

Appendix H
Road Segment Level of Service Calculations Worksheets

	Direction	1	2	
Flow rate, vp		750	917	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		B	C	
Density, D		16.7	20.4	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing AM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

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	695.1	903.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.14	3.52
Bicycle LOS	C	D

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1265	1645	vph
Peak-hour factor, PHF		0.91	0.91	
Peak 15-minute volume, v15		348	452	
Trucks and buses		2	3	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.985	
Flow rate, vp		750	917	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		943	774	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	B	
Density, D		21.0	17.2	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing PM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

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	873.2	770.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.25	2.96
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		1	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.3 mph	0.5 mph	
Free-flow speed		43.0 mph	42.7 mph	

VOLUME

	Direction	1	2	
Volume, V		1659 vph	1480 vph	
Peak-hour factor, PHF		0.95	0.96	
Peak 15-minute volume, v15		437	385	
Trucks and buses		2 %	1 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.73 mi	0.73 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.995	
Flow rate, vp		943 pcphpl	774 pcphpl	

RESULTS

	Direction	1	2	
Flow rate, vp		869	907	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		19.3	20.2	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing Saturday
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

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	835.7	902.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.00	3.04
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1521	1751	vph
Peak-hour factor, PHF		0.91	0.97	
Peak 15-minute volume, v15		418	451	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.962	0.995	
Flow rate, vp		869	907	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		928	881	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		20.6	19.6	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing AM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1466	1591	vph
Peak-hour factor, PHF		0.89	0.92	
Peak 15-minute volume, v15		412	432	
Trucks and buses		3	4	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.3	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.887	0.980	
Flow rate, vp		928	881	pcphpl

RESULTS

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	823.6	864.7
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.47	3.77
Bicycle LOS	C	D

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

	Direction	1	2	
Flow rate, vp		850	pcphpl	779 pcphpl
Free-flow speed, FFS		42.7	mph	42.7 mph
Avg. passenger-car travel speed, S		45.0	mph	45.0 mph
Level of service, LOS		C		B
Density, D		18.9	pc/mi/ln	17.3 pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing PM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		2	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.5 mph	0.5 mph	
Free-flow speed		42.7 mph	42.7 mph	

VOLUME

	Direction	1	2	
Volume, V		1563 vph	1466 vph	
Peak-hour factor, PHF		0.96	0.95	
Peak 15-minute volume, v15		407	386	
Trucks and buses		1 %	2 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.87 mi	0.87 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.990	
Flow rate, vp		850 pcphpl	779 pcphpl	

RESULTS

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	814.1	771.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.99	3.19
Bicycle LOS	C	C

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

	Direction	1	2	
Flow rate, vp		846	844	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		18.8	18.8	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing Saturday
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1507	1580	vph
Peak-hour factor, PHF		0.93	0.94	
Peak 15-minute volume, v15		405	420	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.995	
Flow rate, vp		846	844	pcphpl

RESULTS

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	810.2	840.4
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.98	3.00
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1591 veh/h
Opposing direction volume, Vo 1466 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.742
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1729 pc/h	2148 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	6.6	mi/h
Percent Free Flow Speed, PFFS	16.9	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1729 pc/h	1601 pc/h
Base percent time-spent-following,(note-4) BPTSFD	93.5 %	
Adjustment for no-passing zones, fnp	6.9	
Percent time-spent-following, PTSFD	97.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.02
Peak 15-min vehicle-miles of travel, VMT15	389 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1432 veh-mi
Peak 15-min total travel time, TT15	59.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	6.6	mi/h
Percent time-spent-following, PTSFD (from above)	97.1	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1729.3
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.97
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.95	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
Up/down	-6.0 %	Access point density	19	/mi

Analysis direction volume, V_d 1466 veh/h
 Opposing direction volume, V_o 1563 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.852
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1543 pc/h	1931 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 4.8 mi/h

Free-flow speed, FFSd 39.0 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 9.7 mi/h
 Percent Free Flow Speed, PFFS 24.9 %

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	0.998
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1543 pc/h	1649 pc/h
Base percent time-spent-following,(note-4) BPTSFD	91.8 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFD	95.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	0.91
Peak 15-min vehicle-miles of travel, VMT15	347 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1319 veh-mi
Peak 15-min total travel time, TT15	35.8 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	9.7	mi/h
Percent time-spent-following, PTSFD (from above)	95.1	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1543.2
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.43
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1580 veh/h
Opposing direction volume, Vo 1507 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.920
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1681 pc/h	1743 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	10.1	mi/h
Percent Free Flow Speed, PFFS	25.9	%

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1681 pc/h	1605 pc/h
Base percent time-spent-following,(note-4) BPTSFD	93.1 %	
Adjustment for no-passing zones, fnp	6.6	
Percent time-spent-following, PTSFD	96.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	0.99
Peak 15-min vehicle-miles of travel, VMT15	378 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1422 veh-mi
Peak 15-min total travel time, TT15	37.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	10.1	mi/h
Percent time-spent-following, PTSFD (from above)	96.5	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1680.9
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.26
 Bicycle LOS C

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing AM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.80
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 577 veh/h
 Opposing direction volume, V_o 668 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	738 pc/h	838 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.5 mi/h
 Percent Free Flow Speed, PFFS 67.7 %

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	0.92	1.00
Directional flow rate,(note-2) vi	782 pc/h	835 pc/h
Base percent time-spent-following,(note-4) BPTSFD	69.1 %	
Adjustment for no-passing zones, fnp	24.6	
Percent time-spent-following, PTSFD	81.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	54 veh-mi
Peak-hour vehicle-miles of travel, VMT60	173 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1678 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.5	mi/h
Percent time-spent-following, PTSFD (from above)	81.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	721.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.82
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing PM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.89
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 831 veh/h
Opposing direction volume, Vo 563 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	941 pc/h	634 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.5	mi/h
Percent Free Flow Speed, PFFS	67.7	%

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	0.92	1.00
Directional flow rate,(note-2) vi	1013 pc/h	633 pc/h
Base percent time-spent-following,(note-4) BPTSFd	74.9 %	
Adjustment for no-passing zones, fnp	23.3	
Percent time-spent-following, PTSFd	89.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.60
Peak 15-min vehicle-miles of travel, VMT15	70 veh-mi
Peak-hour vehicle-miles of travel, VMT60	249 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.5	mi/h
Percent time-spent-following, PTSFd (from above)	89.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 933.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.00
 Bicycle LOS C

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing Saturday
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 773 veh/h
 Opposing direction volume, V_o 758 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	844 pc/h	825 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.7 mi/h
 Percent Free Flow Speed, PFFS 66.1 %

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	0.92	1.00
Directional flow rate,(note-2) vi	911 pc/h	824 pc/h
Base percent time-spent-following,(note-4) BPTSFD	73.1 %	
Adjustment for no-passing zones, fnp	23.1	
Percent time-spent-following, PTSFD	85.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.54
Peak 15-min vehicle-miles of travel, VMT15	63 veh-mi
Peak-hour vehicle-miles of travel, VMT60	232 veh-mi
Peak 15-min total travel time, TT15	2.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.7	mi/h
Percent time-spent-following, PTSFD (from above)	85.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	840.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.45
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 668 veh/h
Opposing direction volume, Vo 577 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	2.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.963
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	691 pc/h	618 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.5	mi/h
Percent Free Flow Speed, PFFS	72.3	%

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	0.92
Directional flow rate, (note-2) vi	689 pc/h	645 pc/h
Base percent time-spent-following, (note-4) BPTSFd	63.5 %	
Adjustment for no-passing zones, fnp	29.9	
Percent time-spent-following, PTSFd	78.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	52 veh-mi
Peak-hour vehicle-miles of travel, VMT60	200 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.5	mi/h
Percent time-spent-following, PTSFd (from above)	78.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 688.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.04
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 563 veh/h
 Opposing direction volume, V_o 831 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	626 pc/h	926 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.7	mi/h
Percent Free Flow Speed, PFFS	68.1	%

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	0.92
Directional flow rate, (note-2) vi	626 pc/h	1001 pc/h
Base percent time-spent-following, (note-4) BPTSFD	63.9 %	
Adjustment for no-passing zones, fnp	23.6	
Percent time-spent-following, PTSFD	73.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.37
Peak 15-min vehicle-miles of travel, VMT15	47 veh-mi
Peak-hour vehicle-miles of travel, VMT60	169 veh-mi
Peak 15-min total travel time, TT15	1.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.7	mi/h
Percent time-spent-following, PTSFD (from above)	73.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	625.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.30
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 758 veh/h
Opposing direction volume, Vo 773 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.999	0.996
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	816 pc/h	835 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.9	mi/h
Percent Free Flow Speed, PFFS	66.4	%

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	0.92
Directional flow rate, (note-2) vi	815 pc/h	901 pc/h
Base percent time-spent-following, (note-4) BPTSFd	70.9 %	
Adjustment for no-passing zones, fnp	23.4	
Percent time-spent-following, PTSFd	82.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	61 veh-mi
Peak-hour vehicle-miles of travel, VMT60	227 veh-mi
Peak 15-min total travel time, TT15	2.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.9	mi/h
Percent time-spent-following, PTSFd (from above)	82.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 815.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.45
 Bicycle LOS B

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing AM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.85	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 329 veh/h
 Opposing direction volume, V_o 442 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.997	0.998
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	388 pc/h	521 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 34.9 mi/h
 Percent Free Flow Speed, PFFS 78.9 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)		
PCE for trucks, ET	1.1	1.0		
PCE for RVs, ER	1.0	1.0		
Heavy-vehicle adjustment factor, fHV	0.999	1.000		
Grade adjustment factor,(note-1) fg	1.00	1.00		
Directional flow rate,(note-2) vi	387	520	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	44.4	%		
Adjustment for no-passing zones, fnp	40.0			
Percent time-spent-following, PTSFD	61.5	%		

-----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	29	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	99	veh-mi	
Peak 15-min total travel time, TT15	0.8	veh-h	
Capacity from ATS, CdATS	1697	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.3	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)	61.5		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	387.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.06
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing PM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 683 veh/h
Opposing direction volume, Vo 513 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.997	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	761 pc/h	572 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.6	mi/h
Percent Free Flow Speed, PFFS	71.4	%

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	759 pc/h	570 pc/h
Base percent time-spent-following, (note-4) BPTSFD	64.9 %	
Adjustment for no-passing zones, fnp	29.5	
Percent time-spent-following, PTSFD	81.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.45
Peak 15-min vehicle-miles of travel, VMT15	57 veh-mi
Peak-hour vehicle-miles of travel, VMT60	205 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.6	mi/h
Percent time-spent-following, PTSFD (from above)	81.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 758.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.84
 Bicycle LOS C

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing Saturday
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.87	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 586 veh/h
 Opposing direction volume, V_o 684 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.999	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	674 pc/h	787 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.6 mi/h
 Percent Free Flow Speed, PFFS 69.2 %

-----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	674 pc/h	786 pc/h
Base percent time-spent-following,(note-4) BPTSFD	63.9 %	
Adjustment for no-passing zones, fnp	27.1	
Percent time-spent-following, PTSFD	76.4 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.40
Peak 15-min vehicle-miles of travel, VMT15	51 veh-mi
Peak-hour vehicle-miles of travel, VMT60	176 veh-mi
Peak 15-min total travel time, TT15	1.7 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.3	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)	30.6	mi/h
Percent time-spent-following, PTSFD (from above)	76.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	673.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.34
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 442 veh/h
Opposing direction volume, Vo 329 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.988
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	490 pc/h	366 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	35.3	mi/h
Percent Free Flow Speed, PFFS	79.8	%

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	486 pc/h	363 pc/h
Base percent time-spent-following,(note-4) BPTSFd	48.8 %	
Adjustment for no-passing zones, fnp	41.5	
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	0.29
Peak 15-min vehicle-miles of travel, VMT15	36 veh-mi
Peak-hour vehicle-miles of travel, VMT60	133 veh-mi
Peak 15-min total travel time, TT15	1.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1693 veh/h
Directional Capacity	1693 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	35.3	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 485.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.87
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.93	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 513 veh/h
 Opposing direction volume, V_o 683 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	552 pc/h	734 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 0.8 mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 32.0 mi/h
 Percent Free Flow Speed, PFFS 72.3 %

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	552 pc/h	734 pc/h
Base percent time-spent-following,(note-4) BPTSFD	57.3 %	
Adjustment for no-passing zones, fnp	30.6	
Percent time-spent-following, PTSFD	70.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.32
Peak 15-min vehicle-miles of travel, VMT15	41 veh-mi
Peak-hour vehicle-miles of travel, VMT60	154 veh-mi
Peak 15-min total travel time, TT15	1.3 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.0	mi/h
Percent time-spent-following, PTSFD (from above)	70.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	551.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.05
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 684 veh/h
Opposing direction volume, Vo 586 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	705 pc/h	604 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	0.8	mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.8	mi/h
Percent Free Flow Speed, PFFS	71.8	%

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	705 pc/h	604 pc/h
Base percent time-spent-following,(note-4) BPTSFd	62.7 %	
Adjustment for no-passing zones, fnp	30.6	
Percent time-spent-following, PTSFd	79.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	53 veh-mi
Peak-hour vehicle-miles of travel, VMT60	205 veh-mi
Peak 15-min total travel time, TT15	1.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.8	mi/h
Percent time-spent-following, PTSFd (from above)	79.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 705.2
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.19
 Bicycle LOS B

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing AM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 380 veh/h
 Opposing direction volume, V_o 843 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.977	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	427 pc/h	926 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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.7 mi/h
 Percent Free Flow Speed, PFFS 70.6 %

-----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	418 pc/h	926 pc/h
Base percent time-spent-following,(note-4) BPTSFD	51.3 %	
Adjustment for no-passing zones, fnp	24.1	
Percent time-spent-following, PTSFD	58.8 %	

-----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	157 veh-mi
Peak-hour vehicle-miles of travel, VMT60	570 veh-mi
Peak 15-min total travel time, TT15	5.1 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	1.5	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)	30.7	mi/h
Percent time-spent-following, PTSFD (from above)	58.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	417.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.16
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing PM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 908 veh/h
Opposing direction volume, Vo 438 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.984
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	987 pc/h	484 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 6.5 mi/h
Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 29.8 mi/h
Percent Free Flow Speed, PFFS 68.5 %

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	987 pc/h	476 pc/h
Base percent time-spent-following,(note-4) BPTSFD	73.1 %	
Adjustment for no-passing zones, fnp	22.7	
Percent time-spent-following, PTSFD	88.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.58
Peak 15-min vehicle-miles of travel, VMT15	370 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1362 veh-mi
Peak 15-min total travel time, TT15	12.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5 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)	29.8 mi/h
Percent time-spent-following, PTSFD (from above)	88.4 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 987.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.56
 Bicycle LOS E

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing Saturday
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 671 veh/h
 Opposing direction volume, V_o 538 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.1	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.992		0.992	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	735	pc/h		589	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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.9	mi/h
Percent Free Flow Speed, PFFS	71.1	%

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	729 pc/h	585 pc/h
Base percent time-spent-following,(note-4) BPTSFD	63.8 %	
Adjustment for no-passing zones, fnp	30.1	
Percent time-spent-following, PTSFD	80.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	274 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1007 veh-mi
Peak 15-min total travel time, TT15	8.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	30.9	mi/h
Percent time-spent-following, PTSFD (from above)	80.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	729.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.40
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 843 veh/h
Opposing direction volume, Vo 380 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.984
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1028 pc/h	471 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 6.5 mi/h
Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 29.6 mi/h
Percent Free Flow Speed, PFFS 68.0 %

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	1028 pc/h	463 pc/h
Base percent time-spent-following, (note-4) BPTSFd	73.8 %	
Adjustment for no-passing zones, fnp	21.6	
Percent time-spent-following, PTSFd	88.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.60
Peak 15-min vehicle-miles of travel, VMT15	386 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1265 veh-mi
Peak 15-min total travel time, TT15	13.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5 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)	29.6 mi/h
Percent time-spent-following, PTSFd (from above)	88.7 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1028.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.57
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 438 veh/h
 Opposing direction volume, V_o 908 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.2		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.984		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	543	pc/h		1107	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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.4	mi/h
Percent Free Flow Speed, PFFS	65.3	%

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	534 pc/h	1107 pc/h
Base percent time-spent-following,(note-4) BPTSFD	60.8 %	
Adjustment for no-passing zones, fnp	20.2	
Percent time-spent-following, PTSFD	67.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.31
Peak 15-min vehicle-miles of travel, VMT15	200 veh-mi
Peak-hour vehicle-miles of travel, VMT60	657 veh-mi
Peak 15-min total travel time, TT15	7.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.4	mi/h
Percent time-spent-following, PTSFD (from above)	67.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	534.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.24
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 538 veh/h
Opposing direction volume, Vo 671 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	661 pc/h	825 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.7	mi/h
Percent Free Flow Speed, PFFS	68.2	%

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	656 pc/h	818 pc/h
Base percent time-spent-following,(note-4) BPTSFd	63.2 %	
Adjustment for no-passing zones, fnp	26.7	
Percent time-spent-following, PTSFd	75.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.39
Peak 15-min vehicle-miles of travel, VMT15	246 veh-mi
Peak-hour vehicle-miles of travel, VMT60	807 veh-mi
Peak 15-min total travel time, TT15	8.3 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.7	mi/h
Percent time-spent-following, PTSFd (from above)	75.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 656.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.34
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing AM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 533 veh/h
 Opposing direction volume, V_o 909 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	655 pc/h	1117 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h

Free-flow speed, FFSd 51.5 mi/h

Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 35.9 mi/h
 Percent Free Flow Speed, PFFS 69.8 %

-----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	0.92		
Directional flow rate,(note-2) vi	650	1205	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.7	%		
Adjustment for no-passing zones, fnp	18.7			
Percent time-spent-following, PTSFD	74.3	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.38		
Peak 15-min vehicle-miles of travel, VMT15	390	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1279	veh-mi	
Peak 15-min total travel time, TT15	10.8	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	35.9	mi/h	
Percent time-spent-following, PTSFD (from above)	74.3		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	650.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.28
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing PM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 970 veh/h
Opposing direction volume, Vo 500 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.8
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.941
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1183 pc/h	648 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h

Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	35.5	mi/h
Percent Free Flow Speed, PFFS	68.9	%

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	0.92
Directional flow rate,(note-2) vi	1183 pc/h	663 pc/h
Base percent time-spent-following,(note-4) BPTSFd	79.9 %	
Adjustment for no-passing zones, fnp	17.9	
Percent time-spent-following, PTSFd	91.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.70
Peak 15-min vehicle-miles of travel, VMT15	710 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2328 veh-mi
Peak 15-min total travel time, TT15	20.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.5	mi/h
Percent time-spent-following, PTSFd (from above)	91.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1182.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.64
 Bicycle LOS E

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
- * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing Saturday
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 585 veh/h
 Opposing direction volume, V_o 735 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.991
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	719 pc/h	904 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	37.1	mi/h
Percent Free Flow Speed, PFFS	72.0	%

-----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	0.92		
Directional flow rate,(note-2) vi	713	974	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.4	%		
Adjustment for no-passing zones, fnp	23.1			
Percent time-spent-following, PTSFD	77.2	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.42		
Peak 15-min vehicle-miles of travel, VMT15	428	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1404	veh-mi	
Peak 15-min total travel time, TT15	11.5	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	37.1	mi/h	
Percent time-spent-following, PTSFD (from above)	77.2		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	713.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.39
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 909 veh/h
Opposing direction volume, Vo 533 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1190 pc/h	698 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	35.0	mi/h
Percent Free Flow Speed, PFFS	68.1	%

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	0.92	1.00
Directional flow rate,(note-2) vi	1283 pc/h	692 pc/h
Base percent time-spent-following,(note-4) BPTSFd	82.6	%
Adjustment for no-passing zones, fnp	16.8	
Percent time-spent-following, PTSFd	93.5	%

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.75
Peak 15-min vehicle-miles of travel, VMT15	708 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2182 veh-mi
Peak 15-min total travel time, TT15	20.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.0	mi/h
Percent time-spent-following, PTSFd (from above)	93.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1180.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.64
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 500 veh/h
 Opposing direction volume, V_o 970 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.943	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	689 pc/h	1260 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 34.6 mi/h
 Percent Free Flow Speed, PFFS 67.1 %

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	0.92	1.00
Directional flow rate,(note-2) vi	706 pc/h	1260 pc/h
Base percent time-spent-following,(note-4) BPTSFD	70.6 %	
Adjustment for no-passing zones, fnp	16.1	
Percent time-spent-following, PTSFD	76.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	390 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1200 veh-mi
Peak 15-min total travel time, TT15	11.3 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	34.6	mi/h
Percent time-spent-following, PTSFD (from above)	76.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	649.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.34
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 735 veh/h
Opposing direction volume, Vo 585 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	785 pc/h	623 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	38.8	mi/h
Percent Free Flow Speed, PFFS	75.3	%

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	0.92	1.00
Directional flow rate, (note-2) vi	850 pc/h	622 pc/h
Base percent time-spent-following, (note-4) BPTSFd	69.0 %	
Adjustment for no-passing zones, fnp	26.7	
Percent time-spent-following, PTSFd	84.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.50
Peak 15-min vehicle-miles of travel, VMT15	469 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1764 veh-mi
Peak 15-min total travel time, TT15	12.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	38.8	mi/h
Percent time-spent-following, PTSFd (from above)	84.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 781.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 2.46
 Bicycle LOS B

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing AM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

----- 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		4	
Median type			Divided		Divided	
Free-flow speed:			Base		Base	
FFS or BFFS			55.0	mph	55.0	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	1.0	mph
Free-flow speed			53.0	mph	54.0	mph

----- VOLUME -----

	Direction		1		2	
Volume, V			691	vph	892	vph
Peak-hour factor, PHF			0.80		0.87	
Peak 15-minute volume, v15			216		256	
Trucks and buses			3	%	1	%
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			0.985		0.995	
Flow rate, vp			438	pcphpl	515	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			438	515	pcphp1
Free-flow speed, FFS			53.0	54.0	mph
Avg. passenger-car travel speed, S			55.0	55.0	mph
Level of service, LOS			A	A	
Density, D			8.0	9.4	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	431.9	512.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.69	2.29
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing PM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	12.0	ft
Lateral clearance:					
Right edge			6.0	6.0	ft
Left edge			6.0	6.0	ft
Total lateral clearance			12.0	12.0	ft
Access points per mile			8	4	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	55.0	mph
Lane width adjustment, FLW			0.0	0.0	mph
Lateral clearance adjustment, FLC			0.0	0.0	mph
Median type adjustment, FM			0.0	0.0	mph
Access points adjustment, FA			2.0	1.0	mph
Free-flow speed			53.0	54.0	mph

VOLUME

	Direction		1	2	
Volume, V			968	650	vph
Peak-hour factor, PHF			0.88	0.93	
Peak 15-minute volume, v15			275	175	
Trucks and buses			1	1	%
Recreational vehicles			0	0	%
Terrain type			Level	Level	
Grade			0.00	0.00	%
Segment length			0.00	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			0.995	0.995	
Flow rate, vp			552	351	pcphp1

RESULTS

	Direction		1	2	
Flow rate, vp			552	pcphpl 351	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			10.0	pc/mi/ln 6.4	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	550.0	349.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.33	2.13
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing Saturday
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

----- 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		4
Median type			Divided		Divided
Free-flow speed:			Base		Base
FFS or BFFS			55.0	mph 55.0	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 1.0	mph
Free-flow speed			53.0	mph 54.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			778	vph 768	vph
Peak-hour factor, PHF			0.91	0.94	
Peak 15-minute volume, v15			214	204	
Trucks and buses			1	% 1	%
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			0.995	0.995	
Flow rate, vp			429	pcphpl 410	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			429	410	pcphpl
Free-flow speed, FFS			53.0	54.0	mph
Avg. passenger-car travel speed, S			55.0	55.0	mph
Level of service, LOS			A	A	
Density, D			7.8	7.5	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	427.5	408.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.22	2.18
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing AM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	12.0	ft
Lateral clearance:					
Right edge			6.0	6.0	ft
Left edge			6.0	6.0	ft
Total lateral clearance			12.0	12.0	ft
Access points per mile			8	8	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	55.0	mph
Lane width adjustment, FLW			0.0	0.0	mph
Lateral clearance adjustment, FLC			0.0	0.0	mph
Median type adjustment, FM			0.0	0.0	mph
Access points adjustment, FA			2.0	2.0	mph
Free-flow speed			53.0	53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			985	1181	vph
Peak-hour factor, PHF			0.86	0.68	
Peak 15-minute volume, v15			286	434	
Trucks and buses			2	2	%
Recreational vehicles			0	0	%
Terrain type			Level	Level	
Grade			0.00	0.00	%
Segment length			0.00	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			0.990	0.990	
Flow rate, vp			578	877	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			578	pcphpl 877	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	B	
Density, D			10.5	pc/mi/ln 15.9	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	572.7	868.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.58	2.79
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing PM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1243	vph 938	vph
Peak-hour factor, PHF			0.95		0.88
Peak 15-minute volume, v15			327		266
Trucks and buses			2	% 1	%
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			0.990		0.995
Flow rate, vp			660	pcphpl 535	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			660	pcphpl 535	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	A	
Density, D			12.0	pc/mi/ln 9.7	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	654.2	533.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.65	2.31
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing Saturday
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			978	vph 970	vph
Peak-hour factor, PHF			0.96		0.94
Peak 15-minute volume, v15			255		258
Trucks and buses			1	% 1	%
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			0.995		0.995
Flow rate, vp			511	pcphpl 518	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp	511	pcphpl	518	pcphpl	
Free-flow speed, FFS	53.0	mph	53.0	mph	
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph	
Level of service, LOS	A		A		
Density, D	9.3	pc/mi/ln	9.4	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	509.4	516.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.29	2.30
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing AM
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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	0		0		
Median type	Divided		Divided		
Free-flow speed:	Base		Base		
FFS or BFFS	55.0	mph	55.0	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	0.0	mph	0.0	mph	
Free-flow speed	55.0	mph	55.0	mph	

----- VOLUME -----

	Direction		1	2	
Volume, V	1010	vph	976	vph	
Peak-hour factor, PHF	0.86		0.76		
Peak 15-minute volume, v15	294		321		
Trucks and buses	2	%	2	%	
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	0.990		0.990		
Flow rate, vp	593	pcphpl	648	pcphpl	

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			593	pcphpl 648	pcphpl
Free-flow speed, FFS			55.0	mph 55.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	B	
Density, D			10.8	pc/mi/ln 11.8	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	587.2	642.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.59	2.64
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing PM
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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			0		0
Median type			Divided		Divided
Free-flow speed:			Base		Base
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			980	vph 849	vph
Peak-hour factor, PHF			0.95		0.90
Peak 15-minute volume, v15			258		236
Trucks and buses			2	% 2	%
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			0.990		0.990
Flow rate, vp			520	pcphpl 476	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			520	pcphpl 476	pcphpl
Free-flow speed, FFS			55.0	mph 55.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			9.5	pc/mi/ln 8.7	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	515.8	471.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.58	2.57
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing Saturday
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			888	vph 802	vph
Peak-hour factor, PHF			0.96	0.98	
Peak 15-minute volume, v15			231	205	
Trucks and buses			2	% 2	%
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			0.990	0.990	
Flow rate, vp			467	pcphpl 413	pcphpl

----- RESULTS -----

	Direction	1	2	
Flow rate, vp		467	pcphpl 413	pcphpl
Free-flow speed, FFS		55.0	mph 55.0	mph
Avg. passenger-car travel speed, S		55.0	mph 55.0	mph
Level of service, LOS		A	A	
Density, D		8.5	pc/mi/ln 7.5	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	462.5	409.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.48	2.45
Bicycle LOS	B	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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 293 veh/h
Opposing direction volume, Vo 403 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	2.0	1.8
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.971	0.977
Grade adj. factor, (note-1) fg	0.89	0.96
Directional flow rate, (note-2) vi	446 pc/h	565 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.3	mi/h
Percent Free Flow Speed, PFFS	76.1	%

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.982	0.994
Grade adjustment factor,(note-1) fg	0.89	0.96
Directional flow rate,(note-2) vi	441 pc/h	556 pc/h
Base percent time-spent-following,(note-4) BPTSFD	48.6 %	
Adjustment for no-passing zones, fnp	37.5	
Percent time-spent-following, PTSFD	65.2 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	C
Volume to capacity ratio, v/c	0.26
Peak 15-min vehicle-miles of travel, VMT15	251 veh-mi
Peak-hour vehicle-miles of travel, VMT60	762 veh-mi
Peak 15-min total travel time, TT15	7.8 veh-h
Capacity from ATS, CdATS	1598 veh/h
Capacity from PTSF, CdPTSF	1639 veh/h
Directional Capacity	1639 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	32.3	mi/h
Percent time-spent-following, PTSFD (from above)	65.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	385.5
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.96
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.88
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 653 veh/h
Opposing direction volume, Vo 477 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.5	1.8
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.990	0.984
Grade adj. factor,(note-1) fg	0.98	0.96
Directional flow rate,(note-2) vi	765 pc/h	574 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.8	mi/h
Percent Free Flow Speed, PFFS	70.1	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	1.000	0.996
Grade adjustment factor,(note-1) fg	0.99	0.96
Directional flow rate,(note-2) vi	750 pc/h	567 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.8 %	
Adjustment for no-passing zones, fnp	29.6	
Percent time-spent-following, PTSFd	81.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.44
Peak 15-min vehicle-miles of travel, VMT15	482 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1698 veh-mi
Peak 15-min total travel time, TT15	16.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1642 veh/h
Directional Capacity	1642 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.8	mi/h
Percent time-spent-following, PTSFd (from above)	81.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 742.0
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.06
 Bicycle LOS C

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
- * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 553 veh/h
 Opposing direction volume, V_o 649 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.993	0.994
Grade adj. factor, (note-1) fg	0.97	0.98
Directional flow rate, (note-2) v_i	604 pc/h	701 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.0 mi/h
 Percent Free Flow Speed, PFFS 70.7 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)		
PCE for trucks, ET	1.2	1.0		
PCE for RVs, ER	1.0	1.0		
Heavy-vehicle adjustment factor, fHV	0.998	1.000		
Grade adjustment factor,(note-1) fg	0.97	0.99		
Directional flow rate,(note-2) vi	601	690	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	59.0	%		
Adjustment for no-passing zones, fnp	31.1			
Percent time-spent-following, PTSFD	73.5	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.35		
Peak 15-min vehicle-miles of travel, VMT15	378	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1438	veh-mi	
Peak 15-min total travel time, TT15	12.6	veh-h	
Capacity from ATS, CdATS	1656	veh/h	
Capacity from PTSF, CdPTSF	1683	veh/h	
Directional Capacity	1683	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	30.0	mi/h	
Percent time-spent-following, PTSFD (from above)	73.5		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	582.1
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.73
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 403 veh/h
Opposing direction volume, Vo 293 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.974	0.968
Grade adj. factor, (note-1) fg	0.92	0.84
Directional flow rate, (note-2) vi	489 pc/h	392 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	33.3	mi/h
Percent Free Flow Speed, PFFS	78.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.988	0.982
Grade adjustment factor, (note-1) fg	0.92	0.86
Directional flow rate, (note-2) vi	482 pc/h	377 pc/h
Base percent time-spent-following, (note-4) BPTSFd	47.9 %	
Adjustment for no-passing zones, fnp	41.0	
Percent time-spent-following, PTSFd	70.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	285 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1048 veh-mi
Peak 15-min total travel time, TT15	8.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1486 veh/h
Directional Capacity	1486 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	33.3	mi/h
Percent time-spent-following, PTSFd (from above)	70.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 438.0
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.12
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 477 veh/h
 Opposing direction volume, V_o 653 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.982
Grade adj. factor, (note-1) fg	0.95	0.98
Directional flow rate, (note-2) v_i	553 pc/h	730 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h
 Free-flow speed, FFSd 42.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.2 mi/h
 Percent Free Flow Speed, PFFS 71.1 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)		
PCE for trucks, ET	1.2	1.0		
PCE for RVs, ER	1.0	1.0		
Heavy-vehicle adjustment factor, fHV	0.994	1.000		
Grade adjustment factor,(note-1) fg	0.96	0.99		
Directional flow rate,(note-2) vi	537	709	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	56.7	%		
Adjustment for no-passing zones, fnp	31.4			
Percent time-spent-following, PTSFD	70.2	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.32		
Peak 15-min vehicle-miles of travel, VMT15	333	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1240	veh-mi	
Peak 15-min total travel time, TT15	11.0	veh-h	
Capacity from ATS, CdATS	1636	veh/h	
Capacity from PTSF, CdPTSF	1683	veh/h	
Directional Capacity	1683	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	30.2	mi/h	
Percent time-spent-following, PTSFD (from above)	70.2		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	512.9
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 649 veh/h
Opposing direction volume, Vo 553 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.982	0.979
Grade adj. factor,(note-1) fg	0.98	0.97
Directional flow rate,(note-2) vi	733 pc/h	633 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.5	mi/h
Percent Free Flow Speed, PFFS	69.6	%

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	0.99	0.97
Directional flow rate,(note-2) vi	713 pc/h	620 pc/h
Base percent time-spent-following,(note-4) BPTSFd	63.4 %	
Adjustment for no-passing zones, fnp	29.9	
Percent time-spent-following, PTSFd	79.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	459 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1687 veh-mi
Peak 15-min total travel time, TT15	15.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1649 veh/h
Directional Capacity	1649 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.5	mi/h
Percent time-spent-following, PTSFd (from above)	79.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSPpl	-	%

Level of Service and Other Performance Measures with Passing Lane

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

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 705.4
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.26
 Bicycle LOS C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

-----OPERATIONAL ANALYSIS-----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project AM
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

-----FREE-FLOW SPEED-----

	Direction 1		Direction 2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	5.0	ft	5.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	11.0	ft	11.0	ft
Access points per mile	1		2	
Median type	Undivided		Undivided	
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	0.2	mph	0.2	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.5	mph
Free-flow speed	43.0	mph	42.7	mph

-----VOLUME-----

	Direction 1		Direction 2	
Volume, V	1268	vph	1650	vph
Peak-hour factor, PHF	0.91		0.91	
Peak 15-minute volume, v15	348		453	
Trucks and buses	2	%	3	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	6.00	%	-6.00	%
Segment length	0.73	mi	0.73	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	5.0		1.5	
Recreational vehicles PCE, ER	6.0		1.2	
Heavy vehicle adjustment, fHV	0.926		0.985	
Flow rate, vp	752	pcphpl	920	pcphpl

-----RESULTS-----

	Direction		1	2	
Flow rate, vp			752	920	pcphpl
Free-flow speed, FFS			43.0	42.7	mph
Avg. passenger-car travel speed, S			45.0	45.0	mph
Level of service, LOS			B	C	
Density, D			16.7	20.4	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	696.7	906.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.14	3.52
Bicycle LOS	C	D

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing + Project PM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	12.0	ft
Lateral clearance:					
Right edge			5.0	5.0	ft
Left edge			6.0	6.0	ft
Total lateral clearance			11.0	11.0	ft
Access points per mile			1	2	
Median type			Undivided	Undivided	
Free-flow speed:			Base	Base	
FFS or BFFS			45.0	45.0	mph
Lane width adjustment, FLW			0.0	0.0	mph
Lateral clearance adjustment, FLC			0.2	0.2	mph
Median type adjustment, FM			1.6	1.6	mph
Access points adjustment, FA			0.3	0.5	mph
Free-flow speed			43.0	42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1674	1493	vph
Peak-hour factor, PHF			0.95	0.96	
Peak 15-minute volume, v15			441	389	
Trucks and buses			2	1	%
Recreational vehicles			0	0	%
Terrain type			Grade	Grade	
Grade			6.00	-6.00	%
Segment length			0.73	0.73	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.926	0.995	
Flow rate, vp			951	781	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			951	pcphpl 781	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	B	
Density, D			21.1	pc/mi/ln 17.4	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	881.1	777.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.26	2.96
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project Saturday
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			1	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.3	mph 0.5	mph
Free-flow speed			43.0	mph 42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1542	vph 1770	vph
Peak-hour factor, PHF			0.91	0.97	
Peak 15-minute volume, v15			424	456	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.73	mi 0.73	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.962	0.995	
Flow rate, vp			881	pcphpl 916	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			881	pcphpl 916	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			19.6	pc/mi/ln 20.4	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	847.3	912.4
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.01	3.04
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing + Project AM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1471	vph 1599	vph
Peak-hour factor, PHF			0.89	0.92	
Peak 15-minute volume, v15			413	435	
Trucks and buses			3	% 4	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.3	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.887	0.980	
Flow rate, vp			931	pcphpl 886	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			931	pcphpl 886	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			20.7	pc/mi/ln 19.7	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	826.4	869.0
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.47	3.77
Bicycle LOS	C	D

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing + Project PM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1590	vph 1488	vph
Peak-hour factor, PHF			0.96		0.95
Peak 15-minute volume, v15			414		392
Trucks and buses			1	% 2	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00		1.00
Trucks and buses PCE, ET			5.5		1.5
Recreational vehicles PCE, ER			6.0		1.2
Heavy vehicle adjustment, fHV			0.957		0.990
Flow rate, vp			865	pcphpl 790	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			865	pcphpl 790	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	B	
Density, D			19.2	pc/mi/ln 17.6	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	828.1	783.2
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.00	3.20
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Existing + Project Saturday
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1544	vph 1615	vph
Peak-hour factor, PHF			0.93	0.94	
Peak 15-minute volume, v15			415	430	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.5	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.957	0.995	
Flow rate, vp			867	pcphpl 863	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		867	pcphpl 863	pcphpl
Free-flow speed, FFS		42.7	mph 42.7	mph
Avg. passenger-car travel speed, S		45.0	mph 45.0	mph
Level of service, LOS		C	C	
Density, D		19.3	pc/mi/ln 19.2	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	830.1	859.0
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.00	3.01
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1599 veh/h
Opposing direction volume, Vo 1471 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.742
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1738 pc/h	2155 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	6.4	mi/h
Percent Free Flow Speed, PFFS	16.5	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1738 pc/h	1607 pc/h
Base percent time-spent-following,(note-4) BPTSFD	93.6 %	
Adjustment for no-passing zones, fnp	7.0	
Percent time-spent-following, PTSFD	97.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.02
Peak 15-min vehicle-miles of travel, VMT15	391 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1439 veh-mi
Peak 15-min total travel time, TT15	60.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	6.4	mi/h
Percent time-spent-following, PTSFD (from above)	97.2	
Level of service, LOSD (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1738.0
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.97
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1488 veh/h
Opposing direction volume, Vo 1590 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.852
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1566 pc/h	1964 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	9.3	mi/h
Percent Free Flow Speed, PFFS	23.8	%

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	0.998
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1566 pc/h	1678 pc/h
Base percent time-spent-following,(note-4) BPTSFD	92.0 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFD	95.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	0.92
Peak 15-min vehicle-miles of travel, VMT15	352 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1339 veh-mi
Peak 15-min total travel time, TT15	38.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	9.3	mi/h
Percent time-spent-following, PTSFD (from above)	95.3	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1566.3
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.44
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94	
Shoulder width	5.0 ft	% Trucks and buses	1	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
Up/down	-6.0 %	Access point density	19	/mi

Analysis direction volume, V_d 1615 veh/h
 Opposing direction volume, V_o 1544 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.920
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1718 pc/h	1785 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 4.8 mi/h
 Free-flow speed, FFSd 39.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 9.5 mi/h
 Percent Free Flow Speed, PFFS 24.3 %

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1718 pc/h	1645 pc/h
Base percent time-spent-following,(note-4) BPTSFD	93.4 %	
Adjustment for no-passing zones, fnp	6.6	
Percent time-spent-following, PTSFD	96.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.01
Peak 15-min vehicle-miles of travel, VMT15	387 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1453 veh-mi
Peak 15-min total travel time, TT15	40.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	9.5	mi/h
Percent time-spent-following, PTSFD (from above)	96.8	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1718.1
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.27
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.80
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 582 veh/h
Opposing direction volume, Vo 676 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.977	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	745 pc/h	848 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.3	mi/h
Percent Free Flow Speed, PFFS	67.4	%

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	0.92	1.00
Directional flow rate,(note-2) vi	789 pc/h	845 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.4 %	
Adjustment for no-passing zones, fnp	24.3	
Percent time-spent-following, PTSFd	81.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	55 veh-mi
Peak-hour vehicle-miles of travel, VMT60	175 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1680 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	81.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 727.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.82
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project PM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.89
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 858 veh/h
 Opposing direction volume, V_o 586 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	972 pc/h	660 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.0 mi/h
 Percent Free Flow Speed, PFFS 66.7 %

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	0.92	1.00
Directional flow rate,(note-2) vi	1046 pc/h	658 pc/h
Base percent time-spent-following,(note-4) BPTSFD	75.7 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFD	89.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.62
Peak 15-min vehicle-miles of travel, VMT15	72 veh-mi
Peak-hour vehicle-miles of travel, VMT60	257 veh-mi
Peak 15-min total travel time, TT15	2.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.0	mi/h
Percent time-spent-following, PTSFD (from above)	89.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	964.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.96
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project Saturday
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 811 veh/h
Opposing direction volume, Vo 795 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.997	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	884 pc/h	864 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.1	mi/h
Percent Free Flow Speed, PFFS	64.7	%

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	0.92	1.00
Directional flow rate,(note-2) vi	956 pc/h	864 pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.1 %	
Adjustment for no-passing zones, fnp	21.7	
Percent time-spent-following, PTSFd	86.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.56
Peak 15-min vehicle-miles of travel, VMT15	66 veh-mi
Peak-hour vehicle-miles of travel, VMT60	243 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.1	mi/h
Percent time-spent-following, PTSFd (from above)	86.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 881.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.48
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project AM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 676 veh/h
 Opposing direction volume, V_o 582 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	2.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.963
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	700 pc/h	623 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.4	mi/h
Percent Free Flow Speed, PFFS	72.1	%

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	0.92
Directional flow rate,(note-2) vi	697 pc/h	651 pc/h
Base percent time-spent-following,(note-4) BPTSFD	63.6 %	
Adjustment for no-passing zones, fnp	29.5	
Percent time-spent-following, PTSFD	78.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	52 veh-mi
Peak-hour vehicle-miles of travel, VMT60	203 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.4	mi/h
Percent time-spent-following, PTSFD (from above)	78.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	696.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 586 veh/h
Opposing direction volume, Vo 858 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	652 pc/h	956 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.2	mi/h
Percent Free Flow Speed, PFFS	67.2	%

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	0.92
Directional flow rate, (note-2) vi	651 pc/h	1034 pc/h
Base percent time-spent-following, (note-4) BPTSFD	65.6 %	
Adjustment for no-passing zones, fnp	22.6	
Percent time-spent-following, PTSFD	74.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.38
Peak 15-min vehicle-miles of travel, VMT15	49 veh-mi
Peak-hour vehicle-miles of travel, VMT60	176 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.2	mi/h
Percent time-spent-following, PTSFD (from above)	74.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 651.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.32
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 795 veh/h
 Opposing direction volume, V_o 811 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	855 pc/h	875 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.3 mi/h
 Percent Free Flow Speed, PFFS 65.1 %

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	0.92
Directional flow rate, (note-2) vi	855 pc/h	946 pc/h
Base percent time-spent-following, (note-4) BPTSFD	72.8 %	
Adjustment for no-passing zones, fnp	22.0	
Percent time-spent-following, PTSFD	83.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.50
Peak 15-min vehicle-miles of travel, VMT15	64 veh-mi
Peak-hour vehicle-miles of travel, VMT60	239 veh-mi
Peak 15-min total travel time, TT15	2.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.3	mi/h
Percent time-spent-following, PTSFD (from above)	83.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	854.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.46
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.85
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 334 veh/h
Opposing direction volume, Vo 444 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.997	0.998
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	394 pc/h	523 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	34.8	mi/h
Percent Free Flow Speed, PFFS	78.7	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.999	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	393 pc/h	522 pc/h
Base percent time-spent-following,(note-4) BPTSFd	44.8 %	
Adjustment for no-passing zones, fnp	39.9	
Percent time-spent-following, PTSFd	61.9 %	

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	29 veh-mi
Peak-hour vehicle-miles of travel, VMT60	100 veh-mi
Peak 15-min total travel time, TT15	0.8 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	34.8	mi/h
Percent time-spent-following, PTSFd (from above)	61.9	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 392.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.07
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
- * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project PM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, V_d 697 veh/h
 Opposing direction volume, V_o 527 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.997	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	777 pc/h	587 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 0.8 mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 31.4 mi/h
 Percent Free Flow Speed, PFFS 70.9 %

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	774 pc/h	586 pc/h
Base percent time-spent-following, (note-4) BPTSFD	65.7 %	
Adjustment for no-passing zones, fnp	28.7	
Percent time-spent-following, PTSFD	82.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	58 veh-mi
Peak-hour vehicle-miles of travel, VMT60	209 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.4	mi/h
Percent time-spent-following, PTSFD (from above)	82.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	774.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.85
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project Saturday
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.87
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 610 veh/h
Opposing direction volume, Vo 703 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.999	0.999
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	702 pc/h	809 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.2	mi/h
Percent Free Flow Speed, PFFS	68.3	%

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	701 pc/h	808 pc/h
Base percent time-spent-following,(note-4) BPTSFD	65.2 %	
Adjustment for no-passing zones, fnp	26.3	
Percent time-spent-following, PTSFD	77.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	53 veh-mi
Peak-hour vehicle-miles of travel, VMT60	183 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.2	mi/h
Percent time-spent-following, PTSFD (from above)	77.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 701.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.36
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project AM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 444 veh/h
 Opposing direction volume, V_o 334 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.988
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	492 pc/h	371 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	35.3	mi/h
Percent Free Flow Speed, PFFS	79.7	%

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	488 pc/h	369 pc/h
Base percent time-spent-following,(note-4) BPTSFD	48.8 %	
Adjustment for no-passing zones, fnp	41.4	
Percent time-spent-following, PTSFD	72.4 %	

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	37 veh-mi
Peak-hour vehicle-miles of travel, VMT60	133 veh-mi
Peak 15-min total travel time, TT15	1.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1693 veh/h
Directional Capacity	1693 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	35.3	mi/h
Percent time-spent-following, PTSFD (from above)	72.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	487.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.87
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 527 veh/h
Opposing direction volume, Vo 694 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	567 pc/h	746 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.8	mi/h
Percent Free Flow Speed, PFFS	71.8	%

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	567 pc/h	746 pc/h
Base percent time-spent-following,(note-4) BPTSFD	58.5 %	
Adjustment for no-passing zones, fnp	29.9	
Percent time-spent-following, PTSFD	71.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.33
Peak 15-min vehicle-miles of travel, VMT15	43 veh-mi
Peak-hour vehicle-miles of travel, VMT60	158 veh-mi
Peak 15-min total travel time, TT15	1.4 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.8	mi/h
Percent time-spent-following, PTSFD (from above)	71.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 566.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.06
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.97	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 703 veh/h
 Opposing direction volume, V_o 610 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	725 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 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 31.4 mi/h
 Percent Free Flow Speed, PFFS 71.1 %

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	725 pc/h	629 pc/h
Base percent time-spent-following,(note-4) BPTSFD	64.8 %	
Adjustment for no-passing zones, fnp	29.4	
Percent time-spent-following, PTSFD	80.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	54 veh-mi
Peak-hour vehicle-miles of travel, VMT60	211 veh-mi
Peak 15-min total travel time, TT15	1.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.4	mi/h
Percent time-spent-following, PTSFD (from above)	80.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	724.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.18
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 384 veh/h
Opposing direction volume, Vo 850 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.977	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	432 pc/h	934 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 6.5 mi/h
Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 30.6 mi/h
Percent Free Flow Speed, PFFS 70.3 %

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	422 pc/h	934 pc/h
Base percent time-spent-following, (note-4) BPTSFd	51.6 %	
Adjustment for no-passing zones, fnp	23.8	
Percent time-spent-following, PTSFd	59.0 %	

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	158 veh-mi
Peak-hour vehicle-miles of travel, VMT60	576 veh-mi
Peak 15-min total travel time, TT15	5.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5 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)	30.6 mi/h
Percent time-spent-following, PTSFd (from above)	59.0
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 422.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.12
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
- * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project PM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 929 veh/h
 Opposing direction volume, V_o 457 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.984
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1010 pc/h	505 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.4	mi/h
Percent Free Flow Speed, PFFS	67.7	%

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	1010 pc/h	497 pc/h
Base percent time-spent-following,(note-4) BPTSFD	73.7 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFD	88.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.59
Peak 15-min vehicle-miles of travel, VMT15	379 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1394 veh-mi
Peak 15-min total travel time, TT15	12.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.4	mi/h
Percent time-spent-following, PTSFD (from above)	88.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1009.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.56
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project Saturday
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 699 veh/h
Opposing direction volume, Vo 569 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	766 pc/h	623 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.4	mi/h
Percent Free Flow Speed, PFFS	69.9	%

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	760 pc/h	618 pc/h
Base percent time-spent-following,(note-4) BPTSFd	65.7 %	
Adjustment for no-passing zones, fnp	28.5	
Percent time-spent-following, PTSFd	81.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.45
Peak 15-min vehicle-miles of travel, VMT15	285 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1049 veh-mi
Peak 15-min total travel time, TT15	9.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	30.4	mi/h
Percent time-spent-following, PTSFd (from above)	81.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 759.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.42
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project AM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 850 veh/h
 Opposing direction volume, V_o 384 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.984
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1037 pc/h	476 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.5	mi/h
Percent Free Flow Speed, PFFS	67.7	%

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	1037 pc/h	468 pc/h
Base percent time-spent-following,(note-4) BPTSFD	75.2 %	
Adjustment for no-passing zones, fnp	21.5	
Percent time-spent-following, PTSFD	90.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.61
Peak 15-min vehicle-miles of travel, VMT15	389 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1275 veh-mi
Peak 15-min total travel time, TT15	13.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.5	mi/h
Percent time-spent-following, PTSFD (from above)	90.0	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1036.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.58
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 457 veh/h
Opposing direction volume, Vo 929 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	562 pc/h	1133 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.0	mi/h
Percent Free Flow Speed, PFFS	64.5	%

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	557 pc/h	1133 pc/h
Base percent time-spent-following,(note-4) BPTSFD	61.9 %	
Adjustment for no-passing zones, fnp	19.7	
Percent time-spent-following, PTSFD	68.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.33
Peak 15-min vehicle-miles of travel, VMT15	209 veh-mi
Peak-hour vehicle-miles of travel, VMT60	686 veh-mi
Peak 15-min total travel time, TT15	7.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.0	mi/h
Percent time-spent-following, PTSFD (from above)	68.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 557.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.26
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 569 veh/h
 Opposing direction volume, V_o 699 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	699 pc/h	852 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 6.5 mi/h

Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.2 mi/h
 Percent Free Flow Speed, PFFS 67.0 %

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	694 pc/h	852 pc/h
Base percent time-spent-following,(note-4) BPTSFD	65.5 %	
Adjustment for no-passing zones, fnp	25.5	
Percent time-spent-following, PTSFD	76.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	260 veh-mi
Peak-hour vehicle-miles of travel, VMT60	854 veh-mi
Peak 15-min total travel time, TT15	8.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.2	mi/h
Percent time-spent-following, PTSFD (from above)	76.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	693.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.37
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 538 veh/h
Opposing direction volume, Vo 918 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	661 pc/h	1129 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h

Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	35.8	mi/h
Percent Free Flow Speed, PFFS	69.5	%

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	0.92
Directional flow rate,(note-2) vi	656 pc/h	1217 pc/h
Base percent time-spent-following,(note-4) BPTSFd	68.0 %	
Adjustment for no-passing zones, fnp	18.4	
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	0.39
Peak 15-min vehicle-miles of travel, VMT15	394 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1291 veh-mi
Peak 15-min total travel time, TT15	11.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.8	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 656.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.34
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project PM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 997 veh/h
 Opposing direction volume, V_o 524 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.8
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.943
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1216 pc/h	678 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	35.0	mi/h
Percent Free Flow Speed, PFFS	68.0	%

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	0.92
Directional flow rate,(note-2) vi	1216 pc/h	695 pc/h
Base percent time-spent-following,(note-4) BPTSFD	80.9 %	
Adjustment for no-passing zones, fnp	17.0	
Percent time-spent-following, PTSFD	91.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.72
Peak 15-min vehicle-miles of travel, VMT15	730 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2393 veh-mi
Peak 15-min total travel time, TT15	20.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.0	mi/h
Percent time-spent-following, PTSFD (from above)	91.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1215.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.66
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project Saturday
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 621 veh/h
Opposing direction volume, Vo 775 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	763 pc/h	953 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h

Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	36.4	mi/h
Percent Free Flow Speed, PFFS	70.6	%

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	0.92
Directional flow rate,(note-2) vi	757 pc/h	1027 pc/h
Base percent time-spent-following,(note-4) BPTSFD	70.2 %	
Adjustment for no-passing zones, fnp	21.5	
Percent time-spent-following, PTSFD	79.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.45
Peak 15-min vehicle-miles of travel, VMT15	454 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1490 veh-mi
Peak 15-min total travel time, TT15	12.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	36.4	mi/h
Percent time-spent-following, PTSFD (from above)	79.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 757.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.42
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project AM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 918 veh/h
 Opposing direction volume, V_o 538 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1202 pc/h	704 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 34.9 mi/h
 Percent Free Flow Speed, PFFS 67.8 %

-----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	0.92	1.00
Directional flow rate,(note-2) vi	1296 pc/h	699 pc/h
Base percent time-spent-following,(note-4) BPTSFD	82.6 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFD	93.3 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	E
Volume to capacity ratio, v/c	0.76
Peak 15-min vehicle-miles of travel, VMT15	715 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2203 veh-mi
Peak 15-min total travel time, TT15	20.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	93.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1192.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.65
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 524 veh/h
Opposing direction volume, Vo 997 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.946	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	719 pc/h	1295 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	34.1	mi/h
Percent Free Flow Speed, PFFS	66.2	%

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	0.92	1.00
Directional flow rate,(note-2) vi	740 pc/h	1295 pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.4 %	
Adjustment for no-passing zones, fnp	15.6	
Percent time-spent-following, PTSFd	78.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.44
Peak 15-min vehicle-miles of travel, VMT15	408 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1258 veh-mi
Peak 15-min total travel time, TT15	12.0 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	34.1	mi/h
Percent time-spent-following, PTSFd (from above)	78.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 680.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.36
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 775 veh/h
 Opposing direction volume, V_o 621 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.997	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	827 pc/h	661 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 38.2 mi/h
 Percent Free Flow Speed, PFFS 74.1 %

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	0.92	1.00
Directional flow rate, (note-2) vi	896 pc/h	661 pc/h
Base percent time-spent-following, (note-4) BPTSFD	72.0 %	
Adjustment for no-passing zones, fnp	25.3	
Percent time-spent-following, PTSFD	86.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.53
Peak 15-min vehicle-miles of travel, VMT15	495 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1860 veh-mi
Peak 15-min total travel time, TT15	13.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	38.2	mi/h
Percent time-spent-following, PTSFD (from above)	86.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	824.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	2.49
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

	Direction	1	2	
Flow rate, vp		442	520	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		8.0	9.5	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project AM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	435.6	518.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.69	2.30
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		697	902	vph
Peak-hour factor, PHF		0.80	0.87	
Peak 15-minute volume, v15		218	259	
Trucks and buses		3	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.985	0.995	
Flow rate, vp		442	520	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		570	366	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		10.4	6.7	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project PM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	567.6	364.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.34	2.12
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		999	678	vph
Peak-hour factor, PHF		0.88	0.93	
Peak 15-minute volume, v15		284	182	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		570	366	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		451	435	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		8.2	7.9	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project Saturday
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	449.5	433.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.23	2.21
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		818	815	vph
Peak-hour factor, PHF		0.91	0.94	
Peak 15-minute volume, v15		225	217	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		451	435	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		583	pcphpl 885	pcphpl
Free-flow speed, FFS		53.0	mph 53.0	mph
Avg. passenger-car travel speed, S		55.0	mph 55.0	mph
Level of service, LOS		A	B	
Density, D		10.6	pc/mi/ln 16.1	pc/mi/ln

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project AM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

----- 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	577.3	876.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.58	2.79
Bicycle LOS	C	C

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

----- 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		55.0	mph	55.0	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		53.0	mph	53.0	mph

----- VOLUME -----

	Direction	1		2	
Volume, V		993	vph	1192	vph
Peak-hour factor, PHF		0.86		0.68	
Peak 15-minute volume, v15		289		438	
Trucks and buses		2	%	2	%
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		0.990		0.990	
Flow rate, vp		583	pcphpl	885	pcphpl

----- RESULTS -----

	Direction	1	2	
Flow rate, vp		681	555	pcphp1
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	A	
Density, D		12.4	10.1	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project PM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	674.7	552.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.66	2.33
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1282	973	vph
Peak-hour factor, PHF		0.95	0.88	
Peak 15-minute volume, v15		337	276	
Trucks and buses		2	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.995	
Flow rate, vp		681	555	pcphp1

RESULTS

	Direction	1	2	
Flow rate, vp		539	549	pcphpl
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.8	10.0	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project Saturday
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	536.5	546.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.32	2.33
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1030	1028	vph
Peak-hour factor, PHF		0.96	0.94	
Peak 15-minute volume, v15		268	273	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		539	549	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			593	pcphpl	648 pcphpl
Free-flow speed, FFS			55.0	mph	55.0 mph
Avg. passenger-car travel speed, S			55.0	mph	55.0 mph
Level of service, LOS			A		B
Density, D			10.8	pc/mi/ln	11.8 pc/mi/ln

Phone: Fax:
E-mail:

-----OPERATIONAL ANALYSIS-----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project AM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

-----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	587.2	642.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.59	2.64
Bicycle LOS	C	C

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

-----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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0 mph	55.0 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			0.0 mph	0.0 mph	
Free-flow speed			55.0 mph	55.0 mph	

-----VOLUME-----

	Direction		1	2	
Volume, V			1010 vph	976 vph	
Peak-hour factor, PHF			0.86	0.76	
Peak 15-minute volume, v15			294	321	
Trucks and buses			2 %	2 %	
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			0.990	0.990	
Flow rate, vp			593 pcphpl	648 pcphpl	

-----RESULTS-----

	Direction	1	2	
Flow rate, vp		520	476	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.5	8.7	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project PM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	515.8	471.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.53	2.48
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		980	849	vph
Peak-hour factor, PHF		0.95	0.90	
Peak 15-minute volume, v15		258	236	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		520	476	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		467	413	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		8.5	7.5	pc/mi/ln

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Existing + Project Saturday
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

----- 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	462.5	409.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.47	2.41
Bicycle LOS	B	B

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

----- FREE-FLOW SPEED -----

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

----- VOLUME -----

	Direction	1	2	
Volume, V		888	802	vph
Peak-hour factor, PHF		0.96	0.98	
Peak 15-minute volume, v15		231	205	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		467	413	pcphpl

----- RESULTS -----

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 297 veh/h
Opposing direction volume, Vo 406 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	2.0	1.8
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.971	0.977
Grade adj. factor, (note-1) fg	0.89	0.96
Directional flow rate, (note-2) vi	452 pc/h	570 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.2	mi/h
Percent Free Flow Speed, PFFS	75.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.982	0.994
Grade adjustment factor, (note-1) fg	0.90	0.96
Directional flow rate, (note-2) vi	442 pc/h	560 pc/h
Base percent time-spent-following, (note-4) BPTSFd	48.5 %	
Adjustment for no-passing zones, fnp	37.5	
Percent time-spent-following, PTSFd	65.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.26
Peak 15-min vehicle-miles of travel, VMT15	254 veh-mi
Peak-hour vehicle-miles of travel, VMT60	772 veh-mi
Peak 15-min total travel time, TT15	7.9 veh-h
Capacity from ATS, CdATS	1598 veh/h
Capacity from PTSF, CdPTSF	1639 veh/h
Directional Capacity	1639 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	32.2	mi/h
Percent time-spent-following, PTSFd (from above)	65.0	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 390.8
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.97
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.88	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.6 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	5	/mi

Analysis direction volume, V_d 665 veh/h
 Opposing direction volume, V_o 490 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.5	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.991	0.998
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	763 pc/h	558 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h
 Free-flow speed, FFSd 42.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.9 mi/h
 Percent Free Flow Speed, PFFS 70.4 %

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	0.92	1.00
Directional flow rate,(note-2) vi	821 pc/h	557 pc/h
Base percent time-spent-following,(note-4) BPTSFD	68.2 %	
Adjustment for no-passing zones, fnp	28.2	
Percent time-spent-following, PTSFD	85.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	491 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1729 veh-mi
Peak 15-min total travel time, TT15	16.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.9	mi/h
Percent time-spent-following, PTSFD (from above)	85.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	755.7
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.07
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 572 veh/h
Opposing direction volume, Vo 667 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.993	0.994
Grade adj. factor, (note-1) fg	0.97	0.98
Directional flow rate, (note-2) vi	625 pc/h	721 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.7	mi/h
Percent Free Flow Speed, PFFS	70.0	%

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	0.97	0.99
Directional flow rate, (note-2) vi	621 pc/h	709 pc/h
Base percent time-spent-following, (note-4) BPTSFd	61.2 %	
Adjustment for no-passing zones, fnp	30.0	
Percent time-spent-following, PTSFd	75.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.37
Peak 15-min vehicle-miles of travel, VMT15	391 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1487 veh-mi
Peak 15-min total travel time, TT15	13.2 veh-h
Capacity from ATS, CdATS	1656 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.7	mi/h
Percent time-spent-following, PTSFd (from above)	75.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 602.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.74
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project AM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 406 veh/h
 Opposing direction volume, V_o 297 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.974	0.968
Grade adj. factor, (note-1) fg	0.92	0.85
Directional flow rate, (note-2) v_i	492 pc/h	392 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 33.3 mi/h
 Percent Free Flow Speed, PFFS 78.4 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)		
PCE for trucks, ET	1.4	1.6		
PCE for RVs, ER	1.0	1.0		
Heavy-vehicle adjustment factor, fHV	0.988	0.982		
Grade adjustment factor,(note-1) fg	0.92	0.86		
Directional flow rate,(note-2) vi	485	382	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	47.7	%		
Adjustment for no-passing zones, fnp	40.8			
Percent time-spent-following, PTSFD	70.5	%		

-----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	287	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1056	veh-mi	
Peak 15-min total travel time, TT15	8.6	veh-h	
Capacity from ATS, CdATS	0	veh/h	
Capacity from PTSF, CdPTSF	1486	veh/h	
Directional Capacity	1486	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	33.3	mi/h	
Percent time-spent-following, PTSFD (from above)	70.5		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	441.3
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.03
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Existing + Project PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 490 veh/h
Opposing direction volume, Vo 665 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.982
Grade adj. factor, (note-1) fg	0.96	0.98
Directional flow rate, (note-2) vi	562 pc/h	743 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 1.3 mi/h
Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 30.0 mi/h
Percent Free Flow Speed, PFFS 70.7 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor, (note-1) fg	0.96	0.99
Directional flow rate, (note-2) vi	552 pc/h	722 pc/h
Base percent time-spent-following, (note-4) BPTSFd	56.8 %	
Adjustment for no-passing zones, fnp	30.8	
Percent time-spent-following, PTSFd	70.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.32
Peak 15-min vehicle-miles of travel, VMT15	342 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1274 veh-mi
Peak 15-min total travel time, TT15	11.4 veh-h
Capacity from ATS, CdATS	1636 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	30.0	mi/h
Percent time-spent-following, PTSFd (from above)	70.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 526.9
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.12
 Bicycle LOS C

Phone:
 E-Mail: Fax:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Existing + Project Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 667 veh/h
 Opposing direction volume, V_o 572 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.982	0.979
Grade adj. factor, (note-1) fg	0.98	0.97
Directional flow rate, (note-2) v_i	753 pc/h	655 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h
 Free-flow speed, FFSd 42.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.2 mi/h
 Percent Free Flow Speed, PFFS 68.8 %

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	0.99	0.97
Directional flow rate, (note-2) vi	732 pc/h	641 pc/h
Base percent time-spent-following, (note-4) BPTSFD	64.3 %	
Adjustment for no-passing zones, fnp	28.8	
Percent time-spent-following, PTSFD	79.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	471 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1734 veh-mi
Peak 15-min total travel time, TT15	16.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1666 veh/h
Directional Capacity	1666 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.2	mi/h
Percent time-spent-following, PTSFD (from above)	79.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	725.0
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.28
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

	Direction	1	2	
Flow rate, vp		804	942	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		B	C	
Density, D		17.9	20.9	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background AM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1356	1690	vph
Peak-hour factor, PHF		0.91	0.91	
Peak 15-minute volume, v15		373	464	
Trucks and buses		2	3	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.985	
Flow rate, vp		804	942	pcphpl

RESULTS

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	745.1	928.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.17	3.53
Bicycle LOS	C	D

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

	Direction	1	2	
Flow rate, vp		986	832	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		21.9	18.5	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background PM
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

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	913.7	828.1
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.28	3.00
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		1	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.3 mph	0.5 mph	
Free-flow speed		43.0 mph	42.7 mph	

VOLUME

	Direction	1	2	
Volume, V		1736 vph	1590 vph	
Peak-hour factor, PHF		0.95	0.96	
Peak 15-minute volume, v15		457	414	
Trucks and buses		2 %	1 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.73 mi	0.73 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.995	
Flow rate, vp		986 pcphpl	832 pcphpl	

RESULTS

	Direction	1	2	
Flow rate, vp		910	pcphpl 960	pcphpl
Free-flow speed, FFS		43.0	mph 42.7	mph
Avg. passenger-car travel speed, S		45.0	mph 45.0	mph
Level of service, LOS		C	C	
Density, D		20.2	pc/mi/ln 21.3	pc/mi/ln

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background Saturday
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

----- 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	875.8	955.7
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.02	3.07
Bicycle LOS	C	C

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

----- FREE-FLOW SPEED -----

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		1	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.3 mph	0.5 mph	
Free-flow speed		43.0 mph	42.7 mph	

----- VOLUME -----

	Direction	1	2	
Volume, V		1594 vph	1854 vph	
Peak-hour factor, PHF		0.91	0.97	
Peak 15-minute volume, v15		438	478	
Trucks and buses		1 %	1 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.73 mi	0.73 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.962	0.995	
Flow rate, vp		910 pcphpl	960 pcphpl	

----- RESULTS -----

	Direction	1	2	
Flow rate, vp		995	pcphpl	911 pcphpl
Free-flow speed, FFS		42.7	mph	42.7 mph
Avg. passenger-car travel speed, S		45.0	mph	45.0 mph
Level of service, LOS		C		C
Density, D		22.1	pc/mi/ln	20.2 pc/mi/ln

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background AM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		2	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.5 mph	0.5 mph	
Free-flow speed		42.7 mph	42.7 mph	

----- VOLUME -----

	Direction	1	2	
Volume, V		1572 vph	1644 vph	
Peak-hour factor, PHF		0.89	0.92	
Peak 15-minute volume, v15		442	447	
Trucks and buses		3 %	4 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.87 mi	0.87 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.3	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.887	0.980	
Flow rate, vp		995 pcphpl	911 pcphpl	

----- RESULTS -----

----- 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	883.1	893.5
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.79
Bicycle LOS	D	D

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

	Direction	1	2	
Flow rate, vp		900	847	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		20.0	18.8	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background PM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

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	861.5	839.5
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.02	3.23
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1654	1595	vph
Peak-hour factor, PHF		0.96	0.95	
Peak 15-minute volume, v15		431	420	
Trucks and buses		1	2	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.990	
Flow rate, vp		900	847	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		895	909	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		19.9	20.2	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background Saturday
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0 ft	12.0 ft	
Lateral clearance:				
Right edge		5.0 ft	5.0 ft	
Left edge		6.0 ft	6.0 ft	
Total lateral clearance		11.0 ft	11.0 ft	
Access points per mile		2	2	
Median type		Undivided	Undivided	
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		0.2 mph	0.2 mph	
Median type adjustment, FM		1.6 mph	1.6 mph	
Access points adjustment, FA		0.5 mph	0.5 mph	
Free-flow speed		42.7 mph	42.7 mph	

VOLUME

	Direction	1	2	
Volume, V		1594 vph	1701 vph	
Peak-hour factor, PHF		0.93	0.94	
Peak 15-minute volume, v15		428	452	
Trucks and buses		1 %	1 %	
Recreational vehicles		0 %	0 %	
Terrain type		Grade	Grade	
Grade		6.00 %	-6.00 %	
Segment length		0.87 mi	0.87 mi	
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.995	
Flow rate, vp		895 pcphpl	909 pcphpl	

RESULTS

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	857.0	904.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.01	3.04
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1644 veh/h
Opposing direction volume, Vo 1572 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.742
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1787 pc/h	2303 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	4.9	mi/h
Percent Free Flow Speed, PFFS	12.6	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1787 pc/h	1717 pc/h
Base percent time-spent-following,(note-4) BPTSFD	94.0 %	
Adjustment for no-passing zones, fnp	6.6	
Percent time-spent-following, PTSFD	97.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.05
Peak 15-min vehicle-miles of travel, VMT15	402 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1480 veh-mi
Peak 15-min total travel time, TT15	81.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	4.9	mi/h
Percent time-spent-following, PTSFD (from above)	97.4	%
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1787.0
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.99
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.95	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
	Up/down	Access point density	19	/mi

Analysis direction volume, V_d 1595 veh/h
 Opposing direction volume, V_o 1654 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	9.7	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.852	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1971 pc/h	1741 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 4.8 mi/h
 Free-flow speed, FFSd 39.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 7.8 mi/h
 Percent Free Flow Speed, PFFS 20.1 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.998	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1683 pc/h	1741 pc/h
Base percent time-spent-following,(note-4) BPTSFD	93.1 %	
Adjustment for no-passing zones, fnp	6.5	
Percent time-spent-following, PTSFD	96.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	0.99
Peak 15-min vehicle-miles of travel, VMT15	378 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1435 veh-mi
Peak 15-min total travel time, TT15	48.2 veh-h
Capacity from ATS, CdATS	1448 veh/h
Capacity from PTSF, CdPTSF	1696 veh/h
Directional Capacity	1696 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	7.8	mi/h
Percent time-spent-following, PTSFD (from above)	96.3	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1678.9
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.47
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1701 veh/h
Opposing direction volume, Vo 1594 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.920
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1810 pc/h	1843 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	8.3	mi/h
Percent Free Flow Speed, PFFS	21.3	%

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1810 pc/h	1698 pc/h
Base percent time-spent-following,(note-4) BPTSFD	94.2 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFD	97.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.06
Peak 15-min vehicle-miles of travel, VMT15	407 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1531 veh-mi
Peak 15-min total travel time, TT15	49.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	8.3	mi/h
Percent time-spent-following, PTSFD (from above)	97.7	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1809.6
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.30
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background AM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.80
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 582 veh/h
 Opposing direction volume, V_o 668 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	745 pc/h	838 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.4 mi/h
 Percent Free Flow Speed, PFFS 67.6 %

-----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	0.92	1.00		
Directional flow rate,(note-2) vi	789	835	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	69.4	%		
Adjustment for no-passing zones, fnp	24.5			
Percent time-spent-following, PTSFD	81.3	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.46		
Peak 15-min vehicle-miles of travel, VMT15	55	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	175	veh-mi	
Peak 15-min total travel time, TT15	1.8	veh-h	
Capacity from ATS, CdATS	1678	veh/h	
Capacity from PTSF, CdPTSF	1567	veh/h	
Directional Capacity	1567	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.3	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)	30.4	mi/h	
Percent time-spent-following, PTSFD (from above)	81.3		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	727.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.82
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background PM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.89
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 844 veh/h
Opposing direction volume, Vo 563 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	956 pc/h	634 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.4	mi/h
Percent Free Flow Speed, PFFS	67.5	%

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	0.92	1.00
Directional flow rate,(note-2) vi	1029 pc/h	633 pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.4 %	
Adjustment for no-passing zones, fnp	22.9	
Percent time-spent-following, PTSFd	89.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.61
Peak 15-min vehicle-miles of travel, VMT15	71 veh-mi
Peak-hour vehicle-miles of travel, VMT60	253 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.4	mi/h
Percent time-spent-following, PTSFd (from above)	89.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 948.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.96
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background Saturday
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92	
Shoulder width	6.0 ft	% Trucks and buses	1	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.3 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.30 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	0	/mi

Analysis direction volume, V_d 789 veh/h
 Opposing direction volume, V_o 758 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.996
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	858 pc/h	827 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.6 mi/h
 Percent Free Flow Speed, PFFS 65.8 %

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	0.92
Directional flow rate,(note-2) vi	858 pc/h	894 pc/h
Base percent time-spent-following,(note-4) BPTSFD	72.4 %	
Adjustment for no-passing zones, fnp	22.7	
Percent time-spent-following, PTSFD	83.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.50
Peak 15-min vehicle-miles of travel, VMT15	64 veh-mi
Peak-hour vehicle-miles of travel, VMT60	237 veh-mi
Peak 15-min total travel time, TT15	2.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.6	mi/h
Percent time-spent-following, PTSFD (from above)	83.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	857.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.46
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 668 veh/h
Opposing direction volume, Vo 582 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	2.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.996	0.963
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	691 pc/h	623 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.5	mi/h
Percent Free Flow Speed, PFFS	72.2	%

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	0.92
Directional flow rate,(note-2) vi	689 pc/h	651 pc/h
Base percent time-spent-following,(note-4) BPTSFd	63.2 %	
Adjustment for no-passing zones, fnp	29.8	
Percent time-spent-following, PTSPFd	78.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	52 veh-mi
Peak-hour vehicle-miles of travel, VMT60	200 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.5	mi/h
Percent time-spent-following, PTSPFd (from above)	78.5	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSPfpl	-	%

Level of Service and Other Performance Measures with Passing Lane

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

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 688.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.04
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 563 veh/h
 Opposing direction volume, V_o 844 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	626 pc/h	941 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.5 mi/h
 Percent Free Flow Speed, PFFS 67.9 %

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	0.92	
Directional flow rate,(note-2) vi	626 pc/h	1017	pc/h
Base percent time-spent-following,(note-4) BPTSFD	63.9	%	
Adjustment for no-passing zones, fnp	23.3		
Percent time-spent-following, PTSFD	72.8	%	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.37	
Peak 15-min vehicle-miles of travel, VMT15	47	veh-mi
Peak-hour vehicle-miles of travel, VMT60	169	veh-mi
Peak 15-min total travel time, TT15	1.5	veh-h
Capacity from ATS, CdATS	1700	veh/h
Capacity from PTSF, CdPTSF	1700	veh/h
Directional Capacity	1700	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.5	mi/h
Percent time-spent-following, PTSFD (from above)	72.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	625.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.30
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 758 veh/h
Opposing direction volume, Vo 789 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.999	0.996
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	816 pc/h	852 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.8	mi/h
Percent Free Flow Speed, PFFS	66.1	%

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	0.92
Directional flow rate,(note-2) vi	815 pc/h	920 pc/h
Base percent time-spent-following,(note-4) BPTSFd	70.9 %	
Adjustment for no-passing zones, fnp	23.0	
Percent time-spent-following, PTSFd	81.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	61 veh-mi
Peak-hour vehicle-miles of travel, VMT60	227 veh-mi
Peak 15-min total travel time, TT15	2.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.8	mi/h
Percent time-spent-following, PTSFd (from above)	81.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 815.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.44
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background AM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.85	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 333 veh/h
 Opposing direction volume, V_o 449 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.997	0.998
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	393 pc/h	529 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 34.8 mi/h
 Percent Free Flow Speed, PFFS 78.6 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.999	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	392 pc/h	528 pc/h
Base percent time-spent-following,(note-4) BPTSFD	44.3 %	
Adjustment for no-passing zones, fnp	39.7	
Percent time-spent-following, PTSFD	61.2 %	

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	29 veh-mi
Peak-hour vehicle-miles of travel, VMT60	100 veh-mi
Peak 15-min total travel time, TT15	0.8 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	34.8	mi/h
Percent time-spent-following, PTSFD (from above)	61.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	391.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.06
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background PM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 695 veh/h
Opposing direction volume, Vo 521 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.997	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	775 pc/h	581 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.4	mi/h
Percent Free Flow Speed, PFFS	71.0	%

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	772 pc/h	579 pc/h
Base percent time-spent-following,(note-4) BPTSFd	66.1 %	
Adjustment for no-passing zones, fnp	28.9	
Percent time-spent-following, PTSFd	82.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.45
Peak 15-min vehicle-miles of travel, VMT15	58 veh-mi
Peak-hour vehicle-miles of travel, VMT60	209 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.4	mi/h
Percent time-spent-following, PTSFd (from above)	82.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 772.2
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.85
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background Saturday
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.87	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 601 veh/h
 Opposing direction volume, V_o 692 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.1	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.999		0.999	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	691	pc/h		796	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 0.8 mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.4 mi/h
 Percent Free Flow Speed, PFFS 68.7 %

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	691 pc/h	795 pc/h
Base percent time-spent-following,(note-4) BPTSFD	65.0 %	
Adjustment for no-passing zones, fnp	26.7	
Percent time-spent-following, PTSFD	77.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	52 veh-mi
Peak-hour vehicle-miles of travel, VMT60	180 veh-mi
Peak 15-min total travel time, TT15	1.7 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.4	mi/h
Percent time-spent-following, PTSFD (from above)	77.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	690.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.35
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 449 veh/h
Opposing direction volume, Vo 333 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.988
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	497 pc/h	370 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	35.2	mi/h
Percent Free Flow Speed, PFFS	79.6	%

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	493 pc/h	367 pc/h
Base percent time-spent-following,(note-4) BPTSFd	49.1 %	
Adjustment for no-passing zones, fnp	41.2	
Percent time-spent-following, PTSFd	72.7 %	

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	37 veh-mi
Peak-hour vehicle-miles of travel, VMT60	135 veh-mi
Peak 15-min total travel time, TT15	1.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1693 veh/h
Directional Capacity	1693 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	35.2	mi/h
Percent time-spent-following, PTSFd (from above)	72.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 493.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.87
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.93	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 521 veh/h
 Opposing direction volume, V_o 695 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	560 pc/h	747 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 0.8 mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 31.8 mi/h
 Percent Free Flow Speed, PFFS 71.9 %

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	560 pc/h	747 pc/h
Base percent time-spent-following,(note-4) BPTSFD	58.1 %	
Adjustment for no-passing zones, fnp	30.0	
Percent time-spent-following, PTSFD	71.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.33
Peak 15-min vehicle-miles of travel, VMT15	42 veh-mi
Peak-hour vehicle-miles of travel, VMT60	156 veh-mi
Peak 15-min total travel time, TT15	1.3 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.8	mi/h
Percent time-spent-following, PTSFD (from above)	71.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	560.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.05
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 692 veh/h
Opposing direction volume, Vo 601 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	713 pc/h	620 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.6	mi/h
Percent Free Flow Speed, PFFS	71.4	%

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	713 pc/h	620 pc/h
Base percent time-spent-following,(note-4) BPTSFd	63.4 %	
Adjustment for no-passing zones, fnp	30.0	
Percent time-spent-following, PTSFd	79.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	54 veh-mi
Peak-hour vehicle-miles of travel, VMT60	208 veh-mi
Peak 15-min total travel time, TT15	1.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.6	mi/h
Percent time-spent-following, PTSFd (from above)	79.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 713.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.18
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background AM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 429 veh/h
 Opposing direction volume, V_o 883 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.2		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.984		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	479	pc/h		970	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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.0 mi/h
 Percent Free Flow Speed, PFFS 68.9 %

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	471 pc/h	970 pc/h
Base percent time-spent-following,(note-4) BPTSFD	54.8 %	
Adjustment for no-passing zones, fnp	23.1	
Percent time-spent-following, PTSFD	62.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	177 veh-mi
Peak-hour vehicle-miles of travel, VMT60	644 veh-mi
Peak 15-min total travel time, TT15	5.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	30.0	mi/h
Percent time-spent-following, PTSFD (from above)	62.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	471.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.18
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background PM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 970 veh/h
Opposing direction volume, Vo 509 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1054 pc/h	558 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 6.5 mi/h
Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 28.7 mi/h
Percent Free Flow Speed, PFFS 66.0 %

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	1054 pc/h	553 pc/h
Base percent time-spent-following, (note-4) BPTSFD	75.1 %	
Adjustment for no-passing zones, fnp	21.5	
Percent time-spent-following, PTSFD	89.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.62
Peak 15-min vehicle-miles of travel, VMT15	395 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1455 veh-mi
Peak 15-min total travel time, TT15	13.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5 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)	28.7 mi/h
Percent time-spent-following, PTSFD (from above)	89.2 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1054.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.58
 Bicycle LOS E

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background Saturday
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 729 veh/h
 Opposing direction volume, V_o 604 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	799 pc/h	662 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 6.5 mi/h

Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.9 mi/h
 Percent Free Flow Speed, PFFS 68.6 %

-----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	792	657	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.1	%		
Adjustment for no-passing zones, fnp	27.2			
Percent time-spent-following, PTSFD	82.0	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.47		
Peak 15-min vehicle-miles of travel, VMT15	297	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1094	veh-mi	
Peak 15-min total travel time, TT15	9.9	veh-h	
Capacity from ATS, CdATS	0	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	1.5	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)	29.9	mi/h	
Percent time-spent-following, PTSFD (from above)	82.0		
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	-	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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	792.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.44
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 883 veh/h
Opposing direction volume, Vo 429 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.984
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1077 pc/h	532 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 6.5 mi/h
Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 28.7 mi/h
Percent Free Flow Speed, PFFS 66.0 %

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	1077 pc/h	523 pc/h
Base percent time-spent-following,(note-4) BPTSFd	76.5 %	
Adjustment for no-passing zones, fnp	20.9	
Percent time-spent-following, PTSFd	90.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.63
Peak 15-min vehicle-miles of travel, VMT15	404 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1325 veh-mi
Peak 15-min total travel time, TT15	14.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5 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)	28.7 mi/h
Percent time-spent-following, PTSFd (from above)	90.6 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1076.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.60
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 509 veh/h
 Opposing direction volume, V_o 970 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.992		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	626	pc/h		1183	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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.2	mi/h
Percent Free Flow Speed, PFFS	62.4	%

-----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	621 pc/h	1183	pc/h
Base percent time-spent-following,(note-4) BPTSFD	66.3	%	
Adjustment for no-passing zones, fnp	18.6		
Percent time-spent-following, PTSFD	72.7	%	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.37		
Peak 15-min vehicle-miles of travel, VMT15	233	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	764	veh-mi	
Peak 15-min total travel time, TT15	8.6	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	1.5	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)	27.2	mi/h	
Percent time-spent-following, PTSFD (from above)	72.7		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	620.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.32
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 604 veh/h
Opposing direction volume, Vo 729 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	743 pc/h	889 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.5	mi/h
Percent Free Flow Speed, PFFS	65.6	%

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	737 pc/h	889 pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.9 %	
Adjustment for no-passing zones, fnp	24.3	
Percent time-spent-following, PTSFD	78.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	276 veh-mi
Peak-hour vehicle-miles of travel, VMT60	906 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	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.5	mi/h
Percent time-spent-following, PTSFD (from above)	78.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 736.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.40
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background AM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 654 veh/h
 Opposing direction volume, V_o 950 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	804 pc/h	1168 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 34.4 mi/h
 Percent Free Flow Speed, PFFS 66.8 %

-----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	0.92
Directional flow rate,(note-2) vi	798 pc/h	1259 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.2 %	
Adjustment for no-passing zones, fnp	16.7	
Percent time-spent-following, PTSFD	80.7 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.47
Peak 15-min vehicle-miles of travel, VMT15	479 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1570 veh-mi
Peak 15-min total travel time, TT15	13.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	34.4	mi/h
Percent time-spent-following, PTSFD (from above)	80.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	797.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.44
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background PM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 999 veh/h
Opposing direction volume, Vo 621 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.5
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.964
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1218 pc/h	786 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	34.1	mi/h
Percent Free Flow Speed, PFFS	66.3	%

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	0.92
Directional flow rate, (note-2) vi	1218 pc/h	823 pc/h
Base percent time-spent-following, (note-4) BPTSFd	81.2 %	
Adjustment for no-passing zones, fnp	16.4	
Percent time-spent-following, PTSFd	91.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.72
Peak 15-min vehicle-miles of travel, VMT15	731 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2398 veh-mi
Peak 15-min total travel time, TT15	21.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	34.1	mi/h
Percent time-spent-following, PTSFd (from above)	91.0	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1218.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.66
 Bicycle LOS E

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background Saturday
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 782 veh/h
 Opposing direction volume, V_o 764 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	954 pc/h	939 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h

Free-flow speed, FFSd 51.5 mi/h

Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 35.0 mi/h
 Percent Free Flow Speed, PFFS 68.0 %

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	0.92	
Directional flow rate,(note-2) vi	954 pc/h	1013	pc/h
Base percent time-spent-following,(note-4) BPTSFD	76.5	%	
Adjustment for no-passing zones, fnp	19.3		
Percent time-spent-following, PTSFD	85.9	%	

Level of Service and Other Performance Measures

Level of service, LOS	E		
Volume to capacity ratio, v/c	0.56		
Peak 15-min vehicle-miles of travel, VMT15	572	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1877	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	1700	veh/h	

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.0	mi/h	
Percent time-spent-following, PTSFD (from above)	85.9		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

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, PTSFp1	-	%	

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A		
Peak 15-min total travel time, TT15	-	veh-h	

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	953.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.53
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 950 veh/h
Opposing direction volume, Vo 654 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1244 pc/h	856 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	33.4	mi/h
Percent Free Flow Speed, PFFS	64.9	%

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	0.92	1.00
Directional flow rate, (note-2) vi	1341 pc/h	849 pc/h
Base percent time-spent-following, (note-4) BPTSFd	84.1 %	
Adjustment for no-passing zones, fnp	15.1	
Percent time-spent-following, PTSFd	93.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.79
Peak 15-min vehicle-miles of travel, VMT15	740 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2280 veh-mi
Peak 15-min total travel time, TT15	22.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.4	mi/h
Percent time-spent-following, PTSFd (from above)	93.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1233.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.66
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 621 veh/h
 Opposing direction volume, V_o 999 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.977	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	825 pc/h	1297 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 33.2 mi/h
 Percent Free Flow Speed, PFFS 64.5 %

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	0.92	1.00
Directional flow rate,(note-2) vi	877 pc/h	1297 pc/h
Base percent time-spent-following,(note-4) BPTSFD	77.2 %	
Adjustment for no-passing zones, fnp	15.1	
Percent time-spent-following, PTSFD	83.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.52
Peak 15-min vehicle-miles of travel, VMT15	484 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1490 veh-mi
Peak 15-min total travel time, TT15	14.6 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.2	mi/h
Percent time-spent-following, PTSFD (from above)	83.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	806.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.45
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 764 veh/h
Opposing direction volume, Vo 782 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.997	0.999
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	815 pc/h	833 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	36.9	mi/h
Percent Free Flow Speed, PFFS	71.7	%

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	0.92	1.00
Directional flow rate,(note-2) vi	883 pc/h	832 pc/h
Base percent time-spent-following,(note-4) BPTSFd	72.7 %	
Adjustment for no-passing zones, fnp	23.4	
Percent time-spent-following, PTSFd	84.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.52
Peak 15-min vehicle-miles of travel, VMT15	488 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1834 veh-mi
Peak 15-min total travel time, TT15	13.2 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	36.9	mi/h
Percent time-spent-following, PTSFd (from above)	84.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 812.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 2.48
 Bicycle LOS B

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background AM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

----- 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		4	
Median type			Divided		Divided	
Free-flow speed:			Base		Base	
FFS or BFFS			55.0	mph	55.0	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	1.0	mph
Free-flow speed			53.0	mph	54.0	mph

----- VOLUME -----

	Direction		1		2	
Volume, V			751	vph	973	vph
Peak-hour factor, PHF			0.80		0.87	
Peak 15-minute volume, v15			235		280	
Trucks and buses			3	%	1	%
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			0.985		0.995	
Flow rate, vp			476	pcphpl	561	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			476	561	pcphpl
Free-flow speed, FFS			53.0	54.0	mph
Avg. passenger-car travel speed, S			55.0	55.0	mph
Level of service, LOS			A	A	
Density, D			8.7	10.2	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	469.4	559.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.73	2.34
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background PM
Highway: Carmel Valley Road
From/To: Rio to Rancho San Carlos
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 8

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	12.0	ft
Lateral clearance:					
Right edge			6.0	6.0	ft
Left edge			6.0	6.0	ft
Total lateral clearance			12.0	12.0	ft
Access points per mile			8	4	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	55.0	mph
Lane width adjustment, FLW			0.0	0.0	mph
Lateral clearance adjustment, FLC			0.0	0.0	mph
Median type adjustment, FM			0.0	0.0	mph
Access points adjustment, FA			2.0	1.0	mph
Free-flow speed			53.0	54.0	mph

VOLUME

	Direction		1	2	
Volume, V			1076	742	vph
Peak-hour factor, PHF			0.88	0.93	
Peak 15-minute volume, v15			306	199	
Trucks and buses			1	1	%
Recreational vehicles			0	0	%
Terrain type			Level	Level	
Grade			0.00	0.00	%
Segment length			0.00	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			0.995	0.995	
Flow rate, vp			614	400	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			614	pcphpl 400	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	A	
Density, D			11.2	pc/mi/ln 7.3	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	611.4	398.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.38	2.17
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background Saturday
Highway: Carmel Valley Road
From/To: Rio to Rancho San Carlos
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 8

----- 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	4	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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 1.0	mph
Free-flow speed			53.0	mph 54.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			878	vph 854	vph
Peak-hour factor, PHF			0.91	0.94	
Peak 15-minute volume, v15			241	227	
Trucks and buses			1	% 1	%
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			0.995	0.995	
Flow rate, vp			484	pcphpl 456	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			484	pcphpl 456	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			8.8	pc/mi/ln 8.3	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	482.4	454.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.26	2.23
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background AM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1055	vph 1324	vph
Peak-hour factor, PHF			0.86		0.68
Peak 15-minute volume, v15			307		487
Trucks and buses			2	% 2	%
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			0.990		0.990
Flow rate, vp			619	pcphpl 983	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			619	pcphpl 983	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	B	
Density, D			11.3	pc/mi/ln 17.9	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	613.4	973.5
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.61	2.85
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background PM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1419	vph 1062	vph
Peak-hour factor, PHF			0.95		0.88
Peak 15-minute volume, v15			373		302
Trucks and buses			2	% 1	%
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			0.990		0.995
Flow rate, vp			754	pcphpl 606	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			754	pcphpl 606	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	B	
Density, D			13.7	pc/mi/ln 11.0+	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	746.8	603.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.71	2.37
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background Saturday
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1143	vph 1084	vph
Peak-hour factor, PHF			0.96		0.94
Peak 15-minute volume, v15			298		288
Trucks and buses			1	% 1	%
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			0.995		0.995
Flow rate, vp			598	pcphpl 579	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			598	pcphpl 579	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			10.9	pc/mi/ln 10.5	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	595.3	576.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.37	2.35
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background AM
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1067	vph 1082	vph
Peak-hour factor, PHF			0.86	0.76	
Peak 15-minute volume, v15			310	356	
Trucks and buses			2	% 2	%
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			0.990	0.990	
Flow rate, vp			626	pcphpl 718	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			626	pcphpl 718	pcphpl
Free-flow speed, FFS			55.0	mph 55.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	B	
Density, D			11.4	pc/mi/ln 13.1	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	620.3	711.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.62	2.69
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background PM
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1122	vph 940	vph
Peak-hour factor, PHF			0.95	0.90	
Peak 15-minute volume, v15			295	261	
Trucks and buses			2	% 2	%
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			0.990	0.990	
Flow rate, vp			596	pcphpl 527	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			596	pcphpl 527	pcphpl
Free-flow speed, FFS			55.0	mph 55.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			10.8	pc/mi/ln 9.6	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	590.5	522.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.59	2.53
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background Saturday
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

VOLUME

	Direction		1	2	
Volume, V			1022	vph 886	vph
Peak-hour factor, PHF			0.96	0.98	
Peak 15-minute volume, v15			266	226	
Trucks and buses			2	% 2	%
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			0.990	0.990	
Flow rate, vp			537	pcphpl 456	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		537	pcphpl 456	pcphpl
Free-flow speed, FFS		55.0	mph 55.0	mph
Avg. passenger-car travel speed, S		55.0	mph 55.0	mph
Level of service, LOS		A	A	
Density, D		9.8	pc/mi/ln 8.3	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	532.3	452.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.54	2.46
Bicycle LOS	C	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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 297 veh/h
Opposing direction volume, Vo 405 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	2.0	1.8
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.971	0.977
Grade adj. factor, (note-1) fg	0.89	0.96
Directional flow rate, (note-2) vi	452 pc/h	568 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.2	mi/h
Percent Free Flow Speed, PFFS	75.9	%

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.982	0.994
Grade adjustment factor,(note-1) fg	0.90	0.96
Directional flow rate,(note-2) vi	442 pc/h	558 pc/h
Base percent time-spent-following,(note-4) BPTSFD	48.5 %	
Adjustment for no-passing zones, fnp	37.5	
Percent time-spent-following, PTSFD	65.1 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	C
Volume to capacity ratio, v/c	0.26
Peak 15-min vehicle-miles of travel, VMT15	254 veh-mi
Peak-hour vehicle-miles of travel, VMT60	772 veh-mi
Peak 15-min total travel time, TT15	7.9 veh-h
Capacity from ATS, CdATS	1598 veh/h
Capacity from PTSF, CdPTSF	1639 veh/h
Directional Capacity	1639 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	32.2	mi/h
Percent time-spent-following, PTSFD (from above)	65.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	390.8
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.97
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.88
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 664 veh/h
Opposing direction volume, Vo 485 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.5	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.990	0.986
Grade adj. factor,(note-1) fg	0.99	0.96
Directional flow rate,(note-2) vi	770 pc/h	582 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 1.3 mi/h
Adj. for access point density,(note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 29.7 mi/h
Percent Free Flow Speed, PFFS 69.9 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
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	0.97
Directional flow rate,(note-2) vi	755 pc/h	570 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.8 %	
Adjustment for no-passing zones, fnp	29.4	
Percent time-spent-following, PTSFd	81.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.44
Peak 15-min vehicle-miles of travel, VMT15	490 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1726 veh-mi
Peak 15-min total travel time, TT15	16.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1642 veh/h
Directional Capacity	1642 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6 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)	29.7 mi/h
Percent time-spent-following, PTSFd (from above)	81.6 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 754.5
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.07
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.95	
Shoulder width	5.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	2.6	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Rolling		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	5	/mi

Analysis direction volume, V_d 564 veh/h
 Opposing direction volume, V_o 657 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.993	0.994
Grade adj. factor, (note-1) fg	0.97	0.98
Directional flow rate, (note-2) v_i	616 pc/h	710 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.9	mi/h
Percent Free Flow Speed, PFFS	70.3	%

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.998	1.000
Grade adjustment factor,(note-1) fg	0.97	0.99
Directional flow rate,(note-2) vi	613 pc/h	699 pc/h
Base percent time-spent-following,(note-4) BPTSFD	60.3 %	
Adjustment for no-passing zones, fnp	30.5	
Percent time-spent-following, PTSFD	74.6 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.36
Peak 15-min vehicle-miles of travel, VMT15	386 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1466 veh-mi
Peak 15-min total travel time, TT15	12.9 veh-h
Capacity from ATS, CdATS	1656 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	29.9	mi/h
Percent time-spent-following, PTSFD (from above)	74.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	593.7
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.74
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 405 veh/h
Opposing direction volume, Vo 297 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.974	0.968
Grade adj. factor, (note-1) fg	0.92	0.85
Directional flow rate, (note-2) vi	491 pc/h	392 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	33.3	mi/h
Percent Free Flow Speed, PFFS	78.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.988	0.982
Grade adjustment factor, (note-1) fg	0.92	0.86
Directional flow rate, (note-2) vi	484 pc/h	382 pc/h
Base percent time-spent-following, (note-4) BPTSFd	47.7 %	
Adjustment for no-passing zones, fnp	40.9	
Percent time-spent-following, PTSFd	70.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	286 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1053 veh-mi
Peak 15-min total travel time, TT15	8.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1486 veh/h
Directional Capacity	1486 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	33.3	mi/h
Percent time-spent-following, PTSFd (from above)	70.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 440.2
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.03
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 485 veh/h
 Opposing direction volume, V_o 664 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.982
Grade adj. factor, (note-1) fg	0.95	0.98
Directional flow rate, (note-2) v_i	562 pc/h	742 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.0 mi/h
 Percent Free Flow Speed, PFFS 70.7 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)		
PCE for trucks, ET	1.2	1.0		
PCE for RVs, ER	1.0	1.0		
Heavy-vehicle adjustment factor, fHV	0.994	1.000		
Grade adjustment factor,(note-1) fg	0.96	0.99		
Directional flow rate,(note-2) vi	546	721	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	56.7	%		
Adjustment for no-passing zones, fnp	30.9			
Percent time-spent-following, PTSFD	70.0	%		

Level of Service and Other Performance Measures

Level of service, LOS	C		
Volume to capacity ratio, v/c	0.32		
Peak 15-min vehicle-miles of travel, VMT15	339	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1261	veh-mi	
Peak 15-min total travel time, TT15	11.3	veh-h	
Capacity from ATS, CdATS	1636	veh/h	
Capacity from PTSF, CdPTSF	1683	veh/h	
Directional Capacity	1683	veh/h	

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	30.0	mi/h	
Percent time-spent-following, PTSFD (from above)	70.0		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

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	A		
Peak 15-min total travel time, TT15	-	veh-h	

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	521.5
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.11
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 657 veh/h
Opposing direction volume, Vo 564 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.982	0.979
Grade adj. factor,(note-1) fg	0.98	0.97
Directional flow rate,(note-2) vi	742 pc/h	646 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.4	mi/h
Percent Free Flow Speed, PFFS	69.2	%

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	0.99	0.97
Directional flow rate,(note-2) vi	721 pc/h	632 pc/h
Base percent time-spent-following,(note-4) BPTSFd	64.3 %	
Adjustment for no-passing zones, fnp	29.4	
Percent time-spent-following, PTSFd	80.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	464 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1708 veh-mi
Peak 15-min total travel time, TT15	15.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1666 veh/h
Directional Capacity	1666 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.4	mi/h
Percent time-spent-following, PTSFd (from above)	80.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 714.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.27
 Bicycle LOS C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

-----OPERATIONAL ANALYSIS-----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project AM
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

-----FREE-FLOW SPEED-----

	Direction 1		Direction 2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	5.0	ft	5.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	11.0	ft	11.0	ft
Access points per mile	1		2	
Median type	Undivided		Undivided	
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	0.2	mph	0.2	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.5	mph
Free-flow speed	43.0	mph	42.7	mph

-----VOLUME-----

	Direction 1		Direction 2	
Volume, V	1359	vph	1695	vph
Peak-hour factor, PHF	0.91		0.91	
Peak 15-minute volume, v15	373		466	
Trucks and buses	2	%	3	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	6.00	%	-6.00	%
Segment length	0.73	mi	0.73	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	5.0		1.5	
Recreational vehicles PCE, ER	6.0		1.2	
Heavy vehicle adjustment, fHV	0.926		0.985	
Flow rate, vp	806	pcphpl	945	pcphpl

-----RESULTS-----

	Direction		1	2	
Flow rate, vp			806	pcphpl 945	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			B	C	
Density, D			17.9	pc/mi/ln 21.0	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	746.7	931.3
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.17	3.54
Bicycle LOS	C	D

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background + Project PM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			1	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.3	mph 0.5	mph
Free-flow speed			43.0	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1751	vph 1603	vph
Peak-hour factor, PHF			0.95	0.96	
Peak 15-minute volume, v15			461	417	
Trucks and buses			2	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.73	mi 0.73	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.926	0.995	
Flow rate, vp			995	pcphpl 839	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			995	pcphpl 839	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			22.1	pc/mi/ln 18.6	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	921.6	834.9
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.28	3.00
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background + Project Saturday
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			1		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.3	mph 0.5	mph
Free-flow speed			43.0	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1615	vph 1873	vph
Peak-hour factor, PHF			0.91	0.97	
Peak 15-minute volume, v15			444	483	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.73	mi 0.73	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.962	0.995	
Flow rate, vp			922	pcphpl 970	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			922	pcphpl 970	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			20.5	pc/mi/ln 21.6	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	887.4	965.5
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.03	3.07
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background + Project AM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1577	vph 1652	vph
Peak-hour factor, PHF			0.89	0.92	
Peak 15-minute volume, v15			443	449	
Trucks and buses			3	% 4	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.3	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.887	0.980	
Flow rate, vp			998	pcphpl 915	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			998	pcphpl 915	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			22.2	pc/mi/ln 20.3	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	886.0	897.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.51	3.79
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: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background + Project PM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1681	vph 1617	vph
Peak-hour factor, PHF			0.96	0.95	
Peak 15-minute volume, v15			438	426	
Trucks and buses			1	% 2	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.5	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.957	0.990	
Flow rate, vp			914	pcphpl 859	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			914	pcphpl 859	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			20.3	pc/mi/ln 19.1	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	875.5	851.1
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.02	3.24
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Background + Project Saturday
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

VOLUME

	Direction		1	2	
Volume, V			1631	vph 1736	vph
Peak-hour factor, PHF			0.93	0.94	
Peak 15-minute volume, v15			438	462	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.5	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.957	0.995	
Flow rate, vp			916	pcphpl 928	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		916	pcphpl 928	pcphpl
Free-flow speed, FFS		42.7	mph 42.7	mph
Avg. passenger-car travel speed, S		45.0	mph 45.0	mph
Level of service, LOS		C	C	
Density, D		20.4	pc/mi/ln 20.6	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	876.9	923.4
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.02	3.05
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1652 veh/h
Opposing direction volume, Vo 1577 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.742
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1796 pc/h	2310 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	4.8	mi/h
Percent Free Flow Speed, PFFS	12.3	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1796 pc/h	1722 pc/h
Base percent time-spent-following,(note-4) BPTSFD	94.1 %	
Adjustment for no-passing zones, fnp	6.6	
Percent time-spent-following, PTSFD	97.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.06
Peak 15-min vehicle-miles of travel, VMT15	404 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1487 veh-mi
Peak 15-min total travel time, TT15	84.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	4.8	mi/h
Percent time-spent-following, PTSFD (from above)	97.5	
Level of service, LOSD (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1795.7
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.99
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1617 veh/h
Opposing direction volume, Vo 1681 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	9.7	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.852	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1998 pc/h	1769 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	7.4	mi/h
Percent Free Flow Speed, PFFS	19.0	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.998	1.000
Grade adjustment factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1706 pc/h	1769 pc/h
Base percent time-spent-following, (note-4) BPTSFd	93.3 %	
Adjustment for no-passing zones, fnp	6.5	
Percent time-spent-following, PTSFd	96.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.00
Peak 15-min vehicle-miles of travel, VMT15	383 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1455 veh-mi
Peak 15-min total travel time, TT15	51.6 veh-h
Capacity from ATS, CdATS	1448 veh/h
Capacity from PTSF, CdPTSF	1696 veh/h
Directional Capacity	1696 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	7.4	mi/h
Percent time-spent-following, PTSFd (from above)	96.5	%
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1702.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.48
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94	
Shoulder width	5.0 ft	% Trucks and buses	1	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
Up/down	-6.0 %	Access point density	19	/mi

Analysis direction volume, V_d 1736 veh/h
 Opposing direction volume, V_o 1631 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.920
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1847 pc/h	1886 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	7.7	mi/h
Percent Free Flow Speed, PFFS	19.7	%

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1847 pc/h	1737 pc/h
Base percent time-spent-following,(note-4) BPTSFD	94.4 %	
Adjustment for no-passing zones, fnp	6.7	
Percent time-spent-following, PTSFD	97.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.09
Peak 15-min vehicle-miles of travel, VMT15	416 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1562 veh-mi
Peak 15-min total travel time, TT15	54.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	7.7	mi/h
Percent time-spent-following, PTSFD (from above)	97.9	
Level of service, LOSD (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1846.8
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.31
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.80
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 587 veh/h
Opposing direction volume, Vo 676 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.978	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	750 pc/h	848 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.3	mi/h
Percent Free Flow Speed, PFFS	67.3	%

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	0.92	1.00
Directional flow rate,(note-2) vi	796 pc/h	845 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.6 %	
Adjustment for no-passing zones, fnp	24.2	
Percent time-spent-following, PTSFd	81.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.47
Peak 15-min vehicle-miles of travel, VMT15	55 veh-mi
Peak-hour vehicle-miles of travel, VMT60	176 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1680 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	81.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 733.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.83
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project PM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.89
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 871 veh/h
 Opposing direction volume, V_o 586 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	987 pc/h	660 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.9 mi/h
 Percent Free Flow Speed, PFFS 66.5 %

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	0.92	1.00
Directional flow rate,(note-2) vi	1061 pc/h	658 pc/h
Base percent time-spent-following,(note-4) BPTSFD	76.1 %	
Adjustment for no-passing zones, fnp	22.0	
Percent time-spent-following, PTSFD	89.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.62
Peak 15-min vehicle-miles of travel, VMT15	73 veh-mi
Peak-hour vehicle-miles of travel, VMT60	261 veh-mi
Peak 15-min total travel time, TT15	2.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.9	mi/h
Percent time-spent-following, PTSFD (from above)	89.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	978.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.97
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project Saturday
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 827 veh/h
Opposing direction volume, Vo 795 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.996
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	899 pc/h	868 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.0	mi/h
Percent Free Flow Speed, PFFS	64.4	%

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	0.92
Directional flow rate, (note-2) vi	899 pc/h	937 pc/h
Base percent time-spent-following, (note-4) BPTSFd	74.3 %	
Adjustment for no-passing zones, fnp	21.3	
Percent time-spent-following, PTSFd	84.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.53
Peak 15-min vehicle-miles of travel, VMT15	67 veh-mi
Peak-hour vehicle-miles of travel, VMT60	248 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.0	mi/h
Percent time-spent-following, PTSFd (from above)	84.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 898.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.49
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project AM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 676 veh/h
 Opposing direction volume, V_o 587 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	2.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.963
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	700 pc/h	628 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 32.4 mi/h
 Percent Free Flow Speed, PFFS 72.0 %

-----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	0.92
Directional flow rate,(note-2) vi	697 pc/h	656 pc/h
Base percent time-spent-following,(note-4) BPTSFD	63.3 %	
Adjustment for no-passing zones, fnp	29.4	
Percent time-spent-following, PTSFD	78.4 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	52 veh-mi
Peak-hour vehicle-miles of travel, VMT60	203 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.3	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)	32.4	mi/h
Percent time-spent-following, PTSFD (from above)	78.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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, PTSFp1	-	%

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	696.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.05
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 586 veh/h
Opposing direction volume, Vo 871 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	652 pc/h	971 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.1	mi/h
Percent Free Flow Speed, PFFS	66.9	%

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	0.92
Directional flow rate, (note-2) vi	651 pc/h	1050 pc/h
Base percent time-spent-following, (note-4) BPTSFd	65.6 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFd	74.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.38
Peak 15-min vehicle-miles of travel, VMT15	49 veh-mi
Peak-hour vehicle-miles of travel, VMT60	176 veh-mi
Peak 15-min total travel time, TT15	1.6 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.1	mi/h
Percent time-spent-following, PTSFd (from above)	74.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 651.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.32
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 795 veh/h
 Opposing direction volume, V_o 827 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	855 pc/h	892 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.1 mi/h
 Percent Free Flow Speed, PFFS 64.8 %

-----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	0.92		
Directional flow rate,(note-2) vi	855	964	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	72.8	%		
Adjustment for no-passing zones, fnp	21.6			
Percent time-spent-following, PTSFD	83.0	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.50		
Peak 15-min vehicle-miles of travel, VMT15	64	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	239	veh-mi	
Peak 15-min total travel time, TT15	2.2	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.3	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)	29.1	mi/h
Percent time-spent-following, PTSFD (from above)	83.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A	
Peak 15-min total travel time, TT15	-	veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	854.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.46
Bicycle LOS	B

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.85
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 338 veh/h
Opposing direction volume, Vo 451 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.997	0.998
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	399 pc/h	532 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	34.7	mi/h
Percent Free Flow Speed, PFFS	78.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.999	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	398 pc/h	531 pc/h
Base percent time-spent-following,(note-4) BPTSFd	44.6 %	
Adjustment for no-passing zones, fnp	39.6	
Percent time-spent-following, PTSFd	61.6 %	

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	30 veh-mi
Peak-hour vehicle-miles of travel, VMT60	101 veh-mi
Peak 15-min total travel time, TT15	0.9 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	34.7	mi/h
Percent time-spent-following, PTSFd (from above)	61.6	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 397.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.07
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project PM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	3	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 709 veh/h
 Opposing direction volume, V_o 535 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.1	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.997		0.997	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	790	pc/h		596	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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.2	mi/h
Percent Free Flow Speed, PFFS	70.5	%

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	788 pc/h	594 pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.0 %	
Adjustment for no-passing zones, fnp	28.1	
Percent time-spent-following, PTSFD	83.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	59 veh-mi
Peak-hour vehicle-miles of travel, VMT60	213 veh-mi
Peak 15-min total travel time, TT15	1.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.2	mi/h
Percent time-spent-following, PTSFD (from above)	83.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	787.8
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.86
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project Saturday
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.87
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 625 veh/h
Opposing direction volume, Vo 711 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.999	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	719 pc/h	818 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.0	mi/h
Percent Free Flow Speed, PFFS	67.8	%

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	718 pc/h	817 pc/h
Base percent time-spent-following, (note-4) BPTSFD	66.0 %	
Adjustment for no-passing zones, fnp	26.0	
Percent time-spent-following, PTSFD	78.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	54 veh-mi
Peak-hour vehicle-miles of travel, VMT60	188 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.0	mi/h
Percent time-spent-following, PTSFD (from above)	78.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 718.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.37
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project AM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 451 veh/h
 Opposing direction volume, V_o 338 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.988
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	500 pc/h	376 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 35.2 mi/h
 Percent Free Flow Speed, PFFS 79.4 %

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	0.996
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	496 pc/h	373 pc/h
Base percent time-spent-following,(note-4) BPTSFD	49.1 %	
Adjustment for no-passing zones, fnp	41.1	
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	0.29
Peak 15-min vehicle-miles of travel, VMT15	37 veh-mi
Peak-hour vehicle-miles of travel, VMT60	135 veh-mi
Peak 15-min total travel time, TT15	1.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1693 veh/h
Directional Capacity	1693 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	35.2	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	495.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.88
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 535 veh/h
Opposing direction volume, Vo 709 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	575 pc/h	762 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.6	mi/h
Percent Free Flow Speed, PFFS	71.4	%

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	575 pc/h	762 pc/h
Base percent time-spent-following,(note-4) BPTSFd	59.1 %	
Adjustment for no-passing zones, fnp	29.3	
Percent time-spent-following, PTSFd	71.7 %	

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	43 veh-mi
Peak-hour vehicle-miles of travel, VMT60	161 veh-mi
Peak 15-min total travel time, TT15	1.4 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.6	mi/h
Percent time-spent-following, PTSFd (from above)	71.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 575.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.07
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.97	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 711 veh/h
 Opposing direction volume, V_o 625 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	733 pc/h	644 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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 31.3 mi/h
 Percent Free Flow Speed, PFFS 70.7 %

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	733 pc/h	644 pc/h
Base percent time-spent-following,(note-4) BPTSFD	65.4 %	
Adjustment for no-passing zones, fnp	28.8	
Percent time-spent-following, PTSFD	80.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	55 veh-mi
Peak-hour vehicle-miles of travel, VMT60	213 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	31.3	mi/h
Percent time-spent-following, PTSFD (from above)	80.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	733.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.19
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 433 veh/h
Opposing direction volume, Vo 890 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.984	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	484 pc/h	978 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.9	mi/h
Percent Free Flow Speed, PFFS	68.6	%

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	476 pc/h	978 pc/h
Base percent time-spent-following, (note-4) BPTSFd	55.6 %	
Adjustment for no-passing zones, fnp	22.9	
Percent time-spent-following, PTSPFd	63.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	178 veh-mi
Peak-hour vehicle-miles of travel, VMT60	650 veh-mi
Peak 15-min total travel time, TT15	6.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.9	mi/h
Percent time-spent-following, PTSPFd (from above)	63.1	
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, ATSPpl	-	
Percent free flow speed including passing lane, PFFSPpl	0.0	%

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, PTSPFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

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

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 475.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.18
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project PM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 991 veh/h
 Opposing direction volume, V_o 528 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1077 pc/h	579 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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.3 mi/h
 Percent Free Flow Speed, PFFS 65.2 %

-----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	1077 pc/h	574 pc/h
Base percent time-spent-following,(note-4) BPTSFD	76.8 %	
Adjustment for no-passing zones, fnp	21.0	
Percent time-spent-following, PTSFD	90.5 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	E
Volume to capacity ratio, v/c	0.63
Peak 15-min vehicle-miles of travel, VMT15	404 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1487 veh-mi
Peak 15-min total travel time, TT15	14.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	1.5	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)	28.3	mi/h
Percent time-spent-following, PTSFD (from above)	90.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1077.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.60
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project Saturday
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 757 veh/h
Opposing direction volume, Vo 635 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	829 pc/h	696 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.4	mi/h
Percent Free Flow Speed, PFFS	67.5	%

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	823 pc/h	690 pc/h
Base percent time-spent-following,(note-4) BPTSFd	68.8 %	
Adjustment for no-passing zones, fnp	26.2	
Percent time-spent-following, PTSFd	83.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	309 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1136 veh-mi
Peak 15-min total travel time, TT15	10.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.4	mi/h
Percent time-spent-following, PTSFd (from above)	83.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 822.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.46
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project AM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	26 /mi

Analysis direction volume, V_d 890 veh/h
 Opposing direction volume, V_o 433 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.2
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) v_i	1094 pc/h	536 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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.6 mi/h
 Percent Free Flow Speed, PFFS 65.6 %

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	0.92	1.00
Directional flow rate,(note-2) vi	1180 pc/h	528 pc/h
Base percent time-spent-following,(note-4) BPTSFD	79.0 %	
Adjustment for no-passing zones, fnp	19.4	
Percent time-spent-following, PTSFD	92.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.69
Peak 15-min vehicle-miles of travel, VMT15	407 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1335 veh-mi
Peak 15-min total travel time, TT15	14.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.6	mi/h
Percent time-spent-following, PTSFD (from above)	92.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1085.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.60
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 528 veh/h
Opposing direction volume, Vo 991 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	649 pc/h	1209 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.8	mi/h
Percent Free Flow Speed, PFFS	61.6	%

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	644 pc/h	1209 pc/h
Base percent time-spent-following, (note-4) BPTSFD	67.4 %	
Adjustment for no-passing zones, fnp	18.0	
Percent time-spent-following, PTSFD	73.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.38
Peak 15-min vehicle-miles of travel, VMT15	241 veh-mi
Peak-hour vehicle-miles of travel, VMT60	792 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	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	26.8	mi/h
Percent time-spent-following, PTSFD (from above)	73.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 643.9
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.33
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 635 veh/h
 Opposing direction volume, V_o 757 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.992		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	781	pc/h		923	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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.0 mi/h
 Percent Free Flow Speed, PFFS 64.3 %

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	774 pc/h	923 pc/h
Base percent time-spent-following,(note-4) BPTSFD	69.3 %	
Adjustment for no-passing zones, fnp	23.1	
Percent time-spent-following, PTSFD	79.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	290 veh-mi
Peak-hour vehicle-miles of travel, VMT60	953 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	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.0	mi/h
Percent time-spent-following, PTSFD (from above)	79.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	774.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.43
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 659 veh/h
Opposing direction volume, Vo 959 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	810 pc/h	1179 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	34.3	mi/h
Percent Free Flow Speed, PFFS	66.5	%

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	0.92
Directional flow rate,(note-2) vi	804 pc/h	1271 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.4 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFD	80.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.47
Peak 15-min vehicle-miles of travel, VMT15	482 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1582 veh-mi
Peak 15-min total travel time, TT15	14.1 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	34.3	mi/h
Percent time-spent-following, PTSFD (from above)	80.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 803.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.45
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project PM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 1026 veh/h
 Opposing direction volume, V_o 645 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.4
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.973
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1251 pc/h	808 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 33.7 mi/h
 Percent Free Flow Speed, PFFS 65.5 %

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	0.92
Directional flow rate,(note-2) vi	1251 pc/h	855 pc/h
Base percent time-spent-following,(note-4) BPTSFD	82.4 %	
Adjustment for no-passing zones, fnp	15.8	
Percent time-spent-following, PTSFD	91.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.74
Peak 15-min vehicle-miles of travel, VMT15	751 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2462 veh-mi
Peak 15-min total travel time, TT15	22.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.7	mi/h
Percent time-spent-following, PTSFD (from above)	91.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1251.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.67
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project Saturday
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 818 veh/h
Opposing direction volume, Vo 804 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	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	998 pc/h	988 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	34.3	mi/h
Percent Free Flow Speed, PFFS	66.6	%

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	0.92
Directional flow rate,(note-2) vi	998 pc/h	1066 pc/h
Base percent time-spent-following,(note-4) BPTSFD	78.8 %	
Adjustment for no-passing zones, fnp	17.8	
Percent time-spent-following, PTSFD	87.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.59
Peak 15-min vehicle-miles of travel, VMT15	599 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1963 veh-mi
Peak 15-min total travel time, TT15	17.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	34.3	mi/h
Percent time-spent-following, PTSFD (from above)	87.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 997.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.56
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project AM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 959 veh/h
 Opposing direction volume, V_o 659 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1255 pc/h	856 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 33.3 mi/h
 Percent Free Flow Speed, PFFS 64.7 %

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	0.92	1.00
Directional flow rate,(note-2) vi	1354 pc/h	856 pc/h
Base percent time-spent-following,(note-4) BPTSFD	84.3 %	
Adjustment for no-passing zones, fnp	14.9	
Percent time-spent-following, PTSFD	93.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.80
Peak 15-min vehicle-miles of travel, VMT15	747 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2302 veh-mi
Peak 15-min total travel time, TT15	22.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.3	mi/h
Percent time-spent-following, PTSFD (from above)	93.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1245.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.67
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 645 veh/h
Opposing direction volume, Vo 1026 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.982	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	853 pc/h	1332 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	32.7	mi/h
Percent Free Flow Speed, PFFS	63.6	%

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	0.92	1.00
Directional flow rate, (note-2) vi	911 pc/h	1332 pc/h
Base percent time-spent-following, (note-4) BPTSFD	78.6 %	
Adjustment for no-passing zones, fnp	14.4	
Percent time-spent-following, PTSFD	84.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.54
Peak 15-min vehicle-miles of travel, VMT15	503 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1548 veh-mi
Peak 15-min total travel time, TT15	15.4 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	32.7	mi/h
Percent time-spent-following, PTSFD (from above)	84.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 837.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.47
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 804 veh/h
 Opposing direction volume, V_o 818 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.998	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	857 pc/h	870 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 36.3 mi/h
 Percent Free Flow Speed, PFFS 70.5 %

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	0.92	1.00
Directional flow rate,(note-2) vi	930 pc/h	870 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.3 %	
Adjustment for no-passing zones, fnp	22.0	
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	513 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1930 veh-mi
Peak 15-min total travel time, TT15	14.1 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	855.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	2.51
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

	Direction	1	2	
Flow rate, vp		480	567	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		8.7	10.3	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project AM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	473.1	564.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.73	2.34
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		757	983	vph
Peak-hour factor, PHF		0.80	0.87	
Peak 15-minute volume, v15		237	282	
Trucks and buses		3	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.985	0.995	
Flow rate, vp		480	567	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		632	416	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	A	
Density, D		11.5	7.6	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project PM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	629.0	414.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.40	2.18
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		1107	770	vph
Peak-hour factor, PHF		0.88	0.93	
Peak 15-minute volume, v15		314	207	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		632	416	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		506	481	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.2	8.7	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project Saturday
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	504.4	479.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.28	2.26
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		918	901	vph
Peak-hour factor, PHF		0.91	0.94	
Peak 15-minute volume, v15		252	240	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		506	481	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		624	991	pcphpl
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	C	
Density, D		11.3	18.0+	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project AM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	618.0	981.6
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.62	2.85
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1063	1335	vph
Peak-hour factor, PHF		0.86	0.68	
Peak 15-minute volume, v15		309	491	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		624	991	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		775	pcphpl 626	pcphpl
Free-flow speed, FFS		53.0	mph 53.0	mph
Avg. passenger-car travel speed, S		55.0	mph 55.0	mph
Level of service, LOS		B	B	
Density, D		14.1	pc/mi/ln 11.4	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project PM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	767.4	623.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.73	2.39
Bicycle LOS	C	B

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

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		55.0 mph	55.0 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		53.0 mph	53.0 mph	

VOLUME

	Direction	1	2	
Volume, V		1458 vph	1097 vph	
Peak-hour factor, PHF		0.95	0.88	
Peak 15-minute volume, v15		384	312	
Trucks and buses		2 %	1 %	
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		0.990	0.995	
Flow rate, vp		775 pcphpl	626 pcphpl	

RESULTS

	Direction	1	2	
Flow rate, vp		625	610	pcphpl
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	B	
Density, D		11.4	11.1	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project Saturday
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	622.4	607.4
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.39	2.38
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1195	1142	vph
Peak-hour factor, PHF		0.96	0.94	
Peak 15-minute volume, v15		311	304	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		625	610	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		626	718	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	B	
Density, D		11.4	13.1	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project AM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	620.3	711.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.62	2.69
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		1067	1082	vph
Peak-hour factor, PHF		0.86	0.76	
Peak 15-minute volume, v15		310	356	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		626	718	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		596	527	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		10.8	9.6	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project PM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	590.5	522.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.59	2.53
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		1122	940	vph
Peak-hour factor, PHF		0.95	0.90	
Peak 15-minute volume, v15		295	261	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		596	527	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		537	456	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.8	8.3	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Background + Project Saturday
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	532.3	452.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.54	2.46
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		1022	886	vph
Peak-hour factor, PHF		0.96	0.98	
Peak 15-minute volume, v15		266	226	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		537	456	pcphpl

RESULTS

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 297 veh/h
Opposing direction volume, Vo 405 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	2.0	1.8
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.971	0.977
Grade adj. factor,(note-1) fg	0.89	0.96
Directional flow rate,(note-2) vi	452 pc/h	568 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.2	mi/h
Percent Free Flow Speed, PFFS	75.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.982	0.994
Grade adjustment factor,(note-1) fg	0.90	0.96
Directional flow rate,(note-2) vi	442 pc/h	558 pc/h
Base percent time-spent-following,(note-4) BPTSFd	48.5 %	
Adjustment for no-passing zones, fnp	37.5	
Percent time-spent-following, PTSFd	65.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.26
Peak 15-min vehicle-miles of travel, VMT15	254 veh-mi
Peak-hour vehicle-miles of travel, VMT60	772 veh-mi
Peak 15-min total travel time, TT15	7.9 veh-h
Capacity from ATS, CdATS	1598 veh/h
Capacity from PTSF, CdPTSF	1639 veh/h
Directional Capacity	1639 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	32.2	mi/h
Percent time-spent-following, PTSFd (from above)	65.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 390.8
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.97
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.88	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.6 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Rolling	% Recreational vehicles	0	%
Grade: Length	- mi	% No-passing zones	100	%
Up/down	- %	Access point density	5	/mi

Analysis direction volume, V_d 676 veh/h
 Opposing direction volume, V_o 498 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.5	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.990	0.986
Grade adj. factor, (note-1) fg	0.99	0.96
Directional flow rate, (note-2) v_i	784 pc/h	598 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.4 mi/h
 Percent Free Flow Speed, PFFS 69.3 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)	
PCE for trucks, ET	1.0	1.2	
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	0.97	
Directional flow rate,(note-2) vi	768 pc/h	586	pc/h
Base percent time-spent-following,(note-4) BPTSFD	65.5	%	
Adjustment for no-passing zones, fnp	28.8		
Percent time-spent-following, PTSFD	81.8	%	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.45		
Peak 15-min vehicle-miles of travel, VMT15	499	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1758	veh-mi	
Peak 15-min total travel time, TT15	17.0	veh-h	
Capacity from ATS, CdATS	0	veh/h	
Capacity from PTSF, CdPTSF	1642	veh/h	
Directional Capacity	1642	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	29.4	mi/h	
Percent time-spent-following, PTSFD (from above)	81.8		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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, PTSFp1	-	%	

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	768.2
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.08
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 583 veh/h
Opposing direction volume, Vo 675 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.993	0.994
Grade adj. factor,(note-1) fg	0.97	0.98
Directional flow rate,(note-2) vi	637 pc/h	729 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.5	mi/h
Percent Free Flow Speed, PFFS	69.6	%

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	0.97	0.99
Directional flow rate,(note-2) vi	633 pc/h	718 pc/h
Base percent time-spent-following,(note-4) BPTSFd	61.3 %	
Adjustment for no-passing zones, fnp	29.5	
Percent time-spent-following, PTSFd	75.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.37
Peak 15-min vehicle-miles of travel, VMT15	399 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1516 veh-mi
Peak 15-min total travel time, TT15	13.5 veh-h
Capacity from ATS, CdATS	1656 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.5	mi/h
Percent time-spent-following, PTSFd (from above)	75.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 613.7
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.75
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project AM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 408 veh/h
 Opposing direction volume, V_o 301 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.9	2.1
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.974	0.968
Grade adj. factor, (note-1) fg	0.92	0.85
Directional flow rate, (note-2) v_i	495 pc/h	398 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	33.2	mi/h
Percent Free Flow Speed, PFFS	78.3	%

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.988	0.982
Grade adjustment factor,(note-1) fg	0.93	0.86
Directional flow rate,(note-2) vi	483 pc/h	387 pc/h
Base percent time-spent-following,(note-4) BPTSFD	47.4 %	
Adjustment for no-passing zones, fnp	40.9	
Percent time-spent-following, PTSFD	70.1 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	288 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1061 veh-mi
Peak 15-min total travel time, TT15	8.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1486 veh/h
Directional Capacity	1486 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	33.2	mi/h
Percent time-spent-following, PTSFD (from above)	70.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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, PTSFp1	-	%

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	443.5
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.03
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Background + Project PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 498 veh/h
Opposing direction volume, Vo 676 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.5
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.985
Grade adj. factor, (note-1) fg	0.96	0.98
Directional flow rate, (note-2) vi	571 pc/h	753 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.9	mi/h
Percent Free Flow Speed, PFFS	70.4	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	1.000
Grade adjustment factor, (note-1) fg	0.96	0.99
Directional flow rate, (note-2) vi	561 pc/h	734 pc/h
Base percent time-spent-following, (note-4) BPTSFd	57.8 %	
Adjustment for no-passing zones, fnp	30.2	
Percent time-spent-following, PTSFd	70.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.33
Peak 15-min vehicle-miles of travel, VMT15	348 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1295 veh-mi
Peak 15-min total travel time, TT15	11.6 veh-h
Capacity from ATS, CdATS	1641 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.9	mi/h
Percent time-spent-following, PTSFd (from above)	70.9	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 535.5
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.13
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Background + Project Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 675 veh/h
 Opposing direction volume, V_o 583 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.5	1.7
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.985	0.979
Grade adj. factor, (note-1) fg	0.98	0.97
Directional flow rate, (note-2) v_i	760 pc/h	667 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.1	mi/h
Percent Free Flow Speed, PFFS	68.5	%

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	0.99	0.98	
Directional flow rate, (note-2) vi	741 pc/h	647	pc/h
Base percent time-spent-following, (note-4) BPTSFD	65.5	%	
Adjustment for no-passing zones, fnp	28.5		
Percent time-spent-following, PTSFD	80.7	%	

Level of Service and Other Performance Measures

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.44		
Peak 15-min vehicle-miles of travel, VMT15	477	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1755	veh-mi	
Peak 15-min total travel time, TT15	16.4	veh-h	
Capacity from ATS, CdATS	0	veh/h	
Capacity from PTSF, CdPTSF	1666	veh/h	
Directional Capacity	1666	veh/h	

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	29.1	mi/h	
Percent time-spent-following, PTSFD (from above)	80.7		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

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, PTSFp1	-	%	

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A		
Peak 15-min total travel time, TT15	-	veh-h	

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	733.7
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.29
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

	Direction	1	2	
Flow rate, vp		862	1026	pcphp1
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		19.2	22.8	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative AM
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

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	798.4	1011.0
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.21	3.58
Bicycle LOS	C	D

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1453	1840	vph
Peak-hour factor, PHF		0.91	0.91	
Peak 15-minute volume, v15		399	505	
Trucks and buses		2	3	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.985	
Flow rate, vp		862	1026	pcphp1

RESULTS

	Direction	1	2	
Flow rate, vp		1098	912	pcphpl
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		24.4	20.3	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative PM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1933	1743	vph
Peak-hour factor, PHF		0.95	0.96	
Peak 15-minute volume, v15		509	454	
Trucks and buses		2	1	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.926	0.995	
Flow rate, vp		1098	912	pcphpl

RESULTS

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	1017.4	907.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.33	3.04
Bicycle LOS	C	C

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

	Direction	1	2	
Flow rate, vp		1031	1047	pcphp1
Free-flow speed, FFS		43.0	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		22.9	23.3	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative Saturday
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

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	991.8	1042.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.09	3.11
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		1	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.3	0.5	mph
Free-flow speed		43.0	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1805	2023	vph
Peak-hour factor, PHF		0.91	0.97	
Peak 15-minute volume, v15		496	521	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.73	0.73	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.0	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.962	0.995	
Flow rate, vp		1031	1047	pcphp1

RESULTS

	Direction	1	2	
Flow rate, vp		1063	997	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		23.6	22.2	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative AM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1679	1799	vph
Peak-hour factor, PHF		0.89	0.92	
Peak 15-minute volume, v15		472	489	
Trucks and buses		3	4	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.3	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.887	0.980	
Flow rate, vp		1063	997	pcphpl

RESULTS

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	943.3	977.7
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.54	3.83
Bicycle LOS	D	D

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

	Direction	1	2	
Flow rate, vp		1018	935	pcphpl
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		22.6	20.8	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative PM
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1871	1759	vph
Peak-hour factor, PHF		0.96	0.95	
Peak 15-minute volume, v15		487	463	
Trucks and buses		1	2	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.990	
Flow rate, vp		1018	935	pcphpl

RESULTS

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	974.5	925.8
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.08	3.28
Bicycle LOS	C	C

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

	Direction	1	2	
Flow rate, vp		1018	1005	pcphp1
Free-flow speed, FFS		42.7	42.7	mph
Avg. passenger-car travel speed, S		45.0	45.0	mph
Level of service, LOS		C	C	
Density, D		22.6	22.3	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative Saturday
 Highway: SR 1
 From/To: Ocean / Carmel Valley Rd
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 2 NB

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		5.0	5.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		11.0	11.0	ft
Access points per mile		2	2	
Median type		Undivided	Undivided	
Free-flow speed:		Base	Base	
FFS or BFFS		45.0	45.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.2	0.2	mph
Median type adjustment, FM		1.6	1.6	mph
Access points adjustment, FA		0.5	0.5	mph
Free-flow speed		42.7	42.7	mph

VOLUME

	Direction	1	2	
Volume, V		1812	1881	vph
Peak-hour factor, PHF		0.93	0.94	
Peak 15-minute volume, v15		487	500	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Grade	Grade	
Grade		6.00	-6.00	%
Segment length		0.87	0.87	mi
Number of lanes		2	2	
Driver population adjustment, fP		1.00	1.00	
Trucks and buses PCE, ET		5.5	1.5	
Recreational vehicles PCE, ER		6.0	1.2	
Heavy vehicle adjustment, fHV		0.957	0.995	
Flow rate, vp		1018	1005	pcphp1

RESULTS

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	974.2	1000.5
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.08	3.09
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1799 veh/h
Opposing direction volume, Vo 1679 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.742
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1955 pc/h	2460 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	2.4	mi/h
Percent Free Flow Speed, PFFS	6.1	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1955 pc/h	1834 pc/h
Base percent time-spent-following,(note-4) BPTSFd	95.2 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFd	98.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.15
Peak 15-min vehicle-miles of travel, VMT15	440 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1619 veh-mi
Peak 15-min total travel time, TT15	184.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	2.4	mi/h
Percent time-spent-following, PTSFd (from above)	98.7	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1955.4
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 4.03
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.95	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
Up/down	6.0 %	Access point density	19	/mi

Analysis direction volume, V_d 1759 veh/h
 Opposing direction volume, V_o 1871 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	9.7	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.852	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	2173 pc/h	1969 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 4.8 mi/h
 Free-flow speed, FFSd 39.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 4.5 mi/h
 Percent Free Flow Speed, PFFS 11.6 %

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.998	1.000
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1856 pc/h	1969 pc/h
Base percent time-spent-following,(note-4) BPTSFD	94.5 %	
Adjustment for no-passing zones, fnp	6.7	
Percent time-spent-following, PTSFD	97.8 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	F
Volume to capacity ratio, v/c	1.09
Peak 15-min vehicle-miles of travel, VMT15	417 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1583 veh-mi
Peak 15-min total travel time, TT15	92.5 veh-h
Capacity from ATS, CdATS	1448 veh/h
Capacity from PTSF, CdPTSF	1696 veh/h
Directional Capacity	1696 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	0.9	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)	4.5	mi/h
Percent time-spent-following, PTSFD (from above)	97.8	
Level of service, LOSD (from above)	F	

-----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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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, PTSFp1	-	%

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1851.6
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.52
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1881 veh/h
Opposing direction volume, Vo 1812 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.920
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	2001 pc/h	2095 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	1.3	mi/h
Adj. for access point density,(note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	4.9	mi/h
Percent Free Flow Speed, PFFS	12.5	%

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	2001 pc/h	1930 pc/h
Base percent time-spent-following,(note-4) BPTSFd	95.4 %	
Adjustment for no-passing zones, fnp	6.5	
Percent time-spent-following, PTSFd	98.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.18
Peak 15-min vehicle-miles of travel, VMT15	450 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1693 veh-mi
Peak 15-min total travel time, TT15	92.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	4.9	mi/h
Percent time-spent-following, PTSFd (from above)	98.7	
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 2001.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.35
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative AM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.80	
Shoulder width	6.0 ft	% Trucks and buses	3	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.3 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.30 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	0	/mi

Analysis direction volume, V_d 664 veh/h
 Opposing direction volume, V_o 809 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.987	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	841 pc/h	1011 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.3 mi/h
 Percent Free Flow Speed, PFFS 63.0 %

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	0.92	1.00	
Directional flow rate,(note-2) vi	900 pc/h	1011	pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.8	%	
Adjustment for no-passing zones, fnp	19.5		
Percent time-spent-following, PTSFD	84.0	%	

Level of Service and Other Performance Measures

Level of service, LOS	D	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	62	veh-mi
Peak-hour vehicle-miles of travel, VMT60	199	veh-mi
Peak 15-min total travel time, TT15	2.2	veh-h
Capacity from ATS, CdATS	1686	veh/h
Capacity from PTSF, CdPTSF	1567	veh/h
Directional Capacity	1567	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.3	mi/h
Percent time-spent-following, PTSFD (from above)	84.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	830.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.89
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative PM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.89
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 1044 veh/h
Opposing direction volume, Vo 716 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1182 pc/h	807 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.3	mi/h
Percent Free Flow Speed, PFFS	60.6	%

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	0.92	1.00
Directional flow rate, (note-2) vi	1272 pc/h	804 pc/h
Base percent time-spent-following, (note-4) BPTSFd	82.4 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFd	92.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.75
Peak 15-min vehicle-miles of travel, VMT15	88 veh-mi
Peak-hour vehicle-miles of travel, VMT60	313 veh-mi
Peak 15-min total travel time, TT15	3.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	27.3	mi/h
Percent time-spent-following, PTSFd (from above)	92.5	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1173.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.06
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative Saturday
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 989 veh/h
 Opposing direction volume, V_o 911 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1075 pc/h	993 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 26.7 mi/h
 Percent Free Flow Speed, PFFS 59.2 %

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	0.92
Directional flow rate,(note-2) vi	1075 pc/h	1074 pc/h
Base percent time-spent-following,(note-4) BPTSFD	80.8 %	
Adjustment for no-passing zones, fnp	16.5	
Percent time-spent-following, PTSFD	89.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.63
Peak 15-min vehicle-miles of travel, VMT15	81 veh-mi
Peak-hour vehicle-miles of travel, VMT60	297 veh-mi
Peak 15-min total travel time, TT15	3.0 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	26.7	mi/h
Percent time-spent-following, PTSFD (from above)	89.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1075.0
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.58
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 809 veh/h
Opposing direction volume, Vo 664 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.9
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.996	0.966
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	837 pc/h	709 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.7	mi/h
Percent Free Flow Speed, PFFS	68.2	%

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	0.92
Directional flow rate,(note-2) vi	834 pc/h	742 pc/h
Base percent time-spent-following,(note-4) BPTSFD	70.7 %	
Adjustment for no-passing zones, fnp	25.1	
Percent time-spent-following, PTSFD	84.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.49
Peak 15-min vehicle-miles of travel, VMT15	63 veh-mi
Peak-hour vehicle-miles of travel, VMT60	243 veh-mi
Peak 15-min total travel time, TT15	2.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.7	mi/h
Percent time-spent-following, PTSFD (from above)	84.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 834.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.14
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.90	
Shoulder width	6.0 ft	% Trucks and buses	1	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.3 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.30 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	0	/mi

Analysis direction volume, V_d 716 veh/h
 Opposing direction volume, V_o 1044 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	796 pc/h	1163 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 0.0 mi/h

Free-flow speed, FFSd 45.0 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 27.5 mi/h
 Percent Free Flow Speed, PFFS 61.1 %

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	0.92
Directional flow rate,(note-2) vi	796 pc/h	1258 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.1 %	
Adjustment for no-passing zones, fnp	16.8	
Percent time-spent-following, PTSFD	80.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.47
Peak 15-min vehicle-miles of travel, VMT15	60 veh-mi
Peak-hour vehicle-miles of travel, VMT60	215 veh-mi
Peak 15-min total travel time, TT15	2.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	27.5	mi/h
Percent time-spent-following, PTSFD (from above)	80.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	795.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.42
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 911 veh/h
Opposing direction volume, Vo 989 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	980 pc/h	1067 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.8	mi/h
Percent Free Flow Speed, PFFS	59.6	%

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	0.92
Directional flow rate,(note-2) vi	980 pc/h	1153 pc/h
Base percent time-spent-following,(note-4) BPTSFd	79.1 %	
Adjustment for no-passing zones, fnp	16.7	
Percent time-spent-following, PTSFd	86.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.58
Peak 15-min vehicle-miles of travel, VMT15	73 veh-mi
Peak-hour vehicle-miles of travel, VMT60	273 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	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	26.8	mi/h
Percent time-spent-following, PTSFd (from above)	86.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 979.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.53
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative AM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.85	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 398 veh/h
 Opposing direction volume, V_o 592 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.998	0.999
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	469 pc/h	697 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.9	mi/h
Percent Free Flow Speed, PFFS	74.4	%

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	468 pc/h	696 pc/h
Base percent time-spent-following,(note-4) BPTSFD	52.0 %	
Adjustment for no-passing zones, fnp	32.9	
Percent time-spent-following, PTSFD	65.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	35 veh-mi
Peak-hour vehicle-miles of travel, VMT60	119 veh-mi
Peak 15-min total travel time, TT15	1.1 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.9	mi/h
Percent time-spent-following, PTSFD (from above)	65.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	468.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.15
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative PM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 889 veh/h
Opposing direction volume, Vo 658 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	0.997
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	988 pc/h	733 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.6	mi/h
Percent Free Flow Speed, PFFS	64.6	%

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	988 pc/h	731 pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.4 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFd	88.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.58
Peak 15-min vehicle-miles of travel, VMT15	74 veh-mi
Peak-hour vehicle-miles of travel, VMT60	267 veh-mi
Peak 15-min total travel time, TT15	2.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.6	mi/h
Percent time-spent-following, PTSFd (from above)	88.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 987.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.98
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative Saturday
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.87	
Shoulder width	6.0	ft	% Trucks and buses	1	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 797 veh/h
 Opposing direction volume, V_o 830 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	916 pc/h	954 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.4	mi/h
Percent Free Flow Speed, PFFS	62.0	%

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	916 pc/h	954 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.8 %	
Adjustment for no-passing zones, fnp	20.8	
Percent time-spent-following, PTSFD	85.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.54
Peak 15-min vehicle-miles of travel, VMT15	69 veh-mi
Peak-hour vehicle-miles of travel, VMT60	239 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	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	27.4	mi/h
Percent time-spent-following, PTSFD (from above)	85.0	%
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	916.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.50
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 592 veh/h
Opposing direction volume, Vo 398 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	0.996	0.988
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	653 pc/h	443 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	33.4	mi/h
Percent Free Flow Speed, PFFS	75.6	%

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	651 pc/h	437 pc/h
Base percent time-spent-following,(note-4) BPTSFd	58.9 %	
Adjustment for no-passing zones, fnp	34.6	
Percent time-spent-following, PTSPFd	79.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.38
Peak 15-min vehicle-miles of travel, VMT15	49 veh-mi
Peak-hour vehicle-miles of travel, VMT60	178 veh-mi
Peak 15-min total travel time, TT15	1.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	33.4	mi/h
Percent time-spent-following, PTSPFd (from above)	79.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSPFpl	-	%

Level of Service and Other Performance Measures with Passing Lane

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

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 650.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.01
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.93	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 658 veh/h
 Opposing direction volume, V_o 889 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		1.000		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	708	pc/h		956	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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.0 mi/h
 Percent Free Flow Speed, PFFS 65.6 %

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	708 pc/h	956 pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.2 %	
Adjustment for no-passing zones, fnp	23.3	
Percent time-spent-following, PTSFD	77.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.42
Peak 15-min vehicle-miles of travel, VMT15	53 veh-mi
Peak-hour vehicle-miles of travel, VMT60	197 veh-mi
Peak 15-min total travel time, TT15	1.8 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	29.0	mi/h
Percent time-spent-following, PTSFD (from above)	77.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	707.5
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.17
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 830 veh/h
Opposing direction volume, Vo 797 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	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	856 pc/h	822 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.9	mi/h
Percent Free Flow Speed, PFFS	65.4	%

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	856 pc/h	822 pc/h
Base percent time-spent-following,(note-4) BPTSFd	71.3 %	
Adjustment for no-passing zones, fnp	23.9	
Percent time-spent-following, PTSFd	83.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.50
Peak 15-min vehicle-miles of travel, VMT15	64 veh-mi
Peak-hour vehicle-miles of travel, VMT60	249 veh-mi
Peak 15-min total travel time, TT15	2.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.9	mi/h
Percent time-spent-following, PTSFd (from above)	83.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 855.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.27
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative AM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 457 veh/h
 Opposing direction volume, V_o 912 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.984	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	510 pc/h	1002 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 6.5 mi/h

Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.5 mi/h
 Percent Free Flow Speed, PFFS 67.7 %

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	502 pc/h	1002 pc/h
Base percent time-spent-following,(note-4) BPTSFD	57.2 %	
Adjustment for no-passing zones, fnp	22.5	
Percent time-spent-following, PTSFD	64.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.30
Peak 15-min vehicle-miles of travel, VMT15	188 veh-mi
Peak-hour vehicle-miles of travel, VMT60	686 veh-mi
Peak 15-min total travel time, TT15	6.4 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.5	mi/h
Percent time-spent-following, PTSFD (from above)	64.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	502.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.21
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative PM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 1007 veh/h
Opposing direction volume, Vo 545 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	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1095 pc/h	597 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.1	mi/h
Percent Free Flow Speed, PFFS	64.5	%

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	1095 pc/h	592 pc/h
Base percent time-spent-following,(note-4) BPTSFd	77.1 %	
Adjustment for no-passing zones, fnp	20.6	
Percent time-spent-following, PTSFd	90.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.64
Peak 15-min vehicle-miles of travel, VMT15	410 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1511 veh-mi
Peak 15-min total travel time, TT15	14.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.1	mi/h
Percent time-spent-following, PTSFd (from above)	90.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1094.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.60
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative Saturday
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	1.5 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	26	/mi

Analysis direction volume, V_d 763 veh/h
 Opposing direction volume, V_o 638 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.981	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	845 pc/h	699 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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 29.2 mi/h
 Percent Free Flow Speed, PFFS 67.2 %

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	0.92	1.00	
Directional flow rate,(note-2) vi	901 pc/h	693	pc/h
Base percent time-spent-following,(note-4) BPTSFD	72.5	%	
Adjustment for no-passing zones, fnp	24.8		
Percent time-spent-following, PTSFD	86.5	%	

Level of Service and Other Performance Measures

Level of service, LOS	E	
Volume to capacity ratio, v/c	0.53	
Peak 15-min vehicle-miles of travel, VMT15	311	veh-mi
Peak-hour vehicle-miles of travel, VMT60	1145	veh-mi
Peak 15-min total travel time, TT15	10.6	veh-h
Capacity from ATS, CdATS	0	veh/h
Capacity from PTSF, CdPTSF	1564	veh/h
Directional Capacity	1564	veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.2	mi/h
Percent time-spent-following, PTSFD (from above)	86.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A	
Peak 15-min total travel time, TT15	-	veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	829.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.46
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 912 veh/h
Opposing direction volume, Vo 457 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1112 pc/h	562 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.2	mi/h
Percent Free Flow Speed, PFFS	64.9	%

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	1112 pc/h	557 pc/h
Base percent time-spent-following, (note-4) BPTSFd	77.6 %	
Adjustment for no-passing zones, fnp	20.2	
Percent time-spent-following, PTSFd	91.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.65
Peak 15-min vehicle-miles of travel, VMT15	417 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1368 veh-mi
Peak 15-min total travel time, TT15	14.8 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.2	mi/h
Percent time-spent-following, PTSFd (from above)	91.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1112.2
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.61
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 545 veh/h
 Opposing direction volume, V_o 1007 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.992		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	670	pc/h		1228	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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 26.5 mi/h
 Percent Free Flow Speed, PFFS 60.9 %

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	665 pc/h	1228	pc/h
Base percent time-spent-following,(note-4) BPTSFD	68.8	%	
Adjustment for no-passing zones, fnp	17.5		
Percent time-spent-following, PTSFD	74.9	%	

Level of Service and Other Performance Measures

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.39		
Peak 15-min vehicle-miles of travel, VMT15	249	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	818	veh-mi	
Peak 15-min total travel time, TT15	9.4	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	26.5	mi/h	
Percent time-spent-following, PTSFD (from above)	74.9		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

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	A		
Peak 15-min total travel time, TT15	-	veh-h	

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, VOL	664.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.35
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 638 veh/h
Opposing direction volume, Vo 763 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	784 pc/h	930 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	6.5	mi/h

Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.9	mi/h
Percent Free Flow Speed, PFFS	64.1	%

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	778 pc/h	930 pc/h
Base percent time-spent-following,(note-4) BPTSFD	70.0 %	
Adjustment for no-passing zones, fnp	22.9	
Percent time-spent-following, PTSFD	80.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.46
Peak 15-min vehicle-miles of travel, VMT15	292 veh-mi
Peak-hour vehicle-miles of travel, VMT60	957 veh-mi
Peak 15-min total travel time, TT15	10.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	27.9	mi/h
Percent time-spent-following, PTSFD (from above)	80.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 778.0
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.43
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative AM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 685 veh/h
 Opposing direction volume, V_o 979 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	842 pc/h	1204 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h

Free-flow speed, FFSd 51.5 mi/h

Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 33.8 mi/h
 Percent Free Flow Speed, PFFS 65.7 %

-----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	0.92
Directional flow rate,(note-2) vi	835 pc/h	1298 pc/h
Base percent time-spent-following,(note-4) BPTSFD	75.9 %	
Adjustment for no-passing zones, fnp	15.9	
Percent time-spent-following, PTSFD	82.1 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.49
Peak 15-min vehicle-miles of travel, VMT15	501 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1644 veh-mi
Peak 15-min total travel time, TT15	14.8 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	33.8	mi/h
Percent time-spent-following, PTSFD (from above)	82.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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, PTSFp1	-	%

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	835.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.47
Bicycle LOS	D

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative PM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 1036 veh/h
Opposing direction volume, Vo 657 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.977
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1263 pc/h	820 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	33.5	mi/h
Percent Free Flow Speed, PFFS	65.1	%

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	0.92
Directional flow rate, (note-2) vi	1263 pc/h	871 pc/h
Base percent time-spent-following, (note-4) BPTSFd	82.6 %	
Adjustment for no-passing zones, fnp	15.6	
Percent time-spent-following, PTSFd	91.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.74
Peak 15-min vehicle-miles of travel, VMT15	758 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2486 veh-mi
Peak 15-min total travel time, TT15	22.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.5	mi/h
Percent time-spent-following, PTSFd (from above)	91.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1263.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.68
 Bicycle LOS E

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative Saturday
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	-3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 818 veh/h
 Opposing direction volume, V_o 800 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	998 pc/h	983 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 34.3 mi/h
 Percent Free Flow Speed, PFFS 66.7 %

-----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	0.92	
Directional flow rate,(note-2) vi	998 pc/h	1060	pc/h
Base percent time-spent-following,(note-4) BPTSFD	78.8	%	
Adjustment for no-passing zones, fnp	17.9		
Percent time-spent-following, PTSFD	87.5	%	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	E		
Volume to capacity ratio, v/c	0.59		
Peak 15-min vehicle-miles of travel, VMT15	599	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1963	veh-mi	
Peak 15-min total travel time, TT15	17.4	veh-h	
Capacity from ATS, CdATS	1700	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	34.3	mi/h	
Percent time-spent-following, PTSFD (from above)	87.5		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	997.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.56
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 979 veh/h
Opposing direction volume, Vo 685 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1282 pc/h	890 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	32.8	mi/h
Percent Free Flow Speed, PFFS	63.8	%

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	0.92	1.00
Directional flow rate, (note-2) vi	1382 pc/h	890 pc/h
Base percent time-spent-following, (note-4) BPTSFD	85.2 %	
Adjustment for no-passing zones, fnp	14.2	
Percent time-spent-following, PTSFD	93.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.81
Peak 15-min vehicle-miles of travel, VMT15	763 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2350 veh-mi
Peak 15-min total travel time, TT15	23.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	32.8	mi/h
Percent time-spent-following, PTSFD (from above)	93.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1271.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.68
 Bicycle LOS E

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77	
Shoulder width	6.0 ft	% Trucks and buses	8	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.4 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1	%
Grade: Length	0.25 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	14	/mi

Analysis direction volume, V_d 657 veh/h
 Opposing direction volume, V_o 1036 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.985	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	866 pc/h	1345 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 32.5 mi/h
 Percent Free Flow Speed, PFFS 63.2 %

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	0.92	1.00
Directional flow rate,(note-2) vi	927 pc/h	1345 pc/h
Base percent time-spent-following,(note-4) BPTSFD	79.1 %	
Adjustment for no-passing zones, fnp	14.1	
Percent time-spent-following, PTSFD	84.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.55
Peak 15-min vehicle-miles of travel, VMT15	512 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1577 veh-mi
Peak 15-min total travel time, TT15	15.7 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	32.5	mi/h
Percent time-spent-following, PTSFD (from above)	84.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	853.2
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.48
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 800 veh/h
Opposing direction volume, Vo 818 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.998	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	853 pc/h	870 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	36.3	mi/h
Percent Free Flow Speed, PFFS	70.5	%

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	0.92	1.00
Directional flow rate,(note-2) vi	925 pc/h	870 pc/h
Base percent time-spent-following,(note-4) BPTSFD	74.1 %	
Adjustment for no-passing zones, fnp	22.1	
Percent time-spent-following, PTSFD	85.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.54
Peak 15-min vehicle-miles of travel, VMT15	511 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1920 veh-mi
Peak 15-min total travel time, TT15	14.1 veh-h
Capacity from ATS, CdATS	1697 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	85.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 851.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 2.51
 Bicycle LOS C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for $v > 200$ veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative AM
 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

----- 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		4	
Median type			Divided		Divided	
Free-flow speed:			Base		Base	
FFS or BFFS			55.0	mph	55.0	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	1.0	mph
Free-flow speed			53.0	mph	54.0	mph

----- VOLUME -----

	Direction		1		2	
Volume, V			781	vph	1001	vph
Peak-hour factor, PHF			0.80		0.87	
Peak 15-minute volume, v15			244		288	
Trucks and buses			3	%	1	%
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			0.985		0.995	
Flow rate, vp			495	pcphpl	578	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			495	pcphpl 578	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			9.0	pc/mi/ln 10.5	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	488.1	575.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.75	2.35
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative PM
Highway: Carmel Valley Road
From/To: Rio to Rancho San Carlos
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 8

----- 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	4	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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 1.0	mph
Free-flow speed			53.0	mph 54.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1111	vph 777	vph
Peak-hour factor, PHF			0.88	0.93	
Peak 15-minute volume, v15			316	209	
Trucks and buses			1	% 1	%
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			0.995	0.995	
Flow rate, vp			634	pcphpl 419	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			634	pcphpl 419	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	A	
Density, D			11.5	pc/mi/ln 7.6	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	631.3	417.7
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.40	2.19
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative Saturday
Highway: Carmel Valley Road
From/To: Rio to Rancho San Carlos
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 8

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	4	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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 1.0	mph
Free-flow speed			53.0	mph 54.0	mph

VOLUME

	Direction		1	2	
Volume, V			912	vph 889	vph
Peak-hour factor, PHF			0.91	0.94	
Peak 15-minute volume, v15			251	236	
Trucks and buses			1	% 1	%
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			0.995	0.995	
Flow rate, vp			503	pcphpl 475	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			503	pcphpl 475	pcphpl
Free-flow speed, FFS			53.0	mph 54.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			A	A	
Density, D			9.1	pc/mi/ln 8.6	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	501.1	472.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.28	2.25
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative AM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

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			55.0	mph 55.0	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			53.0	mph 53.0	mph

VOLUME

	Direction		1	2	
Volume, V			1085	vph 1352	vph
Peak-hour factor, PHF			0.86		0.68
Peak 15-minute volume, v15			315		497
Trucks and buses			2	% 2	%
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			0.990		0.990
Flow rate, vp			637	pcphpl 1004	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			637	pcphpl 1004	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	C	
Density, D			11.6	pc/mi/ln 18.3	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	630.8	994.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.63	2.86
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative PM
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

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			55.0	mph 55.0	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			53.0	mph 53.0	mph

VOLUME

	Direction		1	2	
Volume, V			1454	vph 1097	vph
Peak-hour factor, PHF			0.95		0.88
Peak 15-minute volume, v15			383		312
Trucks and buses			2	% 1	%
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			0.990		0.995
Flow rate, vp			772	pcphpl 626	pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			772	pcphpl 626	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	B	
Density, D			14.0	pc/mi/ln 11.4	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	765.3	623.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.73	2.39
Bicycle LOS	C	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative Saturday
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

----- 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			55.0	mph 55.0	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			53.0	mph 53.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1177	vph 1119	vph
Peak-hour factor, PHF			0.96	0.94	
Peak 15-minute volume, v15			307	298	
Trucks and buses			1	% 1	%
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			0.995	0.995	
Flow rate, vp			616	pcphpl 598	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			616	pcphpl 598	pcphpl
Free-flow speed, FFS			53.0	mph 53.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	A	
Density, D			11.2	pc/mi/ln 10.9	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	613.0	595.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.38	2.37
Bicycle LOS	B	B

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative AM
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

----- 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			0	0	
Median type			Divided	Divided	
Free-flow speed:			Base	Base	
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1082	vph 1108	vph
Peak-hour factor, PHF			0.86	0.76	
Peak 15-minute volume, v15			315	364	
Trucks and buses			2	% 2	%
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			0.990	0.990	
Flow rate, vp			635	pcphpl 736	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			635	pcphpl	736 pcphpl
Free-flow speed, FFS			55.0	mph	55.0 mph
Avg. passenger-car travel speed, S			55.0	mph	55.0 mph
Level of service, LOS			B		B
Density, D			11.5	pc/mi/ln	13.4 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	629.1	728.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.63	2.70
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative PM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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			0		0
Median type			Divided		Divided
Free-flow speed:			Base		Base
FFS or BFFS			55.0	mph	55.0 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			0.0	mph	0.0 mph
Free-flow speed			55.0	mph	55.0 mph

VOLUME

	Direction		1	2	
Volume, V			1154	vph	960 vph
Peak-hour factor, PHF			0.95		0.90
Peak 15-minute volume, v15			304		267
Trucks and buses			2	%	2 %
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			0.990		0.990
Flow rate, vp			613	pcphpl	538 pcphpl

RESULTS

	Direction		1	2	
Flow rate, vp			613	pcphpl 538	pcphpl
Free-flow speed, FFS			55.0	mph 55.0	mph
Avg. passenger-car travel speed, S			55.0	mph 55.0	mph
Level of service, LOS			B	A	
Density, D			11.1	pc/mi/ln 9.8	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	607.4	533.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.61	2.54
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative Saturday
Highway: Carmel Valley Road
From/To: SR 1 / Carmel Rancho
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 10

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			0		0
Median type			Divided		Divided
Free-flow speed:			Base		Base
FFS or BFFS			55.0	mph 55.0	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			0.0	mph 0.0	mph
Free-flow speed			55.0	mph 55.0	mph

VOLUME

	Direction		1	2	
Volume, V			1052	vph 907	vph
Peak-hour factor, PHF			0.96		0.98
Peak 15-minute volume, v15			274		231
Trucks and buses			2	% 2	%
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			0.990		0.990
Flow rate, vp			553	pcphpl 467	pcphpl

RESULTS

	Direction 1		Direction 2	
Flow rate, vp	553	pcphpl	467	pcphpl
Free-flow speed, FFS	55.0	mph	55.0	mph
Avg. passenger-car travel speed, S	55.0	mph	55.0	mph
Level of service, LOS	A		A	
Density, D	10.1	pc/mi/ln	8.5	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	547.9	462.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.56	2.47
Bicycle LOS	C	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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 362 veh/h
Opposing direction volume, Vo 548 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.982
Grade adj. factor, (note-1) fg	0.94	0.98
Directional flow rate, (note-2) vi	519 pc/h	749 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.3	mi/h
Percent Free Flow Speed, PFFS	71.4	%

-----Percent Time-Spent-Following-----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.988	1.000
Grade adjustment factor,(note-1) fg	0.95	0.99
Directional flow rate,(note-2) vi	507 pc/h	728 pc/h
Base percent time-spent-following,(note-4) BPTSFD	54.9 %	
Adjustment for no-passing zones, fnp	31.0	
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	0.30
Peak 15-min vehicle-miles of travel, VMT15	310 veh-mi
Peak-hour vehicle-miles of travel, VMT60	941 veh-mi
Peak 15-min total travel time, TT15	10.2 veh-h
Capacity from ATS, CdATS	1641 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	476.3
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.07
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.88
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 859 veh/h
Opposing direction volume, Vo 622 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.994	0.988
Grade adj. factor, (note-1) fg	1.00	0.98
Directional flow rate, (note-2) vi	982 pc/h	730 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 1.3 mi/h
Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
Average travel speed, ATSD 26.9 mi/h
Percent Free Flow Speed, PFFS 63.3 %

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	0.99
Directional flow rate, (note-2) vi	976 pc/h	714 pc/h
Base percent time-spent-following, (note-4) BPTSFD	74.9 %	
Adjustment for no-passing zones, fnp	22.7	
Percent time-spent-following, PTSFD	88.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.57
Peak 15-min vehicle-miles of travel, VMT15	634 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2233 veh-mi
Peak 15-min total travel time, TT15	23.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6 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)	26.9 mi/h
Percent time-spent-following, PTSFD (from above)	88.0 %
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, ATSp1	-
Percent free flow speed including passing lane, PFFSp1	0.0 %

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 976.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.20
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 760 veh/h
 Opposing direction volume, V_o 795 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.4
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.996
Grade adj. factor, (note-1) fg	0.99	0.99
Directional flow rate, (note-2) v_i	811 pc/h	849 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 27.3 mi/h
 Percent Free Flow Speed, PFFS 64.2 %

-----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	800 pc/h	837	pc/h
Base percent time-spent-following,(note-4) BPTSFD	69.8	%	
Adjustment for no-passing zones, fnp	24.6		
Percent time-spent-following, PTSFD	81.8	%	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D		
Volume to capacity ratio, v/c	0.47		
Peak 15-min vehicle-miles of travel, VMT15	520	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	1976	veh-mi	
Peak 15-min total travel time, TT15	19.1	veh-h	
Capacity from ATS, CdATS	1676	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	27.3	mi/h	
Percent time-spent-following, PTSFD (from above)	81.8		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	800.0
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.89
Bicycle LOS	C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 548 veh/h
Opposing direction volume, Vo 362 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	2.0
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.979	0.971
Grade adj. factor,(note-1) fg	0.97	0.90
Directional flow rate,(note-2) vi	627 pc/h	450 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	31.8	mi/h
Percent Free Flow Speed, PFFS	74.9	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.982
Grade adjustment factor,(note-1) fg	0.97	0.90
Directional flow rate,(note-2) vi	618 pc/h	445 pc/h
Base percent time-spent-following,(note-4) BPTSFd	56.7 %	
Adjustment for no-passing zones, fnp	35.0	
Percent time-spent-following, PTSFd	77.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.36
Peak 15-min vehicle-miles of travel, VMT15	387 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1425 veh-mi
Peak 15-min total travel time, TT15	12.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1562 veh/h
Directional Capacity	1562 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	31.8	mi/h
Percent time-spent-following, PTSFd (from above)	77.0	
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	-	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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 595.7
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.18
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 622 veh/h
 Opposing direction volume, V_o 859 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.3
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.982	0.991
Grade adj. factor, (note-1) fg	0.98	1.00
Directional flow rate, (note-2) v_i	695 pc/h	932 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h
 Free-flow speed, FFSd 42.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 27.5 mi/h
 Percent Free Flow Speed, PFFS 64.8 %

-----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	0.98	1.00
Directional flow rate, (note-2) vi	682 pc/h	924 pc/h
Base percent time-spent-following, (note-4) BPTSFD	65.5 %	
Adjustment for no-passing zones, fnp	24.1	
Percent time-spent-following, PTSFD	75.7 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	D
Volume to capacity ratio, v/c	0.40
Peak 15-min vehicle-miles of travel, VMT15	435 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1617 veh-mi
Peak 15-min total travel time, TT15	15.8 veh-h
Capacity from ATS, CdATS	1685 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.6	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)	27.5	mi/h
Percent time-spent-following, PTSFD (from above)	75.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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, PTSFp1	-	%

-----Level of Service and Other Performance Measures with Passing Lane-----

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	668.8
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.24
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 795 veh/h
Opposing direction volume, Vo 760 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.4
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.991	0.988
Grade adj. factor, (note-1) fg	1.00	0.99
Directional flow rate, (note-2) vi	872 pc/h	845 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.8	mi/h
Percent Free Flow Speed, PFFS	63.2	%

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	864 pc/h	826 pc/h
Base percent time-spent-following, (note-4) BPTSFD	72.1 %	
Adjustment for no-passing zones, fnp	23.7	
Percent time-spent-following, PTSFD	84.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.51
Peak 15-min vehicle-miles of travel, VMT15	562 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2067 veh-mi
Peak 15-min total travel time, TT15	20.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	26.8	mi/h
Percent time-spent-following, PTSFD (from above)	84.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 864.1
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.37
 Bicycle LOS C

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
 E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative + Project AM
 Highway: SR 1
 From/To: Carpenter / Ocean
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 1

----- FREE-FLOW SPEED -----

	Direction 1		Direction 2	
Lane width	12.0	ft	12.0	ft
Lateral clearance:				
Right edge	5.0	ft	5.0	ft
Left edge	6.0	ft	6.0	ft
Total lateral clearance	11.0	ft	11.0	ft
Access points per mile	1		2	
Median type	Undivided		Undivided	
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	0.2	mph	0.2	mph
Median type adjustment, FM	1.6	mph	1.6	mph
Access points adjustment, FA	0.3	mph	0.5	mph
Free-flow speed	43.0	mph	42.7	mph

----- VOLUME -----

	Direction 1		Direction 2	
Volume, V	1456	vph	1845	vph
Peak-hour factor, PHF	0.91		0.91	
Peak 15-minute volume, v15	400		507	
Trucks and buses	2	%	3	%
Recreational vehicles	0	%	0	%
Terrain type	Grade		Grade	
Grade	6.00	%	-6.00	%
Segment length	0.73	mi	0.73	mi
Number of lanes	2		2	
Driver population adjustment, fP	1.00		1.00	
Trucks and buses PCE, ET	5.0		1.5	
Recreational vehicles PCE, ER	6.0		1.2	
Heavy vehicle adjustment, fHV	0.926		0.985	
Flow rate, vp	863	pcphpl	1028	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			863	pcphpl 1028	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			19.2	pc/mi/ln 22.8	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	800.0	1013.7
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.21	3.58
Bicycle LOS	C	D

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative + Project PM
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			1		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.3	mph 0.5	mph
Free-flow speed			43.0	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1948	vph 1756	vph
Peak-hour factor, PHF			0.95	0.96	
Peak 15-minute volume, v15			513	457	
Trucks and buses			2	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.73	mi 0.73	mi
Number of lanes			2		
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.926	0.995	
Flow rate, vp			1107	pcphpl 919	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			1107	pcphpl 919	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			24.6	pc/mi/ln 20.4	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	1025.3	914.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.33	3.05
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative + Project Saturday
Highway: SR 1
From/To: Carpenter / Ocean
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 1

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			1		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.3	mph 0.5	mph
Free-flow speed			43.0	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1826	vph 2042	vph
Peak-hour factor, PHF			0.91	0.97	
Peak 15-minute volume, v15			502	526	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.73	mi 0.73	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.0	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.962	0.995	
Flow rate, vp			1043	pcphpl 1057	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			1043	pcphpl 1057	pcphpl
Free-flow speed, FFS			43.0	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			23.2	pc/mi/ln 23.5	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	1003.3	1052.6
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.09	3.12
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative + Project AM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2	2	
Median type			Undivided	Undivided	
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1684	vph 1807	vph
Peak-hour factor, PHF			0.89	0.92	
Peak 15-minute volume, v15			473	491	
Trucks and buses			3	% 4	%
Recreational vehicles			0	% 0	%
Terrain type			Grade	Grade	
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2	2	
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.3	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.887	0.980	
Flow rate, vp			1066	pcphpl 1001	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			1066	pcphpl 1001	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			23.7	pc/mi/ln 22.2	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	946.1	982.1
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.54	3.83
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: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative + Project PM
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1898	vph 1781	vph
Peak-hour factor, PHF			0.96	0.95	
Peak 15-minute volume, v15			494	469	
Trucks and buses			1	% 2	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.5	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.957	0.990	
Flow rate, vp			1033	pcphpl 946	pcphpl

----- RESULTS -----

	Direction		1	2	
Flow rate, vp			1033	pcphpl 946	pcphpl
Free-flow speed, FFS			42.7	mph 42.7	mph
Avg. passenger-car travel speed, S			45.0	mph 45.0	mph
Level of service, LOS			C	C	
Density, D			23.0	pc/mi/ln 21.0	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	988.5	937.4
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.09	3.29
Bicycle LOS	C	C

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

Phone: Fax:
E-mail:

----- OPERATIONAL ANALYSIS -----

Analyst: JO
Agency/Co: Mott MacDonald
Date: 12/6/17
Analysis Period: Cumulative + Project Saturday
Highway: SR 1
From/To: Ocean / Carmel Valley Rd
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 2 NB

----- FREE-FLOW SPEED -----

	Direction		1	2	
Lane width			12.0	ft 12.0	ft
Lateral clearance:					
Right edge			5.0	ft 5.0	ft
Left edge			6.0	ft 6.0	ft
Total lateral clearance			11.0	ft 11.0	ft
Access points per mile			2		2
Median type			Undivided		Undivided
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			0.2	mph 0.2	mph
Median type adjustment, FM			1.6	mph 1.6	mph
Access points adjustment, FA			0.5	mph 0.5	mph
Free-flow speed			42.7	mph 42.7	mph

----- VOLUME -----

	Direction		1	2	
Volume, V			1849	vph 1916	vph
Peak-hour factor, PHF			0.93	0.94	
Peak 15-minute volume, v15			497	510	
Trucks and buses			1	% 1	%
Recreational vehicles			0	% 0	%
Terrain type			Grade		Grade
Grade			6.00	% -6.00	%
Segment length			0.87	mi 0.87	mi
Number of lanes			2		2
Driver population adjustment, fP			1.00	1.00	
Trucks and buses PCE, ET			5.5	1.5	
Recreational vehicles PCE, ER			6.0	1.2	
Heavy vehicle adjustment, fHV			0.957	0.995	
Flow rate, vp			1038	pcphpl 1024	pcphpl

----- RESULTS -----

	Direction	1	2	
Flow rate, vp		1038	pcphp1 1024	pcphp1
Free-flow speed, FFS		42.7	mph 42.7	mph
Avg. passenger-car travel speed, S		45.0	mph 45.0	mph
Level of service, LOS		C	C	
Density, D		23.1	pc/mi/ln 22.8	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	994.1	1019.1
Effective width of outside lane, We	22.00	22.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	3.09	3.10
Bicycle LOS	C	C

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 JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	-6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1807 veh/h
Opposing direction volume, Vo 1684 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.742
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1964 pc/h	2467 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	2.3	mi/h
Percent Free Flow Speed, PFFS	5.8	%

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	0.995
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1964 pc/h	1839 pc/h
Base percent time-spent-following,(note-4) BPTSFD	95.2 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFD	98.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.16
Peak 15-min vehicle-miles of travel, VMT15	442 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1626 veh-mi
Peak 15-min total travel time, TT15	195.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	2.3	mi/h
Percent time-spent-following, PTSFD (from above)	98.7	
Level of service, LOSD (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1964.1
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	4.03
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway SR 1
From/To Ocean / CVR
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 2 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	2 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.9 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.90 mi	% No-passing zones	100 %
Up/down	6.0 %	Access point density	19 /mi

Analysis direction volume, Vd 1781 veh/h
Opposing direction volume, Vo 1898 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	9.7	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.852	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	2200 pc/h	1998 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	1.3	mi/h
Adj. for access point density, (note-3) fA	4.8	mi/h
Free-flow speed, FFSd	39.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	4.1	mi/h
Percent Free Flow Speed, PFFS	10.5	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.998	1.000
Grade adjustment factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1879 pc/h	1998 pc/h
Base percent time-spent-following, (note-4) BPTSFD	94.7 %	
Adjustment for no-passing zones, fnp	6.8	
Percent time-spent-following, PTSFD	98.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.11
Peak 15-min vehicle-miles of travel, VMT15	422 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1603 veh-mi
Peak 15-min total travel time, TT15	103.6 veh-h
Capacity from ATS, CdATS	1448 veh/h
Capacity from PTSF, CdPTSF	1696 veh/h
Directional Capacity	1696 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	4.1	mi/h
Percent time-spent-following, PTSFD (from above)	98.0	%
Level of service, LOSd (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1874.7
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.53
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway SR 1
 From/To Ocean / CVR
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 2 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94	
Shoulder width	5.0 ft	% Trucks and buses	1	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.9 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.90 mi	% No-passing zones	100	%
Up/down	-6.0 %	Access point density	19	/mi

Analysis direction volume, V_d 1916 veh/h
 Opposing direction volume, V_o 1849 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	9.7
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.920
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	2038 pc/h	2138 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 4.8 mi/h
 Free-flow speed, FFSd 39.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 4.2 mi/h
 Percent Free Flow Speed, PFFS 10.9 %

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	0.999
Grade adjustment factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	2038 pc/h	1969 pc/h
Base percent time-spent-following,(note-4) BPTSFD	95.6 %	
Adjustment for no-passing zones, fnp	6.5	
Percent time-spent-following, PTSFD	98.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	F
Volume to capacity ratio, v/c	1.20
Peak 15-min vehicle-miles of travel, VMT15	459 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1724 veh-mi
Peak 15-min total travel time, TT15	108.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.9	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)	4.2	mi/h
Percent time-spent-following, PTSFD (from above)	98.9	
Level of service, LOSD (from above)	F	

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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	2038.3
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.36
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.80
Shoulder width	6.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 669 veh/h
Opposing direction volume, Vo 817 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.988	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	846 pc/h	1021 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.2	mi/h
Percent Free Flow Speed, PFFS	62.7	%

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	0.92	1.00
Directional flow rate,(note-2) vi	907 pc/h	1021 pc/h
Base percent time-spent-following,(note-4) BPTSFd	75.7 %	
Adjustment for no-passing zones, fnp	19.2	
Percent time-spent-following, PTSFd	84.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.53
Peak 15-min vehicle-miles of travel, VMT15	63 veh-mi
Peak-hour vehicle-miles of travel, VMT60	201 veh-mi
Peak 15-min total travel time, TT15	2.2 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.2	mi/h
Percent time-spent-following, PTSFd (from above)	84.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 836.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.89
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project PM
 Highway SR 1
 From/To Rio Rd / Carmel Valley Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.89	
Shoulder width	6.0 ft	% Trucks and buses	3	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	0.3 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0	%
Grade: Length	0.30 mi	% No-passing zones	100	%
Up/down	3.0 %	Access point density	0	/mi

Analysis direction volume, V_d 1071 veh/h
 Opposing direction volume, V_o 739 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1213 pc/h	833 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 0.0 mi/h

Free-flow speed, FFSd 45.0 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 26.8 mi/h
 Percent Free Flow Speed, PFFS 59.6 %

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	0.92	1.00
Directional flow rate,(note-2) vi	1305 pc/h	830 pc/h
Base percent time-spent-following,(note-4) BPTSFD	83.4 %	
Adjustment for no-passing zones, fnp	15.8	
Percent time-spent-following, PTSFD	93.1 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.77
Peak 15-min vehicle-miles of travel, VMT15	90 veh-mi
Peak-hour vehicle-miles of travel, VMT60	321 veh-mi
Peak 15-min total travel time, TT15	3.4 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1567 veh/h
Directional Capacity	1567 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	26.8	mi/h
Percent time-spent-following, PTSFD (from above)	93.1	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1203.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.08
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project Saturday
Highway SR 1
From/To Rio Rd / Carmel Valley Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 1027 veh/h
Opposing direction volume, Vo 948 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	1116 pc/h	1034 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.0	mi/h
Percent Free Flow Speed, PFFS	57.8	%

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	0.92
Directional flow rate, (note-2) vi	1116 pc/h	1118 pc/h
Base percent time-spent-following, (note-4) BPTSFd	82.2 %	
Adjustment for no-passing zones, fnp	15.3	
Percent time-spent-following, PTSFd	89.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.66
Peak 15-min vehicle-miles of travel, VMT15	84 veh-mi
Peak-hour vehicle-miles of travel, VMT60	308 veh-mi
Peak 15-min total travel time, TT15	3.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	26.0	mi/h
Percent time-spent-following, PTSFd (from above)	89.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1116.3
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.60
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project AM
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.97
Shoulder width	6.0 ft	% Trucks and buses	4 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 817 veh/h
 Opposing direction volume, V_o 669 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.9
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.996	0.966
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	846 pc/h	714 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 0.0 mi/h
 Free-flow speed, FFSd 45.0 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 30.6 mi/h
 Percent Free Flow Speed, PFFS 68.0 %

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	0.92
Directional flow rate,(note-2) vi	842 pc/h	748 pc/h
Base percent time-spent-following,(note-4) BPTSFD	70.7 %	
Adjustment for no-passing zones, fnp	24.8	
Percent time-spent-following, PTSFD	83.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.50
Peak 15-min vehicle-miles of travel, VMT15	63 veh-mi
Peak-hour vehicle-miles of travel, VMT60	245 veh-mi
Peak 15-min total travel time, TT15	2.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	30.6	mi/h
Percent time-spent-following, PTSFD (from above)	83.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	842.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.14
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway SR 1
From/To Carmel Valley Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 3 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.90
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, Vd 739 veh/h
Opposing direction volume, Vo 1071 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	0.999	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	822 pc/h	1194 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	0.0	mi/h
Free-flow speed, FFSd	45.0	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.1	mi/h
Percent Free Flow Speed, PFFS	60.1	%

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	0.92
Directional flow rate, (note-2) vi	821 pc/h	1291 pc/h
Base percent time-spent-following, (note-4) BPTSFD	75.4 %	
Adjustment for no-passing zones, fnp	16.1	
Percent time-spent-following, PTSFD	81.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	62 veh-mi
Peak-hour vehicle-miles of travel, VMT60	222 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	27.1	mi/h
Percent time-spent-following, PTSFD (from above)	81.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 821.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.44
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway SR 1
 From/To Carmel Valley Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 3 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	0 %
Grade: Length	0.30 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	0 /mi

Analysis direction volume, V_d 948 veh/h
 Opposing direction volume, V_o 1027 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.3
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.997
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1019 pc/h	1108 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 0.0 mi/h

Free-flow speed, FFSd 45.0 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 26.2 mi/h
 Percent Free Flow Speed, PFFS 58.2 %

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	0.92
Directional flow rate,(note-2) vi	1019 pc/h	1198 pc/h
Base percent time-spent-following,(note-4) BPTSFD	80.6 %	
Adjustment for no-passing zones, fnp	15.5	
Percent time-spent-following, PTSFD	87.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.60
Peak 15-min vehicle-miles of travel, VMT15	76 veh-mi
Peak-hour vehicle-miles of travel, VMT60	284 veh-mi
Peak 15-min total travel time, TT15	2.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	26.2	mi/h
Percent time-spent-following, PTSFD (from above)	87.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1019.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.55
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.85
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 403 veh/h
Opposing direction volume, Vo 594 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.998	0.999
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	475 pc/h	700 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	32.8	mi/h
Percent Free Flow Speed, PFFS	74.2	%

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	474 pc/h	699 pc/h
Base percent time-spent-following,(note-4) BPTSFd	52.4 %	
Adjustment for no-passing zones, fnp	32.7	
Percent time-spent-following, PTSFd	65.6 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.28
Peak 15-min vehicle-miles of travel, VMT15	36 veh-mi
Peak-hour vehicle-miles of travel, VMT60	121 veh-mi
Peak 15-min total travel time, TT15	1.1 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	32.8	mi/h
Percent time-spent-following, PTSFd (from above)	65.6	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 474.1
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.16
 Bicycle LOS B

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project PM
 Highway SR 1
 From/To Ribera Rd / Rio Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 NB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.90	
Shoulder width	6.0	ft	% Trucks and buses	3	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 903 veh/h
 Opposing direction volume, V_o 672 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		0.997	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	1003	pc/h		749	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 0.8 mi/h
 Free-flow speed, FFSd 44.3 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.4 mi/h
 Percent Free Flow Speed, PFFS 64.1 %

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	1003 pc/h	747 pc/h
Base percent time-spent-following,(note-4) BPTSFD	75.9 %	
Adjustment for no-passing zones, fnp	21.8	
Percent time-spent-following, PTSFD	88.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.59
Peak 15-min vehicle-miles of travel, VMT15	75 veh-mi
Peak-hour vehicle-miles of travel, VMT60	271 veh-mi
Peak 15-min total travel time, TT15	2.6 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.4	mi/h
Percent time-spent-following, PTSFD (from above)	88.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1003.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.98
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project Saturday
Highway SR 1
From/To Ribera Rd / Rio Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.87
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 821 veh/h
Opposing direction volume, Vo 849 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.0	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	944 pc/h	976 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.1	mi/h
Percent Free Flow Speed, PFFS	61.1	%

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	944 pc/h	976 pc/h
Base percent time-spent-following, (note-4) BPTSFd	76.2 %	
Adjustment for no-passing zones, fnp	20.0	
Percent time-spent-following, PTSFd	86.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.56
Peak 15-min vehicle-miles of travel, VMT15	71 veh-mi
Peak-hour vehicle-miles of travel, VMT60	246 veh-mi
Peak 15-min total travel time, TT15	2.6 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	27.1	mi/h
Percent time-spent-following, PTSFd (from above)	86.0	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 943.7
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.51
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project AM
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.91	
Shoulder width	6.0	ft	% Trucks and buses	4	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 594 veh/h
 Opposing direction volume, V_o 403 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	0.996	0.988
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	655 pc/h	448 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	33.4	mi/h
Percent Free Flow Speed, PFFS	75.5	%

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	653 pc/h	443 pc/h
Base percent time-spent-following,(note-4) BPTSFD	58.8 %	
Adjustment for no-passing zones, fnp	34.5	
Percent time-spent-following, PTSFD	79.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.38
Peak 15-min vehicle-miles of travel, VMT15	49 veh-mi
Peak-hour vehicle-miles of travel, VMT60	178 veh-mi
Peak 15-min total travel time, TT15	1.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	33.4	mi/h
Percent time-spent-following, PTSFD (from above)	79.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	652.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.02
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway SR 1
From/To Rio Rd / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 4 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	6.0 ft	% Trucks and buses	0 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	0.3 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	3 /mi

Analysis direction volume, Vd 672 veh/h
Opposing direction volume, Vo 903 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	1.000	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	723 pc/h	971 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	0.8	mi/h
Free-flow speed, FFSd	44.3	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.8	mi/h
Percent Free Flow Speed, PFFS	65.1	%

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	723 pc/h	971 pc/h
Base percent time-spent-following,(note-4) BPTSFD	67.8 %	
Adjustment for no-passing zones, fnp	22.8	
Percent time-spent-following, PTSFD	77.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.43
Peak 15-min vehicle-miles of travel, VMT15	54 veh-mi
Peak-hour vehicle-miles of travel, VMT60	202 veh-mi
Peak 15-min total travel time, TT15	1.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	77.5	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 722.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.18
 Bicycle LOS B

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway SR 1
 From/To Rio Rd / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 4 SB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.97	
Shoulder width	6.0	ft	% Trucks and buses	0	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	0.3	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	0	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	3	/mi

Analysis direction volume, V_d 849 veh/h
 Opposing direction volume, V_o 821 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	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	875 pc/h	846 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 0.8 mi/h

Free-flow speed, FFSd 44.3 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.6 mi/h
 Percent Free Flow Speed, PFFS 64.6 %

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	875 pc/h	846 pc/h
Base percent time-spent-following,(note-4) BPTSFD	72.5 %	
Adjustment for no-passing zones, fnp	23.2	
Percent time-spent-following, PTSFD	84.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.51
Peak 15-min vehicle-miles of travel, VMT15	66 veh-mi
Peak-hour vehicle-miles of travel, VMT60	255 veh-mi
Peak 15-min total travel time, TT15	2.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	0.3	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)	28.6	mi/h
Percent time-spent-following, PTSFD (from above)	84.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	875.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	2.28
Bicycle LOS	B

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.91
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 461 veh/h
Opposing direction volume, Vo 919 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.984	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	515 pc/h	1010 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	29.4	mi/h
Percent Free Flow Speed, PFFS	67.5	%

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	507 pc/h	1010 pc/h
Base percent time-spent-following, (note-4) BPTSFD	57.5 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFD	65.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.30
Peak 15-min vehicle-miles of travel, VMT15	190 veh-mi
Peak-hour vehicle-miles of travel, VMT60	692 veh-mi
Peak 15-min total travel time, TT15	6.5 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	29.4	mi/h
Percent time-spent-following, PTSFD (from above)	65.0	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 506.6
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.21
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project PM
 Highway Carmel Valley Road
 From/To Schulte / Robinson Canyon
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 EB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.92	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 1028 veh/h
 Opposing direction volume, V_o 564 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1117 pc/h	618 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.7	mi/h
Percent Free Flow Speed, PFFS	63.8	%

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	1117 pc/h	613 pc/h
Base percent time-spent-following,(note-4) BPTSFD	77.8 %	
Adjustment for no-passing zones, fnp	20.1	
Percent time-spent-following, PTSFD	90.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.66
Peak 15-min vehicle-miles of travel, VMT15	419 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1542 veh-mi
Peak 15-min total travel time, TT15	15.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	27.7	mi/h
Percent time-spent-following, PTSFD (from above)	90.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1117.4
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.61
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project Saturday
Highway Carmel Valley Road
From/To Schulte / Robinson Canyon
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	26 /mi

Analysis direction volume, Vd 791 veh/h
Opposing direction volume, Vo 669 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.986	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	872 pc/h	733 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	28.7	mi/h
Percent Free Flow Speed, PFFS	66.1	%

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	0.92	1.00
Directional flow rate,(note-2) vi	935 pc/h	727 pc/h
Base percent time-spent-following,(note-4) BPTSFd	74.0 %	
Adjustment for no-passing zones, fnp	23.7	
Percent time-spent-following, PTSFd	87.3 %	

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	322 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1187 veh-mi
Peak 15-min total travel time, TT15	11.2 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.7	mi/h
Percent time-spent-following, PTSFd (from above)	87.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 859.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.48
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project AM
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 919 veh/h
 Opposing direction volume, V_o 461 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	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1121 pc/h	567 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 6.5 mi/h

Free-flow speed, FFSd 43.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 28.1 mi/h
 Percent Free Flow Speed, PFFS 64.6 %

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	1121 pc/h	562 pc/h
Base percent time-spent-following,(note-4) BPTSFD	77.6 %	
Adjustment for no-passing zones, fnp	20.0	
Percent time-spent-following, PTSFD	90.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.66
Peak 15-min vehicle-miles of travel, VMT15	420 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1379 veh-mi
Peak 15-min total travel time, TT15	14.9 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	28.1	mi/h
Percent time-spent-following, PTSFD (from above)	90.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1120.7
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.62
Bicycle LOS	E

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway Carmel Valley Road
From/To Robinson Canyon / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 6 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	1.5 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Level	% Recreational vehicles	1 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	26 /mi

Analysis direction volume, Vd 564 veh/h
Opposing direction volume, Vo 1028 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor,(note-5) fHV	0.992	1.000
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	693 pc/h	1254 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	6.5	mi/h
Free-flow speed, FFSd	43.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.1	mi/h
Percent Free Flow Speed, PFFS	60.0	%

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	688 pc/h	1254 pc/h
Base percent time-spent-following,(note-4) BPTSFd	69.8 %	
Adjustment for no-passing zones, fnp	16.9	
Percent time-spent-following, PTSFd	75.8 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.40
Peak 15-min vehicle-miles of travel, VMT15	258 veh-mi
Peak-hour vehicle-miles of travel, VMT60	846 veh-mi
Peak 15-min total travel time, TT15	9.9 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	26.1	mi/h
Percent time-spent-following, PTSFd (from above)	75.8	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 687.8
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.37
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway Carmel Valley Road
 From/To Robinson Canyon / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 6 WB

----- Input Data -----

Highway class	Class 2		Peak hour factor, PHF	0.82	
Shoulder width	6.0	ft	% Trucks and buses	8	%
Lane width	12.0	ft	% Trucks crawling	0.0	%
Segment length	1.5	mi	Truck crawl speed	0.0	mi/hr
Terrain type	Level		% Recreational vehicles	1	%
Grade: Length	-	mi	% No-passing zones	100	%
Up/down	-	%	Access point density	26	/mi

Analysis direction volume, V_d 669 veh/h
 Opposing direction volume, V_o 791 veh/h

----- Average Travel Speed -----

Direction		Analysis(d)		Opposing (o)	
PCE for trucks, ET		1.1		1.0	
PCE for RVs, ER		1.0		1.0	
Heavy-vehicle adj. factor, (note-5) fHV		0.992		1.000	
Grade adj. factor, (note-1) fg		1.00		1.00	
Directional flow rate, (note-2) v_i	822	pc/h		965	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 6.5 mi/h
 Free-flow speed, FFSd 43.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 27.3 mi/h
 Percent Free Flow Speed, PFFS 62.8 %

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	816 pc/h	965 pc/h
Base percent time-spent-following,(note-4) BPTSFD	71.4 %	
Adjustment for no-passing zones, fnp	21.8	
Percent time-spent-following, PTSFD	81.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	306 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1004 veh-mi
Peak 15-min total travel time, TT15	11.2 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	1.5	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)	27.3	mi/h
Percent time-spent-following, PTSFD (from above)	81.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	815.9
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.45
Bicycle LOS	D

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 690 veh/h
Opposing direction volume, Vo 988 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.1
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	0.992
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	848 pc/h	1215 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h

Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	33.7	mi/h
Percent Free Flow Speed, PFFS	65.4	%

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	0.92
Directional flow rate, (note-2) vi	841 pc/h	1310 pc/h
Base percent time-spent-following, (note-4) BPTSFD	76.1 %	
Adjustment for no-passing zones, fnp	15.6	
Percent time-spent-following, PTSFD	82.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.49
Peak 15-min vehicle-miles of travel, VMT15	505 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1656 veh-mi
Peak 15-min total travel time, TT15	15.0 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	33.7	mi/h
Percent time-spent-following, PTSFD (from above)	82.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 841.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.47
 Bicycle LOS D

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project PM
 Highway Carmel Valley Road
 From/To Rancho San Carlos / Schulte
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 EB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 1063 veh/h
 Opposing direction volume, V_o 681 veh/h

----- Average Travel Speed -----

Direction	Analysis (d)	Opposing (o)
PCE for trucks, ET	1.0	1.2
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	1.000	0.981
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1296 pc/h	847 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 33.1 mi/h
 Percent Free Flow Speed, PFFS 64.2 %

-----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	0.92		
Directional flow rate,(note-2) vi	1296	903	pc/h	pc/h
Base percent time-spent-following,(note-4) BPTSFD	83.7	%		
Adjustment for no-passing zones, fnp	14.9			
Percent time-spent-following, PTSFD	92.5	%		

-----Level of Service and Other Performance Measures-----

Level of service, LOS	E		
Volume to capacity ratio, v/c	0.76		
Peak 15-min vehicle-miles of travel, VMT15	778	veh-mi	
Peak-hour vehicle-miles of travel, VMT60	2551	veh-mi	
Peak 15-min total travel time, TT15	23.5	veh-h	
Capacity from ATS, CdATS	0	veh/h	
Capacity from PTSF, CdPTSF	1700	veh/h	
Directional Capacity	1700	veh/h	

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	33.1	mi/h	
Percent time-spent-following, PTSFD (from above)	92.5		
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, ATSp1	-		
Percent free flow speed including passing lane, PFFSp1	0.0	%	

-----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	A		
Peak 15-min total travel time, TT15	-	veh-h	

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1296.3
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.69
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project Saturday
Highway Carmel Valley Road
From/To Rancho San Carlos / Schulte
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 EB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.82
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	-3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 854 veh/h
Opposing direction volume, Vo 840 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	0.992
Grade adj. factor,(note-1) fg	1.00	1.00
Directional flow rate,(note-2) vi	1041 pc/h	1033 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	55.0	mi/h
Adj. for lane and shoulder width,(note-3) fLS	0.0	mi/h
Adj. for access point density,(note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	33.6	mi/h
Percent Free Flow Speed, PFFS	65.3	%

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	0.92
Directional flow rate,(note-2) vi	1041 pc/h	1113 pc/h
Base percent time-spent-following,(note-4) BPTSFD	80.4 %	
Adjustment for no-passing zones, fnp	16.6	
Percent time-spent-following, PTSFD	88.4 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.61
Peak 15-min vehicle-miles of travel, VMT15	625 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2050 veh-mi
Peak 15-min total travel time, TT15	18.6 veh-h
Capacity from ATS, CdATS	1700 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	88.4	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 1041.5
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.58
 Bicycle LOS E

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
- * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project AM
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 988 veh/h
 Opposing direction volume, V_o 690 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.992	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	1293 pc/h	896 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 32.7 mi/h
 Percent Free Flow Speed, PFFS 63.5 %

-----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	0.92	1.00
Directional flow rate,(note-2) vi	1395 pc/h	896 pc/h
Base percent time-spent-following,(note-4) BPTSFD	85.5 %	
Adjustment for no-passing zones, fnp	13.9	
Percent time-spent-following, PTSFD	94.0 %	

-----Level of Service and Other Performance Measures-----

Level of service, LOS	E
Volume to capacity ratio, v/c	0.82
Peak 15-min vehicle-miles of travel, VMT15	770 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2371 veh-mi
Peak 15-min total travel time, TT15	23.5 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

-----Passing Lane Analysis-----

Total length of analysis segment, Lt	2.4	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)	32.7	mi/h
Percent time-spent-following, PTSFD (from above)	94.0	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

-----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	A
Peak 15-min total travel time, TT15	- veh-h

-----Bicycle Level of Service-----

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	1283.1
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	4.68
Bicycle LOS	E

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for v>200 veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway Carmel Valley Road
From/To Schulte / Rancho San Carlos
Jurisdiction Unincorporated Monterey County
Analysis Year Oct 2016
Description Rio Ranch Seg 7 WB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.77
Shoulder width	6.0 ft	% Trucks and buses	8 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, Vd 681 veh/h
Opposing direction volume, Vo 1063 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.990	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) vi	893 pc/h	1381 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	55.0	mi/h
Adj. for lane and shoulder width, (note-3) fLS	0.0	mi/h
Adj. for access point density, (note-3) fA	3.5	mi/h
Free-flow speed, FFSd	51.5	mi/h
Adjustment for no-passing zones, fnp	1.8*	mi/h
Average travel speed, ATSD	32.1	mi/h
Percent Free Flow Speed, PFFS	62.2	%

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	0.92	1.00
Directional flow rate, (note-2) vi	961 pc/h	1381 pc/h
Base percent time-spent-following, (note-4) BPTSFD	80.4 %	
Adjustment for no-passing zones, fnp	13.4	
Percent time-spent-following, PTSFD	85.9 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.57
Peak 15-min vehicle-miles of travel, VMT15	531 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1634 veh-mi
Peak 15-min total travel time, TT15	16.6 veh-h
Capacity from ATS, CdATS	1686 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	32.1	mi/h
Percent time-spent-following, PTSFD (from above)	85.9	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 50
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 884.4
 Effective width of outside lane, We 24.00
 Effective speed factor, St 4.62
 Bicycle LOS Score, BLOS 4.50
 Bicycle LOS D

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway Carmel Valley Road
 From/To Schulte / Rancho San Carlos
 Jurisdiction Unincorporated Monterey County
 Analysis Year Oct 2016
 Description Rio Ranch Seg 7 WB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.94
Shoulder width	6.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.4 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Specific Grade	% Recreational vehicles	1 %
Grade: Length	0.25 mi	% No-passing zones	100 %
Up/down	3.0 %	Access point density	14 /mi

Analysis direction volume, V_d 840 veh/h
 Opposing direction volume, V_o 854 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.1	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adj. factor, (note-5) fHV	0.999	1.000
Grade adj. factor, (note-1) fg	1.00	1.00
Directional flow rate, (note-2) v_i	895 pc/h	909 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 55.0 mi/h
 Adj. for lane and shoulder width, (note-3) fLS 0.0 mi/h
 Adj. for access point density, (note-3) fA 3.5 mi/h
 Free-flow speed, FFSd 51.5 mi/h
 Adjustment for no-passing zones, fnp 1.8* mi/h
 Average travel speed, ATSD 35.7 mi/h
 Percent Free Flow Speed, PFFS 69.3 %

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	0.92	1.00
Directional flow rate,(note-2) vi	971 pc/h	909 pc/h
Base percent time-spent-following,(note-4) BPTSFD	76.0 %	
Adjustment for no-passing zones, fnp	20.7	
Percent time-spent-following, PTSFD	86.7 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.57
Peak 15-min vehicle-miles of travel, VMT15	536 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2016 veh-mi
Peak 15-min total travel time, TT15	15.0 veh-h
Capacity from ATS, CdATS	1698 veh/h
Capacity from PTSF, CdPTSF	1564 veh/h
Directional Capacity	1564 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.4	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)	35.7	mi/h
Percent time-spent-following, PTSFD (from above)	86.7	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	50
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	893.6
Effective width of outside lane, We	24.00
Effective speed factor, St	4.62
Bicycle LOS Score, BLOS	2.53
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

	Direction	1	2	
Flow rate, vp		499	583	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.1	10.6	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
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 Highway: Carmel Valley Road
 From/To: Rio to Rancho San Carlos
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 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	491.9	581.0
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.75	2.36
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		787	1011	vph
Peak-hour factor, PHF		0.80	0.87	
Peak 15-minute volume, v15		246	291	
Trucks and buses		3	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.985	0.995	
Flow rate, vp		499	583	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		652	434	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	A	
Density, D		11.9	7.9	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
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 Analysis Year: 2017
 Project ID: Rio Ranch Seg 8

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	648.9	432.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.41	2.21
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		1142	805	vph
Peak-hour factor, PHF		0.88	0.93	
Peak 15-minute volume, v15		324	216	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		652	434	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		525	500	pcphpl
Free-flow speed, FFS		53.0	54.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		9.5	9.1	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

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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	523.1	497.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.30	2.28
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	4	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	1.0	mph
Free-flow speed		53.0	54.0	mph

VOLUME

	Direction	1	2	
Volume, V		952	936	vph
Peak-hour factor, PHF		0.91	0.94	
Peak 15-minute volume, v15		262	249	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		525	500	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		641	1012	pcphp1
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	C	
Density, D		11.7	18.4	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative + Project AM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	635.5	1002.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.63	2.86
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1093	1363	vph
Peak-hour factor, PHF		0.86	0.68	
Peak 15-minute volume, v15		318	501	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		641	1012	pcphp1

RESULTS

	Direction	1	2	
Flow rate, vp		793	646	pcphpl
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	B	
Density, D		14.4	11.7	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative + Project PM
 Highway: Carmel Valley Road
 From/To: Carmel Rancho to Rio
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 9

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	785.8	643.2
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.74	2.41
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1493	1132	vph
Peak-hour factor, PHF		0.95	0.88	
Peak 15-minute volume, v15		393	322	
Trucks and buses		2	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.995	
Flow rate, vp		793	646	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		643	629	pcphpl
Free-flow speed, FFS		53.0	53.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	B	
Density, D		11.7	11.4	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
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Date: 12/6/17
Analysis Period: Cumulative + Project Saturday
Highway: Carmel Valley Road
From/To: Carmel Rancho to Rio
Jurisdiction: Unincorporated Monterey County
Analysis Year: 2017
Project ID: Rio Ranch Seg 9

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	640.1	626.1
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.41	2.39
Bicycle LOS	B	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		8	8	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		2.0	2.0	mph
Free-flow speed		53.0	53.0	mph

VOLUME

	Direction	1	2	
Volume, V		1229	1177	vph
Peak-hour factor, PHF		0.96	0.94	
Peak 15-minute volume, v15		320	313	
Trucks and buses		1	1	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.995	0.995	
Flow rate, vp		643	629	pcphpl

RESULTS

	Direction	1	2	
Flow rate, vp		635	736	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	B	
Density, D		11.5	13.4	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
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 Date: 12/6/17
 Analysis Period: Cumulative + Project AM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	629.1	728.9
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.63	2.70
Bicycle LOS	C	C

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

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		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0 mph	55.0 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		0.0 mph	0.0 mph	
Free-flow speed		55.0 mph	55.0 mph	

VOLUME

	Direction	1	2	
Volume, V		1082 vph	1108 vph	
Peak-hour factor, PHF		0.86	0.76	
Peak 15-minute volume, v15		315	364	
Trucks and buses		2 %	2 %	
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		0.990	0.990	
Flow rate, vp		635 pcphpl	736 pcphpl	

RESULTS

	Direction	1	2	
Flow rate, vp		613	538	pcphp1
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		B	A	
Density, D		11.1	9.8	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
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 Date: 12/6/17
 Analysis Period: Cumulative + Project PM
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	607.4	533.3
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.61	2.54
Bicycle LOS	C	C

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		1154	960	vph
Peak-hour factor, PHF		0.95	0.90	
Peak 15-minute volume, v15		304	267	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		613	538	pcphp1

RESULTS

	Direction	1	2	
Flow rate, vp		553	467	pcphpl
Free-flow speed, FFS		55.0	55.0	mph
Avg. passenger-car travel speed, S		55.0	55.0	mph
Level of service, LOS		A	A	
Density, D		10.1	8.5	pc/mi/ln

Phone: Fax:
E-mail:

OPERATIONAL ANALYSIS

Analyst: JO
 Agency/Co: Mott MacDonald
 Date: 12/6/17
 Analysis Period: Cumulative + Project Saturday
 Highway: Carmel Valley Road
 From/To: SR 1 / Carmel Rancho
 Jurisdiction: Unincorporated Monterey County
 Analysis Year: 2017
 Project ID: Rio Ranch Seg 10

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	547.9	462.8
Effective width of outside lane, We	24.00	24.00
Effective speed factor, St	4.79	4.79
Bicycle LOS Score, BLOS	2.56	2.47
Bicycle LOS	C	B

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

FREE-FLOW SPEED

	Direction	1	2	
Lane width		12.0	12.0	ft
Lateral clearance:				
Right edge		6.0	6.0	ft
Left edge		6.0	6.0	ft
Total lateral clearance		12.0	12.0	ft
Access points per mile		0	0	
Median type		Divided	Divided	
Free-flow speed:		Base	Base	
FFS or BFFS		55.0	55.0	mph
Lane width adjustment, FLW		0.0	0.0	mph
Lateral clearance adjustment, FLC		0.0	0.0	mph
Median type adjustment, FM		0.0	0.0	mph
Access points adjustment, FA		0.0	0.0	mph
Free-flow speed		55.0	55.0	mph

VOLUME

	Direction	1	2	
Volume, V		1052	907	vph
Peak-hour factor, PHF		0.96	0.98	
Peak 15-minute volume, v15		274	231	
Trucks and buses		2	2	%
Recreational vehicles		0	0	%
Terrain type		Level	Level	
Grade		0.00	0.00	%
Segment length		0.00	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		0.990	0.990	
Flow rate, vp		553	467	pcphpl

RESULTS

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project AM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.76
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 366 veh/h
Opposing direction volume, Vo 551 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.8	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.977	0.982
Grade adj. factor, (note-1) fg	0.94	0.98
Directional flow rate, (note-2) vi	524 pc/h	753 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	30.2	mi/h
Percent Free Flow Speed, PFFS	71.2	%

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.0
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.988	1.000
Grade adjustment factor, (note-1) fg	0.95	0.99
Directional flow rate, (note-2) vi	513 pc/h	732 pc/h
Base percent time-spent-following, (note-4) BPTSFd	55.3 %	
Adjustment for no-passing zones, fnp	30.9	
Percent time-spent-following, PTSFd	68.0 %	

Level of Service and Other Performance Measures

Level of service, LOS	C
Volume to capacity ratio, v/c	0.30
Peak 15-min vehicle-miles of travel, VMT15	313 veh-mi
Peak-hour vehicle-miles of travel, VMT60	952 veh-mi
Peak 15-min total travel time, TT15	10.4 veh-h
Capacity from ATS, CdATS	1641 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	30.2	mi/h
Percent time-spent-following, PTSFd (from above)	68.0	%
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 481.6
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.07
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 - If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
 - For the analysis direction only and for $v > 200$ veh/h.
 - For the analysis direction only.
 - Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project PM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 NB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.88	
Shoulder width	5.0 ft	% Trucks and buses	2	%
Lane width	12.0 ft	% Trucks crawling	0.0	%
Segment length	2.6 mi	Truck crawl speed	0.0	mi/hr
Terrain type	Rolling	% Recreational vehicles	0	%
Grade: Length	- mi	% No-passing zones	100	%
Up/down	- %	Access point density	5	/mi

Analysis direction volume, V_d 871 veh/h
 Opposing direction volume, V_o 635 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.6
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.994	0.988
Grade adj. factor, (note-1) fg	1.00	0.98
Directional flow rate, (note-2) v_i	996 pc/h	745 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h
 Free-flow speed, FFSd 42.5 mi/h
 Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 26.6 mi/h
 Percent Free Flow Speed, PFFS 62.8 %

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	0.99
Directional flow rate,(note-2) vi	990 pc/h	729 pc/h
Base percent time-spent-following,(note-4) BPTSFD	75.4 %	
Adjustment for no-passing zones, fnp	22.3	
Percent time-spent-following, PTSFD	88.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	E
Volume to capacity ratio, v/c	0.58
Peak 15-min vehicle-miles of travel, VMT15	643 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2265 veh-mi
Peak 15-min total travel time, TT15	24.1 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1683 veh/h
Directional Capacity	1683 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	26.6	mi/h
Percent time-spent-following, PTSFD (from above)	88.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	989.8
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.21
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project Saturday
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 NB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.95
Shoulder width	5.0 ft	% Trucks and buses	1 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 779 veh/h
Opposing direction volume, Vo 813 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.4	1.3
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.996	0.997
Grade adj. factor,(note-1) fg	0.99	1.00
Directional flow rate,(note-2) vi	832 pc/h	858 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h

Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.0	mi/h
Percent Free Flow Speed, PFFS	63.7	%

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	820 pc/h	856 pc/h
Base percent time-spent-following,(note-4) BPTSFd	70.5 %	
Adjustment for no-passing zones, fnp	23.9	
Percent time-spent-following, PTSFd	82.2 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.48
Peak 15-min vehicle-miles of travel, VMT15	533 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2025 veh-mi
Peak 15-min total travel time, TT15	19.7 veh-h
Capacity from ATS, CdATS	1695 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	27.0	mi/h
Percent time-spent-following, PTSFd (from above)	82.2	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 820.0
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 2.90
 Bicycle LOS C

Phone: Fax:
 E-Mail:

- Notes:
 1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
 2. If v_i (v_d or v_o) \geq 1,700 pc/h, terminate analysis-the LOS is F.
 3. For the analysis direction only and for $v > 200$ veh/h.
 4. For the analysis direction only.
 5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.
 * These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project AM
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 551 veh/h
 Opposing direction volume, V_o 366 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.7	2.0
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.979	0.971
Grade adj. factor, (note-1) fg	0.97	0.90
Directional flow rate, (note-2) v_i	631 pc/h	455 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 1.3 mi/h
 Adj. for access point density, (note-3) fA 1.3 mi/h

Free-flow speed, FFSd 42.5 mi/h

Adjustment for no-passing zones, fnp 2.3* mi/h
 Average travel speed, ATSD 31.7 mi/h
 Percent Free Flow Speed, PFFS 74.7 %

Percent Time-Spent-Following

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.2	1.6
PCE for RVs, ER	1.0	1.0
Heavy-vehicle adjustment factor, fHV	0.994	0.982
Grade adjustment factor,(note-1) fg	0.97	0.90
Directional flow rate,(note-2) vi	621 pc/h	450 pc/h
Base percent time-spent-following,(note-4) BPTSFD	58.1 %	
Adjustment for no-passing zones, fnp	34.9	
Percent time-spent-following, PTSFD	78.3 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.37
Peak 15-min vehicle-miles of travel, VMT15	389 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1433 veh-mi
Peak 15-min total travel time, TT15	12.3 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1562 veh/h
Directional Capacity	1562 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	31.7	mi/h
Percent time-spent-following, PTSFD (from above)	78.3	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	598.9
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.18
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

Phone: Fax:
E-Mail:

Directional Two-Lane Highway Segment Analysis

Analyst JO
Agency/Co. Mott MacDonald
Date Performed 12/6/17
Analysis Time Period Cumulative + Project PM
Highway SR 1
From/To Highlands Dr / Ribera Rd
Jurisdiction Unincorporated Monterey County
Analysis Year 2017
Description Rio Ranch Seg 13 SB

Input Data

Highway class	Class 2	Peak hour factor, PHF	0.93
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, Vd 635 veh/h
Opposing direction volume, Vo 871 veh/h

Average Travel Speed

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.6	1.3
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor,(note-5) fHV	0.982	0.991
Grade adj. factor,(note-1) fg	0.98	1.00
Directional flow rate,(note-2) vi	710 pc/h	945 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	1.3	mi/h
Adj. for access point density,(note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	27.3	mi/h
Percent Free Flow Speed, PFFS	64.3	%

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	0.99	1.00
Directional flow rate,(note-2) vi	690 pc/h	937 pc/h
Base percent time-spent-following,(note-4) BPTSFd	66.4 %	
Adjustment for no-passing zones, fnp	23.8	
Percent time-spent-following, PTSFd	76.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.41
Peak 15-min vehicle-miles of travel, VMT15	444 veh-mi
Peak-hour vehicle-miles of travel, VMT60	1651 veh-mi
Peak 15-min total travel time, TT15	16.3 veh-h
Capacity from ATS, CdATS	1685 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	27.3	mi/h
Percent time-spent-following, PTSFd (from above)	76.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp 45
 Percent of segment with occupied on-highway parking 0
 Pavement rating, P 3
 Flow rate in outside lane, vOL 682.8
 Effective width of outside lane, We 22.00
 Effective speed factor, St 4.42
 Bicycle LOS Score, BLOS 3.25
 Bicycle LOS C

Phone: Fax:
 E-Mail:

Notes:

1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
2. If v_i (v_d or v_o) $\geq 1,700$ pc/h, terminate analysis-the LOS is F.
3. For the analysis direction only and for $v > 200$ veh/h.
4. For the analysis direction only.
5. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

* These items have been entered or edited to override calculated value

----- Directional Two-Lane Highway Segment Analysis -----

Analyst JO
 Agency/Co. Mott MacDonald
 Date Performed 12/6/17
 Analysis Time Period Cumulative + Project Saturday
 Highway SR 1
 From/To Highlands Dr / Ribera Rd
 Jurisdiction Unincorporated Monterey County
 Analysis Year 2017
 Description Rio Ranch Seg 13 SB

----- Input Data -----

Highway class	Class 2	Peak hour factor, PHF	0.92
Shoulder width	5.0 ft	% Trucks and buses	3 %
Lane width	12.0 ft	% Trucks crawling	0.0 %
Segment length	2.6 mi	Truck crawl speed	0.0 mi/hr
Terrain type	Rolling	% Recreational vehicles	0 %
Grade: Length	- mi	% No-passing zones	100 %
Up/down	- %	Access point density	5 /mi

Analysis direction volume, V_d 813 veh/h
 Opposing direction volume, V_o 779 veh/h

----- Average Travel Speed -----

Direction	Analysis(d)	Opposing (o)
PCE for trucks, ET	1.3	1.4
PCE for RVs, ER	1.1	1.1
Heavy-vehicle adj. factor, (note-5) fHV	0.991	0.988
Grade adj. factor, (note-1) fg	1.00	0.99
Directional flow rate, (note-2) v_i	892 pc/h	866 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	1.3	mi/h
Adj. for access point density, (note-3) fA	1.3	mi/h
Free-flow speed, FFSd	42.5	mi/h
Adjustment for no-passing zones, fnp	2.3*	mi/h
Average travel speed, ATSD	26.5	mi/h
Percent Free Flow Speed, PFFS	62.4	%

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	884 pc/h	847 pc/h
Base percent time-spent-following,(note-4) BPTSFD	72.8 %	
Adjustment for no-passing zones, fnp	23.0	
Percent time-spent-following, PTSFD	84.5 %	

Level of Service and Other Performance Measures

Level of service, LOS	D
Volume to capacity ratio, v/c	0.52
Peak 15-min vehicle-miles of travel, VMT15	574 veh-mi
Peak-hour vehicle-miles of travel, VMT60	2114 veh-mi
Peak 15-min total travel time, TT15	21.7 veh-h
Capacity from ATS, CdATS	0 veh/h
Capacity from PTSF, CdPTSF	1700 veh/h
Directional Capacity	1700 veh/h

Passing Lane Analysis

Total length of analysis segment, Lt	2.6	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)	26.5	mi/h
Percent time-spent-following, PTSFD (from above)	84.5	
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, ATSp1	-	
Percent free flow speed including passing lane, PFFSp1	0.0	%

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, PTSFp1	-	%

Level of Service and Other Performance Measures with Passing Lane

Level of service including passing lane, LOSp1	A
Peak 15-min total travel time, TT15	- veh-h

Bicycle Level of Service

Posted speed limit, Sp	45
Percent of segment with occupied on-highway parking	0
Pavement rating, P	3
Flow rate in outside lane, vOL	883.7
Effective width of outside lane, We	22.00
Effective speed factor, St	4.42
Bicycle LOS Score, BLOS	3.38
Bicycle LOS	C

Notes:

- Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the base conditions. For the purpose of grade adjustment, specific downgrade segments are treated as level terrain.
- If vi (vd or vo) >= 1,700 pc/h, terminate analysis-the LOS is F.
- For the analysis direction only and for v>200 veh/h.
- For the analysis direction only.
- Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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