APPENDIX A

BASE DATA FROM HIS

Route	Beginning MP	Beginning Feature	Ending MP	Ending Feature	Length	Functional Class	State System	NHS	NTN	Truck Weight Class	# of Lanes	Lane Width	Shoulder Type
US 41	3.275	Industrial Road	3.426	Kingdom Hall Road	3.575	Urban Principal Arterial	State Secondary	N	N	AAA	2	10	Paved with Bituminous Material
US 41	3.426	Kingdom Hall Road	3.575	Wicks Well Road	0.149	Urban Principal Arterial	State Secondary						
Hopkins County	3.575	Wicks Well Road	3.722	Calumet Lane	0.147	Rural Minor Arterial		N	N	AAA	2	10	Paved with Bituminous Material
	3.722	Calumet Lane	4.140	Culvert	0.418								
	4.140	Culvert	4.249	Rainwater/Hawkins Lane	0.109								
	4.249	Rainwater/Hawkins Lane	4.806	N/A	0.557								
	4.806	N/A	4.967	Shepherd Lane	0.161								
	4.967	Shepherd Lane	5.002	Manitou Loop	0.035								
	5.002	Manitou Loop	5.010	KY 630	0.008								
	5.010	KY 630	5.056	Manitou Drive	0.046								
	5.056	Manitou Drive	5.145	Webster Street	0.089								
	5.145	Webster Street	5.210	Manitou Loop	0.065								
	5.210	Manitou Loop	5.220	KY 630	0.010								
	5.220	KY 630	5.316	N/A	0.096								
	5.316	N/A	5.515	Pond Creek Bridge - B00200	0.199								
	5.515	Pond Creek Bridge - B00200	6.759	Pond Creek Bridge - B00208	1.244								
	6.759	Pond Creek Bridge - B00208	7.103	J E Ellis Lane	0.344								
	7.103	J E Ellis Lane	7.154	KY 2320	0.051								
	7.154	KY 2320	7.674	Withers Lane	0.520								
	7.674	Withers Lane	8.254	Rose Creek Culvert - B00197	0.580								
	8.254	Rose Creek Culvert - B00197	8.421	N/A	0.167								
	8.421	N/A	8.431	Noffsinger Road	0.010								
	8.431	Noffsinger Road	8.605	Lakewood Drive	0.174								
	8.605	Lakewood Drive	8.679	North Hoffman Street	0.074								
	8.679	North Hoffman Street	8.691	South Hoffman Street	0.012								
	8.691	South Hoffman Street	8.794	KY 502	0.103								
	8.794	KY 502	8.944	N/A	0.150								
	8.944	N/A	9.685	KY 1089	0.741								
	9.685	KY 1089	10.389	Hayes Road	0.704							9	
	10.389	Hayes Road	11.038	KY 2280	0.649								
	11.038	KY 2280	11.898	Weirs Creek Bridge - B00201	0.860								
	11.898	Weirs Creek Bridge - B00201	12.391	Ferrell Loop	0.493								
	12.391	Ferrell Loop	12.461	Ferrell Loop	0.070								
	12.461	Ferrell Loop	12.627	Lutontown Road	0.166								
	12.627	Lutontown Road	13.190	Gibson Jackson Road	0.563								
	13.190	Gibson Jackson Road	13.278	Hopkins - Webster County Line	0.088								
Webster County	0.000	Hopkins - Webster County Line	0.401	Greg Hudson Drive	0.401	Rural Minor Arterial	State Secondary	N	N	AAA	2	10	Combination
	0.401	Greg Hudson Drive	0.420	N/A	0.019								
	0.420	N/A	0.470	KY 814	0.050								
	0.470	KY 814	0.626	Old Madisonville Street	0.156								
	0.626	Old Madisonville Street	0.738	Trader Drive	0.112								
	0.738	Trader Drive	0.934	Country Club Meadows/Fairway Acres	0.196								
	0.934	Country Club Meadows/Fairway Acres	1.000	N/A	0.066								
	1.000	N/A	1.194	Liberty	0.194							13	
	1.194	Liberty	1.324	KY 670	0.130								
	1.324	KY 670	1.420	N/A	0.096								
	1.420	N/A	1.550	N/A	0.130								
	1.550	N/A	1.625	Ken Williams Road	0.075							10	
	1.625	Ken Williams Road	3.379	Old Stanhope Road	1.754								
	3.379	Old Stanhope Road	4.120	Bull Creek Bridge	0.741								
	4.120	Bull Creek Bridge	4.780	Slover Creek Bridge	0.660								
	4.780	Slover Creek Bridge	5.203	KY 270	0.423								

Route	Beginning MP	Beginning Feature	Ending MP	Ending Feature	Shoulder Width	Speed Limit	Pavement Type	Current ADT	Condition Index (CONDINDX)	Safety Index (SAFEINDX)	Service Index (SERVINDX)	Composite Adequacy Rating (COMPINDX)	Composite Adequacy Rating Percentile
US 41	3.275	Industrial Road	3.426	Kingdom Hall Road	2	55	High Flexible	12,200	30.00	40.00	20.00	90.00	94.09
US 41	3.426	Kingdom Hall Road	3.575	Wicks Well Road	2	55	High Flexible	11,800	30.00	40.00	20.00	90.00	94.09
Hopkins County	3.575	Wicks Well Road	3.722	Calumet Lane	2	55	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	3.722	Calumet Lane	4.140	Culvert	2	55	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	4.140	Culvert	4.249	Rainwater/Hawkins Lane	2	55	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	4.249	Rainwater/Hawkins Lane	4.806	N/A	2	55	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	4.806	N/A	4.967	Shepherd Lane	2	45	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	4.967	Shepherd Lane	5.002	Manitou Loop	2	45	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	5.002	Manitou Loop	5.010	KY 630	2	45	High Flexible	11,800	30.00	32.80	19.00	81.80	55.95
Hopkins County	5.010	KY 630	5.056	Manitou Drive	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.056	Manitou Drive	5.145	Webster Street	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.145	Webster Street	5.210	Manitou Loop	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.210	Manitou Loop	5.220	KY 630	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.220	KY 630	5.316	N/A	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.316	N/A	5.515	Pond Creek Bridge - B00200	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	5.515	Pond Creek Bridge - B00200	6.759	Pond Creek Bridge - B00208	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	6.759	Pond Creek Bridge - B00208	7.103	J E Ellis Lane	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	7.103	J E Ellis Lane	7.154	KY 2320	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	7.154	KY 2320	7.674	Withers Lane	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	7.674	Withers Lane	8.254	Rose Creek Culvert - B00197	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.254	Rose Creek Culvert - B00197	8.421	N/A	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.421	N/A	8.431	Noffsinger Road	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.431	Noffsinger Road	8.605	Lakewood Drive	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.605	Lakewood Drive	8.679	North Hoffman Street	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.679	North Hoffman Street	8.691	South Hoffman Street	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.691	South Hoffman Street	8.794	KY 502	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.794	KY 502	8.944	N/A	2	45	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	8.944	N/A	9.685	KY 1089	2	55	High Flexible	6,320	30.00	30.80	20.00	80.80	53.74
Hopkins County	9.685	KY 1089	10.389	Hayes Road	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	10.389	Hayes Road	11.038	KY 2280	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	11.038	KY 2280	11.898	Weirs Creek Bridge - B00201	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	11.898	Weirs Creek Bridge - B00201	12.391	Ferrell Loop	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	12.391	Ferrell Loop	12.461	Ferrell Loop	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	12.461	Ferrell Loop	12.627	Lutontown Road	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	12.627	Lutontown Road	13.190	Gibson Jackson Road	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Hopkins County	13.190	Gibson Jackson Road	13.278	Hopkins - Webster County Line	2	55	High Flexible	5,030	30.00	31.80	20.00	81.80	55.95
Webster County	0.000	Hopkins - Webster County Line	0.401	Greg Hudson Drive	3	55	High Flexible	5,030	30.00	32.80	20.00	82.80	61.36
Webster County	0.401	Greg Hudson Drive	0.420	N/A	3	55	High Flexible	5,030	30.00	32.80	20.00	82.80	61.36
Webster County	0.420	N/A	0.470	KY 814	3	55	High Flexible	5,030	30.00	32.80	20.00	82.80	61.36
Webster County	0.470	KY 814	0.626	Old Madisonville Street	3	45	High Flexible	5,190	30.00	30.80	19.00	79.80	48.52
Webster County	0.626	Old Madisonville Street	0.738	Trader Drive	3	45	High Flexible	5,190	30.00	30.80	19.00	79.80	48.52
Webster County	0.738	Trader Drive	0.934	Country Club Meadows/Fairway Acres	3	45	High Flexible	5,190	30.00	30.80	19.00	79.80	48.52
Webster County	0.934	Country Club Meadows/Fairway Acres	1.000	N/A	3	45	High Flexible	5,190	30.00	30.80	19.00	79.80	48.52
Webster County	1.000	N/A	1.194	Liberty	3	45	High Flexible	5,190	30.00	30.80	19.00	79.80	48.52
Webster County	1.194	Liberty	1.324	KY 670	3	35	High Flexible	7,200	30.00	30.80	19.00	79.80	48.52
Webster County	1.324	KY 670	1.420	N/A	3	45	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	1.420	N/A	1.550	N/A	3	45	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	1.550	N/A	1.625	Ken Williams Road	3	55	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	1.625	Ken Williams Road	3.379	Old Stanhope Road	3	55	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	3.379	Old Stanhope Road	4.120	Bull Creek Bridge	3	55	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	4.120	Bull Creek Bridge	4.780	Slover Creek Bridge	3	55	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74
Webster County	4.780	Slover Creek Bridge	5.203	KY 270	3	55	High Flexible	2,520	30.00	30.80	20.00	80.80	53.74

Route	Beginning MP	Beginning Feature	Ending MP	Ending Feature	Length	Functional Class	State System	NHS	NTN	Truck Weight Class	# of Lanes	Lane Width	Shoulder Type	Shoulder Width	Speed Limit	Pavement Type	Current (HIS) ADT	Number of Crashes	Number of Darkness Crashes	Number of Run-off-Road Crashes	Number of Fatal Crashes	Number of Injury Crashes	Number killed	Number Injured	ADT	Actual Crash Rate	Critical Crash Rate	Road Type	Crash Query	CRF
US 41																														
Hopkins County	3.275	Industrial Drive	3.426	Kingdom Hall Road	0.151	Urban Principal Arterial	State Secondary	N	N	AAA	2	10	Paved with Bituminous Material	2	55	High Flexible	11800	1	0	0	0	0	0	0	12147	0.075	0.937	Urban 2-lane	All	0.080
	3.426	Kingdom Hall Road	3.575	Wicks Well Road	0.149													21	5	4	0	5	0	5	12357	98.043	292.077	Rural 2-lane	All	0.336
	3.575	Wicks Well Road	3.722	Calumet Lane	0.147																									
	3.722	Calumet Lane	4.140	Culvert	0.418																									
	4.140	Culvert	4.249	Rainwater/Hawkins Lane	0.109																									
	4.249	Rainwater/Hawkins Lane	4.806	N/A	0.557																									
	4.806	N/A	4.967	Shepherd Lane	0.161										45															
	4.967	Shepherd Lane	5.002	Manitou Loop	0.035																									
	5.002	Manitou Loop	5.010	KY 630	0.008																									
	5.010	KY 630	5.056	Manitou Drive	0.046																									
	5.056	Manitou Drive	5.145	Webster Street	0.089																									
	5.145	Webster Street	5.210	Manitou Loop	0.065																									
	5.210	Manitou Loop	5.220	KY 630	0.010																									
	5.220	KY 630	5.316	N/A	0.096																									
	5.316	N/A	5.515	Pond Creek Bridge - B00200	0.199																									
	5.515	Pond Creek Bridge - B00200	6.759	Pond Creek Bridge - B00208	1.244																									
	6.759	Pond Creek Bridge - B00208	7.103	J E Ellis Lane	0.344										55															
	7.103	J E Ellis Lane	7.154	KY 2320	0.051												6320	46	14	18	1	15	1	17	6243	143.811	276.678	Rural 2-lane	All	0.520
	7.154	KY 2320	7.674	Withers Lane	0.520	Rural Minor Arterial																								
	7.674	Withers Lane	8.254	Rose Creek Culvert - B00197	0.580																									
	8.254	Rose Creek Culvert - B00197	8.421	N/A	0.167																									
	8.421	N/A	8.431	Noffsinger Road	0.010																									
	8.431	Noffsinger Road	8.605	Lakewood Drive	0.174										45															
	8.605	Lakewood Drive	8.679	North Hoffman Street	0.074																									
	8.679	North Hoffman Street	8.691	South Hoffman Street	0.012																									
	8.691	South Hoffman Street	8.794	KY 502	0.103																									
	8.794	KY 502	8.944	N/A	0.150																									
	8.944	N/A	9.685	KY 1089	0.741										55															
	9.685	KY 1089	10.389	Hayes Road	0.704							9					5030	24	9	14	1	9	2	12	4744	128.737	298.212	Rural 2-lane	All	0.432
	10.389	Hayes Road	11.038	KY 2280	0.649																									
	11.038	KY 2280	11.898	Weirs Creek Bridge - B00201	0.860																									
	11.898	Weirs Creek Bridge - B00201	12.391	Ferrell Loop	0.493																									
	12.391	Ferrell Loop	12.461	Ferrell Loop	0.070																									
	12.461	Ferrell Loop	12.627	Lutontown Road	0.166																									
	12.627	Lutontown Road	13.190	Gibson Jackson Road	0.563																									
	13.190	Gibson Jackson Road	13.278	Hopkins - Webster County Line	0.088																									
Webster County	0.000	Hopkins - Webster County Line	0.401	Greg Hudson Drive	0.401	Rural Minor Arterial	State Secondary	N	N	AAA	2	10	Combination	3.00	55	High Flexible	5030	3	1	2	0	0	0	0	4757	122.548	467.807	Rural 2-lane	All	0.262
	0.401	Greg Hudson Drive	0.420	N/A	0.019																									
	0.420	N/A	0.470	KY 814	0.050										45		5190	14	1	1	0	1	0	1	5898	254.145	377.066	Rural 2-lane	All	0.674
	0.470	KY 814	0.626	Old Madisonville Street	0.156																									
	0.626	Old Madisonville Street	0.738	Trader Drive	0.112																									
	0.738	Trader Drive	0.934	Country Club Meadows/Fairway Acres	0.196																									
	0.934	Country Club Meadows/Fairway Acres	1.000	N/A	0.066																									
	1.000	N/A	1.194	Liberty	0.194							13			35		7200													
	1.194	Liberty	1.324	KY 670	0.130										45		2520													
	1.324	KY 670	1.420	N/A	0.096																									

APPENDIX A

CRASH INFORMATION

CRASHES
(2008-2010)
Spot Buildup Analysis

County	Prefix	Route	Suffix	BMP	EMP	Crashes in 2008	Crashes in 2009	Crashes in 2010	Crashes So Far in 2011 (*Not included in stats*)	Comments
.1 Mile Segments 2007-2009										
Hopkins	US	41	A	8.740	8.840	2	3	0	1 (2/17/11)	4 of 7 at intersection with Bernard Road (KY 502 in Nebo)
Hopkins	US	41	A	9.280	9.380	1	3	1	0	4 were "ran off roadway" (2 daylight, 2 dark)
Webster	US	41	A	1.164	1.264	3	5	1	1 (6/15/11)	3 were rear-end; 3 were angle
.3 Mile Segments 2007-2009										
Hopkins	US	41	A	6.192	6.492	5	4	0	2 (5/14/11 and 10/21/11)	3 (no injuries) were collision with animal
Webster	US	41	A	0.957	1.257	3	6	1	1 (6/15/11)	3 were rear-end; 3 were angle

CRASHES
(2008-2010)

Spot Buildup Analysis

County	Prefix	Route	Suffix	BMP	EMP	Length	Crashes	AADT	R/U	Median?	FC	Number of Lanes	Actual Crash Rate	Critical Crash Rate	Critical Crash Rate Factor	Average Crash Rate	RSE Unique	Fatalities	Injuries	Fatal Crashes	Injury Crashes	Wet Roadway Crashes	Single Vehicle Crashes	Rear-End Crashes	Angle Crashes	ROTR Crashes	Darkness Crashes
.1 Mile Segments 2008-2010																											
Hopkins	US	41	A	8.740	8.840	0.100	5	6270	Rural	Undivided	Min Art	2	0.728	0.733	**0.993**	0.210019	054 US-41A	1	3	1	2	1	1	3	1	1	1
Hopkins	US	41	A	9.28	9.38	0.100	5	6274	R	Undivided	Min Art	2	0.728	0.733	**0.993**	0.210	054 US-41A	0	3	0	3	1	4	1	0	4	3
Webster	US	41	A	1.164	1.264	0.100	9	5902	Rural	Undivided	Min Art	2	1.393	0.752	**1.853**	0.210019	117-US-41A	0	1	0	1	0	0	3	3	0	0
.3 Mile Segments 2008-2010																											
Hopkins	US	41	A	6.192	6.492	0.300	9	6262	Rural	Undivided	6 ma	2	437.5	493.33	**0.887**	209.231	054 US-41A	0	3	0	3	0	8	1	0	3	0
Webster	US	41	A	0.957	1.257	0.3	10	5907	R	Undivided	6 ma	2	1.546	1.511	**1.023**	0.630	117 US-41A	0	1	0	1	1	1	3	3	0	1

CRASHES FROM JANUARY 1, 2008 TO DECEMBER 31, 2010

INVESTIGATING AGENCY	COUNTY NAME	ROADWAY NUMBER	ROADWAY NAME	GPS LATITUDE DECIMAL	GPS LONGITUDE DECIMAL	MILEPOINT DERIVED	COLLISION DATE	COLLISION TIME	INTERSECTION ROADWAY #	INTERSECTION ROADWAY NAME	BETWEEN STREET ROADWAY # 1	BETWEEN STREET ROADWAY NAME 1	BETWEEN STREET ROADWAY # 2	BETWEEN STREET ROADWAY NAME 2	MOTOR VEHICLES INVOLVED	UNITS INVOLVED	KILLED	INJURED	WEATHER	ROADWAY CONDITION	HIT & RUN INDICATOR	DIRECTIONAL ANALYSIS	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
MADISONVILLE POLICE DEPT.	HOPKINS	US0041A	NEBO	37.3576431	-87.5502792	3.284	2/20/2009	1517				INDUSTRIAL		MARIGOLD	3	3	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC ONE VEHICLE STOPPED	REAR END	STRAIGHT & LEVEL	DAYLIGHT
MADISONVILLE POLICE DEPT.	HOPKINS	US0041A	NEBO	37.3578556	-87.551017	3.328	1/29/2010	1610				MARIGOLD		INDUSTRIAL	2	2	0	1	BLOWING SAND/SOIL/ DIRT/SNOW	SNOW/SLUSH	N	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE- OPPOSITE DIRECTION	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3583642	-87.5526715	3.428	8/15/2009	1115		KINGDOM HALL					2	2	0	0	CLEAR	DRY	N	OPPOSING LEFT TURN	OPPOSING LEFT TURN	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3582969	-87.5527071	3.429	3/15/2008	1539							2	2	0	0	CLOUDY	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3588108	-87.5548901	3.549	1/17/2008	1403							2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3589186	-87.5550144	3.557	1/22/2010	1630							2	2	0	0	CLOUDY	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DUSK
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3588972	-87.5553059	3.572	4/25/2010	1649							2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3589878	-87.5553351	3.575	5/27/2008	1659		WICKS WELLS					2	2	0	0	RAINING	WET	N	ANGLE COLLISION - OTHER	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3589963	-87.555367	3.577	6/5/2009	656							2	2	0	0	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.359029	-87.5555153	3.585	3/11/2010	1706							2	2	0	0	CLOUDY	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
MADISONVILLE POLICE DEPT.	HOPKINS	US0041A	NEBO	37.3558665	-87.5446393	3.591	3/25/2009	646				BEAN CEMETARY		INDUSTIAL	2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC ONE VEHICLE STOPPED	REAR END	STRAIGHT & GRADE	DAWN
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3591305	-87.5558875	3.608	10/1/2009	1239							2	2	0	0	CLEAR	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3593049	-87.556612	3.651	5/29/2008	1619							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3596602	-87.5577876	3.722	9/25/2009	1645		CALUMET					2	2	0	1	CLOUDY	WET	N	ANGLE COLLISION - ONE VEHICLE TURNING LEFT	ANGLE	CURVE & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3596735	-87.5579321	3.73	6/7/2009	2026							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3602454	-87.5596198	3.832	12/5/2008	855							1	1	0	1	CLOUDY	DRY	N	OTHER COLLISIONS ON SHOULDER	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3611524	-87.5619039	3.972	5/21/2009	2241							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3619795	-87.5640723	4.104	12/22/2010	625							2	2	0	0	CLOUDY	DRY	Y	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE- OPPOSITE DIRECTION	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3620145	-87.5641159	4.107	4/5/2010	1145							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3621946	-87.564512	4.133	10/7/2008	855							2	2	0	0	CLOUDY	DRY	N	OTHER ROADWAY OR MID-BLOCK COLLISION	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3659612	-87.5722153	4.631	5/24/2010	820							1	1	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3675827	-87.5745077	4.798	11/8/2009	1600				SHEPHERD		RAINWATER	2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	CURVE & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3679191	-87.5750311	4.835	12/18/2008	2135							1	1	0	0	RAINING	WET	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3682243	-87.5755022	4.868	6/13/2009	803							2	2	0	1	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3689058	-87.576473	4.939	11/26/2008	1128							2	2	0	1	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3693274	-87.5771167	4.987	10/16/2008	2320							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3715241	-87.5804302	5.221	5/7/2010	2036	KY0630	MANITOU					2	2	0	0	CLOUDY	WET	N	ANGLE COLLISION - ONE VEHICLE TURNING LEFT	ANGLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3721154	-87.5813123	5.283	10/21/2008	121							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.37212	-87.5813058	5.283	2/1/2010	1600							2	2	0	0	CLOUDY	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3734585	-87.5833431	5.428	1/1/2008	2043							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3759402	-87.5901121	5.834	2/11/2008	1602							1	1	0	0	SLEET/HAIL	ICE	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3763285	-87.5914256	5.91	6/15/2010	1900							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3765745	-87.5922768	5.96	10/27/2010	750							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & HILLCREST	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.376673	-87.5923816	5.968	10/31/2010	200			KY0630	MANITOU		J E ELLIS	1	1	0	2	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3768079	-87.5930828	6.007	9/3/2009	1510							2	2	0	0	CLOUDY	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3767535	-87.5931715	6.009	12/23/2008	820							1	1	0	0	SLEET/HAIL	ICE	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3771283	-87.5951917	6.121	11/8/2009	1432							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3773183	-87.5965025	6.192	4/15/2008	910							1	1	0	1	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3774465	-87.597013	6.221	7/18/2009	550							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & GRADE	DAWN
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3774277	-87.5972026	6.23	5/28/2008	1347							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3775696	-87.5976498	6.257	7/3/2008	1210							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3776387	-87.5978939	6.271	8/26/2008	158							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3778977	-87.5988033	6.324	12/23/2009	54				J E ELLIS	KY0630	MANITOU	1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3781896	-87.6000818	6.396	10/21/2008	610							1	1	0	0	CLOUDY	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3784531	-87.6006761	6.434	4/22/2009	1710							1	1	0	1	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3785744	-87.6012894	6.468	2/20/2009	1800							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & HILLCREST	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.379455	-87.6041927	6.639	9/18/2010	630							2	2	0	3	CLEAR	DRY	N	OTHER ROADWAY OR MID-BLOCK COLLISION	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3800478	-87.6063971	6.767	6/16/2008	2115							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3803806	-87.6075518	6.834	11/9/2008	100							1	1	0	0	CLOUDY	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3811103	-87.6101494	6.986	8/24/2010	753							3	3	0	0	CLEAR	DRY	N	OTHER ROADWAY OR MID-BLOCK COLLISION	REAR END	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3811592	-87.6104736	7.003	4/8/2009	1555				J E ELLIS	KY0630	MANITOU	2	2	0	0	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	CURVE & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3811095	-87.6108328	7.02	1/17/2008	1620							2	2	0	1	CLOUDY	WET	N	REAR END IN TRAFFIC ONE VEHICLE STOPPED	REAR END	STRAIGHT & GRADE	DUSK
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3812764	-87.6117718	7.073	2/10/2010	1015							1	1	0	0	CLOUDY	ICE	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3812903	-87.6137901	7.177	4/28/2009	1900							2	2	0	0	CLEAR	DRY	N	VEHICLE BACKING	BACKING	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.381968	-87.6236183	7.745	3/19/2010	1927							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & HILLCREST	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3825094	-87.627859	7.98	1/6/2010	1600							2	2	0	0	CLOUDY	DRY	N	SIDESWIPE COLLISION - SAME DIRECTION	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3824889	-87.6286677	8.024	1/7/2009	920							1	1	0	0	G SAND/SOIL/DI	SNOW/SLUSH	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.38262	-87.6287695	8.031	3/26/2009	1215							2	2	0	1	CLOUDY	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & HILLCREST	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3826489	-87.6296617	8.079	7/31/2008	2251							1	1	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & GRADE	DARK-HWY LIGHTED/OFF
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.382801	-87.6306342	8.134	11/7/2008	900							3	3	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3827947	-87.6314574	8.179	7/27/2009	2210							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3832449	-87.6372566	8.498	8/30/2009	1909							2	2	0	1	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3834464	-87.6392035	8.606	7/26/2009	1435		LAKEWOOD					2	2	0	0	CLOUDY	DRY	N	ANGLE COLLISION - ONE VEHICLE TURNING RIGHT	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3837094	-87.6416251	8.74	4/20/2009	815							2	2	0	0	CLOUDY	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3838411	-87.6422785	8.777	5/15/2008	821							2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.383781	-87.6426077	8.794	7/16/2009	1403	KY0502	BERNARD					3	3	1	2	CLEAR	DRY	N	REAR END - OTHER	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3837867	-87.6426214	8.795	8/3/2008	8							1	1	0	0	CLEAR	DRY	N	OTHER ROADWAY OR MID-BLOCK COLLISION	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.383795	-87.6426109	8.795	3/27/2009	540	KY0502	BERNARD					2	2	0	1	CLOUDY	DRY	N	ANGLE COLLISION - OTHER	ANGLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3838314	-87.6458815	8.975	10/12/2009	800							2	2	0	0	CLEAR	DRY	N	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.382112	-87.6511544	9.28	9/12/2009	755							1	1	0	1	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3818999	-87.6517129	9.313	2/8/2010	2105							1	1	0	0	G SAND/SOIL/DI	SNOW/SLUSH	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3817438	-87.6520843	9.336	11/1/2008	840							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3817739	-87.652092	9.336	8/30/2009	2009							2	2	0	1	CLEAR	DRY	N	REAR END IN TRAFFIC ONE VEHICLE STOPPED	REAR END	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3817105	-87.6524286	9.355	11/26/2009	410							1	1	0	1	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3811867	-87.6540288	9.449	1/12/2009	832							2	2	0	0	CLEAR	DRY	N	COLLISION WITH NON-FIXED OBJECT	SIDESWIPE-OPPOSITE DIRECTION	CURVE & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3813248	-87.6587181	9.723	2/15/2010	935							1	1	0	4	G SAND/SOIL/DI	SNOW/SLUSH	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3814654	-87.6630982	9.963	10/27/2010	728							2	2	0	1	CLEAR	DRY	N	OVERTURNED IN ROADWAY	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3814291	-87.6651459	10.075	1/26/2009	2245							1	1	0	0	SLEET/HAIL	ICE	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3820875	-87.6688653	10.281	5/4/2009	710							1	1	0	1	CLOUDY	WET	N	OTHER COLLISIONS ON SHOULDER	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3835467	-87.6750109	10.64	8/19/2008	600							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAWN
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3852081	-87.6819853	11.038	4/21/2009	1815							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3859003	-87.6837927	11.148	3/27/2009	2035							2	2	0	0	CLOUDY	WET	N	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3877	-87.6870667	11.365	11/14/2008	530							1	1	0	0	RAINING	WET	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3879923	-87.687701	11.404	9/22/2010	1924							1	1	0	0	CLOUDY	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & HILLCREST	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3891013	-87.6895216	11.531	8/5/2010	1720							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3896657	-87.6908341	11.612	3/27/2009	1310							2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3901063	-87.6913094	11.65	3/27/2009	1233							2	2	0	0	RAINING	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3907123	-87.6925979	11.732	9/3/2008	1718							2	2	0	1	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.391566	-87.6941052	11.833	3/6/2009	1346							1	1	0	2	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3920706	-87.6947754	11.883	9/7/2008	120							1	1	0	2	CLOUDY	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.392083	-87.6950306	11.895	8/1/2008	857							1	1	0	0	CLOUDY	DRY	N	OTHER COLLISIONS ON SHOULDER	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT

CRASHES FROM JANUARY 1, 2008 TO DECEMBER 31, 2010

KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3925839	-87.6959666	11.956	4/14/2009	940							1	1	0	0	CLOUDY	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3927031	-87.6962243	11.972	5/9/2008	1210							2	2	0	0	CLEAR	DRY	N	SIDESWIPE COLLISION - SAME DIRECTION	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.395068	-87.7008732	12.274	11/26/2010	1805							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3953054	-87.7015269	12.312	12/26/2008	100							1	1	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3974322	-87.7088075	12.738	8/1/2008	1023				LUTONTOWN		GIBSON JACKSON	2	2	0	0	CLEAR	DRY	N	1 VEHICLE PARKED POSITION (NOT PARKING LOT/DRIVEWAY)	REAR END	STRAIGHT & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3974326	-87.7094328	12.771	10/12/2008	110							1	1	0	2	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3978059	-87.7116158	12.893	10/27/2009	1600							2	2	0	0	RAINING	WET	N	SIDESWIPE COLLISION - SAME DIRECTION	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3979255	-87.7116392	12.896	7/10/2009	1521							1	1	0	0	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3978905	-87.7119611	12.913	2/21/2010	1918							1	1	0	0	RAINING	WET	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & GRADE	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 16	WEBSTER	US0041A	US41 ALT	37.3993956	-87.7207862	0.162	5/16/2008	1030							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	WEBSTER	US0041A	US41 ALT	37.399608	-87.7218757	0.22	12/18/2009	445							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	WEBSTER	US0041A	US41 ALT	37.3998671	-87.7226355	0.262	6/23/2010	135							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY NOT LIGHTED
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4000427	-87.7238215	0.325	3/29/2010	908							1	1	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4001925	-87.7248063	0.377	3/25/2008	710							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4008235	-87.7264087	0.47	3/7/2010	1419							2	2	0	0	CLOUDY	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	CURVE & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4020683	-87.7278589	0.578	3/1/2009	1300							2	2	0	0	CLOUDY	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DUSK
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4024811	-87.7280817	0.613	12/5/2008	1700							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DUSK
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4033076	-87.7287035	0.68	2/28/2009	1420							2	2	0	0	RAINING	WET	N	OTHER ROADWAY OR MID-BLOCK COLLISION	REAR TO REAR	STRAIGHT & GRADE	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4067748	-87.7311581	0.957	7/29/2009	531							1	1	0	0	CLOUDY	WET	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DAWN
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4093802	-87.7329942	1.164	7/23/2009	1633							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4095317	-87.7329475	1.172	7/24/2009	1113							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.409718	-87.7330683	1.186	9/3/2008	907							2	2	0	0	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4097323	-87.7331145	1.188	10/15/2008	2010							2	2	0	1	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4097788	-87.733117	1.191	7/29/2010	1713							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4097949	-87.7331957	1.194	1/4/2008	1211	KY0120	WESTERFIELD					2	2	0	0	CLOUDY	DRY	N	OPPOSITE DIRECTION - BOTH VEHICLES GOING STRAIGHT AHEAD	HEAD ON	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4097992	-87.733184	1.194	6/11/2009	1534							2	2	0	0	CLOUDY	DRY	N	OTHER ROADWAY OR MID-BLOCK COLLISION	OPPOSING LEFT TURN	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4099861	-87.7333259	1.209	12/11/2009	1551							2	2	0	0	CLOUDY	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4101229	-87.7333795	1.219	9/27/2009	2010							2	2	0	0	CLEAR	DRY	N	SIDESWIPE COLLISION - SAME DIRECTION	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DUSK
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4110015	-87.7335353	1.277	8/2/2008	2241							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DARK-HWY LIGHTED/ON
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4113351	-87.7334898	1.299	11/26/2010	1725							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DARK-HWY LIGHTED/ON
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4116544	-87.7336324	1.321	10/2/2009	19	KY0670	MARTIN LUTHER KING JR					1	1	0	0	RAINING	WET	N	COLLISION WITH FIXED OBJECT IN INTERSECTION - FIRST EVENT COLLISION 09 - 32	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY LIGHTED/OFF

CRASHES FROM JANUARY 1, 2011 TO DECEMBER 31, 2011

INVESTIGATING AGENCY	COUNTY NAME	ROADWAY NUMBER	ROADWAY NAME	GPS LATITUDE DECIMAL	GPS LONGITUDE DECIMAL	MILEPOINT DERIVED	COLLISION DATE	COLLISION TIME	INTERSECTION ROADWAY #	INTERSECTION ROADWAY NAME	BETWEEN STREET ROADWAY # 1	BETWEEN STREET ROADWAY NAME 1	BETWEEN STREET ROADWAY # 2	BETWEEN STREET ROADWAY NAME 2	MOTOR VEHICLES INVOLVED	UNITS INVOLVED	KILLED	INJURED	WEATHER	ROADWAY CONDITION	HIT & RUN INDICATOR	DIRECTIONAL ANALYSIS	MANNER OF COLLISION	ROADWAY CHARACTER	LIGHT CONDITION
MADISONVILLE POLICE DEPT.	HOPKINS	US0041A	NEBO	37.3575976	-87.5501213	3.274	6/28/2011	1520		INDUSTRIAL					2	2	0	0	CLEAR	DRY	N	REAR END - ONE VEHICLE STOPPED	REAR END	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3590623	-87.5556512	3.594	6/21/2011	1650							2	2	0	0	CLOUDY	WET	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3635528	-87.5673217	4.314	6/3/2011	1313							2	2	0	0	CLEAR	DRY	N	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3692825	-87.5770561	4.982	5/18/2011	1155							1	1	0	1	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, CVE	HOPKINS	US0041A	NEBO	37.370222	-87.5794893	5.083	5/18/2011	1222							2	2	0	0	CLOUDY	DRY	N	SIDESWIPE COLLISION - SAME DIRECTION	SIDESWIPE-SAME DIRECTION	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3708136	-87.579372	5.145	9/13/2011	705		WEBSTER					2	2	0	3	CLEAR	DRY	N	ANGLE COLLISION - ONE VEHICLE TURNING LEFT	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3712019	-87.5799485	5.186	6/25/2011	300			KY0630	MANITOU		WEBSTER	1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3748192	-87.5865615	5.627	1/21/2011	945							1	1	0	0	CLEAR	ICE	N	OTHER COLLISIONS ON SHOULDER	SINGLE VEHICLE	STRAIGHT & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3761488	-87.5908169	5.875	2/15/2011	1044							2	2	0	1	CLEAR	DRY	N	HEAD-ON COLLISION	HEAD ON	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, CVE	HOPKINS	US0041A	NEBO	37.3767027	-87.5928324	5.991	9/5/2011	1406							1	1	0	0	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3772371	-87.5959694	6.163	11/1/2011	727				J E ELLIS	KY0630	MANITOU	1	1	0	0	CLOUDY	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & HILLCREST	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3773154	-87.5960489	6.169	4/5/2011	444							1	1	0	0	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3778601	-87.5986434	6.315	5/14/2011	1337							1	1	0	0	RAINING	WET	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	CURVE & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3784437	-87.5999125	6.395	10/21/2011	1015							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3787875	-87.6019183	6.506	10/31/2011	1608							2	2	0	2	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3809045	-87.6093945	6.942	6/3/2011	1247							3	3	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SIDESWIPE-SAME DIRECTION	CURVE & GRADE	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3812749	-87.6149255	7.264	4/5/2011	1615							1	1	0	1	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3816855	-87.6191075	7.495	10/24/2011	2251							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3825127	-87.6280435	7.99	7/11/2011	1843							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.383592	-87.6406373	8.685	5/9/2011	1938							2	2	0	0	CLEAR	DRY	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.383784	-87.6426038	8.794	2/17/2011	923	KY0502	BERNARD					2	2	0	2	CLOUDY	DRY	N	ANGLE COLLISION - ONE VEHICLE TURNING LEFT	ANGLE	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, CVE	HOPKINS	US0041A	NEBO	37.3838772	-87.6453569	8.946	6/17/2011	706							1	1	0	0	CLOUDY	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	CURVE & HILLCREST	DAYLIGHT
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3813061	-87.653405	9.414	2/7/2011	842			KY1089	DONALDSON	KY0502	BERNARD	2	2	0	2	SNOWING	SNOW/SLUSH	N	HEAD-ON COLLISION	HEAD ON	CURVE & HILLCREST	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3812615	-87.6584218	9.706	5/10/2011	53							2	2	0	0	CLEAR	DRY	Y	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.381521	-87.6615085	9.876	10/28/2011	1245							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3814653	-87.6637852	10	10/15/2011	132							1	1	0	2	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3814771	-87.6665346	10.151	10/3/2011	1350							2	2	0	0	CLEAR	DRY	N	SIDESWIPE COLLISION - OPPOSITE DIRECTION	SIDESWIPE-OPPOSITE DIRECTION	CURVE & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3843636	-87.6772442	10.773	1/5/2011	1010							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3852158	-87.6819571	11.037	1/21/2011	1045							2	2	0	0	CLEAR	ICE	N	REAR END IN TRAFFIC LANES BOTH VEHICLES MOVING	REAR END	STRAIGHT & LEVEL	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3852153	-87.6819999	11.039	4/23/2011	1250							1	1	0	0	CLOUDY	WET	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3858105	-87.6836242	11.137	3/18/2011	820							1	1	0	0	CLOUDY	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & GRADE	DAYLIGHT
KY STATE POLICE, POST 02	HOPKINS	US0041A	NEBO	37.3976352	-87.7107383	12.844	6/12/2011	2034							1	1	0	0	CLEAR	DRY	N	COLLISION WITH ANIMAL	SINGLE VEHICLE	STRAIGHT & GRADE	DARK-HWY NOT LIGHTED
HOPKINS COUNTY SHERIFF DEPT.	HOPKINS	US0041A	NEBO	37.3979069	-87.712513	12.942	10/2/2011	1623				GIBSON JACKSON		LUTONTOWN	1	1	0	3	CLEAR	DRY	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	CURVE & HILLCREST	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4028446	-87.7283737	0.643	4/23/2011	200							1	1	0	0	RAINING	WET	N	RAN OFF ROADWAY (1 VEHICLE WITH/EARTH EMBANKMENT/DITCH)	SINGLE VEHICLE	STRAIGHT & LEVEL	DARK-HWY NOT LIGHTED
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4038457	-87.7291538	0.724	4/13/2011	715							2	2	0	0	CLEAR	DRY	N	1 VEHICLE ENTERING/LEAVING ENTRANCE	ANGLE	STRAIGHT & GRADE	DAYLIGHT
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4055304	-87.7302448	0.856	2/17/2011	552							1	1	0	0	CLEAR	DRY	N	COLLISION WITH FIXED OBJECT NON - INTERSECTION - FIRST EVENT COLLISION 09 - 32 EXCLUDING 16	SINGLE VEHICLE	STRAIGHT & LEVEL	DAWN
PROVIDENCE POLICE DEPARTMENT	WEBSTER	US0041A	US41 ALT	37.4098436	-87.7332283	1.198	6/15/2011	1045	KY0120	WESTERFIELD					2	2	0	0	CLEAR	DRY	N	OPPOSITE DIRECTION - BOTH VEHICLES GOING STRAIGHT AHEAD	SIDESWIPE-OPPOSITE DIRECTION	STRAIGHT & GRADE	DAYLIGHT

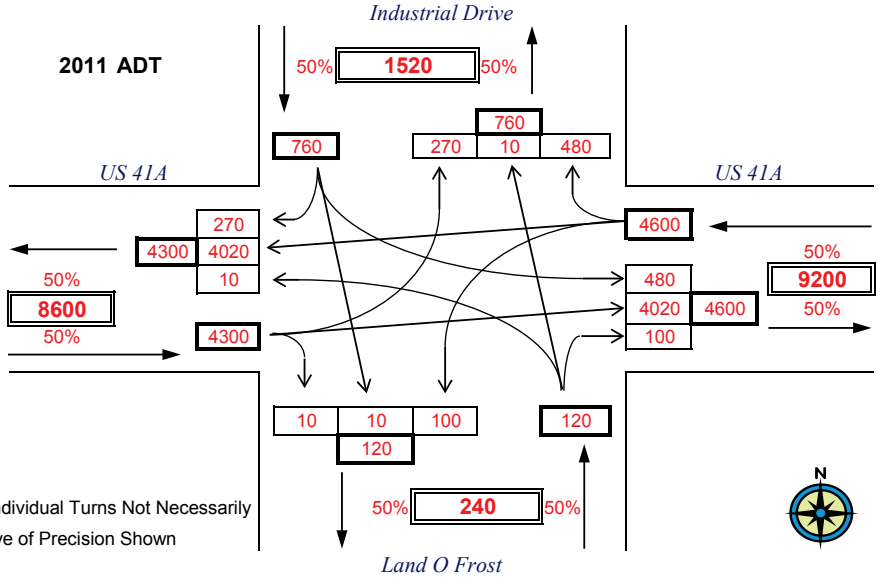
APPENDIX A

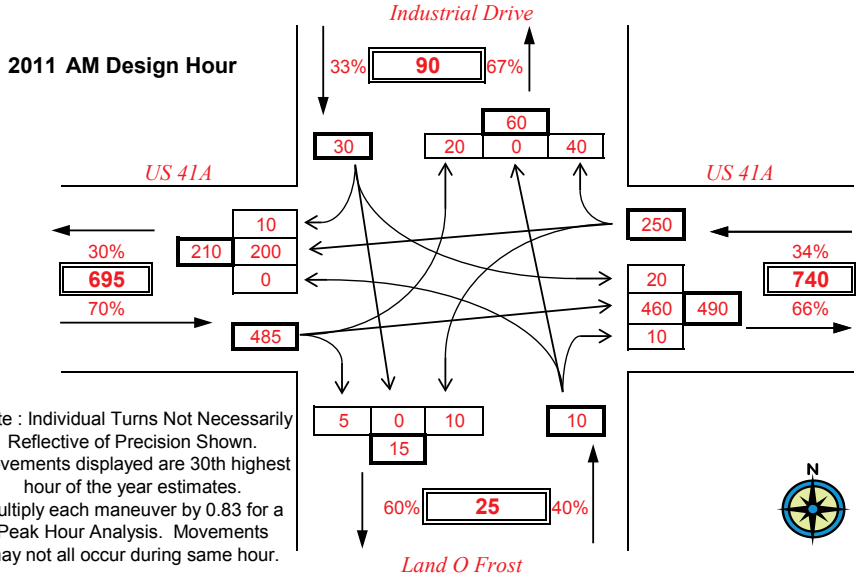
TURNING MOVEMENTS

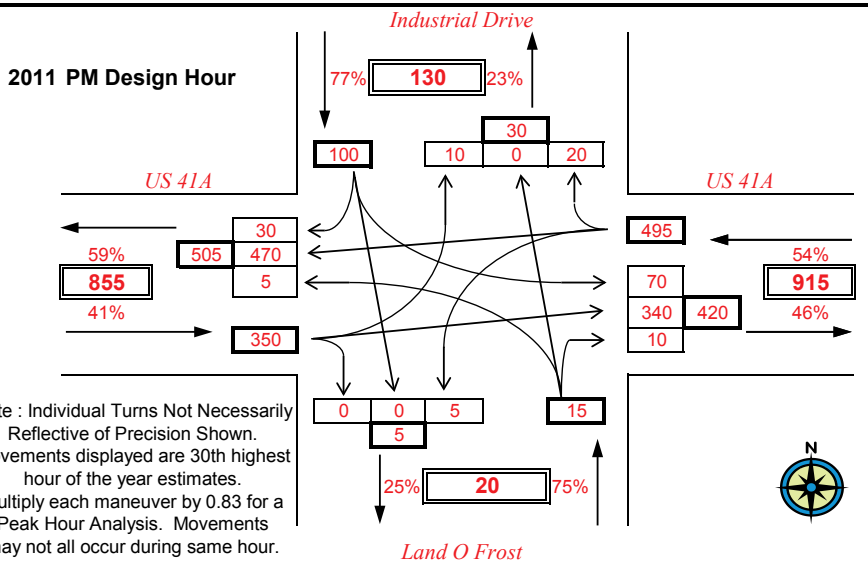
PROJECT: US 41A Madison to Providence
ITEM NUMBER:
MARS NUMBER:
REQUEST DATE:
ANALYST: JJL
SCENARIO: **2011 ADT and Design Hour Volumes**
INTERSECTION: T1: US 41A & Industrial Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





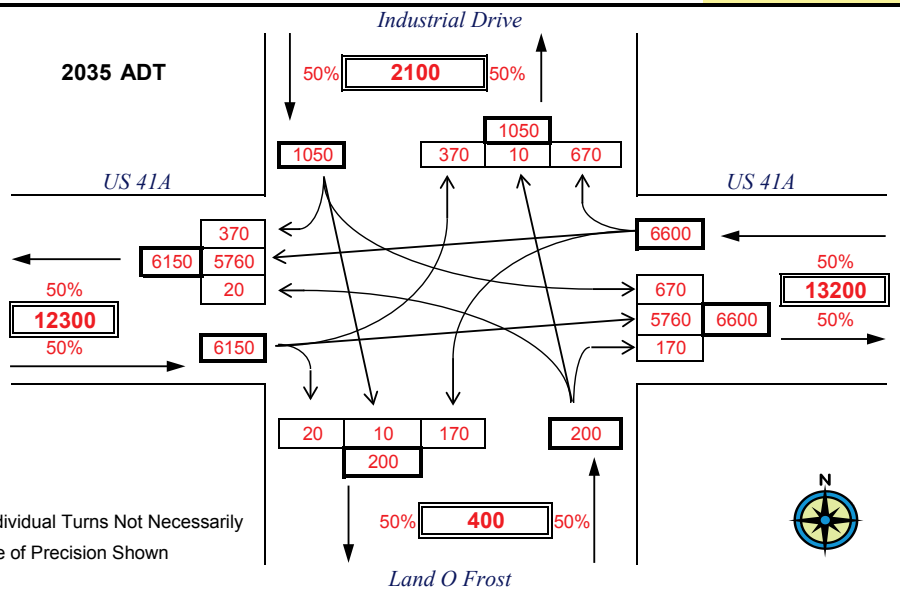


PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2035 ADT and Design Hour Volumes**
INTERSECTION: T1: US 41A & Industrial Drive

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

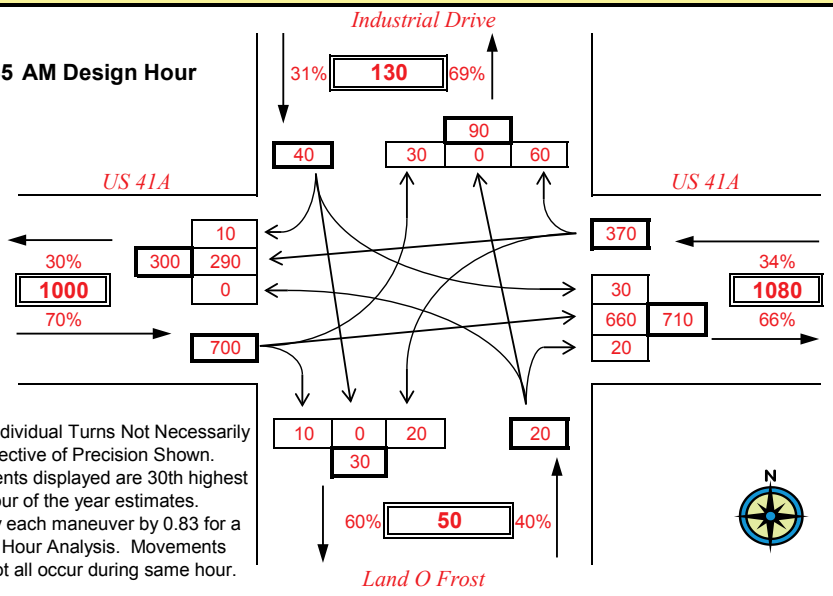
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2035 ADT



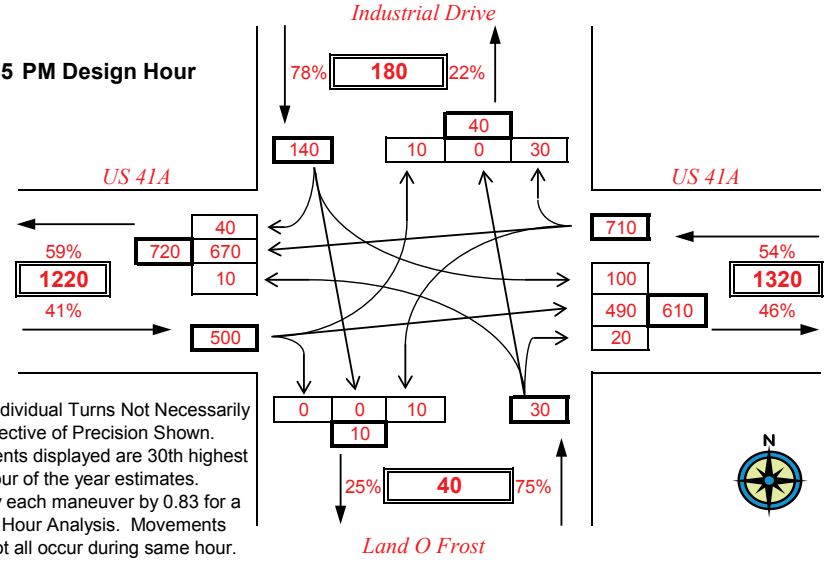
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2035 AM Design Hour



Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.83 for a Peak Hour Analysis. Movements may not all occur during same hour.

2035 PM Design Hour

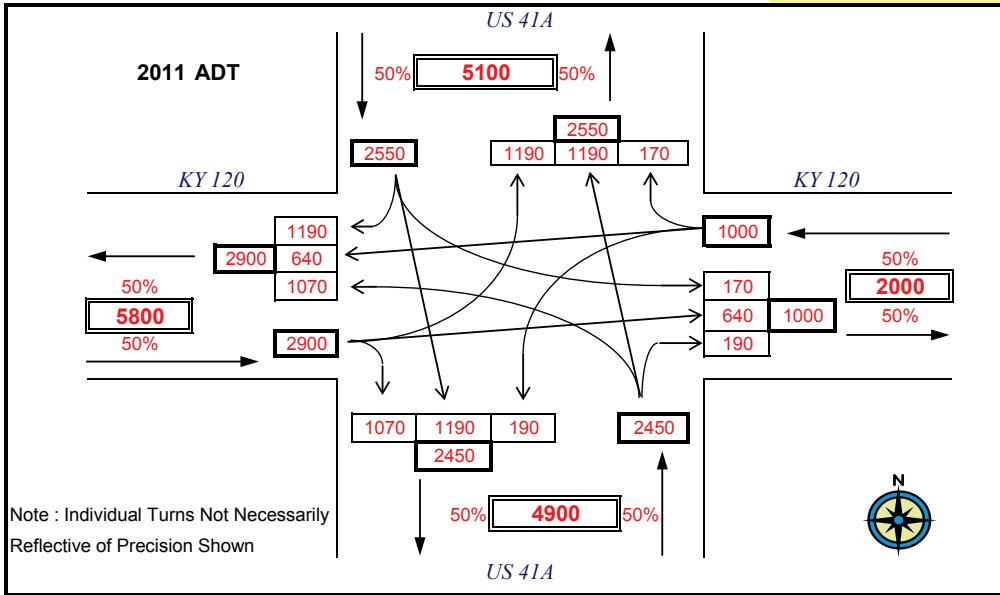


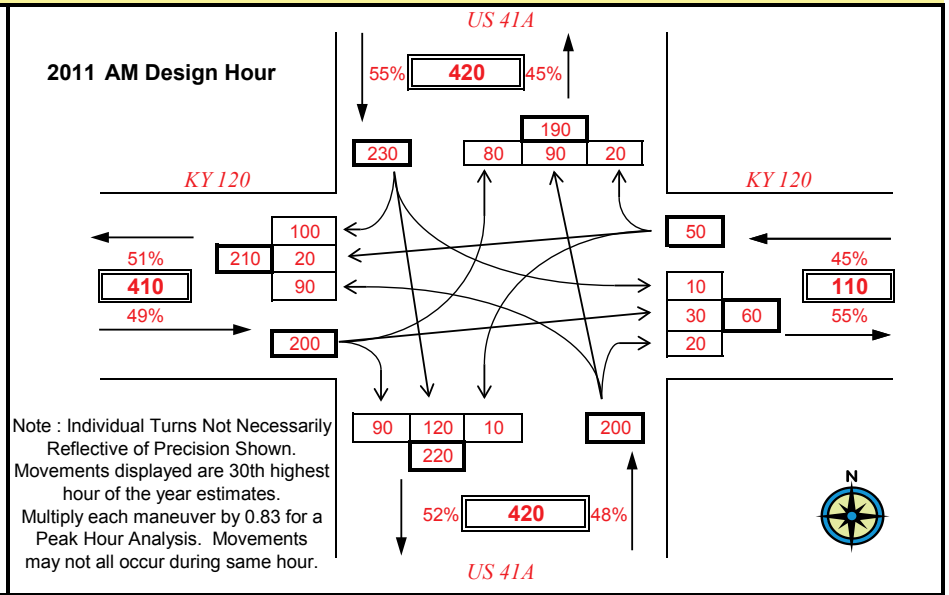
Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.83 for a Peak Hour Analysis. Movements may not all occur during same hour.

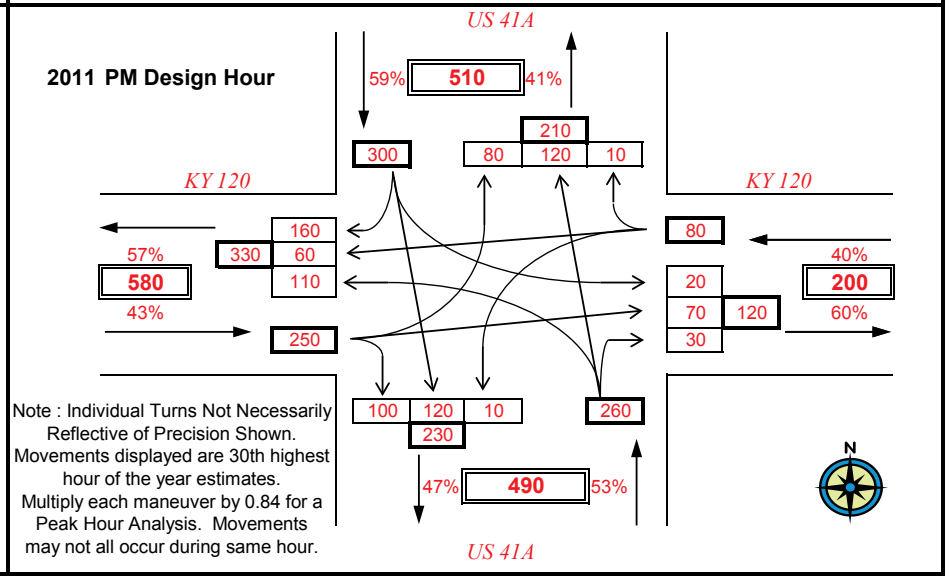
PROJECT: US 41A Madison to Providence
ITEM NUMBER:
MARS NUMBER:
REQUEST DATE:
ANALYST: JJL
SCENARIO: **2011 ADT and Design Hour Volumes**
INTERSECTION: T4: US 41A & KY 120

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



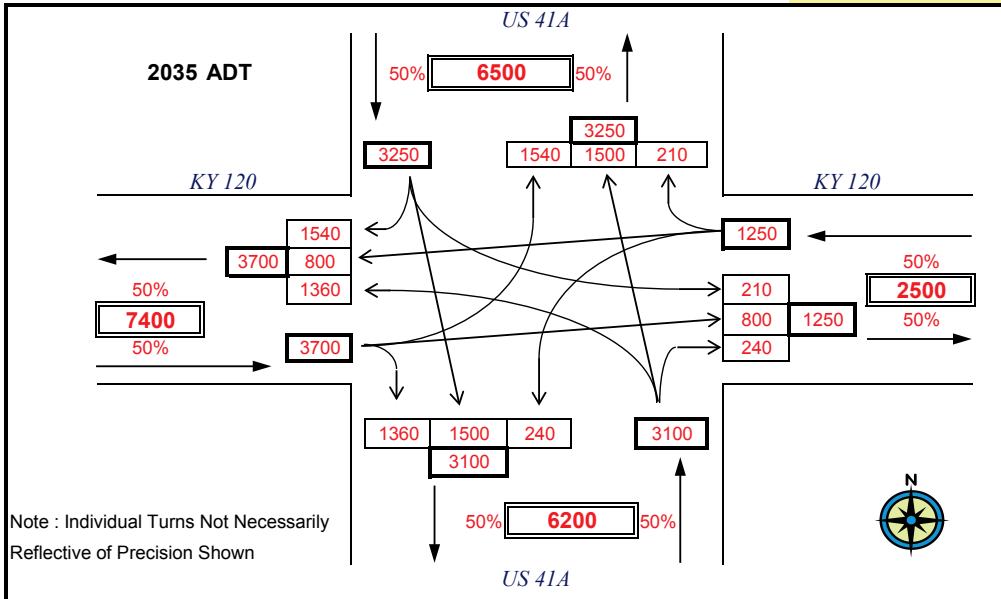


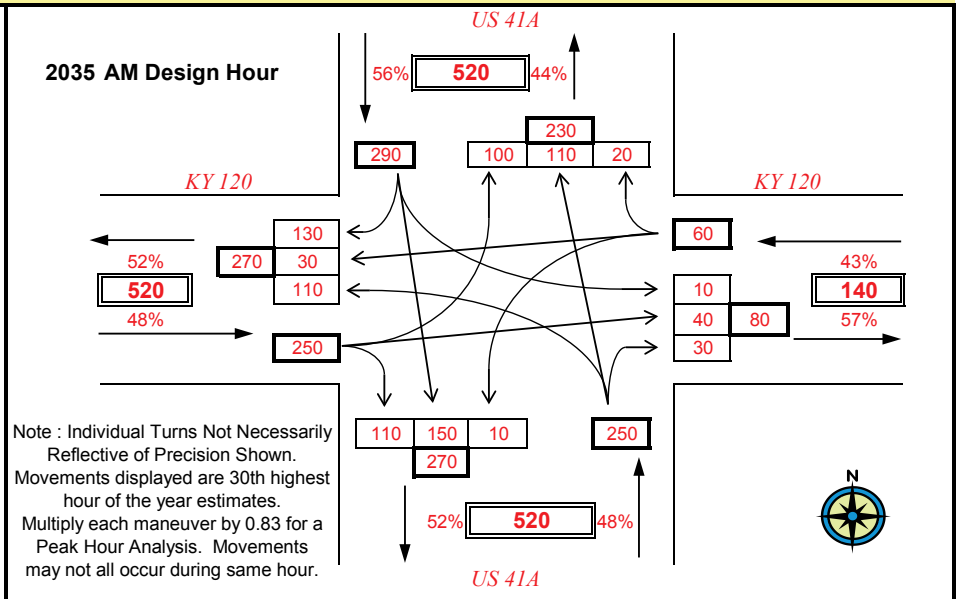


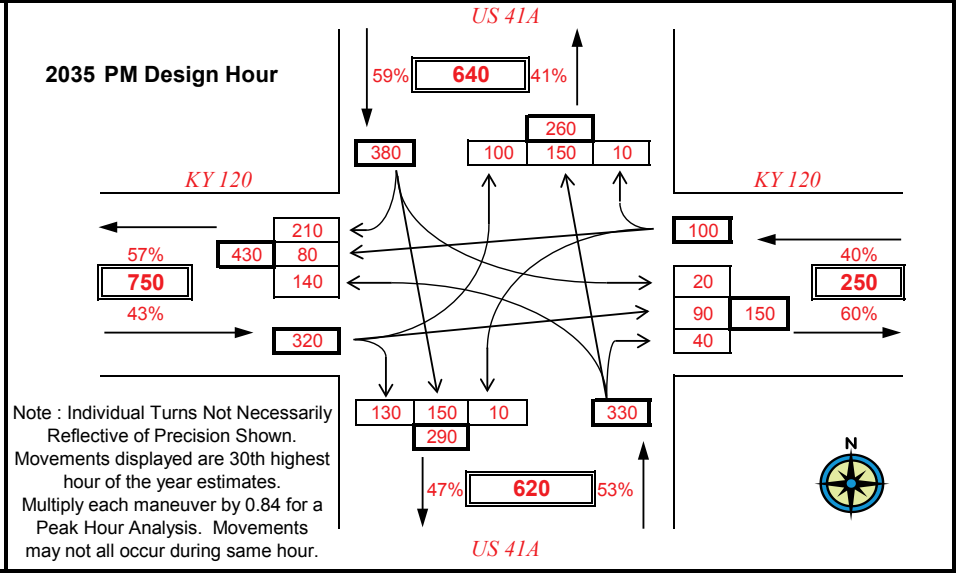
PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2035 ADT and Design Hour Volumes**
INTERSECTION: T4: US 41A & KY 120

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



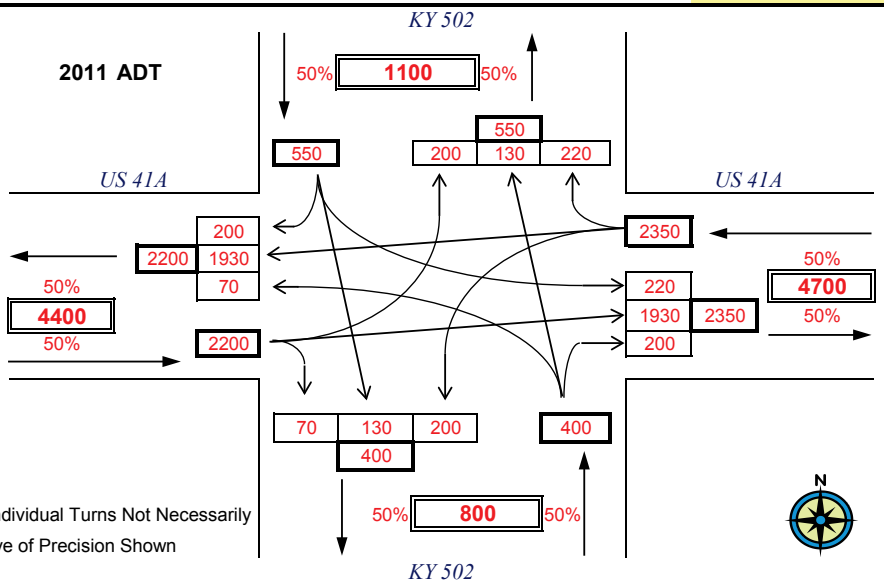


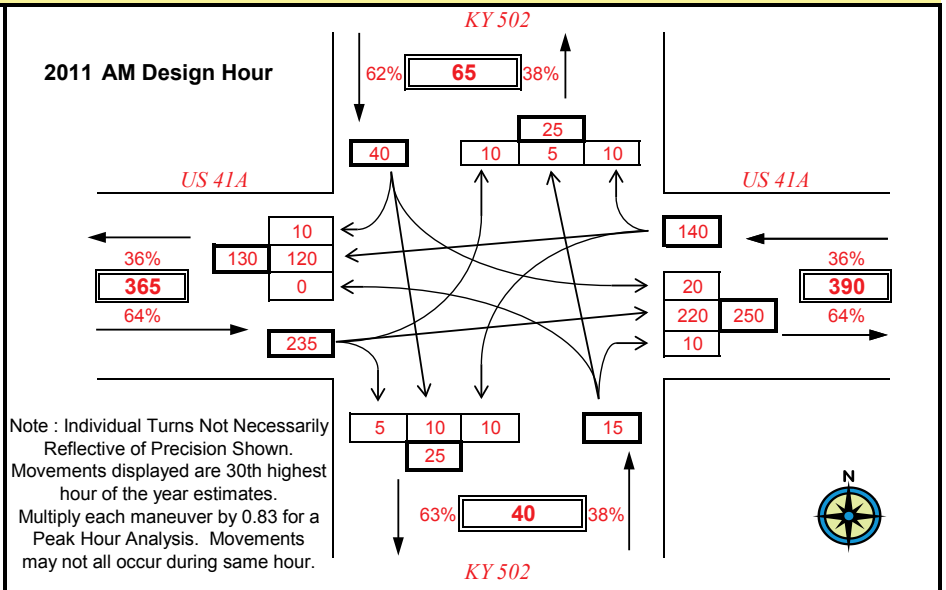


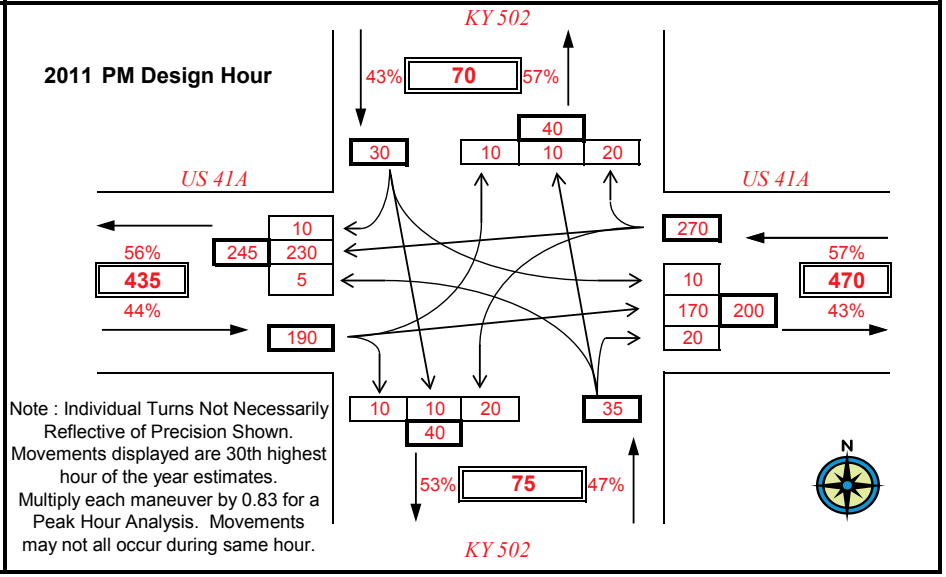
PROJECT: US 41A Madison to Providence
ITEM NUMBER:
MARS NUMBER:
REQUEST DATE:
ANALYST: JJL
SCENARIO: **2011 ADT and Design Hour Volumes**
INTERSECTION: T3: US 41A & KY 502

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**



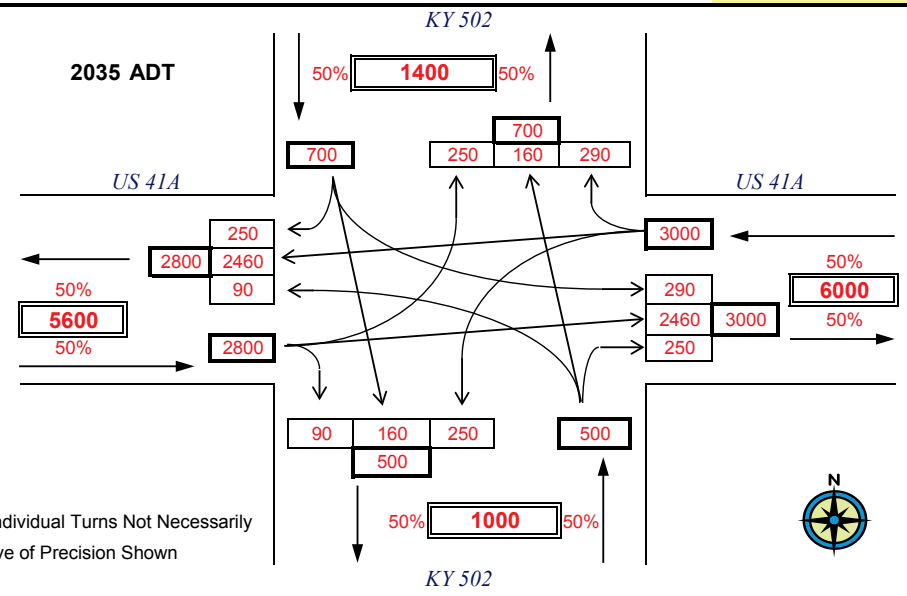


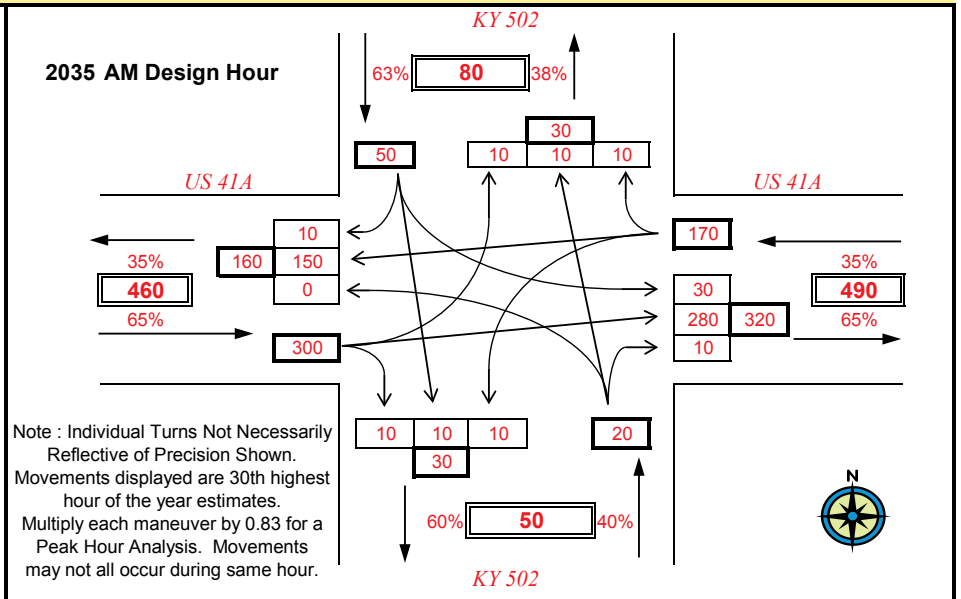


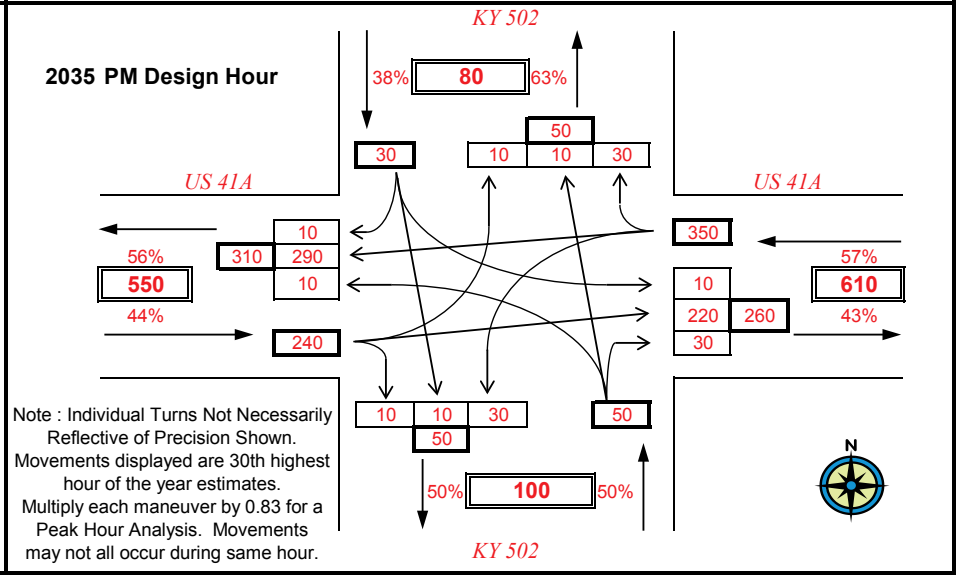
PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2035 ADT and Design Hour Volumes**
INTERSECTION: T3: US 41A & KY 502

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





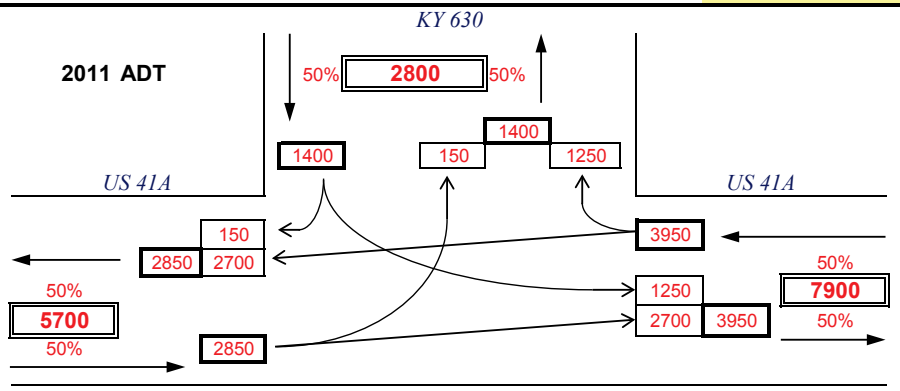


PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2011 ADT and Design Hour Volumes**
INTERSECTION: T2: US 41A & KY 630

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

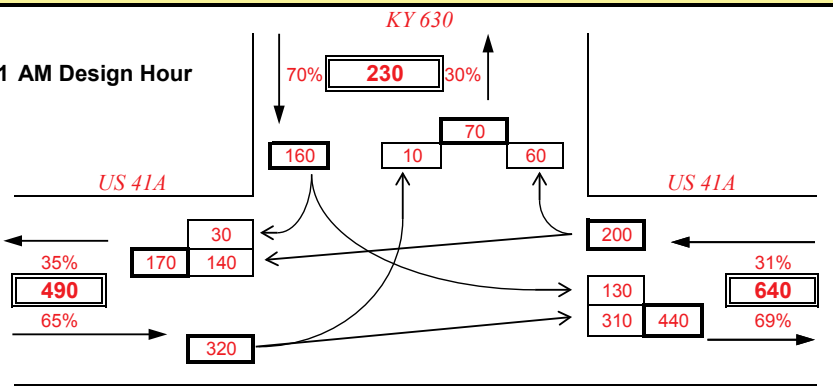
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2011 ADT



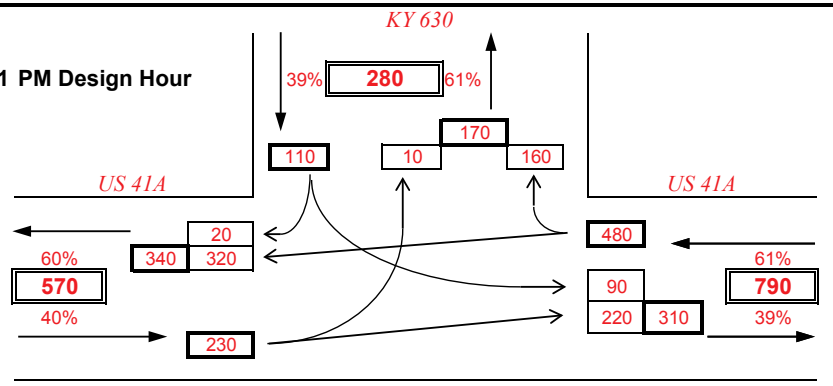
Note : Individual Turns Not Necessarily Reflective of Precision Shown

2011 AM Design Hour



Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.84 for a Peak Hour Analysis. Movements may not all occur during same hour.

2011 PM Design Hour



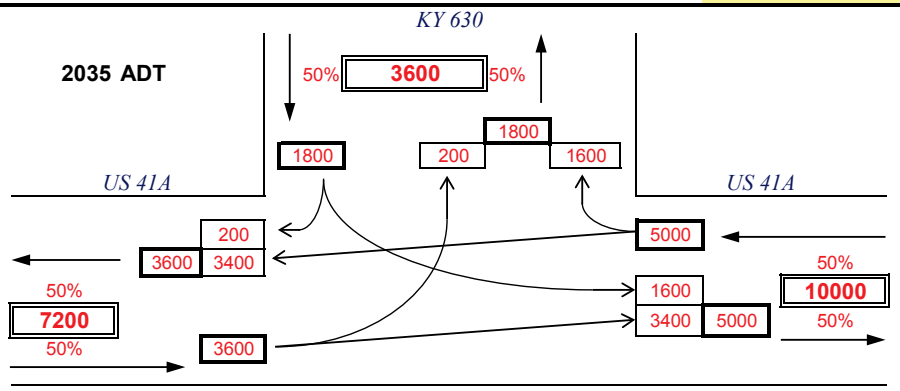
Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.84 for a Peak Hour Analysis. Movements may not all occur during same hour.

PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2035 ADT and Design Hour Volumes**
INTERSECTION: T2: US 41A & KY 630

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

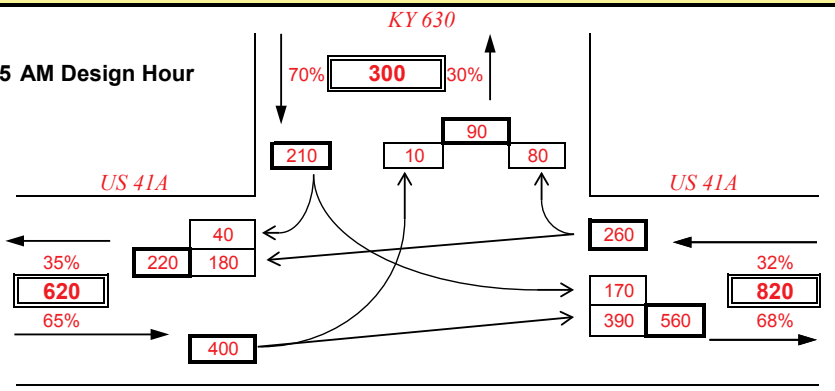
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**

2035 ADT



Note : Individual Turns Not Necessarily Reflective of Precision Shown

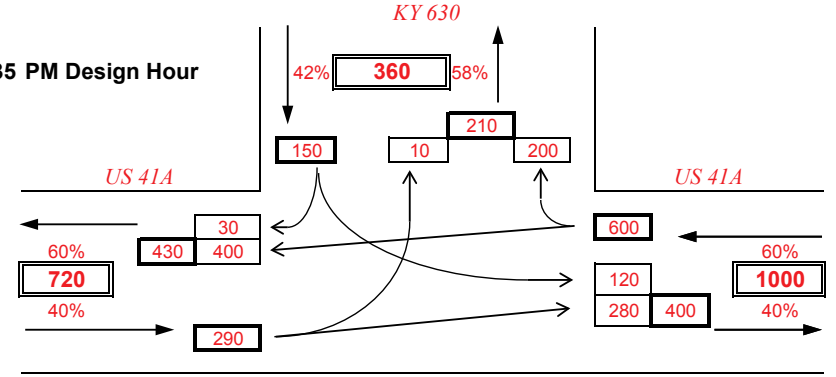
2035 AM Design Hour



Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.84 for a Peak Hour Analysis. Movements may not all occur during same hour.

Location Map

2035 PM Design Hour

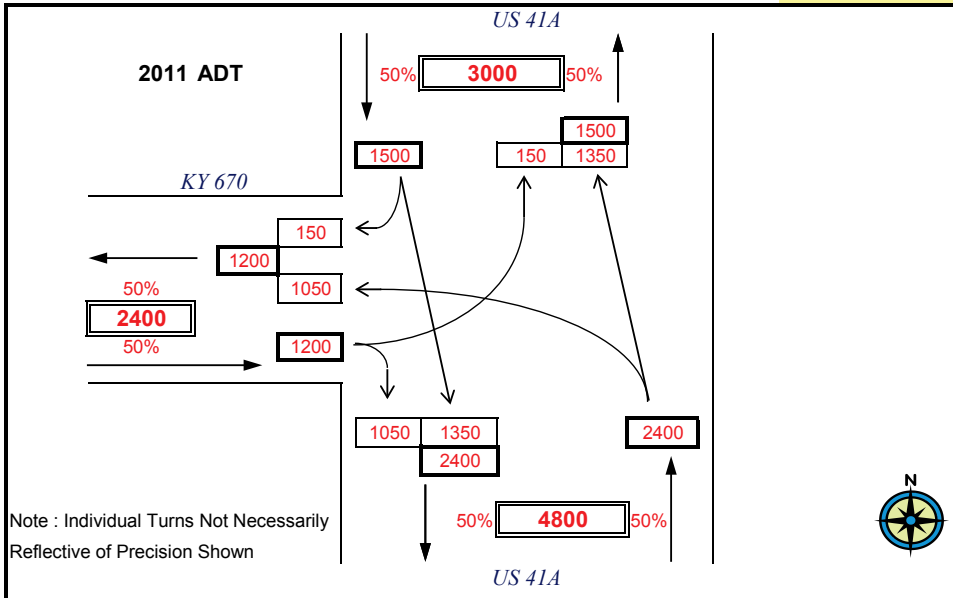


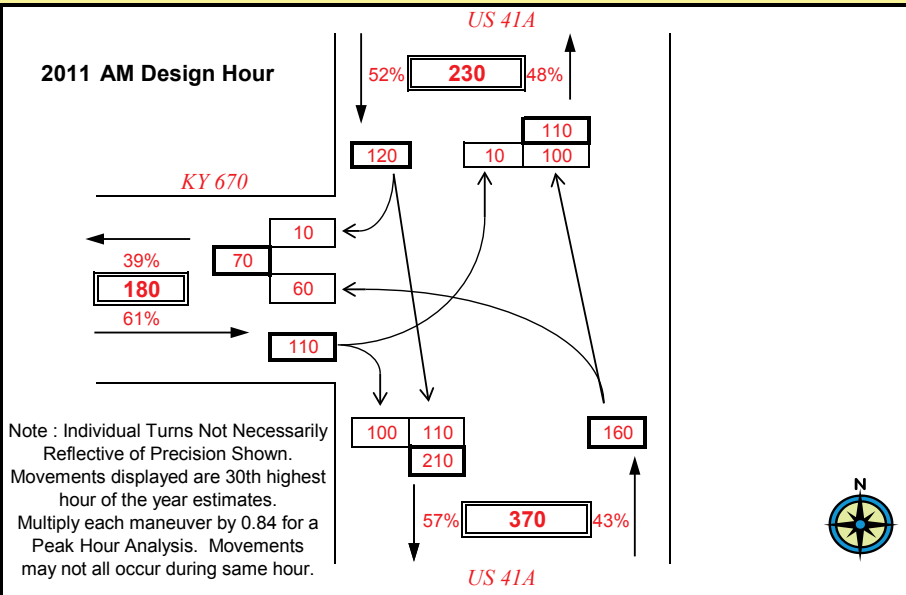
Note : Individual Turns Not Necessarily Reflective of Precision Shown. Movements displayed are 30th highest hour of the year estimates. Multiply each maneuver by 0.84 for a Peak Hour Analysis. Movements may not all occur during same hour.

PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2011 ADT and Design Hour Volumes**
INTERSECTION: T5: US 41A & KY 670

NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

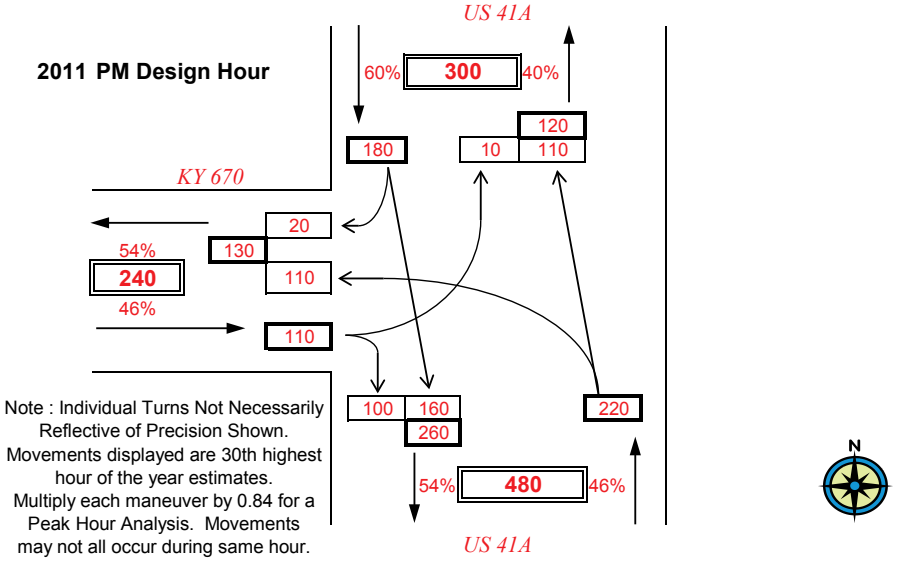
****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





Location Map

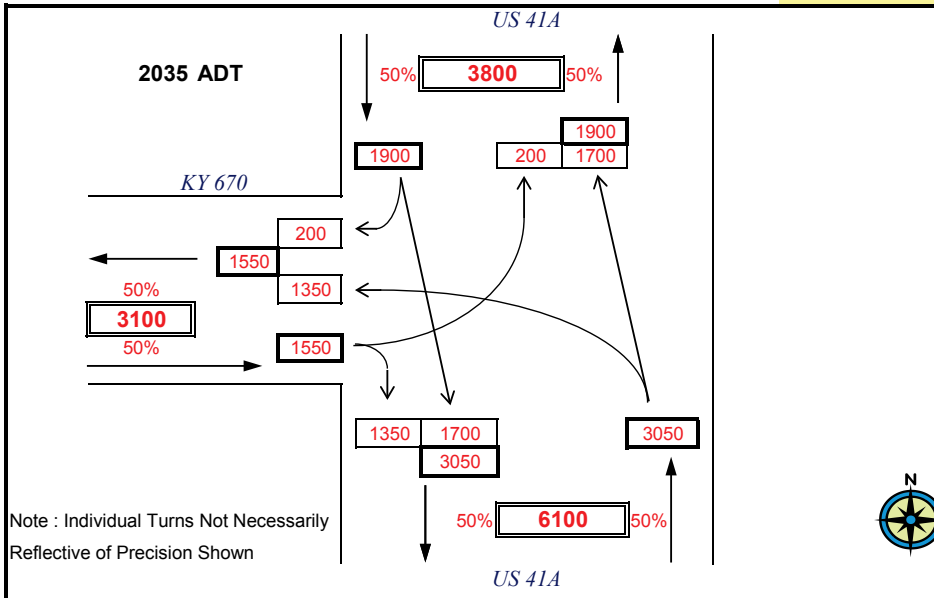
N

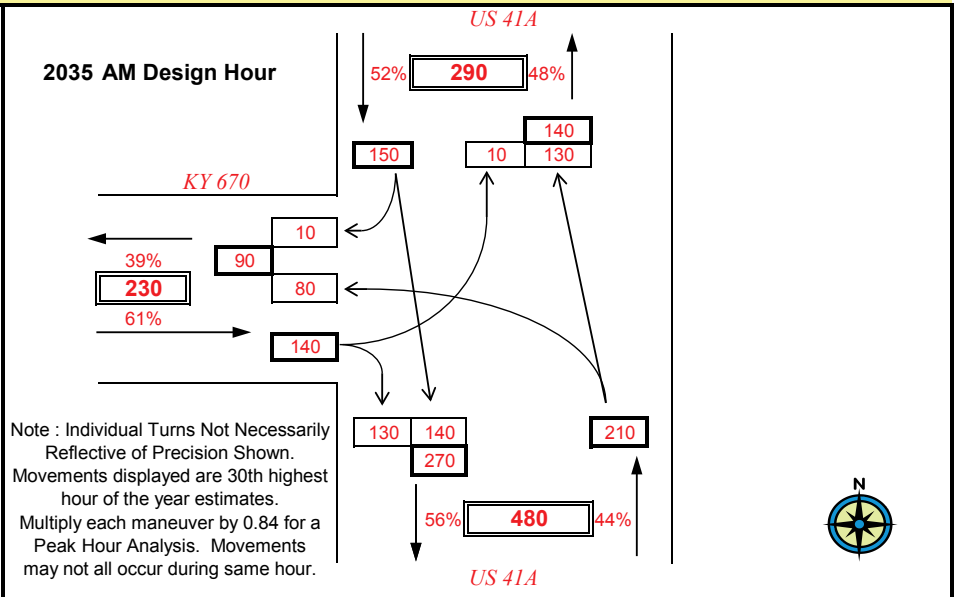


PROJECT: US 41A Madison to Providence
ITEM NUMBER: 0
MARS NUMBER: 0
REQUEST DATE: 1/0/1900
ANALYST: JJL
SCENARIO: **2035 ADT and Design Hour Volumes**
INTERSECTION: T5: US 41A & KY 670

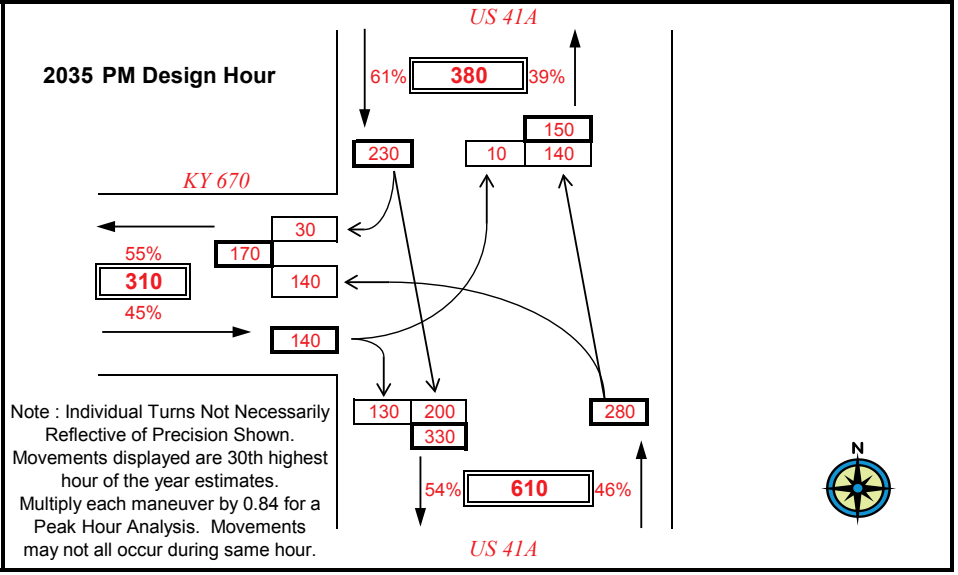
NOTE: K-Factors, Directional Distributions, and Peak Hour Factors were determined from a 2008 Turning Movement Count. AM and PM DHVs represent 30th highest hour estimates for each turn maneuver.

****DHV TURN MOVEMENT FORECASTS SHOULD NOT BE USED FOR SIGNAL TIMING OR WARRANT ANALYSIS**





Location Map



APPENDIX A

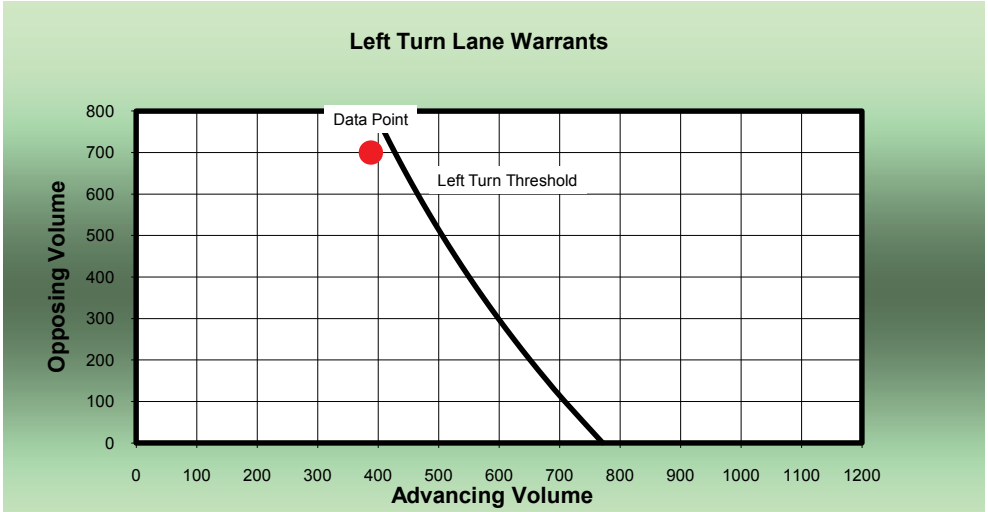
TURN LANE WARRANTS

		AM Peak Hour		PM Peak Hour	
Travel Direction on US 41A	Intersecting Roadway	Left Turn Lane Currently Present or Warranted in 2035?	Right Turn Lane Currently Present of Warranted in 2035?	Left Turn Lane Currently Present or Warranted in 2035?	Right Turn Lane Currently Present of Warranted in 2035?
WB Toward Providence	KY 670 in Providence	NO	N/A	YES	N/A
WB Toward Providence	KY 120 in Providence	NO	NO	YES	NO
EB Toward Madisonville	KY 120 in Providence	NO	NO	NO	NO
WB Toward Providence	KY 502 in Nebo	NO	NO	NO	NO
EB Toward Madisonville	KY 502 in Nebo	NO	NO	NO	NO
WB Toward Providence	KY 630N in Manitou		NO		NO
EB Toward Madisonville	KY 630N in Manitou	NO		NO	
EB Toward Madisonville	KY 630S in Manitou				
WB Toward Providence	Industrial Drive east of Manitou	NO	NO	NO	NO
EB Toward Madisonville	Industrial Drive east of Manitou	YES	NO	NO	NO
Other					
KY 502 SB	US 41A	NO	NO	NO	NO
KY 502 NB	US 41A	NO	NO	NO	NO
KY 630 NB	US 41A	NO	NO	NO	NO

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	20	Speed Limit (mph)	45
Advancing Volume (vph)	370	No. of through lanes	1
Opposing Volume (vph)	700	Percent Heavy Vehicles (decimal percent)	0.1

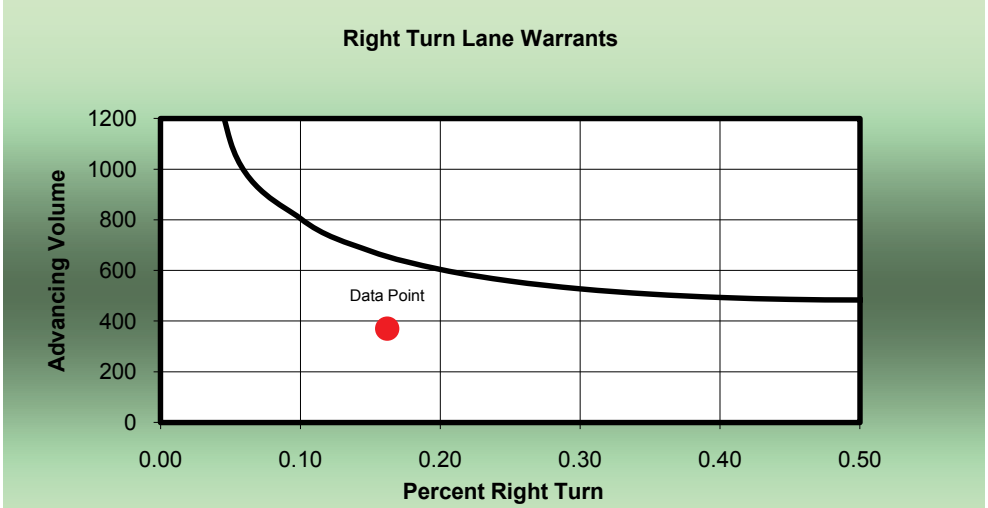


Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	60	Speed Limit (mph)	45
Advancing Volume (vph)	370		



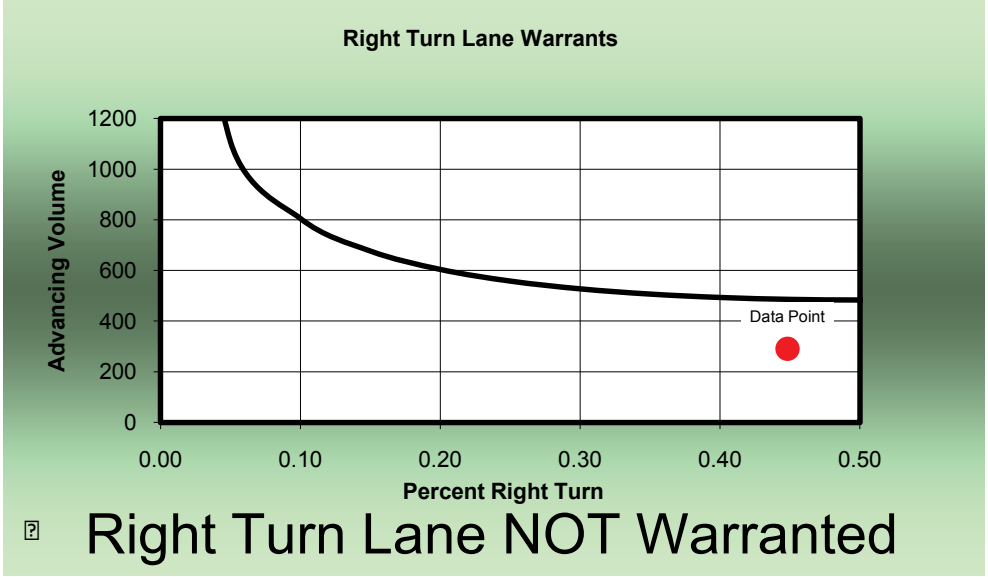
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	130	Speed Limit (mph)	45
Advancing Volume (vph)	290		



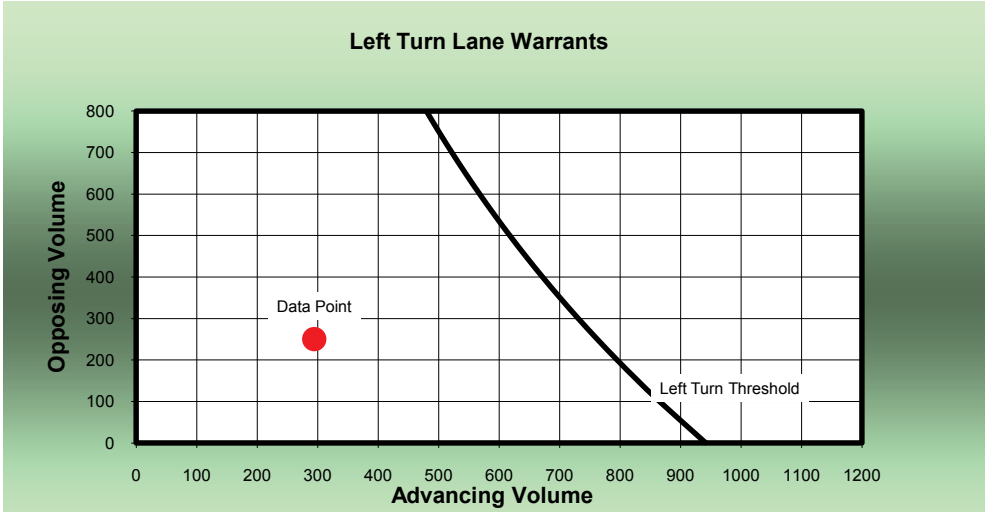
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	290	No. of through lanes	1
Opposing Volume (vph)	250	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

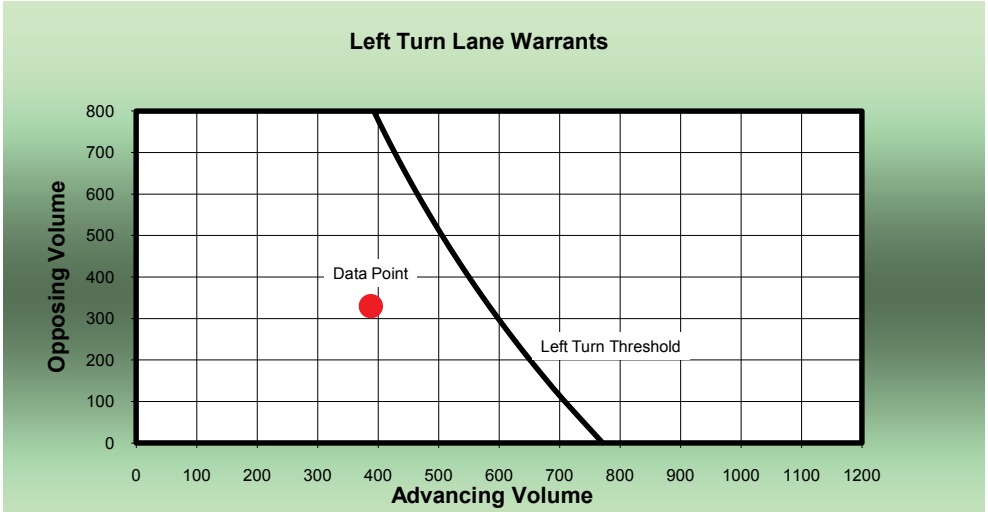
Right Turn Volume (vph)	210	Speed Limit (mph)	45
Advancing Volume (vph)	380		

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	20	Speed Limit (mph)	45
Advancing Volume (vph)	380	No. of through lanes	1
Opposing Volume (vph)	330	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	45
Advancing Volume (vph)	250		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	40	Speed Limit (mph)	45
Advancing Volume (vph)	330		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	140	Speed Limit (mph)	45
Advancing Volume (vph)	330	No. of through lanes	1
Opposing Volume (vph)	380	Percent Heavy Vehicles (decimal percent)	0.09

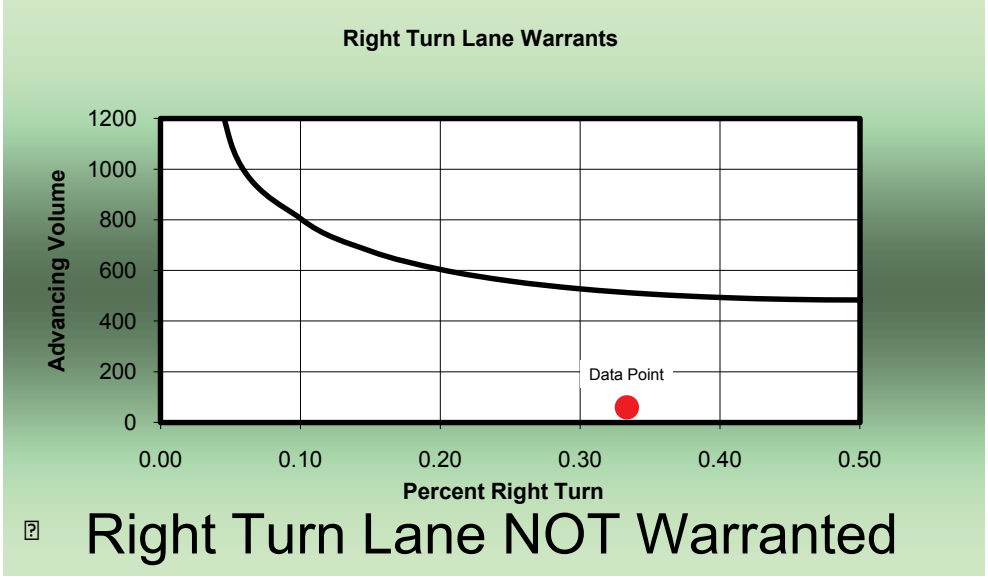
Left Turn Lane WARRANTED

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	20	Speed Limit (mph)	45
Advancing Volume (vph)	60		



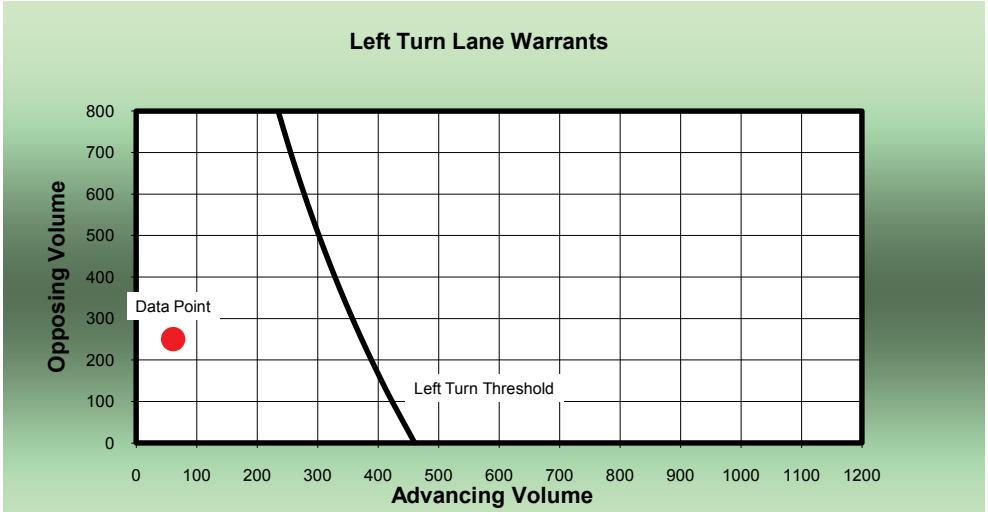
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	60	No. of through lanes	1
Opposing Volume (vph)	250	Percent Heavy Vehicles (decimal percent)	0.09



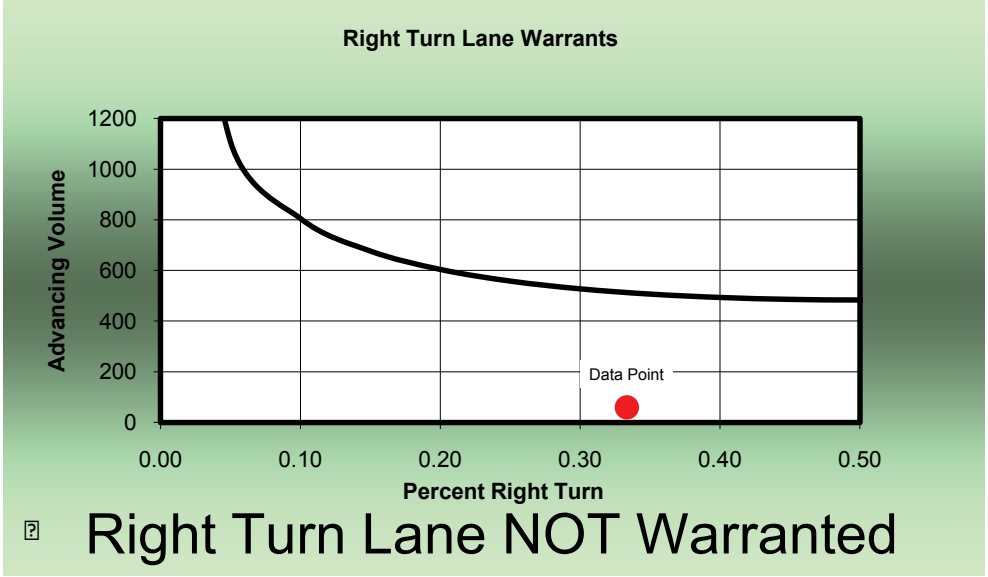
Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	20	Speed Limit (mph)	45
Advancing Volume (vph)	60		



Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	110	Speed Limit (mph)	45
Advancing Volume (vph)	250		

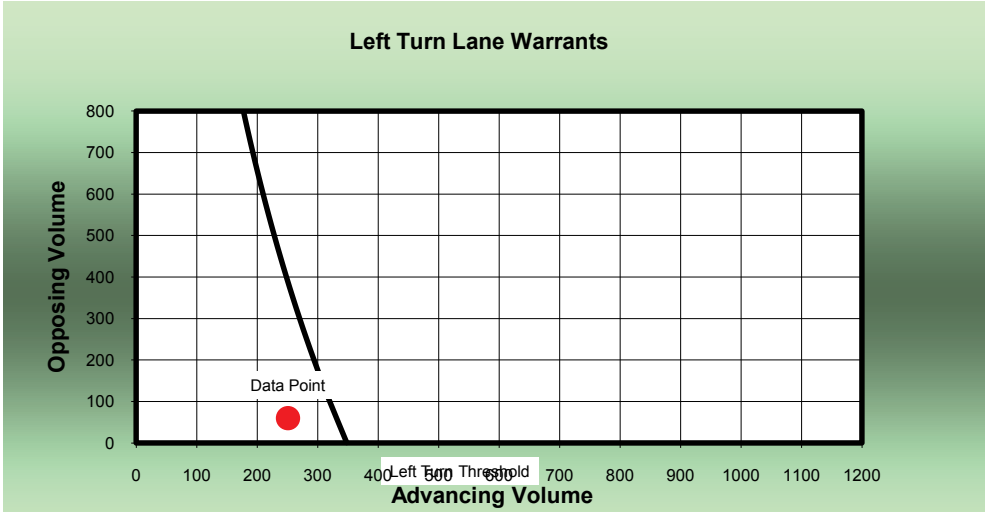
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	100	Speed Limit (mph)	45
Advancing Volume (vph)	250	No. of through lanes	1
Opposing Volume (vph)	60	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	130	Speed Limit (mph)	45
Advancing Volume (vph)	320		

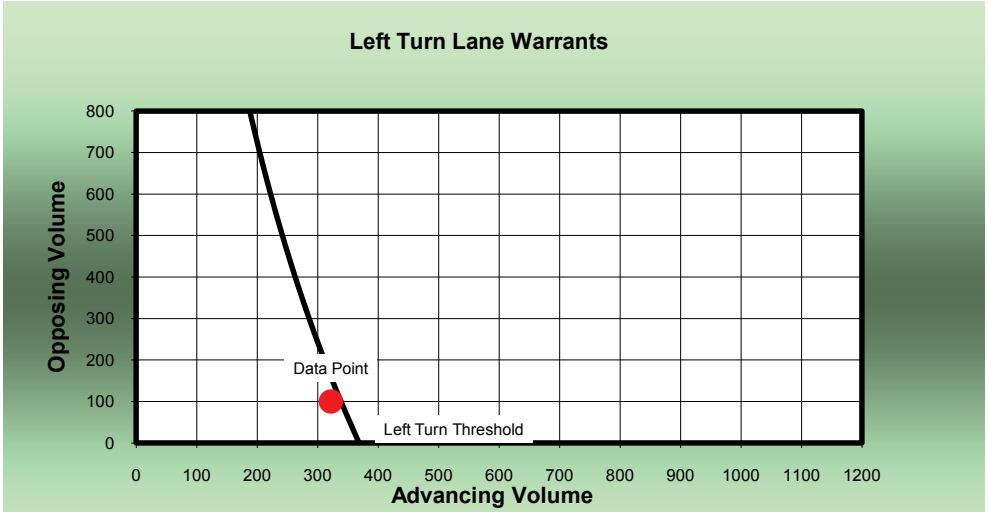
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	100	Speed Limit (mph)	45
Advancing Volume (vph)	320	No. of through lanes	1
Opposing Volume (vph)	100	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	30		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	30	No. of through lanes	1
Opposing Volume (vph)	50	Percent Heavy Vehicles (decimal percent)	0.072

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	50		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	50	No. of through lanes	1
Opposing Volume (vph)	20	Percent Heavy Vehicles (decimal percent)	0.072

Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	20		

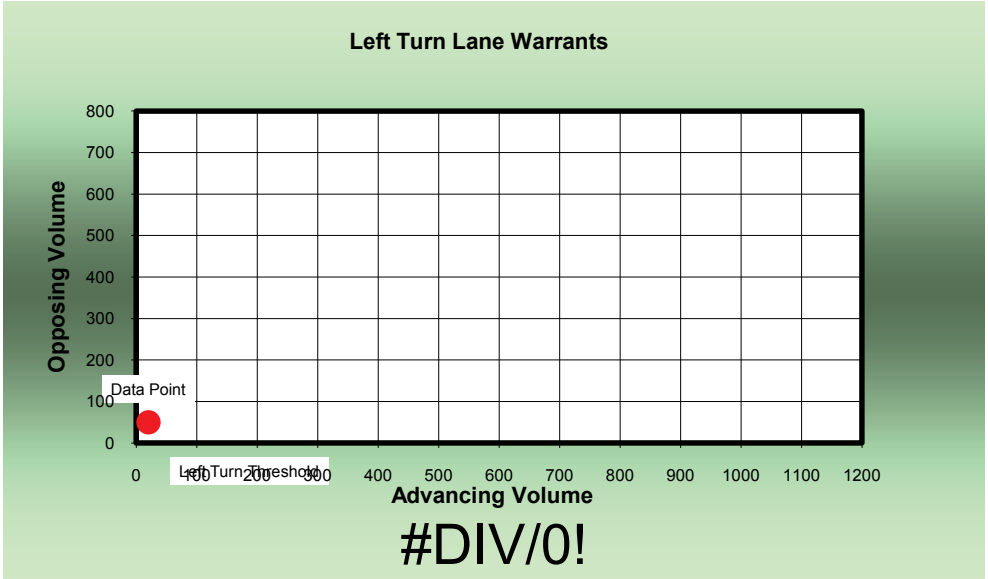
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	0	Speed Limit (mph)	55
Advancing Volume (vph)	20	No. of through lanes	1
Opposing Volume (vph)	50	Percent Heavy Vehicles (decimal percent)	0.072



#DIV/0!

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

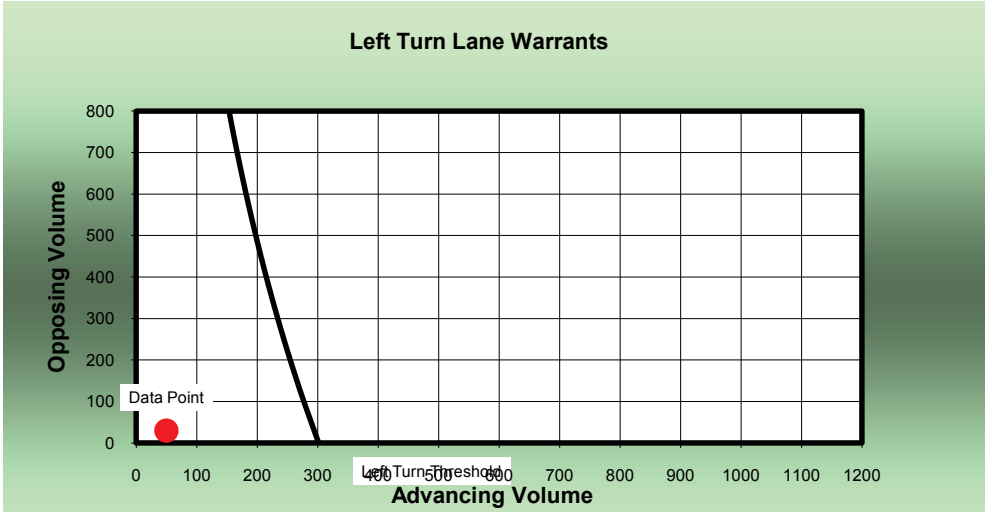
Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	50		

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	50	No. of through lanes	1
Opposing Volume (vph)	30	Percent Heavy Vehicles (decimal percent)	0.072



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	300		

Right Turn Lane NOT Warranted

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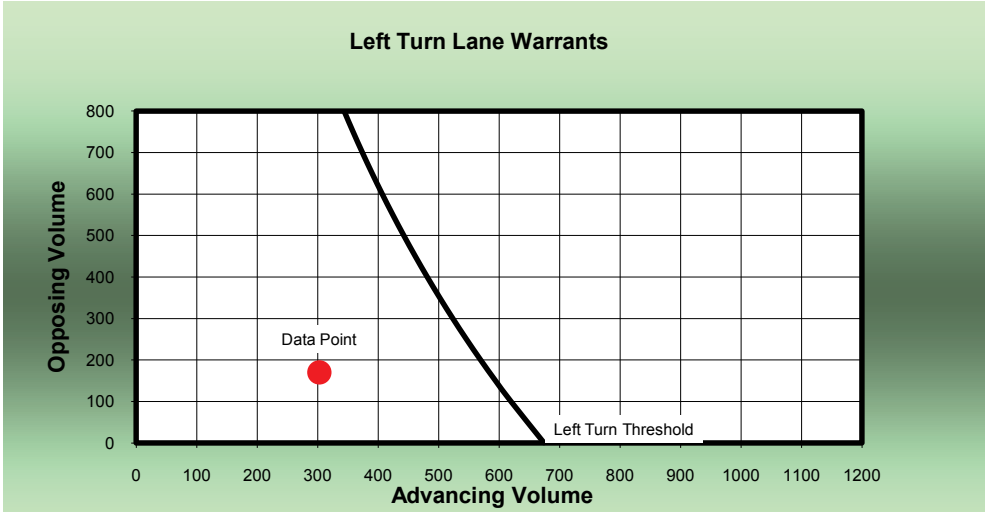
Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	300	No. of through lanes	1
Opposing Volume (vph)	170	Percent Heavy Vehicles (decimal percent)	0.072



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	240		

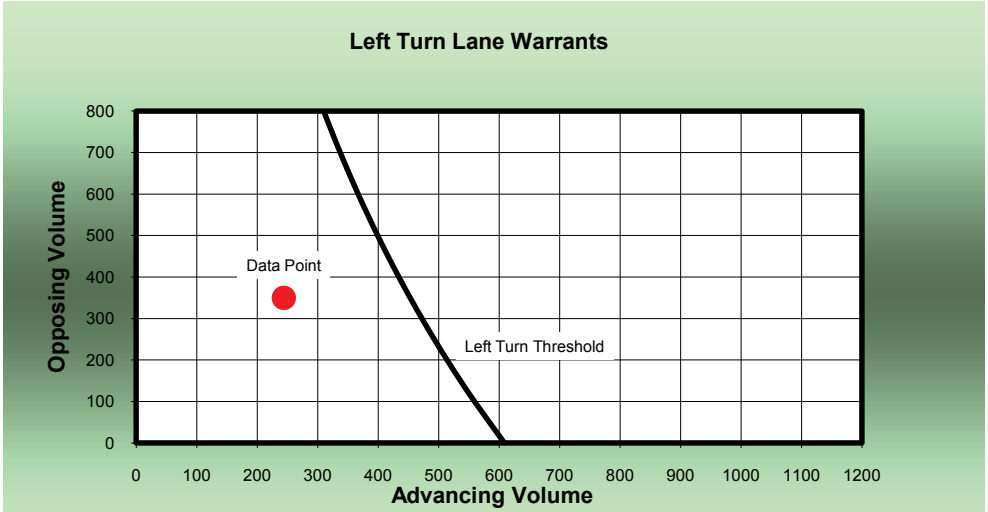
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	240	No. of through lanes	1
Opposing Volume (vph)	350	Percent Heavy Vehicles (decimal percent)	0.072



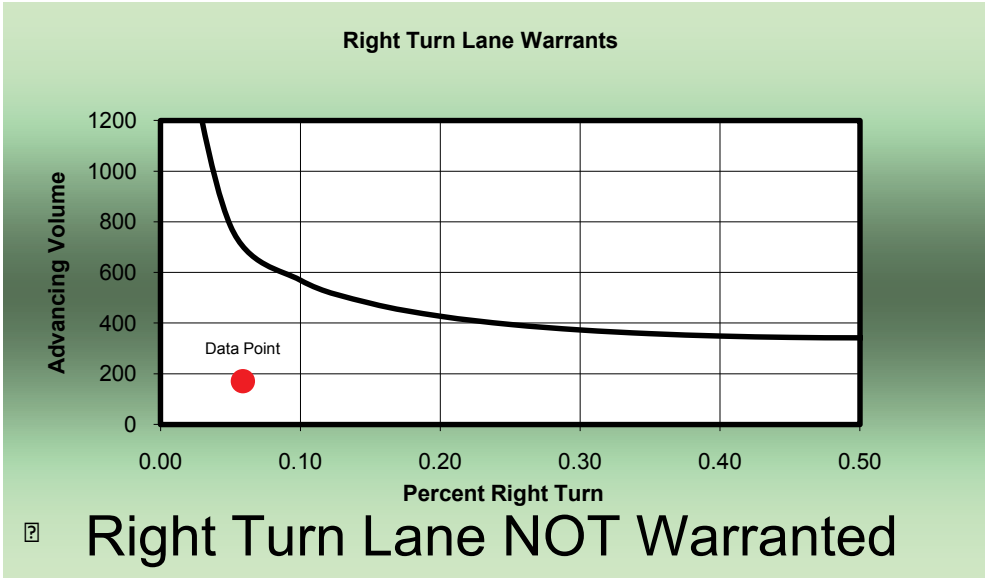
Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	170		



Right Turn Lane NOT Warranted

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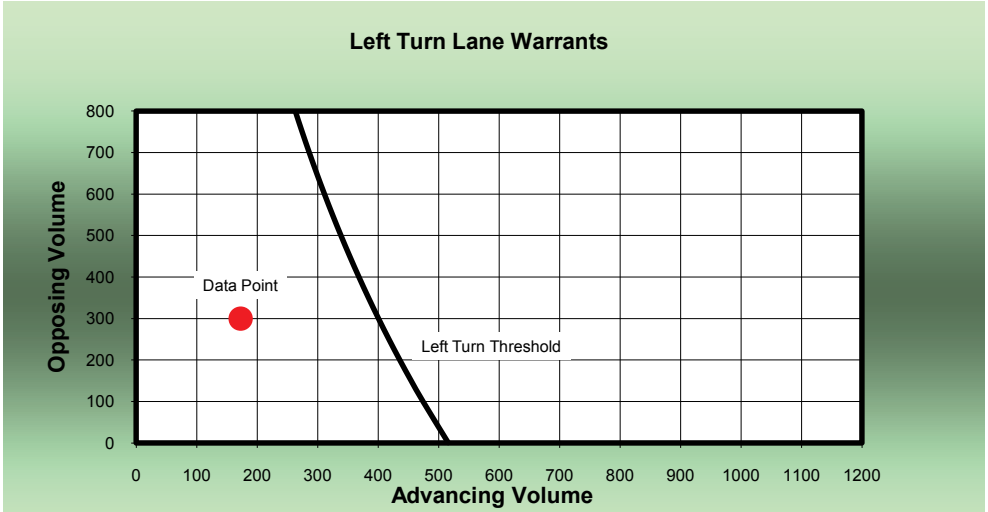
Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	170	No. of through lanes	1
Opposing Volume (vph)	300	Percent Heavy Vehicles (decimal percent)	0.072



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	350		

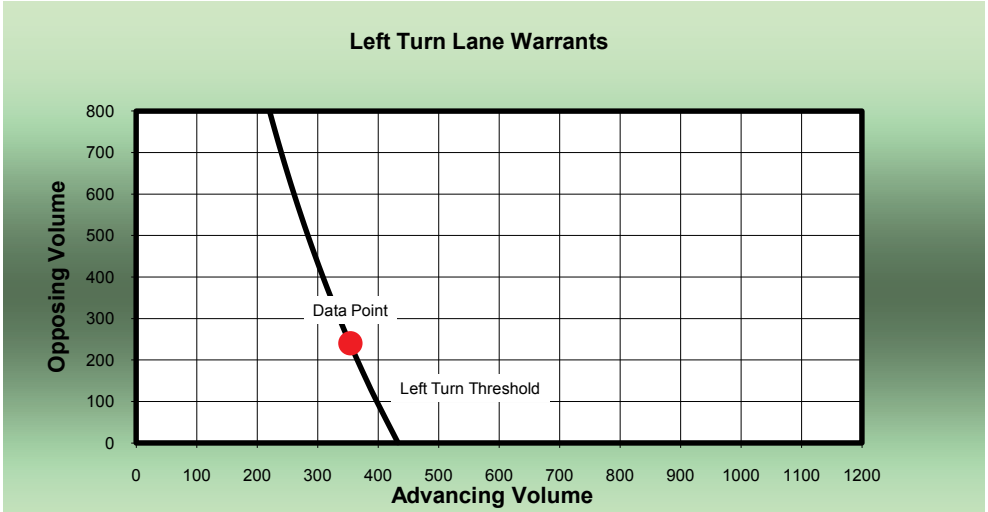
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	350	No. of through lanes	1
Opposing Volume (vph)	240	Percent Heavy Vehicles (decimal percent)	0.072



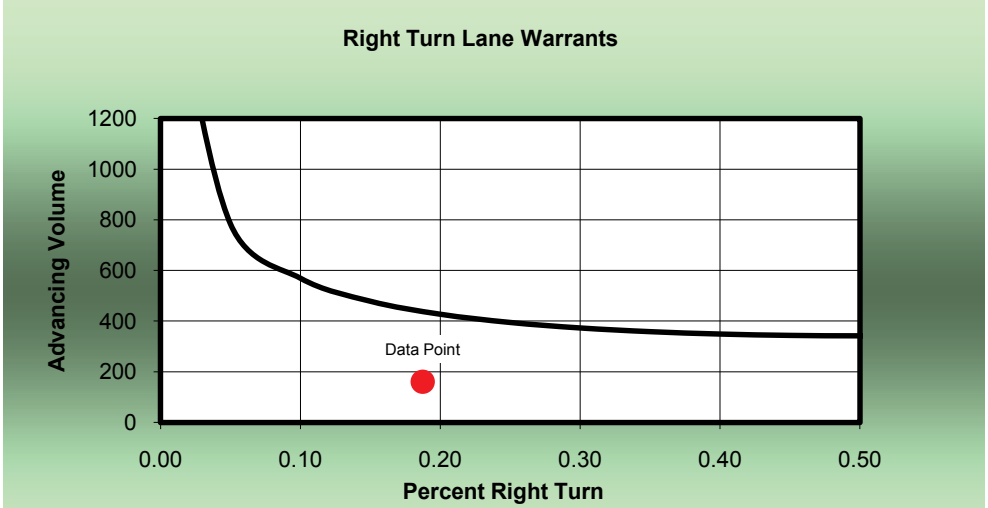
Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	160		



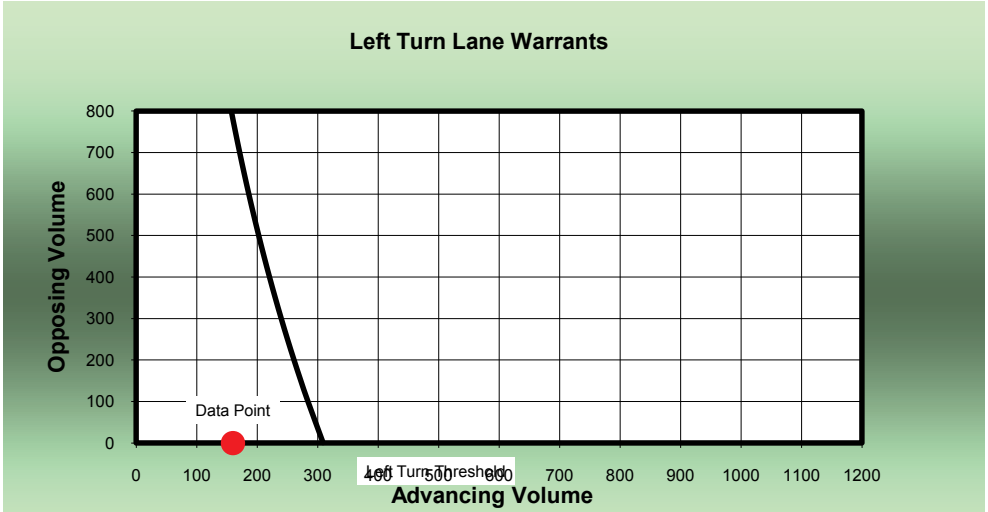
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	130	Speed Limit (mph)	55
Advancing Volume (vph)	160	No. of through lanes	1
Opposing Volume (vph)	0	Percent Heavy Vehicles (decimal percent)	0.1



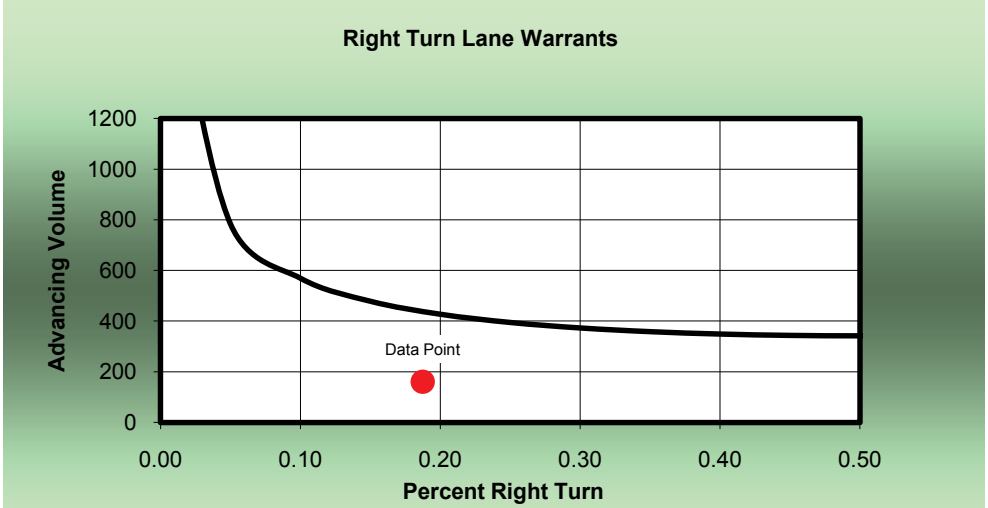
Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	160		



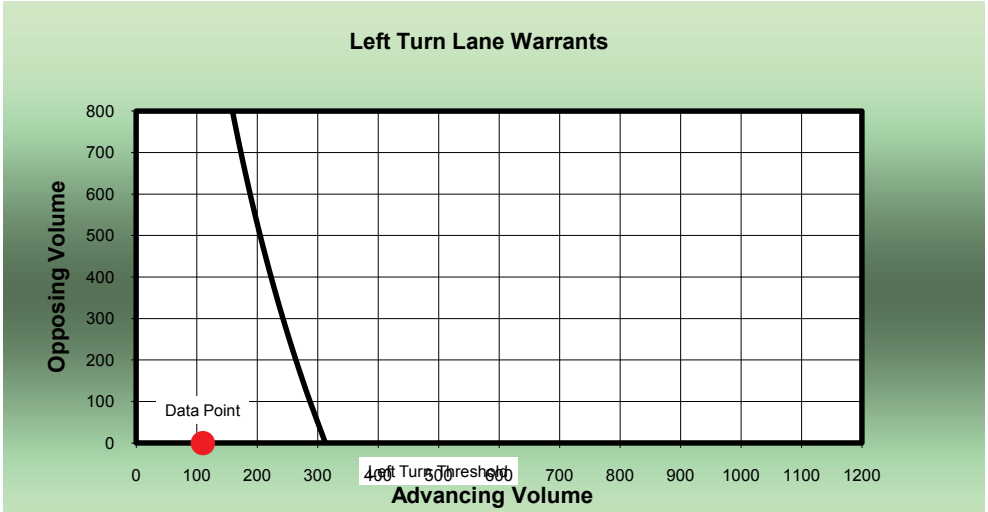
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	90	Speed Limit (mph)	55
Advancing Volume (vph)	110	No. of through lanes	1
Opposing Volume (vph)	0	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	60	Speed Limit (mph)	55
Advancing Volume (vph)	200		

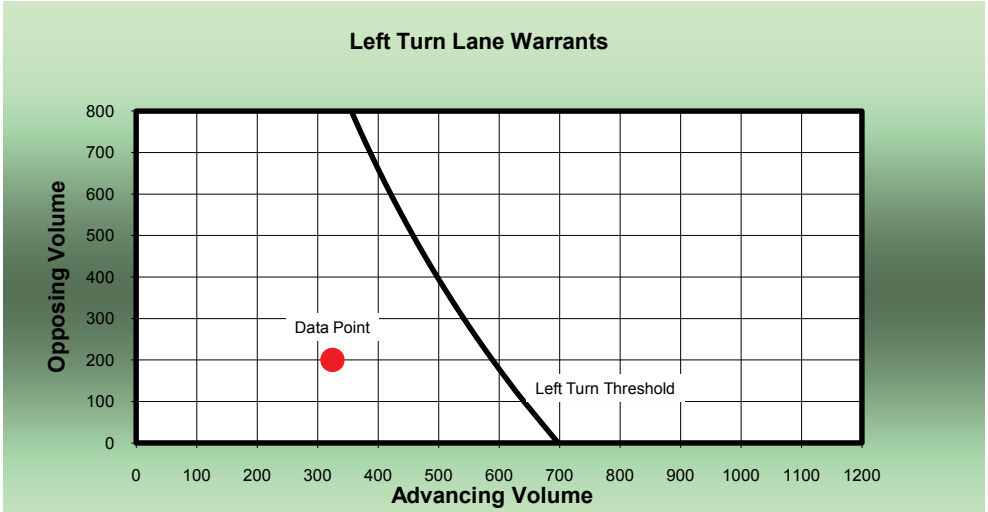
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	320	No. of through lanes	1
Opposing Volume (vph)	200	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	60	Speed Limit (mph)	55
Advancing Volume (vph)	200		

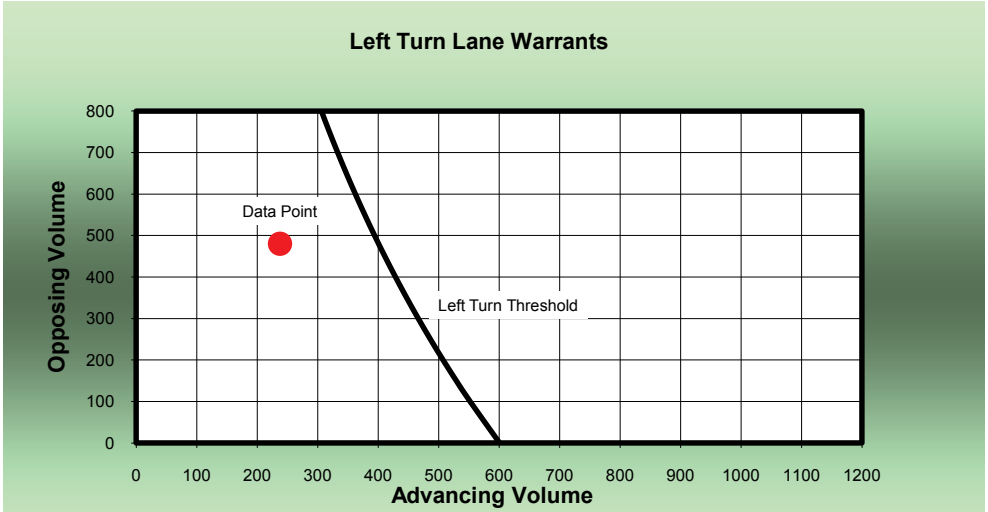
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	55
Advancing Volume (vph)	230	No. of through lanes	1
Opposing Volume (vph)	480	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	60	Speed Limit (mph)	55
Advancing Volume (vph)	200		

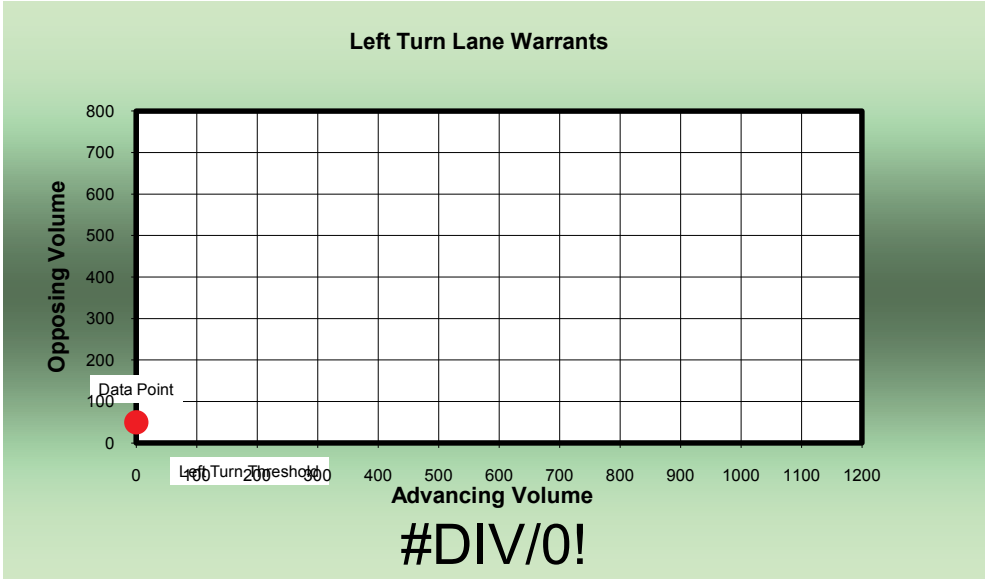
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	0	Speed Limit (mph)	55
Advancing Volume (vph)		No. of through lanes	1
Opposing Volume (vph)	50	Percent Heavy Vehicles (decimal percent)	0.072



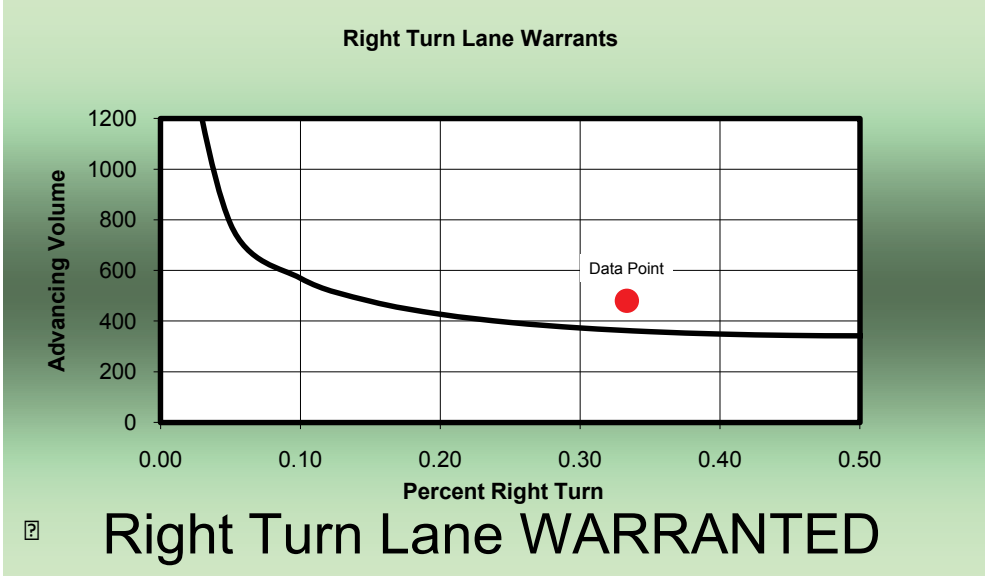
#DIV/0!

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	160	Speed Limit (mph)	55
Advancing Volume (vph)	480		

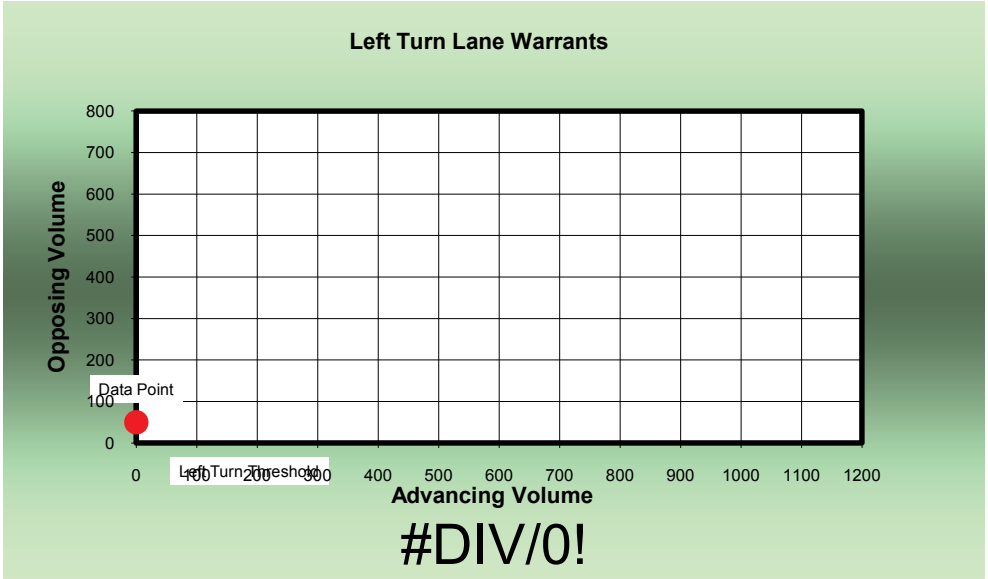


Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	0	Speed Limit (mph)	55
Advancing Volume (vph)		No. of through lanes	1
Opposing Volume (vph)	50	Percent Heavy Vehicles (decimal percent)	0.072



#DIV/0!

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

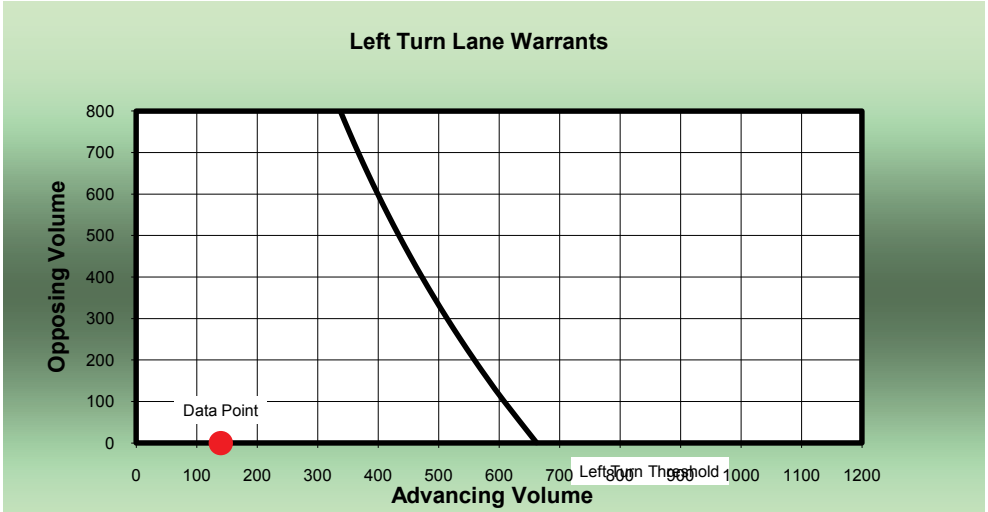
Right Turn Volume (vph)	130	Speed Limit (mph)	45
Advancing Volume (vph)	140		

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	140	No. of through lanes	1
Opposing Volume (vph)	0	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

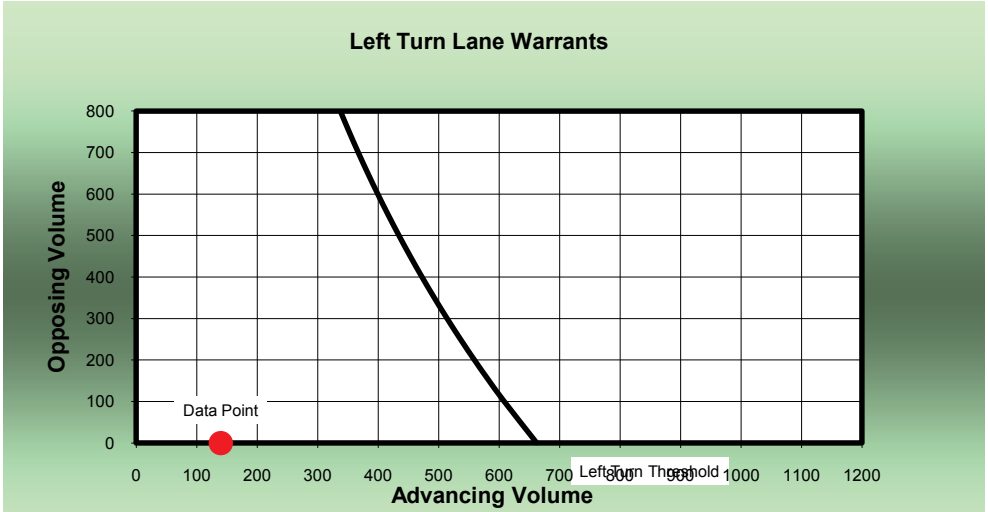
Right Turn Volume (vph)	130	Speed Limit (mph)	45
Advancing Volume (vph)	140		

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	140	No. of through lanes	1
Opposing Volume (vph)	0	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

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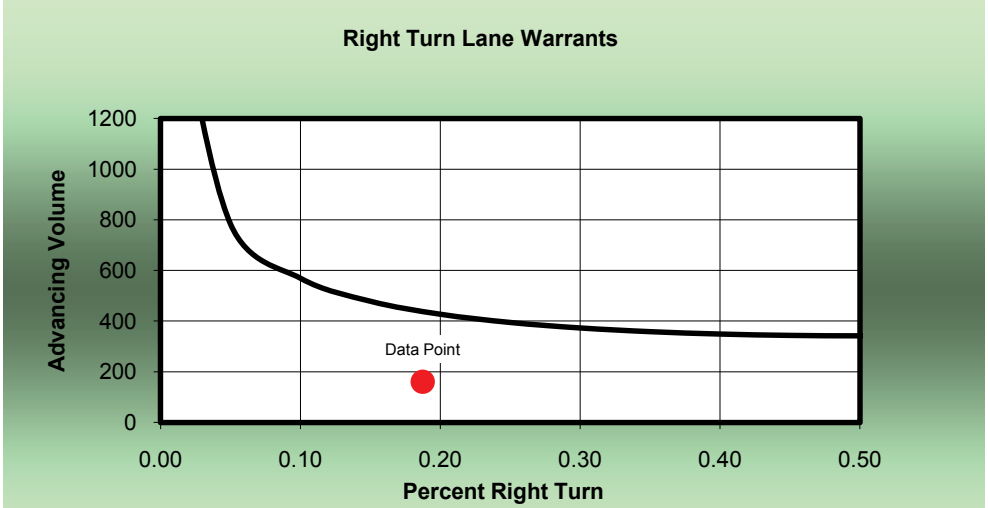
Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	160		



Right Turn Lane NOT Warranted

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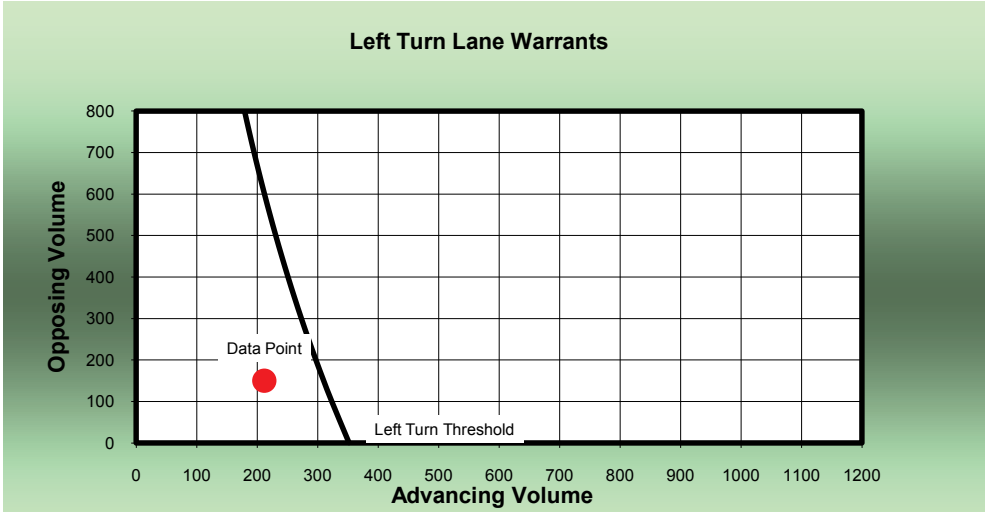
Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	80	Speed Limit (mph)	45
Advancing Volume (vph)	210	No. of through lanes	1
Opposing Volume (vph)	150	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

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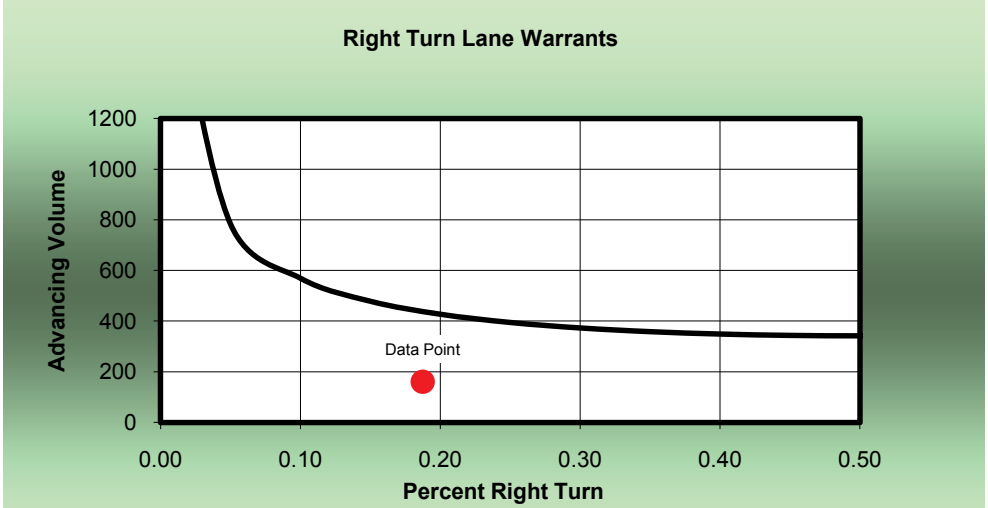
Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	55
Advancing Volume (vph)	160		



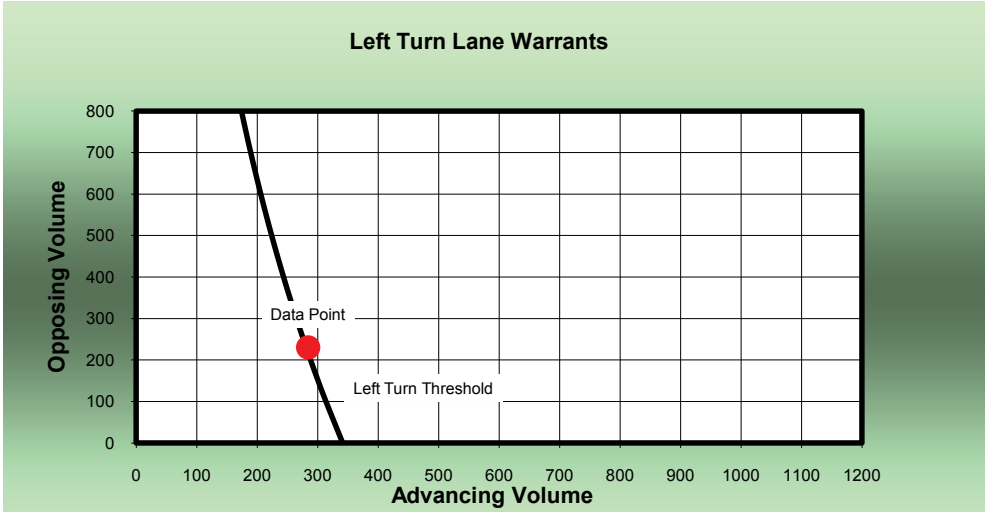
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	140	Speed Limit (mph)	45
Advancing Volume (vph)	280	No. of through lanes	1
Opposing Volume (vph)	230	Percent Heavy Vehicles (decimal percent)	0.09



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	30	Speed Limit (mph)	45
Advancing Volume (vph)	710		

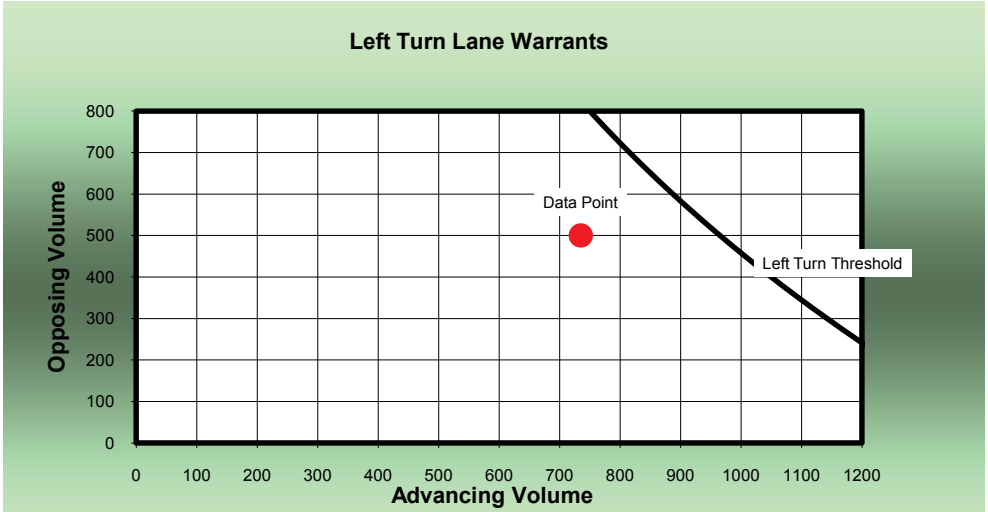
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	710	No. of through lanes	1
Opposing Volume (vph)	500	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	40		

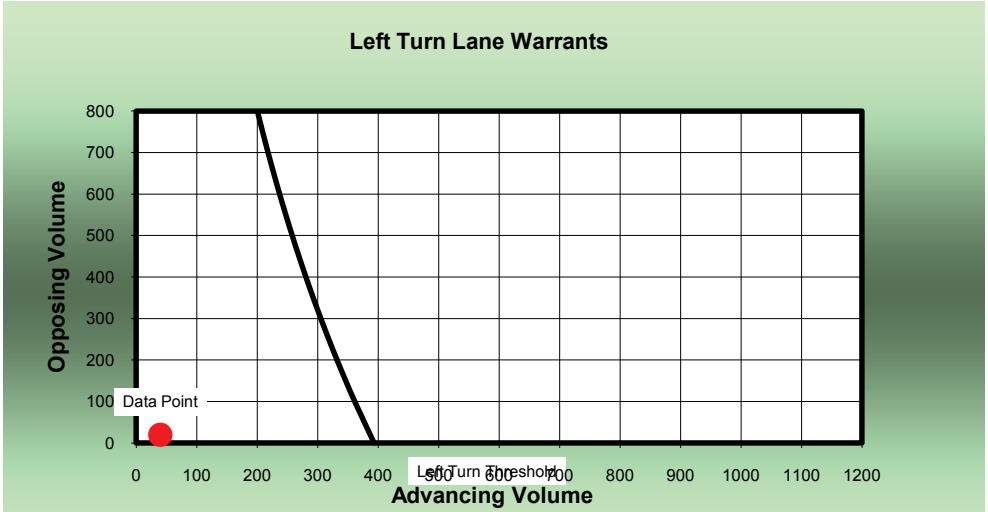
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	30	Speed Limit (mph)	45
Advancing Volume (vph)	40	No. of through lanes	1
Opposing Volume (vph)	20	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	40	Speed Limit (mph)	45
Advancing Volume (vph)	140		

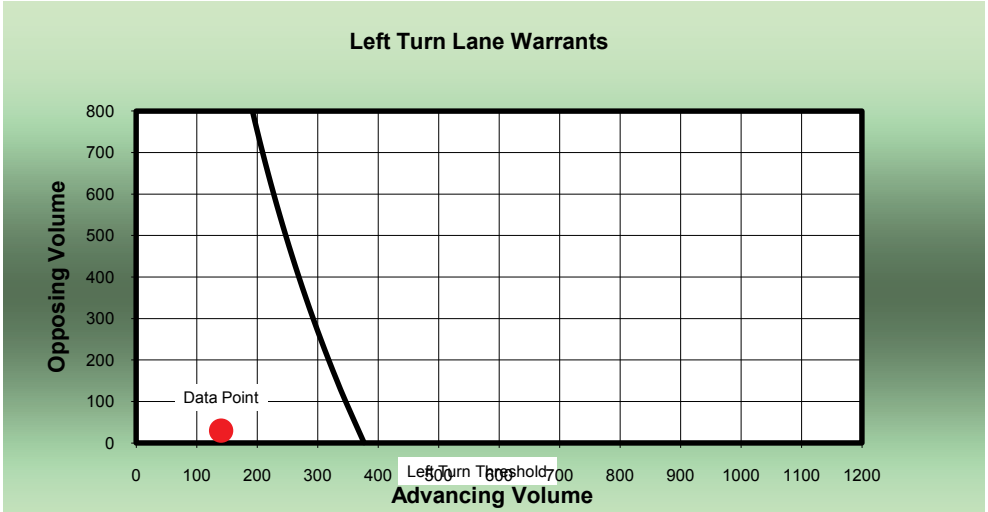
Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	100	Speed Limit (mph)	45
Advancing Volume (vph)	140	No. of through lanes	1
Opposing Volume (vph)	30	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	1	Speed Limit (mph)	45
Advancing Volume (vph)	20	No. of through lanes	1
Opposing Volume (vph)	40	Percent Heavy Vehicles (decimal percent)	0.1

Left Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Right Turn Lane Warrants

Input Fields

Right Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	700		

Right Turn Lane NOT Warranted

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	30	Speed Limit (mph)	45
Advancing Volume (vph)	700	No. of through lanes	1
Opposing Volume (vph)	370	Percent Heavy Vehicles (decimal percent)	0.1

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Turn Lane Length

Input Fields

Turn Volume	30
Speed Limit	45
Cycle Length	45
(Enter 0 for Uncontrolled, 60 for Stop Controlled)	
Approach Percent Grade (G)	1
Is this a Rural Arterial (Y or N)	y

Calculated Turn Lane Length (ft)

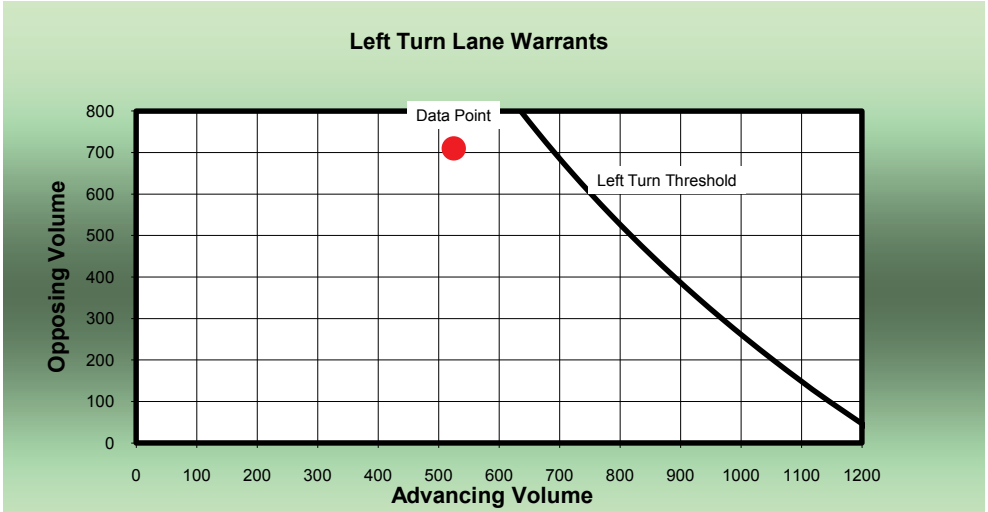
Desirable	**220**
Minimum	**190**

Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

Left Turn Lane Warrants

Input Fields

Left Turn Volume (vph)	10	Speed Limit (mph)	45
Advancing Volume (vph)	500	No. of through lanes	1
Opposing Volume (vph)	710	Percent Heavy Vehicles (decimal percent)	0.1



Left Turn Lane NOT Warranted

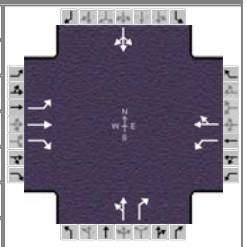
Note: This spreadsheet is intended to supplement the guidance provided in the Auxiliary Turn Lane policy outlined in the KYTC Highway Design Manual. This policy should be fully reviewed and understood prior to using this application.

APPENDIX A

INTERSECTIONS CAPACITY

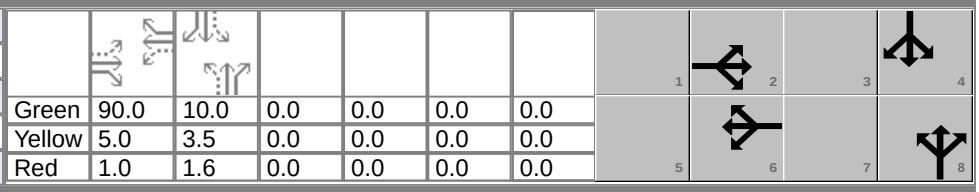
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	AM Peak Hour	PHF	0.90
Intersection	US 41A & Inudustrial Dr	Analysis Year	2011	Analysis Period	1> 7:00
File Name	Industrial Dr AM 2011.xus				
Project Description	AM Existing 2011				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	20	460	5	10	200	40	0	0	10	20	0	10

Signal Information			
Cycle, s	111.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	90.0	10.0	0.0	0.0	0.0	0.0		
Yellow	5.0	3.5	0.0	0.0	0.0	0.0		
Red	1.0	1.6	0.0	0.0	0.0	0.0		

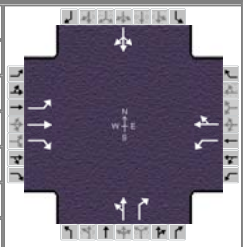
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	5.0	5.0	6.0	6.0	7.0	7.0	8.0	8.0
Phase Duration, s	96.0	96.0	96.0	96.0	15.1	15.1	15.1	15.1
Change Period, *(Y+Rc)*, s	6.0	6.0	6.0	6.0	5.1	5.1	5.1	5.1
Max Allow Headway *(MAH)*, s	2.9	2.9	2.9	2.9	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s)*, s	10.3	10.3	10.7	10.7	2.7	2.7	4.9	4.9
Green Extension Time *(g_e)*, s	1.4	1.4	1.4	1.4	0.1	0.1	0.1	0.1
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	22	511	6	11	0	267	0	0	11	33	0	0
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1076	1810	1533	860	0	1757	0	1810	1533	994	0	0
Queue Service time *(g_s)*, s	0.5	8.3	0.1	0.4	0.0	3.8	0.0	0.0	0.7	1.9	0.0	0.0
Cycle Queue Clearance Time *(g_c)*, s	4.3	8.3	0.1	8.7	0.0	3.8	0.0	0.0	0.7	2.9	0.0	0.0
Capacity *(c)*, veh/h	900	1466	1242	697		1423		163	138	144		
Volume-to-Capacity Ratio *(X)*	0.025	0.349	0.004	0.016	0.000	0.187	0.000	0.000	0.080	0.232	0.000	0.000
Available Capacity *(c_a)*, veh/h	900	1466	1242	697		1423		489	414	308		
Back of Queue *(Q)*, veh/ln	0.1	1.6	0.0	0.1		0.7		0.0	0.3	0.9		
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d_1)*, s/veh	2.8	2.8	2.0	3.9		2.4		0.0	46.3	47.1		
Incremental Delay *(d_2)*, s/veh	0.1	0.7	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.3	0.0	0.0
Initial Queue Delay *(d_3)*, 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
Control Delay *(d)*, s/veh	2.9	3.4	2.0	4.0		2.7		0.0	46.4	47.4		
Level of Service (LOS)	A	A	A	A		A			D	D		
Approach Delay, s/veh / LOS	3.4	A		2.7	A		46.4	D		47.4	D	
Intersection Delay s/veh / LOS	5.4						A					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.4	A	0.9	A	0.5	A	0.5	A

2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	AM Peak Hour	PHF	0.90
Intersection	US 41A & Inudustrial Dr	Analysis Year	2011	Analysis Period	1> 7:00
File Name	Industrial Dr AM 2035.xus				
Project Description	AM Existing 2035				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	30	660	10	20	290	60	0	0	20	30	0	10

Signal Information			
Cycle, s	111.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On

								1	2	3	4	
Green	90.0	10.0	0.0	0.0	0.0	0.0						
Yellow	5.0	3.5	0.0	0.0	0.0	0.0						
Red	1.0	1.6	0.0	0.0	0.0	0.0		5	6	7	8	

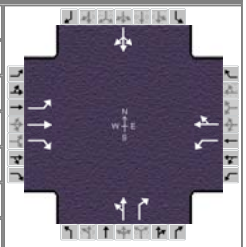
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	5.0	5.0	6.0	6.0	7.0	7.0	8.0	8.0
Phase Duration, s	96.0	96.0	96.0	96.0	15.1	15.1	15.1	15.1
Change Period, *(Y+Rc)*, s	6.0	6.0	6.0	6.0	5.1	5.1	5.1	5.1
Max Allow Headway *(MAH)*, s	2.9	2.9	2.9	2.9	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s)*, s	16.4	16.4	17.6	17.6	3.5	3.5	6.7	6.7
Green Extension Time *(g_e)*, s	2.3	2.3	2.3	2.3	0.1	0.1	0.1	0.1
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	33	733	11	22	0	389	0	0	22	44	0	0
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	962	1810	1533	700	0	1755	0	1810	1533	929	0	0
Queue Service time *(g_s)*, s	1.0	14.4	0.2	1.2	0.0	6.0	0.0	0.0	1.5	4.1	0.0	0.0
Cycle Queue Clearance Time *(g_c)*, s	7.0	14.4	0.2	15.6	0.0	6.0	0.0	0.0	1.5	4.7	0.0	0.0
Capacity *(c)*, veh/h	792	1466	1242	541		1422		163	138	140		
Volume-to-Capacity Ratio *(X)*	0.042	0.500	0.009	0.041	0.000	0.273	0.000	0.000	0.161	0.317	0.000	0.000
Available Capacity *(c_a)*, veh/h	792	1466	1242	541		1422		489	414	297		
Back of Queue *(Q)*, veh/ln	0.1	2.8	0.0	0.2		1.1		0.0	0.6	1.2		
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d_1)*, s/veh	3.4	3.4	2.0	5.9		2.6		0.0	46.7	47.9		
Incremental Delay *(d_2)*, s/veh	0.1	1.2	0.0	0.1	0.0	0.5	0.0	0.0	0.2	0.5	0.0	0.0
Initial Queue Delay *(d_3)*, 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
Control Delay *(d)*, s/veh	3.5	4.6	2.0	6.0		3.0		0.0	46.9	48.4		
Level of Service (LOS)	A	A	A	A		A			D	D		
Approach Delay, s/veh / LOS	4.5	A		3.2	A		46.9	D		48.4	D	
Intersection Delay s/veh / LOS	6.4						A					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.8	A	1.2	A	0.5	A	0.6	A

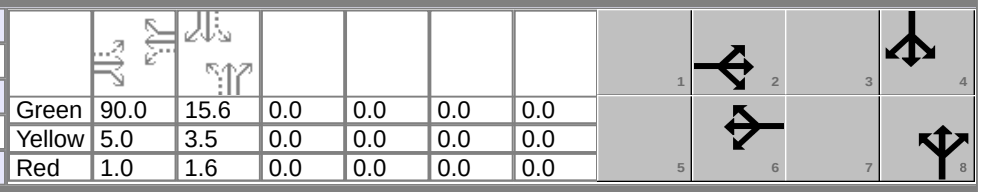
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	PM Peak Hour	PHF	0.90
Intersection	US 41A & Inudustrial Dr	Analysis Year	2011	Analysis Period	1> 7:00
File Name	Industrial Dr PM 2011.xus				
Project Description	PM Existing 2011				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	340	0	5	470	20	5	0	10	70	0	30

Signal Information			
Cycle, s	116.7	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	90.0	15.6	0.0	0.0	0.0	0.0		
Yellow	5.0	3.5	0.0	0.0	0.0	0.0		
Red	1.0	1.6	0.0	0.0	0.0	0.0		

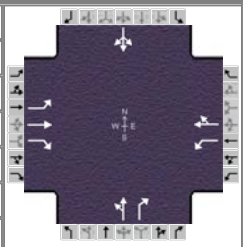
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	5.0	5.0	6.0	6.0	7.0	7.0	8.0	8.0
Phase Duration, s	96.0	96.0	96.0	96.0	20.7	20.7	20.7	20.7
Change Period, *(Y+Rc)*, s	6.0	6.0	6.0	6.0	5.1	5.1	5.1	5.1
Max Allow Headway *(MAH)*, s	2.9	2.9	2.9	2.9	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s),* s	14.1	14.1	13.6	13.6	2.7	2.7	15.4	15.4
Green Extension Time *(g_e),* s	1.6	1.6	1.6	1.6	0.2	0.2	0.2	0.2
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	11	378	0	6	0	544	6	0	11	111	0	0
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	834	1810	1533	972	0	1796	1189	0	1533	940	0	0
Queue Service time *(g_s)*, s	0.5	7.0	0.0	0.2	0.0	11.6	0.0	0.0	0.7	12.6	0.0	0.0
Cycle Queue Clearance Time *(g_c)*, s	12.1	7.0	0.0	7.2	0.0	11.6	0.4	0.0	0.7	13.4	0.0	0.0
Capacity *(c)*, veh/h	622	1395	1183	753		1385	221		205	178		
Volume-to-Capacity Ratio *(X)*	0.018	0.271	0.000	0.007	0.000	0.393	0.025	0.000	0.054	0.624	0.000	0.000
Available Capacity *(c_a)*, veh/h	622	1395	1183	753		1385	308		394	288		
Back of Queue *(Q)*, veh/ln	0.1	1.8	0.0	0.0		3.0	0.1		0.3	3.2		
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d_1)*, s/veh	6.4	3.9	0.0	4.9		4.4	44.0		44.1	49.3		
Incremental Delay *(d_2)*, s/veh	0.1	0.5	0.0	0.0	0.0	0.8	0.0	0.0	0.0	1.3	0.0	0.0
Initial Queue Delay *(d_3)*, 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
Control Delay *(d)*, s/veh	6.4	4.3	0.0	4.9		5.2	44.0		44.1	50.6		
Level of Service (LOS)	A	A		A		A	D		D	D		
Approach Delay, s/veh / LOS	4.4	A		5.2	A		44.1	D		50.6	D	
Intersection Delay s/veh / LOS	10.3						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.0	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.1	A	1.4	A	0.5	A	0.7	A

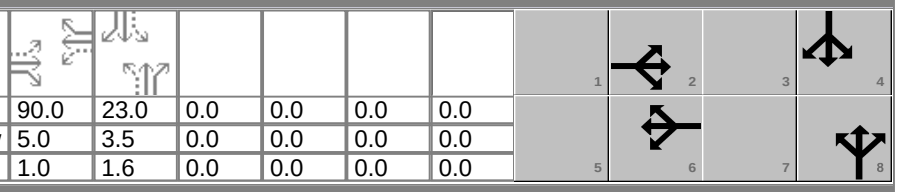
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	PM Peak Hour	PHF	0.90
Intersection	US 41A & Inudustrial Dr	Analysis Year	2011	Analysis Period	1> 7:00
File Name	Industrial Dr PM 2035.xus				
Project Description	PM Existing 2035				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	10	490	0	10	670	30	10	0	20	100	0	40

Signal Information			
Cycle, s	124.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	90.0	23.0	0.0	0.0	0.0	0.0		
Yellow	5.0	3.5	0.0	0.0	0.0	0.0		
Red	1.0	1.6	0.0	0.0	0.0	0.0		

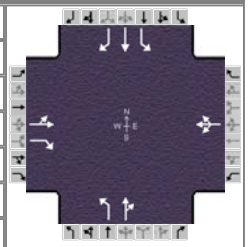
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	5.0	5.0	6.0	6.0	7.0	7.0	8.0	8.0
Phase Duration, s	96.0	96.0	96.0	96.0	28.1	28.1	28.1	28.1
Change Period, *(Y+Rc)*, s	6.0	6.0	6.0	6.0	5.1	5.1	5.1	5.1
Max Allow Headway *(MAH)*, s	2.9	2.9	2.9	2.9	3.2	3.2	3.2	3.2
Queue Clearance Time *(g_s)*, s	29.0	29.0	28.0	28.0	3.5	3.5	22.8	22.8
Green Extension Time *(g_e)*, s	2.6	2.6	2.6	2.6	0.3	0.3	0.2	0.2
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.02

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	11	544	0	11	0	778	11	0	22	156	0	0
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	671	1810	1533	834	0	1796	1235	0	1533	910	0	0
Queue Service time *(g_s)*, s	1.0	14.7	0.0	0.7	0.0	26.0	0.0	0.0	1.5	19.9	0.0	0.0
Cycle Queue Clearance Time *(g_c)*, s	27.0	14.7	0.0	15.3	0.0	26.0	0.9	0.0	1.5	20.8	0.0	0.0
Capacity *(c)*, veh/h	404	1313	1113	565		1303	287		284	218		
Volume-to-Capacity Ratio *(X)*	0.027	0.415	0.000	0.020	0.000	0.597	0.039	0.000	0.078	0.713	0.000	0.000
Available Capacity *(c_a)*, veh/h	404	1313	1113	565		1303	326		371	268		
Back of Queue *(Q)*, veh/ln	0.2	4.6	0.0	0.1		8.2	0.3		0.6	4.9		
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d_1)*, s/veh	14.8	6.7	0.0	9.7		8.2	41.6		41.8	49.4		
Incremental Delay *(d_2)*, s/veh	0.1	1.0	0.0	0.1	0.0	2.0	0.0	0.0	0.0	4.5	0.0	0.0
Initial Queue Delay *(d_3)*, 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
Control Delay *(d)*, s/veh	14.9	7.6	0.0	9.7		10.3	41.6		41.8	53.8		
Level of Service (LOS)	B	A		A		B	D		D	D		
Approach Delay, s/veh / LOS	7.8	A		10.3	B		41.8	D		53.8	D	
Intersection Delay s/veh / LOS	14.5						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.1	B	2.3	B	2.5	B
Bicycle LOS Score / LOS	1.4	A	1.8	A	0.5	A	0.7	A

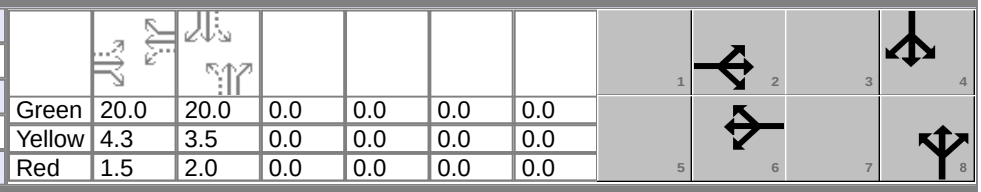
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	AM Peak Hour	PHF	0.90
Intersection	US 41A & KY 120	Analysis Year	2011	Analysis Period	1> 7:00
File Name	KY 120 AM 2011.xus				
Project Description	AM Existing 2011				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	30	90	10	20	20	90	90	20	10	120	100

Signal Information			
Cycle, s	51.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.0	20.0	0.0	0.0	0.0	0.0		
Yellow	4.3	3.5	0.0	0.0	0.0	0.0		
Red	1.5	2.0	0.0	0.0	0.0	0.0		

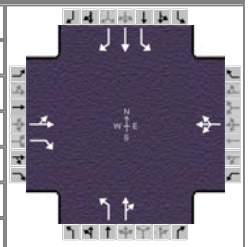
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	7.0	7.0	8.0	8.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.8	25.8	25.8	25.8	25.5	25.5	25.5	25.5
Change Period, *(Y+Rc)*, s	5.8	5.8	5.8	5.8	5.5	5.5	5.5	5.5
Max Allow Headway *(MAH)*, s	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Queue Clearance Time *(gs)*, s	4.3	4.3	3.1	3.1	7.4	7.4	4.6	4.6
Green Extension Time *(ge)*, s	0.5	0.5	0.5	0.5	0.8	0.8	0.8	0.8
Phase Call Probability	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	122	0	100	56	0	0	100	0	122	11	133	111
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1004	0	1533	1443	0	0	1276	0	1752	1289	1810	1610
Queue Service time *(gs)*, s	0.0	0.0	2.2	0.0	0.0	0.0	2.9	0.0	2.3	0.3	2.5	2.3
Cycle Queue Clearance Time *(gc)*, s	2.3	0.0	2.2	1.1	0.0	0.0	5.4	0.0	2.3	2.6	2.5	2.3
Capacity *(c)*, veh/h	513		598	647			576		683	584	705	627
Volume-to-Capacity Ratio *(X)*	0.238	0.000	0.167	0.086	0.000	0.000	0.174	0.000	0.179	0.019	0.189	0.177
Available Capacity *(ca)*, veh/h	684		897	902			825		1025	836	1059	942
Back of Queue *(Q)*, veh/ln	0.8		0.6	0.3			0.7		0.7	0.1	0.7	0.6
Overflow Queue *(Q3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d1)*, s/veh	10.2		10.2	9.9			12.1		10.3	11.1	10.3	10.3
Incremental Delay *(d2)*, s/veh	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Initial Queue 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
Control Delay *(d)*, s/veh	10.3		10.3	9.9			12.1		10.3	11.1	10.4	10.3
Level of Service (LOS)	B		B	A			B		B	B	B	B
Approach Delay, s/veh / LOS	10.3		B	9.9		A	11.1		B	10.4		B
Intersection Delay s/veh / LOS	10.5						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.1	B	2.2	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	0.9	A	0.9	A

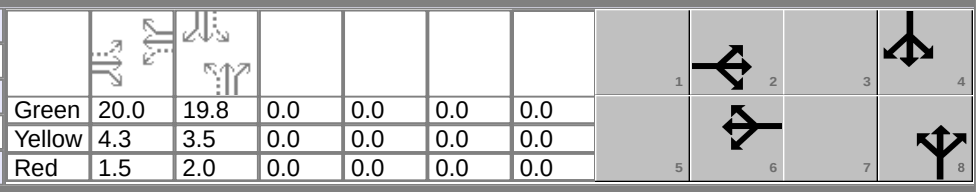
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	AM Peak Hour	PHF	0.90
Intersection	US 41A & KY 120	Analysis Year	2011	Analysis Period	1> 7:00
File Name	KY 120 AM 2035.xus				
Project Description	AM 2035				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	40	110	10	30	20	110	110	30	10	150	130

Signal Information			
Cycle, s	51.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.0	19.8	0.0	0.0	0.0	0.0		
Yellow	4.3	3.5	0.0	0.0	0.0	0.0		
Red	1.5	2.0	0.0	0.0	0.0	0.0		

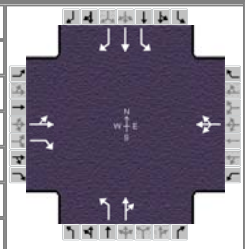
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	7.0	7.0	8.0	8.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.8	25.8	25.8	25.8	25.3	25.3	25.3	25.3
Change Period, *(Y+Rc)*, s	5.8	5.8	5.8	5.8	5.5	5.5	5.5	5.5
Max Allow Headway *(MAH)*, s	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Queue Clearance Time *(gs)*, s	7.1	7.1	3.3	3.3	8.9	8.9	5.4	5.4
Green Extension Time *(ge)*, s	0.7	0.7	0.7	0.7	1.1	1.1	1.1	1.1
Phase Call Probability	1.00	1.00	1.00	1.00	0.98	0.98	0.99	0.99
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	156	0	122	67	0	0	122	0	156	11	167	144
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	939	0	1533	1506	0	0	1238	0	1742	1251	1810	1610
Queue Service time *(gs)*, s	3.8	0.0	2.7	0.0	0.0	0.0	3.8	0.0	3.1	0.3	3.2	3.1
Cycle Queue Clearance Time *(gc)*, s	5.1	0.0	2.7	1.3	0.0	0.0	6.9	0.0	3.1	3.4	3.2	3.1
Capacity *(c)*, veh/h	488		600	672			544		675	550	701	624
Volume-to-Capacity Ratio *(X)*	0.318	0.000	0.204	0.099	0.000	0.000	0.225	0.000	0.230	0.020	0.238	0.232
Available Capacity *(ca)*, veh/h	661		900	938			791		1023	800	1062	945
Back of Queue *(Q)*, veh/ln	1.1		0.7	0.4			0.9		0.9	0.1	1.0	0.8
Overflow Queue *(Q3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d1)*, s/veh	10.7		10.3	9.8			12.9		10.5	11.7	10.6	10.5
Incremental Delay *(d2)*, s/veh	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
Initial Queue 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
Control Delay *(d)*, s/veh	10.9		10.3	9.9			13.0		10.6	11.7	10.6	10.6
Level of Service (LOS)	B		B	A			B		B	B	B	B
Approach Delay, s/veh / LOS	10.6	B		9.9	A		11.6	B		10.7	B	
Intersection Delay s/veh / LOS	10.9						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.1	B	2.2	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	0.9	A	1.0	A

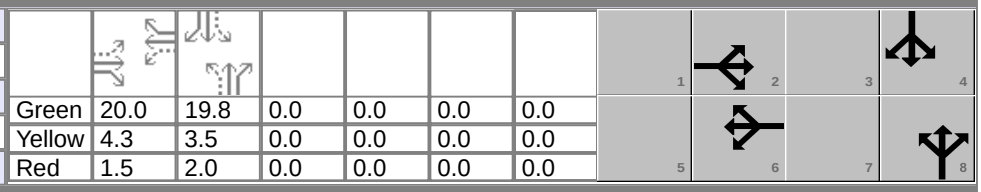
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	PM Peak Hour	PHF	0.90
Intersection	US 41A & KY 120	Analysis Year	2011	Analysis Period	1> 7:00
File Name	KY 120 PM 2011.xus				
Project Description	PM Existing 2011				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	80	70	100	10	60	10	110	120	30	20	120	160

Signal Information			
Cycle, s	51.1	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.0	19.8	0.0	0.0	0.0	0.0	
Yellow	4.3	3.5	0.0	0.0	0.0	0.0	
Red	1.5	2.0	0.0	0.0	0.0	0.0	

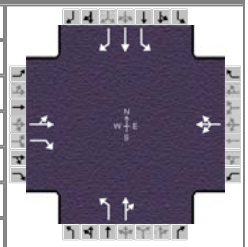
Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	7.0	7.0	8.0	8.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.8	25.8	25.8	25.8	25.3	25.3	25.3	25.3
Change Period, *(Y+Rc)*, s	5.8	5.8	5.8	5.8	5.5	5.5	5.5	5.5
Max Allow Headway *(MAH)*, s	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Queue Clearance Time *(g_s),* s	6.5	6.5	3.6	3.6	8.1	8.1	5.9	5.9
Green Extension Time *(g_e),* s	0.7	0.7	0.7	0.7	1.1	1.1	1.1	1.1
Phase Call Probability	1.00	1.00	1.00	1.00	0.98	0.98	0.99	0.99
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	167	0	111	89	0	0	122	0	167	22	133	178
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1072	0	1533	1627	0	0	1276	0	1747	1238	1810	1610
Queue Service time *(g_s)*, s	2.8	0.0	2.4	0.0	0.0	0.0	3.6	0.0	3.3	0.6	2.5	3.9
Cycle Queue Clearance Time *(g_c)*, s	4.5	0.0	2.4	1.6	0.0	0.0	6.1	0.0	3.3	3.9	2.5	3.9
Capacity *(c)*, veh/h	527		600	716			574		677	541	702	624
Volume-to-Capacity Ratio *(X)*	0.316	0.000	0.185	0.124	0.000	0.000	0.213	0.000	0.246	0.041	0.190	0.285
Available Capacity *(c_a)*, veh/h	723		900	1004			828		1025	788	1062	945
Back of Queue *(Q)*, veh/ln	1.1		0.7	0.5			0.9		1.0	0.1	0.7	1.0
Overflow Queue *(Q_3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d_1)*, s/veh	10.6		10.2	10.0			12.3		10.6	11.9	10.3	10.8
Incremental Delay *(d_2)*, s/veh	0.1	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1
Initial Queue Delay *(d_3)*, 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
Control Delay *(d)*, s/veh	10.7		10.3	10.0			12.4		10.7	11.9	10.4	10.9
Level of Service (LOS)	B		B	B			B		B	B	B	B
Approach Delay, s/veh / LOS	10.6	B		10.0	B		11.4	B		10.7	B	
Intersection Delay s/veh / LOS	10.8						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.1	B	2.2	B
Bicycle LOS Score / LOS	0.9	A	0.6	A	1.0	A	1.0	A

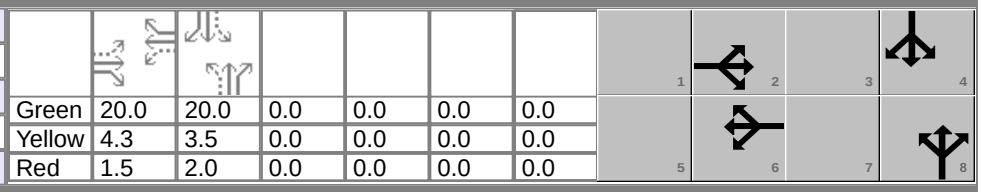
2010 HCS Signalized Intersection Results Summary

General Information				Intersection Information	
Agency	Qk4			Duration, h	0.25
Analyst	JJL	Analysis Date	Aug 1, 2011	Area Type	Other
Jurisdiction	KYTC	Time Period	PM Peak Hour	PHF	0.90
Intersection	US 41A & KY 120	Analysis Year	2011	Analysis Period	1> 7:00
File Name	KY 120 PM 2035.xus				
Project Description	PM 2035				



Demand Information	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Demand (*v*), veh/h	100	90	130	10	80	10	140	150	40	20	150	210

Signal Information			
Cycle, s	51.3	Reference Phase	2
Offset, s	0	Reference Point	End
Uncoordinated	Yes	Simult. Gap E/W	On
Force Mode	Fixed	Simult. Gap N/S	On



Green	20.0	20.0	0.0	0.0	0.0	0.0		
Yellow	4.3	3.5	0.0	0.0	0.0	0.0		
Red	1.5	2.0	0.0	0.0	0.0	0.0		

Timer Results	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Assigned Phase	2	2	6	6	8	8	4	4
Case Number	7.0	7.0	8.0	8.0	6.0	6.0	5.0	5.0
Phase Duration, s	25.8	25.8	25.8	25.8	25.5	25.5	25.5	25.5
Change Period, *(Y+Rc)*, s	5.8	5.8	5.8	5.8	5.5	5.5	5.5	5.5
Max Allow Headway *(MAH)*, s	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
Queue Clearance Time *(gs)*, s	8.2	8.2	4.1	4.1	10.1	10.1	7.3	7.3
Green Extension Time *(ge)*, s	0.9	0.9	0.9	0.9	1.5	1.5	1.5	1.5
Phase Call Probability	1.00	1.00	1.00	1.00	0.99	0.99	1.00	1.00
Max Out Probability	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Movement Group Results	EB			WB			NB			SB		
Approach Movement	L	T	R	L	T	R	L	T	R	L	T	R
Assigned Movement	5	2	12	1	6	16	3	8	18	7	4	14
Adjusted Flow Rate *(v)*, veh/h	211	0	144	111	0	0	156	0	211	22	167	233
Adjusted Saturation Flow Rate *(s)*, veh/h/ln	1082	0	1533	1671	0	0	1238	0	1743	1189	1810	1610
Queue Service time *(gs)*, s	4.2	0.0	3.2	0.0	0.0	0.0	5.0	0.0	4.3	0.7	3.2	5.3
Cycle Queue Clearance Time *(gc)*, s	6.2	0.0	3.2	2.1	0.0	0.0	8.1	0.0	4.3	5.0	3.2	5.3
Capacity *(c)*, veh/h	529		598	729			546		679	503	704	627
Volume-to-Capacity Ratio *(X)*	0.399	0.000	0.241	0.152	0.000	0.000	0.285	0.000	0.311	0.044	0.237	0.372
Available Capacity *(ca)*, veh/h	724		898	1026			789		1021	737	1059	942
Back of Queue *(Q)*, veh/ln	1.5		0.9	0.7			1.2		1.3	0.1	1.0	1.4
Overflow Queue *(Q3)*, veh/ln	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Storage Ratio *(RQ)*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Uniform Delay *(d1)*, s/veh	11.1		10.5	10.2			13.3		10.9	12.6	10.5	11.2
Incremental Delay *(d2)*, s/veh	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.1
Initial Queue 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
Control Delay *(d)*, s/veh	11.3		10.6	10.2			13.4		11.0	12.6	10.6	11.3
Level of Service (LOS)	B		B	B			B		B	B	B	B
Approach Delay, s/veh / LOS	11.0	B		10.2	B		12.0	B		11.1	B	
Intersection Delay s/veh / LOS	11.3						B					

MultiModal Results	EB		WB		NB		SB	
Pedestrian LOS Score / LOS	2.2	B	2.4	B	2.1	B	2.2	B
Bicycle LOS Score / LOS	1.1	A	0.7	A	1.1	A	1.2	A

APPENDIX A

SEGMENT CAPACITY ANALYSIS

EXISTING AND NO BUILD

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Madisonville to ProvidencüÔ

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	10	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	60	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	40.7	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	23.0	
Percent time-spent-following, PTSFd	85.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	1097	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3948	veh-mi
Peak 15-min total travel time, TT15	27.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	0.0	mi
Length of passing lane including tapers, Lpl	0.5	mi
Average travel speed, ATSd (from above)	40.7	mi/h
Percent time-spent-following, PTSFd (from above)	85.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	2.50	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.11	
Average travel speed including passing lane, ATSpl	41.9	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	4.07	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	0.13	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.62	
Percent time-spent-following including passing lane, PTSFpl	68.1	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	D	
Peak 15-min total travel time, TT15	26.2	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to kY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Madisonville to Providencé–§B

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	4	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	55	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	2.6	mi/h
Average travel speed, ATSd	45.3	mi/h
Percent Free Flow Speed, PFFS	83.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	36.9	
Percent time-spent-following, PTSFd	69.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	574	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2068	veh-mi
Peak 15-min total travel time, TT15	12.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.3	mi/h
Percent time-spent-following, PTSFd (from above)	69.9	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Madisonville to ProvidencÝ

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	380	veh/h
Opposing direction volume, Vo	250	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	433	pc/h	288	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	42.3	mi/h
Adjustment for no-passing zones, fnp	3.1	mi/h
Average travel speed, ATSd	33.6	mi/h
Percent Free Flow Speed, PFFS	79.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	422 pc/h	280 pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.7 %	
Adjustment for no-passing zones, fnp	45.6	
Percent time-spent-following, PTSFd	69.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	496	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1786	veh-mi
Peak 15-min total travel time, TT15	14.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2830	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.6	mi/h
Percent time-spent-following, PTSFd (from above)	69.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to KY 670
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Madisonville to ProvidencÞÅ

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	510	veh/h
Opposing direction volume, Vo	340	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.991		0.974	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	572	pc/h	388	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	2.6	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	38.4	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	28.8	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	381 pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.0 %	
Adjustment for no-passing zones, fnp	35.7	
Percent time-spent-following, PTSFd	74.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	666	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2397	veh-mi
Peak 15-min total travel time, TT15	23.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2853	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.8	mi/h
Percent time-spent-following, PTSFd (from above)	74.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 502
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 502
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	220	5	10	120	10
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	244	5	11	133	11
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	5	10	20	10	10
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	5	11	22	11	11
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	11	11		16			44	
C(m) (vph)	1420	1299		667			568	
v/c	0.01	0.01		0.02			0.08	
95% queue length	0.02	0.03		0.07			0.25	
Control Delay	7.6	7.8		10.5			11.9	
LOS	A	A		B			B	
Approach Delay				10.5			11.9	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 502
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 502
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	280	10	10	150	10
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	311	11	11	166	11
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	10	10	30	10	10
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	11	11	33	11	11
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	11	11		22			55	
C(m) (vph)	1381	1221		543			474	
v/c	0.01	0.01		0.04			0.12	
95% queue length	0.02	0.03		0.13			0.39	
Control Delay	7.6	8.0		11.9			13.6	
LOS	A	A		B			B	
Approach Delay				11.9			13.6	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 502
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 502
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	170	10	20	230	20
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	188	11	22	255	22
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	5	10	20	10	10	10
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	5	11	22	11	11	11
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	11	22		38			33	
C(m) (vph)	1269	1356		600			501	
v/c	0.01	0.02		0.06			0.07	
95% queue length	0.03	0.05		0.20			0.21	
Control Delay	7.9	7.7		11.4			12.7	
LOS	A	A		B			B	
Approach Delay				11.4			12.7	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 502
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 502
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	220	10	30	290	30
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	244	11	33	322	33
Percent Heavy Vehicles	5	--	--	5	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	10	30	10	10	10
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	11	33	11	11	11
Percent Heavy Vehicles	5	5	5	5	5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	11	33		55			33	
C(m) (vph)	1187	1293		514			404	
v/c	0.01	0.03		0.11			0.08	
95% queue length	0.03	0.08		0.36			0.27	
Control Delay	8.1	7.9		12.8			14.7	
LOS	A	A		B			B	
Approach Delay				12.8			14.7	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	130			140	60
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	144			155	66
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?						Yes
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				130		30
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				144		33
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	11					144		33
C(m) (vph)	1407					661		883
v/c	0.01					0.22		0.04
95% queue length	0.02					0.83		0.12
Control Delay	7.6					12.0		9.2
LOS	A					B		A
Approach Delay							11.4	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	390			180	80
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	433			200	88
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?						Yes
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				170		40
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				188		44
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	11					188		44
C(m) (vph)	1354					423		833
v/c	0.01					0.44		0.05
95% queue length	0.02					2.23		0.17
Control Delay	7.7					20.1		9.6
LOS	A					C		A
Approach Delay							18.1	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	220			320	160
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	244			355	177
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?						Yes
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				90		20
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				100		22
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	11					100		22
C(m) (vph)	1187					442		682
v/c	0.01					0.23		0.03
95% queue length	0.03					0.86		0.10
Control Delay	8.1					15.5		10.5
LOS	A					C		B
Approach Delay							14.6	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10	280			400	200
Peak-Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	11	311			444	222
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?						Yes
Lanes	1	1			1	1
Configuration	L	T			T	R
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				120		30
Peak Hour Factor, PHF				0.90		0.90
Hourly Flow Rate, HFR				133		33
Percent Heavy Vehicles				5		5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		1
Configuration				L		R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L					L		R
v (vph)	11					133		33
C(m) (vph)	1100					357		608
v/c	0.01					0.37		0.05
95% queue length	0.03					1.68		0.17
Control Delay	8.3					20.9		11.3
LOS	A					C		B
Approach Delay							19.0	
Approach LOS							C	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period:
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		130			60	
Peak-Hour Factor, PHF		0.90			0.90	
Hourly Flow Rate, HFR		144			66	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1			1	
Configuration		T			T	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10					
Peak Hour Factor, PHF	0.90					
Hourly Flow Rate, HFR	11					
Percent Heavy Vehicles	0					
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1					
Configuration	L					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config			L					
v (vph)			11					
C(m) (vph)			783					
v/c			0.01					
95% queue length			0.04					
Control Delay			9.7					
LOS			A					
Approach Delay				9.7				
Approach LOS				A				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst:	JJL
Agency/Co.:	Qk4
Date Performed:	7/29/2011
Analysis Time Period:	AM Design Hour
Intersection:	US 41A & KY 630
Jurisdiction:	KYTC
Units: U. S. Customary	
Analysis Year:	2035
Project ID:	US 41A from Madisonville to Providence
East/West Street:	US 41A
North/South Street:	KY 630
Intersection Orientation: EW	Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		170			80	
Peak-Hour Factor, PHF		0.90			0.90	
Hourly Flow Rate, HFR		188			88	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1			1	
Configuration		T			T	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10					
Peak Hour Factor, PHF	0.90					
Hourly Flow Rate, HFR	11					
Percent Heavy Vehicles	0					
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1					
Configuration	L					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config			L					
v (vph)			11					
C(m) (vph)			718					
v/c			0.02					
95% queue length			0.05					
Control Delay			10.1					
LOS			B					
Approach Delay				10.1				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		90			160	
Peak-Hour Factor, PHF		0.90			0.90	
Hourly Flow Rate, HFR		100			177	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1			1	
Configuration		T			T	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10					
Peak Hour Factor, PHF	0.90					
Hourly Flow Rate, HFR	11					
Percent Heavy Vehicles	0					
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1					
Configuration	L					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config			L					
v (vph)			11					
C(m) (vph)			717					
v/c			0.02					
95% queue length			0.05					
Control Delay			10.1					
LOS			B					
Approach Delay				10.1				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/29/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 630
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A from Madisonville to Providence
East/West Street: US 41A
North/South Street: KY 630
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		120			200	
Peak-Hour Factor, PHF		0.90			0.90	
Hourly Flow Rate, HFR		133			222	
Percent Heavy Vehicles		--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes		1			1	
Configuration		T			T	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10					
Peak Hour Factor, PHF	0.90					
Hourly Flow Rate, HFR	11					
Percent Heavy Vehicles	0					
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1					
Configuration	L					

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config			L					
v (vph)			11					
C(m) (vph)			647					
v/c			0.02					
95% queue length			0.05					
Control Delay			10.7					
LOS			B					
Approach Delay				10.7				
Approach LOS				B				

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 670
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A Madisonville to Providence
East/West Street: KY 670
North/South Street: US 41A
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10		100			
Peak-Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	11		111			
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	60	100			110	10
Peak Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	66	111			122	11
Percent Heavy Vehicles	5	5			5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1	1			1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L		L	T			T	R
v (vph)	11		66	111			122	11
C(m) (vph)	1604		767	860			747	1076
v/c	0.01		0.09	0.13			0.16	0.01
95% queue length	0.02		0.28	0.44			0.58	0.03
Control Delay	7.3		10.1	9.8			10.8	8.4
LOS	A		B	A			B	A
Approach Delay				9.9			10.6	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: AM Design Hour
Intersection: US 41A & KY 670
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A Madisonville to Providence
East/West Street: KY 670
North/South Street: US 41A
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10		130			
Peak-Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	11		144			
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided /					
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	80	130			140	10
Peak Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	88	144			155	11
Percent Heavy Vehicles	5	5			5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1	1			1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L		L	T			T	R
v (vph)	11		88	144			155	11
C(m) (vph)	1604		712	860			716	1076
v/c	0.01		0.12	0.17			0.22	0.01
95% queue length	0.02		0.42	0.60			0.82	0.03
Control Delay	7.3		10.8	10.0+			11.4	8.4
LOS	A		B	B			B	A
Approach Delay				10.3			11.2	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 670
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2011
Project ID: US 41A Madisonville to Providence
East/West Street: KY 670
North/South Street: US 41A
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10		100			
Peak-Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	11		111			
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	110	110			160	20
Peak Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	122	122			177	22
Percent Heavy Vehicles	5	5			5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1	1			1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L		L	T			T	R
v (vph)	11		122	122			177	22
C(m) (vph)	1604		674	860			747	1076
v/c	0.01		0.18	0.14			0.24	0.02
95% queue length	0.02		0.66	0.49			0.92	0.06
Control Delay	7.3		11.5	9.9			11.3	8.4
LOS	A		B	A			B	A
Approach Delay				10.7			11.0	
Approach LOS				B			B	

HCS+: Unsignalized Intersections Release 5.6

TWO-WAY STOP CONTROL SUMMARY

Analyst: JJL
Agency/Co.: Qk4
Date Performed: 7/28/2011
Analysis Time Period: PM Design Hour
Intersection: US 41A & KY 670
Jurisdiction: KYTC
Units: U. S. Customary
Analysis Year: 2035
Project ID: US 41A Madisonville to Providence
East/West Street: KY 670
North/South Street: US 41A
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	10		130			
Peak-Hour Factor, PHF	0.90		0.90			
Hourly Flow Rate, HFR	11		144			
Percent Heavy Vehicles	5	--	--		--	--
Median Type/Storage	Undivided		/			
RT Channelized?			No			
Lanes	1		1			
Configuration	L		R			
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	140	140			200	30
Peak Hour Factor, PHF	0.90	0.90			0.90	0.90
Hourly Flow Rate, HFR	155	155			222	33
Percent Heavy Vehicles	5	5			5	5
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes	1	1			1	1
Configuration	L	T			T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L		L	T			T	R
v (vph)	11		155	155			222	33
C(m) (vph)	1604		594	860			716	1076
v/c	0.01		0.26	0.18			0.31	0.03
95% queue length	0.02		1.04	0.65			1.32	0.09
Control Delay	7.3		13.2	10.1			12.3	8.5
LOS	A		B	B			B	A
Approach Delay				11.6			11.8	
Approach LOS				B			B	

APPENDIX A

ALTERNATIVE CAPACITY

SUMMARY

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: Industrial Rd to KY 630
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A Existing Alignment

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	840	vph	560	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	233		156	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	490	pcphpl	326	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	490	pcphpl	326	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	8.2	pc/mi/ln	5.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	466.7	311.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	5.06	4.85
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 630 to KY 1089
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	440	vph	290	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	122		81	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	256	pcphpl	169	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	256	pcphpl	169	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	4.3	pc/mi/ln	2.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	244.4	161.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.73	4.52
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JJL
Agency/Co:	Qk4
Date:	10/27/2011
Analysis Period:	Design Hour
Highway:	US 41A
From/To:	KY 1089 to KY 814
Jurisdiction:	KYTC
Analysis Year:	2035
Project ID:	US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	350	vph	230	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	97		64	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	204	pcphpl	134	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	204	pcphpl	134	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	3.4	pc/mi/ln	2.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	194.4	127.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.61	4.40
Bicycle LOS	E	D

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 814 to KY 120
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	48.0	mph	48.0	mph

VOLUME

Direction	1		2	
Volume, V	380	vph	250	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	106		69	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	221	pcphpl	145	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	221	pcphpl	145	pcphpl
Free-flow speed, FFS	48.0	mph	48.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.4	pc/mi/ln	2.9	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	211.1	138.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.65	4.44
Bicycle LOS	E	D

Overall results are not computed when free-flow speed is less than 45 mph.

HCS 2010: Multilane Highways Release 6.1

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JJL
Agency/Co:	Qk4
Date:	10/27/2011
Analysis Period:	Design Hour
Highway:	US 41A
From/To:	KY 120 to KY 670
Jurisdiction:	KYTC
Analysis Year:	2035
Project ID:	US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	45.0	mph	45.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	43.0	mph	43.0	mph

VOLUME

Direction	1		2	
Volume, V	510	vph	340	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	142		94	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	297	pcphpl	198	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	297	pcphpl	198	pcphpl
Free-flow speed, FFS	43.0	mph	43.0	mph
Avg. passenger-car travel speed, S	45.0	mph	45.0	mph
Level of service, LOS	A		A	
Density, D	6.6	pc/mi/ln	4.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	283.3	188.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.80	4.60
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 670 to the West
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	180	vph	120	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	50		33	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	105	pcphpl	70	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	105	pcphpl	70	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	1.8	pc/mi/ln	1.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	100.0	66.7
Effective width of outside lane, We	24.00	31.20
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.28	2.09
Bicycle LOS	D	B

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JJL
Agency/Co:	Qk4
Date:	10/27/2011
Analysis Period:	Design Hour
Highway:	US 41A
From/To:	US 41A to KY 630
Jurisdiction:	KYTC
Analysis Year:	2035
Project ID:	US 41A 4-Lane Ex with Bypasses

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	520	vph	350	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	144		97	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	303	pcphpl	204	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	303	pcphpl	204	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	5.1	pc/mi/ln	3.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	288.9	194.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.81	4.61
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 630 to US 41A
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	340	vph	220	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	94		61	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	198	pcphpl	128	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	198	pcphpl	128	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	3.3	pc/mi/ln	2.1	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	188.9	122.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.60	4.38
Bicycle LOS	E	D

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: US 41A to US 41A
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	270	vph	180	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	75		50	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	157	pcphpl	105	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	157	pcphpl	105	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	2.6	pc/mi/ln	1.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	150.0	100.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.48	4.28
Bicycle LOS	D	D

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: US 41A to US 41A
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A 4-Lane Ex with Bypasses

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	120	vph	80	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	33		22	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	70	pcphpl	46	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	70	pcphpl	46	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	1.2	pc/mi/ln	0.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp	55	55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	66.7	44.4
Effective width of outside lane, We	31.20	34.80
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.09	0.68
Bicycle LOS	B	A

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JJL
Agency/Co:	Qk4
Date:	10/27/2011
Analysis Period:	Design Hour
Highway:	US 41A
From/To:	Industrial Rd to Manitou Bypas
Jurisdiction:	KYTC
Analysis Year:	2035
Project ID:	US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	840	vph	560	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	233		156	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	490	pcphpl	326	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	490	pcphpl	326	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	8.2	pc/mi/ln	5.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	466.7	311.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	5.06	4.85
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: Manitou Bypass to Nebo Bypass
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	440	vph	290	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	122		81	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	256	pcphpl	169	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	256	pcphpl	169	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	4.3	pc/mi/ln	2.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	244.4	161.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.73	4.52
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst:	JJL
Agency/Co:	Qk4
Date:	10/27/2011
Analysis Period:	Design Hour
Highway:	US 41A
From/To:	Nebo Bypass to KY 1089
Jurisdiction:	KYTC
Analysis Year:	2035
Project ID:	US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	440	vph	290	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	122		81	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	256	pcphpl	169	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	256	pcphpl	169	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	4.3	pc/mi/ln	2.8	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	244.4	161.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.73	4.52
Bicycle LOS	E	E

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 1089 to Providence Bypass
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	50.0	mph	50.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	48.0	mph	48.0	mph

VOLUME

Direction	1		2	
Volume, V	350	vph	120	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	97		33	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	204	pcphpl	70	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	204	pcphpl	70	pcphpl
Free-flow speed, FFS	48.0	mph	48.0	mph
Avg. passenger-car travel speed, S	50.0	mph	50.0	mph
Level of service, LOS	A		A	
Density, D	4.1	pc/mi/ln	1.4	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	194.4	66.7
Effective width of outside lane, We	24.00	31.20
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.61	2.09
Bicycle LOS	E	B

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JJL
Agency/Co: Qk4
Date: 10/27/2011
Analysis Period: Design Hour
Highway: US 41A
From/To: KY 670 to the West
Jurisdiction: KYTC
Analysis Year: 2035
Project ID: US 41A

FREE-FLOW SPEED

Direction	1		2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	6.0	ft	6.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	12.0	ft	12.0	ft
Access points per mile	8		8	
Median type	Divided		Divided	
Free-flow speed:	Base		Base	
FFS or BFFS	60.0	mph	60.0	mph
Lane width adjustment, FLW	0.0	mph	0.0	mph
Lateral clearance adjustment, FLC	0.0	mph	0.0	mph
Median type adjustment, FM	0.0	mph	0.0	mph
Access points adjustment, FA	2.0	mph	2.0	mph
Free-flow speed	58.0	mph	58.0	mph

VOLUME

Direction	1		2	
Volume, V	180	vph	120	vph
Peak-hour factor, PHF	0.90		0.90	
Peak 15-minute volume, v15	50		33	
Trucks and buses	10	%	10	%
Recreational vehicles	0	%	0	%
Terrain type	Level		Level	
Grade	0.00	%	0.00	%
Segment length	0.00	mi	0.00	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	1.5		1.5	
Recreational vehicles PCE, ER	1.2		1.2	
Heavy vehicle adjustment, fHV	0.952		0.952	
Flow rate, vp	105	pcphpl	70	pcphpl

RESULTS

Direction	1		2	
Flow rate, vp	105	pcphpl	70	pcphpl
Free-flow speed, FFS	58.0	mph	58.0	mph
Avg. passenger-car travel speed, S	60.0	mph	60.0	mph
Level of service, LOS	A		A	
Density, D	1.8	pc/mi/ln	1.2	pc/mi/ln

Bicycle Level of Service

Posted speed limit, Sp		55
Percent of segment with occupied on-highway parking	0	0
Pavement rating, P	3	3
Flow rate in outside lane, vOL	100.0	66.7
Effective width of outside lane, We	24.00	31.20
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	4.28	2.09
Bicycle LOS	D	B

Overall results are not computed when free-flow speed is less than 45 mph.

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Manitou Bypass to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 2		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	5	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	60	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 320 veh/h
Opposing direction volume, Vo 210 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.985		0.976	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	361	pc/h	239	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	46.4	mi/h
Percent Free Flow Speed, PFFS	85.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.995	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	357 pc/h	235 pc/h
Base percent time-spent-following,(note-4) BPTSFd	35.2 %	
Adjustment for no-passing zones, fnp	50.9	
Percent time-spent-following, PTSFd	65.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.21	
Peak 15-min vehicle-miles of travel, VMT15	418	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1504	veh-mi
Peak 15-min total travel time, TT15	9.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2819	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.4	mi/h
Percent time-spent-following, PTSFd (from above)	65.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to Manitou Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	4	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	55	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	100	veh/h
Opposing direction volume, Vo	70	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	115	pc/h	81	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	49.0	mi/h
Percent Free Flow Speed, PFFS	93.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	112 pc/h	78 pc/h
Base percent time-spent-following,(note-4) BPTSFd	12.9 %	
Adjustment for no-passing zones, fnp	48.6	
Percent time-spent-following, PTSFd	41.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	131	veh-mi
Peak-hour vehicle-miles of travel, VMT60	470	veh-mi
Peak 15-min total travel time, TT15	2.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2897	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.0	mi/h
Percent time-spent-following, PTSFd (from above)	41.5	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Nebo Bypass to Nebo Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	4	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	55	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	170	veh/h
Opposing direction volume, Vo	120	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.980		0.969	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	193	pc/h	138	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	2.3	mi/h
Average travel speed, ATSd	47.5	mi/h
Percent Free Flow Speed, PFFS	90.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	190 pc/h	134 pc/h
Base percent time-spent-following,(note-4) BPTSFd	20.6 %	
Adjustment for no-passing zones, fnp	50.9	
Percent time-spent-following, PTSFd	50.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.11	
Peak 15-min vehicle-miles of travel, VMT15	222	veh-mi
Peak-hour vehicle-miles of travel, VMT60	799	veh-mi
Peak 15-min total travel time, TT15	4.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2915	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.5	mi/h
Percent time-spent-following, PTSFd (from above)	50.4	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	Providence Bypass to KY 814
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	230	veh/h
Opposing direction volume, Vo	160	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	265	pc/h	187	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	45.2	mi/h
Percent Free Flow Speed, PFFS	86.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	258 pc/h	179 pc/h
Base percent time-spent-following,(note-4) BPTSFd	26.7 %	
Adjustment for no-passing zones, fnp	55.0	
Percent time-spent-following, PTSFd	59.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	300	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1081	veh-mi
Peak 15-min total travel time, TT15	6.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2899	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.2	mi/h
Percent time-spent-following, PTSFd (from above)	59.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	260	veh/h
Opposing direction volume, Vo	170	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.957	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	299	pc/h	197	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	42.3	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	34.9	mi/h
Percent Free Flow Speed, PFFS	82.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	291 pc/h	191 pc/h
Base percent time-spent-following,(note-4) BPTSFd	29.5 %	
Adjustment for no-passing zones, fnp	53.4	
Percent time-spent-following, PTSFd	61.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.18	
Peak 15-min vehicle-miles of travel, VMT15	339	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1222	veh-mi
Peak 15-min total travel time, TT15	9.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2820	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.9	mi/h
Percent time-spent-following, PTSFd (from above)	61.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

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Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to Providence Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	230	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	265	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	2.6	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	38.4	mi/h
Adjustment for no-passing zones, fnp	2.9	mi/h
Average travel speed, ATSd	30.3	mi/h
Percent Free Flow Speed, PFFS	79.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	258 pc/h
Base percent time-spent-following,(note-4) BPTSFd	38.6 %	
Adjustment for no-passing zones, fnp	48.1	
Percent time-spent-following, PTSFd	67.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	15.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2829	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.3	mi/h
Percent time-spent-following, PTSFd (from above)	67.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	10	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	60	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	40.7	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	23.0	
Percent time-spent-following, PTSFd	85.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	1097	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3948	veh-mi
Peak 15-min total travel time, TT15	27.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.7	mi/h
Percent time-spent-following, PTSFd (from above)	85.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

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Phone: Fax:
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Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to kY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	4.0	ft	% Trucks and buses	4	%
Lane width	11.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	56.3	mi/h
Adjustment for no-passing zones, fnp	2.1	mi/h
Average travel speed, ATSd	47.8	mi/h
Percent Free Flow Speed, PFFS	84.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	574	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2068	veh-mi
Peak 15-min total travel time, TT15	12.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.8	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 1089 to KY 814
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 350 veh/h
Opposing direction volume, Vo 240 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	46.9	mi/h
Percent Free Flow Speed, PFFS	86.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	269 pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.1 %	
Adjustment for no-passing zones, fnp	41.1	
Percent time-spent-following, PTSFd	64.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	9.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2875	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.9	mi/h
Percent time-spent-following, PTSFd (from above)	64.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	4.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	380	veh/h
Opposing direction volume, Vo	250	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	433	pc/h	288	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	44.7	mi/h
Adjustment for no-passing zones, fnp	2.8	mi/h
Average travel speed, ATSd	36.3	mi/h
Percent Free Flow Speed, PFFS	81.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	422 pc/h	280 pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.7 %	
Adjustment for no-passing zones, fnp	44.9	
Percent time-spent-following, PTSFd	68.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	496	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1786	veh-mi
Peak 15-min total travel time, TT15	13.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2830	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.3	mi/h
Percent time-spent-following, PTSFd (from above)	68.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to KY 670
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	510	veh/h
Opposing direction volume, Vo	340	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.991		0.974	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	572	pc/h	388	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	2.6	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	38.4	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	28.8	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	381 pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.0 %	
Adjustment for no-passing zones, fnp	35.7	
Percent time-spent-following, PTSFd	74.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	666	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2397	veh-mi
Peak 15-min total travel time, TT15	23.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2853	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.8	mi/h
Percent time-spent-following, PTSFd (from above)	74.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 670 to KY 270
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	15	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 230 veh/h
Opposing direction volume, Vo 160 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.943		0.917	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	271	pc/h	194	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.3	mi/h
Percent Free Flow Speed, PFFS	90.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.985	0.985
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	259 pc/h	180 pc/h
Base percent time-spent-following,(note-4) BPTSFd	26.8 %	
Adjustment for no-passing zones, fnp	36.7	
Percent time-spent-following, PTSFd	48.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	300	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1081	veh-mi
Peak 15-min total travel time, TT15	6.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2916	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.3	mi/h
Percent time-spent-following, PTSFd (from above)	48.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	10	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	60	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	40.7	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	23.0	
Percent time-spent-following, PTSFd	85.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	1097	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3948	veh-mi
Peak 15-min total travel time, TT15	27.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.7	mi/h
Percent time-spent-following, PTSFd (from above)	85.7	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to kY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	4.0	ft	% Trucks and buses	4	%
Lane width	11.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	56.3	mi/h
Adjustment for no-passing zones, fnp	2.1	mi/h
Average travel speed, ATSd	47.8	mi/h
Percent Free Flow Speed, PFFS	84.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	574	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2068	veh-mi
Peak 15-min total travel time, TT15	12.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	47.8	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 1089 to KY 814
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	4.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	56.7	mi/h
Adjustment for no-passing zones, fnp	2.3	mi/h
Average travel speed, ATSd	49.1	mi/h
Percent Free Flow Speed, PFFS	86.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	269 pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.1 %	
Adjustment for no-passing zones, fnp	41.1	
Percent time-spent-following, PTSFd	64.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	9.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2875	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.1	mi/h
Percent time-spent-following, PTSFd (from above)	64.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	4.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	380	veh/h
Opposing direction volume, Vo	250	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	433	pc/h	288	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	1.3	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	44.7	mi/h
Adjustment for no-passing zones, fnp	2.8	mi/h
Average travel speed, ATSd	36.3	mi/h
Percent Free Flow Speed, PFFS	81.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	422 pc/h	280 pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.7 %	
Adjustment for no-passing zones, fnp	44.9	
Percent time-spent-following, PTSFd	68.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	496	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1786	veh-mi
Peak 15-min total travel time, TT15	13.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2830	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	36.3	mi/h
Percent time-spent-following, PTSFd (from above)	68.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to KY 670
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	510	veh/h
Opposing direction volume, Vo	340	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.991		0.974	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	572	pc/h	388	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	2.6	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	38.4	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	28.8	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	381 pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.0 %	
Adjustment for no-passing zones, fnp	35.7	
Percent time-spent-following, PTSFd	74.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	666	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2397	veh-mi
Peak 15-min total travel time, TT15	23.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2853	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	28.8	mi/h
Percent time-spent-following, PTSFd (from above)	74.4	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 670 to KY 270
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	15	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 230 veh/h
Opposing direction volume, Vo 160 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.943		0.917	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	271	pc/h	194	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	1.4	mi/h
Average travel speed, ATSd	49.3	mi/h
Percent Free Flow Speed, PFFS	90.8	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.985	0.985
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	259 pc/h	180 pc/h
Base percent time-spent-following,(note-4) BPTSFd	26.8 %	
Adjustment for no-passing zones, fnp	36.7	
Percent time-spent-following, PTSFd	48.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	300	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1081	veh-mi
Peak 15-min total travel time, TT15	6.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2916	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.3	mi/h
Percent time-spent-following, PTSFd (from above)	48.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

DO NOTHING - EXISTING AND NO BUILD AND BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2011 ADT	2035 ADT	Truck %	Number of Lanes	Lane Width	Shoulder Width	POPSD	Functional Classification	K Factor	Speed Limit	2011 LOS	2011 V/C Ratio	2035 LOS	2035 V/C Ratio
Webster	KY 120	5.260	6.723	KY 293	US 41A	5900	7500	13.9%	2	11	1	0%	Rural Major Collector	11.1%	55	D	0.27	D	0.33
Webster	KY 120	6.723	11.194	US 41A	KY 2836	670	850	12.8%	2	9	3	40%	Rural Minor Collector	11.7%	55	B	0.04	B	0.04
Hopkins	KY 502	0.000	8.348	KY 109	US 41A	360	460	n/a	2	9	2	45%	Rural Local	10.0%	55	B	0.01	B	0.02
Hopkins	KY 502	8.348	10.235	US 41A	Old Morganfield Rd	1080	1400	n/a	2	9	3	45%	Rural Local	10.0%	55	B	0.05	B	0.05
Hopkins	KY 630	0.000	2.040	KY 262	US 41A	650	830	n/a	2	10	2	20%	Rural Local	10.0%	55	B	0.03	B	0.03
Hopkins	KY 630	2.040	3.909	US 41A	Wolf Hollow Rd	2600	3300	n/a	2	9	2	40%	Rural Minor Collector	11.7%	55	C	0.12	C	0.15
Webster	KY 670	0.000	2.712	KY 109	US 41A	2500	3200	12.0%	2	12	10	65%	Rural Minor Arterial	12.2%	55	B	0.12	C	0.16
Hopkins	US 41A	3.275	5.010	Industrial Road	KY 630	12300	15600	10.0%	2	10	2	35%	Rural Minor Arterial	9.0%	55	E	0.44	E	0.55
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	6400	8100	4.4%	2	10	2	45%	Rural Minor Arterial	9.0%	55	D	0.23	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	5100	6500	8.9%	2	9	2	45%	Rural Minor Arterial	9.0%	55	C	0.19	D	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	5500	7000	8.9%	2	10	3	25%	Rural Minor Arterial	9.0%	45	C	0.2	C	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	7500	9500	8.9%	2	13	3	15%	Rural Minor Arterial	9.0%	35	C	0.27	D	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	2700	3400	8.9%	2	10	3	15%	Rural Minor Arterial	9.0%	55	B	0.11	B	0.13

Note: The build traffic was not expected to generate any new traffic above that which is done through regular forecasts.

ALTERNATIVES 1A AND 1B - SUPER 2 ON EXISTING ALIGNMENT
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck Percentage	Speed Limit	2035 LOS	2035 v/c Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	KY 630	15600	10.0%	55	E	0.55
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	8100	4.4%	55	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	6500	8.9%	55	C	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	8.9%	45	B	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	8.9%	35	C	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.13

Assumptions

12 foot lanes (max HCS benefit)
6 foot shoulders (max HCS benefit)
60% passing
speed limits remain the same

ALTERNATIVE 2 - FOUR LANES ON EXISTING ALIGNMENT
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	ndustrial Roac	KY 630	15600	10.0%	55	A	0.20
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	8100	4.4%	55	A	0.10
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	6500	8.9%	55	A	0.08
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	8.9%	45	A	0.09
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	8.9%	35	A	0.12
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.04

Assumptions

12 foot lanes (max HCS benefit)

6 foot shoulders (max HCS benefit)

speed limits remain the same

ALTERNATIVE 3 AND 3A - FOUR LANES WITH BYPASSES OF NEBO, MANITOU AND PROVIDENCE
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	Manitou Bypass	15600	10.0%	55	A	0.20
Hopkins	US 41A	3.275	5.010	Manitou Bypass	KY 630	5900	5.0%	55	C	0.21
Hopkins	US 41A	5.010	9.685	KY 630	Manitou Bypass	1900	5.0%	55	A	0.07
Hopkins	US 41A	5.010	9.685	Manitou Bypass	Nebo Bypass	8100	4.4%	55	A	0.10
Hopkins	US 41A	5.010	9.685	Nebo Bypass	Nebo Bypass	3200	5.0%	55	B	0.11
Hopkins	US 41A	5.010	9.685	Nebo Bypass	KY 1089	8100	4.4%	55	A	0.10
Hopkins	US 41A	9.685	13.278	KY 1089	Providence Bypass	6500	8.9%	55	A	0.08
Hopkins	US 41A	9.685	13.278	Providence Bypass	KY 814	4300	5.0%	55	B	0.16
Webster	US 41A	0.470	1.194	KY 814	KY 120	4800	5.0%	45	C	0.18
Webster	US 41A	1.194	1.324	KY 120	KY 670	6400	5.0%	35	C	0.23
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.04
Hopkins	Manitou Bypass	n/a	n/a	US 41A	KY 630	9700	10.0%	55	A	0.12
Hopkins	Manitou Bypass	n/a	n/a	KY 630	US 41A	6200	10.0%	55	A	0.08
Hopkins	Nebo Bypass (S)	n/a	n/a	US 41A	US 41A	4900	10%	55	A	0.06
Webster	Providence Bypass	n/a	n/a	US 41A	US 41A	2200	10%	55	A	0.03

Residual Traffic

New Alignment

Assumptions

12 foot lanes (max HCS benefit)
6 foot shoulders (max HCS benefit)
speed limits remain the same
10% trucks on new alignments
5% trucks on residual sections
Residual Segments are Class III roads

ALTERNATIVE 4 - SUPER 2 WITH PASSING LANES
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	Manitou Bypass	15600	10.0%	55	E	0.55
Hopkins	US 41A	3.275	5.010	Manitou Bypass	KY 630	5900	5.0%	55	B	0.22
Hopkins	US 41A	5.010	9.685	KY 630	Manitou Bypass	1900	5.0%	55	A	0.07
Hopkins	US 41A	5.010	9.685	Manitou Bypass	KY 1089	8100	4.4%	55	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	6500	8.9%	55	C	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	8.9%	45	B	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	8.9%	35	C	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.13
Hopkins	Manitou Bypass	n/a	n/a	US 41A	KY 630	9700	10.0%	55	C	0.34
Hopkins	Manitou Bypass	n/a	n/a	KY 630	US 41A	6200	10.0%	55	C	0.22

Residual Traffic

New Alignment

Assumptions

12 foot lanes (max HCS benefit)

6 foot shoulders (max HCS benefit)

60% passing

speed limits remain the same

Residual Segments are Class III roads

ALTERNATIVES 5 - SPOTS A, B AND C

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	K Factor	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	KY 630	15600	10.0%	9.0%	55	E	0.55
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	8100	4.4%	9.0%	55	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	6500	8.9%	9.0%	55	C	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	8.9%	9.0%	45	C	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	8.9%	9.0%	35	D	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	9.0%	55	B	0.13

Assumptions

% of Passing was raised for sections with Spot Improvements

ALTERNATIVES 5 - SPOTS 1, 2, and 3

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	K Factor	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	ndustrial Roac	KY 630	15600	10.0%	9.0%	55	E	0.55
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	8100	4.4%	9.0%	55	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	KY 814	6500	8.9%	9.0%	55	C	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	8.9%	9.0%	45	C	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	8.9%	9.0%	35	D	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	9.0%	55	B	0.13

Assumptions

% of Passing was raised for sections with Spot Improvements

ALTERNATIVES 6 - SHARED FOUR LANES NO BYPASSES

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	KY 630	15600	10.0%	55	D	0.55
Hopkins	US 41A	5.010	9.685	KY 630	KY 1089	8100	4.4%	55	C	0.29
Hopkins	US 41A	9.685	0.470	KY 1089	KY 814	6500	8.9%	55	C	0.24
Webster	US 41A	0.470	1.194	KY 814	KY 120	7000	5.0%	45	B	0.25
Webster	US 41A	1.194	1.324	KY 120	KY 670	9500	5.0%	35	C	0.34
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.13

Assumptions

12 foot lanes (max HCS benefit)
6 foot shoulders (max HCS benefit)
speed limits remain the same
10% trucks on new alignments
5% trucks on residual sections
Residual Segments are Class III roads

ALTERNATIVES 7 AND 7A - SUPER 2 WITH BYPASSES OF NEBO, MANITOU AND PROVIDENCE
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	Manitou Bypass	15600	10.0%	55	E	0.55
Hopkins	US 41A	3.275	5.010	Manitou Bypass	KY 630	5900	5.0%	55	C	0.21
Hopkins	US 41A	5.010	9.685	KY 630	Manitou Bypass	1900	5.0%	55	A	0.07
Hopkins	US 41A	5.010	9.685	Manitou Bypass	Nebo Bypass	8100	4.4%	55	D	0.29
Hopkins	US 41A	5.010	9.685	Nebo Bypass	Nebo Bypass	2600	5.0%	55	A	0.09
Hopkins	US 41A	5.010	9.685	Nebo Bypass	KY 1089	8100	4.4%	55	D	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	Providence Bypass	6500	8.9%	55	D	0.23
Hopkins	US 41A	9.685	13.278	Providence Bypass	KY 814	4300	5.0%	55	B	0.16
Webster	US 41A	0.470	1.194	KY 814	KY 120	4800	5.0%	45	C	0.18
Webster	US 41A	1.194	1.324	KY 120	KY 670	6400	5.0%	35	C	0.23
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.13
Hopkins	Manitou Bypass	n/a	n/a	US 41A	KY 630	9700	10.0%	55	D	0.34
Hopkins	Manitou Bypass	n/a	n/a	KY 630	US 41A	6200	10.0%	55	C	0.22
Hopkins	Nebo Bypass (N)	n/a	n/a	US 41A	US 41A	5500	10%	55	C	0.2
Webster	Providence Bypass	n/a	n/a	US 41A	US 41A	2200	10%	55	B	0.08

Residual Traffic

New Alignment

Assumptions

12 foot lanes (max HCS benefit)
6 foot shoulders (max HCS benefit)
speed limits remain the same
10% trucks on new alignments
5% trucks on residual sections
Residual Segments are Class III roads
No Passing Lanes

ALTERNATIVES 8 AND 8A - SHARED FOUR LANES WITH BYPASSES OF NEBO, MANITOU AND PROVIDENCE
BUILD CAPACITY SUMMARY

County	Route	Beg Mpt	End Mpt	Beg Mpt Description	End Mpt Description	2035 ADT	Truck %	Speed Limit	2035 LOS	2035 V/C Ratio
Hopkins	US 41A	3.275	5.010	Industrial Road	Manitou Bypass	15600	10.0%	55	D	0.55
Hopkins	US 41A	3.275	5.010	Manitou Bypass	KY 630	5900	5.0%	55	C	0.21
Hopkins	US 41A	5.010	9.685	KY 630	Manitou Bypass	1900	5.0%	55	A	0.07
Hopkins	US 41A	5.010	9.685	Manitou Bypass	Nebo Bypass	8100	4.4%	55	C	0.29
Hopkins	US 41A	5.010	9.685	Nebo Bypass	Nebo Bypass	2600	5.0%	55	A	0.09
Hopkins	US 41A	5.010	9.685	Nebo Bypass	KY 1089	8100	4.4%	55	C	0.29
Hopkins	US 41A	9.685	13.278	KY 1089	Providence Bypass	6500	8.9%	55	C	0.23
Hopkins	US 41A	9.685	13.278	Providence Bypass	KY 814	4300	5.0%	55	B	0.16
Webster	US 41A	0.470	1.194	KY 814	KY 120	4800	5.0%	45	C	0.18
Webster	US 41A	1.194	1.324	KY 120	KY 670	6400	5.0%	35	C	0.23
Webster	US 41A	1.324	5.203	KY 670	KY 270	3400	8.9%	55	A	0.13
Hopkins	Manitou Bypass	n/a	n/a	US 41A	KY 630	9700	10.0%	55	C	0.34
Hopkins	Manitou Bypass	n/a	n/a	KY 630	US 41A	6200	10.0%	55	C	0.22
Hopkins	Nebo Bypass (N)	n/a	n/a	US 41A	US 41A	5500	10%	55	C	0.2
Webster	Providence Bypass	n/a	n/a	US 41A	US 41A	2200	10%	55	B	0.08

Residual Traffic

New Alignment

Assumptions

12 foot lanes (max HCS benefit)
6 foot shoulders (max HCS benefit)
speed limits remain the same
10% trucks on new alignments
5% trucks on residual sections
Residual Segments are Class III roads

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	44.7	mi/h
Percent Free Flow Speed, PFFS	77.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	20.4	
Percent time-spent-following, PTSFd	84.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	1097	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3948	veh-mi
Peak 15-min total travel time, TT15	24.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.7	mi/h
Percent time-spent-following, PTSFd (from above)	84.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to kY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Super 2 on Existing Alignment

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	49.4	mi/h
Percent Free Flow Speed, PFFS	85.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	574	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2068	veh-mi
Peak 15-min total travel time, TT15	11.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.4	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 1089 to KY 814
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Super 2 on Existing Align³N§B

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	43.8	mi/h
Percent Free Flow Speed, PFFS	83.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	269 pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.1 %	
Adjustment for no-passing zones, fnp	48.7	
Percent time-spent-following, PTSFd	69.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	10.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2875	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.8	mi/h
Percent time-spent-following, PTSFd (from above)	69.0	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	380	veh/h
Opposing direction volume, Vo	250	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	433	pc/h	288	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	48.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	40.9	mi/h
Percent Free Flow Speed, PFFS	85.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	422 pc/h	280 pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.7 %	
Adjustment for no-passing zones, fnp	38.4	
Percent time-spent-following, PTSFd	64.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	496	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1786	veh-mi
Peak 15-min total travel time, TT15	12.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2830	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.9	mi/h
Percent time-spent-following, PTSFd (from above)	64.8	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to KY 670
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	510	veh/h
Opposing direction volume, Vo	340	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.991		0.974	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	572	pc/h	388	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	41.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	33.0	mi/h
Percent Free Flow Speed, PFFS	80.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	381 pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.0 %	
Adjustment for no-passing zones, fnp	30.6	
Percent time-spent-following, PTSFd	71.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	666	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2397	veh-mi
Peak 15-min total travel time, TT15	20.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2853	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.0	mi/h
Percent time-spent-following, PTSFd (from above)	71.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 670 to KY 270
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 180 veh/h
Opposing direction volume, Vo 120 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.957		0.933	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	209	pc/h	143	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	54.2	mi/h
Percent Free Flow Speed, PFFS	93.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	202 pc/h	135 pc/h
Base percent time-spent-following,(note-4) BPTSFd	21.7 %	
Adjustment for no-passing zones, fnp	34.4	
Percent time-spent-following, PTSFd	42.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	235	veh-mi
Peak-hour vehicle-miles of travel, VMT60	846	veh-mi
Peak 15-min total travel time, TT15	4.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2863	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	54.2	mi/h
Percent time-spent-following, PTSFd (from above)	42.3	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	US 41A to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	520	veh/h
Opposing direction volume, Vo	350	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.971	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	584	pc/h	401	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	48.4	mi/h
Percent Free Flow Speed, PFFS	83.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.990
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	578 pc/h	393 pc/h
Base percent time-spent-following,(note-4) BPTSFd	54.6 %	
Adjustment for no-passing zones, fnp	30.3	
Percent time-spent-following, PTSFd	72.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	1444	veh-mi
Peak-hour vehicle-miles of travel, VMT60	5200	veh-mi
Peak 15-min total travel time, TT15	29.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2867	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	0.2	mi
Length of passing lane including tapers, Lpl	0.7	mi
Average travel speed, ATSd (from above)	48.4	mi/h
Percent time-spent-following, PTSFd (from above)	72.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	7.40	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, ATSpl	49.1	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	6.68	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	2.42	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.61	
Percent time-spent-following including passing lane, PTSFpl	61.2	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	C	
Peak 15-min total travel time, TT15	29.4	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to US 41A
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	340	veh/h
Opposing direction volume, Vo	220	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.980	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	382	pc/h	249	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.5	mi/h
Average travel speed, ATSd	50.6	mi/h
Percent Free Flow Speed, PFFS	87.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	379 pc/h	245 pc/h
Base percent time-spent-following,(note-4) BPTSFd	38.4 %	
Adjustment for no-passing zones, fnp	42.3	
Percent time-spent-following, PTSFd	64.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	944	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3400	veh-mi
Peak 15-min total travel time, TT15	18.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2808	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	0.2	mi
Length of passing lane including tapers, Lpl	0.7	mi
Average travel speed, ATSd (from above)	50.6	mi/h
Percent time-spent-following, PTSFd (from above)	64.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	7.40	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, ATSpl	51.3	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	8.84	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	0.26	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.60	
Percent time-spent-following including passing lane, PTSFpl	51.0	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	C	
Peak 15-min total travel time, TT15	18.4	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to Manitou Bypas
Jurisdiction	KYTC
Analysis Year	2035
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	44.7	mi/h
Percent Free Flow Speed, PFFS	77.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	20.4	
Percent time-spent-following, PTSFd	84.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	1097	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3948	veh-mi
Peak 15-min total travel time, TT15	24.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.7	mi/h
Percent time-spent-following, PTSFd (from above)	84.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Manitou Bypass to kY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	49.4	mi/h
Percent Free Flow Speed, PFFS	85.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	574	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2068	veh-mi
Peak 15-min total travel time, TT15	11.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.4	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 1098 to KY 814
Jurisdiction	KYTC
Analysis Year	2035
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	43.8	mi/h
Percent Free Flow Speed, PFFS	83.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	269 pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.1 %	
Adjustment for no-passing zones, fnp	48.7	
Percent time-spent-following, PTSFd	69.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	10.4	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2875	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	43.8	mi/h
Percent time-spent-following, PTSFd (from above)	69.0	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	380	veh/h
Opposing direction volume, Vo	250	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	433	pc/h	288	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	48.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	40.9	mi/h
Percent Free Flow Speed, PFFS	85.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	422 pc/h	280 pc/h
Base percent time-spent-following,(note-4) BPTSFd	41.7 %	
Adjustment for no-passing zones, fnp	38.4	
Percent time-spent-following, PTSFd	64.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.25	
Peak 15-min vehicle-miles of travel, VMT15	496	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1786	veh-mi
Peak 15-min total travel time, TT15	12.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2830	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	40.9	mi/h
Percent time-spent-following, PTSFd (from above)	64.8	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to KY 670
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	510	veh/h
Opposing direction volume, Vo	340	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.991		0.974	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	572	pc/h	388	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	41.0	mi/h
Adjustment for no-passing zones, fnp	0.6	mi/h
Average travel speed, ATSd	33.0	mi/h
Percent Free Flow Speed, PFFS	80.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	381 pc/h
Base percent time-spent-following,(note-4) BPTSFd	53.0 %	
Adjustment for no-passing zones, fnp	30.6	
Percent time-spent-following, PTSFd	71.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	666	veh-mi
Peak-hour vehicle-miles of travel, VMT60	2397	veh-mi
Peak 15-min total travel time, TT15	20.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2853	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	33.0	mi/h
Percent time-spent-following, PTSFd (from above)	71.3	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Manitou Bypass to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	320	veh/h
Opposing direction volume, Vo	210	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.971		0.952	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	366	pc/h	245	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	56.0	mi/h
Adjustment for no-passing zones, fnp	2.4	mi/h
Average travel speed, ATSd	48.9	mi/h
Percent Free Flow Speed, PFFS	87.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.990	0.990
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	359 pc/h	236 pc/h
Base percent time-spent-following,(note-4) BPTSFd	35.3 %	
Adjustment for no-passing zones, fnp	43.8	
Percent time-spent-following, PTSFd	61.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	418	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1504	veh-mi
Peak 15-min total travel time, TT15	8.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2837	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.9	mi/h
Percent time-spent-following, PTSFd (from above)	61.7	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to Manitou Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	100	veh/h
Opposing direction volume, Vo	70	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	115	pc/h	81	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	56.0	mi/h
Adjustment for no-passing zones, fnp	1.3	mi/h
Average travel speed, ATSd	53.2	mi/h
Percent Free Flow Speed, PFFS	95.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	112 pc/h	78 pc/h
Base percent time-spent-following,(note-4) BPTSFd	12.9 %	
Adjustment for no-passing zones, fnp	41.3	
Percent time-spent-following, PTSFd	37.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	131	veh-mi
Peak-hour vehicle-miles of travel, VMT60	470	veh-mi
Peak 15-min total travel time, TT15	2.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2897	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	53.2	mi/h
Percent time-spent-following, PTSFd (from above)	37.2	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	US 41A to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	520	veh/h
Opposing direction volume, Vo	350	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.1		1.3	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.990		0.971	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	584	pc/h	401	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.0	mi/h
Average travel speed, ATSd	48.4	mi/h
Percent Free Flow Speed, PFFS	83.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.990
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	578 pc/h	393 pc/h
Base percent time-spent-following,(note-4) BPTSFd	54.6 %	
Adjustment for no-passing zones, fnp	30.3	
Percent time-spent-following, PTSFd	72.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.34	
Peak 15-min vehicle-miles of travel, VMT15	1444	veh-mi
Peak-hour vehicle-miles of travel, VMT60	5200	veh-mi
Peak 15-min total travel time, TT15	29.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2867	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.4	mi/h
Percent time-spent-following, PTSFd (from above)	72.6	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to US 41A
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	340	veh/h
Opposing direction volume, Vo	220	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.988		0.980	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	382	pc/h	249	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.5	mi/h
Average travel speed, ATSd	50.6	mi/h
Percent Free Flow Speed, PFFS	87.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	379 pc/h	245 pc/h
Base percent time-spent-following,(note-4) BPTSFd	38.4 %	
Adjustment for no-passing zones, fnp	42.3	
Percent time-spent-following, PTSFd	64.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.22	
Peak 15-min vehicle-miles of travel, VMT15	944	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3400	veh-mi
Peak 15-min total travel time, TT15	18.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2808	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	50.6	mi/h
Percent time-spent-following, PTSFd (from above)	64.1	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	US 41A to US 41A
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	300	veh/h
Opposing direction volume, Vo	200	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.984		0.980	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	339	pc/h	227	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.6	mi/h
Average travel speed, ATSd	51.0	mi/h
Percent Free Flow Speed, PFFS	87.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	335 pc/h	223 pc/h
Base percent time-spent-following,(note-4) BPTSFd	34.0 %	
Adjustment for no-passing zones, fnp	44.2	
Percent time-spent-following, PTSFd	60.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.20	
Peak 15-min vehicle-miles of travel, VMT15	833	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3000	veh-mi
Peak 15-min total travel time, TT15	16.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2838	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	51.0	mi/h
Percent time-spent-following, PTSFd (from above)	60.5	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	US 41A to US 41A
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	120	veh/h
Opposing direction volume, Vo	80	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.8		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.969		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	138	pc/h	92	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.5	mi/h
Average travel speed, ATSd	54.7	mi/h
Percent Free Flow Speed, PFFS	94.3	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	134 pc/h	89 pc/h
Base percent time-spent-following,(note-4) BPTSFd	15.2 %	
Adjustment for no-passing zones, fnp	41.4	
Percent time-spent-following, PTSFd	40.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.08	
Peak 15-min vehicle-miles of travel, VMT15	333	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1200	veh-mi
Peak 15-min total travel time, TT15	6.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2833	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	54.7	mi/h
Percent time-spent-following, PTSFd (from above)	40.1	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Industrial Rd to Manitou Bypas
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	10	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	840	veh/h
Opposing direction volume, Vo	560	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.0		1.1	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	1.000		0.990	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	933	pc/h	629	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.2	mi/h
Average travel speed, ATSd	44.7	mi/h
Percent Free Flow Speed, PFFS	77.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	933 pc/h	622 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.9 %	
Adjustment for no-passing zones, fnp	20.4	
Percent time-spent-following, PTSFd	84.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.55	
Peak 15-min vehicle-miles of travel, VMT15	2333	veh-mi
Peak-hour vehicle-miles of travel, VMT60	8400	veh-mi
Peak 15-min total travel time, TT15	52.2	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2846	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	44.7	mi/h
Percent time-spent-following, PTSFd (from above)	84.1	
Level of service, LOSd (from above)	E	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Manitou Bypass to Nebo Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	49.4	mi/h
Percent Free Flow Speed, PFFS	85.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	1222	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4400	veh-mi
Peak 15-min total travel time, TT15	24.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.4	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Nebo Bypass to KY 1089
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	40	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	440	veh/h
Opposing direction volume, Vo	290	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.2		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.992		0.984	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	493	pc/h	327	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	2.2	mi/h
Average travel speed, ATSd	49.4	mi/h
Percent Free Flow Speed, PFFS	85.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	489 pc/h	324 pc/h
Base percent time-spent-following,(note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	33.0	
Percent time-spent-following, PTSFd	67.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.29	
Peak 15-min vehicle-miles of travel, VMT15	1222	veh-mi
Peak-hour vehicle-miles of travel, VMT60	4400	veh-mi
Peak 15-min total travel time, TT15	24.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2827	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.4	mi/h
Percent time-spent-following, PTSFd (from above)	67.5	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 1089 to Providence Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 1		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	10.0	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	240	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	276	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	3.4	mi/h
Average travel speed, ATSd	49.4	mi/h
Percent Free Flow Speed, PFFS	85.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	269 pc/h
Base percent time-spent-following,(note-4) BPTSFd	40.1 %	
Adjustment for no-passing zones, fnp	48.7	
Percent time-spent-following, PTSFd	69.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	972	veh-mi
Peak-hour vehicle-miles of travel, VMT60	3500	veh-mi
Peak 15-min total travel time, TT15	19.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2875	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	10.0	mi
Length of two-lane highway upstream of the passing lane, Lu	0.1	mi
Length of passing lane including tapers, Lpl	1.0	mi
Average travel speed, ATSd (from above)	49.4	mi/h
Percent time-spent-following, PTSFd (from above)	69.0	
Level of service, LOSd (from above)	D	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	1.70	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	7.20	mi
Adj. factor for the effect of passing lane on average speed, fpl	1.10	
Average travel speed including passing lane, ATSpl	50.2	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	8.38	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	0.52	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	0.60	
Percent time-spent-following including passing lane, PTSFpl	54.7	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	C	
Peak 15-min total travel time, TT15	19.4	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 670 to KY 270
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	9	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	20	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 180 veh/h
Opposing direction volume, Vo 120 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.5		1.8	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.957		0.933	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	209	pc/h	143	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	58.0	mi/h
Adjustment for no-passing zones, fnp	1.1	mi/h
Average travel speed, ATSd	54.2	mi/h
Percent Free Flow Speed, PFFS	93.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	202 pc/h	135 pc/h
Base percent time-spent-following,(note-4) BPTSFd	21.7 %	
Adjustment for no-passing zones, fnp	34.4	
Percent time-spent-following, PTSFd	42.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.12	
Peak 15-min vehicle-miles of travel, VMT15	235	veh-mi
Peak-hour vehicle-miles of travel, VMT60	846	veh-mi
Peak 15-min total travel time, TT15	4.3	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2863	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	54.2	mi/h
Percent time-spent-following, PTSFd (from above)	42.3	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Manitou Bypass to KY 630
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 2		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	5	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	60	%
Up/down	-	%	Access point density	8	/mi

Analysis direction volume, Vd 320 veh/h
Opposing direction volume, Vo 210 veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.985		0.976	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	361	pc/h	239	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	2.0	mi/h
Free-flow speed, FFSd	54.3	mi/h
Adjustment for no-passing zones, fnp	3.3	mi/h
Average travel speed, ATSd	46.4	mi/h
Percent Free Flow Speed, PFFS	85.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.995	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	357 pc/h	235 pc/h
Base percent time-spent-following,(note-4) BPTSFd	35.2 %	
Adjustment for no-passing zones, fnp	50.9	
Percent time-spent-following, PTSFd	65.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.21	
Peak 15-min vehicle-miles of travel, VMT15	418	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1504	veh-mi
Peak 15-min total travel time, TT15	9.0	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2819	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	46.4	mi/h
Percent time-spent-following, PTSFd (from above)	65.9	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	KY 630 to Manitou Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	4	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	55	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	100	veh/h
Opposing direction volume, Vo	70	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.9		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	115	pc/h	81	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	49.0	mi/h
Percent Free Flow Speed, PFFS	93.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	112 pc/h	78 pc/h
Base percent time-spent-following,(note-4) BPTSFd	12.9 %	
Adjustment for no-passing zones, fnp	48.6	
Percent time-spent-following, PTSFd	41.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.07	
Peak 15-min vehicle-miles of travel, VMT15	131	veh-mi
Peak-hour vehicle-miles of travel, VMT60	470	veh-mi
Peak 15-min total travel time, TT15	2.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2897	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	49.0	mi/h
Percent time-spent-following, PTSFd (from above)	41.5	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Hopkins
From/To	Nebo Bypass to Nebo Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	2.0	ft	% Trucks and buses	4	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	55	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	140	veh/h
Opposing direction volume, Vo	90	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.7		1.9	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.973		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	160	pc/h	104	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	1.8	mi/h
Average travel speed, ATSd	48.4	mi/h
Percent Free Flow Speed, PFFS	92.6	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.996	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	156 pc/h	100 pc/h
Base percent time-spent-following,(note-4) BPTSFd	17.4 %	
Adjustment for no-passing zones, fnp	49.0	
Percent time-spent-following, PTSFd	47.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	A	
Volume to capacity ratio, v/c	0.09	
Peak 15-min vehicle-miles of travel, VMT15	183	veh-mi
Peak-hour vehicle-miles of travel, VMT60	658	veh-mi
Peak 15-min total travel time, TT15	3.8	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2805	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	48.4	mi/h
Percent time-spent-following, PTSFd (from above)	47.3	
Level of service, LOSd (from above)	A	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	Providence Bypass to KY 814
Jurisdiction	KYTC
Analysis Year	2011
Description	US 41A Super 2 with Bypasses

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	230	veh/h
Opposing direction volume, Vo	160	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.6	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.949	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	265	pc/h	187	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	60.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	52.3	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	45.2	mi/h
Percent Free Flow Speed, PFFS	86.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	258 pc/h	179 pc/h
Base percent time-spent-following,(note-4) BPTSFd	26.7 %	
Adjustment for no-passing zones, fnp	55.0	
Percent time-spent-following, PTSFd	59.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	B	
Volume to capacity ratio, v/c	0.16	
Peak 15-min vehicle-miles of travel, VMT15	300	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1081	veh-mi
Peak 15-min total travel time, TT15	6.6	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2899	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	45.2	mi/h
Percent time-spent-following, PTSFd (from above)	59.2	
Level of service, LOSd (from above)	B	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 814 to KY 120
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	10.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	75	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	260	veh/h
Opposing direction volume, Vo	170	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.4		1.5	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.965		0.957	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	299	pc/h	197	pc/h

Free-Flow Speed from Field Measurement:

Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h

Estimated Free-Flow Speed:

Base free-flow speed,(note-3) BFFS	50.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	3.7	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	42.3	mi/h
Adjustment for no-passing zones, fnp	3.6	mi/h
Average travel speed, ATSd	34.9	mi/h
Percent Free Flow Speed, PFFS	82.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	291 pc/h	191 pc/h
Base percent time-spent-following,(note-4) BPTSFd	29.5 %	
Adjustment for no-passing zones, fnp	53.4	
Percent time-spent-following, PTSFd	61.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.18	
Peak 15-min vehicle-miles of travel, VMT15	339	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1222	veh-mi
Peak 15-min total travel time, TT15	9.7	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2820	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	34.9	mi/h
Percent time-spent-following, PTSFd (from above)	61.7	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

HCS 2010: Two-Lane Highways Release 6.1

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst	JJL
Agency/Co.	Qk4
Date Performed	6/30/2011
Analysis Time Period	Design Hour
Highway	US 41A Webster
From/To	KY 120 to Providence Bypass
Jurisdiction	KYTC
Analysis Year	2011
Description	

Input Data

Highway class	Class 3		Peak hour factor, PHF	0.90	
Shoulder width	3.0	ft	% Trucks and buses	9	%
Lane width	13.0	ft	% Trucks crawling	0.0	%
Segment length	4.7	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	65	%
Up/down	-	%	Access point density	16	/mi

Analysis direction volume, Vd	350	veh/h
Opposing direction volume, Vo	230	veh/h

Average Travel Speed

Direction	Analysis(d)		Opposing (o)	
PCE for trucks, ET	1.3		1.4	
PCE for RVs, ER	1.0		1.0	
Heavy-vehicle adj. factor,(note-5) fHV	0.974		0.965	
Grade adj. factor,(note-1) fg	1.00		1.00	
Directional flow rate,(note-2) vi	399	pc/h	265	pc/h

Free-Flow Speed from Field Measurement:		
Field measured speed,(note-3) S FM	-	mi/h
Observed total demand,(note-3) V	-	veh/h
Estimated Free-Flow Speed:		
Base free-flow speed,(note-3) BFFS	45.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	2.6	mi/h
Adj. for access point density,(note-3) fA	4.0	mi/h
Free-flow speed, FFSd	38.4	mi/h
Adjustment for no-passing zones, fnp	2.9	mi/h
Average travel speed, ATSd	30.3	mi/h
Percent Free Flow Speed, PFFS	79.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.991	0.991
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	258 pc/h
Base percent time-spent-following,(note-4) BPTSFd	38.6 %	
Adjustment for no-passing zones, fnp	48.1	
Percent time-spent-following, PTSFd	67.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	C	
Volume to capacity ratio, v/c	0.23	
Peak 15-min vehicle-miles of travel, VMT15	457	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1645	veh-mi
Peak 15-min total travel time, TT15	15.1	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	2829	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	4.7	mi
Length of two-lane highway upstream of the passing lane, Lu	-	mi
Length of passing lane including tapers, Lpl	-	mi
Average travel speed, ATSd (from above)	30.3	mi/h
Percent time-spent-following, PTSFd (from above)	67.6	
Level of service, LOSd (from above)	C	

Average Travel Speed with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for average travel speed, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for average travel speed, Ld	-	mi
Adj. factor for the effect of passing lane on average speed, fpl	-	
Average travel speed including passing lane, ATSpl	-	

Percent Time-Spent-Following with Passing Lane

Downstream length of two-lane highway within effective length of passing lane for percent time-spent-following, Lde	-	mi
Length of two-lane highway downstream of effective length of the passing lane for percent time-spent-following, Ld	-	mi
Adj. factor for the effect of passing lane on percent time-spent-following, fpl	-	
Percent time-spent-following including passing lane, PTSFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSpl	-	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service