	Year	Quantity
RTE 67	P	0.072	3.598	U		SUP	MAC	1	1986	9,670

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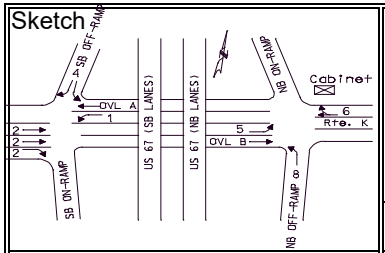
Appendix D: MoDOT Traffic Signal Timings

SIGNAL PHASING AND TIMING - ACTUATED

NAME Jake Butler DATE 6/25/2026 ROUTE MO 47/Rte. K @ US 67 Ramps

CITY Bonne Terre COUNTY St. Francois CONTROLLER MAKE/MODEL McCain ATC EX2

Sketch



	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8	OVL A	OVL B
			Not Used				Not Used			
Min. Green/Min. Initial	7.0	7.0		7.0	7.0	7.0		7.0		
Unit Extension/Passage	5.0	5.0		5.0	5.0	5.0		5.0	-	-
Yellow	3.0	3.0		3.0	3.0	3.0		3.0	3.0	3.0
Red Clearance	1.5	1.5		2.0	2.0	2.0		2.0	1.5	2.0
Max. 1	25.0	30.0		15.0	25.0	30.0		15.0		
Max. 2	30.0	50.0		50.0	30.0	50.0		30.0		
Memory (On/Off)										
Recall (Min/Soft/Max)		Soft				Soft			Time	Pattern
Dual Entry				X				X	0650-0800	1
Flashing yellow arrow	X				X				0815-1100	Free
									1100-1430	2
									1430-1630	3
									1630-1730	2
									1730-1900	1
									1900-0650	Free

Pattern	Cycle Length	Offset
1	80	0
2	100	0
3	110	0

Ring Structure:

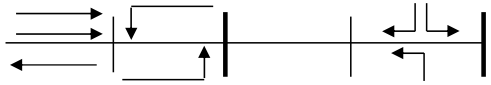


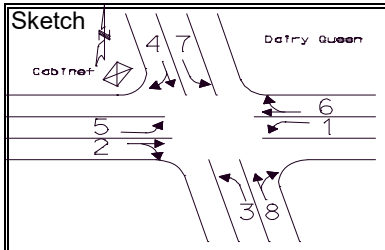
FIGURE 6.2

DISTRIBUTION: CABINET, DISTRICT OFFICE SIGNAL FILE, SIGNAL SHOP MAINTENANCE FILE

SIGNAL PHASING AND TIMING - ACTUATED

NAME Jake Butler DATE 6/25/2026 ROUTE MO 47 @ VoTech Road

CITY Bonne Terre COUNTY St. Francois CONTROLLER MAKE/MODEL McCain ATC EX2

Sketch	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6	Phase 7	Phase 8		
										
Min. Green/Min. Initial	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		
Unit Extension/Passage	3.0	7.0	3.0	5.0	3.0	7.0	3.0	5.0		
Yellow	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0		
Red Clearance	3.0	3.0	3.0	2.5	3.0	3.0	2.5	3.0		
Max. 1	10.0	46.0	10.0	15.0	10.0	46.0	15.0	10.0		
Max. 2	30.0	50.0	30.0	50.0	30.0	50.0	30.0	50.0		
Memory (On/Off)							On			
Recall (Min/Soft/Max)		Soft				Soft			Time	Pattern
Dual Entry									0650-0800	1
									0815-1100	Free
									1100-1430	2
Pattern Cycle Length Offset									1430-1630	3
1 80 6	13	33	13	21	13	33	13	21	1630-1730	2
2 100 0	14	45	18	23	14	45	20	21	1730-1900	1
3 110 4	15	57	19	19	13	59	22	16	1900-0650	Free

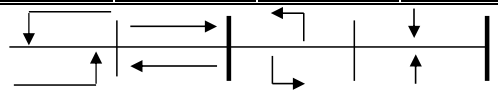
Ring Structure: 

FIGURE 6.2

DISTRIBUTION: CABINET, DISTRICT OFFICE SIGNAL FILE, SIGNAL SHOP MAINTENANCE FILE

Appendix E: Synchro Reports

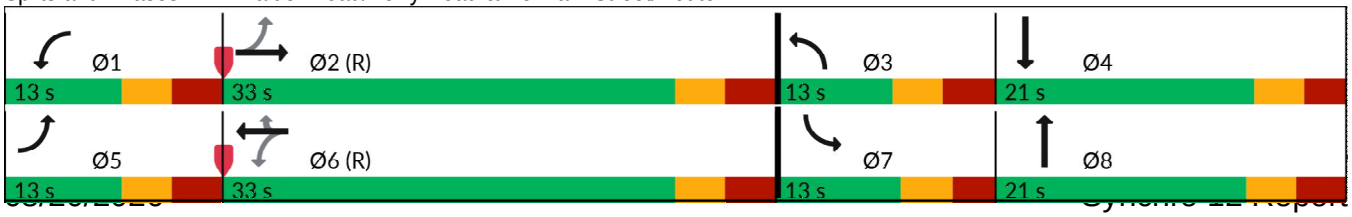
No-Build Conditions

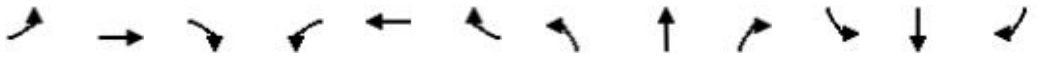
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	19	579	17	290	76	38	9	98	21
Future Volume (vph)	19	579	17	290	76	38	9	98	21
Lane Group Flow (vph)	21	712	18	315	83	41	45	107	57
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	33.0	13.0	33.0	33.0	13.0	21.0	13.0	21.0
Total Split (%)	16.3%	41.3%	16.3%	41.3%	41.3%	16.3%	26.3%	16.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.03	0.63	0.05	0.28	0.08	0.28	0.20	0.66	0.26
Control Delay (s/veh)	7.8	17.7	4.4	8.0	1.1	39.2	16.9	55.7	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.8	17.7	4.4	8.0	1.1	39.2	16.9	55.7	20.2
Queue Length 50th (ft)	4	229	1	61	0	20	5	53	11
Queue Length 95th (ft)	14	#615	5	209	0	51	33	#125	43
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	670	1134	379	1134	1040	149	357	165	356
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.63	0.05	0.28	0.08	0.28	0.13	0.65	0.16

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 6 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	19	579	76	17	290	76	38	9	32	98	21	31
Future Volume (veh/h)	19	579	76	17	290	76	38	9	32	98	21	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	21	629	83	18	315	83	41	10	35	107	23	34
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	680	878	116	327	1008	854	93	21	73	141	52	77
Arrive On Green	0.03	0.54	0.54	0.06	1.00	1.00	0.05	0.06	0.06	0.08	0.08	0.08
Sat Flow, veh/h	1781	1618	214	1781	1870	1585	1781	379	1327	1781	682	1007
Grp Volume(v), veh/h	21	0	712	18	315	83	41	0	45	107	0	57
Grp Sat Flow(s),veh/h/ln	1781	0	1832	1781	1870	1585	1781	0	1706	1781	0	1689
Q Serve(g_s), s	0.4	0.0	23.3	0.3	0.0	0.0	1.8	0.0	2.0	4.7	0.0	2.6
Cycle Q Clear(g_c), s	0.4	0.0	23.3	0.3	0.0	0.0	1.8	0.0	2.0	4.7	0.0	2.6
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.78	1.00		0.60
Lane Grp Cap(c), veh/h	680	0	994	327	1008	854	93	0	94	141	0	129
V/C Ratio(X)	0.03	0.00	0.72	0.05	0.31	0.10	0.44	0.00	0.48	0.76	0.00	0.44
Avail Cap(c_a), veh/h	778	0	994	432	1008	854	156	0	320	167	0	327
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.4	0.0	13.7	10.6	0.0	0.0	36.8	0.0	36.7	36.1	0.0	35.3
Incr Delay (d2), s/veh	0.0	0.0	4.4	0.1	0.8	0.2	3.2	0.0	7.8	15.2	0.0	5.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	9.7	0.1	0.2	0.1	0.8	0.0	1.0	2.6	0.0	1.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.4	0.0	18.1	10.7	0.8	0.2	40.0	0.0	44.4	51.3	0.0	40.4
LnGrp LOS	A		B	B	A	A	D		D	D		D
Approach Vol, veh/h		733			416			86			164	
Approach Delay, s/veh		17.8			1.1			42.3			47.5	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	49.4	10.2	12.1	8.6	49.1	11.9	10.4
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	27.0	7.0	* 16	7.0	27.0	7.5	15.0
Max Q Clear Time (g_c+I1), s	2.3	25.3	3.8	4.6	2.4	2.0	6.7	4.0
Green Ext Time (p_c), s	0.0	1.4	0.0	0.2	0.0	6.8	0.0	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	17.8
HCM 7th LOS	B

Notes

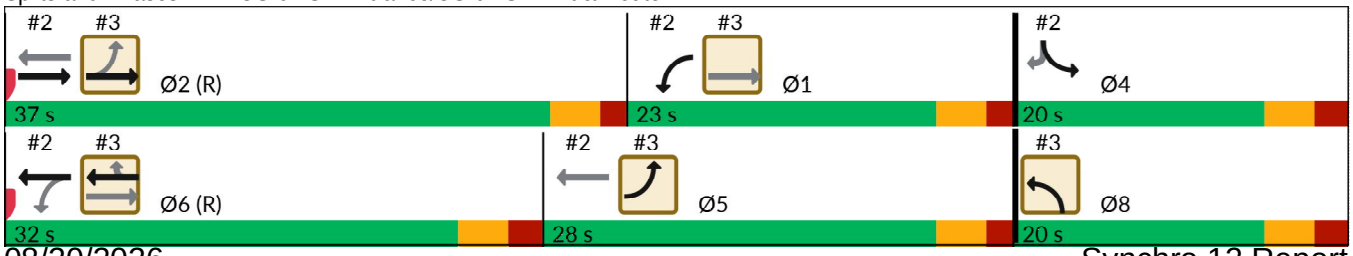
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

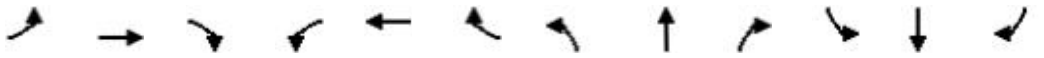
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	360	338	168	331	81	69		
Future Volume (vph)	360	338	168	331	81	69		
Lane Group Flow (vph)	391	367	183	360	88	75		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	37.0		23.0	32.0	20.0	20.0	28.0	20.0
Total Split (%)	46.3%		28.8%	40.0%	25.0%	25.0%	35%	25%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.20	0.20	0.24	0.14	0.36	0.21		
Control Delay (s/veh)	10.1	0.2	3.9	2.6	34.3	1.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	10.1	0.2	3.9	2.6	34.3	1.4		
Queue Length 50th (ft)	38	0	29	29	41	0		
Queue Length 95th (ft)	88	0	48	42	80	2		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1931	1794	980	2548	320	408		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.20	0.20	0.19	0.14	0.28	0.18		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	360	338	168	331	0	0	0	0	81	0	69
Future Volume (vph)	0	360	338	168	331	0	0	0	0	81	0	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.52	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	968	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	391	367	183	360	0	0	0	0	88	0	75
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	64
Lane Group Flow (vph)	0	391	367	183	360	0	0	0	0	88	0	11
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		44.2	80.0	57.4	53.9					11.6		11.6
Effective Green, g (s)		44.2	80.0	57.4	53.9					11.6		11.6
Actuated g/C Ratio		0.55	1.00	0.72	0.67					0.14		0.14
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1890	1794	796	2605					248		221
v/s Ratio Prot		0.11		0.03	0.08					c0.05		
v/s Ratio Perm			c0.20	c0.14	0.02							0.01
v/c Ratio		0.21	0.20	0.23	0.14					0.35		0.05
Uniform Delay, d1		9.0	0.0	4.0	4.7					30.8		29.5
Progression Factor		1.09	1.00	0.78	0.69					1.00		1.00
Incremental Delay, d2		0.2	0.2	0.3	0.1					1.8		0.2
Delay (s)		10.0	0.2	3.4	3.3					32.7		29.6
Level of Service		B	A	A	A					C		C
Approach Delay (s/veh)		5.3			3.3			0.0			31.3	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.27		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

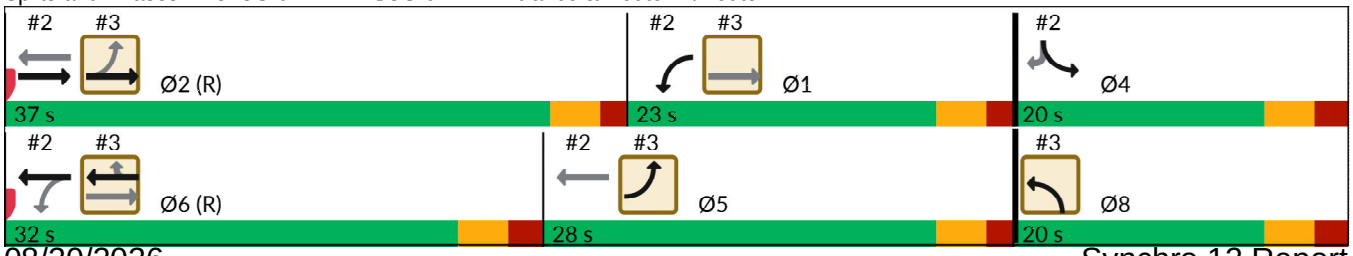
c Critical Lane Group

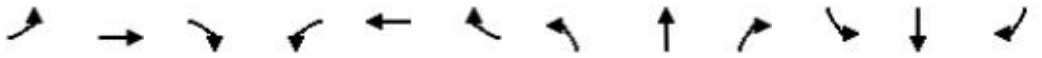
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	112	347	355	106	154	119		
Future Volume (vph)	112	347	355	106	154	119		
Lane Group Flow (vph)	122	377	386	115	167	129		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	28.0	37.0	32.0	32.0	20.0		23.0	20.0
Total Split (%)	35.0%	46.3%	40.0%	40.0%	25.0%		29%	25%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.18	0.30	0.19	0.12	0.34	0.07		
Control Delay (s/veh)	2.5	2.6	8.6	1.3	32.0	0.1		
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	2.5	2.8	8.6	1.3	32.0	0.1		
Queue Length 50th (ft)	9	37	44	0	40	0		
Queue Length 95th (ft)	21	53	78	15	65	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	998	1250	2059	949	643	1794		
Starvation Cap Reductn	0	232	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.12	0.37	0.19	0.12	0.26	0.07		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K

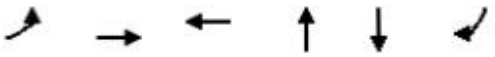




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	112	347	0	0	355	106	154	0	119	0	0	0
Future Volume (vph)	112	347	0	0	355	106	154	0	119	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.52	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	910	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	122	377	0	0	386	115	167	0	129	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	47	0	0	0	0	0	0
Lane Group Flow (vph)	122	377	0	0	386	68	167	0	129	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	50.9	57.4			47.2	47.2	11.6		80.0			
Effective Green, g (s)	50.9	57.4			47.2	47.2	11.6		80.0			
Actuated g/C Ratio	0.64	0.72			0.59	0.59	0.14		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	641	1247			2018	872	497		1794			
v/s Ratio Prot	0.02	c0.17			0.11		c0.05					
v/s Ratio Perm	0.11	0.05				0.05			0.07			
v/c Ratio	0.19	0.30			0.19	0.08	0.34		0.07			
Uniform Delay, d1	6.1	4.1			7.6	7.0	30.7		0.0			
Progression Factor	0.48	0.50			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.3	0.3			0.2	0.2	0.8		0.1			
Delay (s)	3.2	2.3			7.8	7.2	31.6		0.1			
Level of Service	A	A			A	A	C		A			
Approach Delay (s/veh)		2.6			7.7			17.9			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.32		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	36.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	88	294	253	4	10	118
Future Volume (vph)	88	294	253	4	10	118
Lane Group Flow (vph)	96	410	338	147	38	128
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	88	294	83	40	253	18	97	4	35	25	10	118
Future Vol, veh/h	88	294	83	40	253	18	97	4	35	25	10	118
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	96	320	90	43	275	20	105	4	38	27	11	128

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	295	0	0	410	0	0	923	938	365	885	973	285
Stage 1	-	-	-	-	-	-	556	556	-	372	372	-
Stage 2	-	-	-	-	-	-	367	382	-	513	601	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1267	-	-	1149	-	-	250	265	680	266	252	754
Stage 1	-	-	-	-	-	-	515	513	-	649	619	-
Stage 2	-	-	-	-	-	-	652	613	-	544	489	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1267	-	-	1149	-	-	175	233	680	218	223	754
Mov Cap-2 Maneuver	-	-	-	-	-	-	175	233	-	218	223	-
Stage 1	-	-	-	-	-	-	477	474	-	619	591	-
Stage 2	-	-	-	-	-	-	507	585	-	470	452	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.53	1.06	50.17	13.98
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	219	1267	-	-	228	-	-	219	754
HCM Lane V/C Ratio	0.676	0.076	-	-	0.038	-	-	0.174	0.17
HCM Ctrl Dly (s/v)	50.2	8.1	-	-	8.3	0	-	24.9	10.7
HCM Lane LOS	F	A	-	-	A	A	-	C	B
HCM 95th %tile Q(veh)	4.2	0.2	-	-	0.1	-	-	0.6	0.6

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	262	236	2	1
Future Volume (vph)	262	236	2	1
Lane Group Flow (vph)	365	261	52	19
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	262	64	2	236	2	45	2	1	1	1	16
Future Vol, veh/h	9	262	64	2	236	2	45	2	1	1	1	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	285	70	2	257	2	49	2	1	1	1	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	259	0	0	354	0	0	601	602	320	567	636	258
Stage 1	-	-	-	-	-	-	339	339	-	262	262	-
Stage 2	-	-	-	-	-	-	261	263	-	305	374	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1306	-	-	1204	-	-	412	413	721	434	396	781
Stage 1	-	-	-	-	-	-	675	640	-	743	692	-
Stage 2	-	-	-	-	-	-	744	691	-	704	618	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1306	-	-	1204	-	-	398	409	721	426	391	781
Mov Cap-2 Maneuver	-	-	-	-	-	-	398	409	-	426	391	-
Stage 1	-	-	-	-	-	-	669	634	-	741	690	-
Stage 2	-	-	-	-	-	-	724	689	-	694	612	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.21	0.07	15.29	10.22
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	402	47	-	-	15	-	-	709
HCM Lane V/C Ratio	0.13	0.007	-	-	0.002	-	-	0.028
HCM Ctrl Dly (s/v)	15.3	7.8	0	-	8	0	-	10.2
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.4	0	-	-	0	-	-	0.1

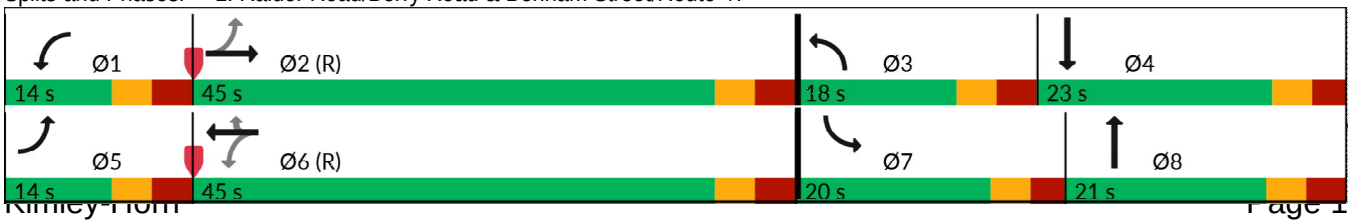
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	49	420	46	608	62	96	29	109	28
Future Volume (vph)	49	420	46	608	62	96	29	109	28
Lane Group Flow (vph)	53	506	50	661	67	104	69	118	141
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	14.0	45.0	14.0	45.0	45.0	18.0	21.0	20.0	23.0
Total Split (%)	14.0%	45.0%	14.0%	45.0%	45.0%	18.0%	21.0%	20.0%	23.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.16	0.55	0.11	0.69	0.07	0.59	0.33	0.58	0.52
Control Delay (s/veh)	10.4	21.7	6.1	23.9	1.0	56.1	27.1	52.9	19.1
Queue Delay	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	10.4	21.7	6.1	24.4	1.0	56.1	27.1	52.9	19.1
Queue Length 50th (ft)	13	228	4	400	7	65	20	73	18
Queue Length 95th (ft)	33	390	m17	#626	m1	120	60	129	73
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	341	917	450	962	894	205	305	256	379
Starvation Cap Reductn	0	0	0	70	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.55	0.11	0.74	0.07	0.51	0.23	0.46	0.37

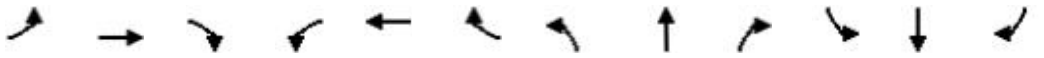
Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	49	420	45	46	608	62	96	29	34	109	28	102
Future Volume (veh/h)	49	420	45	46	608	62	96	29	34	109	28	102
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	53	457	49	50	661	67	104	32	37	118	30	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	549	872	94	474	980	831	132	86	99	148	38	140
Arrive On Green	0.05	0.53	0.53	0.11	1.00	1.00	0.07	0.10	0.10	0.08	0.11	0.11
Sat Flow, veh/h	1781	1660	178	1781	1870	1585	1781	823	951	1781	349	1290
Grp Volume(v), veh/h	53	0	506	50	661	67	104	0	69	118	0	141
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	1870	1585	1781	0	1774	1781	0	1638
Q Serve(g_s), s	1.3	0.0	18.0	1.2	0.0	0.0	5.7	0.0	3.6	6.5	0.0	8.4
Cycle Q Clear(g_c), s	1.3	0.0	18.0	1.2	0.0	0.0	5.7	0.0	3.6	6.5	0.0	8.4
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.54	1.00		0.79
Lane Grp Cap(c), veh/h	549	0	966	474	980	831	132	0	184	148	0	177
V/C Ratio(X)	0.10	0.00	0.52	0.11	0.67	0.08	0.79	0.00	0.37	0.80	0.00	0.80
Avail Cap(c_a), veh/h	595	0	966	523	980	831	214	0	266	258	0	287
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.2	0.0	15.5	10.3	0.0	0.0	45.5	0.0	41.8	45.0	0.0	43.5
Incr Delay (d2), s/veh	0.1	0.0	2.0	0.1	3.6	0.2	10.1	0.0	2.7	9.4	0.0	15.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	7.7	0.4	1.0	0.0	2.9	0.0	1.7	3.2	0.0	4.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.3	0.0	17.6	10.4	3.6	0.2	55.6	0.0	44.4	54.4	0.0	59.1
LnGrp LOS	A		B	B	A	A	E		D	D		E
Approach Vol, veh/h		559			778			173			259	
Approach Delay, s/veh		16.8			3.7			51.2			57.0	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	58.5	13.4	16.8	11.4	58.4	13.8	16.4
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	8.0	39.0	12.0	* 18	8.0	39.0	14.5	15.0
Max Q Clear Time (g_c+I1), s	3.2	20.0	7.7	10.4	3.3	2.0	8.5	5.6
Green Ext Time (p_c), s	0.0	8.3	0.1	0.6	0.0	17.7	0.1	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	20.3
HCM 7th LOS	C

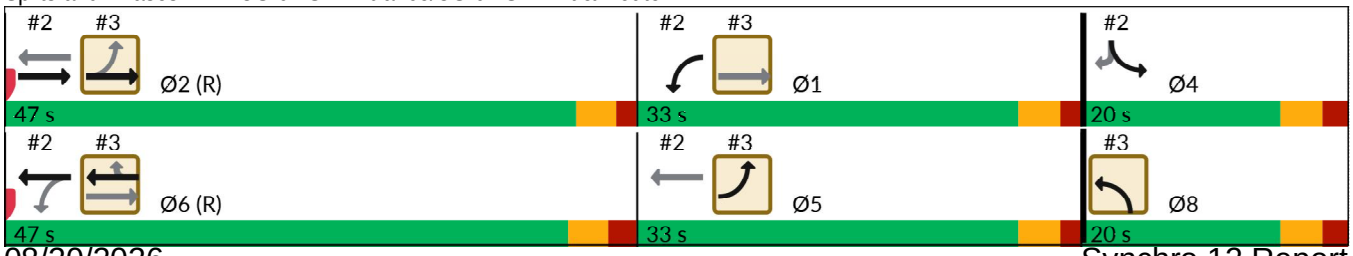
Notes

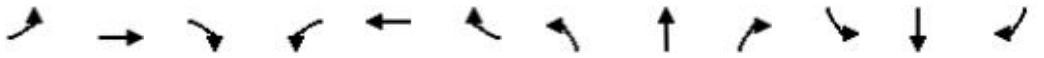
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	304	236	147	552	134	211		
Future Volume (vph)	304	236	147	552	134	211		
Lane Group Flow (vph)	330	257	160	600	146	229		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	47.0		33.0	47.0	20.0	20.0	33.0	20.0
Total Split (%)	47.0%		33.0%	47.0%	20.0%	20.0%	33%	20%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.19	0.14	0.17	0.22	0.59	0.55		
Control Delay (s/veh)	17.9	0.1	0.9	5.8	50.4	10.7		
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.4		
Total Delay (s/veh)	17.9	0.1	0.9	6.2	50.4	11.1		
Queue Length 50th (ft)	61	0	0	113	89	0		
Queue Length 95th (ft)	107	0	10	144	155	67		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1714	1794	1057	2672	256	424		
Starvation Cap Reductn	0	0	0	1409	0	0		
Spillback Cap Reductn	0	0	0	422	0	27		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.19	0.14	0.15	0.48	0.57	0.58		

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	304	236	147	552	0	0	0	0	134	0	211
Future Volume (vph)	0	304	236	147	552	0	0	0	0	134	0	211
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.54	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	1014	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	330	257	160	600	0	0	0	0	146	0	229
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	196
Lane Group Flow (vph)	0	330	257	160	600	0	0	0	0	146	0	33
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		50.1	100.0	76.0	71.0					14.5		14.5
Effective Green, g (s)		50.1	100.0	76.0	71.0					14.5		14.5
Actuated g/C Ratio		0.50	1.00	0.76	0.71					0.14		0.14
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1713	1794	932	2689					248		221
v/s Ratio Prot		0.10		0.04	c0.14					c0.09		
v/s Ratio Perm			0.14	0.09	0.03							0.02
v/c Ratio		0.19	0.14	0.17	0.22					0.59		0.15
Uniform Delay, d1		13.8	0.0	3.6	5.0					40.0		37.4
Progression Factor		1.17	1.00	0.12	1.53					1.00		1.00
Incremental Delay, d2		0.2	0.1	0.2	0.1					5.4		0.7
Delay (s)		16.4	0.1	0.6	7.7					45.4		38.0
Level of Service		B	A	A	A					D		D
Approach Delay (s/veh)		9.3			6.2			0.0			40.9	
Approach LOS		A			A			A			D	

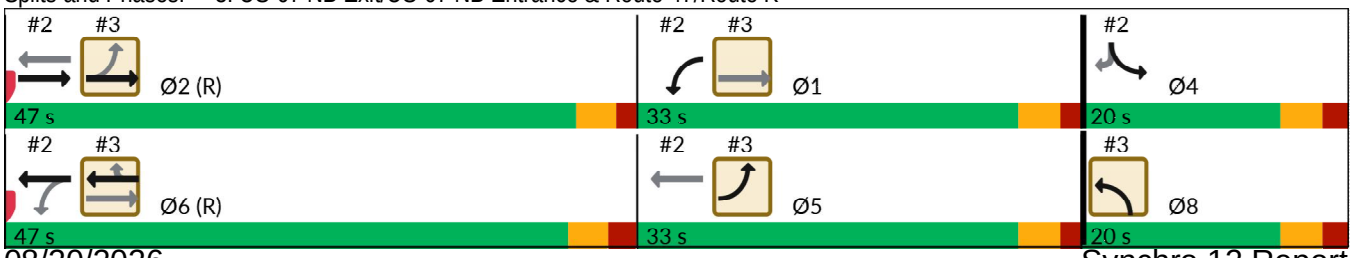
Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.30		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	101	359	424	80	297	143		
Future Volume (vph)	101	359	424	80	297	143		
Lane Group Flow (vph)	110	390	461	87	323	155		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	33.0	47.0	47.0	47.0	20.0		33.0	20.0
Total Split (%)	33.0%	47.0%	47.0%	47.0%	20.0%		33%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.20	0.30	0.22	0.09	0.65	0.09		
Control Delay (s/veh)	4.4	5.5	8.8	2.1	47.0	0.1		
Queue Delay	0.0	0.7	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	4.4	6.2	8.8	2.1	47.0	0.1		
Queue Length 50th (ft)	15	100	63	0	102	0		
Queue Length 95th (ft)	19	132	92	19	148	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	887	1321	2127	951	514	1794		
Starvation Cap Reductn	0	603	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.12	0.54	0.22	0.09	0.63	0.09		

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

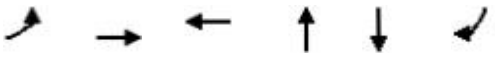
Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	101	359	0	0	424	80	297	0	143	0	0	0
Future Volume (vph)	101	359	0	0	424	80	297	0	143	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.48	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	831	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	110	390	0	0	461	87	323	0	155	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	33	0	0	0	0	0	0
Lane Group Flow (vph)	110	390	0	0	461	54	323	0	155	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	58.9	76.0			62.2	62.2	14.5		100.0			
Effective Green, g (s)	58.9	76.0			62.2	62.2	14.5		100.0			
Actuated g/C Ratio	0.59	0.76			0.62	0.62	0.14		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	561	1321			2127	919	497		1794			
v/s Ratio Prot	0.02	c0.15			0.13		c0.09					
v/s Ratio Perm	0.10	0.08				0.04			0.09			
v/c Ratio	0.20	0.30			0.22	0.06	0.65		0.09			
Uniform Delay, d1	10.1	3.7			8.3	7.4	40.4		0.0			
Progression Factor	0.65	1.28			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.3			0.2	0.1	4.0		0.1			
Delay (s)	6.9	5.0			8.5	7.5	44.3		0.1			
Level of Service	A	A			A	A	D		A			
Approach Delay (s/veh)		5.4			8.3			30.0			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.1%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	156	243	262	14	13	147
Future Volume (vph)	156	243	262	14	13	147
Lane Group Flow (vph)	170	371	330	143	40	160
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	14.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	156	243	98	26	262	16	93	14	25	24	13	147
Future Vol, veh/h	156	243	98	26	262	16	93	14	25	24	13	147
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	170	264	107	28	285	17	101	15	27	26	14	160

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	302	0	0	371	0	0	1005	1015	317	961	1060	293
Stage 1	-	-	-	-	-	-	657	657	-	350	350	-
Stage 2	-	-	-	-	-	-	348	359	-	611	710	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1259	-	-	1188	-	-	220	238	723	236	224	746
Stage 1	-	-	-	-	-	-	454	462	-	666	633	-
Stage 2	-	-	-	-	-	-	668	627	-	481	437	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1259	-	-	1188	-	-	136	200	723	178	188	746
Mov Cap-2 Maneuver	-	-	-	-	-	-	136	200	-	178	188	-
Stage 1	-	-	-	-	-	-	393	400	-	647	615	-
Stage 2	-	-	-	-	-	-	498	609	-	385	378	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.61	0.69	90.67	15
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	168	1259	-	-	152	-	-	182	746
HCM Lane V/C Ratio	0.856	0.135	-	-	0.024	-	-	0.221	0.214
HCM Ctrl Dly (s/v)	90.7	8.3	-	-	8.1	0	-	30.3	11.1
HCM Lane LOS	F	A	-	-	A	A	-	D	B
HCM 95th %tile Q(veh)	6	0.5	-	-	0.1	-	-	0.8	0.8

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	225	203	1	2
Future Volume (vph)	225	203	1	2
Lane Group Flow (vph)	285	225	13	33
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	225	14	2	203	2	10	1	1	2	2	27
Future Vol, veh/h	23	225	14	2	203	2	10	1	1	2	2	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	25	245	15	2	221	2	11	1	1	2	2	29

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	223	0	0	260	0	0	528	529	252	521	536	222
Stage 1	-	-	-	-	-	-	302	302	-	226	226	-
Stage 2	-	-	-	-	-	-	226	227	-	295	310	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1346	-	-	1305	-	-	461	455	786	466	451	818
Stage 1	-	-	-	-	-	-	707	664	-	777	717	-
Stage 2	-	-	-	-	-	-	777	716	-	713	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1346	-	-	1305	-	-	432	444	786	453	440	818
Mov Cap-2 Maneuver	-	-	-	-	-	-	432	444	-	453	440	-
Stage 1	-	-	-	-	-	-	692	650	-	775	715	-
Stage 2	-	-	-	-	-	-	745	715	-	696	645	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.68	0.08	13.24	10.11
HCM LOS			B	B

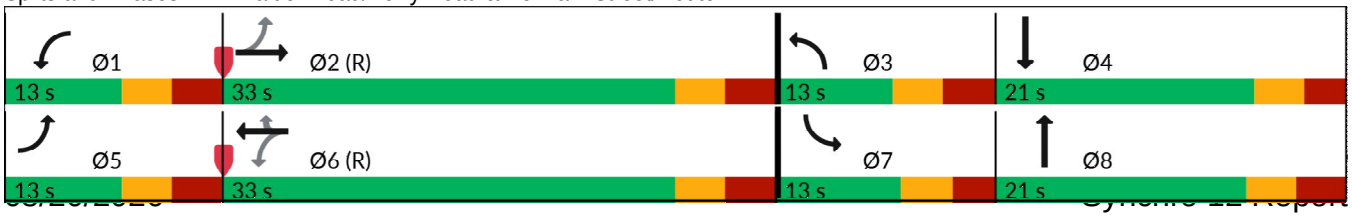
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	450	156	-	-	17	-	-	739
HCM Lane V/C Ratio	0.029	0.019	-	-	0.002	-	-	0.046
HCM Ctrl Dly (s/v)	13.2	7.7	0	-	7.8	0	-	10.1
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

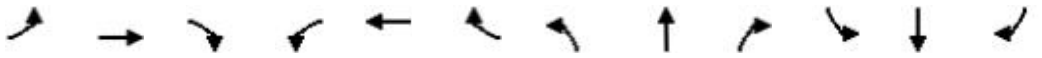
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	20	600	18	300	79	39	9	102	22
Future Volume (vph)	20	600	18	300	79	39	9	102	22
Lane Group Flow (vph)	22	738	20	326	86	42	46	111	59
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	33.0	13.0	33.0	33.0	13.0	21.0	13.0	21.0
Total Split (%)	16.3%	41.3%	16.3%	41.3%	41.3%	16.3%	26.3%	16.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.03	0.68	0.06	0.29	0.08	0.28	0.21	0.68	0.27
Control Delay (s/veh)	8.0	22.4	4.5	7.8	0.9	39.4	16.6	57.8	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.0	22.4	4.5	7.8	0.9	39.4	16.6	57.8	20.1
Queue Length 50th (ft)	4	244	1	18	0	20	5	56	11
Queue Length 95th (ft)	15	#648	5	137	0	52	34	#130	44
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	663	1078	337	1133	1039	149	358	165	357
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.68	0.06	0.29	0.08	0.28	0.13	0.67	0.17

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 6 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	600	79	18	300	79	39	9	33	102	22	32
Future Volume (veh/h)	20	600	79	18	300	79	39	9	33	102	22	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	652	86	20	326	86	42	10	36	111	24	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	872	115	310	1003	850	95	21	75	143	53	77
Arrive On Green	0.03	0.54	0.54	0.06	1.00	1.00	0.05	0.06	0.06	0.08	0.08	0.08
Sat Flow, veh/h	1781	1618	213	1781	1870	1585	1781	371	1334	1781	687	1002
Grp Volume(v), veh/h	22	0	738	20	326	86	42	0	46	111	0	59
Grp Sat Flow(s),veh/h/ln	1781	0	1832	1781	1870	1585	1781	0	1705	1781	0	1690
Q Serve(g_s), s	0.4	0.0	24.9	0.4	0.0	0.0	1.8	0.0	2.1	4.9	0.0	2.7
Cycle Q Clear(g_c), s	0.4	0.0	24.9	0.4	0.0	0.0	1.8	0.0	2.1	4.9	0.0	2.7
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.78	1.00		0.59
Lane Grp Cap(c), veh/h	673	0	987	310	1003	850	95	0	96	143	0	130
V/C Ratio(X)	0.03	0.00	0.75	0.06	0.32	0.10	0.44	0.00	0.48	0.78	0.00	0.45
Avail Cap(c_a), veh/h	768	0	987	410	1003	850	156	0	320	167	0	327
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	0.0	14.3	11.1	0.0	0.0	36.7	0.0	36.6	36.1	0.0	35.3
Incr Delay (d2), s/veh	0.0	0.0	5.2	0.1	0.9	0.2	3.2	0.0	7.8	17.8	0.0	5.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	10.5	0.1	0.2	0.1	0.9	0.0	1.1	2.8	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.5	0.0	19.4	11.2	0.9	0.2	40.0	0.0	44.5	53.9	0.0	40.6
LnGrp LOS	A		B	B	A	A	D		D	D		D
Approach Vol, veh/h		760			432			88			170	
Approach Delay, s/veh		19.1			1.2			42.3			49.3	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	49.1	10.2	12.1	8.7	48.9	11.9	10.5
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	27.0	7.0	* 16	7.0	27.0	7.5	15.0
Max Q Clear Time (g_c+I1), s	2.4	26.9	3.8	4.7	2.4	2.0	6.9	4.1
Green Ext Time (p_c), s	0.0	0.1	0.0	0.3	0.0	7.0	0.0	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	18.7
HCM 7th LOS	B

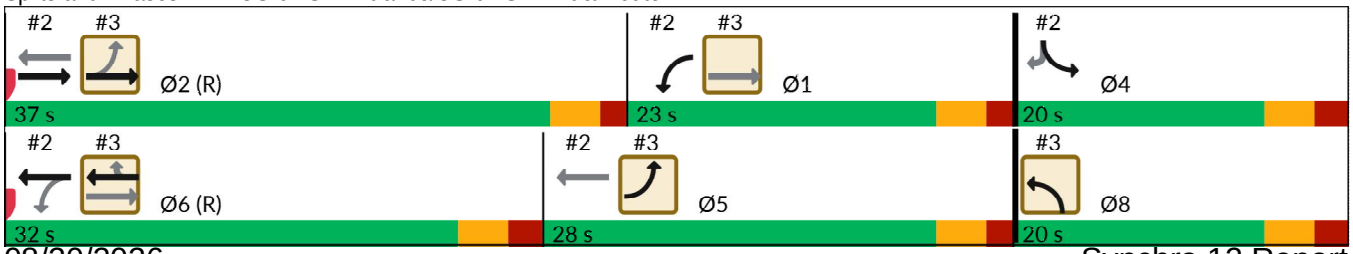
Notes

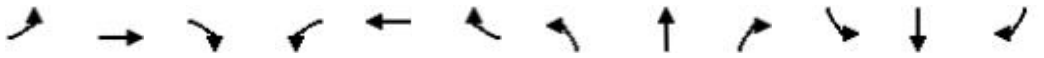
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	373	350	174	343	84	71		
Future Volume (vph)	373	350	174	343	84	71		
Lane Group Flow (vph)	405	380	189	373	91	77		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	37.0		23.0	32.0	20.0	20.0	28.0	20.0
Total Split (%)	46.3%		28.8%	40.0%	25.0%	25.0%	35%	25%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.21	0.21	0.25	0.15	0.36	0.22		
Control Delay (s/veh)	11.8	0.2	4.1	2.6	34.3	1.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	11.8	0.2	4.1	2.6	34.3	1.6		
Queue Length 50th (ft)	45	0	30	30	42	0		
Queue Length 95th (ft)	84	0	49	44	82	3		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1920	1794	963	2554	320	408		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.21	0.21	0.20	0.15	0.28	0.19		

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	373	350	174	343	0	0	0	0	84	0	71
Future Volume (vph)	0	373	350	174	343	0	0	0	0	84	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.51	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	950	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	405	380	189	373	0	0	0	0	91	0	77
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	66
Lane Group Flow (vph)	0	405	380	189	373	0	0	0	0	91	0	11
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		44.0	80.0	57.0	53.8					11.7		11.7
Effective Green, g (s)		44.0	80.0	57.0	53.8					11.7		11.7
Actuated g/C Ratio		0.55	1.00	0.71	0.67					0.15		0.15
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1881	1794	782	2601					250		223
v/s Ratio Prot		0.12		0.03	0.08					c0.05		
v/s Ratio Perm			c0.21	c0.14	0.02							0.01
v/c Ratio		0.22	0.21	0.24	0.14					0.36		0.05
Uniform Delay, d1		9.2	0.0	4.2	4.7					30.8		29.4
Progression Factor		1.24	1.00	0.78	0.70					1.00		1.00
Incremental Delay, d2		0.2	0.2	0.3	0.1					1.9		0.2
Delay (s)		11.6	0.2	3.7	3.4					32.7		29.6
Level of Service		B	A	A	A					C		C
Approach Delay (s/veh)		6.1			3.5			0.0			31.3	
Approach LOS		A			A			A			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

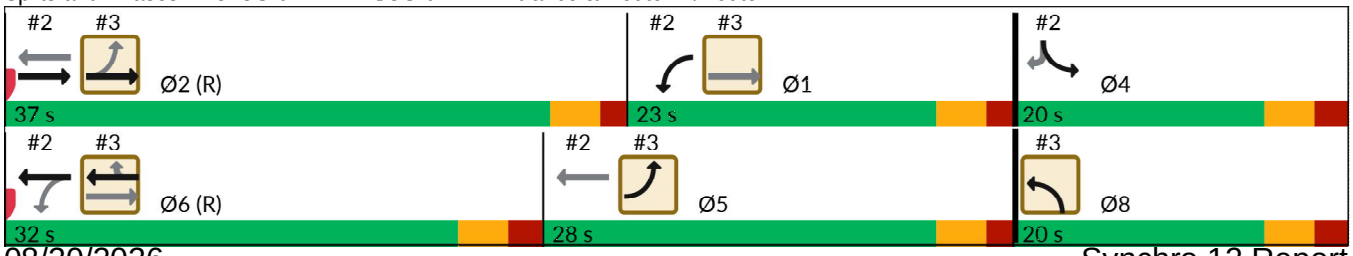
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	116	359	368	110	160	123		
Future Volume (vph)	116	359	368	110	160	123		
Lane Group Flow (vph)	126	390	400	120	174	134		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	28.0	37.0	32.0	32.0	20.0		23.0	20.0
Total Split (%)	35.0%	46.3%	40.0%	40.0%	25.0%		29%	25%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.19	0.31	0.20	0.13	0.35	0.07		
Control Delay (s/veh)	2.5	2.8	9.0	1.6	32.1	0.1		
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	2.5	2.9	9.0	1.6	32.1	0.1		
Queue Length 50th (ft)	10	38	47	0	41	0		
Queue Length 95th (ft)	22	55	86	17	67	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	988	1247	2037	940	643	1794		
Starvation Cap Reductn	0	219	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.13	0.38	0.20	0.13	0.27	0.07		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

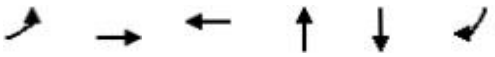
Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	359	0	0	368	110	160	0	123	0	0	0
Future Volume (vph)	116	359	0	0	368	110	160	0	123	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.52	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	898	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	390	0	0	400	120	174	0	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	50	0	0	0	0	0	0
Lane Group Flow (vph)	126	390	0	0	400	70	174	0	134	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	51.1	57.0			46.7	46.7	11.7		80.0			
Effective Green, g (s)	51.1	57.0			46.7	46.7	11.7		80.0			
Actuated g/C Ratio	0.64	0.71			0.58	0.58	0.15		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	640	1239			1997	862	502		1794			
v/s Ratio Prot	0.02	c0.17			0.12		c0.05					
v/s Ratio Perm	0.11	0.05				0.05			0.07			
v/c Ratio	0.20	0.31			0.20	0.08	0.35		0.07			
Uniform Delay, d1	6.1	4.3			7.8	7.3	30.7		0.0			
Progression Factor	0.47	0.53			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.3	0.3			0.2	0.2	0.9		0.1			
Delay (s)	3.2	2.6			8.1	7.5	31.6		0.1			
Level of Service	A	A			A	A	C		A			
Approach Delay (s/veh)		2.7			7.9			17.9			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	91	305	262	4	10	122
Future Volume (vph)	91	305	262	4	10	122
Lane Group Flow (vph)	99	422	349	147	39	133
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	10.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	91	305	83	40	262	19	97	4	35	26	10	122
Future Vol, veh/h	91	305	83	40	262	19	97	4	35	26	10	122
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	99	332	90	43	285	21	105	4	38	28	11	133

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	305	0	0	422	0	0	952	967	377	914	1002	295
Stage 1	-	-	-	-	-	-	574	574	-	382	382	-
Stage 2	-	-	-	-	-	-	377	392	-	532	620	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1255	-	-	1137	-	-	239	254	670	254	243	744
Stage 1	-	-	-	-	-	-	504	503	-	640	613	-
Stage 2	-	-	-	-	-	-	644	606	-	531	480	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1255	-	-	1137	-	-	165	223	670	207	213	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	165	223	-	207	213	-
Stage 1	-	-	-	-	-	-	464	463	-	611	584	-
Stage 2	-	-	-	-	-	-	496	578	-	457	442	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.54	1.03	56.87	14.37
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	207	1255	-	-	221	-	-	209	744
HCM Lane V/C Ratio	0.715	0.079	-	-	0.038	-	-	0.188	0.178
HCM Ctrl Dly (s/v)	56.9	8.1	-	-	8.3	0	-	26.2	10.9
HCM Lane LOS	F	A	-	-	A	A	-	D	B
HCM 95th %tile Q(veh)	4.6	0.3	-	-	0.1	-	-	0.7	0.6

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	271	244	2	1
Future Volume (vph)	271	244	2	1
Lane Group Flow (vph)	377	269	54	20
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	271	66	2	244	2	47	2	1	1	1	17
Future Vol, veh/h	9	271	66	2	244	2	47	2	1	1	1	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	295	72	2	265	2	51	2	1	1	1	18

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	267	0	0	366	0	0	620	622	330	586	657	266
Stage 1	-	-	-	-	-	-	350	350	-	271	271	-
Stage 2	-	-	-	-	-	-	270	272	-	315	386	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1296	-	-	1192	-	-	400	403	711	422	385	772
Stage 1	-	-	-	-	-	-	666	633	-	735	685	-
Stage 2	-	-	-	-	-	-	736	685	-	696	610	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1296	-	-	1192	-	-	385	398	711	414	380	772
Mov Cap-2 Maneuver	-	-	-	-	-	-	385	398	-	414	380	-
Stage 1	-	-	-	-	-	-	660	627	-	734	684	-
Stage 2	-	-	-	-	-	-	715	683	-	686	604	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.2	0.06	15.75	10.28
HCM LOS			C	B

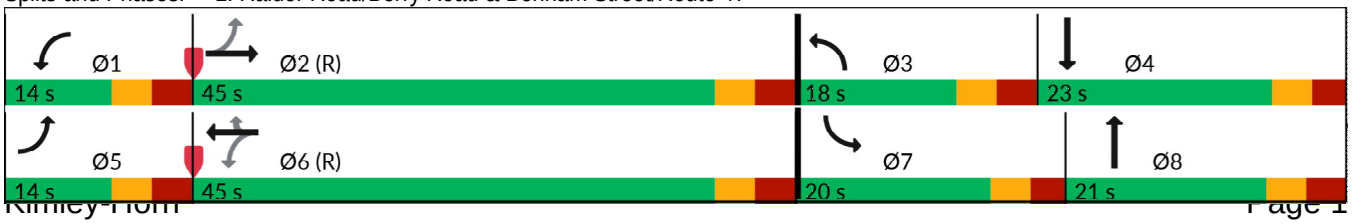
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	389	45	-	-	14	-	-	702
HCM Lane V/C Ratio	0.14	0.008	-	-	0.002	-	-	0.029
HCM Ctrl Dly (s/v)	15.7	7.8	0	-	8	0	-	10.3
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	0.1

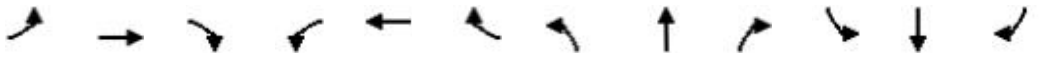
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	51	435	48	630	64	99	30	113	29
Future Volume (vph)	51	435	48	630	64	99	30	113	29
Lane Group Flow (vph)	55	524	52	685	70	108	71	123	147
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	14.0	45.0	14.0	45.0	45.0	18.0	21.0	20.0	23.0
Total Split (%)	14.0%	45.0%	14.0%	45.0%	45.0%	18.0%	21.0%	20.0%	23.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.20	0.60	0.13	0.75	0.08	0.61	0.34	0.49	0.53
Control Delay (s/veh)	11.1	23.5	6.4	26.3	0.9	57.0	27.1	47.3	19.3
Queue Delay	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.1	23.5	6.4	27.1	0.9	57.0	27.1	47.3	19.3
Queue Length 50th (ft)	13	242	5	420	6	67	20	76	19
Queue Length 95th (ft)	34	410	m17	#663	m2	124	61	133	76
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	292	869	405	911	855	205	306	277	382
Starvation Cap Reductn	0	0	0	59	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.19	0.60	0.13	0.80	0.08	0.53	0.23	0.44	0.38

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 80
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	435	47	48	630	64	99	30	35	113	29	106
Future Volume (veh/h)	51	435	47	48	630	64	99	30	35	113	29	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	473	51	52	685	70	108	33	38	123	32	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	536	860	93	454	966	819	136	88	102	153	40	144
Arrive On Green	0.05	0.52	0.52	0.11	1.00	1.00	0.08	0.11	0.11	0.09	0.11	0.11
Sat Flow, veh/h	1781	1659	179	1781	1870	1585	1781	825	950	1781	357	1283
Grp Volume(v), veh/h	55	0	524	52	685	70	108	0	71	123	0	147
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	1870	1585	1781	0	1774	1781	0	1639
Q Serve(g_s), s	1.4	0.0	19.2	1.3	0.0	0.0	6.0	0.0	3.7	6.8	0.0	8.7
Cycle Q Clear(g_c), s	1.4	0.0	19.2	1.3	0.0	0.0	6.0	0.0	3.7	6.8	0.0	8.7
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.54	1.00		0.78
Lane Grp Cap(c), veh/h	536	0	952	454	966	819	136	0	190	153	0	184
V/C Ratio(X)	0.10	0.00	0.55	0.11	0.71	0.09	0.79	0.00	0.37	0.80	0.00	0.80
Avail Cap(c_a), veh/h	581	0	952	501	966	819	214	0	266	258	0	287
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.5	0.0	16.2	10.8	0.0	0.0	45.4	0.0	41.5	44.9	0.0	43.3
Incr Delay (d2), s/veh	0.1	0.0	2.3	0.1	4.2	0.2	10.3	0.0	2.6	9.3	0.0	15.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	8.3	0.5	1.1	0.0	3.0	0.0	1.8	3.4	0.0	4.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.6	0.0	18.5	10.9	4.2	0.2	55.7	0.0	44.1	54.1	0.0	59.2
LnGrp LOS	A		B	B	A	A	E		D	D		E
Approach Vol, veh/h		579			807			179			270	
Approach Delay, s/veh		17.7			4.3			51.1			56.9	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	57.8	13.6	17.2	11.5	57.7	14.1	16.7
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	8.0	39.0	12.0	* 18	8.0	39.0	14.5	15.0
Max Q Clear Time (g_c+I1), s	3.3	21.2	8.0	10.7	3.4	2.0	8.8	5.7
Green Ext Time (p_c), s	0.0	8.2	0.1	0.7	0.0	18.5	0.1	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	20.8
HCM 7th LOS	C

Notes

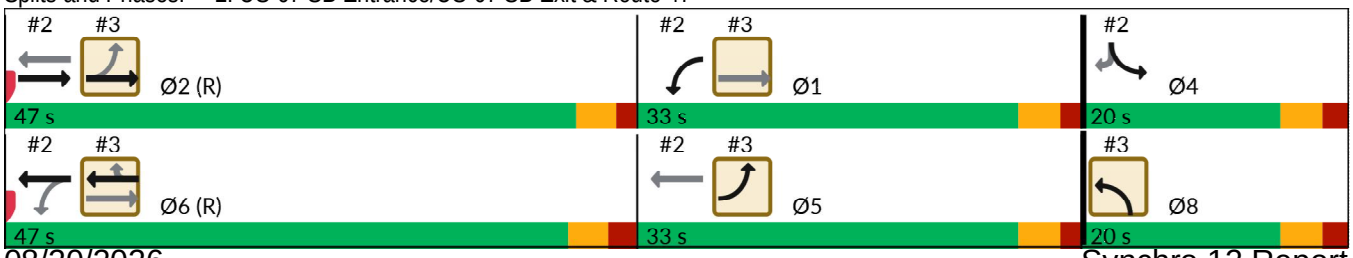
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

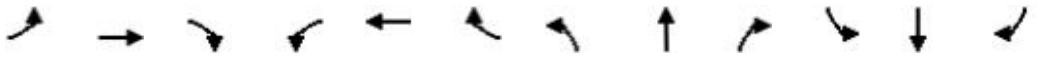
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	315	244	152	572	139	219		
Future Volume (vph)	315	244	152	572	139	219		
Lane Group Flow (vph)	342	265	165	622	151	238		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	47.0		33.0	47.0	20.0	20.0	33.0	20.0
Total Split (%)	47.0%		33.0%	47.0%	20.0%	20.0%	33%	20%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.20	0.15	0.18	0.23	0.61	0.56		
Control Delay (s/veh)	18.5	0.1	0.9	5.9	51.1	10.8		
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.4		
Total Delay (s/veh)	18.5	0.1	0.9	6.3	51.1	11.1		
Queue Length 50th (ft)	65	0	0	118	92	0		
Queue Length 95th (ft)	110	0	11	148	159	69		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1699	1794	1045	2670	256	431		
Starvation Cap Reductn	0	0	0	1394	0	0		
Spillback Cap Reductn	34	0	0	429	0	28		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.21	0.15	0.16	0.49	0.59	0.59		

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	315	244	152	572	0	0	0	0	139	0	219
Future Volume (vph)	0	315	244	152	572	0	0	0	0	139	0	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.53	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	996	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	342	265	165	622	0	0	0	0	151	0	238
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	203
Lane Group Flow (vph)	0	342	265	165	622	0	0	0	0	151	0	35
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		49.5	100.0	75.9	70.9					14.6		14.6
Effective Green, g (s)		49.5	100.0	75.9	70.9					14.6		14.6
Actuated g/C Ratio		0.50	1.00	0.76	0.71					0.15		0.15
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1693	1794	925	2686					249		223
v/s Ratio Prot		0.10		0.04	c0.14					c0.09		
v/s Ratio Perm			0.15	0.10	0.03							0.02
v/c Ratio		0.20	0.15	0.18	0.23					0.61		0.16
Uniform Delay, d1		14.2	0.0	3.8	5.1					40.0		37.3
Progression Factor		1.19	1.00	0.14	1.53					1.00		1.00
Incremental Delay, d2		0.2	0.1	0.2	0.1					6.0		0.7
Delay (s)		17.0	0.1	0.7	7.8					46.0		38.0
Level of Service		B	A	A	A					D		D
Approach Delay (s/veh)		9.7			6.3			0.0			41.1	
Approach LOS		A			A			A			D	

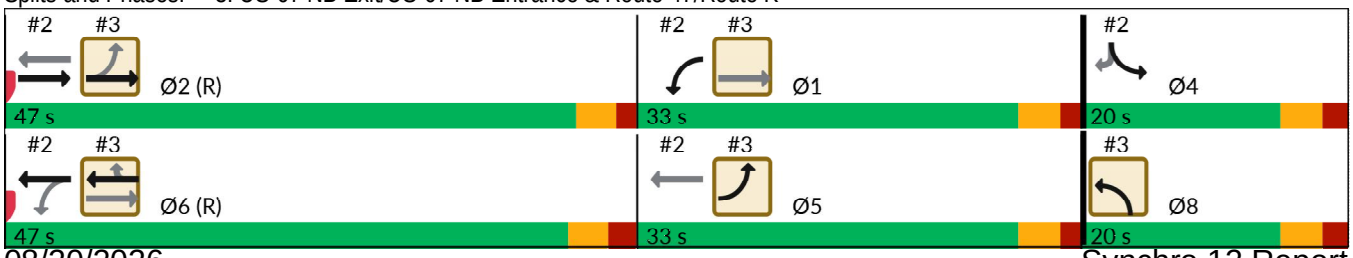
Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

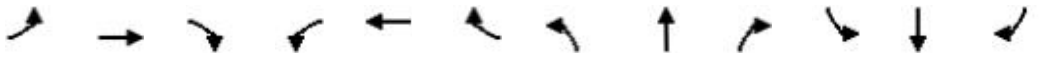
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	105	372	439	83	308	148		
Future Volume (vph)	105	372	439	83	308	148		
Lane Group Flow (vph)	114	404	477	90	335	161		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	33.0	47.0	47.0	47.0	20.0		33.0	20.0
Total Split (%)	33.0%	47.0%	47.0%	47.0%	20.0%		33%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.21	0.31	0.22	0.09	0.67	0.09		
Control Delay (s/veh)	4.6	5.7	8.9	2.1	47.7	0.1		
Queue Delay	0.0	0.7	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	4.6	6.4	8.9	2.1	47.7	0.1		
Queue Length 50th (ft)	15	104	66	0	106	0		
Queue Length 95th (ft)	18	135	95	19	154	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	873	1320	2121	950	514	1794		
Starvation Cap Reductn	0	591	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.13	0.55	0.22	0.09	0.65	0.09		

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K

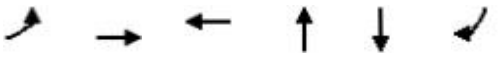




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	372	0	0	439	83	308	0	148	0	0	0
Future Volume (vph)	105	372	0	0	439	83	308	0	148	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.47	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	814	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	404	0	0	477	90	335	0	161	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	0	0	0	0
Lane Group Flow (vph)	114	404	0	0	477	56	335	0	161	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	58.4	75.9			62.0	62.0	14.6		100.0			
Effective Green, g (s)	58.4	75.9			62.0	62.0	14.6		100.0			
Actuated g/C Ratio	0.58	0.76			0.62	0.62	0.15		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	549	1319			2121	916	501		1794			
v/s Ratio Prot	0.02	c0.15			0.14		c0.10					
v/s Ratio Perm	0.10	0.08				0.04			0.09			
v/c Ratio	0.21	0.31			0.22	0.06	0.67		0.09			
Uniform Delay, d1	10.6	3.8			8.4	7.5	40.4		0.0			
Progression Factor	0.64	1.29			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.3			0.2	0.1	4.4		0.1			
Delay (s)	7.2	5.2			8.6	7.6	44.9		0.1			
Level of Service	A	A			A	A	D		A			
Approach Delay (s/veh)		5.6			8.5			30.3			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	162	252	271	14	13	152
Future Volume (vph)	162	252	271	14	13	152
Lane Group Flow (vph)	176	381	341	143	41	165
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	16.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	162	252	98	26	271	17	93	14	25	25	13	152
Future Vol, veh/h	162	252	98	26	271	17	93	14	25	25	13	152
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	176	274	107	28	295	18	101	15	27	27	14	165

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	313	0	0	380	0	0	1038	1049	327	994	1093	304
Stage 1	-	-	-	-	-	-	679	679	-	360	360	-
Stage 2	-	-	-	-	-	-	358	370	-	634	733	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1247	-	-	1178	-	-	209	227	714	224	214	736
Stage 1	-	-	-	-	-	-	441	451	-	658	626	-
Stage 2	-	-	-	-	-	-	660	620	-	467	427	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1247	-	-	1178	-	-	126	190	714	167	179	736
Mov Cap-2 Maneuver	-	-	-	-	-	-	126	190	-	167	179	-
Stage 1	-	-	-	-	-	-	379	387	-	639	608	-
Stage 2	-	-	-	-	-	-	485	602	-	371	366	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.65	0.67	109.19	15.56
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	156	1247	-	-	147	-	-	171	736
HCM Lane V/C Ratio	0.919	0.141	-	-	0.024	-	-	0.241	0.224
HCM Ctrl Dly (s/v)	109.2	8.4	-	-	8.1	0	-	32.6	11.3
HCM Lane LOS	F	A	-	-	A	A	-	D	B
HCM 95th %tile Q(veh)	6.6	0.5	-	-	0.1	-	-	0.9	0.9

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	233	210	1	2
Future Volume (vph)	233	210	1	2
Lane Group Flow (vph)	295	232	13	34
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	233	15	2	210	2	10	1	1	2	2	28
Future Vol, veh/h	24	233	15	2	210	2	10	1	1	2	2	28
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	26	253	16	2	228	2	11	1	1	2	2	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	230	0	0	270	0	0	547	548	261	540	555	229
Stage 1	-	-	-	-	-	-	314	314	-	234	234	-
Stage 2	-	-	-	-	-	-	234	235	-	306	322	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1337	-	-	1294	-	-	448	444	777	453	440	810
Stage 1	-	-	-	-	-	-	697	657	-	769	711	-
Stage 2	-	-	-	-	-	-	769	711	-	704	651	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1337	-	-	1294	-	-	418	433	777	440	429	810
Mov Cap-2 Maneuver	-	-	-	-	-	-	418	433	-	440	429	-
Stage 1	-	-	-	-	-	-	681	641	-	768	710	-
Stage 2	-	-	-	-	-	-	737	709	-	685	636	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.68	0.07	13.51	10.17
HCM LOS			B	B

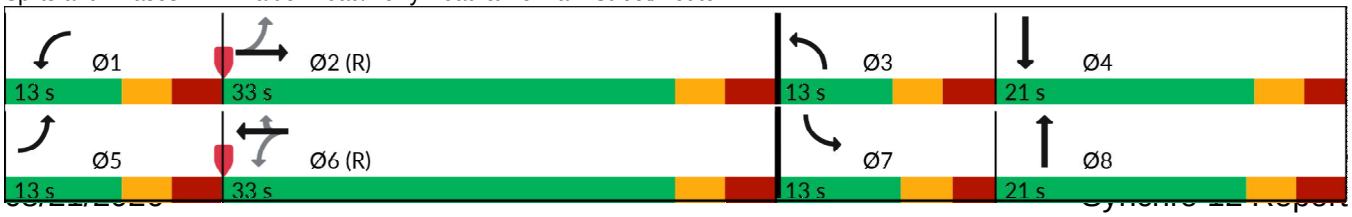
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	436	157	-	-	17	-	-	731
HCM Lane V/C Ratio	0.03	0.02	-	-	0.002	-	-	0.048
HCM Ctrl Dly (s/v)	13.5	7.7	0	-	7.8	0	-	10.2
HCM Lane LOS	B	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0	-	-	0.1

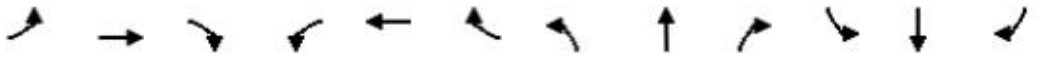
Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	25	758	22	380	100	50	12	128	28
Future Volume (vph)	25	758	22	380	100	50	12	128	28
Lane Group Flow (vph)	27	933	24	413	109	54	59	139	75
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	33.0	13.0	33.0	33.0	13.0	21.0	13.0	21.0
Total Split (%)	16.3%	41.3%	16.3%	41.3%	41.3%	16.3%	26.3%	16.3%	26.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.05	0.94	0.10	0.40	0.11	0.36	0.25	0.84	0.32
Control Delay (s/veh)	8.1	40.3	5.5	7.6	0.4	41.7	16.1	76.8	19.7
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.1	40.3	5.5	7.8	0.4	41.7	16.1	76.8	19.7
Queue Length 50th (ft)	5	393	2	35	0	26	6	71	14
Queue Length 95th (ft)	17	#887	7	150	1	62	39	#171	51
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	551	990	234	1041	972	149	366	165	364
Starvation Cap Reductn	0	0	0	148	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.94	0.10	0.46	0.11	0.36	0.16	0.84	0.21

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 6 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 100
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	758	100	22	380	100	50	12	42	128	28	41
Future Volume (veh/h)	25	758	100	22	380	100	50	12	42	128	28	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	824	109	24	413	109	54	13	46	139	30	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	608	829	110	158	952	807	109	24	85	167	61	91
Arrive On Green	0.04	0.51	0.51	0.07	1.00	1.00	0.06	0.06	0.06	0.09	0.09	0.09
Sat Flow, veh/h	1781	1618	214	1781	1870	1585	1781	376	1330	1781	675	1013
Grp Volume(v), veh/h	27	0	933	24	413	109	54	0	59	139	0	75
Grp Sat Flow(s),veh/h/ln	1781	0	1832	1781	1870	1585	1781	0	1706	1781	0	1688
Q Serve(g_s), s	0.6	0.0	40.5	0.5	0.0	0.0	2.3	0.0	2.7	6.1	0.0	3.4
Cycle Q Clear(g_c), s	0.6	0.0	40.5	0.5	0.0	0.0	2.3	0.0	2.7	6.1	0.0	3.4
Prop In Lane	1.00		0.12	1.00		1.00	1.00		0.78	1.00		0.60
Lane Grp Cap(c), veh/h	608	0	939	158	952	807	109	0	109	167	0	152
V/C Ratio(X)	0.04	0.00	0.99	0.15	0.43	0.14	0.50	0.00	0.54	0.83	0.00	0.49
Avail Cap(c_a), veh/h	694	0	939	250	952	807	156	0	320	167	0	327
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.3	0.0	19.4	18.0	0.0	0.0	36.4	0.0	36.3	35.6	0.0	34.6
Incr Delay (d2), s/veh	0.0	0.0	28.0	0.4	1.4	0.3	3.5	0.0	8.6	28.6	0.0	5.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	0.0	22.4	0.2	0.4	0.1	1.1	0.0	1.4	3.9	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.3	0.0	47.3	18.4	1.4	0.3	39.8	0.0	44.9	64.2	0.0	39.8
LnGrp LOS	A		D	B	A	A	D		D	E		D
Approach Vol, veh/h		960			546			113			214	
Approach Delay, s/veh		46.2			2.0			42.5			55.7	
Approach LOS		D			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	47.0	10.9	13.2	9.2	46.7	13.0	11.1
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	27.0	7.0	* 16	7.0	27.0	7.5	15.0
Max Q Clear Time (g_c+I1), s	2.5	42.5	4.3	5.4	2.6	2.0	8.1	4.7
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	9.2	0.0	0.2

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

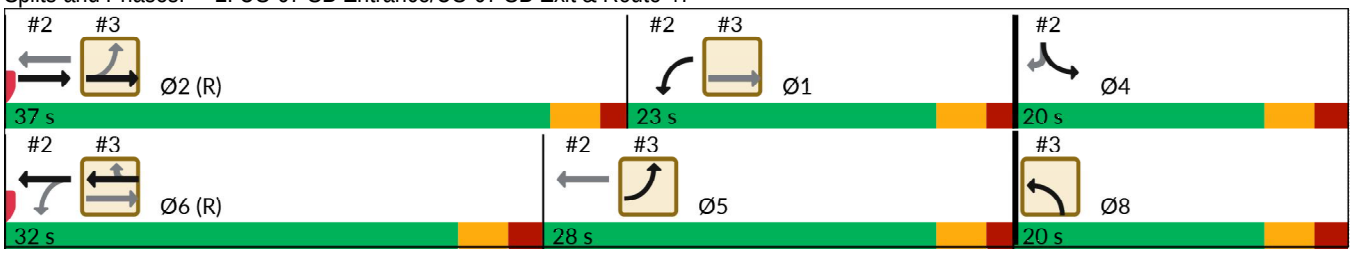
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	471	443	220	434	106	90		
Future Volume (vph)	471	443	220	434	106	90		
Lane Group Flow (vph)	512	482	239	472	115	98		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	37.0		23.0	32.0	20.0	20.0	28.0	20.0
Total Split (%)	46.3%		28.8%	40.0%	25.0%	25.0%	35%	25%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.28	0.27	0.36	0.19	0.42	0.26		
Control Delay (s/veh)	11.4	0.2	6.6	2.8	34.5	3.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	11.4	0.2	6.6	2.8	34.5	3.5		
Queue Length 50th (ft)	68	0	38	39	54	0		
Queue Length 95th (ft)	m73	m0	60	54	97	15		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1857	1794	851	2517	326	413		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.28	0.27	0.28	0.19	0.35	0.24		

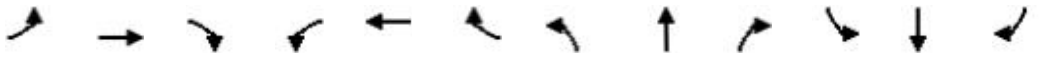
Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	471	443	220	434	0	0	0	0	106	0	90
Future Volume (vph)	0	471	443	220	434	0	0	0	0	106	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.44	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	823	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	512	482	239	472	0	0	0	0	115	0	98
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	0	512	482	239	472	0	0	0	0	115	0	16
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		43.4	80.0	52.3	53.6					12.8		12.8
Effective Green, g (s)		43.4	80.0	52.3	53.6					12.8		12.8
Actuated g/C Ratio		0.54	1.00	0.65	0.67					0.16		0.16
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1855	1794	654	2371					273		244
v/s Ratio Prot		0.15		0.04	0.11					c0.07		
v/s Ratio Perm			c0.27	c0.19	0.03							0.01
v/c Ratio		0.28	0.27	0.37	0.20					0.42		0.06
Uniform Delay, d1		9.8	0.0	7.6	5.0					30.3		28.5
Progression Factor		1.08	1.00	0.89	0.64					1.00		1.00
Incremental Delay, d2		0.2	0.2	0.7	0.1					2.2		0.2
Delay (s)		10.8	0.2	7.4	3.3					32.5		28.8
Level of Service		B	A	A	A					C		C
Approach Delay (s/veh)		5.6			4.7			0.0			30.7	
Approach LOS		A			A			A			C	

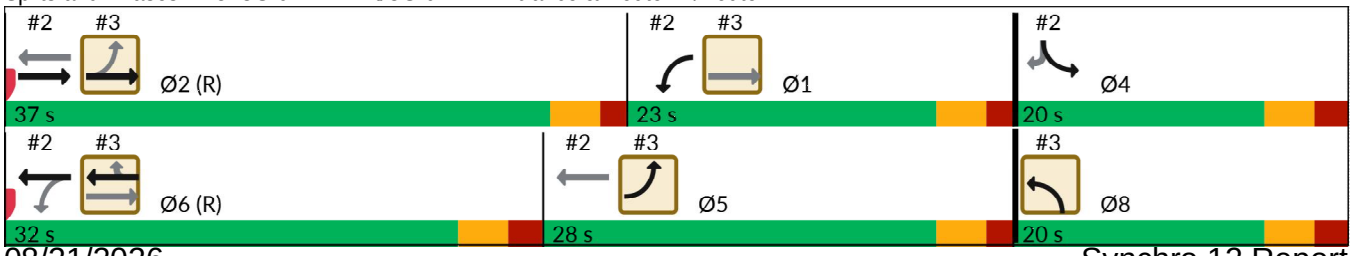
Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

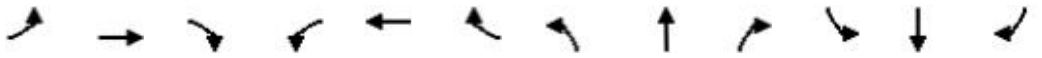
c Critical Lane Group

Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	147	454	465	139	202	156		
Future Volume (vph)	147	454	465	139	202	156		
Lane Group Flow (vph)	160	493	505	151	220	170		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	28.0	37.0	32.0	32.0	20.0		23.0	20.0
Total Split (%)	35.0%	46.3%	40.0%	40.0%	25.0%		29%	25%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.25	0.40	0.28	0.18	0.40	0.09		
Control Delay (s/veh)	3.0	3.2	11.9	3.1	31.8	0.1		
Queue Delay	0.0	0.1	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	3.0	3.3	11.9	3.1	31.8	0.1		
Queue Length 50th (ft)	14	49	64	0	52	0		
Queue Length 95th (ft)	26	68	125	33	80	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	908	1223	1818	856	656	1794		
Starvation Cap Reductn	0	101	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.18	0.44	0.28	0.18	0.34	0.09		

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K

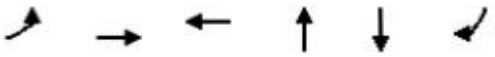




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	454	0	0	465	139	202	0	156	0	0	0
Future Volume (vph)	147	454	0	0	465	139	202	0	156	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.45	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	783	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	493	0	0	505	151	220	0	170	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	71	0	0	0	0	0	0
Lane Group Flow (vph)	160	493	0	0	505	80	220	0	170	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	53.6	53.2			42.5	42.5	12.8		80.0			
Effective Green, g (s)	53.6	53.2			42.5	42.5	12.8		80.0			
Actuated g/C Ratio	0.67	0.67			0.53	0.53	0.16		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	635	1254			1817	785	549		1794			
v/s Ratio Prot	0.03	c0.21			0.15		c0.06					
v/s Ratio Perm	0.14	0.07				0.05			0.09			
v/c Ratio	0.25	0.39			0.28	0.10	0.40		0.09			
Uniform Delay, d1	6.1	6.1			10.3	9.3	30.2		0.0			
Progression Factor	0.43	0.46			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.4	0.4			0.4	0.3	1.0		0.1			
Delay (s)	3.0	3.2			10.7	9.6	31.2		0.1			
Level of Service	A	A			B	A	C		A			
Approach Delay (s/veh)		3.2			10.4			17.6			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	115	385	331	4	13	155
Future Volume (vph)	115	385	331	4	13	155
Lane Group Flow (vph)	125	508	429	147	50	168
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	23.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	385	83	40	331	24	97	4	35	33	13	155
Future Vol, veh/h	115	385	83	40	331	24	97	4	35	33	13	155
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	125	418	90	43	360	26	105	4	38	36	14	168

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	386	0	0	509	0	0	1167	1186	464	1130	1218	373
Stage 1	-	-	-	-	-	-	714	714	-	460	460	-
Stage 2	-	-	-	-	-	-	454	473	-	671	759	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1173	-	-	1056	-	-	170	189	598	181	180	673
Stage 1	-	-	-	-	-	-	422	435	-	581	566	-
Stage 2	-	-	-	-	-	-	586	558	-	446	415	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1173	-	-	1056	-	-	~ 100	160	598	140	153	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 100	160	-	140	153	-
Stage 1	-	-	-	-	-	-	377	389	-	551	536	-
Stage 2	-	-	-	-	-	-	405	529	-	369	371	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	1.66	0.87	191.54	19.19
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	129	1173	-	-	180	-	-	143	673
HCM Lane V/C Ratio	1.149	0.107	-	-	0.041	-	-	0.349	0.25
HCM Ctrl Dly (s/v)	191.5	8.4	-	-	8.6	0	-	43	12.1
HCM Lane LOS	F	A	-	-	A	A	-	E	B
HCM 95th %tile Q(veh)	8.7	0.4	-	-	0.1	-	-	1.4	1

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	343	309	2	1
Future Volume (vph)	343	309	2	1
Lane Group Flow (vph)	477	342	67	25
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	343	84	3	309	3	59	2	1	1	1	21
Future Vol, veh/h	12	343	84	3	309	3	59	2	1	1	1	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	373	91	3	336	3	64	2	1	1	1	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	339	0	0	464	0	0	788	790	418	744	834	338
Stage 1	-	-	-	-	-	-	445	445	-	344	344	-
Stage 2	-	-	-	-	-	-	343	346	-	400	490	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1220	-	-	1097	-	-	309	322	635	331	304	705
Stage 1	-	-	-	-	-	-	593	575	-	671	637	-
Stage 2	-	-	-	-	-	-	672	636	-	626	549	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1220	-	-	1097	-	-	293	316	635	322	298	705
Mov Cap-2 Maneuver	-	-	-	-	-	-	293	316	-	322	298	-
Stage 1	-	-	-	-	-	-	584	566	-	669	634	-
Stage 2	-	-	-	-	-	-	647	633	-	614	541	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.22	0.08	20.72	10.91
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	296	47	-	-	17	-	-	634
HCM Lane V/C Ratio	0.228	0.011	-	-	0.003	-	-	0.039
HCM Ctrl Dly (s/v)	20.7	8	0	-	8.3	0	-	10.9
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.9	0	-	-	0	-	-	0.1



Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	64	550	60	796	81	126	38	143	37
Future Volume (vph)	64	550	60	796	81	126	38	143	37
Lane Group Flow (vph)	70	662	65	865	88	137	90	155	186
Turn Type	pm+pt	NA	pm+pt	NA	Perm	Prot	NA	Prot	NA
Protected Phases	5	2	1	6		3	8	7	4
Permitted Phases	2		6		6				
Detector Phase	5	2	1	6	6	3	8	7	4
Switch Phase									
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	14.0	45.0	14.0	45.0	45.0	18.0	21.0	20.0	23.0
Total Split (%)	14.0%	45.0%	14.0%	45.0%	45.0%	18.0%	21.0%	20.0%	23.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	C-Min	None	None	None	None
v/c Ratio	0.36	0.79	0.23	0.98	0.11	0.72	0.39	0.57	0.58
Control Delay (s/veh)	16.1	32.2	9.1	50.3	0.7	64.2	26.3	49.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	16.1	32.2	9.1	50.3	0.7	64.2	26.3	49.3	18.8
Queue Length 50th (ft)	18	364	8	~627	0	86	25	96	24
Queue Length 95th (ft)	45	#654	m20	#948	m7	#170	70	163	87
Internal Link Dist (ft)		548		332			915		631
Turn Bay Length (ft)	85		125			65		240	
Base Capacity (vph)	203	840	289	880	832	205	315	282	407
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.79	0.22	0.98	0.11	0.67	0.29	0.55	0.46

Intersection Summary

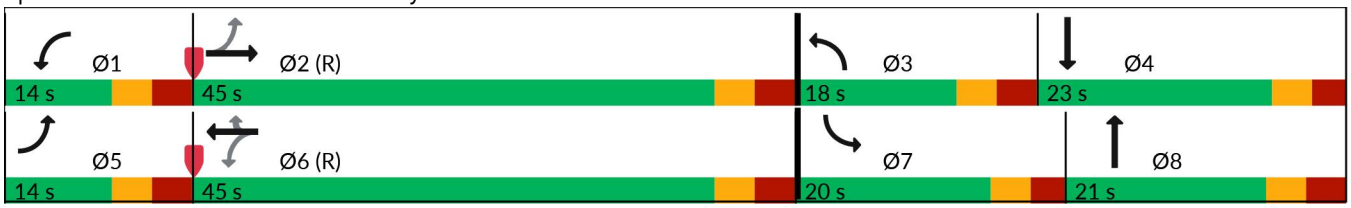
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 90
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

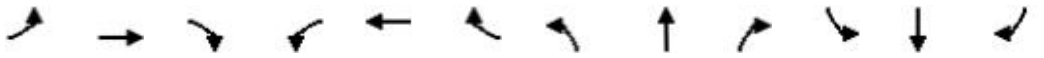
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	550	59	60	796	81	126	38	45	143	37	134
Future Volume (veh/h)	64	550	59	60	796	81	126	38	45	143	37	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	598	64	65	865	88	137	41	49	155	40	146
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	237	783	84	311	879	745	168	105	125	187	48	175
Arrive On Green	0.06	0.47	0.47	0.12	0.94	0.94	0.09	0.13	0.13	0.11	0.14	0.14
Sat Flow, veh/h	1781	1661	178	1781	1870	1585	1781	807	965	1781	352	1286
Grp Volume(v), veh/h	70	0	662	65	865	88	137	0	90	155	0	186
Grp Sat Flow(s),veh/h/ln	1781	0	1838	1781	1870	1585	1781	0	1772	1781	0	1639
Q Serve(g_s), s	1.9	0.0	29.8	1.7	37.2	0.4	7.5	0.0	4.7	8.5	0.0	11.1
Cycle Q Clear(g_c), s	1.9	0.0	29.8	1.7	37.2	0.4	7.5	0.0	4.7	8.5	0.0	11.1
Prop In Lane	1.00		0.10	1.00		1.00	1.00		0.54	1.00		0.78
Lane Grp Cap(c), veh/h	237	0	866	311	879	745	168	0	230	187	0	223
V/C Ratio(X)	0.30	0.00	0.76	0.21	0.98	0.12	0.82	0.00	0.39	0.83	0.00	0.83
Avail Cap(c_a), veh/h	272	0	866	349	879	745	214	0	266	258	0	287
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	0.93	0.93	0.93	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	19.3	0.0	21.8	15.3	2.7	1.6	44.5	0.0	39.9	43.8	0.0	42.1
Incr Delay (d2), s/veh	0.7	0.0	6.3	0.3	25.7	0.3	17.4	0.0	2.3	14.5	0.0	19.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	0.0	13.7	0.7	7.5	0.2	4.1	0.0	2.2	4.5	0.0	5.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	20.0	0.0	28.2	15.6	28.5	1.9	61.8	0.0	42.2	58.3	0.0	62.0
LnGrp LOS	C		C	B	C	A	E		D	E		E
Approach Vol, veh/h		732			1018			227			341	
Approach Delay, s/veh		27.4			25.3			54.0			60.3	
Approach LOS		C			C			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	53.1	15.4	19.6	12.0	53.0	16.0	19.0
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	8.0	39.0	12.0	* 18	8.0	39.0	14.5	15.0
Max Q Clear Time (g_c+I1), s	3.7	31.8	9.5	13.1	3.9	39.2	10.5	6.7
Green Ext Time (p_c), s	0.0	5.0	0.1	0.6	0.0	0.0	0.1	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	33.9
HCM 7th LOS	C

Notes

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	398	309	193	723	176	276		
Future Volume (vph)	398	309	193	723	176	276		
Lane Group Flow (vph)	433	336	210	786	191	300		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	47.0		33.0	47.0	20.0	20.0	33.0	20.0
Total Split (%)	47.0%		33.0%	47.0%	20.0%	20.0%	33%	20%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.26	0.19	0.24	0.30	0.75	0.64		
Control Delay (s/veh)	18.5	0.2	1.8	6.6	59.7	13.4		
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.6		
Total Delay (s/veh)	18.5	0.2	1.8	7.0	59.7	14.0		
Queue Length 50th (ft)	90	0	6	151	120	12		
Queue Length 95th (ft)	m98	m0	27	183	#225	96		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1641	1794	964	2654	256	466		
Starvation Cap Reductn	0	0	0	1276	0	0		
Spillback Cap Reductn	47	0	0	405	0	31		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.27	0.19	0.22	0.57	0.75	0.69		

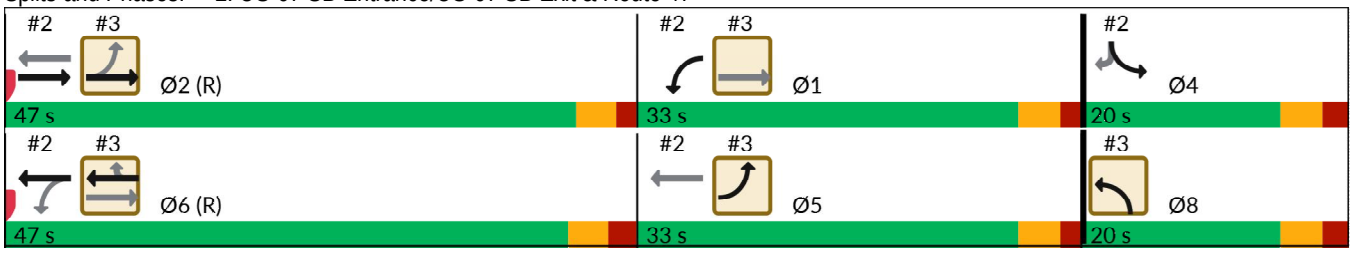
Intersection Summary

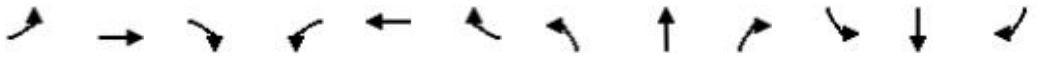
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	398	309	193	723	0	0	0	0	176	0	276
Future Volume (vph)	0	398	309	193	723	0	0	0	0	176	0	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.47	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	878	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	336	210	786	0	0	0	0	191	0	300
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	237
Lane Group Flow (vph)	0	433	336	210	786	0	0	0	0	191	0	63
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		48.0	100.0	75.5	70.5					15.0		15.0
Effective Green, g (s)		48.0	100.0	75.5	70.5					15.0		15.0
Actuated g/C Ratio		0.48	1.00	0.76	0.71					0.15		0.15
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1642	1794	868	2671					256		229
v/s Ratio Prot		0.13		0.06	c0.18					c0.11		
v/s Ratio Perm			0.19	0.13	0.04							0.04
v/c Ratio		0.26	0.19	0.24	0.29					0.75		0.27
Uniform Delay, d1		15.5	0.0	4.9	5.5					40.7		37.7
Progression Factor		1.17	1.00	0.27	1.57					1.00		1.00
Incremental Delay, d2		0.3	0.2	0.3	0.1					13.3		1.4
Delay (s)		18.4	0.2	1.6	8.7					54.0		39.0
Level of Service		B	A	A	A					D		D
Approach Delay (s/veh)		10.5			7.2			0.0			44.9	
Approach LOS		B			A			A			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

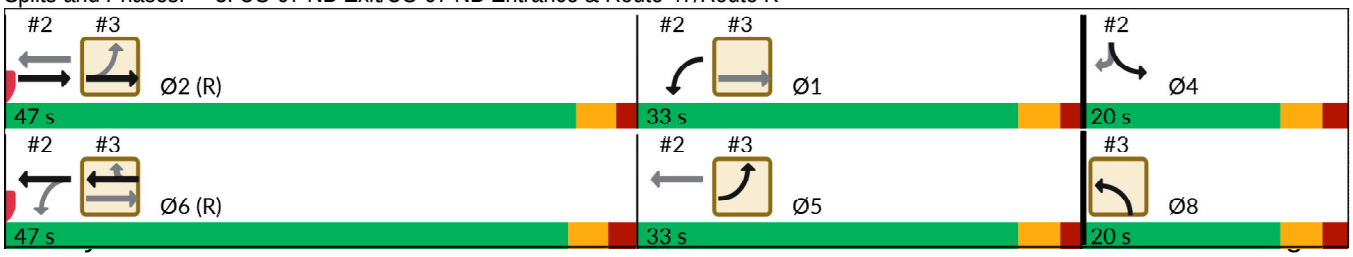
c Critical Lane Group

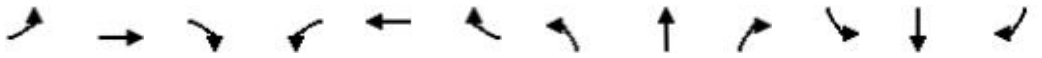
Lane Group	EBL	EBT	WBT	WBR	NBL	NBR	Ø1	Ø4
Lane Configurations								
Traffic Volume (vph)	132	470	555	105	389	187		
Future Volume (vph)	132	470	555	105	389	187		
Lane Group Flow (vph)	143	511	603	114	423	203		
Turn Type	pm+pt	NA	NA	Perm	Prot	Free		
Protected Phases	5	2	6		8		1	4
Permitted Phases	2	1 2 6		6		Free		
Detector Phase	5	2	6	6	8			
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0	12.0		11.5	12.0
Total Split (s)	33.0	47.0	47.0	47.0	20.0		33.0	20.0
Total Split (%)	33.0%	47.0%	47.0%	47.0%	20.0%		33%	20%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0	5.0			
Lead/Lag	Lag	Lead	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	C-Min	None		None	None
v/c Ratio	0.30	0.39	0.29	0.12	0.82	0.11		
Control Delay (s/veh)	5.0	6.8	9.6	1.9	55.8	0.1		
Queue Delay	0.0	0.9	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	5.0	7.7	9.6	1.9	55.8	0.1		
Queue Length 50th (ft)	15	134	90	0	138	0		
Queue Length 95th (ft)	18	291	119	20	#213	0		
Internal Link Dist (ft)		285	345					
Turn Bay Length (ft)				120		125		
Base Capacity (vph)	800	1312	2099	950	514	1794		
Starvation Cap Reductn	0	507	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.18	0.63	0.29	0.12	0.82	0.11		

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K

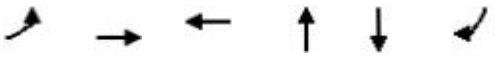




Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	470	0	0	555	105	389	0	187	0	0	0
Future Volume (vph)	132	470	0	0	555	105	389	0	187	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0	5.0	5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95	1.00	0.97		1.00			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1652	1739			3421	1478	3433		1794			
Flt Permitted	0.40	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	687	1739			3421	1478	3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	511	0	0	603	114	423	0	203	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	44	0	0	0	0	0	0
Lane Group Flow (vph)	143	511	0	0	603	70	423	0	203	0	0	0
Turn Type	pm+pt	NA			NA	Perm	Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6				6			Free			
Actuated Green, G (s)	57.1	75.5			61.4	61.4	15.0		100.0			
Effective Green, g (s)	57.1	75.5			61.4	61.4	15.0		100.0			
Actuated g/C Ratio	0.57	0.76			0.61	0.61	0.15		1.00			
Clearance Time (s)	4.5	4.5			5.0	5.0	5.0					
Vehicle Extension (s)	5.0	5.0			5.0	5.0	5.0					
Lane Grp Cap (vph)	480	1312			2100	907	514		1794			
v/s Ratio Prot	0.03	c0.19			0.18		c0.12					
v/s Ratio Perm	0.14	0.11				0.05			0.11			
v/c Ratio	0.30	0.39			0.29	0.08	0.82		0.11			
Uniform Delay, d1	13.2	4.3			9.0	7.8	41.2		0.0			
Progression Factor	0.59	1.36			1.00	1.00	1.00		1.00			
Incremental Delay, d2	0.7	0.4			0.3	0.2	11.4		0.1			
Delay (s)	8.5	6.1			9.4	8.0	52.7		0.1			
Level of Service	A	A			A	A	D		A			
Approach Delay (s/veh)		6.7			9.2			35.6			0.0	
Approach LOS		A			A			D			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group



Lane Group	EBL	EBT	WBT	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	204	318	343	14	17	193
Future Volume (vph)	204	318	343	14	17	193
Lane Group Flow (vph)	222	453	424	143	52	210
Sign Control		Free	Free	Stop	Stop	

Intersection Summary

Control Type: Unsignalized

Intersection	
Int Delay, s/veh	46.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	204	318	98	26	343	21	93	14	25	31	17	193
Future Vol, veh/h	204	318	98	26	343	21	93	14	25	31	17	193
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	0	-	-	-	-	-	-	-	-	-	-	40
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	222	346	107	28	373	23	101	15	27	34	18	210

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	396	0	0	452	0	0	1281	1295	399	1238	1336	384
Stage 1	-	-	-	-	-	-	842	842	-	441	441	-
Stage 2	-	-	-	-	-	-	439	452	-	797	896	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1163	-	-	1108	-	-	142	162	651	153	153	663
Stage 1	-	-	-	-	-	-	359	380	-	595	577	-
Stage 2	-	-	-	-	-	-	597	570	-	380	359	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1163	-	-	1108	-	-	~ 67	127	651	103	120	663
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 67	127	-	103	120	-
Stage 1	-	-	-	-	-	-	290	307	-	576	558	-
Stage 2	-	-	-	-	-	-	382	552	-	280	290	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	2.9	0.56	$ 433.63	23.38
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	86	1163	-	-	119	-	-	109	663
HCM Lane V/C Ratio	1.677	0.191	-	-	0.025	-	-	0.48	0.316
HCM Ctrl Dly (s/v)	$ 433.6	8.8	-	-	8.3	0	-	65.4	12.9
HCM Lane LOS	F	A	-	-	A	A	-	F	B
HCM 95th %tile Q(veh)	11.8	0.7	-	-	0.1	-	-	2.1	1.4

Notes	
~: Volume exceeds capacity	$: Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBT	WBT	NBT	SBT
Lane Configurations				
Traffic Volume (vph)	295	266	1	2
Future Volume (vph)	295	266	1	2
Lane Group Flow (vph)	374	294	16	42
Sign Control	Free	Free	Stop	Stop

Intersection Summary
Control Type: Unsignalized

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	30	295	18	3	266	2	13	1	1	2	2	35
Future Vol, veh/h	30	295	18	3	266	2	13	1	1	2	2	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	33	321	20	3	289	2	14	1	1	2	2	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	291	0	0	340	0	0	692	693	330	683	702	290
Stage 1	-	-	-	-	-	-	396	396	-	297	297	-
Stage 2	-	-	-	-	-	-	297	298	-	386	405	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1270	-	-	1219	-	-	358	367	711	363	362	749
Stage 1	-	-	-	-	-	-	630	604	-	712	668	-
Stage 2	-	-	-	-	-	-	712	667	-	637	598	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1270	-	-	1219	-	-	326	354	711	349	350	749
Mov Cap-2 Maneuver	-	-	-	-	-	-	326	354	-	349	350	-
Stage 1	-	-	-	-	-	-	610	585	-	710	666	-
Stage 2	-	-	-	-	-	-	671	665	-	615	579	-

Approach	EB	WB	NB	SB
HCM Ctrl Dly, s/v	0.69	0.09	16.12	10.73
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	340	156	-	-	20	-	-	670
HCM Lane V/C Ratio	0.048	0.026	-	-	0.003	-	-	0.063
HCM Ctrl Dly (s/v)	16.1	7.9	0	-	8	0	-	10.7
HCM Lane LOS	C	A	A	-	A	A	-	B
HCM 95th %tile Q(veh)	0.2	0.1	-	-	0	-	-	0.2

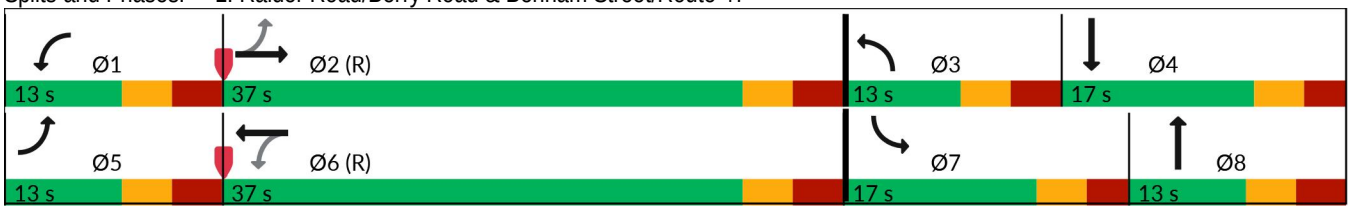
Signalized Corridor Alternative

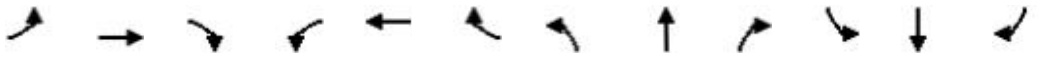
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	20	600	18	300	39	9	102	22
Future Volume (vph)	20	600	18	300	39	9	102	22
Lane Group Flow (vph)	22	738	20	412	42	46	111	59
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6					
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	37.0	13.0	37.0	13.0	13.0	17.0	17.0
Total Split (%)	16.3%	46.3%	16.3%	46.3%	16.3%	16.3%	21.3%	21.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.03	0.37	0.04	0.20	0.28	0.25	0.51	0.25
Control Delay (s/veh)	8.3	12.8	4.7	6.0	39.4	19.0	41.1	19.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.3	12.8	4.7	6.0	39.4	19.0	41.1	19.4
Queue Length 50th (ft)	5	98	1	35	20	5	53	11
Queue Length 95th (ft)	15	204	8	35	52	36	102	44
Internal Link Dist (ft)		548		332		915		631
Turn Bay Length (ft)	85		125		65		240	
Base Capacity (vph)	632	2013	459	2065	149	186	254	273
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.03	0.37	0.04	0.20	0.28	0.25	0.44	0.22

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 6 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	20	600	79	18	300	79	39	9	33	102	22	32
Future Volume (veh/h)	20	600	79	18	300	79	39	9	33	102	22	32
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	22	652	86	20	326	86	42	10	36	111	24	35
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	673	1701	224	447	1497	389	95	21	75	143	53	77
Arrive On Green	0.03	0.54	0.54	0.06	1.00	1.00	0.05	0.06	0.06	0.08	0.08	0.08
Sat Flow, veh/h	1781	3157	416	1781	2791	725	1781	371	1334	1781	687	1002
Grp Volume(v), veh/h	22	367	371	20	206	206	42	0	46	111	0	59
Grp Sat Flow(s),veh/h/ln	1781	1777	1796	1781	1777	1740	1781	0	1705	1781	0	1690
Q Serve(g_s), s	0.4	9.6	9.6	0.4	0.0	0.0	1.8	0.0	2.1	4.9	0.0	2.7
Cycle Q Clear(g_c), s	0.4	9.6	9.6	0.4	0.0	0.0	1.8	0.0	2.1	4.9	0.0	2.7
Prop In Lane	1.00		0.23	1.00		0.42	1.00		0.78	1.00		0.59
Lane Grp Cap(c), veh/h	673	957	967	447	953	933	95	0	96	143	0	130
V/C Ratio(X)	0.03	0.38	0.38	0.04	0.22	0.22	0.44	0.00	0.48	0.78	0.00	0.45
Avail Cap(c_a), veh/h	768	957	967	547	953	933	156	0	149	256	0	243
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	7.5	10.7	10.7	7.9	0.0	0.0	36.7	0.0	36.6	36.1	0.0	35.3
Incr Delay (d2), s/veh	0.0	1.2	1.2	0.0	0.5	0.5	3.2	0.0	7.8	8.8	0.0	5.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	3.7	3.8	0.1	0.1	0.1	0.9	0.0	1.1	2.4	0.0	1.3
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	7.5	11.9	11.9	7.9	0.5	0.5	40.0	0.0	44.5	44.9	0.0	40.6
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		760			432			88			170	
Approach Delay, s/veh		11.8			0.9			42.3			43.4	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.5	49.1	10.2	12.1	8.7	48.9	11.9	10.5
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	31.0	7.0	* 12	7.0	31.0	11.5	7.0
Max Q Clear Time (g_c+I1), s	2.4	11.6	3.8	4.7	2.4	2.0	6.9	4.1
Green Ext Time (p_c), s	0.0	11.2	0.0	0.2	0.0	7.8	0.1	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	14.1
HCM 7th LOS	B

Notes

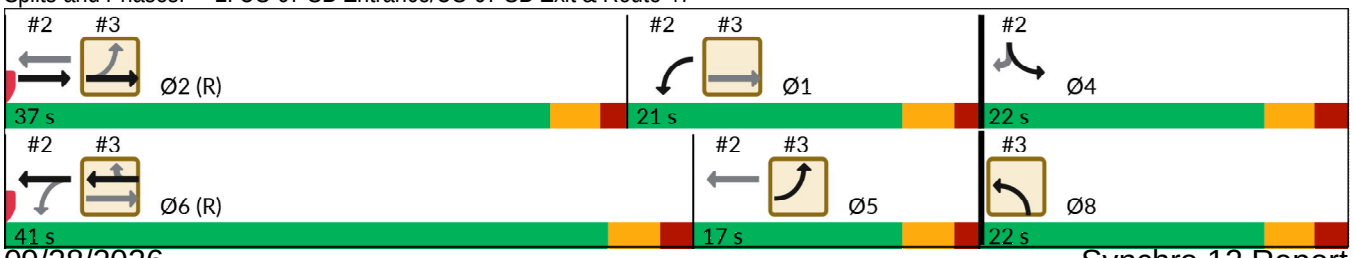
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

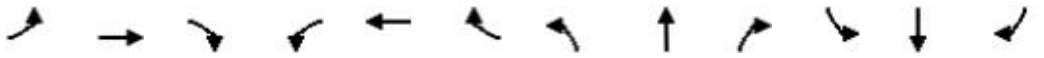
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	373	350	174	343	84	71		
Future Volume (vph)	373	350	174	343	84	71		
Lane Group Flow (vph)	405	380	189	373	91	77		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	37.0		21.0	41.0	22.0	22.0	17.0	22.0
Total Split (%)	46.3%		26.3%	51.3%	27.5%	27.5%	21%	28%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.22	0.21	0.24	0.14	0.36	0.26		
Control Delay (s/veh)	12.5	0.3	4.0	2.6	34.2	9.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	12.5	0.3	4.0	2.6	34.2	9.1		
Queue Length 50th (ft)	36	0	30	30	42	0		
Queue Length 95th (ft)	80	0	49	43	82	33		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1859	1794	917	2577	363	389		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.22	0.21	0.21	0.14	0.25	0.20		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	373	350	174	343	0	0	0	0	84	0	71
Future Volume (vph)	0	373	350	174	343	0	0	0	0	84	0	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.51	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	947	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	405	380	189	373	0	0	0	0	91	0	77
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	66
Lane Group Flow (vph)	0	405	380	189	373	0	0	0	0	91	0	11
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		42.7	80.0	58.8	53.8					11.7		11.7
Effective Green, g (s)		42.7	80.0	58.8	53.8					11.7		11.7
Actuated g/C Ratio		0.53	1.00	0.74	0.67					0.15		0.15
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1825	1794	815	2601					250		223
v/s Ratio Prot		0.12		0.03	0.08					c0.05		
v/s Ratio Perm			c0.21	c0.14	0.02							0.01
v/c Ratio		0.22	0.21	0.23	0.14					0.36		0.05
Uniform Delay, d1		9.9	0.0	3.7	4.7					30.8		29.4
Progression Factor		1.16	1.00	0.78	0.69					1.00		1.00
Incremental Delay, d2		0.3	0.3	0.3	0.1					1.9		0.2
Delay (s)		11.7	0.3	3.2	3.4					32.7		29.6
Level of Service		B	A	A	A					C		C
Approach Delay (s/veh)		6.2			3.3			0.0			31.3	
Approach LOS		A			A			A			C	

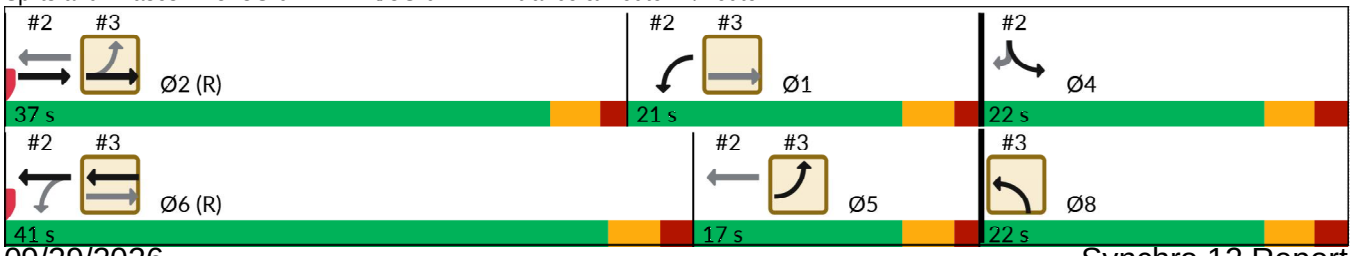
Intersection Summary			
HCM 2000 Control Delay (s/veh)	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	37.5%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

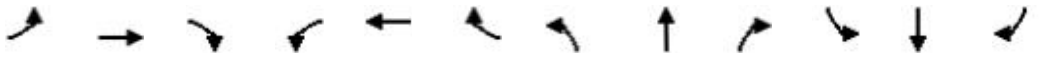
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBR	Ø1	Ø4
Lane Configurations							
Traffic Volume (vph)	116	359	368	160	123		
Future Volume (vph)	116	359	368	160	123		
Lane Group Flow (vph)	126	390	520	174	134		
Turn Type	pm+pt	NA	NA	Prot	Free		
Protected Phases	5	2	6	8		1	4
Permitted Phases	2	1 2 6			Free		
Detector Phase	5	2	6	8			
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0		11.5	12.0
Total Split (s)	17.0	37.0	41.0	22.0		21.0	22.0
Total Split (%)	21.3%	46.3%	51.3%	27.5%		26%	28%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0			
Lead/Lag	Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	None		None	None
v/c Ratio	0.21	0.31	0.26	0.35	0.07		
Control Delay (s/veh)	3.6	2.8	8.0	32.0	0.1		
Queue Delay	0.0	0.1	0.0	0.0	0.0		
Total Delay (s/veh)	3.6	2.9	8.0	32.0	0.1		
Queue Length 50th (ft)	10	38	55	41	0		
Queue Length 95th (ft)	23	55	95	67	0		
Internal Link Dist (ft)		285	345				
Turn Bay Length (ft)					125		
Base Capacity (vph)	678	1258	2005	729	1794		
Starvation Cap Reductn	0	224	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.19	0.38	0.26	0.24	0.07		

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	116	359	0	0	368	110	160	0	123	0	0	0
Future Volume (vph)	116	359	0	0	368	110	160	0	123	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0		5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95		0.97		1.00			
Frt	1.00	1.00			0.97		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1652	1739			3303		3433		1794			
Flt Permitted	0.45	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	782	1739			3303		3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	126	390	0	0	400	120	174	0	134	0	0	0
RTOR Reduction (vph)	0	0	0	0	26	0	0	0	0	0	0	0
Lane Group Flow (vph)	126	390	0	0	494	0	174	0	134	0	0	0
Turn Type	pm+pt	NA			NA		Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6							Free			
Actuated Green, G (s)	48.8	58.8			47.1		11.7		80.0			
Effective Green, g (s)	48.8	58.8			47.1		11.7		80.0			
Actuated g/C Ratio	0.61	0.74			0.59		0.15		1.00			
Clearance Time (s)	4.5	4.5			5.0		5.0					
Vehicle Extension (s)	5.0	5.0			5.0		5.0					
Lane Grp Cap (vph)	549	1278			1944		502		1794			
v/s Ratio Prot	0.02	c0.16			0.15		c0.05					
v/s Ratio Perm	0.12	0.06							0.07			
v/c Ratio	0.23	0.31			0.25		0.35		0.07			
Uniform Delay, d1	7.6	3.6			8.0		30.7		0.0			
Progression Factor	0.61	0.52			1.00		1.00		1.00			
Incremental Delay, d2	0.4	0.3			0.3		0.9		0.1			
Delay (s)	5.1	2.2			8.3		31.6		0.1			
Level of Service	A	A			A		C		A			
Approach Delay (s/veh)		2.9			8.3			17.9			0.0	
Approach LOS		A			A			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.0%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

c Critical Lane Group

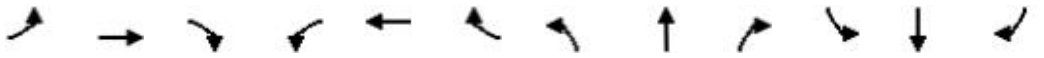
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	91	305	40	262	97	4	26	10
Future Volume (vph)	91	305	40	262	97	4	26	10
Lane Group Flow (vph)	99	422	43	306	105	42	28	144
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	12.0	41.0	11.0	40.0	12.0	24.0	24.0	36.0
Total Split (%)	12.0%	41.0%	11.0%	40.0%	12.0%	24.0%	24.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.15	0.40	0.07	0.30	0.45	0.16	0.13	0.60
Control Delay (s/veh)	7.9	15.0	8.1	15.5	37.3	15.8	29.9	19.9
Queue Delay	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.9	15.5	8.1	15.5	37.3	15.8	29.9	19.9
Queue Length 50th (ft)	21	153	9	107	56	2	14	7
Queue Length 95th (ft)	48	274	25	198	96	33	35	63
Internal Link Dist (ft)		345		628		146		525
Turn Bay Length (ft)			200		100		100	
Base Capacity (vph)	658	1046	588	1035	231	366	386	558
Starvation Cap Reductn	0	291	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.56	0.07	0.30	0.45	0.11	0.07	0.26

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated

Splits and Phases: 4: Circle K Access Road/Northwood Drive & Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	91	305	83	40	262	19	97	4	35	26	10	122
Future Volume (veh/h)	91	305	83	40	262	19	97	4	35	26	10	122
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1945
Adj Flow Rate, veh/h	99	332	90	43	285	21	105	4	38	28	11	133
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	635	780	212	533	927	68	213	20	189	300	14	170
Arrive On Green	0.05	0.55	0.55	0.03	0.54	0.54	0.06	0.12	0.12	0.05	0.11	0.11
Sat Flow, veh/h	1781	1417	384	1781	1721	127	1781	159	1513	1781	123	1481
Grp Volume(v), veh/h	99	0	422	43	0	306	105	0	42	28	0	144
Grp Sat Flow(s),veh/h/ln	1781	0	1801	1781	0	1848	1781	0	1673	1781	0	1604
Q Serve(g_s), s	2.4	0.0	13.8	1.1	0.0	9.2	5.2	0.0	2.3	1.3	0.0	8.7
Cycle Q Clear(g_c), s	2.4	0.0	13.8	1.1	0.0	9.2	5.2	0.0	2.3	1.3	0.0	8.7
Prop In Lane	1.00		0.21	1.00		0.07	1.00		0.90	1.00		0.92
Lane Grp Cap(c), veh/h	635	0	992	533	0	995	213	0	208	300	0	184
V/C Ratio(X)	0.16	0.00	0.43	0.08	0.00	0.31	0.49	0.00	0.20	0.09	0.00	0.78
Avail Cap(c_a), veh/h	659	0	992	560	0	995	213	0	301	532	0	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.6	0.0	13.2	10.1	0.0	12.8	36.6	0.0	39.3	35.5	0.0	43.1
Incr Delay (d2), s/veh	0.1	0.0	1.3	0.1	0.0	0.8	1.8	0.0	0.5	0.1	0.0	7.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.9	0.0	5.6	0.4	0.0	3.9	2.3	0.0	1.0	0.6	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.7	0.0	14.5	10.2	0.0	13.6	38.4	0.0	39.8	35.6	0.0	50.2
LnGrp LOS	A		B	B		B	D		D	D		D
Approach Vol, veh/h		521			349			147			172	
Approach Delay, s/veh		13.6			13.1			38.8			47.8	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	61.1	12.0	17.5	10.7	59.9	11.0	18.5
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	35.0	6.0	30.0	6.0	34.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	3.1	15.8	7.2	10.7	4.4	11.2	3.3	4.3
Green Ext Time (p_c), s	0.0	2.6	0.0	0.8	0.0	1.8	0.0	0.1

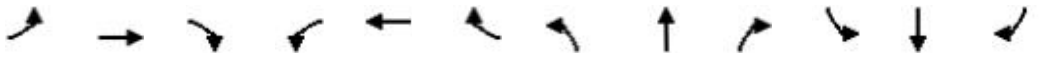
Intersection Summary	
HCM 7th Control Delay, s/veh	21.5
HCM 7th LOS	C

Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	51	435	48	630	99	30	113	29
Future Volume (vph)	51	435	48	630	99	30	113	29
Lane Group Flow (vph)	55	524	52	755	108	71	123	147
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6					
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	45.0	13.0	45.0	21.0	21.0	21.0	21.0
Total Split (%)	13.0%	45.0%	13.0%	45.0%	21.0%	21.0%	21.0%	21.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.15	0.32	0.11	0.44	0.56	0.33	0.48	0.53
Control Delay (s/veh)	11.0	17.0	5.2	10.7	52.4	26.1	46.7	19.6
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.0	17.0	5.2	10.8	52.4	26.1	46.7	19.6
Queue Length 50th (ft)	13	103	5	202	67	20	76	19
Queue Length 95th (ft)	36	169	17	115	119	60	131	76
Internal Link Dist (ft)		548		332		915		631
Turn Bay Length (ft)	85		125		65		240	
Base Capacity (vph)	368	1639	476	1699	256	306	292	352
Starvation Cap Reductn	0	0	0	287	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.32	0.11	0.53	0.42	0.23	0.42	0.42

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	51	435	47	48	630	64	99	30	35	113	29	106
Future Volume (veh/h)	51	435	47	48	630	64	99	30	35	113	29	106
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	55	473	51	52	685	70	108	33	38	123	32	115
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	537	1681	180	551	1686	172	137	87	101	154	39	142
Arrive On Green	0.05	0.52	0.52	0.11	1.00	1.00	0.08	0.11	0.11	0.09	0.11	0.11
Sat Flow, veh/h	1781	3237	348	1781	3255	332	1781	825	950	1781	357	1283
Grp Volume(v), veh/h	55	259	265	52	374	381	108	0	71	123	0	147
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1811	1781	0	1774	1781	0	1639
Q Serve(g_s), s	1.4	8.2	8.3	1.3	0.0	0.0	6.0	0.0	3.7	6.8	0.0	8.8
Cycle Q Clear(g_c), s	1.4	8.2	8.3	1.3	0.0	0.0	6.0	0.0	3.7	6.8	0.0	8.8
Prop In Lane	1.00		0.19	1.00		0.18	1.00		0.54	1.00		0.78
Lane Grp Cap(c), veh/h	537	922	939	551	920	938	137	0	188	154	0	181
V/C Ratio(X)	0.10	0.28	0.28	0.09	0.41	0.41	0.79	0.00	0.38	0.80	0.00	0.81
Avail Cap(c_a), veh/h	564	922	939	580	920	938	267	0	266	276	0	254
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.96	0.96	0.96	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	9.4	13.5	13.5	9.3	0.0	0.0	45.4	0.0	41.6	44.8	0.0	43.5
Incr Delay (d2), s/veh	0.1	0.8	0.8	0.1	1.3	1.3	9.7	0.0	2.7	9.2	0.0	19.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	3.4	3.4	0.5	0.3	0.3	3.0	0.0	1.8	3.4	0.0	4.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	9.5	14.3	14.3	9.3	1.3	1.3	55.0	0.0	44.3	54.0	0.0	62.5
LnGrp LOS	A	B	B	A	A	A	E		D	D		E
Approach Vol, veh/h		579			807			179			270	
Approach Delay, s/veh		13.8			1.8			50.8			58.6	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	57.9	13.7	17.1	11.5	57.8	14.1	16.6
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	39.0	15.0	* 16	7.0	39.0	15.5	15.0
Max Q Clear Time (g_c+I1), s	3.3	10.3	8.0	10.8	3.4	2.0	8.8	5.7
Green Ext Time (p_c), s	0.0	10.1	0.1	0.5	0.0	17.1	0.1	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	18.7
HCM 7th LOS	B

Notes

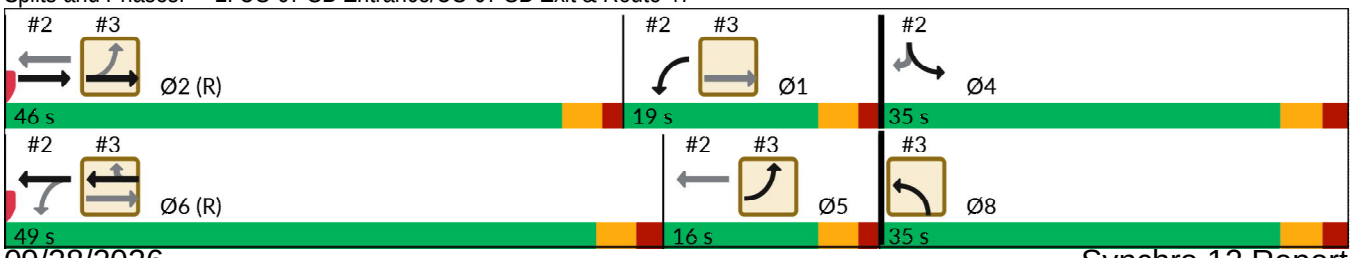
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

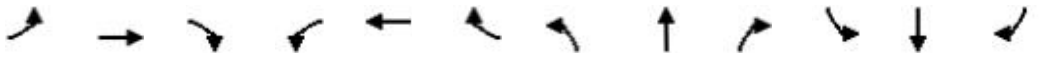
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	315	244	152	572	139	219		
Future Volume (vph)	315	244	152	572	139	219		
Lane Group Flow (vph)	342	265	165	622	151	238		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	46.0		19.0	49.0	35.0	35.0	16.0	35.0
Total Split (%)	46.0%		19.0%	49.0%	35.0%	35.0%	16%	35%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.22	0.15	0.18	0.24	0.51	0.52		
Control Delay (s/veh)	14.5	0.2	0.8	7.5	43.2	8.8		
Queue Delay	0.0	0.0	0.0	0.3	0.0	0.0		
Total Delay (s/veh)	14.5	0.2	0.8	7.8	43.2	8.8		
Queue Length 50th (ft)	54	0	0	118	90	0		
Queue Length 95th (ft)	72	0	2	148	145	62		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1635	1794	902	2574	513	625		
Starvation Cap Reductn	0	0	0	1274	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.21	0.15	0.18	0.48	0.29	0.38		

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	315	244	152	572	0	0	0	0	139	0	219
Future Volume (vph)	0	315	244	152	572	0	0	0	0	139	0	219
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.53	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	986	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	342	265	165	622	0	0	0	0	151	0	238
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	197
Lane Group Flow (vph)	0	342	265	165	622	0	0	0	0	151	0	41
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		45.7	100.0	73.2	68.2					17.3		17.3
Effective Green, g (s)		45.7	100.0	73.2	68.2					17.3		17.3
Actuated g/C Ratio		0.46	1.00	0.73	0.68					0.17		0.17
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1563	1794	902	2590					296		264
v/s Ratio Prot		0.10		0.04	c0.14					c0.09		
v/s Ratio Perm			0.15	0.09	0.03							0.03
v/c Ratio		0.22	0.15	0.18	0.24					0.51		0.16
Uniform Delay, d1		16.4	0.0	4.8	6.0					37.5		35.1
Progression Factor		0.76	1.00	0.07	1.49					1.00		1.00
Incremental Delay, d2		0.3	0.2	0.2	0.1					2.9		0.6
Delay (s)		12.8	0.2	0.5	9.1					40.4		35.7
Level of Service		B	A	A	A					D		D
Approach Delay (s/veh)		7.3			7.3			0.0			37.6	
Approach LOS		A			A			A			D	

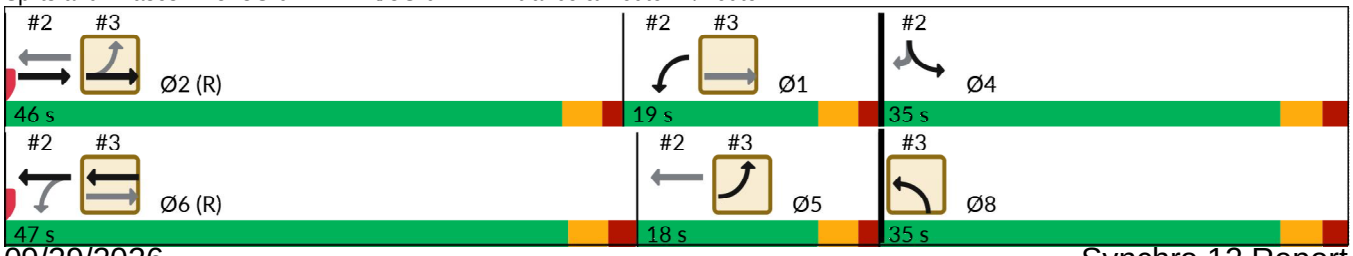
Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	38.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBR	Ø1	Ø4
Lane Configurations							
Traffic Volume (vph)	105	372	439	308	148		
Future Volume (vph)	105	372	439	308	148		
Lane Group Flow (vph)	114	404	567	335	161		
Turn Type	pm+pt	NA	NA	Prot	Free		
Protected Phases	5	2	6	8		1	4
Permitted Phases	2	1 2 6			Free		
Detector Phase	5	2	6	8			
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0		11.5	12.0
Total Split (s)	18.0	46.0	47.0	35.0		19.0	35.0
Total Split (%)	18.0%	46.0%	47.0%	35.0%		19%	35%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0			
Lead/Lag	Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	None		None	None
v/c Ratio	0.24	0.32	0.28	0.57	0.09		
Control Delay (s/veh)	4.8	6.7	9.3	41.3	0.1		
Queue Delay	0.0	0.7	0.0	0.0	0.0		
Total Delay (s/veh)	4.8	7.4	9.3	41.3	0.1		
Queue Length 50th (ft)	5	104	55	104	0		
Queue Length 95th (ft)	29	136	96	140	0		
Internal Link Dist (ft)		285	345				
Turn Bay Length (ft)					125		
Base Capacity (vph)	550	1273	1990	1029	1794		
Starvation Cap Reductn	0	542	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.21	0.55	0.28	0.33	0.09		

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	105	372	0	0	439	83	308	0	148	0	0	0
Future Volume (vph)	105	372	0	0	439	83	308	0	148	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0		5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95		0.97		1.00			
Frt	1.00	1.00			0.98		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1652	1739			3340		3433		1794			
Flt Permitted	0.41	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	712	1739			3340		3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	114	404	0	0	477	90	335	0	161	0	0	0
RTOR Reduction (vph)	0	0	0	0	11	0	0	0	0	0	0	0
Lane Group Flow (vph)	114	404	0	0	556	0	335	0	161	0	0	0
Turn Type	pm+pt	NA			NA		Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6							Free			
Actuated Green, G (s)	55.0	73.2			59.2		17.3		100.0			
Effective Green, g (s)	55.0	73.2			59.2		17.3		100.0			
Actuated g/C Ratio	0.55	0.73			0.59		0.17		1.00			
Clearance Time (s)	4.5	4.5			5.0		5.0					
Vehicle Extension (s)	5.0	5.0			5.0		5.0					
Lane Grp Cap (vph)	476	1272			1977		593		1794			
v/s Ratio Prot	0.02	c0.15			0.17		c0.10					
v/s Ratio Perm	0.11	0.09							0.09			
v/c Ratio	0.24	0.32			0.28		0.56		0.09			
Uniform Delay, d1	13.6	4.7			10.0		37.9		0.0			
Progression Factor	0.49	1.15			0.88		1.00		1.00			
Incremental Delay, d2	0.5	0.3			0.3		2.0		0.1			
Delay (s)	7.2	5.7			9.1		39.9		0.1			
Level of Service	A	A			A		D		A			
Approach Delay (s/veh)		6.0			9.1			27.0			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	41.5%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

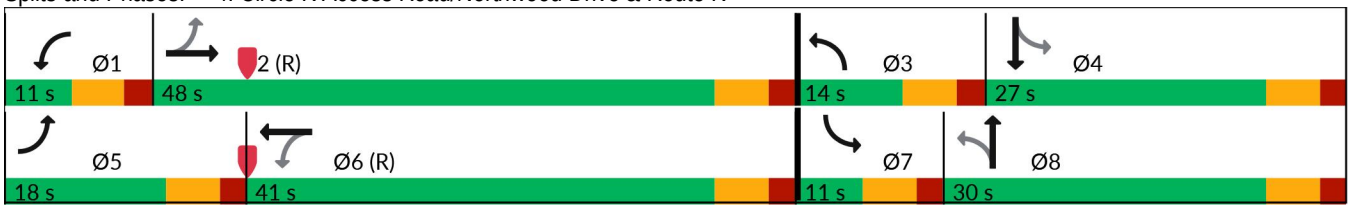
c Critical Lane Group

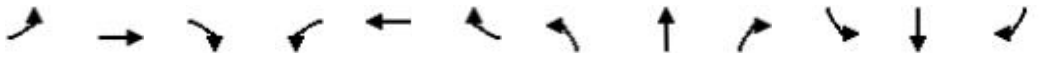
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	162	252	26	271	93	14	25	13
Future Volume (vph)	162	252	26	271	93	14	25	13
Lane Group Flow (vph)	176	381	28	313	101	42	27	179
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	24.0	11.0	24.0
Total Split (s)	18.0	48.0	11.0	41.0	14.0	30.0	11.0	27.0
Total Split (%)	18.0%	48.0%	11.0%	41.0%	14.0%	30.0%	11.0%	27.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.28	0.37	0.05	0.33	0.43	0.15	0.13	0.65
Control Delay (s/veh)	9.8	12.6	9.2	18.9	35.3	20.3	28.4	19.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	9.8	12.8	9.2	18.9	35.3	20.3	28.4	19.8
Queue Length 50th (ft)	36	83	6	115	54	9	14	9
Queue Length 95th (ft)	76	152	21	237	87	38	32	71
Internal Link Dist (ft)		345		628		146		528
Turn Bay Length (ft)			200		100		100	
Base Capacity (vph)	657	1026	610	937	238	478	213	456
Starvation Cap Reductn	0	163	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.44	0.05	0.33	0.42	0.09	0.13	0.39

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 4: Circle K Access Road/Northwood Drive & Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	162	252	98	26	271	17	93	14	25	25	13	152
Future Volume (veh/h)	162	252	98	26	271	17	93	14	25	25	13	152
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1945
Adj Flow Rate, veh/h	176	274	107	28	295	18	101	15	27	27	14	165
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	610	684	267	612	857	52	217	107	193	302	17	199
Arrive On Green	0.12	0.89	0.89	0.03	0.49	0.49	0.06	0.17	0.17	0.03	0.13	0.13
Sat Flow, veh/h	1781	1280	500	1781	1745	106	1781	623	1121	1781	125	1479
Grp Volume(v), veh/h	176	0	381	28	0	313	101	0	42	27	0	179
Grp Sat Flow(s),veh/h/ln	1781	0	1780	1781	0	1851	1781	0	1743	1781	0	1604
Q Serve(g_s), s	4.9	0.0	3.6	0.8	0.0	10.4	4.8	0.0	2.0	1.3	0.0	10.9
Cycle Q Clear(g_c), s	4.9	0.0	3.6	0.8	0.0	10.4	4.8	0.0	2.0	1.3	0.0	10.9
Prop In Lane	1.00		0.28	1.00		0.06	1.00		0.64	1.00		0.92
Lane Grp Cap(c), veh/h	610	0	951	612	0	909	217	0	300	302	0	216
V/C Ratio(X)	0.29	0.00	0.40	0.05	0.00	0.34	0.46	0.00	0.14	0.09	0.00	0.83
Avail Cap(c_a), veh/h	699	0	951	653	0	909	246	0	418	345	0	337
HCM Platoon Ratio	1.67	1.67	1.67	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.98	0.00	0.98	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	10.7	0.0	2.7	11.8	0.0	15.6	34.7	0.0	35.1	35.8	0.0	42.2
Incr Delay (d2), s/veh	0.3	0.0	1.2	0.0	0.0	1.0	1.5	0.0	0.2	0.1	0.0	9.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	1.3	0.3	0.0	4.5	2.2	0.0	0.9	0.6	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	10.9	0.0	3.9	11.8	0.0	16.6	36.2	0.0	35.3	35.9	0.0	51.8
LnGrp LOS	B		A	B		B	D		D	D		D
Approach Vol, veh/h		557			341			143			206	
Approach Delay, s/veh		6.1			16.2			36.0			49.7	
Approach LOS		A			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	59.4	12.4	19.4	13.0	55.1	8.6	23.2
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	42.0	8.0	21.0	12.0	35.0	5.0	24.0
Max Q Clear Time (g_c+I1), s	2.8	5.6	6.8	12.9	6.9	12.4	3.3	4.0
Green Ext Time (p_c), s	0.0	2.7	0.0	0.6	0.2	1.9	0.0	0.1

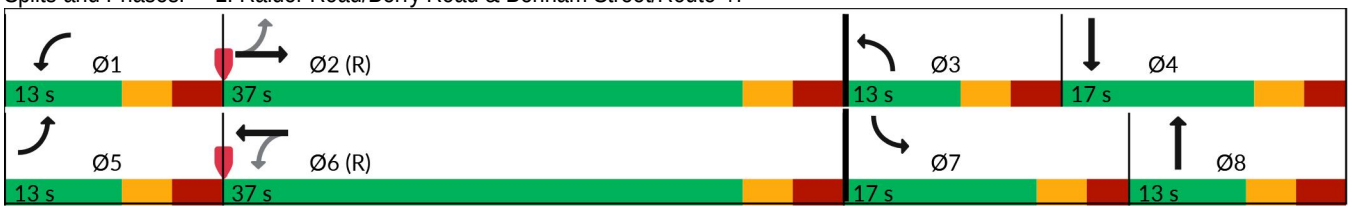
Intersection Summary	
HCM 7th Control Delay, s/veh	19.5
HCM 7th LOS	B

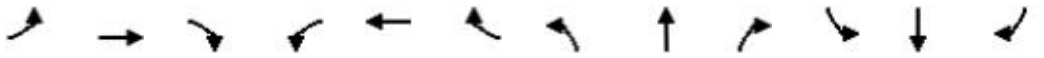
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	25	758	22	380	50	12	128	28
Future Volume (vph)	25	758	22	380	50	12	128	28
Lane Group Flow (vph)	27	933	24	522	54	59	139	75
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6					
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	37.0	13.0	37.0	13.0	13.0	17.0	17.0
Total Split (%)	16.3%	46.3%	16.3%	46.3%	16.3%	16.3%	21.3%	21.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.05	0.51	0.07	0.28	0.36	0.30	0.61	0.29
Control Delay (s/veh)	8.4	15.0	5.0	5.4	41.7	19.0	44.8	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	8.4	15.0	5.0	5.4	41.7	19.0	44.8	18.8
Queue Length 50th (ft)	6	142	2	14	26	6	67	14
Queue Length 95th (ft)	17	276	9	44	62	42	124	51
Internal Link Dist (ft)		548		332		915		631
Turn Bay Length (ft)	85		125		65		240	
Base Capacity (vph)	539	1843	353	1895	149	195	254	282
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.51	0.07	0.28	0.36	0.30	0.55	0.27

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 6 (8%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	25	758	100	22	380	100	50	12	42	128	28	41
Future Volume (veh/h)	25	758	100	22	380	100	50	12	42	128	28	41
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	27	824	109	24	413	109	54	13	46	139	30	45
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	605	1603	212	355	1407	368	109	24	85	174	64	96
Arrive On Green	0.04	0.51	0.51	0.07	1.00	1.00	0.06	0.06	0.06	0.10	0.09	0.09
Sat Flow, veh/h	1781	3155	417	1781	2787	729	1781	376	1330	1781	675	1013
Grp Volume(v), veh/h	27	464	469	24	262	260	54	0	59	139	0	75
Grp Sat Flow(s),veh/h/ln	1781	1777	1795	1781	1777	1739	1781	0	1706	1781	0	1688
Q Serve(g_s), s	0.6	13.9	13.9	0.5	0.0	0.0	2.3	0.0	2.7	6.1	0.0	3.4
Cycle Q Clear(g_c), s	0.6	13.9	13.9	0.5	0.0	0.0	2.3	0.0	2.7	6.1	0.0	3.4
Prop In Lane	1.00		0.23	1.00		0.42	1.00		0.78	1.00		0.60
Lane Grp Cap(c), veh/h	605	903	912	355	897	878	109	0	109	174	0	159
V/C Ratio(X)	0.04	0.51	0.51	0.07	0.29	0.30	0.50	0.00	0.54	0.80	0.00	0.47
Avail Cap(c_a), veh/h	690	903	912	446	897	878	156	0	149	256	0	243
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.99	0.99	0.99	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	8.4	13.1	13.1	9.4	0.0	0.0	36.4	0.0	36.3	35.3	0.0	34.3
Incr Delay (d2), s/veh	0.0	2.1	2.1	0.1	0.8	0.9	3.5	0.0	8.6	10.3	0.0	4.6
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	5.6	5.6	0.2	0.2	0.2	1.1	0.0	1.4	3.1	0.0	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	8.5	15.2	15.2	9.5	0.8	0.9	39.8	0.0	44.9	45.6	0.0	38.9
LnGrp LOS	A	B	B	A	A	A	D		D	D		D
Approach Vol, veh/h		960			546			113			214	
Approach Delay, s/veh		15.0			1.2			42.5			43.2	
Approach LOS		B			A			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.9	46.7	10.9	13.6	9.2	46.4	13.3	11.1
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	31.0	7.0	* 12	7.0	31.0	11.5	7.0
Max Q Clear Time (g_c+I1), s	2.5	15.9	4.3	5.4	2.6	2.0	8.1	4.7
Green Ext Time (p_c), s	0.0	11.1	0.0	0.2	0.0	10.1	0.1	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	15.9
HCM 7th LOS	B

Notes

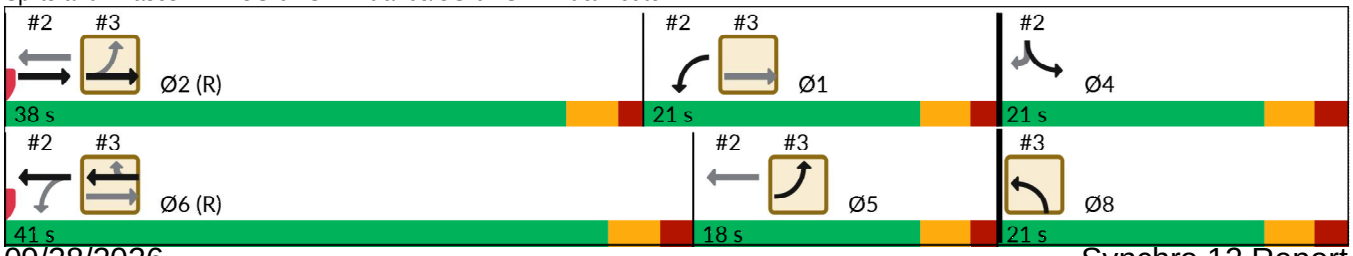
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

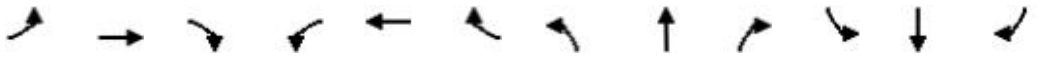
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	471	443	220	434	106	90		
Future Volume (vph)	471	443	220	434	106	90		
Lane Group Flow (vph)	512	482	239	472	115	98		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	38.0		21.0	41.0	21.0	21.0	18.0	21.0
Total Split (%)	47.5%		26.3%	51.3%	26.3%	26.3%	23%	26%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.29	0.27	0.34	0.19	0.42	0.30		
Control Delay (s/veh)	12.1	0.3	5.9	2.8	34.5	9.0		
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0		
Total Delay (s/veh)	12.1	0.3	5.9	2.8	34.5	9.0		
Queue Length 50th (ft)	57	0	38	39	54	0		
Queue Length 95th (ft)	99	0	60	54	97	38		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1790	1794	823	2532	344	386		
Starvation Cap Reductn	0	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.29	0.27	0.29	0.19	0.33	0.25		

Intersection Summary

Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	471	443	220	434	0	0	0	0	106	0	90
Future Volume (vph)	0	471	443	220	434	0	0	0	0	106	0	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.44	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	819	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	512	482	239	472	0	0	0	0	115	0	98
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	82
Lane Group Flow (vph)	0	512	482	239	472	0	0	0	0	115	0	16
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		41.8	80.0	55.7	52.7					12.8		12.8
Effective Green, g (s)		41.8	80.0	55.7	52.7					12.8		12.8
Actuated g/C Ratio		0.52	1.00	0.70	0.66					0.16		0.16
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1787	1794	705	2552					273		244
v/s Ratio Prot		0.15		c0.05	0.10					c0.07		
v/s Ratio Perm			c0.27	c0.19	0.03							0.01
v/c Ratio		0.29	0.27	0.34	0.18					0.42		0.06
Uniform Delay, d1		10.7	0.0	6.1	5.3					30.3		28.5
Progression Factor		1.01	1.00	0.86	0.64					1.00		1.00
Incremental Delay, d2		0.4	0.3	0.6	0.1					2.2		0.2
Delay (s)		11.2	0.3	5.8	3.5					32.5		28.8
Level of Service		B	A	A	A					C		C
Approach Delay (s/veh)		5.9			4.3			0.0			30.7	
Approach LOS		A			A			A			C	

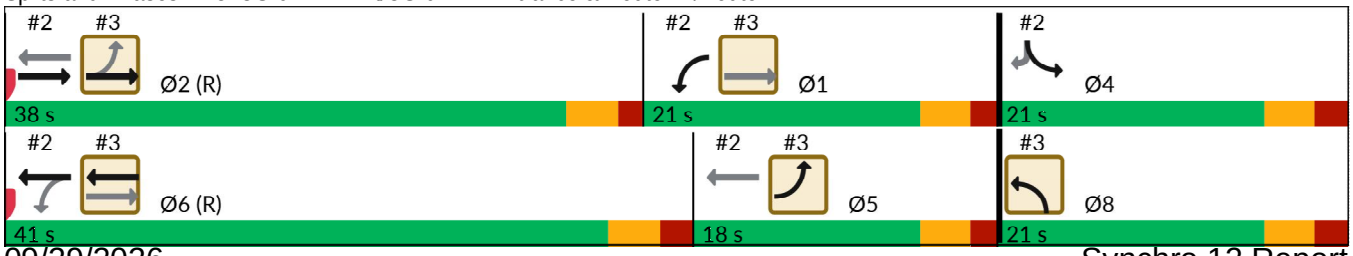
Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	42.7%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

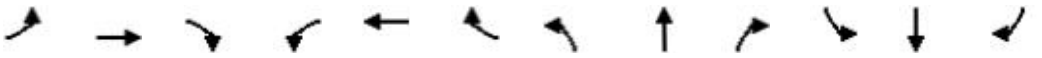
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBR	Ø1	Ø4
Lane Configurations							
Traffic Volume (vph)	147	454	465	202	156		
Future Volume (vph)	147	454	465	202	156		
Lane Group Flow (vph)	160	493	656	220	170		
Turn Type	pm+pt	NA	NA	Prot	Free		
Protected Phases	5	2	6	8		1	4
Permitted Phases	2	1 2 6			Free		
Detector Phase	5	2	6	8			
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0		11.5	12.0
Total Split (s)	18.0	38.0	41.0	21.0		21.0	21.0
Total Split (%)	22.5%	47.5%	51.3%	26.3%		26%	26%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0			
Lead/Lag	Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	None		None	None
v/c Ratio	0.32	0.40	0.35	0.40	0.09		
Control Delay (s/veh)	4.8	3.2	9.9	31.8	0.1		
Queue Delay	0.0	0.2	0.0	0.0	0.0		
Total Delay (s/veh)	4.8	3.4	9.9	31.8	0.1		
Queue Length 50th (ft)	14	49	78	52	0		
Queue Length 95th (ft)	26	68	130	80	0		
Internal Link Dist (ft)		285	345				
Turn Bay Length (ft)					125		
Base Capacity (vph)	604	1238	1858	690	1794		
Starvation Cap Reductn	0	181	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.26	0.47	0.35	0.32	0.09		

Intersection Summary
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 40
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	454	0	0	465	139	202	0	156	0	0	0
Future Volume (vph)	147	454	0	0	465	139	202	0	156	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0		5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95		0.97		1.00			
Frt	1.00	1.00			0.97		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1652	1739			3303		3433		1794			
Flt Permitted	0.37	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	640	1739			3303		3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	160	493	0	0	505	151	220	0	170	0	0	0
RTOR Reduction (vph)	0	0	0	0	29	0	0	0	0	0	0	0
Lane Group Flow (vph)	160	493	0	0	627	0	220	0	170	0	0	0
Turn Type	pm+pt	NA			NA		Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6							Free			
Actuated Green, G (s)	49.1	56.8			44.3		12.8		80.0			
Effective Green, g (s)	49.1	56.8			44.3		12.8		80.0			
Actuated g/C Ratio	0.61	0.71			0.55		0.16		1.00			
Clearance Time (s)	4.5	4.5			5.0		5.0					
Vehicle Extension (s)	5.0	5.0			5.0		5.0					
Lane Grp Cap (vph)	499	1234			1829		549		1794			
v/s Ratio Prot	0.03	c0.20			0.19		c0.06					
v/s Ratio Perm	0.16	0.08							0.09			
v/c Ratio	0.32	0.40			0.34		0.40		0.09			
Uniform Delay, d1	9.6	4.7			9.8		30.2		0.0			
Progression Factor	0.55	0.47			1.00		1.00		1.00			
Incremental Delay, d2	0.8	0.4			0.5		1.0		0.1			
Delay (s)	6.0	2.6			10.3		31.2		0.1			
Level of Service	A	A			B		C		A			
Approach Delay (s/veh)		3.5			10.3			17.6			0.0	
Approach LOS		A			B			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.42		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	43.4%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

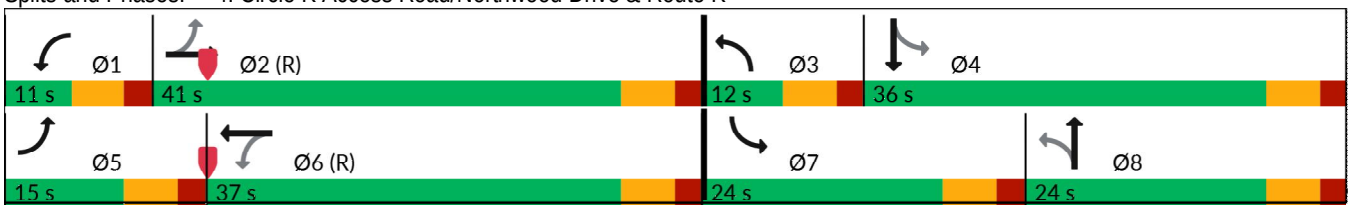
c Critical Lane Group

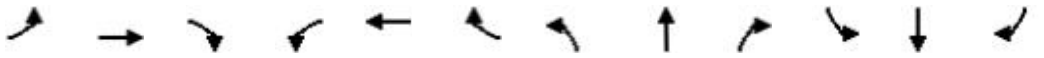
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	115	385	40	331	97	4	33	13
Future Volume (vph)	115	385	40	331	97	4	33	13
Lane Group Flow (vph)	125	508	43	386	105	42	36	182
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	24.0	24.0	24.0
Total Split (s)	15.0	41.0	11.0	37.0	12.0	24.0	24.0	36.0
Total Split (%)	15.0%	41.0%	11.0%	37.0%	12.0%	24.0%	24.0%	36.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.21	0.48	0.08	0.39	0.52	0.17	0.16	0.65
Control Delay (s/veh)	7.8	15.8	7.7	16.8	42.6	16.8	31.2	19.7
Queue Delay	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	7.8	16.6	7.7	16.8	42.6	16.8	31.2	19.7
Queue Length 50th (ft)	27	200	9	145	56	2	19	9
Queue Length 95th (ft)	55	331	23	248	#105	35	43	72
Internal Link Dist (ft)		345		628		146		529
Turn Bay Length (ft)			200		100		100	
Base Capacity (vph)	594	1062	523	994	202	366	378	583
Starvation Cap Reductn	0	284	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.65	0.08	0.39	0.52	0.11	0.10	0.31

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 85
Control Type: Actuated-Coordinated
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 4: Circle K Access Road/Northwood Drive & Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	115	385	83	40	331	24	97	4	35	33	13	155
Future Volume (veh/h)	115	385	83	40	331	24	97	4	35	33	13	155
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1945
Adj Flow Rate, veh/h	125	418	90	43	360	26	105	4	38	36	14	168
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	543	784	169	438	876	63	214	24	226	335	17	207
Arrive On Green	0.05	0.53	0.53	0.03	0.51	0.51	0.06	0.15	0.15	0.05	0.14	0.14
Sat Flow, veh/h	1781	1491	321	1781	1723	124	1781	159	1513	1781	123	1480
Grp Volume(v), veh/h	125	0	508	43	0	386	105	0	42	36	0	182
Grp Sat Flow(s),veh/h/ln	1781	0	1813	1781	0	1848	1781	0	1673	1781	0	1604
Q Serve(g_s), s	3.3	0.0	18.5	1.1	0.0	13.0	5.0	0.0	2.2	1.7	0.0	11.0
Cycle Q Clear(g_c), s	3.3	0.0	18.5	1.1	0.0	13.0	5.0	0.0	2.2	1.7	0.0	11.0
Prop In Lane	1.00		0.18	1.00		0.07	1.00		0.90	1.00		0.92
Lane Grp Cap(c), veh/h	543	0	953	438	0	939	214	0	250	335	0	224
V/C Ratio(X)	0.23	0.00	0.53	0.10	0.00	0.41	0.49	0.00	0.17	0.11	0.00	0.81
Avail Cap(c_a), veh/h	610	0	953	465	0	939	214	0	301	567	0	481
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.96	0.00	0.96	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.4	0.0	15.6	12.2	0.0	15.3	34.7	0.0	37.1	33.5	0.0	41.8
Incr Delay (d2), s/veh	0.2	0.0	2.1	0.1	0.0	1.3	1.7	0.0	0.3	0.1	0.0	7.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	7.8	0.4	0.0	5.6	2.3	0.0	0.9	0.7	0.0	4.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.6	0.0	17.7	12.3	0.0	16.6	36.4	0.0	37.4	33.7	0.0	48.7
LnGrp LOS	B		B	B		B	D		D	C		D
Approach Vol, veh/h		633			429			147			218	
Approach Delay, s/veh		16.5			16.2			36.7			46.3	
Approach LOS		B			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.5	58.6	12.0	20.0	11.2	56.8	11.0	21.0
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	35.0	6.0	30.0	9.0	31.0	18.0	18.0
Max Q Clear Time (g_c+I1), s	3.1	20.5	7.0	13.0	5.3	15.0	3.7	4.2
Green Ext Time (p_c), s	0.0	2.9	0.0	0.9	0.1	2.1	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

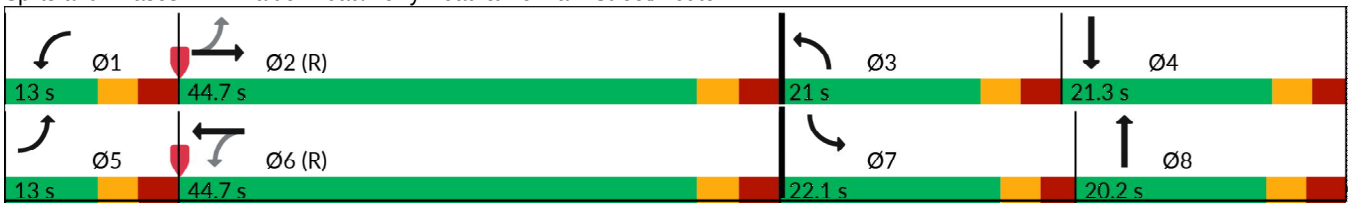
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	64	550	60	796	126	38	143	37
Future Volume (vph)	64	550	60	796	126	38	143	37
Lane Group Flow (vph)	70	662	65	953	137	90	155	186
Turn Type	pm+pt	NA	pm+pt	NA	Prot	NA	Prot	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6					
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	12.5	12.5
Total Split (s)	13.0	44.7	13.0	44.7	21.0	20.2	22.1	21.3
Total Split (%)	13.0%	44.7%	13.0%	44.7%	21.0%	20.2%	22.1%	21.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	2.5	2.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.25	0.42	0.16	0.58	0.64	0.39	0.55	0.60
Control Delay (s/veh)	12.9	19.2	6.6	12.9	55.4	26.2	47.2	19.8
Queue Delay	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0
Total Delay (s/veh)	12.9	19.2	6.6	13.2	55.4	26.2	47.2	19.8
Queue Length 50th (ft)	18	145	7	96	85	25	96	24
Queue Length 95th (ft)	45	222	m25	373	147	70	159	88
Internal Link Dist (ft)		548		332		915		631
Turn Bay Length (ft)	85		125		65		240	
Base Capacity (vph)	283	1588	394	1645	256	301	311	382
Starvation Cap Reductn	0	0	0	188	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.42	0.16	0.65	0.54	0.30	0.50	0.49

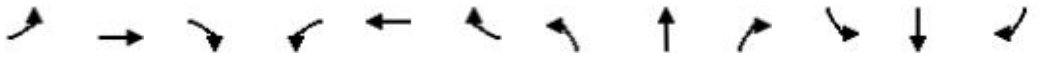
Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 65
Control Type: Actuated-Coordinated
Description: 1. Berry Rd/Raider Rd and US-47

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 1: Raider Road/Berry Road & Benham Street/Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	64	550	59	60	796	81	126	38	45	143	37	134
Future Volume (veh/h)	64	550	59	60	796	81	126	38	45	143	37	134
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1870
Adj Flow Rate, veh/h	70	598	64	65	865	88	137	41	49	155	40	146
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	437	1531	164	449	1534	156	169	103	124	188	47	173
Arrive On Green	0.06	0.47	0.47	0.12	0.94	0.94	0.09	0.13	0.13	0.11	0.13	0.13
Sat Flow, veh/h	1781	3239	346	1781	3256	331	1781	807	965	1781	352	1286
Grp Volume(v), veh/h	70	328	334	65	472	481	137	0	90	155	0	186
Grp Sat Flow(s),veh/h/ln	1781	1777	1808	1781	1777	1811	1781	0	1772	1781	0	1639
Q Serve(g_s), s	1.9	11.9	12.0	1.7	3.3	3.3	7.5	0.0	4.7	8.5	0.0	11.1
Cycle Q Clear(g_c), s	1.9	11.9	12.0	1.7	3.3	3.3	7.5	0.0	4.7	8.5	0.0	11.1
Prop In Lane	1.00		0.19	1.00		0.18	1.00		0.54	1.00		0.78
Lane Grp Cap(c), veh/h	437	840	855	449	837	853	169	0	227	188	0	220
V/C Ratio(X)	0.16	0.39	0.39	0.14	0.56	0.56	0.81	0.00	0.40	0.82	0.00	0.85
Avail Cap(c_a), veh/h	455	840	855	470	837	853	267	0	252	296	0	259
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	0.92	0.92	0.92	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.5	17.0	17.1	11.5	1.6	1.6	44.4	0.0	40.0	43.8	0.0	42.3
Incr Delay (d2), s/veh	0.2	1.4	1.3	0.1	2.5	2.5	9.7	0.0	2.4	10.0	0.0	23.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	5.0	5.2	0.7	1.2	1.2	3.8	0.0	2.2	4.3	0.0	5.9
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	11.7	18.4	18.4	11.6	4.1	4.1	54.1	0.0	42.4	53.8	0.0	65.8
LnGrp LOS	B	B	B	B	A	A	D		D	D		E
Approach Vol, veh/h		732			1018			227			341	
Approach Delay, s/veh		17.8			4.6			49.5			60.3	
Approach LOS		B			A			D			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.8	53.3	15.5	19.4	12.0	53.1	16.1	18.8
Change Period (Y+Rc), s	6.0	6.0	6.0	* 6	6.0	6.0	5.5	6.0
Max Green Setting (Gmax), s	7.0	38.7	15.0	* 16	7.0	38.7	16.6	14.2
Max Q Clear Time (g_c+I1), s	3.7	14.0	9.5	13.1	3.9	5.3	10.5	6.7
Green Ext Time (p_c), s	0.0	11.9	0.1	0.4	0.0	20.8	0.2	0.4

Intersection Summary	
HCM 7th Control Delay, s/veh	21.4
HCM 7th LOS	C

Notes

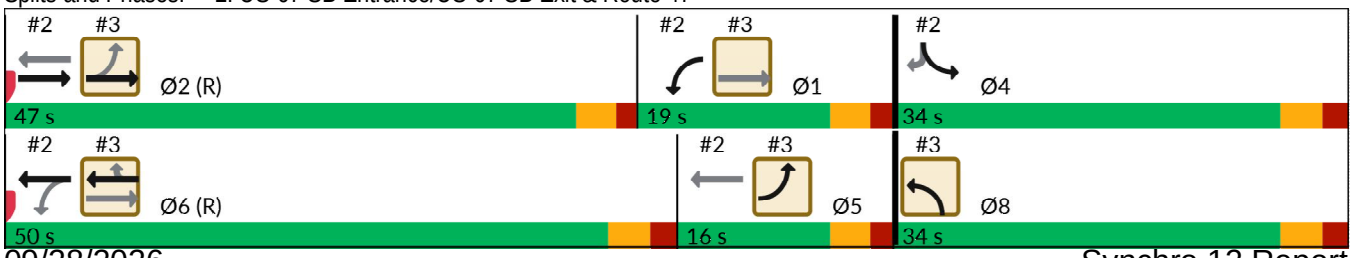
* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

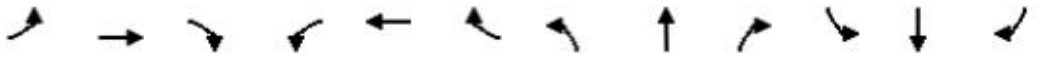
Lane Group	EBT	EBR	WBL	WBT	SBL	SBR	Ø5	Ø8
Lane Configurations								
Traffic Volume (vph)	398	309	193	723	176	276		
Future Volume (vph)	398	309	193	723	176	276		
Lane Group Flow (vph)	433	336	210	786	191	300		
Turn Type	NA	Free	pm+pt	NA	Prot	Perm		
Protected Phases	2		1	6	4		5	8
Permitted Phases		Free	6	2 5 6		4		
Detector Phase	2		1	6	4	4		
Switch Phase								
Minimum Initial (s)	7.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	11.5		11.5	12.0	12.0	12.0	12.0	12.0
Total Split (s)	47.0		19.0	50.0	34.0	34.0	16.0	34.0
Total Split (%)	47.0%		19.0%	50.0%	34.0%	34.0%	16%	34%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.5		1.5	2.0	2.0	2.0	1.5	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.5		4.5	5.0	5.0	5.0		
Lead/Lag	Lead		Lag	Lead			Lag	
Lead-Lag Optimize?	Yes		Yes	Yes			Yes	
Recall Mode	C-Min		None	C-Min	None	None	None	None
v/c Ratio	0.30	0.19	0.26	0.32	0.56	0.64		
Control Delay (s/veh)	14.6	0.2	1.8	9.3	42.0	18.6		
Queue Delay	0.0	0.0	0.0	0.4	0.0	0.0		
Total Delay (s/veh)	14.6	0.2	1.8	9.7	42.0	18.6		
Queue Length 50th (ft)	68	0	12	151	113	55		
Queue Length 95th (ft)	62	0	15	183	171	136		
Internal Link Dist (ft)	332			285				
Turn Bay Length (ft)		50				200		
Base Capacity (vph)	1553	1794	826	2480	496	587		
Starvation Cap Reductn	0	0	0	1066	0	0		
Spillback Cap Reductn	0	0	0	96	0	5		
Storage Cap Reductn	0	0	0	0	0	0		
Reduced v/c Ratio	0.28	0.19	0.25	0.56	0.39	0.52		

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 45
Control Type: Actuated-Coordinated
Description: 2. SB Exit US-67 HWY and US-47

Splits and Phases: 2: US-67 SB Entrance/US-67 SB Exit & Route 47





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	398	309	193	723	0	0	0	0	176	0	276
Future Volume (vph)	0	398	309	193	723	0	0	0	0	176	0	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	12	11	16	12	12	12	12	12	12	11	12	11
Total Lost time (s)		4.5	4.0	4.5	5.0					5.0		5.0
Lane Util. Factor		0.95	1.00	1.00	0.95					1.00		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		3421	1794	1770	3539					1711		1531
Flt Permitted		1.00	1.00	0.46	1.00					0.95		1.00
Satd. Flow (perm)		3421	1794	856	3539					1711		1531
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	433	336	210	786	0	0	0	0	191	0	300
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	162
Lane Group Flow (vph)	0	433	336	210	786	0	0	0	0	191	0	138
Turn Type		NA	Free	pm+pt	NA					Prot		Perm
Protected Phases		2		1	6					4		
Permitted Phases			Free	6	2 5 6							4
Actuated Green, G (s)		42.5	100.0	70.6	65.6					19.9		19.9
Effective Green, g (s)		42.5	100.0	70.6	65.6					19.9		19.9
Actuated g/C Ratio		0.43	1.00	0.71	0.66					0.20		0.20
Clearance Time (s)		4.5		4.5	5.0					5.0		5.0
Vehicle Extension (s)		5.0		5.0	5.0					5.0		5.0
Lane Grp Cap (vph)		1453	1794	820	2498					340		304
v/s Ratio Prot		0.13		0.06	c0.18					c0.11		
v/s Ratio Perm			0.19	0.12	0.04							0.09
v/c Ratio		0.30	0.19	0.26	0.31					0.56		0.45
Uniform Delay, d1		18.9	0.0	7.1	7.5					36.1		35.3
Progression Factor		0.72	1.00	0.15	1.43					1.00		1.00
Incremental Delay, d2		0.5	0.2	0.3	0.1					3.5		2.2
Delay (s)		14.2	0.2	1.4	10.8					39.6		37.5
Level of Service		B	A	A	B					D		D
Approach Delay (s/veh)		8.1			8.8			0.0			38.3	
Approach LOS		A			A			A			D	

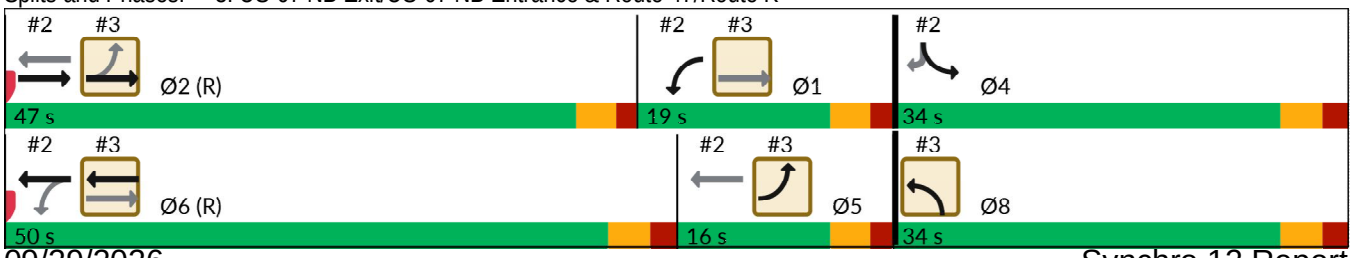
Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.0	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.39		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	45.8%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 2. SB Exit US-67 HWY and US-47			

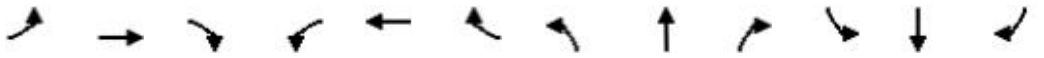
c Critical Lane Group

Lane Group	EBL	EBT	WBT	NBL	NBR	Ø1	Ø4
Lane Configurations							
Traffic Volume (vph)	132	470	555	389	187		
Future Volume (vph)	132	470	555	389	187		
Lane Group Flow (vph)	143	511	717	423	203		
Turn Type	pm+pt	NA	NA	Prot	Free		
Protected Phases	5	2	6	8		1	4
Permitted Phases	2	1 2 6			Free		
Detector Phase	5	2	6	8			
Switch Phase							
Minimum Initial (s)	7.0	7.0	7.0	7.0		7.0	7.0
Minimum Split (s)	12.0	11.5	12.0	12.0		11.5	12.0
Total Split (s)	16.0	47.0	50.0	34.0		19.0	34.0
Total Split (%)	16.0%	47.0%	50.0%	34.0%		19%	34%
Yellow Time (s)	3.0	3.0	3.0	3.0		3.0	3.0
All-Red Time (s)	1.5	1.5	2.0	2.0		1.5	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0			
Total Lost Time (s)	4.5	4.5	5.0	5.0			
Lead/Lag	Lag	Lead	Lead			Lag	
Lead-Lag Optimize?	Yes	Yes	Yes			Yes	
Recall Mode	None	C-Min	C-Min	None		None	None
v/c Ratio	0.37	0.42	0.38	0.62	0.11		
Control Delay (s/veh)	5.3	8.5	9.3	40.2	0.1		
Queue Delay	0.0	0.6	0.2	0.0	0.0		
Total Delay (s/veh)	5.3	9.1	9.5	40.2	0.1		
Queue Length 50th (ft)	7	135	137	130	0		
Queue Length 95th (ft)	3	245	118	167	0		
Internal Link Dist (ft)		285	345				
Turn Bay Length (ft)					125		
Base Capacity (vph)	424	1222	1896	995	1794		
Starvation Cap Reductn	0	375	461	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.34	0.60	0.50	0.43	0.11		

Intersection Summary
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBWB and 6:WBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Description: 3. NB Exit US-67 HWY and US-47

Splits and Phases: 3: US-67 NB Exit/US-67 NB Entrance & Route 47/Route K





Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	132	470	0	0	555	105	389	0	187	0	0	0
Future Volume (vph)	132	470	0	0	555	105	389	0	187	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	12	12	11	10	12	12	16	12	12	12
Total Lost time (s)	4.5	4.5			5.0		5.0		4.0			
Lane Util. Factor	1.00	1.00			0.95		0.97		1.00			
Frt	1.00	1.00			0.98		1.00		0.85			
Flt Protected	0.95	1.00			1.00		0.95		1.00			
Satd. Flow (prot)	1652	1739			3340		3433		1794			
Flt Permitted	0.32	1.00			1.00		0.95		1.00			
Satd. Flow (perm)	557	1739			3340		3433		1794			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	143	511	0	0	603	114	423	0	203	0	0	0
RTOR Reduction (vph)	0	0	0	0	12	0	0	0	0	0	0	0
Lane Group Flow (vph)	143	511	0	0	705	0	423	0	203	0	0	0
Turn Type	pm+pt	NA			NA		Prot		Free			
Protected Phases	5	2			6		8					
Permitted Phases	2	1 2 6							Free			
Actuated Green, G (s)	51.4	70.6			56.4		19.9		100.0			
Effective Green, g (s)	51.4	70.6			56.4		19.9		100.0			
Actuated g/C Ratio	0.51	0.71			0.56		0.20		1.00			
Clearance Time (s)	4.5	4.5			5.0		5.0					
Vehicle Extension (s)	5.0	5.0			5.0		5.0					
Lane Grp Cap (vph)	387	1227			1883		683		1794			
v/s Ratio Prot	0.03	c0.18			0.21		c0.12					
v/s Ratio Perm	0.16	0.12							0.11			
v/c Ratio	0.37	0.42			0.37		0.62		0.11			
Uniform Delay, d1	19.4	6.1			12.0		36.6		0.0			
Progression Factor	0.28	1.07			0.71		1.00		1.00			
Incremental Delay, d2	1.2	0.5			0.5		2.4		0.1			
Delay (s)	6.7	7.0			9.1		39.0		0.1			
Level of Service	A	A			A		D		A			
Approach Delay (s/veh)		7.0			9.1			26.4			0.0	
Approach LOS		A			A			C			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	13.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	49.2%	ICU Level of Service	A
Analysis Period (min)	15		
Description: 3. NB Exit US-67 HWY and US-47			

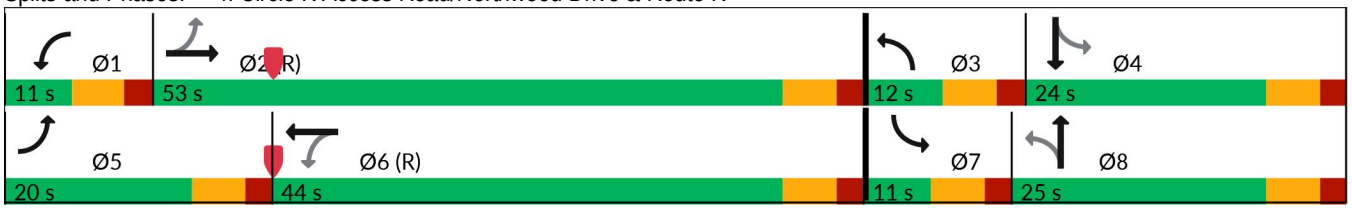
c Critical Lane Group

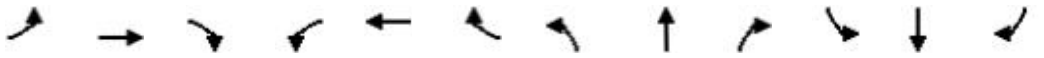
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Configurations								
Traffic Volume (vph)	204	318	26	343	93	14	31	17
Future Volume (vph)	204	318	26	343	93	14	31	17
Lane Group Flow (vph)	222	453	28	396	101	42	34	228
Turn Type	pm+pt	NA	pm+pt	NA	pm+pt	NA	pm+pt	NA
Protected Phases	5	2	1	6	3	8	7	4
Permitted Phases	2		6		8		4	
Detector Phase	5	2	1	6	3	8	7	4
Switch Phase								
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	11.0	24.0	11.0	24.0	11.0	24.0	11.0	24.0
Total Split (s)	20.0	53.0	11.0	44.0	12.0	25.0	11.0	24.0
Total Split (%)	20.0%	53.0%	11.0%	44.0%	12.0%	25.0%	11.0%	24.0%
Yellow Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lead/Lag	Lead	Lag	Lead	Lag	Lead	Lag	Lead	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	C-Min	None	C-Min	None	None	None	None
v/c Ratio	0.39	0.44	0.05	0.43	0.46	0.15	0.15	0.70
Control Delay (s/veh)	11.2	14.0	9.2	21.0	36.6	20.9	29.1	19.8
Queue Delay	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	11.2	14.2	9.2	21.0	36.6	20.9	29.1	19.8
Queue Length 50th (ft)	54	121	6	160	54	9	17	11
Queue Length 95th (ft)	80	160	19	307	90	39	39	81
Internal Link Dist (ft)		345		628		146		527
Turn Bay Length (ft)			200		100		100	
Base Capacity (vph)	604	1046	551	928	221	388	225	451
Starvation Cap Reductn	0	148	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.50	0.05	0.43	0.46	0.11	0.15	0.51

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 70
Control Type: Actuated-Coordinated

Splits and Phases: 4: Circle K Access Road/Northwood Drive & Route K





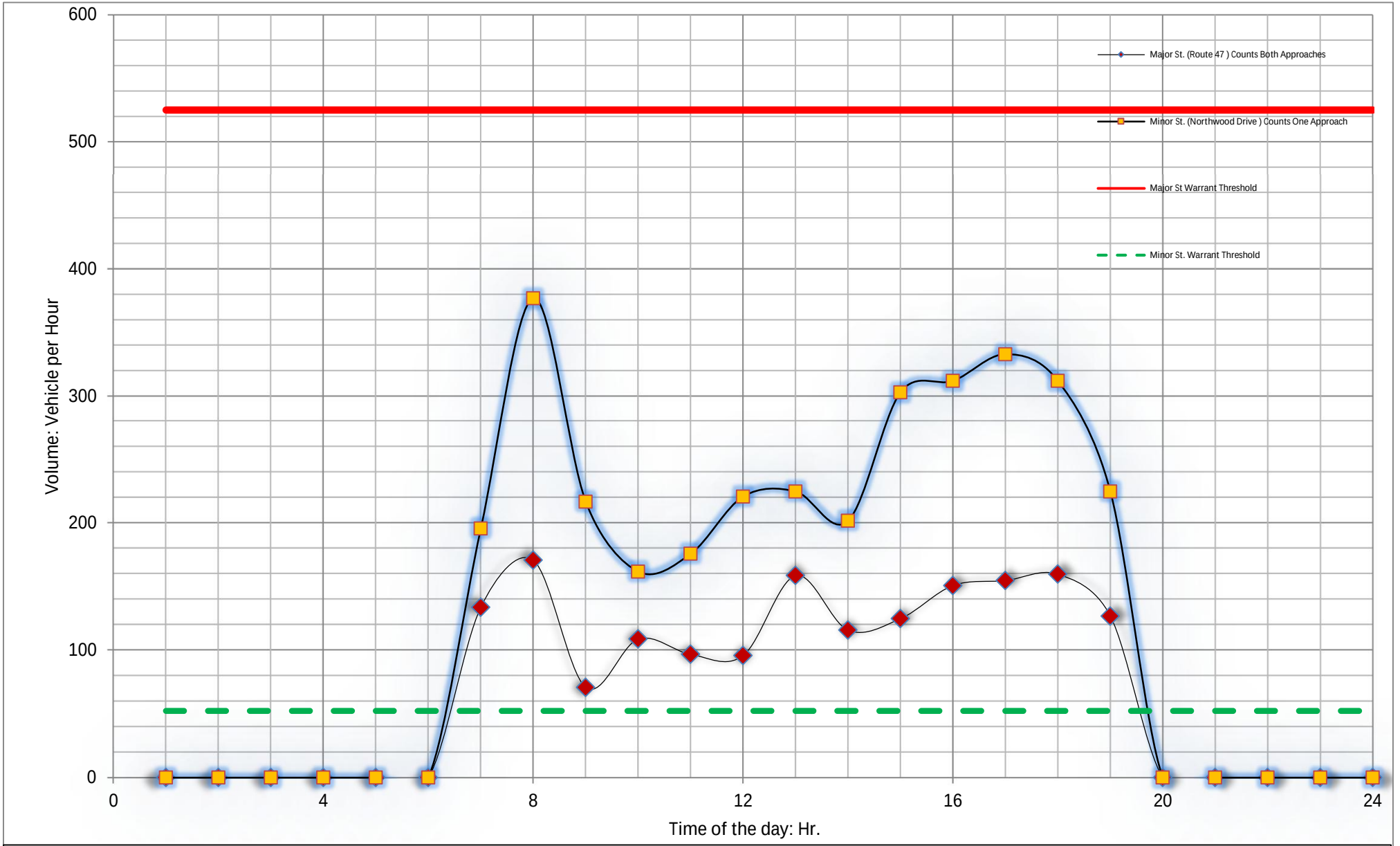
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	204	318	98	26	343	21	93	14	25	31	17	193
Future Volume (veh/h)	204	318	98	26	343	21	93	14	25	31	17	193
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.04	1.00	1.00	1.00	1.04
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1945	1870	1870	1870	1945
Adj Flow Rate, veh/h	222	346	107	28	373	23	101	15	27	34	18	210
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	527	701	217	542	784	48	205	119	214	347	20	239
Arrive On Green	0.18	1.00	1.00	0.03	0.45	0.45	0.06	0.19	0.19	0.03	0.16	0.16
Sat Flow, veh/h	1781	1370	424	1781	1744	108	1781	623	1121	1781	127	1478
Grp Volume(v), veh/h	222	0	453	28	0	396	101	0	42	34	0	228
Grp Sat Flow(s),veh/h/ln	1781	0	1794	1781	0	1851	1781	0	1743	1781	0	1604
Q Serve(g_s), s	6.6	0.0	0.0	0.8	0.0	15.0	4.7	0.0	2.0	1.6	0.0	13.9
Cycle Q Clear(g_c), s	6.6	0.0	0.0	0.8	0.0	15.0	4.7	0.0	2.0	1.6	0.0	13.9
Prop In Lane	1.00		0.24	1.00		0.06	1.00		0.64	1.00		0.92
Lane Grp Cap(c), veh/h	527	0	918	542	0	832	205	0	333	347	0	259
V/C Ratio(X)	0.42	0.00	0.49	0.05	0.00	0.48	0.49	0.00	0.13	0.10	0.00	0.88
Avail Cap(c_a), veh/h	618	0	918	583	0	832	205	0	333	381	0	289
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.95	0.00	0.95	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	11.7	0.0	0.0	13.9	0.0	19.3	33.2	0.0	33.5	33.3	0.0	41.0
Incr Delay (d2), s/veh	0.5	0.0	1.8	0.0	0.0	1.9	1.8	0.0	0.2	0.1	0.0	23.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.2	0.0	0.5	0.3	0.0	6.7	2.1	0.0	0.9	0.7	0.0	7.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	12.3	0.0	1.8	14.0	0.0	21.2	35.0	0.0	33.7	33.4	0.0	64.7
LnGrp LOS	B		A	B		C	D		C	C		E
Approach Vol, veh/h		675			424			143			262	
Approach Delay, s/veh		5.2			20.7			34.6			60.6	
Approach LOS		A			C			C			E	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.7	57.1	12.0	22.2	14.9	51.0	9.1	25.1
Change Period (Y+Rc), s	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Max Green Setting (Gmax), s	5.0	47.0	6.0	18.0	14.0	38.0	5.0	19.0
Max Q Clear Time (g_c+I1), s	2.8	2.0	6.7	15.9	8.6	17.0	3.6	4.0
Green Ext Time (p_c), s	0.0	3.3	0.0	0.3	0.3	2.4	0.0	0.1

Intersection Summary	
HCM 7th Control Delay, s/veh	22.0
HCM 7th LOS	C

Appendix F: Traffic Signal Warrant Analysis

Existing (Year 2026) Conditions



WARRANT 1B

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? **NO**

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? **YES**

Spot Number: **--4**

Route 47 @ Northwood Drive

NO. OF LANES ON MAJOR ST.? **1**

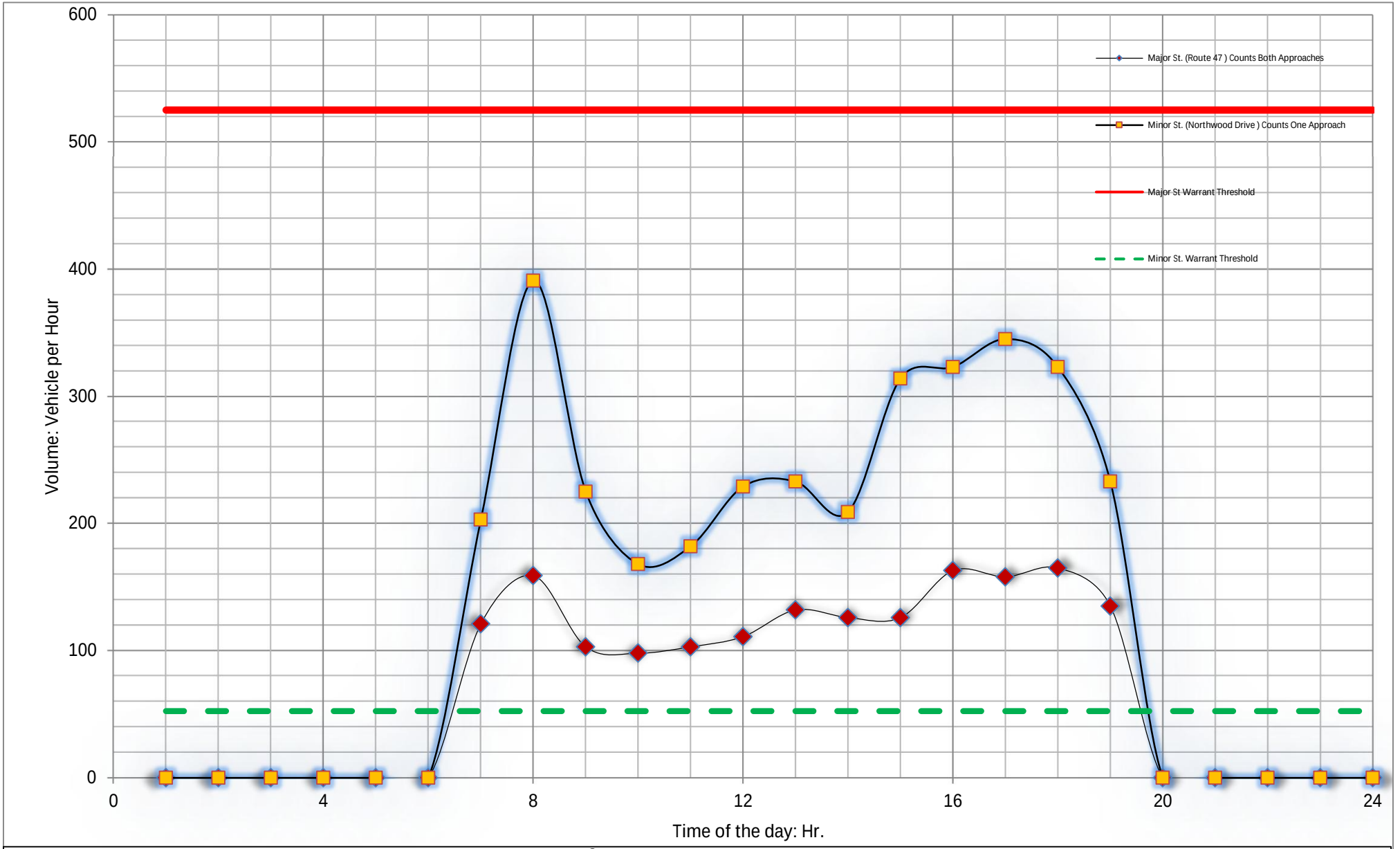
NO. OF LANES ON MINOR ST.? **1**

Number of Hours that met the Warrant: **0**

Does this intersection meet Warrant 1B for signal installation? **NO**

Data Collection Date: **4/23/2026**

Build (Year 2029) Conditions



WARRANT 1B

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? **NO**

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? **YES**

Spot Number: **--4**

Route 47 @ Northwood Drive

NO. OF LANES ON MAJOR ST.? **1**

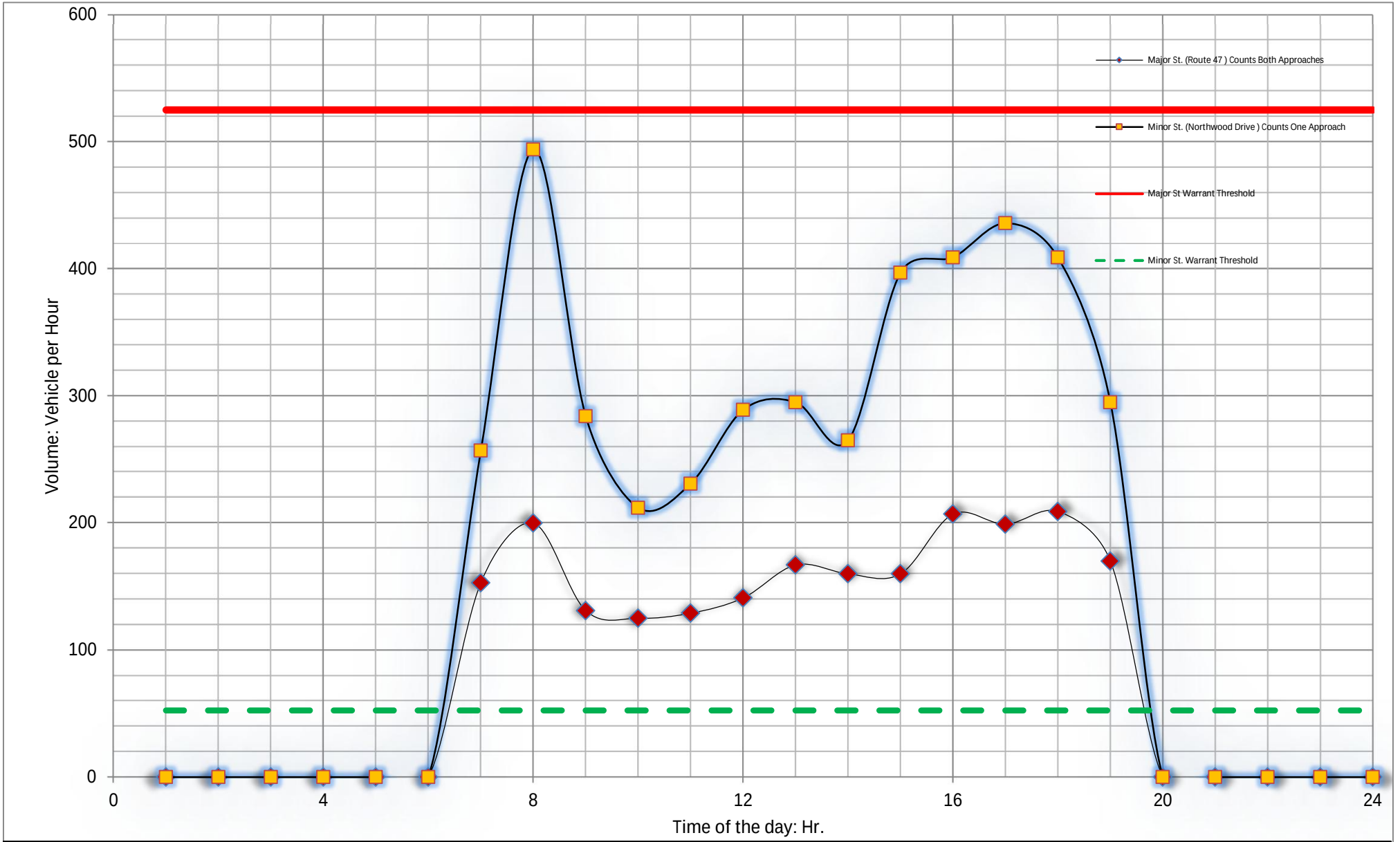
NO. OF LANES ON MINOR ST.? **1**

Number of Hours that met the Warrant: **0**

Does this intersection meet Warrant 1B for signal installation? **NO**

Data Collection Date: **4/23/2026**

Design (Year 2049) Conditions



WARRANT 1B

IS THERE A REDUCTION IN THE WARRANT THRESHOLDS TO 70% ...

1- DUE TO SPEED? **NO**

2- DUE TO ISOLATED COMMUNITY WITH POPULATION LESS THAN 10,000? **YES**

Spot Number: **--4**

Route 47 @ Northwood Drive

NO. OF LANES ON MAJOR ST.? **1**

NO. OF LANES ON MINOR ST.? **1**

Number of Hours that met the Warrant: **0**

Does this intersection meet Warrant 1B for signal installation? **NO**

Data Collection Date: **4/23/2026**

Appendix G: SIDRA Reports

LANE SUMMARY

Site: 1 [Build-AM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & Berry Road
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Raider Road															
Lane 1[d]	88	3.0	88	3.0	666	0.132	100	6.9	LOS A	0.4	11.3	Full	1600	0.0	0.0
Approach	88	3.0	88	3.0		0.132		6.9	LOS A	0.4	11.3				
East: Route 47															
Lane 1	216	3.0	216	3.0	1284	0.168	100	4.1	LOS A	0.7	18.9	Full	1600	0.0	0.0
Lane 2[d]	216	3.0	216	3.0	1284	0.168	100	4.1	LOS A	0.7	18.9	Full	1600	0.0	0.0
Approach	432	3.0	432	3.0		0.168		4.1	LOS A	0.7	18.9				
North: Berry Road															
Lane 1[d]	170	3.0	170	3.0	965	0.176	100	5.4	LOS A	0.7	17.1	Full	1600	0.0	0.0
Approach	170	3.0	170	3.0		0.176		5.4	LOS A	0.7	17.1				
West: Route 47															
Lane 1	380	3.0	380	3.0	1187	0.320	100	6.0	LOS A	1.6	41.5	Full	1600	0.0	0.0
Lane 2[d]	380	3.0	380	3.0	1187	0.320	100	6.0	LOS A	1.6	41.5	Full	1600	0.0	0.0
Approach	760	3.0	760	3.0		0.320		6.0	LOS A	1.6	41.5				
All Vehicles	1449	3.0	1449	3.0		0.320		5.4	LOS A	1.6	41.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Raider Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	42	10	36	88	3.0	666	0.132	100	NA	NA
Approach	42	10	36	88	3.0		0.132			

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	20	196	-	216	3.0	1284	0.168	100	NA	NA

Lane 2	-	130	86	216	3.0	1284	0.168	100	NA	NA
Approach	20	326	86	432	3.0		0.168			
North: Berry Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	111	24	35	170	3.0	965	0.176	100	NA	NA
Approach	111	24	35	170	3.0		0.176			
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	22	358	-	380	3.0	1187	0.320	100	NA	NA
Lane 2	-	294	86	380	3.0	1187	0.320	100	NA	NA
Approach	22	652	86	760	3.0		0.320			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1449	3.0	0.320

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Raider Road				
Lane 1	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [Build-PM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 SB Ramp
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Route 47															
Lane 1	393	3.0	393	3.0	1380	0.285	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Lane 2[d]	393	3.0	393	3.0	1380	0.285	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	787	3.0	787	3.0		0.285		4.0	LOS A	0.0	0.0				
North: US 67 SB Ramp															
Lane 1[d]	183	3.0	183	3.0	665	0.275	100	8.8	LOS A	1.0	25.5	Full	1600	0.0	0.0
Lane 2	207	3.0	207	3.0	754	0.275	100	7.9	LOS A	1.0	26.6	Full	1600	0.0	0.0
Approach	390	3.0	390	3.0		0.275		8.3	LOS A	1.0	26.6				
West: Route 47															
Lane 1[d]	342	3.0	342	3.0	1012	0.338	100	7.0	LOS A	1.6	41.3	Full	1600	0.0	0.0
Lane 2	265	3.0	265	3.0	1122	0.236	100	5.3	LOS A	1.2	29.9	Full	1600	0.0	0.0
Approach	608	3.0	608	3.0		0.338		6.3	LOS A	1.6	41.3				
All Vehicles	1785	3.0	1785	3.0		0.338		5.7	LOS A	1.6	41.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	165	228	393	3.0	1380	0.285	100	NA	NA
Lane 2	-	393	393	3.0	1380	0.285	100	NA	NA
Approach	165	622	787	3.0		0.285			

North: US 67 SB Ramp

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	151	1	31	183	3.0	665	0.275	100	NA	NA
Lane 2	-	-	207	207	3.0	754	0.275	100	NA	NA

Approach	151	1	238	390	3.0		0.275			
West: Route 47										
Mov. From W To Exit:	T1 E	R2 S	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	342	-	342	3.0		1012	0.338	100	NA	NA
Lane 2	-	265	265	3.0		1122	0.236	100	NA	NA
Approach	342	265	608	3.0			0.338			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1785	3.0		0.338						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: US 67 SB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [Build-AM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 NB Ramp
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US 67 NB Ramp															
Lane 1	84	3.0	84	3.0	790	0.106	100	5.6	LOS A	0.4	9.7	Full	1600	0.0	0.0
Lane 2[d]	91	3.0	91	3.0	857	0.106	100	5.2	LOS A	0.4	9.5	Full	1600	0.0	0.0
Lane 3	134	3.0	134	3.0	880	0.152	100	5.6	LOS A	0.6	16.4	Full	1600	0.0	0.0
Approach	309	3.0	309	3.0		0.152		5.5	LOS A	0.6	16.4				
East: Route 47															
Lane 1	260	3.0	260	3.0	1028	0.253	100	5.9	LOS A	1.1	28.6	Full	1600	0.0	0.0
Lane 2[d]	260	3.0	260	3.0	1028	0.253	100	5.9	LOS A	1.1	28.6	Full	1600	0.0	0.0
Approach	520	3.0	520	3.0		0.253		5.9	LOS A	1.1	28.6				
West: Route 47															
Lane 1[d]	516	3.0	516	3.0	1343	0.384	100	4.6	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	516	3.0	516	3.0		0.384		4.6	LOS A	0.0	0.0				
All Vehicles	1345	3.0	1345	3.0		0.384		5.3	LOS A	1.1	28.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: US 67 NB Ramp

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	84	-	-	84	3.0	790	0.106	100	NA	NA
Lane 2	90	1	-	91	3.0	857	0.106	100	NA	NA
Lane 3	-	-	134	134	3.0	880	0.152	100	NA	NA
Approach	174	1	134	309	3.0		0.152			

East: Route 47

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	260	-	260	3.0	1028	0.253	100	NA	NA
Lane 2	140	120	260	3.0	1028	0.253	100	NA	NA

Approach	400	120	520	3.0		0.253				
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	126	390	516	3.0	1343	0.384	100	NA	NA	
Approach	126	390	516	3.0		0.384				
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1345	3.0		0.384						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: US 67 NB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 4 [Build-AM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route K & Northwood Drive
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Circle K Driveway															
Lane 1[d]	148	3.0	148	3.0	817	0.181	100	6.3	LOS A	0.8	19.5	Full	1600	0.0	0.0
Approach	148	3.0	148	3.0		0.181		6.3	LOS A	0.8	19.5				
East: Route K															
Lane 1[d]	349	3.0	349	3.0	1072	0.326	100	6.5	LOS A	1.7	44.3	Full	1600	0.0	0.0
Approach	349	3.0	349	3.0		0.326		6.5	LOS A	1.7	44.3				
North: Northwood Drive															
Lane 1[d]	172	3.0	172	3.0	840	0.205	100	6.4	LOS A	0.9	22.6	Full	1600	0.0	0.0
Approach	172	3.0	172	3.0		0.205		6.4	LOS A	0.9	22.6				
West: Route K															
Lane 1[d]	521	3.0	521	3.0	1228	0.424	100	7.0	LOS A	2.8	71.4	Full	1600	0.0	0.0
Approach	521	3.0	521	3.0		0.424		7.0	LOS A	2.8	71.4				
All Vehicles	1189	3.0	1189	3.0		0.424		6.7	LOS A	2.8	71.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Circle K Driveway

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	105	4	38	148	3.0	817	0.181	100	NA	NA
Approach	105	4	38	148	3.0		0.181			

East: Route K

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	43	285	21	349	3.0	1072	0.326	100	NA	NA
Approach	43	285	21	349	3.0		0.326			

North: Northwood Drive											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	28	11	133	172	3.0	840	0.205	100	NA	NA	
Approach	28	11	133	172	3.0		0.205				
West: Route K											
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	99	332	90	521	3.0	1228	0.424	100	NA	NA	
Approach	99	332	90	521	3.0		0.424				
	Total	%HV	Deg.Satn (v/c)								
All Vehicles	1189	3.0		0.424							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Circle K Driveway				
Lane 1	0.0	0.0	0.0	0.0
East: Route K				
Lane 1	0.0	0.0	0.0	0.0
North: Northwood Drive				
Lane 1	0.0	0.0	0.0	0.0
West: Route K				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [Build-PM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & Berry Road
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Raider Road															
Lane 1[d]	178	3.0	178	3.0	755	0.236	100	7.4	LOS A	0.9	22.2	Full	1600	0.0	0.0
Approach	178	3.0	178	3.0		0.236		7.4	LOS A	0.9	22.2				
East: Route 47															
Lane 1	403	3.0	403	3.0	1140	0.354	100	6.6	LOS A	1.8	46.7	Full	1600	0.0	0.0
Lane 2[d]	403	3.0	403	3.0	1140	0.354	100	6.6	LOS A	1.8	46.7	Full	1600	0.0	0.0
Approach	807	3.0	807	3.0		0.354		6.6	LOS A	1.8	46.7				
North: Berry Road															
Lane 1[d]	270	3.0	270	3.0	630	0.428	100	12.0	LOS B	2.0	51.2	Full	1600	0.0	0.0
Approach	270	3.0	270	3.0		0.428		12.0	LOS B	2.0	51.2				
West: Route 47															
Lane 1	290	3.0	290	3.0	1128	0.257	100	5.5	LOS A	1.2	30.3	Full	1600	0.0	0.0
Lane 2[d]	290	3.0	290	3.0	1128	0.257	100	5.5	LOS A	1.2	30.3	Full	1600	0.0	0.0
Approach	579	3.0	579	3.0		0.257		5.5	LOS A	1.2	30.3				
All Vehicles	1834	3.0	1834	3.0		0.428		7.1	LOS A	2.0	51.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Raider Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	108	33	38	178	3.0	755	0.236	100	NA	NA
Approach	108	33	38	178	3.0		0.236			

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	351	-	403	3.0	1140	0.354	100	NA	NA

Lane 2	-	334	70	403	3.0	1140	0.354	100	NA	NA
Approach	52	685	70	807	3.0		0.354			
North: Berry Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	123	32	115	270	3.0	630	0.428	100	NA	NA
Approach	123	32	115	270	3.0		0.428			
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	55	234	-	290	3.0	1128	0.257	100	NA	NA
Lane 2	-	239	51	290	3.0	1128	0.257	100	NA	NA
Approach	55	473	51	579	3.0		0.257			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1834	3.0	0.428

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Raider Road				
Lane 1	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [Build-PM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 SB Ramp
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Route 47															
Lane 1	393	3.0	393	3.0	1380	0.285	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Lane 2[d]	393	3.0	393	3.0	1380	0.285	100	4.0	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	787	3.0	787	3.0		0.285		4.0	LOS A	0.0	0.0				
North: US 67 SB Ramp															
Lane 1[d]	183	3.0	183	3.0	665	0.275	100	8.8	LOS A	1.0	25.5	Full	1600	0.0	0.0
Lane 2	207	3.0	207	3.0	754	0.275	100	7.9	LOS A	1.0	26.6	Full	1600	0.0	0.0
Approach	390	3.0	390	3.0		0.275		8.3	LOS A	1.0	26.6				
West: Route 47															
Lane 1[d]	342	3.0	342	3.0	1012	0.338	100	7.0	LOS A	1.6	41.3	Full	1600	0.0	0.0
Lane 2	265	3.0	265	3.0	1122	0.236	100	5.3	LOS A	1.2	29.9	Full	1600	0.0	0.0
Approach	608	3.0	608	3.0		0.338		6.3	LOS A	1.6	41.3				
All Vehicles	1785	3.0	1785	3.0		0.338		5.7	LOS A	1.6	41.3				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	165	228	393	3.0	1380	0.285	100	NA	NA
Lane 2	-	393	393	3.0	1380	0.285	100	NA	NA
Approach	165	622	787	3.0		0.285			

North: US 67 SB Ramp

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	151	1	31	183	3.0	665	0.275	100	NA	NA
Lane 2	-	-	207	207	3.0	754	0.275	100	NA	NA

Approach	151	1	238	390	3.0		0.275			
West: Route 47										
Mov. From W To Exit:	T1 E	R2 S	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	342	-	342	3.0		1012	0.338	100	NA	NA
Lane 2	-	265	265	3.0		1122	0.236	100	NA	NA
Approach	342	265	608	3.0			0.338			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1785	3.0		0.338						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: US 67 SB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [Build-PM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 NB Ramp
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US 67 NB Ramp															
Lane 1	161	3.0	161	3.0	788	0.204	100	6.7	LOS A	0.8	20.0	Full	1600	0.0	0.0
Lane 2[d]	175	3.0	175	3.0	855	0.204	100	6.3	LOS A	0.8	19.6	Full	1600	0.0	0.0
Lane 3	161	3.0	161	3.0	867	0.186	100	6.0	LOS A	0.8	20.4	Full	1600	0.0	0.0
Approach	497	3.0	497	3.0		0.204		6.3	LOS A	0.8	20.4				
East: Route 47															
Lane 1	284	3.0	284	3.0	888	0.319	100	7.5	LOS A	1.4	36.1	Full	1600	0.0	0.0
Lane 2[d]	284	3.0	284	3.0	888	0.319	100	7.5	LOS A	1.4	36.1	Full	1600	0.0	0.0
Approach	567	3.0	567	3.0		0.319		7.5	LOS A	1.4	36.1				
West: Route 47															
Lane 1[d]	518	3.0	518	3.0	1343	0.386	100	4.6	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	518	3.0	518	3.0		0.386		4.6	LOS A	0.0	0.0				
All Vehicles	1583	3.0	1583	3.0		0.386		6.2	LOS A	1.4	36.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: US 67 NB Ramp

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	161	-	-	161	3.0	788	0.204	100	NA	NA
Lane 2	174	1	-	175	3.0	855	0.204	100	NA	NA
Lane 3	-	-	161	161	3.0	867	0.186	100	NA	NA
Approach	335	1	161	497	3.0		0.204			

East: Route 47

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	284	-	284	3.0	888	0.319	100	NA	NA
Lane 2	193	90	284	3.0	888	0.319	100	NA	NA

Approach	477	90	567	3.0		0.319				
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	114	404	518	3.0	1343	0.386	100	NA	NA	
Approach	114	404	518	3.0		0.386				
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1583	3.0		0.386						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: US 67 NB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 4 [Build-PM (Site Folder: Build (Year 2029) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route K & Northwood Drive
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Circle K Driveway															
Lane 1[d]	143	3.0	143	3.0	801	0.179	100	6.3	LOS A	0.7	19.2	Full	1600	0.0	0.0
Approach	143	3.0	143	3.0		0.179		6.3	LOS A	0.7	19.2				
East: Route K															
Lane 1[d]	341	3.0	341	3.0	979	0.349	100	7.3	LOS A	1.8	46.4	Full	1600	0.0	0.0
Approach	341	3.0	341	3.0		0.349		7.3	LOS A	1.8	46.4				
North: Northwood Drive															
Lane 1[d]	207	3.0	207	3.0	849	0.243	100	6.8	LOS A	1.1	27.8	Full	1600	0.0	0.0
Approach	207	3.0	207	3.0		0.243		6.8	LOS A	1.1	27.8				
West: Route K															
Lane 1[d]	557	3.0	557	3.0	1246	0.447	100	7.1	LOS A	3.1	78.9	Full	1600	0.0	0.0
Approach	557	3.0	557	3.0		0.447		7.1	LOS A	3.1	78.9				
All Vehicles	1248	3.0	1248	3.0		0.447		7.0	LOS A	3.1	78.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Circle K Driveway

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	101	15	27	143	3.0	801	0.179	100	NA	NA
Approach	101	15	27	143	3.0		0.179			

East: Route K

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	28	295	18	341	3.0	979	0.349	100	NA	NA
Approach	28	295	18	341	3.0		0.349			

North: Northwood Drive											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	27	14	165	207	3.0	849	0.243	100	NA	NA	
Approach	27	14	165	207	3.0		0.243				
West: Route K											
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	176	274	107	557	3.0	1246	0.447	100	NA	NA	
Approach	176	274	107	557	3.0		0.447				
	Total	%HV	Deg.Satn (v/c)								
All Vehicles	1248	3.0		0.447							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Circle K Driveway				
Lane 1	0.0	0.0	0.0	0.0
East: Route K				
Lane 1	0.0	0.0	0.0	0.0
North: Northwood Drive				
Lane 1	0.0	0.0	0.0	0.0
West: Route K				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [Design-AM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & Berry Road
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Berry Road															
Lane 1[d]	113	3.0	113	3.0	548	0.206	100	9.3	LOS A	0.7	17.4	Full	1600	0.0	0.0
Approach	113	3.0	113	3.0		0.206		9.3	LOS A	0.7	17.4				
East: Route 47															
Lane 1	273	3.0	273	3.0	1258	0.217	100	4.7	LOS A	1.0	25.6	Full	1600	0.0	0.0
Lane 2[d]	273	3.0	273	3.0	1258	0.217	100	4.7	LOS A	1.0	25.6	Full	1600	0.0	0.0
Approach	546	3.0	546	3.0		0.217		4.7	LOS A	1.0	25.6				
North: Berry Road															
Lane 1[d]	214	3.0	214	3.0	877	0.244	100	6.6	LOS A	1.0	24.3	Full	1600	0.0	0.0
Approach	214	3.0	214	3.0		0.244		6.6	LOS A	1.0	24.3				
West: Route 47															
Lane 1	480	3.0	480	3.0	1142	0.420	100	7.4	LOS A	2.4	60.2	Full	1600	0.0	0.0
Lane 2[d]	480	3.0	480	3.0	1142	0.420	100	7.4	LOS A	2.4	60.2	Full	1600	0.0	0.0
Approach	960	3.0	960	3.0		0.420		7.4	LOS A	2.4	60.2				
All Vehicles	1833	3.0	1833	3.0		0.420		6.6	LOS A	2.4	60.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Berry Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	54	13	46	113	3.0	548	0.206	100	NA	NA
Approach	54	13	46	113	3.0		0.206			

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

Lane 1	24	249	-	273	3.0	1258	0.217	100	NA	NA
Lane 2	-	164	109	273	3.0	1258	0.217	100	NA	NA
Approach	24	413	109	546	3.0		0.217			
North: Berry Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	139	30	45	214	3.0	877	0.244	100	NA	NA
Approach	139	30	45	214	3.0		0.244			
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	27	453	-	480	3.0	1142	0.420	100	NA	NA
Lane 2	-	371	109	480	3.0	1142	0.420	100	NA	NA
Approach	27	824	109	960	3.0		0.420			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1833	3.0	0.420

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [Design-AM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 SB Ramp
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Route 47															
Lane 1	355	3.0	355	3.0	1380	0.258	100	3.9	LOS A	0.0	0.0	Full	1600	0.0	0.0
Lane 2[d]	355	3.0	355	3.0	1380	0.258	100	3.9	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	711	3.0	711	3.0		0.258		3.9	LOS A	0.0	0.0				
North: US 67 SB Ramp															
Lane 1[d]	116	3.0	116	3.0	714	0.163	100	6.8	LOS A	0.6	14.4	Full	1600	0.0	0.0
Lane 2	98	3.0	98	3.0	893	0.110	67[5]	5.1	LOS A	0.4	9.9	Full	1600	0.0	0.0
Approach	214	3.0	214	3.0		0.163		6.0	LOS A	0.6	14.4				
West: Route 47															
Lane 1[d]	512	3.0	512	3.0	975	0.525	100	10.2	LOS B	4.0	101.9	Full	1600	0.0	0.0
Lane 2	482	3.0	482	3.0	1036	0.465	100	8.7	LOS A	2.8	72.8	Full	1600	0.0	0.0
Approach	993	3.0	993	3.0		0.525		9.5	LOS A	4.0	101.9				
All Vehicles	1918	3.0	1918	3.0		0.525		7.0	LOS A	4.0	101.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	239	116	355	3.0	1380	0.258	100	NA	NA
Lane 2	-	355	355	3.0	1380	0.258	100	NA	NA
Approach	239	472	711	3.0		0.258			

North: US 67 SB Ramp

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	115	1	-	116	3.0	714	0.163	100	NA	NA

Lane 2	-	-	98	98	3.0	893	0.110	67[5]	NA	NA
Approach	115	1	98	214	3.0		0.163			
West: Route 47										
Mov. From W To Exit:	T1 E	R2 S	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL %	Ov. Lane No.
Lane 1	512	-	512	3.0		975	0.525	100	NA	NA
Lane 2	-	482	482	3.0		1036	0.465	100	NA	NA
Approach	512	482	993	3.0			0.525			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1918	3.0	0.525							

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: US 67 SB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [Design-AM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 NB Ramp
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US 67 NB Ramp															
Lane 1	105	3.0	105	3.0	689	0.153	100	6.9	LOS A	0.5	14.0	Full	1600	0.0	0.0
Lane 2[d]	115	3.0	115	3.0	754	0.153	100	6.4	LOS A	0.5	13.7	Full	1600	0.0	0.0
Lane 3	170	3.0	170	3.0	787	0.216	100	6.9	LOS A	0.9	23.5	Full	1600	0.0	0.0
Approach	390	3.0	390	3.0		0.216		6.7	LOS A	0.9	23.5				
East: Route 47															
Lane 1	328	3.0	328	3.0	951	0.345	100	7.4	LOS A	1.6	41.1	Full	1600	0.0	0.0
Lane 2[d]	328	3.0	328	3.0	951	0.345	100	7.4	LOS A	1.6	41.1	Full	1600	0.0	0.0
Approach	657	3.0	657	3.0		0.345		7.4	LOS A	1.6	41.1				
West: Route 47															
Lane 1[d]	653	3.0	653	3.0	1343	0.486	100	5.1	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	653	3.0	653	3.0		0.486		5.1	LOS A	0.0	0.0				
All Vehicles	1700	3.0	1700	3.0		0.486		6.4	LOS A	1.6	41.1				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: US 67 NB Ramp

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	105	-	-	105	3.0	689	0.153	100	NA	NA
Lane 2	114	1	-	115	3.0	754	0.153	100	NA	NA
Lane 3	-	-	170	170	3.0	787	0.216	100	NA	NA
Approach	220	1	170	390	3.0		0.216			

East: Route 47

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	328	-	328	3.0	951	0.345	100	NA	NA

Lane 2	177	151	328	3.0	951	0.345	100	NA	NA
Approach	505	151	657	3.0		0.345			
West: Route 47									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	160	493	653	3.0	1343	0.486	100	NA	NA
Approach	160	493	653	3.0		0.486			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1700	3.0	0.486

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: US 67 NB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 4 [Design-AM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route K & Northwood Drive
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Circle K Driveway															
Lane 1[d]	148	3.0	148	3.0	717	0.206	100	7.3	LOS A	0.8	21.7	Full	1600	0.0	0.0
Approach	148	3.0	148	3.0		0.206		7.3	LOS A	0.8	21.7				
East: Route K															
Lane 1[d]	429	3.0	429	3.0	1042	0.412	100	7.8	LOS A	2.4	60.8	Full	1600	0.0	0.0
Approach	429	3.0	429	3.0		0.412		7.8	LOS A	2.4	60.8				
North: Northwood Drive															
Lane 1[d]	218	3.0	218	3.0	774	0.282	100	7.8	LOS A	1.3	32.1	Full	1600	0.0	0.0
Approach	218	3.0	218	3.0		0.282		7.8	LOS A	1.3	32.1				
West: Route K															
Lane 1[d]	634	3.0	634	3.0	1214	0.522	100	8.4	LOS A	4.0	101.9	Full	1600	0.0	0.0
Approach	634	3.0	634	3.0		0.522		8.4	LOS A	4.0	101.9				
All Vehicles	1429	3.0	1429	3.0		0.522		8.0	LOS A	4.0	101.9				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Circle K Driveway

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	105	4	38	148	3.0	717	0.206	100	NA	NA
Approach	105	4	38	148	3.0		0.206			

East: Route K

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	43	360	26	429	3.0	1042	0.412	100	NA	NA

Approach	43	360	26	429	3.0		0.412				
North: Northwood Drive											
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	36	14	168	218	3.0	774	0.282	100	NA	NA	
Approach	36	14	168	218	3.0		0.282				
West: Route K											
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.	
Lane 1	125	418	90	634	3.0	1214	0.522	100	NA	NA	
Approach	125	418	90	634	3.0		0.522				
	Total	%HV	Deg.Satn (v/c)								
All Vehicles	1429	3.0	0.522								

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Circle K Driveway				
Lane 1	0.0	0.0	0.0	0.0
East: Route K				
Lane 1	0.0	0.0	0.0	0.0
North: Northwood Drive				
Lane 1	0.0	0.0	0.0	0.0
West: Route K				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 1 [Design-PM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & Berry Road
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Berry Road															
Lane 1[d]	227	3.0	227	3.0	643	0.353	100	10.3	LOS B	1.5	37.6	Full	1600	0.0	0.0
Approach	227	3.0	227	3.0		0.353		10.3	LOS B	1.5	37.6				
East: Route 47															
Lane 1	509	3.0	509	3.0	1083	0.470	100	8.5	LOS A	2.7	69.2	Full	1600	0.0	0.0
Lane 2[d]	509	3.0	509	3.0	1083	0.470	100	8.5	LOS A	2.7	69.2	Full	1600	0.0	0.0
Approach	1018	3.0	1018	3.0		0.470		8.5	LOS A	2.7	69.2				
North: Berry Road															
Lane 1[d]	341	3.0	341	3.0	510	0.670	100	23.3	LOS C	3.9	100.6	Full	1600	0.0	0.0
Approach	341	3.0	341	3.0		0.670		23.3	LOS C	3.9	100.6				
West: Route 47															
Lane 1	366	3.0	366	3.0	1069	0.342	100	6.8	LOS A	1.7	43.0	Full	1600	0.0	0.0
Lane 2[d]	366	3.0	366	3.0	1069	0.342	100	6.8	LOS A	1.7	43.0	Full	1600	0.0	0.0
Approach	732	3.0	732	3.0		0.342		6.8	LOS A	1.7	43.0				
All Vehicles	2318	3.0	2318	3.0		0.670		10.3	LOS B	3.9	100.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Berry Road

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	137	41	49	227	3.0	643	0.353	100	NA	NA
Approach	137	41	49	227	3.0		0.353			

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

Lane 1	65	444	-	509	3.0	1083	0.470	100	NA	NA
Lane 2	-	421	88	509	3.0	1083	0.470	100	NA	NA
Approach	65	865	88	1018	3.0		0.470			
North: Berry Road										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	155	40	146	341	3.0	510	0.670	100	NA	NA
Approach	155	40	146	341	3.0		0.670			
West: Route 47										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	70	296	-	366	3.0	1069	0.342	100	NA	NA
Lane 2	-	302	64	366	3.0	1069	0.342	100	NA	NA
Approach	70	598	64	732	3.0		0.342			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	2318	3.0	0.670

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Berry Road				
Lane 1	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 2 [Design-PM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 SB Ramp
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
East: Route 47															
Lane 1	498	3.0	498	3.0	1380	0.361	100	4.4	LOS A	0.0	0.0	Full	1600	0.0	0.0
Lane 2[d]	498	3.0	498	3.0	1380	0.361	100	4.4	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	996	3.0	996	3.0		0.361		4.4	LOS A	0.0	0.0				
North: US 67 SB Ramp															
Lane 1[d]	226	3.0	226	3.0	546	0.414	100	13.2	LOS B	1.8	46.0	Full	1600	0.0	0.0
Lane 2	267	3.0	267	3.0	644	0.414	100	11.5	LOS B	1.9	49.5	Full	1600	0.0	0.0
Approach	492	3.0	492	3.0		0.414		12.2	LOS B	1.9	49.5				
West: Route 47															
Lane 1[d]	433	3.0	433	3.0	931	0.465	100	9.4	LOS A	2.9	73.4	Full	1600	0.0	0.0
Lane 2	336	3.0	336	3.0	1069	0.314	100	6.4	LOS A	1.6	42.2	Full	1600	0.0	0.0
Approach	768	3.0	768	3.0		0.465		8.1	LOS A	2.9	73.4				
All Vehicles	2257	3.0	2257	3.0		0.465		7.4	LOS A	2.9	73.4				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

East: Route 47

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	210	288	498	3.0	1380	0.361	100	NA	NA
Lane 2	-	498	498	3.0	1380	0.361	100	NA	NA
Approach	210	786	996	3.0		0.361			

North: US 67 SB Ramp

Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	191	1	33	226	3.0	546	0.414	100	NA	NA
Lane 2	-	-	267	267	3.0	644	0.414	100	NA	NA

Approach	191	1	300	492	3.0		0.414			
West: Route 47										
Mov. From W To Exit:	T1 E	R2 S	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	433	-	433	3.0		931	0.465	100	NA	NA
Lane 2	-	336	336	3.0		1069	0.314	100	NA	NA
Approach	433	336	768	3.0			0.465			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	2257	3.0		0.465						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: US 67 SB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 3 [Design-PM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route 47 & US 67 NB Ramp
Site Category: AM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: US 67 NB Ramp															
Lane 1	202	3.0	202	3.0	689	0.294	100	8.8	LOS A	1.1	29.2	Full	1600	0.0	0.0
Lane 2[d]	221	3.0	221	3.0	753	0.294	100	8.2	LOS A	1.1	28.8	Full	1600	0.0	0.0
Lane 3	203	3.0	203	3.0	772	0.263	100	7.6	LOS A	1.2	29.5	Full	1600	0.0	0.0
Approach	627	3.0	627	3.0		0.294		8.2	LOS A	1.2	29.5				
East: Route 47															
Lane 1	359	3.0	359	3.0	791	0.454	100	10.5	LOS B	2.6	66.8	Full	1600	0.0	0.0
Lane 2[d]	359	3.0	359	3.0	791	0.454	100	10.5	LOS B	2.6	66.8	Full	1600	0.0	0.0
Approach	717	3.0	717	3.0		0.454		10.5	LOS B	2.6	66.8				
West: Route 47															
Lane 1[d]	654	3.0	654	3.0	1343	0.487	100	5.1	LOS A	0.0	0.0	Full	1600	0.0	0.0
Approach	654	3.0	654	3.0		0.487		5.1	LOS A	0.0	0.0				
All Vehicles	1999	3.0	1999	3.0		0.487		8.0	LOS A	2.6	66.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: US 67 NB Ramp

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	202	-	-	202	3.0	689	0.294	100	NA	NA
Lane 2	220	1	-	221	3.0	753	0.294	100	NA	NA
Lane 3	-	-	203	203	3.0	772	0.263	100	NA	NA
Approach	423	1	203	627	3.0		0.294			

East: Route 47

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	359	-	359	3.0	791	0.454	100	NA	NA

Lane 2	245	114	359	3.0	791	0.454	100	NA	NA
Approach	603	114	717	3.0		0.454			
West: Route 47									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	143	511	654	3.0	1343	0.487	100	NA	NA
Approach	143	511	654	3.0		0.487			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1999	3.0	0.487

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: US 67 NB Ramp				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
East: Route 47				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Route 47				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 4 [Design-PM (Site Folder: Design (Year 2049) Conditions)]

Output produced by SIDRA INTERSECTION Version: 9.1.1.200

Route K & Northwood Drive
Site Category: PM Peak Hour
Roundabout

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: Circle K Driveway															
Lane 1[d]	143	3.0	143	3.0	700	0.205	100	7.5	LOS A	0.8	21.4	Full	1600	0.0	0.0
Approach	143	3.0	143	3.0		0.205		7.5	LOS A	0.8	21.4				
East: Route K															
Lane 1[d]	424	3.0	424	3.0	932	0.455	100	9.2	LOS A	2.8	70.6	Full	1600	0.0	0.0
Approach	424	3.0	424	3.0		0.455		9.2	LOS A	2.8	70.6				
North: Northwood Drive															
Lane 1[d]	262	3.0	262	3.0	779	0.336	100	8.6	LOS A	1.6	39.8	Full	1600	0.0	0.0
Approach	262	3.0	262	3.0		0.336		8.6	LOS A	1.6	39.8				
West: Route K															
Lane 1[d]	674	3.0	674	3.0	1231	0.547	100	8.7	LOS A	4.4	113.5	Full	1600	0.0	0.0
Approach	674	3.0	674	3.0		0.547		8.7	LOS A	4.4	113.5				
All Vehicles	1503	3.0	1503	3.0		0.547		8.7	LOS A	4.4	113.5				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
Delay Model: HCM Delay Formula (Stopline Delay: Geometric Delay is not included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: Siegloch M1 implied by US HCM 6 Roundabout Capacity Model.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

d Dominant lane on roundabout approach

Approach Lane Flows (veh/h)

South: Circle K Driveway

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	101	15	27	143	3.0	700	0.205	100	NA	NA
Approach	101	15	27	143	3.0		0.205			

East: Route K

Mov. From E To Exit:	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	28	373	23	424	3.0	932	0.455	100	NA	NA

Approach	28	373	23	424	3.0		0.455			
North: Northwood Drive										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	34	18	210	262	3.0	779	0.336	100	NA	NA
Approach	34	18	210	262	3.0		0.336			
West: Route K										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	222	346	107	674	3.0	1231	0.547	100	NA	NA
Approach	222	346	107	674	3.0		0.547			
	Total	%HV	Deg.Satn (v/c)							
All Vehicles	1503	3.0		0.547						

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length ft	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Circle K Driveway				
Lane 1	0.0	0.0	0.0	0.0
East: Route K				
Lane 1	0.0	0.0	0.0	0.0
North: Northwood Drive				
Lane 1	0.0	0.0	0.0	0.0
West: Route K				
Lane 1	0.0	0.0	0.0	0.0

Appendix H: Interim Improvements Concepts

NB HIGHWAY 67

NB ON RAMP

NORTHWOOD DR

ROUTE K

SB HIGHWAY 67

SB OFF RAMP

POINTVIEW DR

CARZON RD

HILLCREST DR

SCALE

0 50 100 150

- TRAVERSABLE ISLANDS

DRAFT PLANS
NOT FOR CONSTRUCTION

DATE

DATE PREPARED
10/2/2026

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
SE	1

COUNTY
ST. FRANCOIS

JOB NO.
SE0154

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

MoDOT

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

APPENDIX H
EXHIBIT 1 - K/NORTHWOOD
MINI-ROUNDABOUT
SHEET 1 OF 1

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DRAFT PLANS
NOT FOR CONSTRUCTION

DATE

DATE PREPARED
10/2/2026

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
SE	2

COUNTY
ST. FRANCOIS

JOB NO.
SE0154

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

APPENDIX H
EXHIBIT 2 - CORRIDOR
INTERMEDIATE IMPROVEMENTS
SHEET 1 OF 2

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SB HIGHWAY 67

NB HIGHWAY 67

NB ON RAMP

NORTHWOOD DR

ROUTE 47

ROUTE K

SB ON RAMP

POINTVIEW DR

SCALE

0 50 100 150

DRAFT PLANS
NOT FOR CONSTRUCTION

DATE

DATE PREPARED
10/2/2026

ROUTE	STATE
K	MO

DISTRICT	SHEET NO.
SE	3

COUNTY
ST. FRANCOIS

JOB NO.
SE0154

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION

105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

APPENDIX H
EXHIBIT 2 - CORRIDOR
INTERMEDIATE IMPROVEMENTS
SHEET 2 OF 2

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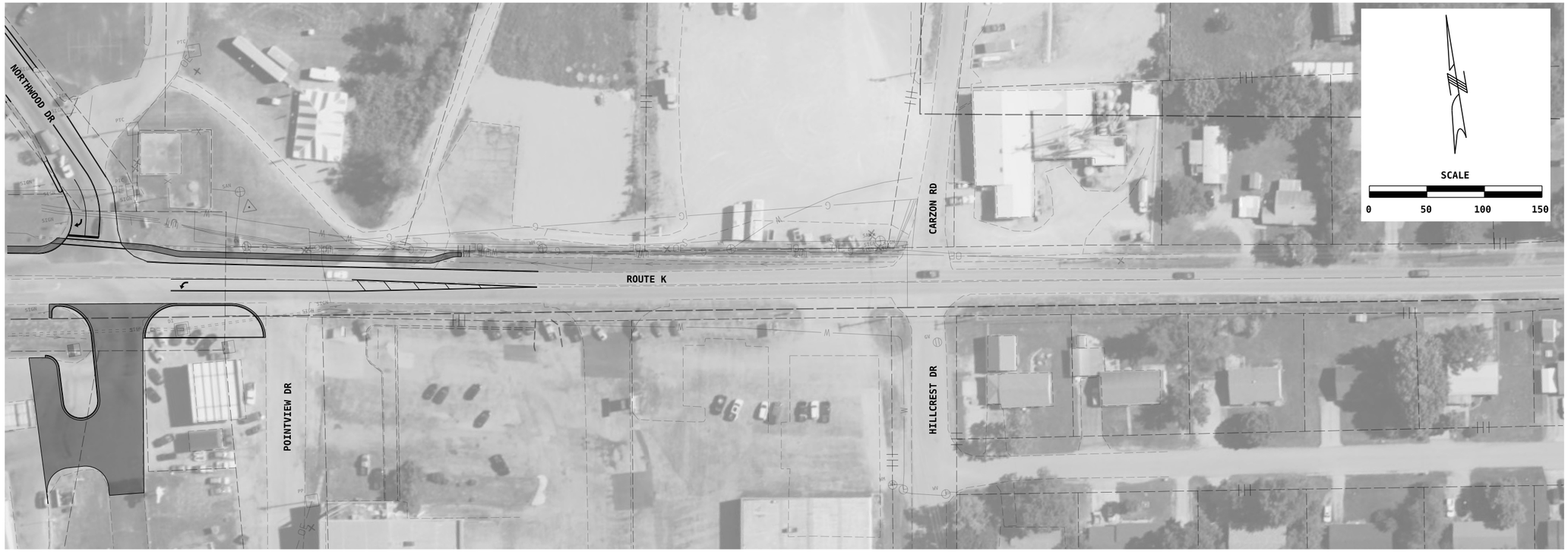

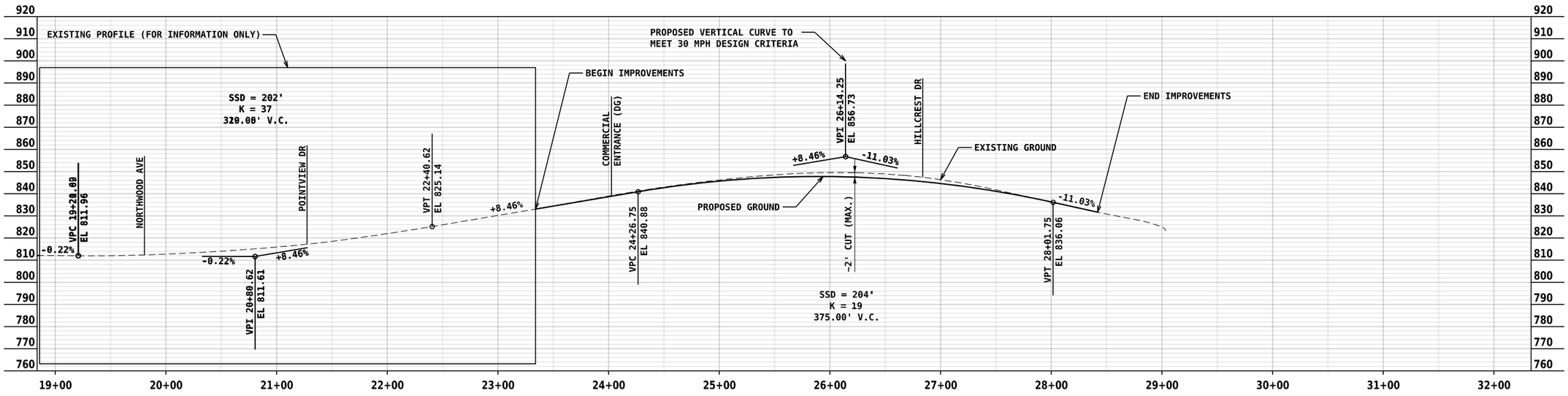

DRAFT PLANS
NOT FOR CONSTRUCTION

DATE

DATE PREPARED
10/2/2026

ROUTE	STATE
K	MO
DISTRICT	SHEET NO.
SE	4

COUNTY
ST. FRANCOIS

JOB NO.
SE0154

CONTRACT ID.

PROJECT NO.

BRIDGE NO.

DESCRIPTION	DATE

MISSOURI HIGHWAYS AND TRANSPORTATION COMMISSION
105 WEST CAPITOL
JEFFERSON CITY, MO 65102
1-888-ASK-MODOT (1-888-275-6636)

APPENDIX H
EXHIBIT 3 - FUTURE
VERTICAL IMPROVEMENTS
SHEET 1 OF 1

K:\KNC_TPTO\268242005 - MoDOT Route K-North Wood\CAD\Exhibit\Conceptual Draft for TSO\Plansheets\Vertical Profile Exhibit.dgn 11:07:35 AM 10/2/2026

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Appendix I: Design Criteria

Design Criteria - Route K / Northwood Drive

Roadway design criteria is summarized below and will be used to develop proposed design alternatives.

Roadway Classification

Roadway	Functional Classification	AADT (2029/2049)
Route K	Major Collector	15,955/20,174
Northwood Dr	Minor Collector	3,833/4,678
Other Side Roads	Local Street	3,926/4,792

Roadway Design Criteria

Design Attribute	Route K Minimum Criteria	Northwood Drive Minimum Criteria	Other Side Roads Minimum Criteria	Basis For Design Criteria*
Design Speed	45 mph	30 mph	25 mph	MoDOT EPG 230.1
Posted Speed	45 mph	30 mph	25 mph	The current posted speeds
Lane Width	12 ft	11 ft	11 ft	AASHTO Greenbook (Table 6-5)
Shoulder Width	6 ft	6 ft	6 ft	AASHTO Greenbook (Table 6-5)
Normal Crown	2.00%	2.00%	2.00%	AASHTO Greenbook (Section 3.3.3.1)
Horizontal Curve	R=643 ft emax = 6%	R=231 ft emax = 6%	R=144 ft emax = 6%	AASHTO Greenbook (Table 3-7)
Crest Vertical Curve	SSD=360 ft K = 61	SSD=200 ft K = 19	SSD=155 ft K = 12	AASHTO Greenbook (Table 3-35)
Sag Vertical Curve	SSD=360 ft K = 79	SSD=200 ft K = 37	SSD=155 ft K = 26	AASHTO Greenbook (Table 3-37)
Maximum Grade	5.00%	5.00%	7.00%	AASHTO Greenbook (Table 7-2, 5-2)
Clear Zone	22 ft	14 ft	14 ft	AASHTO Roadside Design Guide (Table 3-1)
Sidewalk Width	5 ft	N/A	N/A	MoDOT EPG 642.8.1
Sidewalk Slope	1.00% Min. 2.00% Max.	N/A	N/A	MoDOT EPG 642.8
Sidewalk Grade	5.00% Max.	N/A	N/A	MoDOT EPG 642.8.4

*The basis for Design Criteria is the MoDOT Engineering Policy Guide, AASHTO 2018 Edition of “A Policy on Geometric Design on Highways and Streets” and the AASHTO 2011 Edition of “Roadside Design Guide”.

Roundabout design criteria is summarized below and will be used to develop proposed design alternatives incorporating a roundabout.

Roundabout Design Criteria

Roundabout Design Element	Single Lane	Multilane[1]	EPG Section[5]
Inscribed Circle Diameter [2]	120 – 150 ft.**	140 - 180 ft.	233.3.3.2
Fastest Path Entry Speed, R1 [3]	25 mph (max.)	28 mph (max.)	233.3.5.1
Fastest Path Entry/ Circulating Speed Differential (R1 to R4)	10 mph (max.)	12-15 mph (max.)	233.3.5.1
Minimum Tangent between Approach Reverse Curves	50 –100 ft. (min.)	50 – 100 ft. (min.)	233.3.3.3
View Angle	75 degrees (min.)	75 degrees (min.)	233.3.5.2.3
Crosswalk Pedestrian Refuge Width (Face of curb)	6 ft. (min.)	6 ft. (min.)	233.3.4.1
Splitter Island Length (≤35 mph posted speed) (>35 posted speed)	50 ft. (min.) 100 ft. (min.)	100 ft. (min.) 200 ft. (min.)	233.3.3.5
Entry Radius	60 - 90 ft.	70 - 100 ft.	233.3.3.6
Entry Width (Face of curb)	18 - 21 ft.	26 - 32 ft.	233.3.3.6
Exit Radius [4]	120 - 500 ft.	200 – 800 ft.	233.3.3.6
Exit Width (Face of curb)	18 - 21 ft.	28 - 32 ft.	233.3.3.6
Circulatory Roadway Width (Face of curb)	18 - 21 ft.	28 - 32 ft.	233.3.3.7
Truck Apron Width	10 – 14 ft.	10 – 14 ft.	233.3.3.4
Truck Apron Height	3 in.	3 in.	233.3.3.4
Truck Apron Slope	1% (min.)	1% (min.)	233.3.3.4
Cross Slope	-2%	-2%	233.3.3.12
Longitudinal Grade	0.5% - 5%	0.5% - 5%	233.3.3.12

[1] Assume two circulating lanes

[2] Based on WB-67 design vehicle

[3] 25 mph is the maximum fastest path entry speed for bypass lanes

[4] When there is significant pedestrian activity, radii should be at the lower end of the provided range

[5] MoDOT EPG Article references are from upcoming updates to EPG Roundabout Article 233.3, based on NCHRP Report 1043 “Guide for Roundabouts”.

**Accommodations for OSOW loads should be included in design.

Appendix J: Conceptual Cost Estimates

Route K-North Wood Conceptual Engineer's Opionion of Probable Construction Cost

Intermediate Improvements with Mini Roundabout

Kimley»Horn

10/2/2026

#	Description	Quantity	Unit	Unit Cost	Extension
1	Clearing, Grubbing, and Demolition	1	LS	$ 65,000.00	$ 65,000.00
2	Mobilization	1	LS	$ 130,000.00	$ 130,000.00
3	Construction Staking	1	LS	$ 13,000.00	$ 13,000.00
4	Temporary Traffic Control	1	LS	$ 26,000.00	$ 26,000.00
5	Earthwork	1	LS	$ 30,000.00	$ 30,000.00
6	Concrete Pavement	785	SY	$ 110.00	$ 86,350.00
7	Asphalt Pavement	1,020	SY	$ 100.00	$ 102,000.00
8	4" Median Island	885	SY	$ 150.00	$ 132,750.00
9	Truck Apron	380	SY	$ 75.00	$ 28,500.00
10	Compacted Aggregrate	3,070	SY	$ 20.00	$ 61,400.00
11	Compacted Subgrade	3,070	SY	$ 8.00	$ 24,560.00
12	Mill and Overlay	4,370	SY	$ 10.00	$ 43,700.00
13	Pavement Markings	1	LS	$ 10,000.00	$ 10,000.00
14	4" Sidewalk	1,030	SY	$ 90.00	$ 92,700.00
15	Concrete Curb Ramp	13	EA	$ 2,000.00	$ 26,000.00
16	Commercial Driveway (8")	890	SY	$ 100.00	$ 89,000.00
17	Concrete Curb and Gutter	1,855	LF	$ 60.00	$ 111,300.00
18	Upright Curb	2,075	LF	$ 30.00	$ 62,250.00
19	Storm Pipe	460	LF	$ 300.00	$ 138,000.00
20	Storm Structures	8	EA	$ 15,000.00	$ 120,000.00
21	Permanent Traffic Control	1	LS	$ 40,000.00	$ 40,000.00
22	Erosion Control	1	LS	$ 25,000.00	$ 25,000.00
23	Street Lights	6	EA	$ 15,000.00	$ 90,000.00
24	Permanent Seeding / Sodding	1	LS	$ 26,000.00	$ 26,000.00
25	Traffic Signal Modifications	1	LS	$ 75,000.00	$ 75,000.00
				SUB-TOTAL =	$ 1,573,510.00
				Contingency (20%) =	$ 314,702.00
				BASE TOTAL =	**$ 1,888,212.00**

Note: Costs for construction only. Costs for permitting, ROW/easements or engineering design are not included.

Disclaimer: The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs

Route K-North Wood Conceptual Engineer's Opionion of Probable Construction Cost

Intermediate Improvements

10/2/2026

#	Description	Quantity	Unit	Unit Cost	Extension
1	Clearing, Grubbing, and Demolition	1	LS	$ 31,000.00	$ 31,000.00
2	Mobilization	1	LS	$ 61,000.00	$ 61,000.00
3	Construction Staking	1	LS	$ 6,000.00	$ 6,000.00
4	Temporary Traffic Control	1	LS	$ 12,500.00	$ 12,500.00
5	Mill and Overlay	1,500	SY	$ 10.00	$ 15,000.00
6	Aspahlt Pavement	1,000	SY	$ 100.00	$ 100,000.00
7	Compacted Aggregrate	2,673	SY	$ 20.00	$ 53,460.00
8	Compacted Subgrade	2,673	SY	$ 8.00	$ 21,384.00
9	Pavement Markings	1	LS	$ 7,500.00	$ 7,500.00
10	4" Sidewalk	896	SY	$ 90.00	$ 80,640.00
11	Concrete Curb Ramp	9	EA	$ 2,000.00	$ 18,000.00
12	Commercial Driveway (8")	367	SY	$ 100.00	$ 36,700.00
13	Concrete Curb and Gutter	1,136	LF	$ 60.00	$ 68,160.00
14	Upright Curb	1,135	LF	$ 30.00	$ 34,050.00
15	Storm Pipe	120	LF	$ 300.00	$ 36,000.00
16	Storm Structures	4	EA	$ 15,000.00	$ 60,000.00
17	Permanent Traffic Control	1	LS	$ 18,500.00	$ 18,500.00
18	Erosion Control	1	LS	$ 5,000.00	$ 5,000.00
19	Street Lights	2	EA	$ 15,000.00	$ 30,000.00
20	Permanent Seeding / Sodding	1	LS	$ 12,500.00	$ 12,500.00
21	Traffic Signal Modifications	1	LS	$ 75,000.00	$ 75,000.00
				SUB-TOTAL =	$ 707,394.00
				Contingency (20%) =	$ 141,478.80
				BASE TOTAL =	**$ 848,872.80**

Note: Costs for construction only. Costs for permitting, ROW/easements or engineering design are not included.

Disclaimer: The Engineer has no control over the cost of labor, materials, equipment, or over the Contractor's methods of determining prices or over competitive bidding or market conditions. Opinions of probable costs provided herein are based on the information known to Engineer at this time and represent only the Engineer's judgment as a design professional familiar with the construction industry. The Engineer cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from its opinions of probable costs