

HCM-CALC

**Calculation Software for the Uninterrupted Flow Analysis
Methodologies of the Highway Capacity Manual**

Sample Screenshots from the Segment Modules

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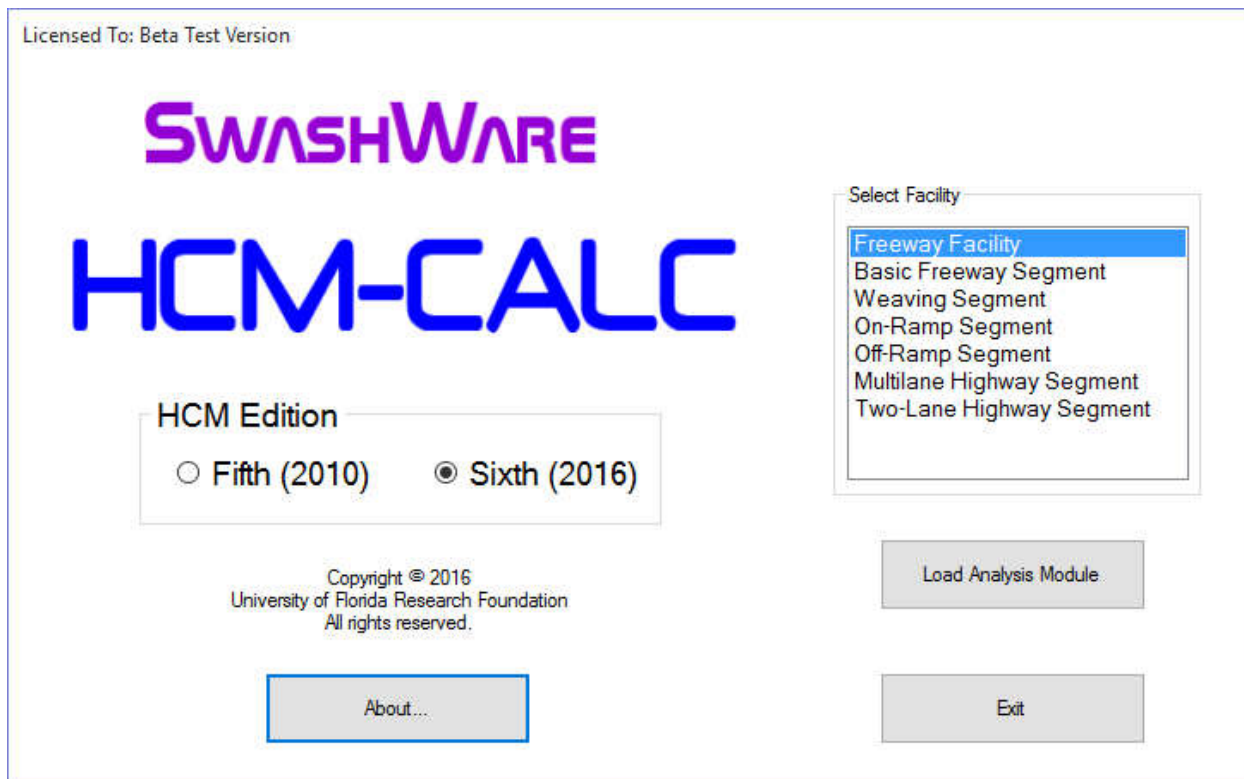


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Startup Screen



All of the available calculation methodologies are shown in the panel on the right.

Basic Freeway Segment

Level of Service Calculation Screen

HCM-CALC: Basic Freeway Segment - [Level of Service]

File View Help

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Filename

Number of Lanes: 3
Demand (veh/h): 2700
Peak Hour Factor: 1.000

Segment Length

Mainline

Heavy Vehicle Factor

Terrain: General

General Terrain

Level

Rolling

Specific Grade

Length (mi): 0.000
Grade (%): 0.00

% Single Unit Trucks (STs): 10.0
% Tractor Trailers (TTs): 5.0

Truck PCE (E_T): 2.00
f_HV: 0.870

Free-Flow Speed (FFS)

Estimated

Measured

70 mi/h

Specify Speed-Flow Curve

FFS Adjustment Factors

Lane Width (ft): 11.0
Right Side Lateral Clearance (ft): 5.0

BFFS (mi/h): 75.4
f_LW (mi/h): 1.9
f_RLC (mi/h): 0.4

Ramp Data

Enter: # of ramps

Ramps Upstream (ramps/3 mi): 2
Ramps Downstream (ramps/3 mi): 3
Total Ramp Density (ramps/mi): 0.83

TRD term (mi/h): 2.8
FFS, calculated (mi/h): 70.3

Calculate Performance Measures and LOS

Results

Analysis Flow Rate (pc/h/n): 1035
Capacity (pc/h/n): 2400
v/c: 0.43
Avg. Speed (mi/h): 70.3
Density (pc/mi/n): 14.71
LOS: B

Level of Service Analysis

Service Volumes

Report

Composite Grade Specification Screen

Composite Grade

Segment Data

	Length (ft)	Grade (%)
1	500	2.00
2	1000	3.00
3	700	2.50
4		

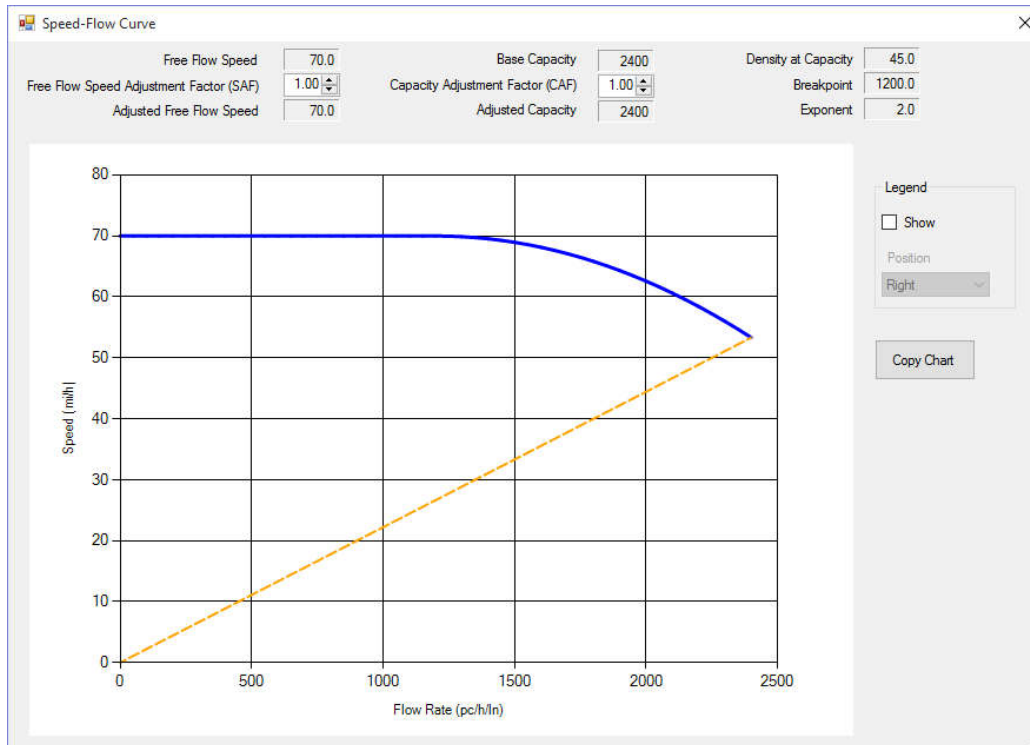
Equivalent Grade

Length (mi): 0.42
Grade (%): 2.61

OK

Cancel

Speed-Flow Curve Specification Screen (for HCM 6th Edition)



Service Volumes Calculation Screen

HCM-CALC: Basic Freeway Segment - [Service Volumes]

File View Help

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Filename: _____

For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

Calculate Service Volumes

D Factor: 0.50

K Factor: 0.10

Lanes	Hourly Volume (veh/h) in Peak Direction				
	A	B	C	D	E
1	670	1100	1510	1840	2090
2	1340	2190	3020	3670	4170
3	2010	3290	4520	5510	6260
4	2680	4380	6030	7350	8350
5	3350	5480	7540	9180	10430

Lanes	Hourly Volume (veh/h) in Both Directions				
	A	B	C	D	E
2	1340	2200	3020	3680	4180
4	2680	4390	6040	7350	8350
6	4020	6580	9050	11030	12520
8	5360	8770	12070	14700	16700
10	6700	10960	15080	18370	20870

Lanes	Annual Average Daily Traffic (veh)				
	A	B	C	D	E
2	13400	22000	30200	36800	41800
4	26800	43900	60400	73500	83500
6	40200	65800	90500	110300	125200
8	53600	87700	120700	147000	167000
10	67000	109600	150800	183700	208700

Notes

Level of Service Analysis Service Volumes Report

HCM-CALC: Basic Project Segment - [Report]

File View Help

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Filename

Input Values and Intermediate Calculation Results

Mainline Data

# Lanes	Demand (veh/h)	Peak Hour Factor	Driver Population Factor
3	2700	1.000	1.000

Heavy Vehicle Factor Values

Terrain	% Grade	Length (mi)	% Trucks	% RVs	Truck PCE	RV PCE	Heavy Vehicle Factor
Level	N/A	N/A	5.0	10.0	2.00	0.00	0.870

Free Flow Speed Values

FFS Method	Estimated				
Input Values	Lane Width (ft)	Right Side Lat. Clear. (ft)	# Ramps Upstream	# Ramps Downstream	Total Ramp Density (ramps/mi)
	11	5	2	3	0.833
Adjustment Values	Lane Width (mi/h)	Right Side Lat. Clear. (mi/h)			Ramp Density (mi/h)
	1.9	0.4			2.76
FFS, Base (mi/h)	75.4				
FFS, Calculated (mi/h)	70.3				
FFS, Rounded (mi/h)	70.3				

Performance Measures and LOS

Analysis Flow Rate (pc/h/ln)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Capacity (pc/h/ln)	v/c ratio	LOS
1035	70.3	14.7	2400	0.43	B

Service Volumes

Lanes	A	B	C	D	E
	Hourly Volume In Peak Direction				
1	670	1100	1510	1840	2090
2	1340	2190	3020	3670	4170
3	2010	3290	4520	5510	6260
4	2680	4380	6030	7350	8350

Level of Service Analysis Service Volumes Report

Weaving Segment

Level of Service Calculation Screen

HCMM-CALC: Weaving Segment - [Level of Service]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Mainline

Segment Type: Freeway

Number of Lanes: 4

Demand (veh/h): 2507

Peak Hour Factor: 0.910

Free-Flow Speed (mi/h)

☒ Measured: 65

☐ Estimated: Inputs... N/A

Interchange Density (int/mi): 0.80

Heavy Vehicle Factor

Terrain: General

General Terrain

☒ Level ☐ Rolling

Specific Grade

Length (mi): 0.000

Grade (%): 0.00

% Single Unit Trucks (STs): 0.0

% Tractor Trailers (TTs): 10.0

Truck PCE (E_T): 2.00

f_HV: 0.909

Weave Configuration

☒ One-Sided ☐ Two-Sided

Short Length (L_S) (ft): 1500

of Weaving Lanes (N_WL): 3

Min. Lane Changes Freeway-Ramp (LC_FR): 1

Min. Lane Changes Ramp-Freeway (LC_RF): 0

Min. Lane Changes Ramp-Ramp (LC_RR): 0

Calculate Performance Measures and LOS

Results

v_FF (pc/h)	2194
v_FR (pc/h)	836
v_RF (pc/h)	1254
v_RR (pc/h)	1568
Volume Ratio	0.357
Maximum Length (ft)	4639
C_IWL (pc/h/in)	2110
C_IW (pc/h)	9800
C_W (veh/h)	7672
v/c	0.631
LC_min (l/c/h)	836
LC_W (l/c/h)	1182
L_NW	451
LC_NW (l/c/h)	818
LC_All (l/c/h)	1999
Weaving Intensity	0.284
Non-Weaving Speed (mi/h)	52.0
Weaving Speed (mi/h)	54.0
Avg. Speed (mi/h)	52.7
Density (pc/mi/in)	27.78
LOS	C

Diagram: Mainline, On Ramp, Auxiliary Lane, Off Ramp, Segment Length, Short Length

On-Ramp to Freeway

Demand (veh/h): 2334

% Trucks: 10.0

f_HV: 0.909

Ramp-to-Ramp

Demand (veh/h): 1297

Freeway to Off-Ramp

Demand (veh/h): 1989

% Trucks: 10.0

f_HV: 0.909

Level of Service Analysis Service Volumes Report

Free-Flow Speed Estimation Screen

FFS Estimation

FFS Adjustment Factors

Lane Width (ft): 11.0

Right Side Lateral Clearance (ft): 5.0

BFFS (mi/h): 75.4

f_LW (mi/h): 1.9

f_RLC (mi/h): 0.4

Ramp Data

Enter: ☒ # of ramps ☐ ramp density

Ramps Upstream (ramps/3 mi): 2

Ramps Downstream (ramps/3 mi): 3

Total Ramp Density (ramps/mi): 0.83

TRD term (mi/h): 2.8

FFS, calculated (mi/h): 70.3

OK Cancel

Service Volumes Calculation Screen

HCM-CALC: Weaving Segment - [Service Volumes]

File View Help

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Filename

Proportion of Movement Volume to Total Segment Entering Volume

On-ramp to Freeway 0.28

Freeway to Off-ramp 0.23

On-Ramp to Off-ramp 0.15

Freeway to Freeway 0.34

For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

Calculate Service Volumes

D Factor 0.50

K Factor 0.10

Lanes Hourly Volume (veh/h) in Peak Direction

Lanes	A	B	C	D	E
1	--	--	--	--	--
2	570	1120	1530	1880	1940
3	860	1670	2290	2460	2470
4	1150	2230	2450	2480	2490
5	1430	2460	2490	2520	---

Lanes Hourly Volume (veh/h) in Both Directions

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	1150	2240	3070	3760	3890
6	1730	3360	4590	4940	4950
8	2310	4460	4920	4980	4990
10	2870	4930	4990	5040	---

Lanes Annual Average Daily Traffic (veh)

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	11500	22400	30700	37600	38900
6	17300	33600	45900	49400	49500
8	23100	44600	49200	49800	49900
10	28700	49300	49900	50400	---

Notes

-- Not applicable for this facility type

--- Service volume the same as for previous LOS level

Level of Service Analysis Service Volumes Report

HCM-CALC: Weaving Segment - [Report]

File View Help

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Filename

Input Values and Intermediate Calculation Results

Mainline Data

# Lanes	Demand (veh/h)	Peak Hour Factor	Driver Population Factor
4	4841	0.910	1.000
Interchange Density (int/mi)	0.80		

Heavy Vehicle Factor Values

Terrain	% Grade	Length (mi)	% Trucks	% RVs	Truck PCE	RV PCE	Heavy Vehicle Factor
Level	N/A	N/A	10.0	0.0	2.00	0.00	0.909

Free Flow Speed Values

FFS Method	
FFS Method	Measured
FFS, Rounded (mi/h)	65.0

Weaving Segment Configuration

Segment Type	Freeway	Weaving Type	Short Length	# Weaving Lanes	Min. Lane Changes Freeway-Ramp	Min. Lane Changes Ramp-Freeway	Min. Lane Changes Ramp-Ramp
OneSide	1500	2	0	0			

Weaving Segment Ramps

Ramp-to-Ramp Demand	On-Ramp				Off-Ramp			
	Demand	% Trucks	% RVs	Heavy Vehicle Factor	Demand	% Trucks	% RVs	Heavy Vehicle Factor
1297	2334	10.0	0.0	0.909	1989	10.0	0.0	0.909

Flow Rates (pc/h)

Freeway to Freeway	Freeway to Off-ramp	On-ramp to Freeway	On-ramp to Off-ramp
2194	836	1254	1568

Volume Ratio	
Maximum Weaving Length (ft)	6205

Capacity

Weave Capacity Ideal (pc/h/in)	Weave Capacity Ideal All Lanes (pc/h)	Weave Capacity Prevail All Lanes (veh/h)
1990	6720	6109

Lane Changing

Level of Service Analysis	Service Volumes	Report
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On-Ramp Segment

Level of Service Calculation Screen

HCM-CALC: On-Ramp Segment - [Level of Service]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Mainline

Number of Lanes: 2

Demand (veh/h): 2500

Peak Hour Factor: 0.900

Driver Population Factor: 1.000

Free-Flow Speed (mi/h)

Measured: 60

Estimated: N/A

Heavy Vehicle Factor

Terrain: General

General Terrain

Level

Specific Grade

Length (mi): 0.000

Grade (%): 0.00

% Trucks: 10.0

% RVs: 0.0

Truck PCE (E_T): 1.50

RV PCE (E_R): 1.20

f_{HV}: 0.952

Right-Side Ramp

Segment Length

Mainline

On Ramp

Acceleration Length

On-Ramp

Demand (veh/h): 535

% Trucks: 5.0

% RVs: 0.0

f_{HV}: 0.976

Number of Lanes: 1

Free-Flow Speed (mi/h): 45

Acceleration Lane Length (ft): 740

Adjacent Ramp Data

Upstream Off-Ramp?

Distance (ft): 0

Demand (veh/h): 0

% Trucks: 0.0

% RVs: 0.0

f_{HV}: 1.000

Downstream Off-Ramp?

Distance (ft): 0

Demand (veh/h): 0

% Trucks: 0.0

% RVs: 0.0

f_{HV}: 1.000

Calculate Performance Measures and LOS

Results

Analysis Flow Rate, Mainline (pc/h/ln): 2917

Analysis Flow Rate, Ramp (pc/h/ln): 609

Mainline Capacity (pc/h/ln): 4600

v/c: 0.77

V_{up}: NA

L_{EQup}: NA

P_{FDup}: NA

V_{down}: NA

L_{EQdown}: NA

P_{FDdown}: NA

P_{FM}: 1.000

V₁₂ (pc/h): 2916.7

S_R (mi/h): 53.0

D_R (pc/mi): 28.03

LOS: D

Avg. Speed, All Lanes (mi/h): 53.0

Density, All Lanes (pc/mi/ln): 33.24

Level of Service Analysis

Service Volumes

Report

Service Volumes Calculation Screen

HCM-CALC: On-Ramp Segment - [Service Volumes]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Proportion of On-Ramp Volume to Mainline Entering Volume

On-ramp to Freeway: 0.18

For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

Calculate Service Volumes

D Factor: 0.50

K Factor: 0.10

Lanes Hourly Volume (veh/h) in Peak Direction

Lanes	A	B	C	D	E
1	--	--	--	--	--
2	870	1810	2570	--	3360
3	1330	2770	3930	--	5050
4	1800	3750	6560	--	6730
5	2360	4450	6680	--	8590

Lanes Hourly Volume (veh/h) in Both Directions

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	1740	3630	5150	--	6730
6	2660	5550	7870	--	10100
8	3600	7510	13120	--	13460
10	4720	8910	13360	--	17180

Lanes Annual Average Daily Traffic (veh)

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	17400	36300	51500	--	67300
6	26600	55500	78700	--	101000
8	36000	75100	131200	--	134600
10	47200	89100	133600	--	171800

Notes

-- Not applicable for this facility type

** No defined LOS threshold for this LOS level

Level of Service Analysis

Service Volumes

Report

Formatted Report Screen

HCM-CALC: On-Ramp Segment - [Report]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Input Values and Intermediate Calculation Results

Mainline Data

# Lanes	Demand (veh/h)	Peak Hour Factor	Driver Population Factor
2	3050	0.900	1.000

Heavy Vehicle Factor Values

Terrain	% Grade	Length (mi)	% Trucks	% RVs	Truck PCE	RV PCE	Heavy Vehicle Factor
Level	N/A	N/A	10.0	0.0	1.50	1.20	0.952

Free Flow Speed Values

FFS Method	
FFS Method	Measured
FFS, Rounded (mi/h)	60.0

On-Ramp Data

Demand (veh/h)	% Trucks	% RVs	Heavy Vehicle Factor	FFS
550	5.00	0.00	0.976	45
Lanes	Accel Lane Length, 1 (ft)	Accel Lane Length, 2 (ft)	Effective Accel Lane Length (ft)	
1	740	N/A	740	

Analysis Flow Rates

Analysis Flow Rate, Mainline (pc/h/ln)	Analysis Flow Rate, On-Ramp (pc/h)	Prop. Vehicles in Lanes 1 and 2	Flow Rate in Lanes 1 and 2 (pc/h)
3543	626	1.000	2916.7

Adjacent Ramp Data

Performance Measures and LOS

v/c ratio	Avg. Speed, Ramp Influence Area (mi/h)	Density, Ramp Influence Area (pc/mi/ln)
0.77	53.0	28.2
Avg. Speed, Overall (mi/h)	Density, Overall (pc/mi/ln)	LOS
53.0	33.4	D

Service Volumes

Level of Service Analysis	Service Volumes	Report

Off-Ramp Segment

Level of Service Calculation Screen

HCM-CALC: Off-Ramp Segment - [Level of Service]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Mainline

Number of Lanes: 3

Demand (veh/h): 4500

Peak Hour Factor: 0.950

FFS Adjustment Fact.: 1.000

Free-Flow Speed (mi/h)

Measured: 60

Estimated: N/A

Capacity Adjustment Fact.: 1.000

Heavy Vehicle Factor

Terrain: General

General Terrain

Level: ☐ Rolling: ☒

Specific Grade

Length (mi): 0.000

Grade (%): 0.00

% Single Unit Trucks (STs): 0.0

% Tractor Trailers (TTs): 5.0

Truck PCE (E_T): 3.00

f_HV: 0.909

Right-Side Ramp: ☒ Left-Side Ramp: ☐

Diagram: Mainline, Segment Length, Deceleration Length, Off Ramp

Off-Ramp

Demand (veh/h): 300

% Trucks: 5.0

f_HV: 0.909

Number of Lanes: 1

Free-Flow Speed (mi/h): 40

Deceleration Lane Length (ft): 500

Adjacent Ramp Data

Upstream On-Ramp?: ☐ Downstream Off-Ramp?: ☒

Distance (ft): 0

Demand (veh/h): 0

% Trucks: 0.0

f_HV: 1.000

Distance (ft): 750

Demand (veh/h): 500

% Trucks: 5.0

f_HV: 0.909

Calculate Performance Measures and LOS

Results

Analysis Flow Rate, Mainline (pc/h/ln): 5211

Analysis Flow Rate, Ramp (pc/h/ln): 347

Mainline Capacity (pc/h/ln): 6900

v/c: 0.76

V_up: NA

L_EQup: NA

P_FUp: NA

V_down: 578.9

L_EQdown: 677.1

P_FDdown: 0.614

P_FD: 0.614

V_12 (pc/h): 3332.2

S_R (mi/h): 52.9

D_R (pc/mi): 28.41

LOS: D

Avg. Speed, All Lanes (mi/h): 56.0

Density, All Lanes (pc/mi/ln): 31.03

Level of Service Analysis Service Volumes Report

Service Volumes Calculation Screen

HCM-CALC: Off-Ramp Segment - [Service Volumes]

File View Help

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Filename

Proportion of Off-Ramp Volume to Mainline Entering Volume

Freeway to Off-ramp: 0.07

For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

Calculate Service Volumes

D Factor: 0.50

K Factor: 0.10

Lanes Hourly Volume (veh/h) in Peak Direction

Lanes	A	B	C	D	E
1	--	--	--	--	--
2	1480	2490	3290	--	3970
3	2080	3750	5360	--	5960
4	3130	5250	6940	--	7950
5	3130	6430	8510	--	9930

Lanes Hourly Volume (veh/h) in Both Directions

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	2970	4980	6580	--	7950
6	4160	7510	10730	--	11920
8	6260	10500	13890	--	15900
10	6260	12870	17030	--	19870

Lanes Annual Average Daily Traffic (veh)

Lanes	A	B	C	D	E
2	--	--	--	--	--
4	29700	49800	65800	--	79500
6	41600	75100	107300	--	119200
8	62600	105000	138900	--	159000
10	62600	128700	170300	--	198700

Notes

-- Not applicable for this facility type

-- No defined LOS threshold for this LOS level

Level of Service Analysis Service Volumes Report

HCM-CALC: Off-Ramp Segment - [Report]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Input Values and Intermediate Calculation Results

Mainline Data

# Lanes	Demand (veh/h)	Peak Hour Factor	Driver Population Factor
3	4500	0.950	1.000

Heavy Vehicle Factor Values

Terrain	% Grade	Length (mi)	% Trucks	% RVs	Truck PCE	RV PCE	Heavy Vehicle Factor
Rolling	N/A	N/A	5.0	0.0	2.50	2.00	0.930

Free Flow Speed Values

FFS Method	Measured
FFS, Rounded (mi/h)	60.0

Off-Ramp Data

Demand (veh/h)	% Trucks	% RVs	Heavy Vehicle Factor	FFS (mi/h)
300	5.00	0.00	0.930	40
Lanes	Decel Lane Length, 1 (ft)	Decel Lane Length, 2 (ft)	Effective Decel Lane Length (ft)	
1	500	N/A	500	

Analysis Flow Rates

Analysis Flow Rate, Mainline (pc/h/in)	Analysis Flow Rate, Off-Ramp (pc/h)	Prop. Vehicles in Lanes 1 and 2	Flow Rate in Lanes 1 and 2 (pc/h)
5092	339	0.617	3272.2

Adjacent Ramp Data

Adjacent Ramp Downstream

Type	Distance (ft)	Demand (veh/h)	% Trucks	% RVs	Heavy Vehicle Factor
OffRamp	750	500	5.00	0.00	0.930
Analysis Flow Rate (pc/h)		Equilibrium Length (ft)		Prop. Vehicles in Lanes 1 and 2	
565.8		656.5		0.617	

Performance Measures and LOS

v/c ratio	Avg. Speed, Ramp Influence Area (mi/h)	Density, Ramp Influence Area (pc/mi/in)
0.74	52.9	27.9
Avg. Speed, Overall (mi/h)		Density, Overall (pc/mi/in)
56.0		30.3
		LOS
		D

Service Volumes

Level of Service Analysis	Service Volumes	Report

Multilane Highway Segment

Level of Service Calculation Screen

HCM-CALC: Multilane Highway Segment - [Level of Service]

File View Help

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Filename

Number of Lanes: 3
Demand (veh/h): 2800
Peak Hour Factor: 0.950
Driver Population Factor: 1.000

Heavy Vehicle Factor

Terrain: Specific Grade (Composite)

General Terrain: ☒ Level ☐ Rolling ☐ Mountainous

Specific Grade

Length (mi): 1.250
Grade (%): 3.20

% Trucks: 10.0
% RVs: 5.0

Truck PCE (E_T): 3.00
RV PCE (E_R): 2.50
f_{HV}: 0.784

Segment Length

Mainline

Free-Flow Speed (FFS)

☒ Estimated ☐ Measured 70 mi/h

FFS Adjustment Factors

Lane Width (ft): 11.0
Median Type: Undivided

Lateral Clearance (ft): Left 6.0, Right 4.0, Total 10.0
Access Point Density (access points/mi): 10.0

BFFS (mi/h): 60
f_{LW} (mi/h): 1.9
f_M (mi/h): 1.6
f_{LC} (mi/h): 0.4
f_A (mi/h): 2.5
FFS, calculated (mi/h): 53.6
FFS, rounded (mi/h): 55

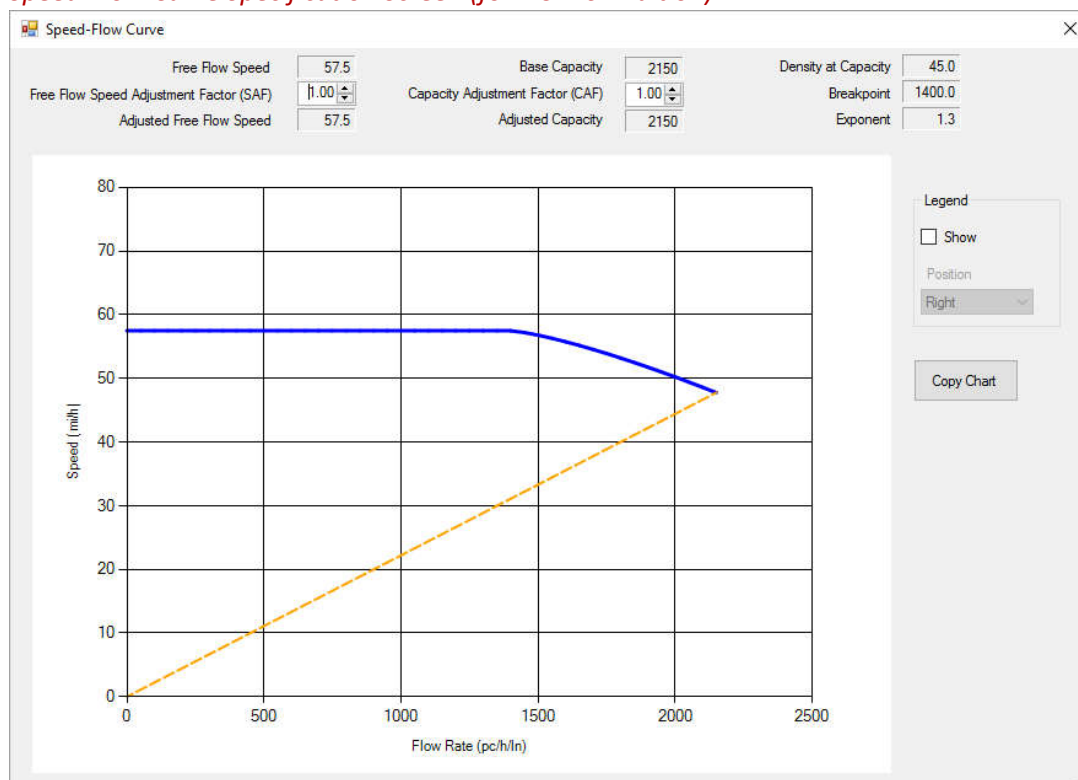
Calculate Performance Measures and LOS

Results

Analysis Flow Rate (pc/h/ln): 1253
Capacity (pc/h/ln): 2100
v/c: 0.60
Avg. Speed (mi/h): 55.0
Density (pc/mi/ln): 22.78
LOS: C

Level of Service Analysis Service Volumes Report

Speed-Flow Curve Specification Screen (for HCM 6th Edition)



HCM-CALC: Multilane Highway Segment - [Service Volumes]

File View Help

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For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

[Calculate Service Volumes](#)

D Factor

K Factor

Lanes	Hourly Volume (veh/h) in Peak Direction				
	A	B	C	D	E
1	450	740	1060	1380	1560
2	900	1480	2130	2760	3130
3	1350	2210	3190	4140	4690
4	--	--	--	--	--
5	--	--	--	--	--

Lanes	Hourly Volume (veh/h) in Both Directions				
	A	B	C	D	E
2	910	1480	2130	2760	3130
4	1810	2960	4260	5520	6260
6	2710	4430	6390	8280	9390
8	--	--	--	--	--
10	--	--	--	--	--

Lanes	Annual Average Daily Traffic (veh)				
	A	B	C	D	E
2	9100	14800	21300	27600	31300
4	18100	29600	42600	55200	62600
6	27100	44300	63900	82800	93900
8	--	--	--	--	--
10	--	--	--	--	--

Notes

-- Not applicable for this facility type

Level of Service Analysis **Service Volumes** Report

Formatted Report Screen

HCM-CALC: Multilane Highway Segment - [Report]

File View Help

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User Notes
File Name

Input Values and Intermediate Calculation Results

Mainline Data

# Lanes	Demand (veh/h)	Peak Hour Factor	Driver Population Factor
3	2800	0.950	1.000

Heavy Vehicle Factor Values

Terrain	% Grade	Length (mi)	% Trucks	% RVs	Truck PCE	RV PCE	Heavy Vehicle Factor
Specific Grade	3.20	1.250	10.0	5.0	3.00	2.50	0.784

Free Flow Speed Values

FFS Method	Estimated			
Input Values	Lane Width (ft)	Total Lateral Clearance (ft)	Median Type	Access Point Density (access pts/mi)
	11	10	Undivided	10
Adjustment Values	Lane Width (mi/h)	Total Lat. Clearance (mi/h)	Median Type (mi/h)	Access Point Density (mi/h)
	1.9	0.4	1.6	2.5
FFS, Base (mi/h)	60.0			
FFS, Calculated (mi/h)	53.6			
FFS, Rounded (mi/h)	55.0			

Performance Measures and LOS

Analysis Flow Rate (pc/h/ln)	Avg. Speed (mi/h)	Density (pc/mi/ln)	Capacity (pc/h/ln)	v/c ratio	LOS
1253	55.0	22.8	2100	0.60	C

Service Volumes

Lanes	A	B	C	D	E
	Hourly Volume In Peak Direction				
1	450	740	1060	1380	1560
2	900	1480	2130	2760	3130

Level of Service Analysis Service Volumes Report

Two-Lane Highway Segment

Level of Service Calculation Screen

No passing lane

HCM-CALC: Two-Lane Highway Segment - [Level of Service]

File View Help

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Filename

Note: "d" refers to analysis direction, "o" refers to opposing direction

Class 1

Demand, d (veh/h) 600

Demand, o (veh/h) 400

Directional Split 0.60

Peak Hour Factor 0.900

Passing Lane ☐

% No Passing Zones 20

Heavy Vehicle & Grade Adjustment Factors

Terrain General

General Terrain

Level ☒ Rolling ☐

Specific Grade

Length (mi) 0.25

Grade (%) 3.0

% Trucks 10

% RVs 5

Grade Adj. Fact. (f_G)

	d	o	d	o
Truck PCE (E _T)	1.00	1.10	1.10	1.30
RV PCE (E _R)	1.00	1.00	1.00	1.00
f _{HV}	1.000	0.990	0.990	0.971

Passing Lane Parameters

Total Segment Length, L_T (mi) 1.00

Length Upstream of Passing Lane, L_U (mi) 0.00

Length of Passing Lane, L_{PL} (mi) 0.00

Length Downstream within Effective Length, L_{de} (mi)

Length Downstream within Effective Length, L_{'de} (mi)

Length Downstream beyond Effective Length, L_d (mi)

Free-Flow Speed (FFS)

Estimated ☒ Measured ☐

Lane Width (ft) 11.0

Shoulder Width (ft) 3.0

Access Point Density (access points/mi) 8.0

BFFS (mi/h) 60

f_{LS} (mi/h) 3.0

f_A (mi/h) 2.0

FFS (mi/h) 55.0

Flow Rate (veh/h) 0

Adjusted FFS (mi/h) 70.0

Calculate Performance Measures and LOS

Results

	PTSF	ATS
Analysis Flow Rate, d (pc/h)	667	673
Analysis Flow Rate, o (pc/h)	449	458
Capacity, d (veh/h)	1700	1700
Coeff. 'a'	-0.0025	
Coeff. 'b'	0.9100	
Adj. for No-Passing Zones (f _{np}); %, mi/h	23.31	1.18
Adj. for Passing Lane (f _{pl})	N/A	N/A
v/c Ratio	0.40	
PTSF (%)	74.0	
Average Speed (mi/h)	45.0	
% Free Flow Speed	81.9	
LOS	D	
Service Measure	PTSF	

Level of Service Analysis Service Volumes Report

With passing lane

HCM-CALC: Two-Lane Highway Segment - [Level of Service]

File View Help

Licensed to: Beta Test Version; Trial Expires: 08/31/2016

Filename

Note: "d" refers to analysis direction, "o" refers to opposing direction

Class 1

Demand, d (veh/h) 600

Demand, o (veh/h) 400

Directional Split 0.60

Peak Hour Factor 0.900

Passing Lane ☒

% No Passing Zones 100

Heavy Vehicle & Grade Adjustment Factors

Terrain General

General Terrain

Level ☒ Rolling ☐

Specific Grade

Length (mi) 0.25

Grade (%) 3.0

% Trucks 10

% RVs 5

Grade Adj. Fact. (f_G)

	d	o	d	o
Truck PCE (E _T)	1.00	1.10	1.10	1.30
RV PCE (E _R)	1.00	1.00	1.00	1.00
f _{HV}	1.000	0.990	0.990	0.971

Passing Lane Parameters

Total Segment Length, L_T (mi) 2.00

Length Upstream of Passing Lane, L_U (mi) 1.00

Length of Passing Lane, L_{PL} (mi) 1.00

Length Downstream within Effective Length, L_{de} (mi)

Length Downstream within Effective Length, L_{'de} (mi)

Length Downstream beyond Effective Length, L_d (mi)

Free-Flow Speed (FFS)

Estimated ☒ Measured ☐

Lane Width (ft) 11.0

Shoulder Width (ft) 3.0

Access Point Density (access points/mi) 8.0

BFFS (mi/h) 60

f_{LS} (mi/h) 3.0

f_A (mi/h) 2.0

FFS (mi/h) 55.0

Flow Rate (veh/h) 0

Adjusted FFS (mi/h) 70.0

Calculate Performance Measures and LOS

Results

	PTSF	ATS
Analysis Flow Rate, d (pc/h)	667	673
Analysis Flow Rate, o (pc/h)	449	458
Capacity, d (veh/h)	1700	1700
Coeff. 'a'	-0.0025	
Coeff. 'b'	0.9100	
Adj. for No-Passing Zones (f _{np}); %, mi/h	33.94	2.54
Adj. for Passing Lane (f _{pl})	0.62	1.11
v/c Ratio	0.40	
PTSF (%)	64.9	
Average Speed (mi/h)	46.0	
% Free Flow Speed	83.6	
LOS	C	
Service Measure	PTSF	

Level of Service Analysis Service Volumes Report

Service Volumes Calculation Screen

HCM-CALC: Two-Lane Highway Segment - [Service Volumes]

File View Help

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Filename

For the service volumes to be displayed in formatted report, the results must first have been calculated on the LOS analysis screen. This will ensure that the service volumes shown in the report are based on the current LOS analysis input values.

Calculate Service Volumes

D Factor 0.60

K Factor 0.10

Lanes Hourly Volume (veh/h) in Peak Direction

Lanes	A	B	C	D	E
1	150	420	990	1700	1700
2	--	--	--	--	--
3	--	--	--	--	--
4	--	--	--	--	--
5	--	--	--	--	--

Lanes Hourly Volume (veh/h) in Both Directions

Lanes	A	B	C	D	E
2	250	700	1650	2830	2830
4	--	--	--	--	--
6	--	--	--	--	--
8	--	--	--	--	--
10	--	--	--	--	--

Lanes Annual Average Daily Traffic (veh)

Lanes	A	B	C	D	E
2	400	1200	2800	4700	4700
4	--	--	--	--	--
6	--	--	--	--	--
8	--	--	--	--	--
10	--	--	--	--	--

Notes

-- Not applicable for this facility type

Level of Service Analysis Service Volumes Report

Formatted Report Screen

HCM-CALC: Two-Lane Highway Segment - [Report] — □ ×

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Filename

Grade Adjustment Factor Values			
Terrain	Level		
Grade Adj. Factor PTSF (d)	Grade Adj. Factor PTSF (o)	Grade Adj. Factor ATS (d)	Grade Adj. Factor ATS (o)
1.00	1.00	1.00	1.00

Heavy Vehicle Factor Values					
Terrain	% Grade	Length (mi)	% Trucks	% RVs	
Level	N/A	N/A	10.0	5.0	
Truck PCE PTSF (d)	RV PCE PTSF (d)	Heavy Vehicle Factor PTSF (d)	Truck PCE ATS (d)	RV PCE ATS (d)	Heavy Vehicle Factor ATS (d)
1.00	1.00	1.000	1.10	1.00	0.990
Truck PCE PTSF (o)	RV PCE PTSF (o)	Heavy Vehicle Factor PTSF (o)	Truck PCE ATS (o)	RV PCE ATS (o)	Heavy Vehicle Factor ATS (o)
1.10	1.00	0.990	1.30	1.00	0.971

Free Flow Speed Adjustment Values			
FFS Method	Estimated		
Base FFS (mi/h)	60		
Input Values	Lane Width (ft)	Shoulder Width (ft)	Access Density (access pts/mi)
	11	3	8
Adjustment Values	Lane and Shoulder Width (mi/h)		Access Point Density (mi/h)
	3.0		2.0
FFS (mi/h)	70		

Passing Lane Values			
Total Segment Length (mi)	Length Upstream of Passing Lane (mi)	Passing Lane Length (mi)	
2.00	1.00	1.00	
PTSF L_d	PTSF L_de	PTSF L_de'	PTSF f_pl
-6.0	N/A	0.0	0.62
ATS L_d	ATS L_de	ATS L_de'	ATS f_pl
-1.7	N/A	0.0	1.11

Level of Service Analysis
Service Volumes
Report