Sterling Highway Milepost 45 to 60 ADOT&PF Project 53014

2014 Traffic Study Update



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NOTICE TO USERS

This report is intended to document the methodologies, findings, and conclusions of a Traffic Study Update completed for HDR Alaska, Inc. Changes frequently occur during the evolution of the design process. Persons who may rely on the information contained in this document should consult with HDR Alaska, Inc. for the most current design decisions.



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1.0 INTRODUCTION

This report updates the analyses and results of the *Sterling Highway Traffic Analysis Study* completed by HDR Alaska, Inc. in 2006 (HDR Study). The purpose of this traffic study is to evaluate intersection and road segment alternatives in support of the Sterling Highway Milepost 45 to 60 Environmental Impact Statement for the Alaska Department of Transportation and Public Facilities (ADOT&PF).

This study primarily focuses on estimating future traffic demand and evaluating the performance of intersections and highway segments related to the proposed alternatives. The analysis presented in this report incorporates the most recently available Average Annual Daily Traffic (AADT) count data. The construction year and design year have been updated to 2023 and 2043 respectively.

1.1 **PREVIOUS WORK**

1.1.1 STUDIES

This study builds on work presented in:

- Sterling Highway Traffic Summary Report, HDR Alaska, October 2006.
- Sterling Highway Preliminary Engineering Memorandum, R&M Consultants, Inc., March 2006.
- Sterling Highway Alaska Origin-Destination Study, Transformation Systems, Inc., September 2001.

These studies established methodologies and assumptions used in this analysis.

1.1.2 ALTERNATIVES

The four alternatives analyzed in this study were identified in the *Sterling Highway Preliminary Engineering Memorandum*. These alternatives include:

- No-Build Alternative
- Juneau Creek Alternative
 - Including North bypass of the Sterling Highway
 - Variants 1, 2, and 3
- G-South Alternative
 - Including North bypass of the Sterling Highway
- Cooper Creek Alternative
 - o Including South bypass of the Sterling Highway
- Juneau Creek Alternative without Schooner Bend Bridge
 - Including North bypass of the Sterling Highway, with Schooner Bend Bridge closed.

Figures showing these alternatives are included as Appendix A.

2.0 EXISTING CONDITIONS

The portion of the Sterling Highway (CDS Route 110000) evaluated in this study is located between Quartz Creek Road and the east terminus of Skilak Lake Road in the vicinity of Cooper Landing. The highway in this area is currently a two-lane highway classified as a Rural Principal Arterial - Interstate (FC 1). It is characterized by tight curves, narrow lanes, areas without shoulders, and varying speed limits.

2.1 TRAFFIC VOLUMES

The most basic measure of traffic demand on a highway is the number of vehicles on

the roadway. The volume of traffic on a roadway is defined as the average daily traffic (ADT) and/or the average annual daily traffic (AADT). The ADOT&PF records traffic volume counts at various locations by either permanent traffic recorders (PTR) or tube counts. Recorded counts are published as AADTs for individual links by ADOT&PF in the Annual Traffic Volume Report (ATVR). This link data provides a basis for estimating future traffic demand.

Historic traffic volume data from the PTR located at Cooper Landing was used to determine historic traffic growth and the design hourly volume (DHV). The DHV is that part of the AADT that can be expected to be on the roadway during the highest volume (peak hour) of any given day. The 100th highest hourly volume (100HV) was determined from guidelines provides by the American Association of State Highway and Transportation Officials (AASHTO) and by comparing a range of design hourly volumes from traffic volume data collected on the Sterling Highway.

Based on a review of traffic data collected by the PTR at Cooper Landing, a DHV corresponding to the 100HV was determined to be 0.19 (approximately 20% of the AADT). A DHV of 0.20 was used in this study. Historic traffic volumes and PTR data used in this study can be found in Appendix B. A summary of the 2012 100HV is shown in Table 1.

			100 th Highest
			Hourly Volume
Location	Milepost	AADT	(Veh/Hour)
Quartz Creek Road (Segment 6)	41	3033	607
Cooper Creek (Segment 2-5)	50.5	2915	583
Skilak Lake Road (Segment 1)	58	2810	562

 Table 1. Sterling Highway 2012 Traffic Volumes

2.2 COMPOSITION OF TRAFFIC

2.2.1 DIRECTIONAL DISTRIBUTION

Most highways and roadways allow traffic to travel in two directions. Traffic volumes established by applying the DHV are considered the total volume of traffic in both directions. The directional distribution (DD) is the percent of the traffic volume traveling in either direction. Continuous 24-hour count information collected in 2012 at Cooper Landing was used to calculate the directional distribution for this portion of the Sterling Highway. The evaluation of the data resulted in an average DD of 55/45 (rounded to 60/40). This split is consistent with the AASHTO design recommendation for directional distribution. A DD of 60/40 was used in this study. Supporting data for the DD determination is included in Appendix B.

2.2.2 COMPOSITION OF TRAFFIC

Vehicles of different sizes and weights have different operating characteristics. The FHWA has categorized vehicles into 13 classifications. Vehicle classification counts were performed by ADOT&PF at milepoint 6.143 of the Sterling Highway in 2008. The percent of trucks in the traffic stream are considered vehicles recorded in classes 4 through 13. This is also known as the percentage of commercial vehicles in the vehicle classification data. This study assumed that the percent of recreational vehicles (RV) in

the traffic stream are those recorded in class 4 and 5 and the percent of trucks in the traffic stream are those recorded in classes 6 through 13. Based on the classification counts, approximately 17% of the traffic is considered RVs and 7% is considered trucks. Supporting data used to determine the percent trucks is presented in Appendix B.

3.0 FUTURE TRAFFIC CONDITIONS

3.1 TRAFFIC GROWTH

Estimates of future traffic demand were determined from a review of available historic traffic count data published in the Annual Traffic Volume Report (ATVR) for each year. Growth rates for three time periods were developed – 1992 to 2012 (20 year), 2002 to 2012 (10 year), and 2007 to 2012 (5 year). The three time periods provide long-term, mid-term, and short-term overviews of growth trends. Growth rates for the three time periods were developed by evaluating historical traffic growth and performing a statistical regression analysis (called a linear trend line analysis) of the historical data.

Sogmont	Hi	storical Gro	wth	Linear Trend Line Growth		
Segment	5 year	10 year	20 year	5 year	10 year	20 year
Quartz Creek to Snug Harbor	-4.30%	-0.90%	0.04%	-2.77% R ² = 0.47	0.36% R ² = 0.03	1.19% R ² = 0.43
Snug Harbor to Russian River Campground	-2.86%	0.24%	0.60%	-1.81% R ² = 0.34	0.23% $R^2 = 0.02$	1.03% R ² = 0.43
Russian River Campground to Russian River Ferry Entrance	0.87%	1.88%	0.88%	1.90% R ² = 0.12	3.73% R ² = 0.65	1.41% R ² = 0.35
Russian River Ferry Entrance to Skilak Lake Road (east)	0.06%	-0.19%	1.15%	0.59% R ² = 0.20	-0.25% R ² = 0.09	1.01% R ² = 0.41

Table 2. Traffic Growth

Since the project will be applied over a long term, the long-term growth rates were used as the basis of determining the projected growth rate. Based on the low R^2 values computed for the four segments, variations in traffic volumes are random and do not follow a linear pattern of growth. Based on the linear trend line growth the 20 year data contains the largest R^2 values providing the most accurate data available. The average 20 year linear trend line growth rate is 1.16%.

Based on a review of historic growth characteristics, growth over the next 20 years may likely be similar to what has occurred over the last 10-20 years. In general, growth in the study area was positive in the long term. The average historical growth rate for the past 10 years is approximately 0.26%. The average historical growth rate for the past 20 years is approximately 0.67%.

Considering the 20 year historical growth and 20 year linear trend line growth related to destinations, a compound annual growth rate of 1.0% was determined for use in this study.

3.2 FUTURE TRAFFIC VOLUMES

For purposes of this study, the design year has changed from 2035 to 2043. As such, all future traffic volumes are projected to the year 2043. Future traffic volumes were estimated by applying a compound annual growth rate of 1% to current traffic volumes. Estimated future traffic volumes are summarized in the following table.

			100 th Highest
			Hourly Volume
Location	Milepost	AADT	(Veh/Hour)
Quartz Creek Road (Segment 6)	41	4129	826
Cooper Creek (Segments 2-5)	50.5	3969	794
Skilak Lake Road (Segment 1)	58	3826	766

Table 3. 2043 Sterling Highway Traffic Volumes	Table 3.	2043	Sterling	Highway	Traffic	Volumes
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Turning movement volumes published in the 2006 HDR Study provided the basis of turning movement volume estimates. The 2006 HDR Study assumed a growth rate of 3.0%. The turning movement volumes were adjusted in this study to reflect an annual growth rate of 1.0% to the year 2043. Projected future turning movement volumes at each intersection for each alternative can be found in Appendix C.

4.0 2043 LEVEL OF SERVICE ANALYSIS

4.1 INTERSECTION LEVEL OF SERVICE

A level of service analysis was completed for the two-way stop controlled intersections related to each alternative. This analysis identifies how intersections related to the proposed alternatives are anticipated to operate in 2043 under peak traffic conditions.

4.1.1 METHODOLOGY

The methodologies used to analyze the intersections follow procedures established in the 2000 Highway Capacity Manual (HCM), utilizing Highway Capacity Software (HCS+). The two-way stop controlled analysis assumed that all intersections were unsignalized, minor approaches to alternative alignments were stop controlled, and approaches on the new alignments were not stop controlled (i.e. considered free movements). In addition to the HCM analysis, an Intersection Capacity Utilization (ICU) analysis using Trafficware's Synchro traffic analysis software was completed.

The HCM analysis of two-way stop controlled intersections results in a LOS for individual movements. This methodology provides a measure of the delay that motorists may experience. The LOS is based on the calculated delay for those movements that have to stop or yield to through movements. As such, the LOS does not represent the performance of the entire intersection.

The ICU analysis method results in an LOS that represents overall intersection performance. This methodology provides a measure of how much capacity is available to handle traffic fluctuations at a particular intersection. The ICU LOS considers all approach movements but does not predict delay. As such ICU should not be confused with the HCM LOS and delay.

4.1.2 LEVEL OF SERVICE ANALYSIS

The following sections summarize the results of the LOS analysis for individual alternatives. A summary of the LOS results for all alternatives are presented in Tables

10 and 11 at the end of section 4.1. Worksheets used to determine the HCM LOS and the ICU LOS are included in Appendix D and E respectively. The reported HCM LOS and delay indicates the poorest operating movement or approach at that intersection. The ICU indicates the LOS and percent capacity utilization for the entire intersection.

• No Build Alternative

The No Build Alternative maintains the existing lane configurations for all intersections. All intersection movements are expected to operate at an acceptable LOS.

Intersection			Level of Service		Average Control Delay	
East/West Street	North/South Street	нсм	ICU	НСМ	ICU%	Movement (HCM)
Sterling Highway	Bean Creek Road	С	A	17.6	39.3	SBLR
Bean Creek Road	Sterling Highway	В	A	12.0	44.5	EBLT
Sterling Highway	Snug Harbor Road	В	A	14.1	38.3	NBLR
Sterling Highway	Kenai River	В	A	12.1	42.4	SBLR
Sterling Highway	Hamilton Place	B	A	10.0	42.1	SBLTR

Table 4. 2043 No Build Alternative Intersection LOS

Based on the ICU analysis, all intersections are anticipated to operate with reserve capacity in 2043.

Analysis worksheets are included as Appendix D and E.

Juneau Creek and G-South Alternatives

The intersections connecting the new Sterling Highway alignment and the old Sterling Highway alignment for each alternative are expected to operate at acceptable levels of service. All intersection movements are expected to operate at an acceptable LOS.

The Lane Configurations evaluated for this alternative are summarized in Table 5.

Table 5. Juneau Creel	k, G-South, and Variant	Alternatives Intersection L	ane Configurations
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East/West Approach			North/South Approach		
Street	EB	WB	Street	NB	SB
Sterling Highway	T/R	T/L	Old Sterling Highway	L/R	
Sterling Highway	TL	TR	Bean Creek Road		LR
Bean Creek Road	RL		Sterling Highway	LT	TR
Sterling Highway	TR	TL	Snug Harbor Road	LR	
Sterling Highway	TL	TR	Kenai River		LR
Sterling Highway	LTR	LTR	Hamilton Place	LTR	LTR
Sterling Highway	TR	TL	Sportsman's Access	LR	
Sterling Highway	T/R	T/L	Old Sterling Highway	LR	
Sterling Highway Variant	T/L	T/R	Old Sterling Highway		LR

Sterling Highway Milepost 45 to 60

The Juneau Creek Variants provide alternative intersection configurations to connect the old and new Sterling Highway alignments at the west end of the project. The intersection configuration Variants 1 and 3 loop the old Sterling Highway under the new Sterling Highway and connect with southbound traffic turning onto the New Sterling Highway. Under each variant alternative, the intersection movements are expected to operate at an acceptable LOS.

Inters	Level of Service		Average De	Critical Lane Movement		
East/West Street	North/South Street	НСМ	ICU	НСМ	ICU%	(HCM)
Sterling Highway	Old Sterling Highway	С	А	16.9	38.3	NBL
Sterling Highway	Bean Creek Road	В	А	10.3	17.9	SBLR
Bean Creek Road	Sterling Highway	Α	А	9.4	23.2	EBLT
Sterling Highway	Snug Harbor Road	Α	Α	9.7	20.7	NBLR
Sterling Highway	Kenai River	Α	А	9.5	22.7	SBLR
Sterling Highway	Hamilton Place	Α	Α	9.0	22.7	SBLTR
Sterling Highway	Sportsman's Access	Α		10.0		NBLR
Sterling Highway	Old Sterling Highway	В	Α	14.9	30.9	NBLR
Sterling Highway Variant	Old Sterling Highway	В	А	12.9	33.5	SBLR

Table 6.	2043 Juneau	Creek, G-So	outh, and Varian	t Alternatives	Intersection LOS
			· • · · · · · · · · · · · · · · · · · ·		

Based on the ICU analysis, the intersections related to this alternative are expected to operate with reserve capacity.

Analysis worksheets are included as Appendix D and E.

Cooper Creek Alternative

All Cooper Creek alternative intersection movements are expected to operate at an acceptable LOS.

The Lane Configurations evaluated for this alternative are summarized in Table 7.

 Table 7. Cooper Creek Alternative Intersection Lane Configurations

East/West A	pproach		North/South Approach			
Street	EB	WB	Street	NB	SB	
Bean Creek Road	L/R		Sterling Highway	LT	TR	
Snug Harbor Road	LT/R	LT/R	Sterling Highway	L/T/R	L/T/R	
Sterling Highway	TL	TR	Kenai River		LR	
Sterling Highway	LTR	LTR	Hamilton Place	LTR	LTR	
Sterling Highway	T/L	T/R	Old Sterling Highway		LR	

Table 8. 2043 Cooper Creek Alternative Intersection LOS

Inters	Level o	f Service	Average De	Critical Lane Movement		
East/West Street	North/South Street	НСМ	ICU	НСМ	ICU%	(HCM)
Bean Creek Road	New Sterling Highway	С	А	18.0	43.3	EBL
Sterling Highway	Snug Harbor Road	С	А	23.7	40.6	EBLT
Sterling Highway	Kenai River	А	А	9.5	22.7	SBLR
Sterling Highway	Hamilton Place	A	А	9.0	22.7	SBLTR
Sterling Highway	Old Sterling Highway	В	А	12.9	33.5	SBLR

Based on the ICU analysis, the intersections related to this alternative are expected to operate with reserve capacity.

Analysis worksheets are included as Appendix D and E.

Juneau Creek Alternative without Schooner Bend Bridge

The intersections connecting the new Sterling Highway alignment and the old Sterling Highway alignment are anticipated to operate at acceptable levels of service. All intersection movements all are anticipated to operate at LOS C or better. The lane configurations evaluated for this alternative is the same as the Juneau Creek Alternative summarized in Table 5.

Inters	ection	Level o	f Service	Average De	Control lay	Critical Lane Movement
East/West Street	North/South Street	НСМ	ICU	НСМ	ICU%	(HCM)
Sterling Highway	Old Sterling Highway	С	А	20.0	38.8	NBL
Sterling Highway	Bean Creek Road	В	А	11.5	20.2	SBLR
Bean Creek Road	Sterling Highway	В	А	10.5	19.3	EBLT
Sterling Highway	Snug Harbor Road	А	А	9.5	29.0	NBLR
Sterling Highway	Kenai River	В	А	10.5	18.4	SBLR
Sterling Highway	Hamilton Place	В	Α	10.2	23.2	SBLTR
Sterling Highway	Old Sterling Highway	В	А	14.7	35.5	NBLR

 Table 9. 2043 Juneau Creek Alternative Without Bridge Intersection LOS

Based on the ICU analysis, all intersections are anticipated to operate with reserve capacity in 2043.

Analysis worksheets are included as Appendix D and E.

	2042			_		0				Juneau	Creek
	2407	NO-E	suid	Juneau	I Creek	ñ-5	outh	Cooper	Creek	Without	Bridge
Intersection	Approach	Delay	SOJ	Delay	ros	Delay	ros	Delay	ros	Delay	ros
East Connection to Existing Highway	WBL	Ţ		8.8	A	8.8	A	,		9.3	A
	NBR	I		13.5	в	13.5	В	I		13.4	в
	NBL		ı	16.9	ပ	16.9	C			20.0	ပ
Bean Creek Road - North	EBLT	8.0	A	7.6	A	7.6	A	,		7.9	A
	SBLR	17.6	c	10.3	В	10.3	В	1		11.5	в
Bean Creek Road - South	EBLT	12.0	В	9.4	A	9.4	A	•		10.5	ш
	NBLR	8.0	A	7.6	A	7.6	A	ı	1	7.8	A
Bean Creek Road - Combined	EBL	•				•	'	18.0	ပ		
	EBR	ı	ı		1	ı	1	10.2	ш		
	NBL	ı	ı		ı		1	8.1	A		
Snug Harbor Road	WBLT	9.0	A	7.7	A	7.7	A			7.8	A
	NBLR	14.1	ш	9.7	A	9.7	A	ı	ı	9.5	A
Snug Harbor Road & East Connection	EBLT	8.0	A	ı	ı	ı	'	23.7	o	·	ı
to Existing Highway	EBR	I	I	ı	I	I	1	9.6	A	ı	ı
	WBLT	I	I	ı	I	I	ı	15.7	U	ı	ı
	WBR	Ţ	ı	ı	I	Ţ	1	11.1	ш	I	ı
	NBL	I			ı	I		7.9	A	ı	
	SBL				ı		'	8.4	A		
Kenai River Boat Launch	EBLT	8.1	A	7.6	A	7.6	A	7.6	A	7.8	A
	SBLR	12.1	ш	9.5	A	9.5	A	9.5	A	10.5	ш
Hamilton's Place	EBLTR	8.1	A	7.7	A	7.7	A	7.7	A	7.7	A
	WBLTR	8.9	A	7.8	A	7.8	A	7.8	A	7.6	A
	NBLTR				1		-				
	SBLTR	10.0	В	9.0	A	9.0	A	6	A	10.2	В
West Connection to Existing Highway	WBL	•		8.9	A	8.9	A	-		0.6	A
	NBLR	I	1	14.9	В	14.9	В	I	ı	14.7	В
West Connection to Existing Highway	EBL		ı					8.3	A		
	SBLR	I	ı		ı	I	'	12.9	В	I	
							L - Left			R - Right	
[SO]	A	в	ပ	D	ш	ш	LT - Left/T	Thru		LR - Left/I	Right
Approach Delay (s):	0-10	10-15	15-25	25-35	35-50	50+	LTR - Left	/Thru/Right		TR - Thur	/Right

Table 10. Unsignalized Intersection Analysis Results (1% Growth Rate)

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	2012	:		Juneau	I Creek	Junear	J Creek	Juneau	Creek	_	-
	2407	NO-E	suld	Varia	ant 1	Vari	ant 2	Varia	ant 3	Juneau	Creek
Intersection	Approach	Delay	LOS	Delay	LOS	Delay	ros	Delay	LOS	Delay	LOS
East Connection to Existing Highway	WBL			8.8	A	8.8	A	8.8	A	8.8	A
	NBR			13.5	В	13.5	В	13.5	В	13.5	Ш
	NBL			16.9	c	16.9	c	16.9	c	16.9	C
Bean Creek Road - North	EBLT	8.0	A	7.6	A	7.6	A	7.6	A	7.6	A
	SBLR	17.6	C	10.3	В	10.3	В	10.3	В	10.3	В
Bean Creek Road - South	EBLT	12.0	В	9.4	A	9.4	A	9.4	А	9.4	A
	NBLR	8.0	А	7.6	A	7.6	A	7.6	A	7.6	A
Bean Creek Road - Combined	EBL		-	-		-	-				-
	EBR					-				I	
	NBL	-	•	-		-	-			-	
Snug Harbor Road	WBLT	9.0	A	7.7	A	7.7	A	7.7	A	7.7	A
	NBLR	14.1	В	9.7	A	9.7	A	9.7	A	6.7	A
	EBL	8.0	А		ı			ı	ı		
Snug Harbor Road & East Connection	EBT					-	-			-	
to Existing Highway	EBR			-		-			ı	-	
No East & West Bound Left Turns	WBT					-				I	
	WBR			-		-			ı	-	
	NBL			-		-	-			-	
	SBL			-		-				-	
Kenai River Boat Launch	EBLT	8.1	A	7.6	A	7.6	A	7.6	A	7.6	A
	SBLR	12.1	В	9.5	A	9.5	А	9.5	А	9.5	A
Hamilton's Place	EBLTR	8.1	A	7.7	A	7.7	A	7.7	A	7.7	A
	WBLTR	8.9	A	7.8	A	7.8	A	7.8	A	7.8	A
	NBLTR		1	ı	ı		ı	I	I	I	I
	SBLTR	10.0	В	9.0	A	9.0	A	9.0	A	9.0	A
Sportsman's Access	WBL	-			T	7.9	A		I	I	
	NBLR	ı			ı	10.0	A	I	I	I	
West Connection to Existing Highway	WBL					8.9	A	ı		8.9	A
	NBLR				ı	14.9	В	ı	ı	14.9	в
West Connection to Existing Highway	EBL	ı	I	8.3	A	ı	ı	8.3	A	I	
	SBLR			12.9	В			12.9	В	ı	
							L - Left			R - Right	
L'SOL	A	В	C	D	ш	ш	LT - Left/T	hru		LR - Left/Ri	ght
Approach Delay (s):	0-10	10-15	15-25	25-35	35-50	50+	LTR - Left	/Thru/Right		TR - Thur/F	tight

Table 11. Unsignalized Intersection Analysis Results Variants (1% Growth Bate)

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4.2 ROADWAY SEGMENT ANALYSIS

A level of service analysis was completed for the two lane highway segments related to each alternative. This analysis identifies how the highway segments related to the proposed alternatives are anticipated to operate in 2043 under peak traffic conditions.

4.2.1 METHODOLOGY & ASSUMPTIONS

A two lane highway level of service analysis was completed for each alternative. The analysis evaluated individual segments within the proposed alternative corridor. The methodologies used to analyze the segments follow procedures established in the HCM using HCS+.

Traffic volumes projected for 2043 were used to analyze each segment. Based on the HDR Study, the Juneau Creek, G-South, and Cooper Creek Alternatives assumed that approximately 70 percent of the Sterling Highway traffic is anticipated to use the new alignment and 30 percent is anticipated to continue using the existing corridor. The Juneau Creek Alternative without Schooner Bend Bridge assumed that approximately 80 percent of Sterling Highway traffic is anticipated to use the new alignment and 20 percent is anticipated to continue to use the existing corridor. Additionally, the two-lane highway analysis incorporates climbing and passing lanes for all build alternatives.

4.2.2 LEVEL OF SERVICE ANALYSIS

The following sections summarize the results of the two lane highway LOS analysis for individual alternatives. A summary of the LOS results for all alternatives are presented in Tables 19 and 20 at the end of Section 4.2. Analysis worksheets used to determine the Segment LOS are included as Appendix F.

No Build Alternative

The No Build Alternative maintains the existing Sterling Highway alignment and lane configurations. As shown in the table below, all segments are anticipated to operate at LOS D in 2043.

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1	3826	766	D/D
2, 3, 4, & 5	3969	794	D/D
6	4129	826	D/D

 Table 12. 2043 No Build Alternative Two Lane Highway LOS

Juneau Creek Alternative

The Juneau Creek alternative consists of a two lane highway with climbing and passing lanes. Passing lanes are provided in each direction of Segment 1. Climbing lanes are provided in the eastbound direction for Segment 2. In the westbound direction, climbing lanes are provided on Segments 3, 4, 5 and 6. Each segment of the Juneau Creek alternative is expected to operate at acceptable level of service in 2043.

Table 13. 2043	Juneau Creek	Alternative T	wo Lane H	lighway LOS

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1	3830	766	D/C
2			C/C
3	2770	550	C/C
4	2119	556	C/B
5			C/B
6	4130	826	D/C

The Juneau Creek Variants incorporate alternate routes along segment 2. For all variants, Segment 2 is expected to operate at LOS C in both eastbound and westbound lanes.

• G-South Alternative

The G-South alternative consists of a two lane highway with climbing and passing lanes. Passing lanes are provided in each direction of Segments 1 and 2. Climbing lanes are provided in the eastbound direction for Segments 3 and 4. In the westbound direction, climbing lanes are provided on Segments 5 and 6. Each segment of the Juneau Creek alternative is expected to operate at acceptable level of service in 2043.

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1	3830	766	D/C
2	3970	794	D/C
3, 4, & 5	2779	556	C/B
6	4130	826	D/C

Table 14. 2043 G South Alternative Two Lane Highway LOS

Cooper Creek Alternative

The Cooper Creek alternative consists of a two lane highway with climbing and passing lanes. Passing lanes are provided in each direction of Segments 1 and 2. Climbing lanes are provided in the eastbound direction for Segments 3 and 6. In the westbound direction, climbing lanes are provided on Segments 4 and 6. Each segment of the Juneau Creek alternative is expected to operate at acceptable level of service in 2043.

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1	3830	766	D/C
2	3970	794	D/C
3 & 4	2779	556	C/C
5	3970	794	D/C
6	4130	826	D/C

Table 15. 2043 Cooper Creek Alternative Two Lane Highway LOS

Juneau Creek Alternative without Schooner Bend Bridge

This Juneau Creek alternative consists of a two lane highway with climbing and passing lanes. Passing lanes are provided in each direction of Segment 1 and in the eastbound direction of Segment 4. Climbing lanes are provided in the eastbound direction for Segment 2. In the westbound direction, climbing lanes are provided on Segments 3, 4,

5 and 6. Each segment of the Juneau Creek alternative is expected to operate at acceptable level of service in 2043.

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1	3830	766	D/C
2			B/C
3	2176	625	C/C
4	3170	000	C/B
5			C/B
6	4130	826	D/C

Table 16. 2043 Juneau Creek Without Bridge	Alternative Tv	wo Lane Highway LO
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• Existing Sterling Highway

Each alternative assumes that a portion of the traffic will continue using the existing Sterling Highway alignment. Based on the assumed distribution of traffic for the Juneau Creek, G-South, and Cooper Creek alternatives the existing Sterling Highway is expected to operate at acceptable level of service in 2043.

Table 17. 2043 Old Sterling Highway Two Lane Highway LOS

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1*	3830	766	D/C
2, 3, 4, & 5	1191	238	C/A
6*	4130	826	D/C

*Segment with the same layout as the respective alternative analysis.

Based on the assumed distribution of traffic for the Juneau Creek without Schooner Bend Bridge the existing Sterling Highway is expected to operate at acceptable level of service in 2043.

Segment	AADT	100th Highest Hourly Volume (veh/hour)	LOS (EB/WB)
1*	3830	766	D/C
2			A/A
3	704	150	C/A
4	794	159	C/A
5			C/A
6*	4130	826	D/C

Table 18. 2043 Juneau Creek Without Bridge Alternative	e Two Lane Highway LOS (20%) – no bridge
--	--

*Segment with the same layout as the respective alternative analysis.

4.2.3 SEGMENT 6 PASSING LANE

As shown in the tables above, the eastbound direction of Segment 6 operates at a LOS D for all the build alternatives. The eastbound direction of Segment 6 borders on LOS E. Including a passing lane in the eastbound direction of Segment 6 could provide a more desirable level of service. Since passing and climbing lanes are provided on the adjacent segments, the addition of a passing lane may not provide a substantial benefit to the project. An evaluation of the impacts (environmental, cost, etc.) related to a passing lane should be completed.

4.2.4 DIRECTIONAL IMPACT SUMMARY

A Directional Impact analysis was completed to determine the percent of LOS for each Alternative. This summary shows the impact of each alternative's segments in relation to the entire alignment length. The Impact Summary emphasizes the percentage of roadway at LOS D or worse and LOS E or worse. The Directional Impact Summary is presented in Table 21.

Sterling Highway Milepost 45 to 60

			0100	I		0040			0										
			2012			Z045													YD:
			Existing	~	Z	lo-Buil(B	Jun	eau Cr∈	ek.	J	3-South		0 C O	per Cr	eek	With	nout Bri	dge
Segment	Direction	ATS	PTSF	ros	ATS	PTSF	ros	ATS	PTSF	ros	ATS	PTSF	ros	ATS	PTSF	ros	ATS	PTSF	ros
-	EB	46.0	60.6	ပ	44.6	66.4	Δ	49.2	66.4	Δ	49.2	66.4	D	49.2	66.4	Δ	49.2	66.4	Δ
	WB	46.1	48.6	c	44.9	55.9	D	49.4	55.9	U	49.4	55.9	c	49.4	55.9	c	49.4	55.9	с
2	EB	44.0	70.4	D	42.9	73.0	D	48.0	45.1	U	49.0	66.1	D	49.0	66.1	D	50.1	49.7	В
	WB	44.6	55.7	Δ	43.5	61.5	Δ	49.0	35.5	U	49.2	56.3	U	49.1	57.3	U	48.2	39.0	U
ო	EB	44.0	70.4	Δ	42.9	73.0	Δ	48.0	45.1	U	52.0	50.3	U	48.0	45.1	U	47.8	49.6	U
	WB	44.6	55.7	Δ	43.5	61.5	Δ	49.0	35.5	U	50.7	41.2	ш	49.0	35.5	U	48.7	37.9	U
4	EB	44.0	70.4	D	42.9	73.0	D	50.5	55.4	U	52.0	60.6	с	48.0	45.1	с	50.0	59.0	ပ
	WB	44.6	55.7	Δ	43.5	61.5	Δ	50.7	45.0	ш	52.0	48.7	В	49.0	35.5	U	50.2	47.5	ш
5	EB	44.0	70.4	Δ	42.9	73.0	Δ	50.5	60.6	U	52.0	55.4	U	47.0	73.0	Δ	50.0	63.2	U
	WB	44.6	55.7	Δ	43.5	61.5	Δ	50.7	45.0	ш	52.0	45.0	ш	48.0	61.5	U	50.2	47.5	ш
9	EB	43.9	70.1	Δ	42.7	74.3	Δ	48.0	71.5	Δ	50.0	71.5	Δ	48.6	68.2	Δ	48.0	71.5	Δ
	WB	44.4	56.2	D	43.3	62.2	D	49.0	54.5	U	50.0	54.5	υ	49.0	54.5	с	49.0	54.5	v
2E	EB							n/a	55.1	U							n/a	23.5	A
	WB							n/a	39.4	A							n/a	16.4	A
3E	EB							n/a	55.1	U	n/a	55.1	U	n/a	55.1	U	n/a	55.1	U
	WB							n/a	39.3	A	n/a	39.3	A	n/a	39.3	A	n/a	39.3	A
4E	EB							n/a	55.1	U	n/a	55.1	υ	n/a	55.1	U	n/a	55.1	U
	WB							n/a	39.3	A	n/a	39.3	A	n/a	39.3	A	n/a	39.3	A
5E	EB							n/a	55.1	U	n/a	55.1	C				n/a	55.1	с
	WB							n/a	39.3	A	n/a	39.3	A				n/a	39.3	A
		ΓŐ	S (Class	s 1 High	:(way	٩	ш	ပ	۵	ш	Ŀ	EB:	Eastbo	und Tra	ffic				
	Ā	TS (Av€	rage Ti	ravel S _I	:(paac	>55	50-55	45-50	40-45	<40	**	NB:	Westbo	und Tra	affic				
Δ.	TSF (Perc	ent Tin	ne Spen	nt Follo	wing):	<35	35-50	50-65	65-80	>80	**								
	**Exceed	s Capac	ity (2-La	ane Cap	bacity =	1,700 [Jassenc	jer cars	per hou	ur)									
	Per Highw	vay Cap	acity Ma	anual															
	Average 1	Travel S	peed cr	iteria fo	r NHS I	Intersta	te Rura	l is 45 N	APH.										

Table 19. Two-Lane Highway Analysis Results (1% Growth Rate)

Anchorage, Alaska Final

Sterling Highway Milepost 45 to 60

			0100	5	214 14				2	-		5							ſ
						2043		únr	eau Cré	ek	unr	eau Cré	Sek	unr	eau Cr	eek			
		_	Existing	J L	2	lo-Buil	σ	>	ariant 1		>	ariant 2	~	>	ariant	3	nn	eau Cre	sek
Segment	Direction	ATS	PTSF	SOT	ATS	PTSF	ros	ATS	PTSF	LOS	ATS	PTSF	LOS	ATS	PTSF	SOT	ATS	PTSF	LOS
-	EB	46.0	60.6	ပ	44.6	66.4	D	49.2	66.4	D	49.2	66.4	D	49.2	66.4	D	49.2	66.4	D
	WB	46.1	48.6	ပ	44.9	55.9	D	49.4	55.9	U	49.4	55.9	υ	49.4	55.9	с	49.4	55.9	υ
2	EB	44.0	70.4	D	42.9	73.0	D	47.3	52.1	U	47.9	51.4	c	47.3	52.1	C	48.0	45.1	с
	WB	44.6	55.7	D	43.5	61.5	D	47.5	40.2	U	47.5	40.2	c	47.5	40.2	C	49.0	35.5	с
с	EB	44.0	70.4	D	42.9	73.0	D	48.0	45.1	U	48.0	45.1	c	48.0	45.1	C	48.0	45.1	с
	WB	44.6	55.7	Δ	43.5	61.5	D	49.0	35.5	U	49.0	35.5	U	49.0	35.5	С	49.0	35.5	U
4	EB	44.0	70.4	D	42.9	73.0	D	50.5	55.4	U	50.5	55.4	c	50.5	55.4	C	50.5	55.4	с
	WB	44.6	55.7	Δ	43.5	61.5	D	50.7	45.0	В	50.7	45.0	В	50.7	45.0	В	50.7	45.0	ш
5	EB	44.0	70.4	Δ	42.9	73.0	D	50.5	60.6	U	50.5	60.6	U	50.5	60.6	С	50.5	60.6	U
	WB	44.6	55.7	Δ	43.5	61.5	D	50.7	45.0	в	50.7	45.0	В	50.7	45.0	В	50.7	45.0	ш
9	EB	43.9	70.1	Δ	42.7	74.3	Δ	48.0	71.5	Δ	48.0	71.5	Δ	48.0	71.5	Δ	48.0	71.5	Δ
	WB	44.4	56.2	Δ	43.3	62.2	D	49.0	54.5	ပ	49.0	54.5	ပ	49.0	54.5	ပ	49.0	54.5	ပ
2E	EB							n/a	55.1	с	n/a	55.1	с	n/a	55.1	ပ	n/a	55.1	o
	WB							n/a	39.4	A	n/a	39.4	A	n/a	39.4	A	n/a	39.4	A
ЗE	EB							n/a	55.1	ပ	n/a	55.1	c	n/a	55.1	ပ	n/a	55.1	ပ
	WB							n/a	39.3	A	n/a	39.3	A	n/a	39.3	A	n/a	39.3	A
4E	EB							n/a	55.1	ပ	n/a	55.1	c	n/a	55.1	ပ	n/a	55.1	с
	WB							n/a	39.3	A	n/a	39.3	A	n/a	39.3	A	n/a	39.3	A
5E	EB							n/a	55.1	ပ	n/a	55.1	c	n/a	55.1	ပ	n/a	55.1	с
	WB							n/a	39.3	A	n/a	39.3	A	n/a	39.3	A	n/a	39.3	A
		ΓŎ	S (Class	s 1 Higł	:(way	٩	В	ပ	۵	ш	Ŀ	ËB:	Eastbo	und Tra	iffic				
	Ā	TS (Av€	srage T	ravel S	ceed):	>55	50-55	45-50	40-45	<40	**	WB:	Westbo	ound Tra	affic				
Ъ	TSF (Perc	ent Tin	le Sper	t Follo	wing):	<35	35-50	50-65	65-80	>80	**					_			
	**Exceed	s Capac	<u>sity (2-L</u> ;	ane Cap	bacity =	1,700	passen(jer cars	per hou	ur)									
	Per Highw	vay Cap	acity Mi	anual															
	Average 1	Travel S	peed cr	iteria fo	r NHS I	Intersta	te Rura	l is 45 N	ЛРН.										

Table 20. Two-I ane Highway Analysis Results Variants (1% Growth Bate)

Anchorage, Alaska Final

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		Exi	sting 2	012	Ν	2043 Io-Buil	d	G	à-South	1	Coc	oper Cr	eek	Jun With	eau Cr nout Br	eek 'idge	Jun	eau Cr	eek	Jun V	eau Cr /ariant	eek 1	Jun V	eau Cr ariant	eek 2	Jun V	eau Cre ariant 3	ek 3
Segment	Direction	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS
1	EB	12.0	3	С	12.0	3	D	9.3	2.8	D	10.2	2.8	D	9.8	2.8	D	9.8	2.8	D	10.5	2.8	D	10.9	2.8	D	10.5	2.8	D
	WB	12.0	3	С	12.0	3	D	9.3	2.8	С	10.2	2.8	С	9.8	2.8	С	9.8	2.8	С	10.5	2.8	С	10.9	2.8	С	10.5	2.8	С
2	EB	12.0	3	D	12.0	3	D	14.9	4.5	D	16.4	4.5	D	14.0	4	В	14.0	4	С	11.3	3	С	9.8	2.5	С	11.3	3	С
	WB	12.0	3	D	12.0	3	D	14.9	4.5	С	16.4	4.5	С	14.0	4	С	14.0	4	С	11.3	3	С	9.8	2.5	С	11.3	3	С
3	EB	8.0	2	D	8.0	2	D	3.6	1.1	С	3.6	1	С	10.5	3	С	10.5	3	С	11.3	3	С	11.7	3	С	11.3	3	С
	WB	8.0	2	D	8.0	2	D	3.6	1.1	В	3.6	1	С	10.5	3	С	10.5	3	С	11.3	3	С	11.7	3	С	11.3	3	С
4	EB	6.0	1.5	D	6.0	1.5	D	11.6	3.5	С	7.3	2	С	4.5	1.3	С	4.5	1.3	С	4.9	1.3	С	5.1	1.3	С	4.9	1.3	С
	WB	6.0	1.5	D	6.0	1.5	D	11.6	3.5	В	7.3	2	С	4.5	1.3	В	4.5	1.3	В	4.9	1.3	В	5.1	1.3	В	4.9	1.3	В
5	EB	4.0	1	D	4.0	1	D	4.0	1.2	С	5.1	1.4	D	4.2	1.2	С	4.2	1.2	С	4.5	1.2	С	4.7	1.2	С	4.5	1.2	С
	WB	4.0	1	D	4.0	1	D	4.0	1.2	В	5.1	1.4	С	4.2	1.2	В	4.2	1.2	В	4.5	1.2	В	4.7	1.2	В	4.5	1.2	В
6	EB	8.0	2	D	8.0	2	D	6.6	2	D	7.3	2	D	7.0	2	D	7.0	2	D	7.5	2	D	7.8	2	D	7.5	2	D
	WB	8.0	2	D	8.0	2	D	6.6	2	С	7.3	2	С	7.0	2	С	7.0	2	С	7.5	2	С	7.8	2	С	7.5	2	С
Total	Length	100.0	25		100.0	25		100.0	30.2		100.0	27.4		100.0	28.6		100.0	28.6		100.0	26.6		100.0	25.6		100.0	26.6	

Table 21A. Directional Impact Summary

Table 21B. Directional Impact Summary - Peak Direction of Travel

	Exi	sting 20	012	N	2043 Io-Build	d	G	à-South	ı	Coc	oper Cr	eek	Jun With	eau Cr nout Br	eek idge	Jun	eau Cr	eek	Jun V	eau Cr ariant	eek 1	Jun V	eau Cr ariant :	eek 2	Jun V	eau Cre ariant 3	ek 3
Segment	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS	%	Length	LOS
1	24.0	3	С	24.0	3	D	18.5	2.8	D	20.4	2.8	D	19.6	2.8	D	19.6	2.8	D	21.1	2.8	D	21.9	2.8	D	21.1	2.8	D
2	24.0	3	D	24.0	3	D	29.8	4.5	D	32.8	4.5	D	28.0	4	С	28.0	4	С	22.6	3	С	19.5	2.5	С	22.6	3	С
3	16.0	2	D	16.0	2	D	7.3	1.1	С	7.3	1	С	21.0	3	С	21.0	3	С	22.6	3	С	23.4	3	С	22.6	3	С
4	12.0	1.5	D	12.0	1.5	D	23.2	3.5	С	14.6	2	С	9.1	1.3	С	9.1	1.3	С	9.8	1.3	С	10.2	1.3	С	9.8	1.3	С
5	8.0	1	D	8.0	1	D	7.9	1.2	С	10.2	1.4	D	8.4	1.2	С	8.4	1.2	С	9.0	1.2	С	9.4	1.2	С	9.0	1.2	С
6	16.0	2	D	16.0	2	D	13.2	2	D	14.6	2	D	14.0	2	D	14.0	2	D	15.0	2	D	15.6	2	D	15.0	2	D
Total	100.0	12.5		100.0	12.5		100.0	15.1		100.0	13.7		100.0	14.3		100.0	14.3		100.0	13.3		100.0	12.8		100.0	13.3	

Table 21C. Impact Summary

		2043			Juneau Creek		Juneau Creek	Juneau Creek	Juneau Creek
	Existing 2012	No-Build	G-South	Cooper Creek	Without Bridge	Juneau Creek	Variant 1	Variant 2	Variant 3
Segment Length (miles)	12.5	12.5	15.1	13.7	14.3	14.3	13.3	12.8	13.3
Percent of Alternative at Level of Service (LOS) D or Worse*	76	100.0	61.6	78.1	33.6	33.6	36.1	37.5	36.1
Percent of Alternative at LOS E or Worse*	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	* Based on peak	direction of Travel							

Table 21D.	Percent Lev	el of Service
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	Existing 2012	2043 No-Build	G-South	Cooper Creek	Juneau Creek Without Bridge	Juneau Creek	Juneau Creek Variant 1	Juneau Creek Variant 2	Juneau Creek Variant 3
Total % LOS B*									
Total % LOS C*	24.0		38.4	21.9	66.4	66.4	63.9	62.5	63.9
Total % LOS D*	76.0	100.0	61.6	78.1	33.6	33.6	36.1	37.5	36.1
Total % LOS E*									
Total % LOS F*									
	* Based on peak	direction of Travel							

REFERENCES

- 1. Sterling Highway Traffic Summary Report, HDR Alaska, October 2006.
- 2. Sterling Highway Preliminary Engineering Memorandum, R&M Consultants, Inc., March 2006.
- 3. Sterling Highway Alaska Original-Destination Study, Transformation Systems, Inc., September 2001.
- 4. Transportation Research Board: *Highway Capacity Manual,* 2000.
- 5. AASHTO-Geometric Design of Highways and Streets, 2001.

APPENDICES

APPENDIX A

ALTERNATIVE FIGURES







Cooper Creek Alternative



G-South Alternative





Juneau Creek Variant Alternative

APPENDIX B

HISTORICAL TRAFFIC VOLUMES

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ROUTE: 110(000	MI	LEPOI	NT: 6.14	13	STA	TION N	UMBER	: 11800	015 9	PER	MANEN	T STN 5	NMMAI	XY: 2013	7
		6A	M 10	Md		A	ERCENT (JF AADT F	OR DAY C	F WEEK			HISTORY		PERCEN	T
MNTH MADT	% AAD	r - 10P	9 - W	AM	MON	TUE	VED	THU	FRI V	VKDY	SAT	SUN	YEAR	AADT	GROWTI	ΞÌ
JAN 1164	1 39.	6	6.1	8.1	96.0	77.2	82.4	86.2	128.6	94.1	116.8	112.6	2012 2011	2915 2947	-1.1 -3.0	1
FEB 1269	43.	5	2.0	8.0	91.1	91.4	82.7	87.7	123.1	95.2	117.5	106.3	2010	3037	-0.6	
MAR 1601	54.	6	2.2	7.8	87.6	79.3	83.3	91.6	128.4	94.0	110.3	119.2	2008	2880 2880	0.1 -7.7 2.0	
APR 1960	. 67.	2	2.0	8.0	85.7	83.8	83.7	91.6	127.5	94.5	112.1	115.6	2006 2006	3120 3036 2121	-2.8 -2.8	
MAY 3108	106.	6 9	8.1	8.2	98.5	78.0	6.77	89.1	129.0	94.5	114.0	113.4	2004 2004	3124 3132 2002	-0.3 1.6	
JUN 4754	163.	1	0.1	9.6	86.6	80.6	83.2	91.3	121.1	92.6	115.1	122.1	2003 2002	3082 3042	1.3 4.3	
JUL 7473	256.	4	3.3	11.7	79.9	81.3	89.5	92.5	120.1	92.7	117.1	119.5	1007	/167		
AUG 5127	175.	6	[.3	8.7	96.4	83.9	84.1	87.2	113.8	93.1	111.2	123.6				
SEP 3339	114.	<u> </u>	0.	0.	86.8	79.1	80.9	84.5	121.9	90.6	117.9	128.8				
OCT 2189	. 75.	1 92	2.1	7.9	83.3	80.1	79.6	93.6	125.7	92.5	119.0	118.7				
NOV 1570	53.	6	6.1	8.1	88.0	83.1	99.5	90.06	116.3	95.4	106.8	116.1				
DEC [42]	48.		6.(9.1	85.3	78.6	91.5	6.66	126.8	96.4	112.5	105.5				
AADT 2915			.3	8.7	88.8	81.4	84.9	90.4	123.5	93.8	114.2	116.8				
HIGH DAYS	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	9TH	10TH	AVG					
VOLUME 12 DAY 0'	2229 7/22	12039 07/21	11639 07/20	9896 07/27	9646 07/29	9331 07/28	9240 07/15	9045 07/19	8882 07/18	7998 71/70	9995					
% AADT 4	19.5	413.0	399.3	339.5	330.9	320.1	317.0	310.3	304.7	274.4	342.9					
HIGH HOURS	1ST	2ND	3RD	4TH	5TH	6TH	7TH	8TH	HT9	10TH	20TH	30TH	40TH	50TH	AVG	ان
VOLUME	1242	1094	1071	1051	1045	1024	1008	988	941	617	L6L	752	685	645	103	œ
HOUR	6PM	7PM	3PM	2PM	4PM	8PM	5PM	5PM	M46	M41	12AM	Md6	6PM	2PM		
WADT V	42.6	0//20 37.5	0//22 36.7	36.1	35.8	35.1	34.6	33.9	32.3	31.5	27.3	25.8	23.5	22.1	35.	9
PERCENT OF AA	ADT BY HC AM 4AN	DUR 1 5AM	L MAA	AM 8AM	MAQ MA	11 M 11 AV	I 17 PM	IPM 3P	Маг и	4PM 5P	Mdy M	8 MdL	Mab Ma	10PM 11	PM 1241	L.
1.2 0.9	0.8 0.	7 0.7	1.0	1.6 2.	3 3.4	4.8 5.9	6.6	7.1 7	5 7.9	6.7	1.7 7.3	6.6	5.8 4.7	3.5	2.5 1.	

2010-2012 Traffic Volume Report

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ROUTE:	110000		MIL	EPOID	NT: 6.14	e O	ST,	ATION P	NUMBER	: 118000	15 9	PER	MANE	NTS TN	SUMMA	RY: 200	6(
MNTH	1ADT %	6 AADT	6AN - 10PN	M 10 - 6	MM	MON	TUE	PERCENT WED	OF AADT THU	FOR DAY C	JF WEEK WKDY	SAT	NIIS	HISTORY	AADT	PERCEN	L) H
JAN	1222	40.0	92.(0	8.0	95.0	87.0	79.5	87.9	122.4	94.4	113.1	115.2	2009	3055	6.1	
FEB	1421	46.5	92.(9	7.4	91.4	77.1	81.2	85.1	133.0	93.6	118.6	113.3	2007	2880 3120	-7.7	
MAR	1684	55.1	92.	3	7.7	83.1	80.9	85.7	92.5	126.7	93.8	114.4	116.7	2005	3036 3124	-2.8	
APR	2061	67.5	,22.	4	7.6	85.3	84.9	82.1	92.2	124.7	93.8	112.7	118.1	2004 2003	3132 3082	1.6	
МАҮ	3527	115.5	61.5	5	8.5	102.6	79.9	75.8	88.1	124.9	94.3	111.9	116.7	2002 2001	3042 2917	4.3	
NUL	5684	186.1	88.(6	11.4	83.4	78.8	82.4	92.1	120.5	91.4	114.7	128.2				
JUL	7344	240.4	88.(6	11.4	86.1	77.0	80.3	93.5	117.6	90.9	116.3	129.2				
AUG	4901	160.4	·'16	4	8.6	82.6	84.9	81.9	88.2	117.8	91.1	118.1	126.6				
SEP	3424	112.1	93.	Ι	6.9	94.4	75.9	74.3	83.0	123.9	90.3	123.3	125.2				
0CT	2264	74.1	92.(6	7.4	82.7	79.7	78.1	89.3	123.8	90.7	119.9	126.4				
NOV	1587	51.9	92.{	∞	7.2	80.6	84.0	97.3	91.1	118.1	94.2	111.5	117.3				
DEC	1535	50.2	92.2	2	7.8	91.7	84.8	90.5	99.5	104.3	94.2	111.5	117.7				
AADT	3055		61.5	7	8.3	88.2	81.2	82.4	90.2	121.5	92.7	115.5	120.9				
HIGH DAY ^S VOLUME DAY % AADT	S 1ST 11268 07/19 368.8	2 0 0 K	2ND 835 1 7/17 0 54.7 3	3RD 0328 07/18 338.1	4TH 10057 07/25 329.2	5TH 9312 07/05 304.8	6TH 9280 07/26 303.8	7TH 8943 07/03 292.7	8TH 8815 07/24 288.5	9TH 8248 06/21 270.0	10TH 8107 07/12 265.4	AVG 9519 311.6		DIR. DIST NB - 49.8% SB - 50.2%	. к.		
HIGH HOU	RS 1ST	5	QNS	3RD	4TH	5TH	6TH	7TH	8TH	HT9	10TH	20TH	30TH	40TH	I 50TH	AV(Ģ
VOLUME	1025		024	1009	951 2014	950 2014	945 enve	933 2004	872	859	858	761 7	712	689	675 (75	94	43
DAY	4.FM 07/19	× 50	7/19 G	07/19	07/05	07/19	07/17	07/26	07/19	07/17	4FM 07/26	07/17	07/19	07/26	5 07/17		
% AADT	33.6		33.5	33.0	31.1	31.1	30.9	30.5	28.5	28.1	28.1	24.9	23.3	22.(5 22.1	30	6.(
PERCENT (1AM 2A	DF AADT M 3AM	BY HOUR 4AM	5AM (6AM 7.	AM 8AN	MA9 h	10AM 11A	M 12PM	1PM 2F	M 3PM	4PM SP	M 6PM	7PM 8	MA6 MA	[10PM 1]	IPM 12AN	Σ
1.1 (0.7 0.7	0.6	0.7	1.0	1.6 2.	4 3.7	4.9 5	.8 6.5	7.0	7.3 7.7	7.9 T	.7 7.4	6.8	6.0 4.5	7 3.5	2.5 1.	۲.

STERLING HIGHWAY AT COOPER LANDING

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2007-2009 Traffic Volume Report

Traffic Growth Summary

110000 Sterling Highway MP 45 to 60, Quartz Creek Road to Skilak Lake Road East

									AN	NUAL AVERA	AGE DAILY T	RAFFIC									
CDS MILE DESCRIPTION	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
8.11 - 11.14 Quartz Creek Rd. to Snug Harbor Rd.	3006	3100	3100	2745	2300	2800	3223	3220	2928	3131	3320	3360	3410	3410	3029	3778	3490	3714	3690	3580	3033
11.14 - 15.67 Snug Harbor Rd. to Russian River Campground Rd.	2900	3150	3124	3100	2638	2475	2668	3029	2950	3050	3194	3240	3290	3461	3360	3780	3212	3410	3390	3345	3270
15.67 - 17.67 Russian River Campground Rd. to Russian River Ferry Entrance	2900	3150	3120	3100	2500	2500	2695	2690	2620	2710	2870	2668	2710	2710	3219	3310	3060	4079	3804	3690	3456
17.67 - 21.71 Russian River Ferry Entrance to Skilak Lake Rd. (East)	2500	2959	3000	3000	2367	2334	2740	2751	2680	2770	3200	3260	3280	3113	3040	3130	2981	3180	3180	3178	3140
6.14 Cooper Landing PTR										2917	3042	3082	3132	3124	3036	3120	2880	3055	3037	2947	2915



HISTORIC GROWTH RATES (Based on Linear Trend Line)

HISTORIC GROWTH RATES (Based on Beginning Year and Ending Year)

MILE	DESCRIPTION	EQUATION	R ²	2007	2012	2007 - 2012
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	y = -99.4x + 3895.4	0.47	3796	3299	-2.77%
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	y = -62.03x + 3618.27	0.34	3556	3246	-1.81%
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	y = 67x + 3332	0.12	3399	3734	1.90%
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	y = 18.31x + 3067.4	0.2	3086	3177	0.59%
6.14	Cooper Landing PTR	y = -24.06x + 3076.53	0.24	3052	2932	-0.80%

_		BEGIN	BEGIN	END	END	GROWTH
MILE	DESCRIPTION	YEAR	VOLUME	YEAR	VOLUME	RATE
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	2007	3778	2012	3033	-4.30%
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	2007	3780	2012	3270	-2.86%
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	2007	3310	2012	3456	0.87%
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	2007	3130	2012	3140	0.06%
6.14	Cooper Landing PTR	2007	3120	2012	2915	-1.35%

THIS SHEET PROVIDES A BASIS OF COMPARISON BETWEEN GROWTH RATES CALCULATED BY A LINEAR TREND LINE AND GROWTH RATES CALCULATED FROM THE BEGINNING AND ENDING YEARS' DATA. A GRAPHICAL REPRESENTATION OF THE TWO GROWTH RATE CALCULATIONS IS SHOWN IN THE GRAPH. GENERAL OBSERVATIONS REGARDING THE TWO ANALYSIS METHODS ARE GIVEN BELOW. GROWTH RATES LISTED ARE FOR YEARS THAT DATA IS AVAILABLE. IF ADDITIONAL INFORMATION IS NEEDED, PLEASE CONTATCT THE HIGHWAY DATA SECTION.

LINEAR TREND LINE ANALYSIS: A linear trend line analysis attempts to find a linear relationship among a given set of data. The equations given on this sheet are for the line that most closely fits the data.

HISTORICAL ANALYSIS: The historical analysis evaluates the change in data between two specified years. An annual compound growth rate calculation is applied to determine the growth rate from one year to another.

Traffic Growth Summary

110000 Sterling Highway MP 45 to 60, Quartz Creek Road to Skilak Lake Road East

										A	NNUAL AVER	AGE DAILY	TRAFFIC									
MILE	DESCRIPTION	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
8.11 - 11.14 Quarta	z Creek Rd. to Snug Harbor Rd.	3006	3100	3100	2745	2300	2800	3223	3220	2928	3131	3320	3360	3410	3410	3029	3778	3490	3714	3690	3580	3033
11.14 - 15.67 Snug	Harbor Rd. to Russian River Campground Rd.	2900	3150	3124	3100	2638	2475	2668	3029	2950	3050	3194	3240	3290	3461	3360	3780	3212	3410	3390	3345	3270
15.67 - 17.67 Russia	an River Campground Rd. to Russian River Ferry Entrance	2900	3150	3120	3100	2500	2500	2695	2690	2620	2710	2870	2668	2710	2710	3219	3310	3060	4079	3804	3690	3456
17.67 - 21.71 Russia	an River Ferry Entrance to Skilak Lake Rd. (East)	2500	2959	3000	3000	2367	2334	2740	2751	2680	2770	3200	3260	3280	3113	3040	3130	2981	3180	3180	3178	3140



HISTORIC GROWTH RATES (Based on Linear Trend Line)												
			TREND LIN	E VOLUME	GROWTH RATES							
MILE	DESCRIPTION	EQUATION	R ²	2002	2012	2002 - 2012						
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	y = 12.31x + 3363.78	0.03	3376	3499	0.36%						
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	y = 7.73x + 3312.91	0.02	3321	3398	0.23%						
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	y = 117.08x + 2531.69	0.65	2649	3820	3.73%						
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	y = -7.75x + 3199.44	0.09	3192	3114	-0.25%						

		BEGIN	BEGIN	END	END	GROWTH
MILE	DESCRIPTION	YEAR	VOLUME	YEAR	VOLUME	RATE
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	2002	3320	2012	3033	-0.90%
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	2002	3194	2012	3270	0.24%
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	2002	2870	2012	3456	1.88%
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	2002	3200	2012	3140	-0.19%

THIS SHEET PROVIDES A BASIS OF COMPARISON BETWEEN GROWTH RATES CALCULATED BY A LINEAR TREND LINE AND GROWTH RATES CALCULATED FROM THE BEGINNING AND ENDING YEARS' DATA. A GRAPHICAL REPRESENTATION OF THE TWO GROWTH RATE CALCULATIONS IS SHOWN IN THE GRAPH. GENERAL OBSERVATIONS REGARDING THE TWO ANALYSIS METHODS ARE GIVEN BELOW. GROWTH RATES LISTED ARE FOR YEARS THAT DATA IS AVAILABLE. IF ADDITIONAL INFORMATION IS NEEDED, PLEASE CONTATCT THE HIGHWAY DATA SECTION.

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HISTORICAL ANALYSIS: The historical analysis evaluates the change in data between two specified years. An annual compound growth rate calculation is applied to determine the growth rate from one year to another.

HISTORIC GROWTH RATES (Based on Beginning Year and Ending Year)

Traffic Growth Summary

110000 Sterling Highway MP 45 to 60, Quartz Creek Road to Skilak Lake Road East

ANNUAL AVERAGE DAILY TRAFFIC																						
MILE	DESCRIPTION	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
8.11 - 11.14 Quart	z Creek Rd. to Snug Harbor Rd.	3006	3100	3100	2745	2300	2800	3223	3220	2928	3131	3320	3360	3410	3410	3029	3778	3490	3714	3690	3580	3033
11.14 - 15.67 Snug	Harbor Rd. to Russian River Campground Rd.	2900	3150	3124	3100	2638	2475	2668	3029	2950	3050	3194	3240	3290	3461	3360	3780	3212	3410	3390	3345	3270
15.67 - 17.67 Russi	an River Campground Rd. to Russian River Ferry Entrance	2900	3150	3120	3100	2500	2500	2695	2690	2620	2710	2870	2668	2710	2710	3219	3310	3060	4079	3804	3690	3456
17.67 - 21.71 Russi	an River Ferry Entrance to Skilak Lake Rd. (East)	2500	2959	3000	3000	2367	2334	2740	2751	2680	2770	3200	3260	3280	3113	3040	3130	2981	3180	3180	3178	3140



HISTORIC GR	OWTH RATES (Based on Linear Trend Line)					
				TREND LIN	E VOLUME	GROWTH RATES
MILE	DESCRIPTION	EQUATION	R ²	1992	2012	1992 - 2012
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	y = 37.81x + 2792.1	0.43	2830	3586	1.19%
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	y = 32.02x + 2792.34	0.43	2824	3465	1.03%
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	y = 42.14x + 2563.16	0.35	2605	3448	1.41%
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	y = 29.49x + 2617.6	0.41	2647	3237	1.01%

	errining rour and Ending rour,					
		BEGIN	BEGIN	END	END	GROWTH
MILE	DESCRIPTION	YEAR	VOLUME	YEAR	VOLUME	RATE
8.11 - 11.14	Quartz Creek Rd. to Snug Harbor Rd.	1992	3006	2012	3033	0.04%
11.14 - 15.67	Snug Harbor Rd. to Russian River Campground Rd.	1992	2900	2012	3270	0.60%
15.67 - 17.67	Russian River Campground Rd. to Russian River Ferry Entrance	1992	2900	2012	3456	0.88%
17.67 - 21.71	Russian River Ferry Entrance to Skilak Lake Rd. (East)	1992	2500	2012	3140	1.15%

THIS SHEET PROVIDES A BASIS OF COMPARISON BETWEEN GROWTH RATES CALCULATED BY A LINEAR TREND LINE AND GROWTH RATES CALCULATED FROM THE BEGINNING AND ENDING YEARS' DATA. A GRAPHICAL REPRESENTATION OF THE TWO GROWTH RATE CALCULATIONS IS SHOWN IN THE GRAPH. GENERAL OBSERVATIONS REGARDING THE TWO ANALYSIS METHODS ARE GIVEN BELOW. GROWTH RATES LISTED ARE FOR YEARS THAT DATA IS AVAILABLE. IF ADDITIONAL INFORMATION IS NEEDED, PLEASE CONTATCT THE HIGHWAY DATA SECTION.

LINEAR TREND LINE ANALYSIS: A linear trend line analysis attempts to find a linear relationship among a given set of data. The equations given on this sheet are for the line that most closely fits the data.

HISTORICAL ANALYSIS: The historical analysis evaluates the change in data between two specified years. An annual compound growth rate calculation is applied to determine the growth rate from one year to another.

Route/N	Ipt Route Name/Description	Length(mi)	FC	10AADT	11AADT	12AADT	DVMT
100137	ANDERSON WAY, SELDOVIA						
0.000	Jct with Alder Street	0.348	8	370	370	360	125
0.348	Jct with Shoreline Drive					Total	125
100139	SELDOVIA STREET, SELDOVIA						
0.000	Jct with Main Street	0.070	8	700	700	680	48
0.070	Jct with Alder Street					Total	48
100148	DOCK ROAD, SELDOVIA						
0.000	Soldotna Ferry Terminal	0.131	7	70	70	70	9
0.131	Jct with Main Street					Total	9
100150	JAKALOF BAY ROAD, SELDOVIA						
0.000	Jct with Shoreline Drive	2,376	8	290	290	280	665
2.376	Jct with Boone Lane	2.488	8	110	110	110	274
4.864	Jct with Bickford Circle	7.464	8	40	40	40	299
12.328	End of State Maintenance					Total	1238
110000	STERLING HIGHWAY						
0.000	Jct with Seward Highway	0.581	1	1666	1640	2256	1311
0.581	Jct with Sterling Wye (West Leg) - PTR	7.506	1	3037	2947	2915	21880
8.087	Jct with Quartz Creek Road	3.045	1	3690	3580	3033	9235
11.132	Jct with Snug Harbor Road	4.538	1	3390	3345	3270	14839
15.670	Jct with Russian River Campground Road	d 2.325	1	3804	3690	3456	8035
17.995	Jct with Russian River Ferry Entrance	3.769	1	3180	3178	3140	11835
21.764	Jct with Skilak Lake Road	17.176	1	2943	2850	2810	48265
38.940	Jct with Skilak Lake Road	3.894	1	3607	3480	3420	13317
42.834	Jct with Kenai Keys Road - PTR	2.843	1	3846	3711	3652	10383
45.677	Moose River Bridge	1.375	1	6128	5990	5950	8181
47.052	Jct with Swanson River Road	3.701	1	6090	8022	8030	29719
50.753	Jct with Robinson Loop Road - PTR	2.081	1	8425	8313	8314	17301
52.834	Jct with Forest Lane Road	2.868	1	10344	10230	10240	29368
55.702	Jct with Mackey Lake Road	1.473	1	14160	15409	15410	22699
57.175	Jct with Kenai Spur Highway	0.329	2	16900	16650	18085	5950
57.504	Jct with Birch Street	0.222	2	17320	18737	18740	4160

Route/	Mpt Route Name/Description	Length(mi)	FC	09AADT	10AADT	11AADT	DVMT
100139	SELDOVIA STREET, SELDOVIA						_
0.000	Jct with Main Street	0.070	8	678	700	700	49
0.070	Jct with Alder Street					Total	49
100148	DOCK ROAD, SELDOVIA						
0.000	Soldotna Ferry Terminal	0.131	7	71	70	70	9
0.131	Jct with Main Street					Total	9
100150	JAKALOF BAY ROAD, SELDOVIA						
0.000	Jct with Shoreline Drive	2.376	8	279	290	290	689
2.376	Jct with Boone Lane	2.488	8	106	110	110	274
4.864	Jct with Bickford Circle	7.464	8	36	40	40	299
12.328	End of State Maintenance					Total	1261
110000	STERLING HIGHWAY						_
0.000	Jct with Seward Highway	0.581	1	2001	1666	1640	953
0.581	Jct with Sterling Wye (West Leg) - PTR	7.506	1	3055	3037	2947	22120
8.087	Jct with Quartz Creek Road	3.045	1	3714	3690	3580	10901
11.132	Jct with Snug Harbor Road	4.538	1	3410	3390	3345	15180
15.670	Jct with Russian River Campground Road	d 2.325	1	4079	3804	3690	8579
17.995	Jct with Russian River Ferry Entrance	3.769	1	3180	3180	3178	11978
21.764	Jct with Skilak Lake Road	17.176	1	3500	2943	2850	48952
38.940	Jct with Skilak Lake Road	3.894	1	4220	3607	3480	13551
42.834	Jct with Kenai Keys Road - PTR	2.843	1	3802	3846	3711	10550
45.677	Moose River Bridge	1.375	1	6800	6128	5990	8236
47.052	Jct with Swanson River Road	3.701	1	6040	6090	8022	29689
50.753	Jct with Robinson Loop Road - PTR	2.081	1	8352	8425	8313	17299
52.834	Jct with Forest Lane Road	2.868	1	11720	10344	10230	29340
55.702	Jct with Mackey Lake Road	1.473	1	13908	14160	15409	22697
57.175	Jct with Kenai Spur Highway	0.329	2	16634	16900	16650	5478
57.504	Jct with Birch Street	0.222	2	17055	17320	18737	4160
57.726	Jct with Binkley Street	0.306	2	19010	18329	18060	5526
58.032	Jct with Kobuk Street	0.414	2	17414	17690	17430	7216
58.446	Jct with Kalifornsky Beach Road	4.251	2	5531	5580	5520	23466
62 697	Jct with Arc Loop Road	2,303	2	4607	4650	4824	11110

Route/	Mpt Route Name/Description	Length(mi)	FC	07AADT	08AADT	09AADT	VMT
080068	STANDARD OIL ROAD, BETHEL						
0.000	Jct with Chief Eddie Hoffman Highway	0.454	9	400	833	840	381
0.454	Yukon Fuel Company					Total	381
080076	NOEL POLTY BLVD. BETHEL						
0.000	Jct with Ugsugak Road	1 764	9		837	850	1400
1.764	Jct with Tower Road		,		057	Total	1499
				L			
<u>100100</u>	AIRPORT AVENUE, SELDOVIA						
0.000	Jct with Main Street	0.675	7	210	200	388	262
0.675	Airport Parking					Total	262
100125	MAIN STREET, SELDOVIA						
0.183	Jct with Dock Road	0.203	7	560	530	540	110
0.386	Jct with Seldovia Street	0.160	7	670	640	748	120
0.546	Jct with Airport Avenue					Total	229
100137	ANDERSON WAY, SELDOVIA						
0.000	Jct with Alder Street	0.348	8	360	340	362	126
0.348	Jct with Shoreline Drive					Total	126
				<u></u>	· · · · · · · · · · · · · · · · · · ·		
<u>100139</u>	SELDOVIA STREET, SELDOVIA			1			
0.000	Jct with Main Street	0.070	8	500	480	678	47
0.070	Jct with Alder Street					Total	47
100148	DOCK ROAD, SELDOVIA						
0.000	Soldotna Ferry Terminal	0.131	7	70	70	71	9
0.131	Jct with Main Street					Total	9
100150	JAKALOF BAY ROAD, SELDOVIA						
0.000	Jct with Shoreline Drive	2.376	8	360	340	279	663
2.376	Jct with Boone Lane	2.488	8	120	110	106	264
4.864	Jct with Bickford Circle	7.464 [·]	8	50	50	36	269
12.328	End of State Maintenance					Total	1195
110000	STERLING HIGHWAY			1			

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11.132 Jet with Snug Harbor Road 4.538 1 3780 3212 3410 15.670 Jet with Russian River Campground Road 2.325 1 3310 3060 4079 17.995 Jet with Russian River Ferry Entrance 3.769 1 3130 2981 3180 21.764 Jet with Skilak Lake Road 17.176 1 3458 3272 3500 38.940 Jet with Skilak Lake Road 3.894 1 4217 3910 4220 42.834 Jet with Skilak Lake Road 3.894 1 4217 3910 4220 42.874 Jet with Kenai Keys Road - PTR 2.843 1 3800 3526 3802 45.677 Moose River Bridge 1.375 1 6831 6410 6800 47.052 Jet with Kobinson Loop Road - PTR 2.081 8430 7997 8352 25.834 Jet with Kobinson Loop Road 1.473 1 13600 13030 13908 57.175 Jet with Mackey Lake Road 1.473 1 1460 14120 16634 57.726	11309
15.670 Jet with Russian River Campground Road 2.325 1 3310 3060 4079 17.995 Jet with Russian River Ferry Entrance 3.769 1 3130 2981 3180 21.764 Jet with Skilak Lake Road 17.176 1 3458 3272 3500 38.940 Jet with Skilak Lake Road 3.894 1 4217 3910 4220 42.834 Jet with Kenai Keys Road - PTR 2.843 1 3800 3526 3802 45.677 Moose River Bridge 1.375 1 6831 6410 6800 47.052 Jet with Robinson Loop Road - PTR 2.081 1 8430 7997 8352 52.834 Jet with Forest Lane Road 2.868 1 11827 11220 11720 55.702 Jet with Mackey Lake Road 1.473 1 13690 13030 13908 57.175 Jet with Kenai Spur Highway 0.329 2 14850 14120 16634 57.726 Jet with Kalifornsky Beach Road 4.251 2 6400 6070 5531 <	15475
17.995 Jet with Russian River Ferry Entrance 3.769 1 3130 2981 3180 21.764 Jet with Skilak Lake Road 17.176 1 3458 3272 3500 38.940 Jet with Skilak Lake Road 3.894 1 4217 3910 4220 42.834 Jet with Kenai Keys Road - PTR 2.843 1 3800 3526 3802 45.677 Moose River Bridge 1.375 1 6831 6410 6800 47.052 Jet with Swanson River Road 3.701 1 7340 5782 6040 50.753 Jet with Forest Lane Road 2.868 1 11827 11220 11720 55.702 Jet with Mackey Lake Road 1.473 1 13690 13030 13908 57.175 Jet with Bink Street 0.222 2 17107 16270 17055 57.726 Jet with Kenai Spur Highway 0.329 2 14850 14120 16634 57.726 Jet with Kenai Spur Highway 0.322 17070 18140 17414 58.032 Jet	9484
21.764 Jet with Skilak Lake Road 17.176 1 3458 3272 3500 38.940 Jet with Skilak Lake Road 3.894 1 4217 3910 4220 42.834 Jet with Skilak Lake Road 3.894 1 3800 3526 3802 45.677 Moose River Bridge 1.375 1 6831 6410 6800 47.052 Jet with Swanson River Road 3.701 1 7340 5782 6040 50.753 Jet with Robinson Loop Road - PTR 2.081 1 8430 7997 8352 52.834 Jet with Forest Lane Road 2.868 1 11827 11220 11720 55.702 Jet with Mackey Lake Road 1.473 1 13690 13030 13908 57.175 Jet with Birch Street 0.222 2 17107 16270 17055 57.726 Jet with Kalifornsky Beach Road 4.251 2 6400 6070 5531 62.697 Jet with Kalifornsky Beach Road 2.03 2 5500 5220 4607 65.000	11985
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42.834 Jet with Kenai Keys Road - PTR 2.843 1 3800 3526 3802 45.677 Moose River Bridge 1.375 1 6831 6410 6800 47.052 Jet with Swanson River Road 3.701 1 7340 5782 6040 50.753 Jet with Robinson Loop Road - PTR 2.081 1 8430 7997 8352 52.834 Jet with Forest Lane Road 2.868 1 11827 11220 11720 55.702 Jet with Mackey Lake Road 1.473 1 13690 13030 13908 57.175 Jet with Kenai Spur Highway 0.329 2 14850 14120 16634 57.704 Jet with Binkley Street 0.222 2 17107 16270 17055 57.726 Jet with Kalifornsky Beach Road 4.251 2 6400 6070 5531 62.697 Jet with Are Loop Road 2.031 2 5500 5220 4607 65.000 Jet with Cohoe Loop Road (North) 2.869 2 3525 3689 3830 75.60	16433
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123.902 Jct with North Fork Road (South) 0.480 2 3911 3560 3580 124.382 Jct with Old Sterling Highway 2.251 2 3340 3320 3340 126.633 Jct with Diamond Ridge Road 2.102 2 4097 3790 3800	22570
124.382 Jct with Old Sterling Highway 2.251 2 3340 3320 3340 126.633 Jct with Diamond Ridge Road 2.102 2 4097 3790 3800	1718
126.633 Jct with Diamond Ridge Road 2.102 2 4097 3790 3800	7518
	7988
128.735 Jct with Rogers Loop (North) 0.504 2 4620 4723 4740	2389
129.239 Jct with Rogers Loop (South) 1.800 2 5500 4844 4860	8748

Route/	/Mpt Route Name/Description	Length(mi)	FC	07AADT	08AADT	09AADT	VMT
131.039	Jct with West Hill Road	0.772	2	7762	7360	7380	5697
131.811	Jct with Crittenden Drive	0.145	2	9190	9275	9280	1346
131.956	Jct with Pioneer Avenue	0.256	2	9990	9640	8495	2175
132.212	Jct with Main Street - PTR	0.691	2	9595	9257	9266	6403
132.903	Jct with Lake Street	0.947	2	6410	6017	5970	5654
133.850	Jct with FAA Road - PTR	4.393	2	4125	3840	3773	16575
138.243	End of Homer Spit Road					Total	558874
110030	GREER ROAD, HOMER	<u> </u>					
0.000	Jct with East End Road	0.894	9	255	240	240	215
0.894	Jct with Trappers Lane					Total	215
<u>110040</u>	FAA ROAD, HOMER						
0.000	Jct with Sterling Highway	0.525	8	780	727	740	389
0.525	Airport Parking Lot				<u></u> .	Total	389
<u>110100</u>	PIONEER AVENUE, HOMER						
0.000	Jct with Lake Street	0.618	7	7590	7260	7396	4571
0.618	Jct with Main Street	0.370	7	4250	4060	4423	1637
0.988	Jct with Sterling Highway					Total	6207
110150	LAKE STREET, HOMER	· · · · · · · · · · · · · · · · · · ·					
0.000	Jct with Sterling Highway	0.489	7	5067	4840	4349	2127
0.489	Jct with Pioneer Avenue					Total	2127
<u>110200</u>	KACHEMAK BAY DRIVE, HOMER						
0.000	Jct with Sterling Highway	1.014	7/8	1687	1620	2156	2186
1.014	Homer Boat Yard	2.510	8	1596	1530	1530	3840
3.524	Jct with East End Road					Total	6026
<u>110300</u>	EAST END ROAD, HOMER						
0.000	Jct with Lake Street - PTR	0.801	7	8338	7940	8053	6450
0.801	Jct with East Hill Road	2.770	7	5401	5095	5170	14321
3.571	Jct with Kachemak Bay Drive	5.525	7	2816	2970	3010	16630
9.096	Jct with Greer Road	3.173	7	1770	1281	1300	4125
12.269	Jct with Old East End Road (W Jct)	6.166	7	510	829	840	5179

Route	/Mpt	Route Name/Description	Length(mi)	FC	05AADT	06AADT	07AADT	VMT
080068	STA	NDARD OIL ROAD, BETHEL						
0.454	Yuk	on Fuel Company					Total	182
100100	AIR	PORT AVENUE, SELDOVIA						
0.000	Jct v	vith Main Street	0.675	7	212	210	210	142
0.675	Airp	ort Parking					Total	142
100125	MAI	N STREET, SELDOVIA						
0.183	Jct w	vith Dock Road	0.203	7	562	560	560	114
0.386	Jct w	vith Seldovia Street	0.160	7	678	670	670	107
0.546	Jct w	rith Airport Avenue					Total	221
100137	ANE	ERSON WAY, SELDOVIA						
0.000	Jct w	ith Alder Street	0.348	8	360	360	360	125
0.348	Jct w	ith Shoreline Drive					Total	125
100139	SELI	DOVIA STREET, SELDOVIA						
0.000	Jct w	ith Main Street	0.070	8	500	500	500	35
0.070	Jct w	ith Alder Street					Total	35
100148	DOC	K ROAD, SELDOVIA						
0.000	Soldo	tna Ferry Terminal	0.131	7	70	70	70	9
0.131	Jct wi	th Main Street				. <u></u>	Total	9
100150	JAKA	LOF BAY ROAD, SELDOVIA						
0.000	Jct wi	th Shoreline Drive	2.376	8	360	360	360	855
2.376	Jct wi	th Boone Lane	2.488	8	120	120	120	299
4.864	Jct wi	th Bickford Circle	7.464	8	50	50	50	373
12.328	End o	f State Maintenance					Total	1527
110000	STER	LING HIGHWAY			<u>, </u>			
0.000	Jct wi	th Seward Highway	0.581	1	2170	1835	1850	1075
0.581	Jct wi	th Sterling Wye (West Leg) - PTR	7.506	1	3124	3036	3120	23419
8.087	Jct wi	h Quartz Creek Road	3.045	1	3410	3029	3778	11504
11.132	Jct wit	h Snug Harbor Road	4.538	1	3461	3360	3780	17154
15.670	Jct wit	h Russian River Campground Road	1 2.325	1	2710	3219	3310	7696

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Route	Mpt Route Name/Description	Length(mi)	FC	05AADT	06AADT	07AADT	VMT
110000	STERLING HIGHWAY					2000	
17.995	Jct with Russian River Ferry Entrance	3.769	1	3113	3040	3130	11707
21.764	Jct with Skilak Lake Road	17.176	1	3150	3070	3458	59395
38.940	Jct with Skilak Lake Road	3.894	1	4100	4010	4217	16421
42.834	Jct with Kenai Keys Road - PTR	2.843	1	3771	3688	3800	10803
45.677	Moose River Bridge	1.375	1	6480	6340	6831	0303
47.052	Jct with Swanson River Road	3.701	1	7233	7150	7340	27165
50.753	Jct with Robinson Loop Road - PTR	2.081	1	8303	8212	8430	17543
52.834	Jct with Forest Lane Road	2.868	1	12949	12810	11827	33920
55.702	Jct with Mackey Lake Road	1.473	1	13590	13440	13690	20165
57.175	Jct with Kenai Spur Highway	0.329	2	14618	14460	14850	4886
57.504	Jct with Birch Street	0.222	2	16943	16760	17107	3798
57.726	Jct with Binkley Street	0.306	2	18658	18450	19247	5890
58.032	Jct with Kobuk Street	0.414	2	18892	18680	19070	7895
58.446	Jct with Kalifornsky Beach Road	4.251	2	6579	6230	6400	27206
62.697	Jct with Arc Loop Road	2.303	2	5419	5360	5500	12667
65.000	Jct with Reflection Lake Road	5.719	2	4840	4016	4120	23562
70.719	Jct with Kalifornsky Beach Road	2.021	2	5000	4950	5294	10699
72.740	Jct with Cohoe Loop Road (North)	2.869	2	4580	4530	3525	10113
75.609	Jct with Cohoe Loop Road (South)	3.248	2	2890	2860	3454	11219
78.857	Jct with Clam Gulch Road	9.471	2	2687	2462	2530	23962
88.328	Jct with Silver Lane	7.436	2	2170	2007	2060	15318
95.764	Jct with Mission Avenue	2.393	2	3240	3310	3465	8292
98.157	Jct with Deep Creek Road	13.825	2	2210	2260	2300	31798
111.982	Jct with Old Sterling at Stariski - PTR	4.574	2	2582	2641	2715	12418
116.556	Jct with North Fork Road (North)	0.253	2	4340	4440	4560	1154
116.809	Jct with Old Sterling Highway	7.093	2	3400	3480	3253	23074
123.902	Jct with North Fork Road (South)	0.480	2	3860	3950	3911	1877
124.382	Jct with Old Sterling Highway	2.251	2	3228	3250	3340	7518
126.633	Jct with Diamond Ridge Road	2.102	2	4340	4350	4097	8612
128.735	Jct with Rogers Loop (North)	0.504	2	4588	4580	4620	2328
129.239	Jct with Rogers Loop (South)	1.800	2	5464	5450	5500	9900
131.039	Jct with West Hill Road	0.772	2	7360	7350	7762	5992
131.811	Jct with Crittenden Drive	0.145	2	9295	9170	9190	1333
131.956	Jct with Pioneer Avenue	0.256	2	8840	9926	9990	2557
132.212	Jct with Main Street - PTR	0.691	2	9709	9578	9595	6630

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Route/	MiPt Route Name/Description	Length(mi)	FC	03AADT	04AADT	05AADT	VMT
100150	JAKALOF BAY ROAD, SELDOVIA						
0.000	Jct with Shoreline Drive	2.376	8	290	290	360	855
2.376	Jct with Boone Lane	2.488	8	118	120	120	299
4.864	Jct with Bickford Circle	7.464	8	45	45	50	373
12.328	End of State Maintenance					Total	1527
110000	STERLING HIGHWAY			L			
0.000	Jct with Seward Highway	0.580	I	2129	2160	2170	1259
0.580	Jct with Sterling Wye (West Leg)	7.530	1	3082	3132	3124	23524
8.110	Jct with Quartz Creek Road	3.030	1	3360	3410	3410	10332
11.140	Jct with Snug Harbor Road	4.530	1	3240	3290	3461	15678
15.670	Jct with Russian River Campground Road	2.000	I	2668	2710	2710	5420
17.670	Jct with Russian River Ferry Entrance	4.040	1	3260	3280	3113	12577
21.710	Jct with Skilak Lake Road	17.210	1	2840	3135	3150	54212
38.920	Jct with Skilak Lake Road	3.890	1	3620	4083	4100	15949
42.810	Jct with Kenai Keys Road	2.810	1	3763	3757	3771	10597
45.620	Moose River Bridge	1.400	1	6580	6449	6480	9072
47.020	Jct with Swanson River Road	3.620	1	4160	4180	7233	26183
50.640	Jct with Robinson Loop Road	2.160	1	8221	8311	8303	17934
52.800	Jct with Forest Lane Road	2.880	1	11070	10348	12949	37293
55.680	Jct with Mackeys Lake Road	1.470	1	12980	15023	13590	19977
57.150	Jct with Kenai Spur Highway	0.330	2	11560	15870	14618	4824
57.480	Jct with Birch Street	0.220	2	16500	16710	16943	3727
57.700	Jct with Binkley Street	0.310	2	19790	19464	18658	5784
58.010	Jct with Kobuk Street	0.410	2	17290	17510	18892	7746
58.420	Jct with Kalifornsky Beach Road	4.240	2	6544	6620	6579	27895
62.660	Jct with Arc Loop Road	1.680	2	4270	4300	5419	9104
64.340	Jct with Reflection Lake Road	6.340	2	4882	4870	4840	30686
70.680	Jct with Kalifornsky Beach Road	2.030	2	5170	5030	5000	10150
72.710	Jct with Cohoe Loop Road	2.850	2	4620	4610	4580	13053
75.560	Jct with South Cohoe Loop Road	3.250	2	3360	2905	2890	9393
78.810	Jct with Clam Gulch Road	9.190	2	2620	2610	2687	24694
88.000	Jct with Sterling Lane	7.700	2	2180	2180	2170	16709
95.700	Jct with Mission Avenue	2.380	2	3340	3260	3240	7711
98.080	Jct with Deep Creek Road	13.800	2	2460	2221	2210	30498
11.880	Jct with Old Sterling at Stariski	4.580	2	2605	2601	2582	11826
16.460	Jct with North Fork Road	0.220	2	4379	4370	4340	955
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Route/	MiPt Route Name/Description	Length(mi)) FC	03AADT	04AADT	05AADT	VMT
110000	STERLING HIGHWAY			а. -			
116.680	Jct with Old Sterling Highway	7.130	2	3426	3420	3400	24242
123.810	Jct with North Fork Road	0.480	2	4320	3884	3860	1853
124.290	Jct with Old Sterling Highway	2.250	2	3010	3000	3228	7263
126.540	Jct with Diamond Ridge Road	1.880	2	3850	4375	4340	8159
128.420	Jct with Rogers Loop	0.540	2	4910	4900	4588	2478
128.960	Jct with Rogers Loop	1.860	2	4960	4950	5464	10163
130.820	Jct with West Hill Road	0.910	2	6890	7438	7360	6698
131.730	Jct with Crittenden Drive	0.140	2	9370	9490	9295	1301
131.870	Jct with Pioneer Avenue	0.260	2	8838	8950	8840	2298
132.130	Jct with Main Street	0.740	2	9393	9830	9709	7185
132.870	Jct with Lake Street	1.060	2	6250	6410	6492	6882
133.930	Jct with FAA Road	4.250	2	4055	4075	4189	17803
138.180	Jct with Southwest Marine Highway					Total	571084
110030	GREER ROAD, HOMER			L			
0.000	Jct with Kalopi Court	0.905	9	230	405	400	362
0.905	Jct with Tappers Lane, Homer					Total	362
110040	FAA ROAD, HOMER						
0.000	Jct with Sterling Highway	0.516	8	658	670	743	383
0.516	Airport Parking Lot					Total	383
110100	PIONEER AVENUE, HOMER			L			
0.000	Jct with Lake Street	0.620	7	6871	7000	6990	4334
0.620	Jct with Main Street	0.374	7	4580	4670	4093	1531
0.994	Jct with Sterling Highway					Total	5865
110150	LAKE STREET, HOMER					······	
0.000	Jct with Sterling Highway	0 494	7	6110	4746	4740	0242
0.494	Jct with Pioneer Avenue	01171	,	0110	0-17	Total	2342
110200	KACHEMAK BAV DRIVE HOMED		1				
0.000	Ict with Sterling Highway	1.007	7/0	0100			
1.026	Homer Boot Vord	1.026	7/8	2130	2170	2794	2867
3 5/10	Introduced Fact	2.523	8			3127	7889
J.J47	JUL WILL EAST END KOAD					Total	10756

Route	MiPt Description	Length(mi)	FC	01AADT	02AADT	03AADT	VMT
080054	BIA HEADQUARTERS ROAD, BETH	EL					
0.00	0 Jct with Chief Eddie Hoffman Highway	1.862	8/9	198	210	210	391
1.862	2 BIA Headquarters Complex					Total	391
080068	STANDARD OIL ROAD, BETHEL			L			
0.000) Jct with Chief Eddie Hoffman Hwy	0.454	9	452	470	480	218
0.454	Yukon Fuel Company					Total	218
100100	AIRPORT AVENUE, SELDOVIA					<u>_</u> _	
0.000	Jct with Main Street	0.675	7	230	220	235	159
0.675	Airport Parking					Total	159
100125	MAIN STREET, SELDOVIA			L			
0.183	Jct with Dock Road	0.203	7	410	400	410	83
0.386	Jct with Seldovia Street	0.160	7	730	710	720	115
0.546	Jct with Airport Avenue					Total	198
100137	ANDERSON WAY, SELDOVIA						
0.000	Jct with Alder Street	0.348	8	430	420	360	125
0.348	Jct with Shoreline Drive					Total	125
100139	SELDOVIA STREET, SELDOVIA						
0.000	Jct with Main Street	0.070	8	450	450	405	28
0.070	Jct with Alder Street					Total	28
100148	DOCK ROAD, SELDOVIA			· · · · · · · · · · · · · · · · · · ·		·	·····
0.000	Soldotna Ferry Terminal	0.131	7	40	40	31	4
0.131	Jct with Main Street					Total	4
100150	JAKALOF BAY ROAD, SELDOVIA					I	
0.000	Jct with Shoreline Drive	2.376	8	300	290	290	689
2.376	Jct with Boone Lane	2.488	8			118	294
4.864	Jct with Bickford Circle	7.464	8	55	55	45	336
12.328	End of State Maintenance		:			Total	1319
110000	STERLING HIGHWAY						
0.000	Jct with Southwest Marine Highway	4.250	2	4023	4107	4055	17234
4.250	Jct with FAA Road	1.060	2	5889	6111	6250	6625
5.310	Jct with Lake Street	0.740	2	8587	8873	9393	6951

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Route	MiPt Description	Length(mi)	FC	01AADT	02AADT	03AADT	VMT
110000	STERLING HIGHWAY						
6.050	Jct with Main Street	0.260	2	6290	6490	8838	2298
6.310	Jct with Pioneer Avenue	0.140	2	7742	8957	9370	1312
6.450	Jct with Crittenden Drive	0.910	2	6384	6590	6890	6270
7.360	Jct with West Hill Road	1.860	2	3890	4773	4960	9226
9.220	Jct with Rogers Loop	0.540	2	4660	4725	4910	2651
9.760	Jct with Rogers Loop	1.880	2	3520	3710	3850	7238
11.640	Jct with Diamond Ridge Road	2.250	2	3230	2929	3010	6773
13.890	Jct with Old Sterling Highway	0.480	2	3992	4210	4320	2074
14.370	Jct with North Fork Road	7.130	2	2830	2990	3426	24427
21.500	Jct with Old Sterling Highway	0.220	2	3580	3780	4379	963
21.720	Jct with Milo Fritz Road	4.580	2	2485	2622	2605	11931
26.300	Jct with Stariski Loop Road	13.800	2	2350	2480	2460	33948
40.100	Jct with Deep Creek Road	2.380	2	3180	3360	3340	7949
42.480	Jct with Mission Avenue	7.700	2	2080	2190	2180	16786
50.180	Jct with Sterling Lane	9.190	2	2450	2637	2620	24078
59.370	Jct with Clam Gulch Road	3.250	2	3203	3380	3360	10920
62.620	Jct with South Cohoe Loop Road	2.850	2	2970	3130	4620	13167
65.470	Jct with Cohoe Loop Road	2.030	2	4912	5180	5170	10495
67.500	Jct with Kalifornsky Beach Road	6.340	2	3288	3470	4882	30952
73.840	Jct with Reflection Lake Road	1.680	2	4280	4281	4270	7174
75.520	Jct with Arc Loop Road	4.240	2	5590	5960	6544	27747
79.760	Jct with Kalifornsky Beach Road	0.410	2	15300	17327	17290	7089
80.170	Jct with Kobuk Street	0.310	2	18940	19830	19790	6135
80.480	Jct with Binkley Street	0.220	2	16300	16534	16500	3630
80.700	Jct with South Birch Lane	0.330	2	14874	15580	11560	3815
81.030	Jct with Kenai Spur Road	1.470	1	12900	13004	12980	19081
82.500	Jct with Mackeys Lakes Road	2.880	1	10441	11090	11070	31882
85.380	Jct with Forest Lane Road	2.160	1	7731	8238	8221	17757
87.540	Jct with Robinson Loop Road	3.620	1	6150	4173	4160	15059
91.160	Jct with Swanson River Road	1.400	1	6184	6590	6580	9212
92.560 1	Moose River Bridge	2.810	1	3482	3689	3763	10574
95.370	Jct with Kenai Keys Road	3.890	1	3350	3550	3620	14082
99.260 J	Ict with Skilak Lake Road	17.210	1	2628	2780	2840	48876
116. 4 70 J	Ict with Skilak Lake Road	2.630	1	2770	3200	3260	8574
119.100 J	Ict with Russian River Ferry Entrance	3.640	1	2710	2870	2668	9712

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Route	MiPt Description	I	ength(mi)	FC	01AADT	02AADT	03AADT	VMT
110000	STERLING HIGHWAY	1						
122.74) Jct with Russian River Ca	mpground Road	4.300	1	3050	3194	3240	13932
127.04() Jct with Snug Harbor Roa	d	3.030	1	3131	3320	3360	10181
130.070) Jct with Quartz Creek Roa	d	7.530	1	2917	3042	3082	23207
137.600	Jct with Sterling Wye (We	est Leg)	0.580	1	1450	1540	2129	1235
138.180	Jct with Seward Highway						Total	543219
110030	GREER ROAD, HOMER	Ł						
0.000	Jct with Kalopi Court		0.905	9	197	190	230	208
0.905	Jct with Tappers Lane, Ho	mer					Total	208
110040	FAA ROAD, HOMER				L		I	
0.000	Jct with Sterling Highway		0.516	8			658	340
0.516	Airport Parking Lot						Total	340
110100	PIONEER AVENUE, HO	MER					I	
0.000	Jct with Lake Street		0.620	7	6534	6450	6871	4260
0.620	Jct with Main Street		0.374	7	6020	4513	4580	1713
0.994	Jct with Sterling Highway						Total	5973
110150	LAKE STREET, HOMER				· · · · · · · · · · · · · · · · · · ·			
0.000	Jct with Sterling Highway		0.494	7	6075	6000	6110	3018
0.494	Jct with Pioneer Avenue						Total	3018
110200	KACHEMAK BAY DRIV	E, HOMER						
0.000	Jct with Sterling Highway		1.008	7/8	1760	2100	2130	2147
1.008	Lou's Storage Facility		2.541	8	633	600	610	1550
3.549	Jct with East End Road						Total	3697
110300	EAST END ROAD, HOM	ER						
0.000	Jct with Lake Street		0.805	7	7943	7574	7776	6260
0.805	Jct with East Hill Road		2.782	7	5020	4522	4650	12936
3.587	Jct with Kachemak Bay Driv	ve	5.557	7	3419	3260	3350	18616
9.144	Jct with Greer Road		9.800	7	858	820	840	8232
18.944	Jct with Eagle Lake Road		3.403	8	370	411	420	1429
22.347	End of Road						Total	47473
110302	MCLAY ROAD, HOMER			·				
0.000	Jct with East End Road		0.500	9	250	240	230	115
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Route	MiPt Description	Length(mi)	FC	99AADT	00AADT	01AADT	VM
088000	BLUFF DRIVE/OLD 1ST AVE	, BETHEL		·			
0.850	Jct with Chief Eddie Hoffman High	way				Total	38
088015	1ST AVENUE/FRONT STREE	T, BETHEL					
0.000	Jct with Willow Road	0.210	9	360	370	517	10
0.210	Begin Washout	0.310	9	0	0	0	
0.520	Jct with Main Street	0.170	8	600	610	620	10
0.690	Jct with Tundra Street	0.190	8	340	350	360	6
0.880	Jct with Chief Eddie Hoffman High	way				Total	28
088800	BIA HEADQUARTERS ROAD.	BETHEL					
0.000	Jct with Chief Eddie Hoffman High	way 1.860	**			198	36
1.860	BIA Headquarters Complex					Total	36
100100	AIRPORT AVENUE, SELDOV	[A					
0.000	Jct with Main Street	0.675	7	390	231	230	15
0.675	Airport Parking					Total	15:
100125	MAIN STREET, SELDOVIA			· · · · · · · · · · · · · · · · · · ·			
0.183	Jct with Dock Road	0.203	7	690	416	410	83
0.386	Jct with Seldovia Street	0.160	7	640	738	730	112
0.546	Jct with Airport Avenue					Total	200
00137	ANDERSON WAY, SELDOVIA			·		L	
0.000	Ict with Alder Street	0.348	8	460	430	430	150
0.348	Ict with Shoreline Drive					Total	150
00148	DOCK ROAD, SELDOVIA					L	
0.000	Soldotna Ferry Terminal	0.131	7	210	37	40	5
0.131	Ict with Main Street					Total	5
00150	JAKALOF BAY ROAD, SELDO	VIA				······································	
0.000 J	lct with Shoreline Drive	4.384	8	400	301	300	1315
4.384 J	ct with Olstead Road	7.944	8	80	55	55	437
12.328 H	End of State Maintenance					Total	1752
10000	STERLING HIGHWAY			·			
0.000 J	ct with Southwest Marine Highway	4.250	2	4009	4011	4023	17098
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Route	MiPt Description	Length(mi)	FC	99AADT	00AADT	01AADT	VMT
110000	STERLING HIGHWAY	·					
4.250) Jct with FAA Road	1.060	2	6263	6240	5889	6242
5.310	Jct with Lake Street	0.740	2	8286	8535	8587	6354
6.050	Jct with Main Street	0.260	2	6230	6080	6290	1635
6.310	Jct with Pioneer Avenue	0.140	2	6962	7050	7742	1035
6.450	Jct with Crittenden Drive	0.910	2	6830	6920	6384	5809
7.360	Jct with West Hill Road	1.860	2	4230	4210	3890	7235
9.220	Jct with Rogers Loop	0.540	2	4464	4470	4660	2516
9.760	Jct with Rogers Loop	1.880	2	3640	3610	3520	6618
11.640	Jct with Diamond Ridge Road	2.250	2	3166	3140	3230	7268
13.890	Jct with Old Sterling Highway	0.480	2	3470	3440	3992	1916
14.370	Jct with North Fork Road	7.130	2	3750	2749	2830	20178
21.500	Jct with Old Sterling Highway	0.220	2	2470	3478	3580	788
21.720	Jct with Milo Fritz Road	4.580	2	2435	2413	2485	11381
26.300	Jct with Stariski Loop Road	13.800	2	2420	2400	2350	32430
40.100	Jct with Deep Creek Road	2.380	2	3980	3089	3180	7568
42.480	Jct with Mission Avenue	7.700	2	2380	2696	2080	16016
50.180 .	Jct with Sterling Lane	9.190	2	2400	2380	2450	22516
59.370	Ict with Clam Gulch Road	3.250	2	2870	2840	3203	10410
62.620	Ict with South Cohoe Loop Road	2.850	2	3440	2880	2970	8464
65.470 J	Ict with Cohoe Loop Road	2.030	2	3980	3940	4912	9971
67.500 J	ct with Kalifornsky Beach Road	6.340	2	3550	4011	3288	20846
73.840 J	ct with Reflection Lake Road	1.680	2	4093	4090	4280	7190
75.520 J	ct with Arc Loop Road	4.240	2	4800	5312	5590	23702
79.760 J	ct with Kalifornsky Beach Road	0.410	2	15352	14641	15300	6273
80.170 J	ct with Kobuk Street	0.310	2	18040	18120	18940	5871
80.480 J	ct with Binkley Street	0.220	2	15516	15590	16300	3586
80.700 J	ct with South Birch Lane	0.330	2	15910	15980	14874	4908
81.030 J	ct with Kenai Spur Road	1.470	1	12304	12370	12900	18963
82.500 Jo	ct with Mackeys Lakes Road	2.880	1	10140	10180	10441	30070
85.380 Jo	ct with Forest Lane Road	2.160	1	7335	7344	7731	16699
87.540 Jo	ct with Robinson Loop Road	3.620	1	5830	5840	6150	22263
91.160 Jo	et with Swanson River Road	1.400	1	4120	4130	6184	8658
92.560 M	loose River Bridge	2.810	1	3113	3137	3482	9784
95.370 Jc	rt with Kenai Keys Road	3.890	I	3160	3200	3350	13032
99.260 Jc	t with Skilak Lake Road	17.210	1	2570	2520	2628	45228

III - 10

Route MiPt Description	Length(mi)	FC	99AADT	00AADT	01AADT	VMT
110000 STERLING HIGHWAY	·····			0		
116.470 Jct with Skilak Lake Road	4.040	1	2751	2680	2770	11191
120.510 Jct with Russian River Ferry Road	2.230	1	2690	2620	2710	6043
122.740 Jct with Russian River Campground	Road 4.300	1	3029	2950	3050	13115
127.040 Jct with Snug Harbor Road	3.030	1	3220	2928	3131	9487
130.070 Jct with Quartz Creek Road	7.530	1	2841	2760	2917	21965
137.600 Jct with Sterling Wye (West Leg)	0.580	1	2020	1404	1450	841
138.180 Jct with Seward Highway					Total	503214
110030 GREER ROAD, HOMER						
0.000 Jct with Kalopi Court	0.905	9	110	120	197	178
0.905 Jct with Tappers Lane, Homer					Total	178
110100 PIONEER AVENUE, HOMER			L	······································		- <u></u>
0.000 Jct with Lake Street	0.620	7	7300	7249	6534	4051
0.620 Jct with Main Street	0.374	7	5890	6050	6020	2251
0.994 Jct with Sterling Highway					Total	6303
110150 LAKE STREET, HOMER			L			
0.000 Jct with Sterling Highway	0.494	7	5550	5700	6075	3001
0.494 Jct with Pioneer Avenue					Total	3001
110200 KACHEMAK BAY DRIVE, HOM	<u>1ER</u>				—I.	v.
0.000 Jct with Sterling Highway	1.008	**	1720	1770	1760	1774
1.008 Lou's Storage Facility	2.541	8	1100	1140	633	1608
3.549 Jct with East End Road					Total	3383
110300 EAST END ROAD, HOMER						
0.000 Jct with Lake Street	0.805	7	7705	8001	7943	6394
0.805 Jct with East Hill Road	2.782	7	4870	5060	5020	13966
3.587 Jct with Kachemak Bay Drive	5.557	7	2370	2460	3419	18999
9.144 Jct with Greer Road	9.800	7	940	1009	858	8408
18.944 Jct with Eagle Lake Road	1.238	8	360	370	370	458
20.182 End of State Maintenance					Total	48226
110302 MCLAY ROAD, HOMER		l	<u> </u>	<u></u>	<u>l</u>	
0.000 Jct with East End Road	0.500	9	190	249	250	125
		·			1	

Route MiPt	Description	Lngth	FC	96AADT	97AADT	98AADT	99AADT
080000	Chief Eddie Hoffman Hwy (CHEHH), Be	thel					()
0.000) Jct with Hanger Lake Road	0.130	7	2000	2000	2246	2290
0.130	Jct with First Avenue	0.130	7	2300	2300	2588	2640
0.260	Jct with Tundra Street	0.410	7	3600	3600	3725	3800
0.670	Jct with Main Street	0.280	7	4800	4800	5357	5460
0.950	Jct with Ridgecrest Drive	0.270	7	7143	7138	7379	7581
1.220	Jct with Willow Road	0.490	7	4700	4700	6226	6350
1.710	Jct with Old Hospital Access Road	0.280	7	4500	4500	5447	5550
1.990	Jct with Willow Road	1.580	7	2700	2700	4265	4390
3.570	Jct with BIA Headquarters Road	0.730	7	1750	1750	2880	2940
087000	Hanger Lake Road, Bethel						
0.000	Jct with Bethel Highway	0.090	7	3500	3500	3620	3670
0.090	Jct with North Harbor Road	0.970	7	700	700	720	730
087300	Tundra Street, Bethel						
0.000	Jct with Bethel Highway	0.100	9	350	350	360	360
)87600	Main Street, Bethel						
0.000	Jct with First Avenue	0.310	7	1150	1150	1253	1280
87800	Willow Street/Ridgecrest Drive, Bethel						
0.000	Jct with Bethel Highway	0.570	7	5000	5000	0770	0070
0.570	Jct with Akeek Street	0.310	7	1750	1750	3699	6870 3800
088015	1st Avenue/Front Street, Bethel						
0.000	Jct with Willow Road	0.210	9	50	50	60	60
0.210	Begin Washout	0.310	9	0	0	00	00
0.520	Jct with Main Street	0.170	8	480	480	503	600
0.690	Jct with Tundra Street	0.190	8	310	310	332	340
00100	Seldovia Airport Road						
0.000	Seldovia Ferry Terminal	0.080	7	180	200	205	
0.080	Jct with Main Street	0.200	7	580	656	200	210
0.280	Jct with Anderson Way	0.200	7	410	612	670	690
0.440	Jct with Airport Avenue	0.561	7	230	373	380	640 390
00110	Seldovia/Jakolof Bay Road						
0.000	Jct with Main Street	0.420	8	340	445	450	460
0.420	Jct with Shoreline Drive	4 310	Ř	310	384	400	400
4.730	Jct with Olestead Road	7.020	8	130	76	390 80	400 80
10000	Sterling Highway						
0.000	Jct with Southwest Marine Highway	4,250	2	4219	4245	4022	4000
4.250	Jct w/ Airport Bypass/Kachemak Bay Rd	1 060	2	7600	7700	9050	4009
5.310	Jct with Lake Street	0.740	2	7331	7/00	7750	0203
6.050	Jct with Main Street	0.260	2	5500	5957	6100	0280
6.310	Jct with Pioneer Avenue	0.140	2	7000	7100	7440	6230 6962
6.450	Jct with Crittenden Drive	0.010	2	6200	6400	0707	
7.360	Jct with West Hill Drive	1 960	2	0300	0400	6/0/	6830
9.220	Jct with Roger Loon Road	0.600	2	4443	4672	5580	4230
9.220		0.540	2	4300	3942	41/5	4464

Route MiPt	Description	Lngth	FC	96AADT	97AADT	98AADT	99AADT
110000	Sterling Highway		jan	1977 - E 21			Continued
9.760) Jct with Roger Loop Road	1.880	2	4100	3742	2043	3640
11.64() Jct with Diamond Ridge Road	2.250	2	2645	2700	3220	3166
13.89() Jct with Old Sterling Highway	0.480	2	3000	3000	3586	3470
14.370	Jct w/ North Anchor Point Rd (Pioneer)	7.130	2	2800	3240	3870	2750
21.500) Jct with Old Sterling Highway	0.220	2	2700	2410	2550	2470
21.720) Jct with Milo Fritz Road	4.580	2	2469	2505	2517	2435
26.300) Jct with Staritski Loop	13.800	2	2300	2350	2499	2400
40.100	Jct with Deep Creek Road	2.380	2	3500	3863	4107	3080
42.480	Jct with Ninilchik Road	7.700	2	1970	2324	2460	2380
50.180	Jct with Sterling Lane	9.190	2	2400	2496	2500	2300
59.370	Jct with Clam Gulch Road	3.250	2	3000	3300	2965	2870
62.620	Jct with Cohoe Loop	2.850	2	3000	3353	3550	2070
65.470	Jct with Cohoe Loop	2.030	2	3100	3400	4114	3020
67.500	Jct with Kalifonsky Beach Road	6.340	2	3300	3400	3664	2550
73.840	Jct with Reflection Lake Road	1.680	2	4059	4100	4420	4093
75.520	Jct with Arc Loop	4,240	2	5000	4496	4760	4900
79.760	Jct with Kalifonsky Beach Road	0.410	2	14826	14800	15760	4000
80.170	Jct with Kobuk Street	0.310	2	14800	14800	17862	10002
80.480	Jct with Binkley Street	0.220	2	14140	14200	15002	16040
80.700	Jct with South Birch Lane	0.330	2	14000	14000	15748	15910
81.030	Jct with Kenai Spur Road	1.470	1	11800	10034	10620	12304
82.500	Jct with Mackeys Lakes Road	2.880	1	9100	9400	10208	10140
85.380	Jct with Forest lane	2.160	1	6526	6871	7278	7335
87.540	Jct with Robinson Loop	3.620	1	5700	5206	5500	5830
91.160	Jct with Robinson Loop	1.400	1	5700	5200	4088	4120
92.560	Moose River Bridge	2.810	1	3800	3900	3100	3113
95.370	Jct with Kenai Keyes Road	3.890	1	2931	2959	3130	3160
99.260	Jct with Skilak Lake Road (West end)	17.210	1	2438	2500	2587	2570
116.470	Jct with Skilak Lake Road (East end)	2.630	1	2367	2334	2740	2070
119.100	Sportsmans Lodge	3.640	1	2500	2500	2695	2690
122.740	Jct with Russian River Campground Rd	4.300	1	2638	2475	2668	3020
127.040	Jct with Snug Harbor Road	3.030	1	2300	2800	3223	3029
130.070	Jct with Quartz Creek Road	7.530	1	2378	3210	3460	JZZU 20/1
137.600	Jct with Sterling Wye	0.580	1	1350	1870	2020	2041
110030	Greer Road, Homer						
0.085	Jct with East End Road	0.957	9	110	110	110	110
110100	Pioneer Avenue, Homer						
0.000	Jct with Lake Street & East End Road	0.620	7	7500	6839	7080	7200
0.620	Jct with Main Street	0.374	7	3800	5569	5730	5890
110150	Lake Street, Homer						
0.000	Jct with Sterling Highway	0.494	7	5100	5200	5382	5550
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Annual Traffic Volume Manual

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ANNUAL AVERAGE DAILY TRAFFIC (AADT)

ROUTE	MILI	DESCRIPTION	TENCOR	-	00000		
			LENGTH	FC	9 JAADT	94AADT	95AADT
088015		First Avenue (Bethel)					
	0.00	Jct with Willow Road	0 21	9	FO	5.0	
	0.21	Begin Washout	0.31	9	50	50	50
	0.52	Jct with Main Street	0.17	8	470	470	0
	0.69	JCt with Tundra Street	0.19	8	310	310	470
100100		Seldovia livnort Bood				010	210
	0.00	Seldovia Ferry Torminal					
	0.08	Jct with Main Street	0.08	2	100	174	180
	0.28	Jct with Anderson Way	0.20	7	640	567	580
	0.44	Jct with Airport Avenue	0.16	4	580	409	410
100110		•	0.56	/	180	224	230
100110	0 00	Seldovia/Jakolof Bay Road					
	0.00	Jct with Main Street	0.42	8	310	220	2.4.0
	0.42	Jct with Shoreline Drive	4.31	8	300	310	340
	4./3	JCt with Olestead Road	7.02	8	40	125	310
110000		Sterling Highwork					130
	0.00	Jct with Southwest Marine Wishing					
	4.25	Jct with Airport Burges /Kachomak Bay Dend	4.25	2	4222	4199	4268
	5.31	Jct with Lake Street	1.06	2	6900	6900	7419
	6.05	Jct with Main Street	0.74	2	6804	6800	7122
	6.31	Jct with Pioneer Avenue	0.20	2	4800	5218	5400
	6.45	Jct with Crittenden Drive	0.14	2	6500	6500	6811
			0.91	4	4400	4400	6157
	7.36	Jct with West Hill Drive	1.86	2	3478	2500	2.0.0.0
	9.44	Jct with Roger Loop Road	0.54	$\tilde{2}$	3307	3400	3800
	9.70	JCt with Roger Loop Road	1.88	2	2600	2700	3700
	13 89	Jet with Old Charling Road	2.25	2	2596	2700	2262
	14.37	Jet with North Archan Righway	0.48	2	2500	2600	3019
		See with North Anchor Point Road (Pioneer)	7.13	2	2480	2500	2800
2	21.50	Jct with Old Sterling Highway	0 00	~			
2	21.72	Jct with Milo Fritz Road	0.22	4	2100	2373	2700
2	26.30	Jct with Staritski Loop	13 80	2	2009	2153	2482
4	10.10	Jct with Deep Creek Road	2.38	2	2500	1800	2305
4	12.48	Jct with Ninilchik Road	7.70	ĩ	1637	3140	3500
3	50.18	Jct with Sterling Lane	9.19	2	2145	2150	1876
5	9.37	Jet with clam Gulah parts				2100	2400
6	2.62	Jet with Cohoe Loop	3.25	2	2400	2400	2973
6	5.47	Jct with Cohoe Loop	2.85	2	2700	2675	3000
6	7.50	Jct with Kalifonsky Beach Road	2.03	2	3700	3800	3115
7	3.84	Jct with Reflection Lake Road	0.34	2	2550	2970	3300
7	4.85	Jct with Old Tote Road	0.67	2	3333	3500	3900
			0.07	4	3800	3900	4363
7	5.52	Jct with Arc Loop	4.24	2	4300	4504	5000
/	9.70	JCt with Kalifonsky Beach Road	0.41	$\tilde{2}$	14200	14600	16000
0 0	0.10	JCt with Kobuk Street	0.41	2	14182	14600	15953
8	0.40	Jet with Sinkley Street	0.22	.2	12667	13000	14100
8	1.03	Jct with Konai Crum David	0.33	2	12590	12900	14000
0	2.05	see with kenal Spur Road	1.47	1	10394	10700	11600
8:	2.50	Jct with Mackeys Lakes Road	0 00				
8	5.38	Jct with Forest lane	2.88	1	9200	9600	8931
87	7.54	Jct with Robinson Loop	2.10	1	5898	6165	6406
93	1.16	Jct with Robinson Loop	3.02	1	5218	5400	5600
92	2.56	Moose River Bridge	2 91	1	5200	5400	5600
95	5.37	Jct with Kenai Keyes Road	3 89	1	3600	3800	3184
~	0.00		2.02	-	20UU	2880	2900
99	26	Jct with Skilak Lake Road (West end)	17.21	1	2600	2680	2700
110).4/	JCC with Skilak Lake Road (East end)	2.63	1	2959	3000	2700
100	> 12	Sportsmans Lodge	3.33	1	3150	3120	3100
100) 71	Achal River Bridge	0.29	1	3152	3124	3100
127	04	Jet with Russian River Campground Road	4.30	1	3150	3124	3100
130	.07	Jet with Quarte Greek a	3.03	1	3100	3100	2745
137	. 60	Jct with Sterling Was	7.53	1	2997	3000	3000
201			0.58	1	1600	1635	1650

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ANNUAL AVERAGE DAILY TRAFFIC (AADT)

ROL	<u>JTE MII</u>	E DESCRIPTION	TENOM	-			
			LENGTH	FC	91AADT	92AADT	93AADT
100	100	Seldovia Airport Road					
_	0.0	0 Seldovia Ferry Terminal	0.00	-			
1	0.0	8 Jct with Main Street	0.08	/	100	100	100
	0.2	8 Jct with Anderson Way	0.20	7	643	640	640
	0.4	4 Jct with Airport Avenue	0.10	7	5/5	. 580	580
100	110		0.50	/	1/4	180	180
100	110 0 01	Seldovia/Jakolof Bay Road	٠				
	0.00	JCt with Main Street	0.42	8	308	210	210
	1 7	2 JCC With Shoreline Drive	4.31	8	304	200	310
	~ . / .	5 JCC with Olestead Road	7.02	8	44	300	300
110	000	Sterling High	_	-		40	40
	0.00	Jet with Southware We in our					
	4.25	Jct with Airport Pupage (Keshard)	4.25	2	3819	3976	4222
	5.31	Jct with Lake Street	Bay Road 1.06	2	5880	6635	6900
	6.05	JCt with Main Street	0.74	2	5969	6200	6804
	6.31	Jct with Pioneer Avenue	0.26	2	4400	4580	4800
	6.45	Jct with Crittenden Drivo	0.14	2	5600	6137	6500
	7.36	Jct with West Hill Drive	0.91	2	5860	4156	4400
	9.22	Jct with Roger Loop Road	1.86	2	3300	3400	3478
	9.76	Jct with Roger Loop Road	0.54	2	2630	3223	3307
	11.64	Jct with Diamond Ridge Road	1.88	2	2551	2555	2600
	13.89	Jct with Old Sterling Highway	2.20	2	2526	2548	2596
	14.37	Jct with North Anchor Point Road	(Pioneer) 7 13	2	2430	2265	2500
	21.50	Jct with Old Sterling Highway	0.22	2	1960	2239	2480
	21.72	Jct with Milo Fritz Road	4 58	2	1774	1900	2100
	20.30	Jet with Staritski Loop	13.80	2	1960	1815	2009
	40.10	Jct with Deep Creek Road	2.38	ĩ	2192	2300	1700
	50 10	Jet with Ninilchik Road	7.70	2	1405.	1437	2500
	59 37	Jot with Sterling Lane	9.19	2	1860	1900	1037
	62.62	Jct with Caboo Loss	3.25	2	2690	2170	2400
•	65.47	JCt with Cohoe Loop	2.85	2	2450	2500	2400
	67.50	JCt With Kalifonsky Beach Bard	2.03	2	3430	3379	3700
	. 73.84	Jct with Reflection Jake Beach	6.,34	2	2268	2124	2550
	74.85	Jct with Old Tote Road	1.01	2	3100	3200	3333
	75.52	Jct with Arc Loon	0.67	2	3400	3559	3800
	79.76	Jct with Kalifonsky Beach Road	4.24	2	4100	4300	4300
	80.17	Jct with Kobuk Street	· 0.41	2	12170	12960	14200
	80.48	Jct with Binkley Street	0.41 -	4	12170	12804	14182
	80.70	Jct with South Birch Lane	0.22	4	9530	12500	12667
	81.03	Jct with Kenai Spur Road	1 47	2	9530	11050	12590
	82.50	Jct with Mackeys Lakes Road	2.88	1	9360 9350	8990	10394
	80.38 97 EA	JCE with Forest lane	2.16	î	5158	8900	9200
	07.54 01 1 <i>C</i>	Jet with Robinson Loop	3.62	1	4150	4500	5898
	92 56	Mooro River Duide	1.40	1	4900	5026	5200
	99.26	Jet with Skilak Lake Day 1	6.70	1	3870	3370	3600
	116.47	Jet with Skilak Lake Road	17.21	1	2863	2419	2600
	119.10	Sportsmang Lodgo	2.63	1	3030	2500	2959
	122.43	Kenaj River Bridge	3.33	1	2800	2900	3150
	122.74	Jct with Russian Biwer Commenced	0.29	1	2800	2900	3152
	127.04	Jct with Snug Harbor Boad	Road 4.30	1	3670	2900	3150
	130.07	Jct with Quartz Creek Road	3.03	1	3500	3006	3100
	137.60	Jct with Sterling Wyo	7.53	1	3370	3500	2997
			0.58	1	1454	1530	1600
110020) La	ake Street/Pioneer Avenue					-
	0.00	Jct with Sterling Highway	0.45	7		_	
	0.45	Jct with East End Road	0.45	/	6100	5156	5500
	1.07	Jct with Main Street	0.02	<i>'</i>	/281	7197	7200
1100-			0.35	/	4200	4250	3696
TT0500	Ai	rport Bypass/Kachemak Bay Road					
	0.00	Jct with Sterling Highway	1 01	7	2000	1045	
	1.01	Lou's Storage Facility	2 51	é	2000	1843	1828
		-	2.J1	0	222	924	920

ANNUAL TRAFFIC VOLUME REPORT Page V - 5

AVERAGE ANNUAL DAILY TRAFFIC (AADT)

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ROUTE	MIL	DESCRIPTION	TEMORY					
			LENGTH	FC	87AADT	88AADT	89AADT	90AADT
089800		MEKORYUK AIRPORT RD, MEKORYUK-AIRPORT						
	0.0	END	3.00	7	44	45	17	
091000							47	50
001000	0.0	BEGIN SURFACE TYPE E						
	- 60	END	.60	9	35	40	42	40
092000		KALSKAG RD, UPPER-LOWER KALSAG VIA AIRPORT						
	4.19	BEGIN SURFACE TYPE E	4.19	7	44	45	47	
095000							47	50
033000	0.00	BEGIN SURFACE TYPE C						
	1.20	END	1.20	7	5	5	5	5
0970 00	0 00	ST MARYS/MT VILLAGE RD, ST MARYS-MOUNTAIN VILLAGE						
	20.25	BEGIN SUFACE TYPE E	20.25	7	148	150	156	1
097010	,						100	100
	0.00	JCT WITH ST MARYS/MT VILLAGE RD-PITKAS POINT						
	1.75	END	1.75	8	5	5	10	10
100100	0.00	ELDOVIA AIRPORT RD, SELDOVIA FERRY TERMINAL-AIRPORT						
	.12	JCT WITH KENAI ST	.12	7	232	195	202	200
	1.00	END	.88	7	804	806	840	840
100110	s	ELDOVIA/JAKOLOF BAY RD, SELDOVIA AIRPORT RD-END BOUTE						
	.42	JCT WITH SELDOVIA AIRPORT RD JCT WITH SHORELINE DR	.42	8	440	424	440	440
1	4.78	BARBARA CREEK	4.36	8	210	192	200	200
110000				-	105	97	101	100
110000	0.00	JCT WITH SOUTHWEST MARINE HWY						
	4.30	JCT WITH AIRPORT BYPASS/KACHEMAK RD	4.30 1.06	6	3604	3650	4203	3892
1	5.92	JCT WITH MAIN ST	.56	6	5620	5690	5696	6396 5300
	6.31	JCT WITH PIONEER AVE JCT WITH ROAD TO HIGH SCHOOL	.13	6	5503	5615 5558	3786	3790
8	7.20	JCT WITH WEST HILL RD	.89 1.81	6 6	4600 3249	4806	5140	5862
4 9	9.01	JCT WITH ROGER LOOP RD	. 61	6	2605	2052		3211
11	.37	JCT WITH DIAMOND RIDGE RD	1.75	6	2747	2856	2840	3515 3410
13	1.10	JCT WITH OLD STERLING HWY JCT WITH NORTH ANCHOR RIVER (DIOWERD LOOP	.49	6	2889 2697	2880 2600	3080	3301
21	. 21	JCT WITH OLD STERLING HWY	7.11	6	2506	2400	2560	2061
		JEI WIIN MILO FRITZ RD	4.59	6	2200	2150	2320	1886 1711
39	.83	JCT WITH STARITSKI LOOP RD JCT WITH DEEP CREEK RD	13.81	6	2100	2100	1489'	1000
42	.20	JCT WITH NINILCHIK RD	2.37 8.38	6	2008	2055	2205	2249
59	•22	JCT WITH CLAM GULCH RD	8.64	6	1950	2067	2210	1988 1863
62	.45 .31	JCT WITH COHOE LOOP RD JCT WITH COHOE LOOP RD	2.86	6	2185	2200 2700	2350	3244
67	. 17		1.86	6	2450	3934	2530	4291
72	.87	JCT WITH REFLECTION LAKE RD	5.70	6	2961	2980	2650	2791
74.	. 64 . 31	JCT WITH OLD TOTE RD JCT WITH ARC LOOP PD	.67	6	4100 3665	4100 3660	3060	3403
78.	.91	JCT WITH KALIFONSKY BEACH RD	3.60	6	4119	4120	4280	4090
80.	.85	JCT WITH KENAI SPUR RD	. 33	6	15000	15000	12550 14600	11932
82.	.42	JCT WITH MACKEYS LAVES DO	1.57	1	8024	8124	8440	9389
85.	.30	JCT WITH FOREST LANE RD	2.88	1	6500 4764	8279	7930	8090
91.	11	JCT WITH ROBINSON LOOP RD	3.63	i	3495	4786	4956 4900	5055
92. 98.	40	JCT WITH MOOSE RIVER BRIDGE	1.29	1	4007	3727	4710	4800
116.	85	JCT WITH SKILAK LAKE RD	17.86	ī	2140	2500	2290	3796 2749
119.	46	SPORTSMANS LODGE	2.01	Ŧ	1900	1977	2050	2948
122.	39 76	KENAI RIVER	2.93	1	1671	2200	2240	3324
127.	50	ICT WITH SNUG HARBOR RD	4.74	1	1972	1975	2380 2500	3585 3567
130.	45	JCT WITH QUARTZ CREEK RD	2.95	1	2097 1959	2100	2652	3420
138.	57	ND	. 57	1	1200	1200	1260	3268 1642
								-

Same U

C	1 4 5 5	FHWA VEHICI	LE CLASSIFICATION	
G	ROUP		DESCRIPTION	NO. OF AXLES
	1		MOTORCYCLES	2
			ALL PASSENGER CARS	2
	2		CARS W/ 1-AXLE TRAILER	3
			CARS W/ 2-AXLE TRAILER	4
	3		PICK-UPS & VANS 1 & 2 AXLE TRAILERS	2, 3, & 4
Î	4		BUSES	2 & 3
	5		2-AXLE, SINGLE UNIT	2
	6		3-AXLE, SINGLE UNIT	3
	7		4-AXLE, SINGLE UNIT	4
CLES			2-AXLE, TRACTOR, 1-AXLE TRAILER (2&1)	3
/EHI	8		2-AXLE, TRACTOR, 2-AXLE TRAILER (2&2)	4
CIAL \			3-AXLE, TRACTOR, 1-AXLE TRAILER (3&1)	4
MER(9		3-AXLE, TRACTOR, 2-AXLE TRAILER (3&2)	5
COM			3-AXLE, TRUCK W/ 2-AXLE TRAILER	5
	10		TRACTOR W/ SINGLE TRAILER	6&7
	11		5-AXLE MULTI-TRAILER	5
	12		6-AXLE MULTI-TRAILER	6
	13	ANY 7 OR MORE AXLE		7 or more
	14	UNCLASSIFIED VEHICLES		
	15	NOT USED		

												6					/0	ľ		/0	F	6
												Sinale	Unit			Sir	// Iale Tra	iler	Mu	i Traile		" Total
								p	TAL 0	SLS (CLS CL	S. CL	S CL	S CLS	CLS	CLS	CLS	CLS	CLS	CLS	CLS 0	Cmrcl
ROUTE R(OUTE NAME	MIPT	STATION	ы	DIR	YR M	TH D⊿	YS VH	CLS	-	2	e	4	2		8	6	10	1	12	13	/hcls
110000 St	erling Highway (Cont'd)																					
At Cooper Landing		6.143	11800015	-	-	2012	9	30 6	9182 (0.23 5	4.01 33.6	32 0.1	5 6.7	3 0.56	0.04	. 0.77	1.68	0.77	0.00	0.01	1.24	11.94
					ß		9	21 5	1396 (0.15 50	0.04 35.0	0.2	0 8.9	5 0.65	0.01	1.18	1.58	0.83	0.00	0.01	1.38	14.79
					~		7 3	31 11.	4784 (0.14 5	1.26 37.0	0.1	0 7.2	5 0.35	0.02	1.04	1.33	0.57	0.00	0.00	0.87	11.57
					ß		7 3	31 11.	4115 (0.10 4	7.87 38.0	0.1	3 9.2	5 0.47	, 0.01	1.25	1.33	0.57	0.00	0.00	0.92	13.94
					~		8	8	8642 (0.21 5	4.14 33.4	44 0.1	3 6.9	5 0.45	0.06	1.06	1.67	0.72	0.00	0.00	1.11	12.22
					ß		8	4	5929 (0.14 5	1.32 34.6	53 0.1	8.6	1 0.55	0.02	0.98	1.64	0.78	0.00	0.00	1.10	13.90
					~		10	31	2870 (0.05 4:	3.88 39.7	79 0.0)8 8.4(3 0.75	0.07	0.35	2.83	1.20	0.00	0.01	2.50	16.28
					ß		10	28	9880	0.14 4	5.26 37.5	56 0.2	14 8.5	4 0.97	, 0.02	0.52	2.90	1.36	0.00	0.01	2.49	17.04
					~		11	29	2014 (0.03 5	1.16 36.3	33 0.0	6 4.8	7 0.86	0.01	0.29	3.13	1.05	0.00	0.01	2.19	12.48
					ß		1	1	3009 (0.17 50	0.12 36.9	94 0.2	23 5.60	3 0.95	0.00	0.30	2.91	0.92	0.00	0.01	1.78	12.78
					-		12	31 2	1034 (0.09 5	1.67 37.1	15 0.C)5 4.2(5 0.8 [∠]	0.02	0.23	2.96	0.71	0.00	0.00	2.01	11.09
					2		12	2	0410 (0.64 40	6.77 37.7	70 0.5	50 5.90	0 1.7£	0.01	09.0	3.30	0.82	0.00	0.01	1.99	14.89
Btwn Bean Creek R	łd & Quartz Creek Rd	9.303	51219000	~	т т	2012	œ	7	9055	1.09 5	4.64 32.8	35 0.1	1 6.05	9 1.12	0.06	0.99	1.43	0.86	0.00	0.00	0.77	11.43
					7		∞	7	8250 (0.99 4	9.47 34.6	34 0.2	36 8.4 ⁷	7 1.95	0.02	1.08	1.18	1.01	0.00	0.00	0.60	14.60
West of Kenai Keys	0	42.904	51180000	-	.	2012	~	31 2	3678 (0.62 4	8.18 40.(0.0	16 5.7(S 0.57	0.02	0.31	2.42	0.89	0.00	0.00	0.97	11.10
					ß			31 2	6684 (0.56 4	7.95 40.(0.1	19 6.0	5 0.68	3 0.01	0.32	2.54	0.81	0.00	0.00	0.86	11.45
					-		2	29 20	3668 (0.73 4	7.67 40.6	59 0.1	14 5.7;	3 0.61	0.01	0.27	2.45	0.79	0.00	0.00	0.93	10.92
					ß		2	9	8513 (0.62 4	8.24 40.1	19 0.1	13 5.8	4 0.61	0.0	0.31	2.47	0.68	0.00	0.00	0.88	10.94
					-		е е	30	2402 (0.70 50	0.05 39.3	35 0.1	13 5.0	9 0.63	10.01	0.22	2.13	0.69	0.00	0.01	1.00	9.90
					2		ი ო	30 33	2940 (0.68 4	9.81 39.2	20 0.0	9 5.4	9 0.63	10.01	0.31	2.13	0.67	0.00	0.01	0.97	10.30
					-		4	30	8775	1.09 5	1.39 36.5	59 0.1	13 5.0	3 0.66	0.01	0.38	2.33	1.12	0.00	0.01	1.22	10.93
					ß		4	30 3	9437	1.01 49	9.83 37.2	23 0.1	12 6.1	1 0.61	0.01	0.46	2.23	1.13	0.00	0.01	1.26	11.92
					-		5	31 55	. 3005	1.22 5(0.73 36.7	77 0.1	12 6.0(5 0.8t	0.01	0.51	1.78	0.93	0.00	0.01	1.03	11.29
					ß		5	31 6	1510	1.04 4	9.70 36.7	77 0.1	1 7.1	7 0.83	0.01	0.68	1.73	0.89	0.00	0.00	1.07	12.49
					-		9	80	2337	1.28 5	1.69 35.9	97 0.0)7 6.2,	4 0.76	0.01	0.72	1.48	0.85	0.00	0.01	0.90	11.06
					Q		9	80 80	9567	1.06 5(0.78 36.2	26 0.(7. 7.0	5 0.74	0.00	06.0	1.44	0.83	0.00	0.01	0.85	11.90
					~		~	31 13	2647 (0.82 4	9.63 38.7	79 0.(06 6.8	2 0.5(0.01	0.93	1.16	0.64	0.00	0.00	0.62	10.76
					ъ.		~	31 13	1818 (0.72 4	8.56 39.(02 0.(15 7.6	6 0.5 ⁻	0.0	1.01	1.20	0.62	0.00	0.00	0.64	11.69
					-		ω ω	<u>3</u>	. 2226	1.01 5	1.99 35.7	78 0.()8 6.5t	5 0.62	0.02	0.83	1.50	0.87	0.00	0.00	0.76	11.23
					ß			31 8	7501 (0.89 5	1.57 35.7	75 0.(38 7.1(5 0.6 ²	10.01	0.74	1.51	0.89	0.00	0.00	0.76	11.80
					-		റ	30 55	9696	0.91 4	9.59 37.(50 0.1	12 6.0	9 0.8(0.02	0.52	1.77	1.44	0.00	0.00	1.08	11.89
					2		റ	30 5	7654 (0.89 4	7.99 38.(0.1	14 7.0	5 0.85	0.00	0.54	1.95	1.43	0.00	0.00	1.09	13.06
					-		10	4	4113	1.02 4	8.43 38.5	57 0.1	0 5.6	7 0.93	3 0.02	0.35	2.25	1.21	0.00	0.00	1.44	11.98
					2		10	31 4	3966	0.88 4	7.52 38.4	44 0.1	13 6.6	5 0.92	0.02	0.50	2.40	1.15	0.00	0.00	1.38	13.16
					-		1	50 3	1182 (0.87 49	9.39 38.5	50 0.1	10 5.5	3 0.77	0.01	0.27	2.22	1.02	0.00	0.01	1.33	11.25
					ß		11	30 3	1163 (0.69 4	9.37 38.4	41 0.1	11 5.6	5 0.8(0.01	0.41	2.21	1.07	0.00	0.01	1.19	11.53
					~		12		0252 (0.77 49	9.40 39.{	57 0.1	5.0	2 0.7	0.01	0.32	2.11	0.78	0.00	0.00	1.14	10.26
					2		12	31 33	0624 0	0.73 49	9.22 39.4	45 0.1	9 5.2	2 0.8(0.00	0.38	2.21	0.73	0.00	0.00	1.04	10.59

					-			6				/0			6/	-	9
							Sir	% Igle Unit			Sin	∞ gle Trai	ler	Mult	‰ Trailer	Ĥ	otal
ROUTE ROUTE NAME	MIPT STATION F	C DIR	YR MT	н рауз	TOTAL	CLS CL	S CLS 2 3	CLS CI 4	S CL3	s CLS	CLS 8	CLS 9	CLS 10	CLS 11	CLS C 12	LS Cn 13 VI	nrcl hcls
110000 Sterling Highway																	
Cooper Landing	6.143 11800015	1 1 2	009 1	31	18802	0.10 51.4	3 33.15	0.06 8.5	58 0.8	0.00	0.23	3.11	0.73	0.00	0.00 1	.78 15	5.32
		5	-	11	7019	0.57 51.2	8 32.98	0.11 10.7	13 0.8	0.00	0.13	2.14	0.73	0.00	0.00 1	.07 15	5.17
		~	0	28	19958	0.13 51.6	3 34.53	0.07 7.8	34 0.6;	3 0.01	0.27	2.69	0.71	0.00	0.00 1	.49 13	3.71
		~	С	26	21215	0.06 53.2	1 32.72	0.05 8.2	28 0.4	0.01	0.26	2.61	0.74	0.00	0.00 1	.56 14	4.01
		~	4	30	30006	0.08 42.7	2 30.14	0.26 21.2	24 0.2	5 0.01	0.14	2.11	1.31	0.00	0.00 1	.74 27	7.06
		5	4	30	30760	0.51 49.4	1 33.11	0.14 11.5	59 0.6	0.01	0.28	2.33	0.62	0.00	0.00 1	.33 16	6.97
		~	5	31	54002	0.22 52.6	2 32.29	0.14 10.5	59 0.3	0.01	0.22	1.79	0.61	0.00	0.00 1	.12 14	4.87
		5	5	31	56130	0.33 49.1	1 32.90	0.17 13.2	29 0.5	t 0.01	0.36	1.77	0.51	0.00	0.00 1	.01 17	7.67
		~	9	30	82218	0.24 52.9	0 32.79	0.09 10.4	19 0.4	0.00	0.24	1.51	0.44	0.00	0.00 0	.85 14	4.06
		5	9	30	84744	0.21 49.0	5 32.58	0.11 14.3	35 0.59	0.01	0.31	1.43	0.55	0.00	0.00 0	.81 18	8.16
		-	7	31	110935	0.23 51.5	3 33.57	0.07 11.5	51 0.3	0.00	0.29	1.37	0.36	0.00	0.00 0	.68 14	4.68
		5	7	31	113722	0.19 47.8	5 33.11	0.12 15.4	19 0.4	3 0.00	0.43	1.28	0.48	0.00	0.00 0	.62 18	8.85
		~	80	31	78224	0.23 53.7	3 30.90	0.13 11.0	0.3	0.00	0.26	1.54	0.80	0.00	0.00 0	.97 15	5.13
		5	80	28	65675	0.25 49.9	0 30.76	0.20 14.3	35 0.6	0.00	0.31	1.78	0.92	0.00	0.00 0	.89 19	9.10
		~	ດ	30	50407	0.16 52.8	4 32.29	0.16 10.4	t6 0.4	0.00	0.24	1.56	0.58	0.00	0.01 1	.24 14	4.70
		5	ດ	28	46540	0.27 48.7	7 32.95	0.20 13.5	52 0.6	I 0.01	0.31	1.62	0.75	0.00	0.01 0	.99 18	8.01
		-	10	31	34592	0.05 52.0	6 32.72	0.15 10.0	0.5	0.00	0.25	1.91	0.84	0.00	0.01 1	.47 15	5.17
		5	10	28	31688	0.23 48.2	9 33.75	0.18 12.7	15 0.8;	0.00	0.34	2.21	0.76	0.00	0.01 1	.27 17	7.73
		~	11	29	22419	0.25 52.9	17 33.26	0.11 7.8	37 0.8(0.02	0.22	2.55	0.75	0.00	0.00 1	.20 13	3.52
		5	11	14	10520	0.70 48.3	5 33.13	0.28 11.2	26 1.0	0.01	0.22	2.89	0.83	0.00	0.01 1	.33 17	7.82
		~	12	31	23479	0.14 51.8	4 34.72	0.09 8.	14 0.5	t 0.02	0.22	2.56	0.51	0.00	0.00	.22 13	3.30
		•							•								;
west of Kenai Keys	42.904 51180000		009 1	15 1	2/828	0.05 53.2	16 34.41	0.02 /.	64 0.4		0.15	2.16	0.77	0.00	0.00	0.04 0.0	2.27
			N	0 0	20/07	0.02 04.0	1 30.11				0.10		0.7.0	0.00			0.02
			o ∠	200	3294 I		0 34.30		4. 0.4.		27.0	00.1	0.00				9 10
			ד ער	0.6	68005	0.24 51 1	7 34 71	0.07 10.3	+ 0 7		0.37	1 50	0.52			7 02	
		- -	9 9	30	88839	0.29 51.5	8 34.21	0.04 10.7	12 0.5	0.0	0.38	1.45	0.55	0.00	0.00	80	3.92
		~	7	31	125199	0.24 49.6	5 35.33	0.04 11.3	34 0.6	0.00	0.48	1.23	0.43	0.00	0.00	.63 14	4.79
		~	8	6	29813	0.25 51.8	0 33.80	0.04 10.8	39 0.3	0.00	0.50	1.26	0.46	0.00	0.00 0	.68 14	4.14
		~	10	ი	11809	0.57 49.6	8 33.66	0.08 11.5	53 0.7:	0.00	0.24	2.00	0.86	0.00	0.02 0	.65 16	6.09
		5	10	6	12377	0.57 45.1	1 35.85	0.11 14.(0.7	0.00	0.23	1.96	0.77	0.00	0.02 0	.64 18	8.48
		-	11	29	32189	0.57 50.8	6 32.93	0.09 11.3	31 0.6	0.01	0.22	1.92	0.72	0.00	0.01 0	.70 15	5.64
		5	11	29	32561	0.64 50.5	0 32.80	0.10 11.7	73 0.69	0.01	0.15	1.84	0.74	0.00	0.01 0	.80 16	6.06
		~	12	28	30443	0.54 50.4	6 33.85	0.08 11.7	18 0.5	I 0.01	0.24	1.87	0.51	0.00	0.00 0	.76 15	5.15
		5	1	28	30676	0.47 50.0	5 33.94	0.07 11.5	55 0.5;	2 0.01	0.25	1.85	0.56	0.00	0.00	.72 15	5.54

APPENDIX C

INTERSECTION TURNING MOVEMENTS

APPENDIX C1 NO BUILD

INTERSECTION TURNING MOVEMENT PROJECTIONS No-Build Alternative

2043

Sterling Highway and Hamilton Place





INTERSECTION TURNING MOVEMENT PROJECTIONS No-Build Alternative

2043

Sterling Highway and Snug Harbor Road







APPENDIX C₂ Juneau Creek and G-South

2043

Sterling Highway and Old Sterling Highway



Sterling Highway and Hamilton Place



Sterling Highway and Kenai River



Sterling Highway and Snug Harbor Road



Bean creek road and Sterling Highway



Bean creek road and Sterling Highway



Old Sterling Highway and Sterling Highway



APPENDIX C₃ Cooper Creek
INTERSECTION TURNING MOVEMENT PROJECTIONS **Cooper Creek Alternative** 2043

Sterling Highway and Old Sterling Highway



INTERSECTION TURNING MOVEMENT PROJECTIONS **Cooper Creek Alternative** 2043

Sterling Highway and Hamilton Place



INTERSECTION TURNING MOVEMENT PROJECTIONS Cooper Creek Alternative 2043 Sterling Highway and Kenai River



INTERSECTION TURNING MOVEMENT PROJECTIONS **Cooper Creek Alternative** 2043 **Snug Harbor Road and New Sterling Highway**



INTERSECTION TURNING MOVEMENT PROJECTIONS **Cooper Creek Alternative** 2043

Bean creek road and Sterling Highway



APPENDIX C4 Juneau Creek without Bridge

INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Sterling Highway and Old Sterling Highway



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Sterling Highway and Hamilton Place



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Sterling Highway and Kenai River



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Sterling Highway and Snug Harbor Road



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Bean creek road and Sterling Highway



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Bean creek road and Sterling Highway



INTERSECTION TURNING MOVEMENT PROJECTIONS Juneau Creek Alternative Without Schooner Bend Bridge 2043 Old Sterling Highway and Sterling Highway



APPENDIX D

TWO-WAY STOP CONTROL SUMMARY

APPENDIX D1 NO BUILD

	TW	O-WAY STOP	CONTR	OL SI	JMN	IARY																
General Informatio	n		Site I	nform	atic	on																
Analyst			Interse	ection																		
Agency/Co.			Jurisdi	ction			1															
Date Performed	11/20/20	13	Analys	is Yea	r		2043															
Analysis Time Period																						
Project Description No	o Build Alternati	ve																				
East/West Street: STE	RLING HIGHWA	4 <i>Y</i>	North/S	South S	Stree	t: BEAN (CREAK (NC	DRTH)														
Intersection Orientation:	East-West		Study I	Period	(hrs)	: 0.25																
Vehicle Volumes ar	nd Adjustme	ents																				
Major Street		Eastbound	-				Westbou	nd														
Movement	1	2	3			4	5		6	;												
	L	T	R			L	T		R	{												
Volume (veh/h)	0	557				0.05	241		8													
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.9	5												
(veh/h)	0	586	0			0	253		8													
Percent Heavy Vehicles	24		0																			
Median Type		Undivided																				
RT Channelized		0							0													
Lanes	0	1	0			0	1		0													
Configuration	LT								TF	7												
Upstream Signal		0					0															
Minor Street		Northbound			Southbou	ind																
Movement	7	8	9			10	11		12	2												
	L	Т	R			L	Т		F	{												
Volume (veh/h)						20					0											
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95 0.95			0.9	5												
Hourly Flow Rate, HFR (veh/h)	0	0	0			21	0		0													
Percent Heavy Vehicles	0	0	0		24		24		24		24		24		24		24		0		24	1
Percent Grade (%)	1	0		Í			0	•														
Flared Approach		N	1				N															
Storage		0					0															
RT Channelized			0						0													
Lanes	0	0	0			0	0		0													
Configuration							LR															
Delay, Queue Length, a	and Level of Se	ervice																				
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhbou	nd													
Movement	1	4	7	8		9	10	11	Т	12												
Lane Configuration	LT							LR														
v (veh/h)	0						21															
C (m) (veh/h)	1186					30		306														
v/c	0.00					0.07																
95% queue lenath	0.00							0.22														
Control Delay (s/yeh)	8.00				_			176	╋													
	л								┿													
LUU Annra agh Dalais (a (s. b)	А																					
Approach Delay (s/veh)								17.6														
Approach LOS							С															

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	TW	O-WAY STOP	CONTR	OL SI	UMN	IARY			
General Informatio	n		Site I	nform	natic	on			
Analyst			Interse	ection					
Agency/Co.	ĺ		Jurisdi	ction			1		
Date Performed	11/20/20	13	Analys	is Yea	r		2043		
Analysis Time Period									
Project Description No	o Build Alternati	ve	•						
East/West Street: BEA	N CREEK (SOL	ITH)	North/S	South S	Street	t: STERL	ING HIGHV	VAY	
Intersection Orientation:	North-South		Study I	Period	(hrs)	: 0.25			
Vehicle Volumes ar	nd Adjustme	ents							
Major Street		Northbound					Southbou	nd	
Movement	1	2	3			4	5		6
	L L	T	R			L	<u> </u>		R
Volume (veh/h)	7	550					238		3
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95
Hourly Flow Rate, HFR (veh/h)	7	578	0			0	250		3
Percent Heavy Vehicles	24		0						
Median Type		Undivided							
RT Channelized		0							0
Lanes	0	1	0		0		1		0
Configuration	LT						1	· · ·	
Upstream Signal		0					0		
Minor Street		Eastbound			Westbou	nd			
Movement	7	8	8 9 10		11		12		
	L	Т	R			L	Т		R
Volume (veh/h)	7		20						
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95 0.95			0.95
Hourly Flow Rate, HFR (veh/h)	7	0	21			0	о		0
Percent Heavy Vehicles	24	0	24			0	0		0
Percent Grade (%)	1	0					0		
Flared Approach		N					N		
Storage		0					0		
RT Channelized			0						0
Lanes	0	0	0			0	0		0
Configuration		LR	ĺ				1		
Delay, Queue Length, a	and Level of Se	ervice							
Approach	Northbound	Southbound		Westbo	ound		E	astbour	d
Movement	1	4	7	8		9	10	11	12
Lane Configuration	LT				Ĩ			LR	
v (veh/h)	7				Î			28	
C (m) (veh/h)	1194					543		543	
v/c	0.01				0.05				
95% queue length	0.02							0.00	
Control Delay (s/yoh)	8 N							12.10	
	0.0 A							12.U	
	А							<u>В</u>	
Approach Delay (s/veh)							ļ	12.0	
Approach LOS							В		

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	TWO-WAY STOP CONTROL SUMMARY											
General Information	n		Site I	nform	atic	on						
Analyst			Interse	ection								
Agency/Co.	- î		Jurisdi	ction								
Date Performed	11/20/20	13	Analys	is Yea	r		2043					
Analysis Time Period												
Project Description No	o Build Alternati	ve										
East/West Street: STEI	RLING HIGHWA	4 <i>Y</i>	North/S	South S	Street	t: SNUG	HARBOR					
Intersection Orientation:	East-West		Study F	Period ((hrs)	: 0.25						
Vehicle Volumes ar	nd Adjustme	ents										
Major Street	_	Eastbound	-				Westbou	nd				
Movement	1	2	3			4	5			6		
	L L	1	R				1			R		
Volume (veh/h)	0	527	10			/	250			$\frac{0}{0}$		
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		().95		
(veh/h)	0	554	10			7	263			0		
Percent Heavy Vehicles	24		24									
Median Type			Undivided									
RT Channelized			0							0		
Lanes	0	1	0			0	1			0		
Configuration	LTR			LTR								
Upstream Signal		0				0						
Minor Street		Northbound					Southbou	ind				
Movement	7	8	9	9 10		11			12			
	L	Т	R			L	Т			R		
Volume (veh/h)	8		27	Í								
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95		0.95		().95		
Hourly Flow Rate, HFR (veh/h)	8	0	28			0	0			0		
Percent Heavy Vehicles	24	0	24		0		0	- i		0		
Percent Grade (%)		0					0					
Flared Approach		N					N					
Storage		0					0					
RT Channelized		ĺ	0	1			1			0		
Lanes	0	0	0			0	0			0		
Configuration	1	LR		Í				Ì				
Delay, Queue Length, a	nd Level of Se	ervice		•			•					
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhb	ound			
Movement	1	4	7	8		9	10	1	1	12		
Lane Configuration	LTR	LTR	ĺ	LR								
v (veh/h)	0	7	ĺ	36	ĺ							
C (m) (veh/h)	1184	907		432	2					ĺ		
v/c	0.00	0.01		0.08	3							
95% queue length	0.00	0.02	ĺ	0.27	7							
Control Delay (s/veh)	8.0	9.0		14.1	1							
LOS	А	A		В								
Approach Delav (s/veh)			[14.1	1					P		
Approach LOS			ĺ	В								
• •												

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	TW	O-WAY STOP	CONTR	OL SI	JMN	MARY																															
General Informatio	n		Site I	nform	atio	on																															
Analyst			Interse	ection																																	
Agency/Co.			Jurisdi	ction			Í																														
Date Performed	11/20/20	13	Analys	is Yea	r		2043																														
Analysis Time Period																																					
Project Description No	o Build Alternati	ve																																			
East/West Street: STEI	RLING HIGHW/	4 <i>Y</i>	North/S	South S	Stree	t: KENAI	RIVER																														
Intersection Orientation:	East-West		Study I	Period	(hrs)	: 0.25																															
Vehicle Volumes ar	nd Adjustme	ents																																			
Major Street		Eastbound					Westbou	nd																													
Movement	1	2	3			4	5		6																												
	L L	T	R			L	T		R																												
Volume (veh/h)	7	509					245		7																												
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95																												
(veh/h)	7	535	0			0	257		7																												
Percent Heavy Vehicles	24		0																																		
Median Type				Undiv	videa	1																															
RT Channelized			0						0																												
Lanes	0	1	0	Ĩ		0	1		0																												
Configuration	LT		ĺ						TR																												
Upstream Signal		0					0		0																												
Minor Street		Northbound					Southbou	nd																													
Movement	7	8	9			10	11		12																												
	L	Т	R			L	T T		Т		R																										
Volume (veh/h)						11			33																												
Peak-Hour Factor, PHF	0.95	0.95	0.95	·		0.95 0.95			0.95																												
Hourly Flow Rate, HFR (veh/h)	0	0	0			11	0		34																												
Percent Heavy Vehicles	0	0	0			24	0		24																												
Percent Grade (%)	1	0		Í																					ĺ										0		
Flared Approach	1	N					N																														
Storage		0					0																														
RT Channelized			0						0																												
Lanes	0	0	0			0	0		0																												
Configuration							LR																														
Delay, Queue Length, a	and Level of Se	ervice																																			
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhbour	d																												
Movement	1	4	7	8		9	10	11	12																												
Lane Configuration	LT							LR																													
v (veh/h)	7							45																													
C (m) (veh/h)	1183						554																														
v/c	0.01						0.08		1																												
95% aueue lenath	0.02					0.26																															
Control Delav (s/veh)	8.1					·		12.1																													
I OS	A							B	1																												
Approach Delay (e/veh)						<u> </u>		12 1																													
Approach I OS								R																													
								U																													

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General Information Site Information Analyst Intersection Agency/Co. Jurisdiction Date Performed 11/20/2013 Analysis Time Period Analysis Year Project Description No Build Alternative East/West Street: STERLING HIGHWAY Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Westbound Major Street Eastbound L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95	6 R 11
Analyst Intersection Agency/Co. Jurisdiction Date Performed 11/20/2013 Analysis Time Period Analysis Year Project Description No Build Alternative East/West Street: STERLING HIGHWAY Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Study Period (hrs): Major Street Eastbound Movement 1 2 3 4 5 L T R L T Veloume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
Agency/Co.JurisdictionDate Performed11/20/2013Analysis Time PeriodAnalysis YearProject DescriptionNo Build AlternativeEast/West Street:STERLING HIGHWAYIntersection Orientation:East-WestStudy Period (hrs):0.25Vehicle Volumes and AdjustmentsMajor StreetEastboundMovement121234551049012425099.950.950.950.950.950.950.95	6 R 11
Date Performed11/20/2013Analysis Year2043Analysis Time Period </td <td>6 R 11</td>	6 R 11
Analysis Time Period Image: Mail of Alternative Project Description No Build Alternative East/West Street: STERLING HIGHWAY Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Westbound Major Street Eastbound Westbound Movement 1 2 3 4 5 L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
Project Description No Build Alternative East/West Street: STERLING HIGHWAY North/South Street: HAMILTON PLACE Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Westbound Major Street Eastbound Westbound Movement 1 2 3 4 5 L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
East/West Street: STERLING HIGHWAY North/South Street: HAMILTON PLACE Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Westbound Major Street Eastbound Westbound Movement 1 2 3 4 5 L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
Intersection Orientation:East-WestStudy Period (hrs):0.25Vehicle Volumes and AdjustmentsMajor StreetEastboundWestboundMovement12345LTRLTVolume (veh/h)10490124250Peak-Hour Factor, PHF0.950.950.950.950.950.95	6 R 11
Vehicle Volumes and Adjustments Major Street Eastbound Movement 1 2 3 4 5 L T R L T 1 2 3 4 5 1 <td>6 R 11</td>	6 R 11
Major Street Eastbound Westbound Movement 1 2 3 4 5 L T R L T 7 Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
Movement 1 2 3 4 5 L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95	6 R 11
L T R L T Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0	R 11
Volume (veh/h) 10 490 12 4 250 Peak-Hour Factor, PHF 0.95 </td <td>11</td>	11
Peak-Hour Factor, PHF 0.95	
	1.95
(veh/h) 10 515 12 4 263	11
Percent Heavy Vehicles 24 24	
Median Type Undivided	
RT Channelized 0	0
Lanes 0 1 0 0 1	0
Configuration LTR LTR	
Upstream Signal 0 0	
Minor Street Northbound Southbound	
Movement 7 8 9 10 11	12
	R
Volume (veh/h) 0 0 0 0 0	3
Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95).95
Hourly Flow Rate, HFR 0 0 0 0 0	3
Percent Heavy Vehicles 24 24 24 24 24	24
Percent Grade (%) 0 0	
Flared Approach N N	
Storage 0 0	
RT Channelized 0	0
Lanes 0 1 0 1 1	0
Configuration LTR LTR	
Delay, Queue Length, and Level of Service	
Approach Eastbound Westbound Northbound Southbound	
Movement 1 4 7 8 9 10 11	12
Lane Configuration LTR LTR LTR LTR	
v (veh/h) 10 4 0 3	
C (m) (veh/h) 1172 937 721	
v/c 0.01 0.00 0.00 0.00	
95% queue length 0.03 0.01 0.01	
Control Delay (s/veh) 8.1 8.9 10.0	
LOS A A B	
Approach Delay (s/veh) 10.0	·
Approach LOS B	

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APPENDIX D2 Juneau Creek and G-South

	TWO	D-WAY STOP	CONTR	OL SI	JMN	IARY				
General Information	n		Site I	nform	natio	n				
Analyst			Interse	ection						
Agency/Co.			Jurisdi	ction			1			
Date Performed	11/21/201	3	Analys	is Yea	r		2043			
Analysis Time Period										
Project Description Ju	neau Creek and	l G-South Alterna	ative 2							
East/West Street: NEW	STERLING HIG	GHWAY	North/S	South S	Street	: OLD S	TERLING H	IIGHV	VAY E	C
Intersection Orientation:	East-West		Study I	Period	(hrs):	0.25				
Vehicle Volumes ar	nd Adjustme	nts								
Major Street		Eastbound					Westbou	nd		
Movement	1	2	3			4	5			6
	L		R			L				R
Volume (veh/h)	0.05	388	8			82	191			0.05
Peak-Hour Factor, PHF	0.95	0.95	0.95		(0.95	0.95		l	1.95
(veh/h)	0	408	8			86	201			0
Percent Heavy Vehicles	0		24					ĺ		
Median Type				Undiv	/ided					
RT Channelized		0								0
Lanes	0	1	1			1	1			0
Configuration		Т	R			L	T			
Upstream Signal		0					0			
Minor Street		Northbound S					Southbou	und		
Movement	7	8	9			10	11			12
	L	Т	R			L	Т			R
Volume (veh/h)	4		166							
Peak-Hour Factor, PHF	0.95	0.95	0.95		(0.95 0.95			().95
Hourly Flow Rate, HFR (veh/h)	4	0	174			0	0			0
Percent Heavy Vehicles	24	0	24			0	0			0
Percent Grade (%)		0					0			
Flared Approach		N					N			
Storage		0	1				0			
RT Channelized			0							0
Lanes	1	0	1			0	0			0
Configuration	Ĺ		R					ĺ		
Delay, Queue Length, a	Ind Level of Se	rvice								
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhb	ound	
Movement	1	4	7	8		9	10	1	1	12
Lane Configuration		L	L			R				
v (veh/h)		86	4		Ī	174				
C (m) (veh/h)		1034	306		Ť	598	1			
v/c		0.08	0.01			0.29				
95% aueue lenath		0.27	0.04			1.20				
Control Delay (s/veh)		8.8	16.9		-+	13.5	1	1		
LOS		A	С		\dashv	В	1	i – –		
Approach Delay (s/veh)			İ	13.5	5					
Approach LOS			İ	В			1			

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	TW	O-WAY STOP	CONTR	OL SI	JMN	IARY					
General Informatio	n		Site I	nform	atio	n					
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction							
Date Performed	11/20/201	13	Analys	is Year	r		2043				
Analysis Time Period											
Project Description Ju	neau Creek and	d G-South Alterna	tive								
East/West Street: STE	RLING HIGHWA	4 <i>Y</i>	North/S	South S	street	: BEAN C	CREAK (NC	DRTH)			
Intersection Orientation:	East-West		Study I	Period ((hrs):	. 0.25					
Vehicle Volumes a	nd Adjustme	ents									
Major Street		Eastbound	-				Westbou	nd			
Movement	1	2	3			4	5		6		
		1	R			L	1		R		
Volume (veh/h)	0	150	0.05			0.05	82		8		
Peak-Hour Factor, PHF	0.95	0.95	0.95	ł		0.95	0.95		0.95		
(veh/h)	0	157	0			0	86		8		
Percent Heavy Vehicles	24		0								
Median Type				Undiv	rided						
RT Channelized		0						0			
Lanes	0	1	0			0	1		0		
Configuration	LT								TR		
Upstream Signal		0			0		0		0		
Minor Street		Northbound Sc			Southbou	nd					
Movement	7	8	9			10	11		12		
	L	Т	R			L	Т		R		
Volume (veh/h)			ĺ			20			0		
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0			21	0		0		
Percent Heavy Vehicles	0	0	0			24	0		24		
Percent Grade (%)		0		ĺ			0				
Flared Approach		N					N				
Storage		0	Í				0				
RT Channelized			0						0		
Lanes	0	0	0			0	0		0		
Configuration							LR				
Delay, Queue Length, a	and Level of Se	ervice									
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhbound			
Movement	1	4	7	8		9	10	11	12		
Lane Configuration	LT				Ĩ			LR			
v (veh/h)	0					2		21			
C (m) (veh/h)	1373				Î	696		696	ĺ		
v/c	0.00				0		0.03				
95% aueue lenath	0.00							0.09			
Control Delav (s/veh)	7.6							10.3			
LOS	A							B			
Approach Delay (s/veh)								10.3	<u>.</u>		
Approach LOS								 			
								D			

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	TW	O-WAY STOP	CONTR	OL SI	UMN	MARY			
General Informatio	n		Site I	nform	natio	on			
Analyst			Interse	ection					
Agency/Co.			Jurisdi	ction					
Date Performed	11/20/201	13	Analys	sis Yea	r		2043		
Analysis Time Period									
Project Description Ju	neau Creek and	d G-South Alterna	tive						
East/West Street: BEA	N CREEK (SOL	ITH)	North/S	South S	Stree	t: <i>STERL</i>	ING HIGHV	VAY	
Intersection Orientation:	North-South		Study I	Period	(hrs)	: 0.25			
Vehicle Volumes ar	nd Adjustme	ents							
Major Street		Northbound					Southbou	ind	
Movement	1	2	3			4	5		6
		T	R			L	T		R
Volume (veh/h)	7	143					79		3
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95
Hourly Flow Rate, HFR (veh/h)	7	150	0			0	83		3
Percent Heavy Vehicles	24		0						
Median Type		Undivided							
RT Channelized		0						0	
Lanes	0	1	0			0	1		0
Configuration	LT								TR
Upstream Signal		0				0			
Minor Street		Eastbound		Westbou	nd				
Movement	7	8 9 10		11		12			
	L	Т	R			L	Т		R
Volume (veh/h)	7		20						
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95 0.95			0.95
Hourly Flow Rate, HFR (veh/h)	7	0	21			0	о		0
Percent Heavy Vehicles	24	0	24			0	0		0
Percent Grade (%)		0					0		
Flared Approach		N					N		
Storage		0	1				0		
RT Channelized			0						0
Lanes	0	0	0			0	0		0
Configuration		LR							
Delay, Queue Length, a	and Level of Se	ervice							
Approach	Northbound	Southbound		Westbo	ound		E	astbound	
Movement	1	4	7	8		9	10	11	12
Lane Configuration	LT							LR	
v (veh/h)	7							28	1
C (m) (veh/h)	1382					848		848	
v/c	0.01					0.03			
95% queue length	0.02							0.00	
Control Delay (c/yoh)	76							0.10 Q /	
	7.0							<i>3.4</i>	
	А								1
Approach Delay (s/veh)							ļ	9.4	
Approach LOS							A		

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General Information Site Information Analyst Agency/Co. Intersection Intersection Date Performed 10/20/2013 Analysis Year 2043 Analysis Time Period Intersection Original Street 2043 Project Description Juneau Creek and G-South Alternative SNUG HARBOR Intersection Orientation: East/West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Study Period (hrs): 0.25 0.95 Moorement 1 2 3 4 5 6 Volume (veh/h) 121 11 7 93 Past-Norr Revision Past-Norr Revision 0.95		TW	O-WAY STOP	CONTR	OL SI	TWO-WAY STOP CONTROL SUMMARY											
Analyst Intersection Jurisdiction Jurisdiction Agency/Co. Date Performed 10/20/2013 Analysis Year 2043 Analysis Time Period Intersection Analysis Year 2043 Analysis Time Period North/South Street: SNUG HARBOR East/West Street: Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Westbound Movement 1 2 3 4 5 6 Volume (veh/h) 121 11 7 93 Pereonit Heavy Vehicles 10/20/2013 Major Street Eastbound Westbound Westbound 0 95 0.95 0	General Information	n		Site I	nform	atic	on										
Agency/Co. Jurisdiction Agency/Co. Date Performed 10/20/2013 Analysis Time Period Inalysis Time Period Project Description Juneau Creek and G-South Alternative Study Period (hrs): 0.25 East/West Stret. Study Period (hrs): 0.25 Study Period (hrs): 0.25 Weinterest: Study Period (hrs): 0.25 0.25 0.95	Analyst			Interse	ection												
Date Performed 10/20/2013 Analysis Year 20/3 Analysis Time Period	Agency/Co.			Jurisdi	ction												
Analysis Time Period	Date Performed	10/20/201	13	Analys	is Yea	r		2043									
Project Description Juneau Creek and G-South Alternative East/West Street: STERLING HIGHWAY North/South Street: SNUG HARBOR Major Street East/West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Westbound Westbound Movement 1 2 3 4 5 6 Working (veh/h) L T R L T R Volume (veh/h) 1217 11 7 93 — Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 Hourly Flow Rate, HFR 0 127 11 7 97 0 Median Type Undivided Undivided … … … … RT Channelized 0 1 0 0 1 0 Gonfiguration T R LT … … More theasy Vehicles 24 0 0 … … Movement 7	Analysis Time Period																
East.West Street: Strucy Period (hs): 0.25 Weiter vection Orientation: East.West Strucy Period (hs): 0.25 Major Street Eastbound Westbound Movement 1 2 3 4 5 6 Volume (veh/h) L T R L T R Power of the vector, PHF 0.95	Project Description Ju	neau Creek and	d G-South Alterna	ative													
Intersection Orientation: East-West Study Period (hrs): 0.25 Vehicle Volumes and Adjustments Major Street Eastbound Westbound Movement 1 2 3 4 5 6 Volume (veh/h) 121 11 7 93	East/West Street: STEI	RLING HIGHWA	4 <i>Y</i>	North/S	South S	Stree	t: SNUG	HARBOR									
Vehicle Volumes and Adjustments Eastbound Westbound Major Street L T R L T R Volume (veh/h) 127 11 7 93	Intersection Orientation:	East-West		Study I	Period ((hrs)	: 0.25										
Major StreetEastboundWestboundMovement123456Volume (veh/h)12111793Volume (veh/h)12111793Peak-Hour Factor, PHF0.950.950.950.950.95Hourly Flow Rate, HFR0127117970Percent Heavy Vehicles1124Median TypeUndivided00100RT Channelized010010Lanes01001112Minor StreetNorthboundSouthboundSouthboundMovement789101112Volume (veh/h)1029Velw/h)10030000000Percent Heavy Vehicles2402400000Percent Heavy Vehicles2402400000Percent Heavy Vehicles240000000Percent Heavy Vehicles240000000Percent Heavy Vehicles240000000Percent Heavy Vehicles24000000	Vehicle Volumes ar	nd Adjustme	nts														
Movement 1 2 3 4 5 6 Volume (veh/h) I T R L T R Volume (veh/h) 121 11 7 93 Image: Solution of the solutholi solution of the solutholi solution of the solutio	Major Street	_	Eastbound					Westbou	nd								
L I H L I R Volume (veh/h) 121 11 7 93	Movement	1	2	3			4	5			6						
Volume (verin) 121 11 7 93 Peak-Hour Factor, PHF 0 127 11 7 97 0 Percent Heavy Vehicles 11 24 Median Type Undivided 0 1 0 0 1 0 RT Channelized 0 1 0 0 1 0 Lanes 0 1 0 0 1 0 Configuration TR LT 0 0 0 0 More Street Northbound Southbound Northbound Southbound 0 <t< td=""><td></td><td></td><td>101</td><td>R R</td><td></td><td></td><td></td><td></td><td></td><td></td><td>R</td></t<>			101	R R							R						
Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Median Type 0 127 11 7 97 0 Percent Heavy Vehicles 11 -24 Median Type 0 1 0 1 0 RT Channelized 0 1 0 1 0 Lanes 0 1 0 1 0 Minor Street Northbound Southbound Movement 7 8 9 10 11 12 Volume (veh/h) 10 29	Volume (ven/n)	0.05	121	11			/	93			05						
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Hourly Flow Bate HER	0.95	0.95	0.95			0.95	0.95		0	.95						
Percent Heavy Vehicles 11 24 Median Type Undivided 0 </td <td>(veh/h)</td> <td>0</td> <td>127</td> <td>11</td> <td></td> <td></td> <td>7</td> <td>97</td> <td></td> <td></td> <td>0</td>	(veh/h)	0	127	11			7	97			0						
Median TypeUndividedRT Channelized010010Lanes0100100Configuration010010Upstream Signal0101112Minor StreetNorthboundSouthboundMovement789101112LTRLTRVolume (veh/h)1029	Percent Heavy Vehicles	11			ĺ		24		Ĺ								
RT Channelized0010Lanes01010Configuration0TRLT0Upstream Signal00010Minor StreetNorthboundSouthboundMovement7891011LTRLTRVolume (veh/h)1029	Median Type		Undivided														
Lanes 0 1 0 0 1 0 Configuration I TR LT Image: constraint of the second seco	RT Channelized			0							0						
Configuration TR LT Image: configuration Upstream Signal 0 0 0 Miner Street Northbound Southbound Movement 7 8 9 10 11 12 L T R L T R L T R Volume (veh/h) 10 29 R L T R R	Lanes	0	1	0			0	1			0						
Upstream Signal 0 0 0 Minor Street Northbound Southbound Movement 7 8 9 10 11 12 Movement L T R L T R Volume (veh/h) 10 29 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 Hourly Flow Rate, HFR (veh/h) 10 0 30 0 0 0 Percent Heavy Vehicles 24 0 24 0 0 0 Percent Grade (%)	Configuration			TR			LT										
Minor StreetNorthboundSouthboundMovement789101112LTRLTRVolume (veh/h)1029Image: Constraint of the second seco	Upstream Signal		0				0										
Movement 7 8 9 10 11 12 L T R L T R N T R Volume (veh/h) 10 29 - - - - Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Hourly Flow Rate, HFR (veh/h) 10 0 30 0 0 0 0 Percent Heavy Vehicles 24 0 24 0 0 0 0 Percent Grade (%) - 0 24 0 0 0 0 Flared Approach N - - 0 - - 0 -	Minor Street		Northbound			Southbou	Ind										
$\begin{array}{ c c c c c c } \begin{tabular}{ c c c c } eq:linear_li$	Movement	7	8	9	9 10		11			12							
Volume (veh/h) 10 29 Image: constraint of the second		L	Т	R			L	Т			R						
Peak-Hour Factor, PHF 0.95	Volume (veh/h)	10		29													
Hourly Flow Rate, HFR (veh/h) 10 0 30 0 0 0 Percent Heavy Vehicles 24 0 24 0 0 0 Percent Grade (%) 0 0 0 0 0 0 Flared Approach N 0 0 0 0 0 Storage 0 0 0 0 0 0 0 RT Channelized 0 0 0 0 0 0 0 Lanes 0 0 0 0 0 0 0 Configuration LR 0 0 0 Delay, Queue Length, and Level of Service Approach Eastbound Westbound Northbound Southbound	Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95 0		0.95		0	.95						
Percent Heavy Vehicles 24 0 24 0 0 0 Percent Grade (%) 0 0 0 0 0 Flared Approach N N N N Storage 0 0 0 0 0 RT Channelized 0 0 0 0 0 Lanes 0 0 0 0 0 Configuration LR 0 0 0 Delay, Queue Length, and Level of ServiceApproachEastboundNorthboundSouthboundMovement1 4 7 8 9 10 11 12 Lane Configuration LT LR 11 12 12 11 12 Lane Configuration 0 7 40 11 12 12 1321 813 12 12 Storage 0.01 0.05 12 12 12 12 12 12 12 Storage 0.01 0.05 12 12 12 12 12 12 Storage 0.01 0.02 0.15 12 12 12 12 Storage 0.02 0.15 12 12 12 12 12 Storage 0.02 0.15 12 12 12 12 12 Storage 132 132 132 132 12 12 12 Storage 132 132 132 132	Hourly Flow Rate, HFR (veh/h)	10	0	30			0	0			0						
Percent Grade (%) 0 0 Flared Approach N N Storage 0 0 RT Channelized 0 0 Lanes 0 0 0 0 0 Configuration LR Delay, Queue Length, and Level of ServiceApproachEastboundMovement1 4 1 4 7 8 9 10 1 LT LR V (veh/h) 7 40 V (veh/h) 1321 813 $ V(c$ 0.01 0.02 0.15 95% queue length 0.02 0.15 $ 0.02$ 0.15	Percent Heavy Vehicles	24	0	24			0	0			0						
Flared ApproachNNNStorage00000RT Channelized00000Lanes000000ConfigurationLR0000Delay, Queue Length, and Level of ServiceApproachEastboundWestboundNorthboundSouthboundMovement14789101112Lane ConfigurationLTLR112V (veh/h)7401V(c0.010.05195% queue length0.020.151Control Delay, (s/veh)7.79.79.7	Percent Grade (%)		0					0									
Storage000RT Channelized0000Lanes00000ConfigurationLR000Delay, Queue Length, and Level of ServiceApproachEastboundWestboundNorthboundSouthboundMovement14789101112Lane ConfigurationLTLR0111212V (veh/h)74001112V (veh/h)1321813111V/c0.010.0511195% queue length0.020.15111Control Delay (s/veh)7.79.79.701	Flared Approach		N					N									
RT Channelized 0	Storage		0					0									
Lanes000000ConfigurationLRImage: constraint of the second secon	RT Channelized			0					Î		0						
ConfigurationLRImage: configurationDelay, Queue Length, and Level of ServiceApproachEastboundWestboundNorthboundSouthboundMovement14789101112Lane ConfigurationLTLRImage: configurationImage:	Lanes	0	0	0			0	0			0						
Delay, Queue Length, and Level of ServiceApproachEastboundWestboundNorthboundSouthboundMovement14789101112Lane Configuration LT LR </td <td>Configuration</td> <td></td> <td>LR</td> <td></td> <td>ĺ</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Configuration		LR		ĺ												
ApproachEastboundWestboundNorthboundSouthboundMovement14789101112Lane Configuration LT LR </td <td>Delay, Queue Length, a</td> <td>nd Level of Se</td> <td>ervice</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Delay, Queue Length, a	nd Level of Se	ervice														
Movement 1 4 7 8 9 10 11 12 Lane Configuration LT LR <	Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhbo	ound							
Lane Configuration LT LR Image: Constraint of the state of th	Movement	1	4	7	8		9	10	11		12						
v (veh/h) 7 40 C (m) (veh/h) 1321 813 v/c 0.01 0.05 95% queue length 0.02 0.15	Lane Configuration		LT		LR			ĺ		Ĩ							
C (m) (veh/h) 1321 813 v/c 0.01 0.05 95% queue length 0.02 0.15 Control Delay (s/yeh) 7.7 9.7	v (veh/h)		7		40												
v/c 0.01 0.05 95% queue length 0.02 0.15 Control Delay (s/yeh) 7.7 9.7	C (m) (veh/h)		1321		813	}											
95% queue length 0.02 0.15 Control Delay (s/yeb) 7.7 9.7 9.7	v/c		0.01		0.05	5											
Control Delay (s/yeh) 77 97	95% queue length		0.02		0.15	5											
	Control Delay (s/veh)		7.7		9.7	·		ĺ	ĺ								
	LOS		A		A			[i								
Approach Delay (s/veh) 9.7	Approach Delav (s/veh)				9.7	,		İ									
Approach LOS A	Approach LOS				A			i									

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	TW	O-WAY STOP	CONTR	OL SI	JMN	MARY						
General Informatio	n		Site I	nform	atio	on						
Analyst			Interse	ection								
Agency/Co.			Jurisdi	ction								
Date Performed	11/20/20	13	Analys	sis Yea	r		2043					
Analysis Time Period												
Project Description Ju	neau Creek and	d G-South Alterna	tive									
East/West Street: STE	RLING HIGHWA	4 <i>Y</i>	North/S	South S	Stree	t: KENAL	RIVER					
Intersection Orientation:	East-West		Study I	Period	(hrs)	: 0.25						
Vehicle Volumes ar	nd Adjustme	ents										
Major Street		Eastbound					Westbou	nd				
Movement	1	2	3	3 4		5			6			
		1	R			L	75			R		
Volume (veh/h)	/	132	0.05			0.05	75			8		
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		U	.95		
(veh/h)	7	138	0			0	78			8		
Percent Heavy Vehicles	24		0									
Median Type		Undivided										
RT Channelized			0							0		
Lanes	0	1	0			0	1			0		
Configuration	LT			Î						TR		
Upstream Signal		0					0		0			
Minor Street		Northbound					Southbou	ind				
Movement	7	8	9			10	11		12			
	L	Т	R			L	Т			R		
Volume (veh/h)						12			34			
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95 0.95			0	.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0			12	0			35		
Percent Heavy Vehicles	0	0	0			24	0			24		
Percent Grade (%)	1	0	•				0					
Flared Approach		N					N					
Storage		0					0					
RT Channelized			0							0		
Lanes	0	0	0	ĺ		0	0			0		
Configuration							LR					
Delay, Queue Length, a	and Level of Se	ervice										
Approach	Eastbound	Westbound	1	Northbo	ound		S	outhbo	und			
Movement	1	4	7	8		9	10	11		12		
Lane Configuration	LT							LR				
v (veh/h)	7							47				
C (m) (veh/h)	1382						853					
v/c	0.01	ĺ					0.06					
95% aueue lenath	0.02					0.17						
Control Delav (s/veh)	7.6							9.5				
LOS	A							A	-			
Approach Delay (s/yoh)								05				
Approach LOS								9.0 A				
Approach LOS						А	А					

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	TWO-WAY STOP CONTROL SUMMARY										
General Informatio	n		Site II	nformat	ion						
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction		1					
Date Performed	11/20/20	13	Analys	is Year		2043					
Analysis Time Period											
Project Description Ju	neau Creek and	d G-South Alterna	tive								
East/West Street: STE	RLING HIGHWA	٩Y	North/S	South Stre	et: HAMIL	TON PLAC	E				
Intersection Orientation:	East-West		Study F	Period (hrs	s): <i>0.25</i>						
Vehicle Volumes ar	nd Adjustme	ents									
Major Street		Eastbound				Westbou	nd				
Movement	1	2	3		4	5		6			
		1	R					R			
Volume (veh/h)	11	139	14		4	93		12			
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95			
(veh/h)	11	146	14		4	97		12			
Percent Heavy Vehicles	24		24 -								
Median Type		Undivided									
RT Channelized			0					0			
Lanes	0	1	0		0	1		0			
Configuration	LTR				LTR						
Upstream Signal		0				0		0			
Minor Street		Northbound				Southbou	ind				
Movement	7	8	9		10	11		12			
	L	Т	R		L	T T		Т		R	
Volume (veh/h)	0	0	0		0	0		3			
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95			
Hourly Flow Rate, HFR (veh/h)	0	0	0		0	0		3			
Percent Heavy Vehicles	24	24	24		24	24		24			
Percent Grade (%)	Î	0				0					
Flared Approach		N				N					
Storage		0				0					
RT Channelized			0					0			
Lanes	0	1	0		0	1		0			
Configuration		LTR				LTR					
Delay, Queue Length, a	and Level of Se	ervice									
Approach	Eastbound	Westbound	1	Northboun	d	S	outhbound				
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	LTR	LTR		LTR	ĺ	Î	LTR				
v (veh/h)	11	4		0		3					
C (m) (veh/h)	1355	1296			Í		895				
v/c	0.01	0.00					0.00				
95% gueue length	0.02	0.01					0.01				
Control Delay (s/veh)	7.7	7.8				1	9.0				
LOS	A	A				1	A				
Approach Delay (s/yeh)							<u> </u>	I			
Approach LOS							J.U A				
			A			А					

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	TWO-WAY STOP CONTROL SUMMARY											
General Information	า		Site I	nforma	tion							
Analyst			Interse	ection								
Agency/Co.			Jurisdi	ction								
Date Performed	11/21/201	13	Analys	sis Year		2043						
Analysis Time Period												
Project Description Ju	neau Creek and	d G-South Alterna	ative									
East/West Street: NEW	STERLING HI	GHWAY	North/S	South Str	eet: OLD S	STERLING H	IIGHW	AYN	/C			
Intersection Orientation:	East-West		Study I	Period (h	rs): <i>0.25</i>							
Vehicle Volumes ar	nd Adjustme	nts										
Major Street		Eastbound				Westbou	nd					
Movement	1	2	3		4	5			6			
	L L	T	R		L	T			R			
Volume (veh/h)	0.05	359	154		10	176			05			
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.	.95			
(veh/h)	0	377	162		10	185			0			
Percent Heavy Vehicles	0											
Median Type			Undivided									
RT Channelized			0						0			
Lanes	0	1	1		1	1			0			
Configuration		Т	R		L	Т	Т		Т			
Upstream Signal		0										
Minor Street		Northbound S				Southbou	und					
Movement	7	8	9	9 10		11			12			
	L	Т	R		L	Т			R			
Volume (veh/h)	76	0	19									
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.	95			
Hourly Flow Rate, HFR (veh/h)	80	0	20		0	0			0			
Percent Heavy Vehicles	24	0	24		0	0			0			
Percent Grade (%)		0				0						
Flared Approach		N	Î			N						
Storage		0				0						
RT Channelized			0						0			
Lanes	0	1	0		0	0			0			
Configuration		LTR										
Delay, Queue Length, a	nd Level of Se	rvice										
Approach	Eastbound	Westbound	1	Northbou	nd	S	outhbo	ound				
Movement	1	4	7	8	9	10	11		12			
Lane Configuration		L		LTR		Î	1	Î				
v (veh/h)		10		100		1		Î				
C (m) (veh/h)		927		464				Ĩ				
v/c		0.01		0.22		1						
95% aueue lenath		0.03		0.81								
Control Delay (s/veh)		8.9		14.9		1	<u> </u>					
		Δ	[P								
LOO Approach Delay (a/yeh)		7										
Approach Delay (S/ven)				14.9								
Approach LOS				В								

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	TW	O-WAY STOP	CONTR	OL SU	JMN	IARY								
General Informatio	n		Site I	Site Information										
Analyst			Interse	ection										
Agency/Co.			Jurisdi	ction										
Date Performed	11/21/20	13	Analysis Year			2043								
Analysis Time Period														
Project Description Ju	ineau Creek Alt	ernative Variant 1	and 3											
East/West Street: NEW	/ STERLING HI	GHWAY	North/S	South S	treet	:: OLD ST	TERLING H	IGHWA	Y					
Intersection Orientation:	East-West		Study I	Period ((hrs):	. 0.25								
Vehicle Volumes ar	nd Adjustme	ents												
Major Street		Eastbound					Westbou	nd						
Movement	1	2	3			4	5			6				
	L	T	R			L	T			R				
Volume (veh/h)	154	359					176			10				
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.	.95				
Hourly Flow Rate, HFR (veh/h)	162	377	0			0	185			10				
Percent Heavy Vehicles	24					11								
Median Type				Undiv	ided									
RT Channelized			0							0				
Lanes	1	1	0	[0	1			1				
Configuration	L	Т					Τ		Т			R		
Upstream Signal		0		Ĩ			0							
Minor Street		Northbound					Southbound							
Movement	7	8	9			10	11		11		11			12
	L	Т	R			L	Т		R					
Volume (veh/h)				Í		19	0	0 76		76				
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95					
Hourly Flow Rate, HFR (veh/h)	0	0	0			20	0		80					
Percent Heavy Vehicles	11	0	11		24		0		2	24				
Percent Grade (%)	1	0	•	1			0	R						
Flared Approach		N					N							
Storage		0					0							
RT Channelized			0							0				
Lanes	0	0	0			0	1			0				
Configuration							LTR							
Delay, Queue Length, a	and Level of Se	ervice												
Approach	Eastbound	Westbound	1	Northbo	und		S	outhbou	nd					
Movement	1	4	7	8		9	10	11		12				
Lane Configuration	L				Ī			LTR	T					
v (veh/h)	162							100						
C (m) (veh/h)	1257				Ĩ			558	Ĩ					
v/c	0.13							0.18	Í					
95% queue length	0.44							0.65						
Control Delay (s/veh)	8.3							12.9	╈					
LOS	A							В	╡					
Approach Delav (s/veh)			L					12.9						
Approach LOS								B						
			L				l	-						

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	TW	O-WAY STOP	CONTR	OL SI	JMN	MARY					
General Information	n		Site I	Site Information							
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction							
Date Performed	11/21/201	13	Analys	sis Yea	r		2043				
Analysis Time Period											
Project Description Ju	neau Creek Alte	ernative Variant 2	·								
East/West Street: NEW	//OLD STERLIN	IG HIGHWAY	North/S	North/South Street: SPORTSMAN'S ACCESS							
Intersection Orientation:	East-West		Study Period (hrs): 0.25								
Vehicle Volumes ar	nd Adjustme	Adjustments									
Major Street		Eastbound	1 .				Westbound				
Movement		2	3			4	5			6	
Volumo (voh/h)		121	R 22			L 10	76			ĸ	
Peak-Hour Factor PHF	0.95	0.95	0.95			19 0.95	70 0.95		0	95	
Hourly Flow Bate HFR	0.00	0.00	0.00			0.00	0.00				
(veh/h)	0	137	34			20	80			0	
Percent Heavy Vehicles	0					24					
Median Type				Undiv	/idec	1					
RT Channelized			0							0	
Lanes	0	1	1			1	1			0	
Configuration		Т	R			L	Т				
Upstream Signal		0					0				
Minor Street		Northbound					Southbound				
Movement	7	8	9			10	11		11		
	L	Т	R			L	Т			R	
Volume (veh/h)	19		33								
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95		
Hourly Flow Rate, HFR (veh/h)	20	0	34			0	0		0		
Percent Heavy Vehicles	24	0	24		0		0			0	
Percent Grade (%)		0					0				
Flared Approach		N					N				
Storage		0					0				
RT Channelized			0							0	
Lanes	0	0	0	Ĩ		0	0			0	
Configuration		LR									
Delay, Queue Length, a	Ind Level of Se	rvice									
Approach	Eastbound	Westbound	1	Northbo	ound		S	outhb	ound		
Movement	1	4	7	8		9	10	1.	1	12	
Lane Configuration		L		LR							
v (veh/h)		20		54							
C (m) (veh/h)		1283		779	9						
v/c		0.02		0.0	7						
95% queue length		0.05		0.22	2						
Control Delav (s/veh)		7.9		10.0)		1	i			
		A		A			1				
Approach Delay (s/yeh)				10/	າ	Į		I			
$\frac{1}{2} \sum_{i=1}^{n} \frac{1}{2} \sum_{i=1}^{n} \frac{1}$				Δ	•						
Appilacii LOO			A								

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APPENDIX D3 Cooper Creek

	TW	O-WAY STOP	CONTR	OL SI	JMN	MARY						
General Informatio	n		Site I	Site Information								
Analyst			Interse	ection								
Agency/Co.	ĺ		Jurisdi	ction								
Date Performed	11/20/201	13	Analys	Analysis Year 2043		2043						
Analysis Time Period												
Project Description Co	ooper Creek Alte	ernative										
East/West Street: BEA	N CREEK		North/S	South S	Stree	t: STERL	STERLING HIGHWAY					
Intersection Orientation:	North-South		Study I	Period	(hrs)	: 0.25						
Vehicle Volumes ar	nd Adjustme	stments										
Major Street		Northbound					Southbou	Ind				
Movement	1	2	3			4	5			6		
	L L	т	R			L	<u> </u>			R		
Volume (veh/h)	7	527					263			11		
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0	.95		
Hourly Flow Rate, HFR (veh/h)	7	554	0			0	276			11		
Percent Heavy Vehicles	24					0						
Median Type				Undiv	<i>videa</i>	1						
RT Channelized			0							0		
Lanes	1	1	0			0	1			1		
Configuration	L	Т					Т			R		
Upstream Signal		0					0					
Minor Street		Eastbound					Westbound					
Movement	7	8	9			10	11			12		
	L	Т	R			L	Т	Т		R		
Volume (veh/h)	26		20									
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95			
Hourly Flow Rate, HFR (veh/h)	27	0	21			0	о		0			
Percent Heavy Vehicles	24	0	24			0	0			0		
Percent Grade (%)	1	0		ĺ			0					
Flared Approach		N					N					
Storage		0					0					
RT Channelized			0	Î						0		
Lanes	1	0	1			0	0			0		
Configuration	L		R	Í			ĺ	- T				
Delay, Queue Length, a	and Level of Se	ervice										
Approach	Northbound	Southbound		Westbo	ound		E	Eastbo	ound			
Movement	1	4	7	8		9	10	1.	1	12		
Lane Configuration	L						L			R		
v (veh/h)	7						27			21		
C (m) (veh/h)	1159						304			713		
v/c	0.01						0.09			0.03		
95% queue length	0.02						0.29			0.00		
Control Delay (c/uch)	Q 1						18.0			10.00		
	0. I						10.0			л <i>0.2</i>		
	А						U U			В		
Approach Delay (s/veh)								14.6	5			
Approach LOS								В				

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	тw	O-WAY STOP	CONTR	OL SU	MN	IARY								
General Informatio	n		Site I	Site Information										
Analyst	Í		Interse	ection										
Agency/Co.	1		Jurisdi	ction			Í							
Date Performed	11/20/201	13	Analys	is Year			2043							
Analysis Time Period														
Project Description Co	ooper Creek Alte	ernative												
East/West Street: SNU	G HARBOR		North/S	South St	treet	: STERLI	ING HIGHWAY							
Intersection Orientation:	North-South		Study I	Study Period (hrs): 0.25										
Vehicle Volumes ar	nd Adjustme	d Adjustments												
Major Street		Northbound	_				Southbou	Ind						
Movement	1	2	3			4	5			6				
		1	R			L	1			R				
Volume (veh/h)	8	363	10	 -		8	197			/8				
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0	.95				
(veh/h)	8	382	10			8	207		82					
Percent Heavy Vehicles	24					24								
Median Type				Undivi	ided									
RT Channelized			1							1				
Lanes	1	1	1			1	1			1				
Configuration	L	Т	R			L	Т		T				T R	
Upstream Signal		0			0		0		0					
Minor Street		Eastbound					Westbound							
Movement	7	8	9			10	11			12				
	L	Т	R			L	Т	т		R				
Volume (veh/h)	143	4	4			8	4	ĺ	27					
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0	.95				
Hourly Flow Rate, HFR (veh/h)	150	4	4			8	4			28				
Percent Heavy Vehicles	24	24	24			24	24			24				
Percent Grade (%)		0					0							
Flared Approach		N					N							
Storage		0					0							
RT Channelized			1							1				
Lanes	0	1	1			0	1			1				
Configuration	LT		R			LT		Î		R				
Delay, Queue Length, a	and Level of Se	rvice												
Approach	Northbound	Southbound		Westbou	und		E	astbo	ound					
Movement	1	4	7	8		9	10	1	1	12				
Lane Configuration	L	L	LT		Ĩ	R	LT			R				
v (veh/h)	8	8	12		Î	28	154			4				
C (m) (veh/h)	1243	1066	348			619	344			781				
v/c	0.01	0.01	0.03			0.05	0.45			0.01				
95% gueue length	0.02	0.02	0.11			0.14	2.22			0.02				
Control Delay (s/veh)	7.9	8.4	15.7			11.1	23.7			9.6				
LOS	A	A	С			В	С			A				
Approach Delay (s/veh)				12.5	(23.3	3					
Approach LOS				В				С						
LOS Approach Delay (s/veh) Approach LOS	A 	A 	С	12.5 В		В	23.7 C 23.3 C		A					

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	TW	O-WAY STOP	CONTR	OL SI	JMN	IARY						
General Informatio	n		Site I	Site Information								
Analyst			Interse	ection								
Agency/Co.			Jurisdi	ction								
Date Performed	11/20/201	13	Analys	is Yea	r		2043					
Analysis Time Period												
Project Description Co	ooper Creek Alte	ernative										
East/West Street: STE	RLING HIGHWA	4 <i>Y</i>	North/South Street: KENAI RIVER									
Intersection Orientation:	East-West		Study I	Period	(hrs)	: 0.25						
Vehicle Volumes ar	nd Adjustme	djustments										
Major Street		Eastbound				Westbou	nd					
Movement	1	2	3			4	5		6			
		T	R			L	<u> </u>		R			
Volume (veh/h)	7	132				0.05	75		8			
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95			
(veh/h)	7	138	0			0	78		8			
Percent Heavy Vehicles	24					0						
Median Type				Undiv	vided							
RT Channelized			0						0			
Lanes	0	1	0			0	1		0			
Configuration	LT								TR			
Upstream Signal		0					0					
Minor Street		Northbound					Southbound					
Movement	7	8	9			10	11		12			
	L	Т	R			L	Т		R			
Volume (veh/h)						12			34			
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95			
Hourly Flow Rate, HFR (veh/h)	0	0	0			12	0		35			
Percent Heavy Vehicles	0	0	0			24 0			24			
Percent Grade (%)	1	0		ĺ			0					
Flared Approach		N					N					
Storage		0					0					
RT Channelized			0						0			
Lanes	0	0	0	ĺ		0	0		0			
Configuration							LR					
Delay, Queue Length, a	and Level of Se	ervice										
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhboun	d			
Movement	1	4	7	8		9	10	11	12			
Lane Configuration	LT							LR				
v (veh/h)	7				Î			47	1			
C (m) (veh/h)	1382							853				
v/c	0.01							0.06				
95% queue length	0.02							0.00				
Control Delay (s/yoh)	76							0.17				
	7.0							9.0				
	А						ļ					
Approach Delay (s/veh)								9.5				
Approach LOS							Α					

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	TW	O-WAY STOP	CONTR		MARY						
General Information	n		Site Information								
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction		1					
Date Performed	11/20/201	13	Analys	Analysis Year 2043							
Analysis Time Period											
Project Description Ca	oper Creek Alte	ernative									
East/West Street: STEI	RLING HIGHWA	4 <i>Y</i>	North/S	South Stre	eet: HAMIL	TON PLAC	E				
Intersection Orientation:	East-West		Study I	Period (hr	rs): <i>0.25</i>						
Vehicle Volumes ar	nd Adjustme	Adjustments									
Major Street		Eastbound				Westbou	nd				
Movement	1	2	3		4	5		6			
	L	Т	R		L	Т		R			
Volume (veh/h)	11	139	14		4	93		12			
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95	().95			
Hourly Flow Rate, HFR (veh/h)	11	146	14		4	97		12			
Percent Heavy Vehicles	24				24						
Median Type				Undivid	ed						
RT Channelized			0					0			
Lanes	0	1	0		0	1		0			
Configuration	LTR				LTR						
Upstream Signal		0				0					
Minor Street		Northbound				Southbound					
Movement	7	8	9		10	11		12			
	L	Т	R		L	Т	т				
Volume (veh/h)	0	0	0		0 0			3			
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95	().95			
Hourly Flow Rate, HFR (veh/h)	0	0	0		0	О		3			
Percent Heavy Vehicles	24	24	24		24	24		24			
Percent Grade (%)	1	0	•			0					
Flared Approach		N				N					
Storage		0				0					
RT Channelized			0					0			
Lanes	0	1	0		0	1		0			
Configuration	1	LTR	Í			LTR					
Delay, Queue Length, a	nd Level of Se	ervice									
Approach	Eastbound	Westbound	1	Vorthboui	nd	S	outhbound				
Movement	1	4	7	8	9	10	11	12			
Lane Configuration	LTR	LTR		LTR			LTR				
v (veh/h)	11	4		0			3				
C (m) (veh/h)	1355	1296					895				
v/c	0.01	0.00					0.00				
95% queue length	0.02	0.01					0.01				
Control Delay (s/veh)	7.7	7.8				ĺ	9.0				
LOS	А	A					A				
Approach Delay (s/veh)							9.0				
Approach LOS							Α				

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	TW	O-WAY STOP	CONTR	OL SU	JMN	IARY										
General Information	n		Site I	Site Information												
Analyst			Interse	ection												
Agency/Co.			Jurisdi	ction												
Date Performed	11/20/20	13	Analys	Analysis Year 2043												
Analysis Time Period																
Project Description Co	ooper Creek Alt	ernative														
East/West Street: STEI	RLING HIGHW/	4 <i>Y</i>	North/S	h/South Street: OLD STERLING HIGHWAY WC				VC								
Intersection Orientation:	East-West		Study I	Period (hrs):	0.25										
Vehicle Volumes ar	nd Adjustme	Adjustments														
Major Street		Eastbound				Westbound										
Movement	1	2	3			4	5			6						
	L	T	R			L	T			R						
Volume (veh/h)	154	359				0.05	176			10						
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0	.95						
(veh/h)	162	377	0			0	185			10						
Percent Heavy Vehicles	24					0										
Median Type				Undivi	ided											
RT Channelized			0							0						
Lanes	1	1	0			0	1			1						
Configuration	L	Т		T T			Т		T		Т		T		R	
Upstream Signal		0					0									
Minor Street	Î	Northbound					Southbound									
Movement	7	8	9			10	11		11			12				
	L	Т	R			L	Т		R							
Volume (veh/h)						19	0		76							
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95							
Hourly Flow Rate, HFR (veh/h)	0	0	0			20	0	0 80		80						
Percent Heavy Vehicles	0	0	0			24 0				24						
Percent Grade (%)	1	0		î			0									
Flared Approach	1	N					N									
Storage		0					0									
RT Channelized			0							0						
Lanes	0	0	0			0	1			0						
Configuration							LTR									
Delay, Queue Length, a	nd Level of Se	ervice														
Approach	Eastbound	Westbound	1	Vorthbo	und		S	outhbo	ound							
Movement	1	4	7	8		9	10	11		12						
Lane Configuration	L							LTF	3							
v (veh/h)	162				Ť			100	,							
C (m) (veh/h)	1257							558	3							
v/c	0.13							0.18	3							
95% queue length	0.44						<u> </u>			0.64	5					
Control Doloy (c/ych)	0.74 0.2							10.00	<u>,</u>							
Control Delay (S/Vell)	0.3				-+			12.8	7							
	A	ļ						В								
Approach Delay (s/veh)								12.9								
Approach LOS							В									

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APPENDIX D4 Juneau Creek without Bridge

	TWO	D-WAY STOP	CONTROL SUMMARY								
General Information	n		Site I	nform	atic	n					
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction							
Date Performed	11/20/201	3	Analys	is Yea	r		2043				
Analysis Time Period											
Project Description Ju	neau Creek Alte	ernative Without S	Schooner E	Rend Br	ridge		-				
East/West Street: NEW	STERLING HI	GHWAY	North/S	South S	Street	t: OLD ST	TERLING H	IIGHV	VAY E	C	
Intersection Orientation:	East-West	-	Study I	Period	(hrs)	0.25					
Vehicle Volumes ar	nd Adjustme	nts		1							
Major Street		Eastbound					Westbound				
Movement		2 T	3			4				6	
Valuma (yah/h)		115	1 20			L 61	211			ĸ	
Peak-Hour Factor PHF	0.95	415	0.95			01	0.95		(1 95	
Hourly Flow Bate, HFR	0.00	0.00	0.00			0.00	0.00		L		
(veh/h)	0	436	135			64	222			0	
Percent Heavy Vehicles	0					24					
Median Type			_	Undiv	<i>ided</i>						
RT Channelized			0							0	
Lanes	0	1	1			1	1			0	
Configuration		Т	R			L	Т				
Upstream Signal		0					0				
Minor Street		Northbound					Southbou	ind			
Movement	7	8	9			10	11			12	
	L	Т	R			L	Т			R	
Volume (veh/h)	65		139								
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		().95	
Hourly Flow Rate, HFR (veh/h)	68	0	146			0	0			0	
Percent Heavy Vehicles	24	0	24			0	0			0	
Percent Grade (%)		0					0				
Flared Approach		N					N				
Storage		0					0				
RT Channelized			0	Ĩ						0	
Lanes	1	0	1			0	0			0	
Configuration	L		R					ĺ			
Delay, Queue Length, a	Ind Level of Se	rvice									
Approach	Eastbound	Westbound	1	Vorthbo	ound		S	outhb	ound		
Movement	1	4	7	8		9	10	1	1	12	
Lane Configuration		L	L			R					
v (veh/h)		64	68		Î	146					
C (m) (veh/h)		901	308			576					
v/c		0.07	0.22			0.25	i	i			
95% queue length		0.23	0.83			1.00					
Control Delav (s/veh)		9.3	20.0			13.4					
		A	 C			B					
Approach Delay (s/yeh)	 			15 4	5	2		I			
Approach LOS					,						
Approach LOS				C							

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	TW	TWO-WAY STOP C			CONTROL SUMMARY						
General Information	n		Site I	nform	atic	on					
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction			1				
Date Performed	11/20/20	13	Analys	is Year			2043				
Analysis Time Period											
Project Description Ju	neau Creek Alte	ernative Without S	Schooner E	Bend Br	idge						
East/West Street: STEI	RLING HIGHWA	٩Y	North/S	South S	tree	t: BEAN C	CREAK (NC	DRTH)			
Intersection Orientation:	East-West		Study I	Period ((hrs)	: 0.25					
Vehicle Volumes ar	nd Adjustme	ents									
Major Street		Eastbound					Westbou	nd			
Movement	1	2	3			4	5		(о̀	
		T	R				T		F	۲	
Volume (veh/h)	0	167				0.05	177		1.	4	
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.9	15	
(veh/h)	0	175	0			0	186		1.	4	
Percent Heavy Vehicles	24					0				-	
Median Type				Undiv	ided						
RT Channelized			0						0)	
Lanes	0	1	0	Ī		0	1		C)	
Configuration	LT								Т	R	
Upstream Signal		0					0				
Minor Street		Northbound					Southbou	ind			
Movement	7	8	9			10	11		1	2	
	L	Т	R			L	Т		F	7	
Volume (veh/h)						37			C)	
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.9) 5	
Hourly Flow Rate, HFR (veh/h)	0	0	0			38	0		C)	
Percent Heavy Vehicles	0	0	0		24		0		2	4	
Percent Grade (%)		0			1		0				
Flared Approach		N	1				N				
Storage		0	Í				0				
RT Channelized			0						0)	
Lanes	0	0	0			0	0		C)	
Configuration							LR				
Delay, Queue Length, a	nd Level of Se	ervice									
Approach	Eastbound	Westbound	1	Northbo	und		S	outhbou	۱d		
Movement	1	4	7	8		9	10	11		12	
Lane Configuration	LT							LR	Т		
v (veh/h)	0				Î			38	Т		
C (m) (veh/h)	1251							591	Ť		
v/c	0.00							0.06	╈		
95% queue length	0.00							0.21	╈		
Control Delay (s/veh)	79							11 5	╋		
	Δ							, 1.5 R	╉		
Approach Dolou (chuch)	7										
Approach Delay (s/ven)								11.5			
Approach LOS								В			

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	TW	O-WAY STOP	CONTR	CONTROL SUMMARY							
General Informatio	n		Site I	nform	ation)					
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction							
Date Performed	11/20/20	13	Analys	is Year			2043				
Analysis Time Period											
Project Description Ju	neau Creek Alt	ernative Without S	Schooner E	Rend Bri	idge						
East/West Street: BEA	N CREEK (SOL	ITH)	North/S	South St	treet:	STERL	ING HIGHV	VAY			
Intersection Orientation:	North-South		Study I	Period (hrs):	0.25					
Vehicle Volumes ar	nd Adjustme	ents									
Major Street		Northbound					Southbound				
Movement	1	2	3			4	5			6	
	L	Т	R			L	T			R	
Volume (veh/h)	1	161					174			3	
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.	95	0.95		0.	95	
Hourly Flow Rate, HFR (veh/h)	1	169	0			0	183		ť	3	
Percent Heavy Vehicles	24			0		0			-	-	
Median Type				Undivi	ided						
RT Channelized			0						()	
Lanes	0	1	0			0	1		()	
Configuration	LT		1						Т	R	
Upstream Signal		0	1				0				
Minor Street		Eastbound					Westbou	nd			
Movement	7	8	9			10	11		1	2	
	L	Т	R			L	Т			R	
Volume (veh/h)	7		5								
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.	95	0.95		0.	95	
Hourly Flow Rate, HFR (veh/h)	7	0	5			0	0		()	
Percent Heavy Vehicles	24	0	24		0		0		()	
Percent Grade (%)		0					0				
Flared Approach		N					N				
Storage		0					0				
RT Channelized	1		0						()	
Lanes	0	0	0			0	0		()	
Configuration		LR		î							
Delay, Queue Length, a	and Level of Se	ervice									
Approach	Northbound	Southbound		Vestbo	und		E	Eastbou	nd		
Movement	1	4	7	8		9	10	11		12	
Lane Configuration	LT							LR			
v (veh/h)	1							12	T		
C (m) (veh/h)	1267							672			
v/c	0.00							0.02			
95% queue length	0.00							0.05			
Control Delay (s/veh)	7.8							10.5	╋		
105	A							 R	+		
Approach Delay (s/yoh)								105			
Approach LOS								10.J D			
Appilacii LOS							В				

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	TW	O-WAY STOP	CONTROL SUMMARY							
General Information	n		Site I	nform	natic	on				
Analyst			Interse	ection						
Agency/Co.	l l		Jurisdi	ction			1			
Date Performed	11/20/20	13	Analys	is Yea	r		2043			
Analysis Time Period										
Project Description Ju	neau Creek Alt	ernative Without S	Schooner E	Bend B	ridge					
East/West Street: STEI	RLING HIGHW/	4 <i>Y</i>	North/S	South S	Street	t: SNUG	HARBOR			
Intersection Orientation:	East-West		Study I	Period	(hrs)	: 0.25				
Vehicle Volumes ar	nd Adjustme	ents								
Major Street		Eastbound					Westbound			
Movement	1	2	3			4			6	
		100	R R			L				К
Volume (ven/n) Book Hour Footor, PHE	0.05	128	3			15	151			05
Hourly Flow Bate HER	0.95	0.95	0.95			0.95	0.95		0	.95
(veh/h)	0	134	3			15	158			0
Percent Heavy Vehicles	11					24		Ĺ		
Median Type				Undiv	vided	1	,			
RT Channelized			0							0
Lanes	0	1	0			0	1			0
Configuration			TR			LT				
Upstream Signal		0					0			
Minor Street		Northbound					Southbou	Ind		
Movement	7	8	9			10	11			12
	L	Т	R			L	Т			R
Volume (veh/h)	3		34							
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0	.95
Hourly Flow Rate, HFR (veh/h)	3	0	35			0	о			0
Percent Heavy Vehicles	24	0	24		0		0			0
Percent Grade (%)		0			ĺ		0			
Flared Approach		N					N			
Storage		0					0			
RT Channelized	1		0				1			0
Lanes	0	0	0			0	0			0
Configuration	1	LR					1			
Delay, Queue Length, a	nd Level of Se	ervice					P			
Approach	Eastbound	Westbound	1	Northbo	ound		S	outhbo	und	
Movement	1	4	7	8		9	10	11		12
Lane Configuration		LT		LR	· 1		1			
v (veh/h)		15		38	Î		Î			
C (m) (veh/h)		1322		832	2					
v/c		0.01		0.0	5					
95% queue length		0.03		0.14	4					
Control Delay (s/veh)		7.8		9.5	;					
LOS		A		A						
Approach Delay (s/veh)				9.5	;			,		
Approach LOS				Α						

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	TW	O-WAY STOP	CONTR	CONTROL SUMMARY							
General Information	n		Site I	nform	atio	n					
Analyst			Interse	ection							
Agency/Co.			Jurisdi	ction			1				
Date Performed	11/20/20	13	Analys	is Year			2043				
Analysis Time Period											
Project Description Ju	neau Creek Alte	ernative Without S	Schooner E	Bend Br	idge						
East/West Street: STEI	RLING HIGHWA	4 <i>Y</i>	North/S	South S	treet	: KENAL	RIVER				
Intersection Orientation:	East-West		Study I	Period ((hrs):	0.25					
Vehicle Volumes ar	nd Adjustme	ents									
Major Street		Eastbound					Westbou	nd			
Movement	1	2	3			4	5		6		
			R			L	T		R		
Volume (veh/h)	3	78				0.05	139		15		
Peak-Hour Factor, PHF	0.95	0.95	0.95		(0.95	0.95		0.95		
(veh/h)	3	82	0			0	146		15		
Percent Heavy Vehicles	24					0					
Median Type			Undi		ided						
RT Channelized			0						0		
Lanes	0	1	0			0	1		0		
Configuration	LT			1				ĺ	TR		
Upstream Signal		0					0				
Minor Street		Northbound					Southbou	nd			
Movement	7	8	3 9			10	11		12		
	L	Т	R			L	Т		R		
Volume (veh/h)						53			10		
Peak-Hour Factor, PHF	0.95	0.95	0.95		(0.95	0.95		0.95		
Hourly Flow Rate, HFR (veh/h)	0	0	0			55	0		10		
Percent Heavy Vehicles	0	0	0			24	0		24		
Percent Grade (%)	1	0		Ī			0				
Flared Approach		N					N				
Storage		0					0				
RT Channelized			0						0		
Lanes	0	0	0			0	0		0		
Configuration							LR				
Delay, Queue Length, a	and Level of Se	ervice									
Approach	Eastbound	Westbound	1	Northbo	und		S	outhbou	nd		
Movement	1	4	7	8		9	10	11	12		
Lane Configuration	LT							LR			
v (veh/h)	3							65			
C (m) (veh/h)	1295							717	1		
v/c	0.00	()						0.09			
95% aueue lenath	0.01							0.30			
Control Delay (s/veh)	7.8	()		ļ	¦-			10.5			
	Δ				-+			 R			
LOU Approach Delay (aluch)	7							10.5			
Approach Delay (s/ven)								10.5			
Approach LOS								В			

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	TW	TWO-WAY STOP C			CONTROL SUMMARY						
General Information	n		Site I	nforma	tion						
Analyst			Interse	ction							
Agency/Co.			Jurisdi	ction			1				
Date Performed	10/20/201	13	Analys	is Year			2043				
Analysis Time Period											
Project Description Ju	neau Creek Alte	ernative Without S	Schooner E	end Bric	lge						
East/West Street: STEI	RLING HIGHWA	4 <i>Y</i>	North/S	South Str	reet: h	IAMIL	TON PLAC	E			
Intersection Orientation:	East-West		Study I	Period (h	rs): <i>0.</i>	25					
Vehicle Volumes ar	nd Adjustme	nts									
Major Street		Eastbound					Westbou	nd			
Movement	1	2	3		4		5			6	
	<u> </u>	T	R		L		T			R	
Volume (veh/h)	4	78	4		16		110		2	2	
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95		0.95		0.	95	
Hourly Flow Rate, HFR (veh/h)	4	82	4		16		115		2	3	
Percent Heavy Vehicles	24								-	-	
Median Type			Undi		led						
RT Channelized			0						()	
Lanes	0	1	0		0		1		()	
Configuration	LTR				LTR)	[- î			
Upstream Signal		0					0				
Minor Street		Northbound					Southbou	ind			
Movement	7	8	9		10		11		1	2	
	L	Т	R		L		Т			R	
Volume (veh/h)	0	0	0		3		0		i	1	
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95		0.95			95	
Hourly Flow Rate, HFR (veh/h)	0	0	0		3		0			1	
Percent Heavy Vehicles	24	24	24		24		24		2	4	
Percent Grade (%)		0					0				
Flared Approach	1	N	1				N				
Storage		0	1				0				
RT Channelized	Î		0				[- î	()	
Lanes	0	1	0		0		1		()	
Configuration	1	LTR	1				LTR				
Delay, Queue Length, a	and Level of Se	ervice	- -								
Approach	Eastbound	Westbound	1	Vorthbou	Ind		S	outhbou	nd		
Movement	1	4	7	8		9	10	11		12	
Lane Configuration	LTR	LTR		LTR				LTR			
v (veh/h)	4	16		0			ĺ	4			
C (m) (veh/h)	1321	1382						695			
v/c	0.00	0.01						0.01			
95% queue length	0.01	0.04						0.02			
Control Delay (s/veh)	7.7	7.6						10.2			
LOS	A	A						В	T		
Approach Delay (s/veh)				,			1	10.2			
Approach LOS							В				

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	TW	O-WAY STOP	CONTR	CONTROL SUMMARY						
General Information	า		Site I	nforma	tion					
Analyst			Interse	ection					$\neg \neg$	
Agency/Co.			Jurisdi	ction						
Date Performed	11/20/20	13	Analys	is Year		2043				
Analysis Time Period										
Project Description Ju	neau Creek Alt	W/o Schooner Be	end Bridge							
East/West Street: STEF	RLING HIGHWA	4 <i>Y</i>	North/S	South Str	eet: OLD S	STERLING F	IIGHWA	Y WC		
Intersection Orientation:	East-West		Study I	Period (h	rs): <i>0.25</i>					
Vehicle Volumes ar	nd Adjustme	ents								
Major Street		Eastbound				Westbou	nd			
Movement	1	2	3		4	5		6		
		1 1	R					<u> </u>		
Volume (veh/h)	0.05	4/4	38		30	234		0.05		
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95		
(veh/h)	0	498	40		31	246		0		
Percent Heavy Vehicles	11			ĺ	24	24				
Median Type				Undivia	led					
RT Channelized			0					0		
Lanes	0	1	1		1	1		0		
Configuration		Т	R		L	Т				
Upstream Signal		0				0				
Minor Street		Northbound				Southbou	und			
Movement	7	8	9		10	11		12		
	L	Т	R		L	Т		R		
Volume (veh/h)	19	0	46							
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95		
Hourly Flow Rate, HFR (veh/h)	20	0	48		0	0		0		
Percent Heavy Vehicles	24	0	24	11		0		0		
Percent Grade (%)		0				0				
Flared Approach		N				N				
Storage		0				0				
RT Channelized			0			Î	- Î	0		
Lanes	0	1	0		0	0		0		
Configuration		LTR								
Delay, Queue Length, a	nd Level of Se	ervice								
Approach	Eastbound	Westbound	1	Vorthbou	Ind	s	outhbou	und		
Movement	1	4	7	8	9	10	11		12	
Lane Configuration		L		LTR						
v (veh/h)		31		68						
C (m) (veh/h)		928		440						
v/c		0.03		0.15						
95% queue length		0.10		0.54						
Control Delay (s/veh)		9.0		14.7		1				
LOS		A		В		Î	<u> </u>			
Approach Delay (s/veh)				14.7		1	-			
Approach LOS				В						

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APPENDIX E

INTERSECTION CAPACITY UTILIZATION RESULTS

APPENDIX E1 NO BUILD

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Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	1.			ភ	¥		
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	527	10	7	250	8	27	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	573	11	8	272	9	29	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			584		865	578	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			584		865	578	
tC, single (s)			4.3		6.6	6.4	
tC, 2 stage (s)							
tF (s)			2.4		3.7	3.5	
p0 queue free %			99		97	94	
cM capacity (veh/h)			891		294	476	
Direction, Lane #	EB 1	WB 1	NB 1				
Volume Total	584	279	38				
Volume Left	0	8	9				
Volume Right	11	0	29				
cSH	1700	891	417				
Volume to Capacity	0.34	0.01	0.09				
Queue Length (ft)	0	1	7				
Control Delay (s)	0.0	0.3	14.5				
Lane LOS		А	В				
Approach Delay (s)	0.0	0.3	14.5				
Approach LOS			В				
Intersection Summary							
Average Delay			0.7				
Intersection Capacity Uti	lization		38.3%	I	CU Leve	l of Serv	vice
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		ર્સ	ĥ		- M				
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Volume (veh/h)	7	509	245	7	11	33			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	8	553	266	8	12	36			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume	274				839	270			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	274				839	270			
tC, single (s)	4.3				6.6	6.4			
tC, 2 stage (s)									
tF (s)	2.4				3.7	3.5			
p0 queue free %	99				96	95			
cM capacity (veh/h)	1172				306	719			
Direction, Lane #	EB 1	WB 1	SB 1						
Volume Total	561	274	48						
Volume Left	8	0	12						
Volume Right	0	8	36						
cSH	1172	1700	538						
Volume to Capacity	0.01	0.16	0.09						
Queue Length (ft)	0	0	7						
Control Delay (s)	0.2	0.0	12.3						
Lane LOS	А		В						
Approach Delay (s)	0.2	0.0	12.3						
Approach LOS			В						
Intersection Summary									
Average Delay			0.8						
Intersection Capacity U	tilization		42.4%	10	CU Leve	el of Servi	се	А	
Analysis Period (min)			15						

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			\$			\$	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	10	490	12	4	250	11	0	0	0	0	0	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	533	13	4	272	12	0	0	0	0	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked	004			E 40			054	050	500	0.47	054	070
vC, conflicting volume	284			546			851	853	539	847	854	278
vC1, stage 1 conf vol												
VC2, stage 2 cont vol	004			E 4 C			051	050	500	047	054	070
	204			040 4 0			7 2	600	539	047	67	210
$C_{\rm c}$ single (s)	4.3			4.3			7.3	0.7	0.4	1.3	0.7	0.4
tE(c)	24			24			37	10	35	37	10	35
	2.4			100			100	100	100	100	100	100
cM capacity (yeh/h)	1162			922			253	269	502	256	269	711
	1102			522			200	203	502	200	203	711
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	557	288	0	3								
Volume Left	11	4	0	0								
Volume Right	13	12	0	3								
cSH	1162	922	1700	711								
Volume to Capacity	0.01	0.00	0.00	0.00								
Queue Length (ft)	1	0	0	0								
Control Delay (s)	0.3	0.2	0.0	10.1								
Lane LOS	A	A	A	B								
Approach Delay (s)	0.3	0.2	0.0	10.1								
Approach LOS			A	В								
Intersection Summary												
Average Delay			0.3									
Intersection Capacity U	tilization		42.1%	ŀ	CU Leve	el of Ser	vice		A			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		र्भ	4Î		- M			
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Volume (veh/h)	0	557	241	8	20	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	0	605	262	9	22	0		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type					None			
Median storage veh)								
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	271				872	266		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	271				872	266		
tC, single (s)	4.3				6.6	6.4		
tC, 2 stage (s)								
tF (s)	2.4				3.7	3.5		
p0 queue free %	100				93	100		
cM capacity (veh/h)	1176				294	722		
Direction Lane #	FR 1	WR 1	SR 1					
Volume Total	605	271	22					
Volume Left	000	0	22					
Volume Bight	0	0	22					
	1176	1700	20/					
Volume to Canacity	0.00	0.16	0.07					
Ouque Length (ft)	0.00	0.10	6.07					
Control Delay (c)	0	0	18.2					
Lang LOS	0.0	0.0	10.2					
Approach Dolay (c)	0.0	0.0	18.2					
Approach LOS	0.0	0.0	10.2					
			U					
Intersection Summary								
Average Delay			0.4		0111			
Intersection Capacity Ut	tilization		39.3%](CU Leve	el of Servi	ce	F
Analysis Period (min)			15					

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Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	- M			ę	ef 🕺			
Sign Control	Stop			Free	Free			
Grade	0%			0%	0%			
Volume (veh/h)	7	20	7	550	238	3		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	8	22	8	598	259	3		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type	None							
Median storage veh)								
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	873	260	262					
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	873	260	262					
tC, single (s)	6.6	6.4	4.3					
tC, 2 stage (s)								
tF (s)	3.7	3.5	2.4					
p0 queue free %	97	97	99					
cM capacity (veh/h)	292	728	1185					
Direction, Lane #	EB 1	NB 1	SB 1					
Volume Total	29	605	262					
Volume Left	8	8	0					
Volume Right	22	0	3					
cSH	525	1185	1700					
Volume to Capacity	0.06	0.01	0.15					
Queue Length (ft)	4	0	0					
Control Delay (s)	12.3	0.2	0.0					
Lane LOS	В	Α						
Approach Delay (s)	12.3	0.2	0.0					
Approach LOS	В							
Intersection Summary								
Average Delay			0.5					
Intersection Capacity U	tilization		44.5%	IC	CU Leve	l of Servic	e	А
Analysis Period (min)			15					

APPENDIX E₂ Juneau Creek and G-South

	-	\rightarrow	×.	-	1	1	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	1.			្ឋ	M		
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	121	11	7	93	10	29	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	132	12	8	101	11	32	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			143		254	138	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			143		254	138	
tC, single (s)			4.3		6.6	6.4	
tC, 2 stage (s)							
tF (s)			2.4		3.7	3.5	
p0 queue free %			99		98	96	
cM capacity (veh/h)			1315		686	856	
Direction, Lane #	EB 1	WB 1	NB 1				
Volume Total	143	109	42				
Volume Left	0	8	11				
Volume Right	12	0	32				
cSH	1700	1315	804				
Volume to Capacity	0.08	0.01	0.05				
Queue Length (ft)	0	0	4				
Control Delay (s)	0.0	0.6	9.7				
Lane LOS		Α	А				
Approach Delay (s)	0.0	0.6	9.7				
Approach LOS			А				
Intersection Summary							
Average Delay			1.6				
Intersection Capacity Uti	lization		20.7%	10	CU Leve	l of Serv	ice
Analysis Period (min)			15				

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EBT	EBR	WBL	WBT	NBL	NBR	
•	1	5	•	5	1	
Free			Free	Stop		
0%			0%	0%		
388	8	82	191	4	166	
0.92	0.92	0.92	0.92	0.92	0.92	
422	9	89	208	4	180	
					4	
				None		
		430		808	422	
		430		808	422	
		4.3		6.6	6.4	
		2.4		3.7	3.5	
		91		99	69	
		1021		294	587	
EB 1	EB 2	WB 1	WB 2	NB 1		
422	9	89	208	185		
0	0	89	0	4		
0	9	0	0	180		
1700	1700	1021	1700	602		
0.25	0.01	0.09	0.12	0.31		
0	0	7	0	32		
0.0	0.0	8.9	0.0	13.9		
		А		В		
0.0		2.7		13.9		
				В		
		3.7				
lization		38.3%](CU Leve	l of Servi	/ice
		15				
	EBT Free 0% 388 0.92 422 422 1 422 0 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.25 0 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 1700 0.00 170	■ ■ EBT EBR ● ● Free ● 0% 0 388 8 0.92 0.92 422 9 ● ● EB1 EB2 422 9 ● ● ● ● ● ● ● ● ● ● ● ● ● <	►BT EBR WBL ▲ ▲ ▲ Free ✓ ▲ 0% ✓ ✓ 388 8 82 0.92 0.92 0.92 422 9 89 422 9 89 422 9 89 430 430 430 4.3 430 4.3 430 4.3 422 9 430 4.3 430 4.3 422 9 91 1021 422 9 91 1021 422 9 91 1021 422 9 91 1021 1021 1021 422 9 90 0 0 9 0 9 0 0 1700 1700 1700 0.0 0.0 38.3% 0.0 </td <td>EBT EBR WBL WBT Free i i i 0% i 0% 0% 388 8 82 191 0.92 0.92 0.92 0.92 422 9 89 208 422 9 89 208 430 10 10 10 430 4.3 10 10 430 4.3 10 10 430 4.3 10 10 430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 442 9 89 208 0 0 89 0 0 0 89 0 0 0 7 0 0.0 0.0 89 0.0 0.0 0.0 89 0.0</td> <td>EBT EBR WBL WBT NBL Free I Free Stop 0% 0% 0% 0% 388 8 82 191 4 0.92 0.92 0.92 0.92 422 9 89 208 4 0.92 9.92 0.92 0.92 422 9 89 208 4 0.92 430 808 8 8 430 808 8 8 8 8 8 430 808 8 8 8 8 8 430 808 4.3 6.6 8 8 1021 24 3.7 9 9 9 1 9 9 1021 24 3.7 91 99 1 1 9 1 1 1 1 1 1 1 1 1 1 1<td>EBT EBR WBL WBT NBL NBR Free Free Stop 0% 0% 0% 0% 0.92 0.92 0.92 0.92 0.92 0.92 0% 0.92 0.92 0.92 0.92 0.92 0.92 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 9 9 9 69 64 64 422 9 89 208 185 66 0</td></td>	EBT EBR WBL WBT Free i i i 0% i 0% 0% 388 8 82 191 0.92 0.92 0.92 0.92 422 9 89 208 422 9 89 208 430 10 10 10 430 4.3 10 10 430 4.3 10 10 430 4.3 10 10 430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 4430 4.3 10 10 442 9 89 208 0 0 89 0 0 0 89 0 0 0 7 0 0.0 0.0 89 0.0 0.0 0.0 89 0.0	EBT EBR WBL WBT NBL Free I Free Stop 0% 0% 0% 0% 388 8 82 191 4 0.92 0.92 0.92 0.92 422 9 89 208 4 0.92 9.92 0.92 0.92 422 9 89 208 4 0.92 430 808 8 8 430 808 8 8 8 8 8 430 808 8 8 8 8 8 430 808 4.3 6.6 8 8 1021 24 3.7 9 9 9 1 9 9 1021 24 3.7 91 99 1 1 9 1 1 1 1 1 1 1 1 1 1 1 <td>EBT EBR WBL WBT NBL NBR Free Free Stop 0% 0% 0% 0% 0.92 0.92 0.92 0.92 0.92 0.92 0% 0.92 0.92 0.92 0.92 0.92 0.92 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 9 9 9 69 64 64 422 9 89 208 185 66 0</td>	EBT EBR WBL WBT NBL NBR Free Free Stop 0% 0% 0% 0% 0.92 0.92 0.92 0.92 0.92 0.92 0% 0.92 0.92 0.92 0.92 0.92 0.92 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 422 9 89 208 4 180 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 430 808 422 9 9 9 69 64 64 422 9 89 208 185 66 0

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Movement	EBT	EBR	WBL	WBT	NWL	NWR			
Lane Configurations	†	1	ኘ	†	Y				
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Volume (veh/h)	359	154	10	176	76	19			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	390	167	11	191	83	21			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume			558		603	390			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol			558		603	390			
tC, single (s)			4.3		6.6	6.4			
tC, 2 stage (s)									
tF (s)			2.4		3.7	3.5			
p0 queue free %			99		80	97			
cM capacity (veh/h)			912		423	613			
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NW 1				
Volume Total	390	167	11	191	103				
Volume Left	0	0	11	0	83				
Volume Right	0	167	0	0	21				
cSH	1700	1700	912	1700	451				
Volume to Capacity	0.23	0.10	0.01	0.11	0.23				
Queue Length (ft)	0	0	1	0	22				
Control Delay (s)	0.0	0.0	9.0	0.0	15.3				
Lane LOS			Α		С				
Approach Delay (s)	0.0		0.5		15.3				
Approach LOS					С				
Intersection Summary									
Average Delay			1.9						
Intersection Capacity U	tilization		30.9%	I	CU Lev	el of Service)	А	
Analysis Period (min)			15						

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Novement	EBL	EBT	WBT	WBR	SBL	SBR		
ane Configurations		र्भ	el 👘		Y			
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
/olume (veh/h)	0	150	82	8	20	0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
lourly flow rate (vph)	0	163	89	9	22	0		
edestrians								
ane Width (ft)								
Valking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Nedian type					None			
Median storage veh)								
Jpstream signal (ft)								
oX. platoon unblocked								
C. conflicting volume	98				257	93		
C1. stage 1 conf vol								
C2. stage 2 conf vol								
/Cu, unblocked vol	98				257	93		
C. single (s)	4.3				6.6	6.4		
C. 2 stage (s)					0.0	••••		
F(s)	2.4				3.7	3.5		
0 queue free %	100				97	100		
M capacity (veh/h)	1368				687	906		
Direction Long #						000		
frection, Lane #	EB 1	WB 1	5B 1					
volume I otal	163	98	22					
Volume Lett	0	0	22					
Volume Right	0	9	0					
CSH	1368	1700	687					
Volume to Capacity	0.00	0.06	0.03					
Queue Length (ft)	0	0	2					
Control Delay (s)	0.0	0.0	10.4					
ane LOS			В					
Approach Delay (s)	0.0	0.0	10.4					
Approach LOS			В					
ntersection Summary								
Average Delay			0.8					
ntersection Capacity U	tilization		17.9%	10	CU Leve	el of Servic	е	А
Analysis Period (min)			15					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	139	14	4	93	12	0	0	0	0	0	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	151	15	4	101	13	0	0	0	0	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			166			302	305	159	299	307	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			166			302	305	159	299	307	108
tC, single (s)	4.3			4.3			7.3	6.7	6.4	7.3	6.7	6.4
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.2	3.5	3.7	4.2	3.5
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1349			1289			601	566	832	606	566	890
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	178	118	0	3								
Volume Left	12	4	0	0								
Volume Right	15	13	0	3								
cSH	1349	1289	1700	890								
Volume to Capacity	0.01	0.00	0.00	0.00								
Queue Length (ft)	1	0	0	0								
Control Delay (s)	0.6	0.3	0.0	9.1								
Lane LOS	А	А	А	А								
Approach Delay (s)	0.6	0.3	0.0	9.1								
Approach LOS			А	А								
Intersection Summary												
Average Delay			0.6									
Intersection Capacity U	tilization		22.7%	l	CU Leve	el of Ser	vice		А			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		ا	el el		Y				
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Volume (veh/h)	7	132	75	8	12	34			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	8	143	82	9	13	37			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume	90				245	86			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	90				245	86			
tC, single (s)	4.3				6.6	6.4			
tC, 2 stage (s)									
tF (s)	2.4				3.7	3.5			
p0 queue free %	99				98	96			
cM capacity (veh/h)	1377				694	915			
Direction, Lane #	EB 1	WB 1	SB 1						
Volume Total	151	90	50						
Volume Left	8	0	13						
Volume Right	0	9	37						
cSH	1377	1700	845						
Volume to Capacity	0.01	0.05	0.06						
Queue Length (ft)	0	0	5						
Control Delay (s)	0.4	0.0	9.5						
Lane LOS	А		А						
Approach Delay (s)	0.4	0.0	9.5						
Approach LOS			A						
Intersection Summarv									
Average Delav			1.9						
Intersection Capacity U	tilization		22.7%	10	CU Leve	el of Servic	e	А	
Analysis Period (min)			15				•		
			10						

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Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations	¥			ۍ ۲	î.∍	
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Volume (veh/h)	7	20	7	143	79	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	8	22	8	155	86	3
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC. conflicting volume	258	88	89			
vC1, stage 1 conf vol	200	00	00			
vC2_stage 2 conf vol						
vCu, unblocked vol	258	88	89			
tC single (s)	6.6	6.4	43			
tC, 2 stane (s)	0.0	0.4	4.0			
$t \in (c)$	37	35	24			
	00	0.0	2.4			
oM consoity (yoh/h)	660	012	1270			
	002	913	1379			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	29	163	89			
Volume Left	8	8	0			
Volume Right	22	0	3			
cSH	839	1379	1700			
Volume to Capacity	0.03	0.01	0.05			
Queue Length (ft)	3	0	0			
Control Delay (s)	9.4	0.4	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	0.4	0.0			
Approach LOS	A		0.0			
Intersection Summary						
Average Delay			12			
Intersection Canacity II	tilization		23 2%	10		of Som
Analysis Poriod (min)	unzation		15	- N		

MovementEBLEBTWBTWBRSBLSBRLane ConfigurationsIIIIIISign ControlFreeFreeStopGrade0%0%Grade0%0%0%0%0%Volume (veh/h)154359176101976Peak Hour Factor0.920.920.920.920.920.920.920.920.92Hourly flow rate (vph)167390191112183PedestriansLane Width (ft)Walking Speed (ft/s)Percent BlockageVolume (veh)Volume (veh)Volume (veh)Median typeNoneNoneNoneVolupstream signal (ft)Volupstream sig
Lane Configurations Free Free Free Stop Grade 0% 0% 0% 0% Volume (veh/h) 154 359 176 10 19 76 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians
Sign Control Free Free Stop Grade 0% 0% 0% Volume (veh/h) 154 359 176 10 19 76 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians Lane Width (ft) Valking Speed (ft/s) Percent Blockage 8 8 Percent Blockage Right turn flare (veh) None None 8 8 Median storage veh) Upstream signal (ft) None 916 191 91 191 vC, conflicting volume 202 916 191 91 191 91 191 vC1, stage 1 conf vol vC2, stage 2 conf vol 916 191 191 191 191 191 10, stage 1 (s) 191 10, stage 1 (s) 191 10, stage 1 (s) 191 191 10, stage 1 (s) 191 10, stage 1 (s)
Grade 0% 0% 0% Volume (veh/h) 154 359 176 10 19 76 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians
Volume (veh/h) 154 359 176 10 19 76 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians Lane Width (ft) V
Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians
Hourly flow rate (vph) 167 390 191 11 21 83 Pedestrians Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vC4, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) Example 204 27 2.5
Pedestrians Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 tC, 2 stage (s) 2.4
Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vC4, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) E (a)
Walking Speed (ft/s)Percent BlockageRight turn flare (veh)Median typeNoneMedian storage veh)Upstream signal (ft)pX, platoon unblockedvC, conflicting volume202916191vC1, stage 1 conf volvC2, stage 2 conf volvCu, unblocked vol202916191tC, single (s)4.36.66.4tC, 2 stage (s)tE (a)2.4
Percent BlockageRight turn flare (veh)Median typeNoneMedian storage veh)Upstream signal (ft)pX, platoon unblockedvC, conflicting volume202916191vC1, stage 1 conf volvC2, stage 2 conf volvCu, unblocked vol202916191tC, single (s)4.36.66.4tC, 2 stage (s)tE (a)2.4
Right turn flare (veh)NoneMedian typeNoneMedian storage veh)Upstream signal (ft)pX, platoon unblockedVC, conflicting volumevC, conflicting volume202916191vC1, stage 1 conf volVC2, stage 2 conf volvC2, stage 2 conf vol916vCu, unblocked vol202916191tC, single (s)4.3tC, 2 stage (s)5
Median typeNoneMedian storage veh)Upstream signal (ft)pX, platoon unblockedvC, conflicting volumevC1, stage 1 conf vol916vC2, stage 2 conf vol916vCu, unblocked vol202916191tC, single (s)4.3tC, 2 stage (s)916
Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) tE (a) 2.4 2.7 2.5
Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s)
pX, platoon unblocked vC, conflicting volume 202 916 191 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s)
vC, conflicting volume 202 916 191 vC1, stage 1 conf vol v v v vC2, stage 2 conf vol v v v vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) 24 27 25
vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s)
vC2, stage 2 conf vol vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) 5 4.5 5
vCu, unblocked vol 202 916 191 tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s) 2.4 2.7 2.5
tC, single (s) 4.3 6.6 6.4 tC, 2 stage (s)
tC, 2 stage (s)
+ (-) 2.4 2.7 2.5
IF (S) 2.4 3.7 3.3
p0 gueue free % 87 91 90
cM capacity (veh/h) 1249 239 797
Direction, Lane # EB1 EB2 WB1 WB2 SB1
Volume I otal 167 390 191 11 103
Volume Left 167 0 0 0 21
Volume Right 0 0 0 11 83
cSH 1249 1700 1700 1700 544
Volume to Capacity 0.13 0.23 0.11 0.01 0.19
Queue Length (ft) 12 0 0 0 17
Control Delay (s) 8.3 0.0 0.0 0.0 13.2
Lane LOS A B
Approach Delay (s) 2.5 0.0 13.2
Approach LOS B
Intersection Summary
Average Delay 3.2
Intersection Capacity Utilization 33.5% ICU Level of Service
Analysis Period (min) 15

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APPENDIX E3 Cooper Creek

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Movement	EBL	EBR	NBL	NBT	SBT	SBR	
Lane Configurations	Y			र्स	et 🗧		
Sign Control	Stop			Free	Free		
Grade	0%			0%	0%		
Volume (veh/h)	26	20	7	527	263	11	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	28	22	8	573	286	12	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type	None						
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume	880	292	298				
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol	880	292	298				
tC, single (s)	6.6	6.4	4.3				
tC, 2 stage (s)							
tF (s)	3.7	3.5	2.4				
p0 queue free %	90	97	99				
cM capacity (veh/h)	289	698	1148				
Direction, Lane #	EB 1	NB 1	SB 1				
Volume Total	50	580	298				
Volume Left	28	8	0				
Volume Right	22	0	12				
cSH	388	1148	1700				
Volume to Capacity	0.13	0.01	0.18				
Queue Length (ft)	11	1	0				
Control Delay (s)	15.7	0.2	0.0				
Lane LOS	С	А					
Approach Delay (s)	15.7	0.2	0.0				
Approach LOS	С						
Intersection Summary							
Average Delay			1.0				
Intersection Capacity U	tilization		43.3%	IC	CU Leve	l of Servic	е
Analysis Period (min)			15				

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ર્સ	1		ર્સ	1	ሻ	•	1	ሻ	•	1
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Volume (veh/h)	143	4	4	8	4	27	8	363	10	6	145	57
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	155	4	4	9	4	29	9	395	11	7	158	62
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	585	583	158	585	583	395	158			395		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	585	583	158	585	583	395	158			395		
tC, single (s)	7.3	6.7	6.4	7.3	6.7	6.4	4.3			4.3		
tC, 2 stage (s)												
t⊢ (s)	3.7	4.2	3.5	3.7	4.2	3.5	2.4			2.4		
p0 queue free %	58	99	99	98	99	95	99			99		
cM capacity (veh/h)	366	391	833	383	391	609	1299			1054		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3		
Volume Total	160	4	13	29	9	395	11	7	158	62		
Volume Left	155	0	9	0	9	0	0	7	0	0		
Volume Right	0	4	0	29	0	0	11	0	0	62		
cSH	367	833	385	609	1299	1700	1700	1054	1700	1700		
Volume to Capacity	0.44	0.01	0.03	0.05	0.01	0.23	0.01	0.01	0.09	0.04		
Queue Length (ft)	54	0	3	4	1	0	0	0	0	0		
Control Delay (s)	22.2	9.3	14.7	11.2	7.8	0.0	0.0	8.4	0.0	0.0		
Lane LOS	С	A	В	В	A			A				
Approach Delay (s)	21.8		12.3		0.2			0.2				
Approach LOS	С		В									
Intersection Summary												
Average Delay			5.0									
Intersection Capacity Ut	ilization		40.6%	I	CU Leve	el of Ser	vice		А			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR		
Lane Configurations		ជ	î,		¥			
Sign Control		Free	Free		Stop			
Grade		0%	0%		0%			
Volume (veh/h)	7	132	75	8	12	34		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Hourly flow rate (vph)	8	143	82	9	13	37		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type					None			
Median storage veh)								
Upstream signal (ft)								
pX, platoon unblocked								
vC, conflicting volume	90				245	86		
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	90				245	86		
tC, single (s)	4.3				6.6	6.4		
tC, 2 stage (s)								
tF (s)	2.4				3.7	3.5		
p0 queue free %	99				98	96		
cM capacity (veh/h)	1377				694	915		
Direction, Lane #	EB 1	WB 1	SB 1					
Volume Total	151	90	50					
Volume Left	8	0	13					
Volume Right	0	9	37					
cSH	1377	1700	845					
Volume to Capacity	0.01	0.05	0.06					
Queue Length (ft)	0	0	5					
Control Delay (s)	0.4	0.0	9.5					
Lane LOS	А		А					
Approach Delay (s)	0.4	0.0	9.5					
Approach LOS			А					
Intersection Summary								
Average Delay			1.9					
Intersection Capacity Ut	tilization		22.7%	(CU Leve	el of Service	•	А
Analysis Period (min)			15					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	139	14	4	93	12	0	0	0	0	0	3
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	151	15	4	101	13	0	0	0	0	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	114			166			302	305	159	299	307	108
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	114			166			302	305	159	299	307	108
tC, single (s)	4.3			4.3			7.3	6.7	6.4	7.3	6.7	6.4
tC, 2 stage (s)												
tF (s)	2.4			2.4			3.7	4.2	3.5	3.7	4.2	3.5
p0 queue free %	99			100			100	100	100	100	100	100
cM capacity (veh/h)	1349			1289			601	566	832	606	566	890
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	178	118	0	3								
Volume Left	12	4	0	0								
Volume Right	15	13	0	3								
cSH	1349	1289	1700	890								
Volume to Capacity	0.01	0.00	0.00	0.00								
Queue Length (ft)	1	0	0	0								
Control Delay (s)	0.6	0.3	0.0	9.1								
Lane LOS	А	А	А	А								
Approach Delay (s)	0.6	0.3	0.0	9.1								
Approach LOS			А	А								
Intersection Summary												
Average Delay			0.6									
Intersection Capacity L	Itilization		22.7%	ŀ	CU Leve	el of Ser	vice		А			
Analysis Period (min)			15									

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations	۲	•	•	1	¥				
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Volume (veh/h)	154	359	176	10	19	76			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	167	390	191	11	21	83			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume	202				916	191			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	202				916	191			
tC, single (s)	4.3				6.6	6.4			
tC, 2 stage (s)									
tF (s)	2.4				3.7	3.5			
p0 queue free %	87				91	90			
cM capacity (veh/h)	1249				239	797			
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	SB 1				
Volume Total	167	390	191	11	103				
Volume Left	167	0	0	0	21				
Volume Right	0	0	0	11	83				
cSH	1249	1700	1700	1700	544				
Volume to Capacity	0.13	0.23	0.11	0.01	0.19				
Queue Length (ft)	12	0	0	0	17				
Control Delay (s)	8.3	0.0	0.0	0.0	13.2				
Lane LOS	A				В				
Approach Delay (s)	2.5		0.0		13.2				
Approach LOS					В				
Intersection Summary									
Average Delay			3.2					_	
Intersection Capacity U	Itilization		33.5%](CU Leve	el of Service)	A	
Analysis Period (min)			15						

APPENDIX E4 Juneau Creek without Bridge

	-	\rightarrow	-	-	1	1	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	•	1	ሻ	•	5	1	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	415	129	61	211	65	139	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	451	140	66	229	71	151	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			591		813	451	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			591		813	451	
tC, single (s)			4.3		6.6	6.4	
tC, 2 stage (s)			~ /		~ -		
t⊢ (s)			2.4		3.7	3.5	
p0 queue free %			93		/6	/3	
cM capacity (veh/h)			885		296	565	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	NB 2	
Volume Total	451	140	66	229	71	151	
Volume Left	0	0	66	0	71	0	
Volume Right	0	140	0	0	0	151	
cSH	1700	1700	885	1700	296	565	
Volume to Capacity	0.27	0.08	0.07	0.13	0.24	0.27	
Queue Length (ft)	0	0	6	0	23	27	
Control Delay (s)	0.0	0.0	9.4	0.0	21.0	13.7	
Lane LOS			А		С	В	
Approach Delay (s)	0.0		2.1		16.0		
Approach LOS					С		
Intersection Summary							
Average Delay			3.8				
Intersection Capacity I	Jtilization		38.8%](CU Leve	el of Servi	ice
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR			
Lane Configurations		ę	eî 🕺		- M				
Sign Control		Free	Free		Stop				
Grade		0%	0%		0%				
Volume (veh/h)	0	167	177	14	37	0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92			
Hourly flow rate (vph)	0	182	192	15	40	0			
Pedestrians									
Lane Width (ft)									
Walking Speed (ft/s)									
Percent Blockage									
Right turn flare (veh)									
Median type					None				
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked									
vC, conflicting volume	208				382	200			
vC1, stage 1 conf vol									
vC2, stage 2 conf vol									
vCu, unblocked vol	208				382	200			
tC, single (s)	4.3				6.6	6.4			
tC, 2 stage (s)									
tF (s)	2.4				3.7	3.5			
p0 queue free %	100				93	100			
cM capacity (veh/h)	1243				580	788			
Direction, Lane #	EB 1	WB 1	SB 1						
Volume Total	182	208	40						
Volume Left	0	0	40						
Volume Bight	0	15	0						
cSH	1243	1700	580						
Volume to Capacity	0.00	0.12	0.07						
Queue Length (ft)	0.00	0	6						
Control Delay (s)	0.0	0.0	117						
Lane LOS	0.0	0.0	R						
Approach Delay (s)	0.0	0.0	117						
Approach LOS	0.0	0.0	В						
Intersection Summary									
Average Delay			1.1						
Intersection Capacity Ut	tilization		20.2%	10	CU Leve	el of Servic	е	А	
Analysis Period (min)			15						

Baseline Lounsbury & Associates, Inc.

٩ t Ť Movement EBL EBR NBL NBT SBT SBR Lane Configurations ¥ đ Þ Sign Control Free Stop Free Grade 0% 0% 0% Volume (veh/h) 7 5 161 174 3 1 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Hourly flow rate (vph) 8 5 1 175 189 3 Pedestrians Lane Width (ft) Walking Speed (ft/s) Percent Blockage Right turn flare (veh) Median type None Median storage veh) Upstream signal (ft) pX, platoon unblocked vC, conflicting volume 368 191 192 vC1, stage 1 conf vol vC2, stage 2 conf vol vCu, unblocked vol 368 191 192 tC, single (s) 6.6 6.4 4.3 tC, 2 stage (s) tF (s) 3.7 3.5 2.4 p0 queue free % 99 99 100 cM capacity (veh/h) 590 798 1260 Direction, Lane # EB 1 NB 1 SB 1 Volume Total 13 176 192 Volume Left 8 0 1 Volume Right 5 0 3 cSH 662 1260 1700 Volume to Capacity 0.02 0.00 0.11 Queue Length (ft) 2 0 0 Control Delay (s) 10.5 0.1 0.0 Lane LOS В Α 10.5 0.1 0.0 Approach Delay (s) Approach LOS В Intersection Summary Average Delay 0.4 Intersection Capacity Utilization 19.3% ICU Level of Service А Analysis Period (min) 15

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Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	1.			្ឋ	M		
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	128	3	15	151	3	34	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	139	3	16	164	3	37	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			142		338	141	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol							
vCu, unblocked vol			142		338	141	
tC, single (s)			4.3		6.6	6.4	
tC, 2 stage (s)							
tF (s)			2.4		3.7	3.5	
p0 queue free %			99		99	96	
cM capacity (veh/h)			1316		608	852	
Direction, Lane #	EB 1	WB 1	NB 1				
Volume Total	142	180	40				
Volume Left	0	16	3				
Volume Right	3	0	37				
cSH	1700	1316	825				
Volume to Capacity	0.08	0.01	0.05				
Queue Length (ft)	0	1	4				
Control Delay (s)	0.0	0.8	9.6				
Lane LOS		А	А				
Approach Delay (s)	0.0	0.8	9.6				
Approach LOS			А				
Intersection Summary							
Average Delay			1.5				
Intersection Capacity L	Jtilization		29.0%	10	CU Leve	l of Serv	rice
Analysis Period (min)			15				

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Movement	EBL	EBT	WBT	WBR	SBL	SBR						
Lane Configurations		4	ĥ		M				 			
Sign Control		Free	Free		Stop							
Grade		0%	0%		0%							
Volume (veh/h)	3	78	139	15	53	10						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92						
Hourly flow rate (vph)	3	85	151	16	58	11						
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type					None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	167				251	159						
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	167				251	159						
tC, single (s)	4.3				6.6	6.4						
tC, 2 stage (s)												
tF (s)	2.4				3.7	3.5						
p0 queue free %	100				92	99						
cM capacity (veh/h)	1287				691	832						
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	88	167	68									
Volume Left	3	0	58									
Volume Right	0	16	11									
cSH	1287	1700	710									
Volume to Capacity	0.00	0.10	0.10									
Queue Length (ft)	0	0	8									
Control Delay (s)	0.3	0.0	10.6									
Lane LOS	А		В									
Approach Delay (s)	0.3	0.0	10.6									
Approach LOS			В									
Intersection Summary												
Average Delay			2.3									
Intersection Capacity U	Itilization		18.4%	10	CU Leve	el of Servic	e	А				
Analysis Period (min)			15									
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			\$			4	
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	78	4	16	110	22	0	0	0	3	0	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	4	85	4	17	120	24	0	0	0	3	0	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	143			89			263	274	87	262	264	132
vC1, stage 1 conf vol												_
vC2, stage 2 conf vol												
vCu, unblocked vol	143			89			263	2/4	87	262	264	132
tC, single (s)	4.3			4.3			7.3	6.7	6.4	7.3	6.7	6.4
tC, 2 stage (s)	~ (~ -	~ -		
t⊢ (s)	2.4			2.4			3.7	4.2	3.5	3.7	4.2	3.5
p0 queue free %	100			99			100	100	100	99	100	100
cM capacity (veh/h)	1315			1379			638	588	914	640	596	862
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	93	161	0	4								
Volume Left	4	17	0	3								
Volume Right	4	24	0	1								
cSH	1315	1379	1700	684								
Volume to Capacity	0.00	0.01	0.00	0.01								
Queue Length (ft)	0	1	0	0								
Control Delay (s)	0.4	0.9	0.0	10.3								
Lane LOS	A	Α	А	В								
Approach Delay (s)	0.4	0.9	0.0	10.3								
Approach LOS			А	В								
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Ut	ilization		23.2%](CU Leve	el of Ser	vice		А			
Analysis Period (min)			15									

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Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	•	1	7	•	M		
Sign Control	Free		•	Free	Stop		
Grade	0%			0%	0%		
Volume (veh/h)	474	38	30	234	19	46	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly flow rate (vph)	515	41	33	254	21	50	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)							
Percent Blockage							
Right turn flare (veh)							
Median type					None		
Median storage veh)							
Upstream signal (ft)							
pX, platoon unblocked							
vC, conflicting volume			557		835	515	
vC1, stage 1 conf vol							
vC2, stage 2 conf vol					005	545	
vCu, unblocked vol			557		835	515	
tC, single (s)			4.3		6.6	6.4	
tC, 2 stage (s)			0.4		07	0.5	
t⊢ (S)			2.4		3.7	3.5	
pu queue free %			96		93	90	
civi capacity (ven/n)			913		299	518	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1		
Volume Total	515	41	33	254	71		
Volume Left	0	0	33	0	21		
Volume Right	0	41	0	0	50		
cSH	1700	1700	913	1700	427		
Volume to Capacity	0.30	0.02	0.04	0.15	0.17		
Queue Length (ft)	0	0	3	0	15		
Control Delay (s)	0.0	0.0	9.1	0.0	15.1		
Lane LOS			A		С		
Approach Delay (s)	0.0		1.0		15.1		
Approach LOS					С		
Intersection Summary							
Average Delay			1.5				
Intersection Capacity Ut	ilization		35.5%	10	CU Leve	l of Servic	ce
Analysis Period (min)			15				

APPENDIX F

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEETS

APPENDIX F1 EXISTING 2012

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET				
General Information		Site Information		
Analyst Agency or Company Date Performed 11/21, Analysis Time Baried	/2013	Highway / Direction of Travel From/To Jurisdiction	Sterling Segment 1 EB	
Project Description: Existing 2012		Analysis Year	2012	
Input Data				
1 Sho	ulderwidthtt	_	_	
	e width It	Class I h	nighway 📕 Class II	
Lan	ulder width ft	highway	Class III highway	
Segment length, L _t	mi	Terrain Grade Length Peak-hour fac	Level Rolling mi Up/down ctor, PHF 0.95	
Analysis direction vol., V _d 337veh/h		Show North Arrow % Trucks and	I Buses , P _T 7%	
Opposing direction vol., V _o 225veh/h Shoulder width ft 1.0 Lane Width ft 11.0		% Recreation Access points	al vehicles, P _R 17% s <i>mi 8</i> /mi	
Segment Length mi 3.0				
Average Travel Speed		Analysis Direction (d)	Opposing Direction (s)	
		Analysis Direction (d)		
Passenger-car equivalents for trucks, E_T (Exhi	bit 15-11 or 15-12)	2.0	2.2	
Passenger-car equivalents for RVs, E _R (Exhibit		1.1	1.1	
Heavy-venicle adjustment factor, f _{HV,ATS} =1/ (1	$+ P_T(E_T^{-1}) + P_R(E_R^{-1}))$	0.920	0.908	
Grade adjustment factor', f _{g,ATS} (Exhibit 15-9))	0.87	0.78	
Demand flow rate ² , v_i (pc/h) $v_i = v_i / (PHF^* t_{g,AT})$	s ^{*†} hv,ats ⁾	443	334	
Free-Flow Speed from Fiel	d Measurement	Estimated Fre	e-Flow Speed	
		Base free-flow speed ⁴ , BFFS	60.0 mi/n	
Mean speed of sample ³ , S _{FM}		Adj. for lane and shoulder width,	t _{LS} (Exhibit 15-7) 4.7 mi/n	
Total demand flow rate, both directions, v		Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h	
Free-flow speed, FFS=S _{FM} +0.00776(ν / f _{HV,ATS}	₃)	Free-flow speed, FFS (FSS=BFF	FS-f _{LS} -f _A) 53.3 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-1	5) 1.3 mi/h	Average travel speed, ATS _d =FFS	6-0.00776(v _{d,ATS} + 46.0 mi/h	
		v _{o,ATS}) - r _{np,ATS} Percent free flow speed, PFFS	86.3 %	
Percent Time-Spent-Following				
		Analysis Direction (d)		
Passenger-car equivalents for trucks, E _T (Exhib	nt 15-18 or 15-19)	1.6	1./	
Passenger-car equivalents for RVs, E _R (Exhibit	t 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $t_{HV} = 1/(1 + P_T)$	$(E_{T}-1)+P_{R}(E_{R}-1))$	0.960	0.953	
Grade adjustment factor', f _{g,PTSF} (Exhibit 15-1	6 or Ex 15-17)	0.88	0.82	
Directional flow rate-, v_i (pc/n) $v_i = V_i/(PHF*t_{HV,P})$	TSF ^{° T} g,PTSF ⁾	420	303	
Base percent time-spent-following ⁴ , BPTSF _d (%	b)=100(1-e ^{av} d)	42.2		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)		31.6		
Percent time-spent-following, PTSF _d (%)=BPTS	SF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	6	0.6	
V _{o,PTSF})				
Level of Service and Other Performance Me	asures	1	<u>^</u>	
Volume to capacity ratio, v/c		ſ	.26	
- stand to supusity ratio, w/o				

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1387
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.3
Bicycle Level of Service	•
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	354.7
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.95
Bicycle level of service (Exhibit 15-4)	F
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTION	NAL TWO-LANE HIGHWA	AY SEGMENT WORK	SHEET	
General Information		Site Information		
Analyst Agency or Company Date Performed Analysis Timo Poriod	11/21/2013	Highway / Direction of Travel From/To Jurisdiction Analysis Yoar	Sterling Segment 1 WB 2012	
Project Description: Existing 2012		Analysis real	2012	
Input Data				
+				
	Shoulder width ft		_	
	Lane width tt	Class I h	nighway 🔲 Class II	
	Shoulder width ft	highway	Class III highway	
Segment length	ո, Լլ mi	Terrain Grade Length Peak-hour fac No-passing z	Level PRolling mi Up/down ctor, PHF 0.95 one 20%	
Analysis direction vol., V _d 225v	eh/h	Show North Arrow % Trucks and	Buses , P _T 7%	
Opposing direction vol., Vo337vShoulder width ft1.0Lane Width ft11.0	eh/h	% Recreation Access points	al vehicles, P _R 17% s <i>mi 8</i> /mi	
Segment Length mi 3.0				
Average maver Speed		Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E-	_r (Exhibit 15-11 or 15-12)	2.2	2.0	
Passenger-car equivalents for RVs, E_{R}	(Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, f _{HV,AT}	$_{S}=1/(1+P_{T}(E_{T}-1)+P_{R}(E_{R}-1))$	0.908	0.920	
Grade adjustment factor ¹ , f _{g,ATS} (Exhib	it 15-9)	0.78	0.87	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF	^{=* f} g,ATS ^{* f} HV,ATS ⁾	334	443	
Free-Flow Speed fro	m Field Measurement	Estimated Fre	ee-Flow Speed	
		Base free-flow speed ⁴ , BFFS	60.0 mi/h	
Mean around of complete S		Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 4.7 mi/h	
Total demand flow rate, both directions.	V	Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h	
Free-flow speed, $FFS=S_{FM}+0.00776(v/$	funcate)	Free-flow speed, FFS (FSS=BFF	FS-f _{LS} -f _A) 53.3 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhit	bit 15-15) 1.1 mi/h	Average travel speed, ATS _d =FFS	G-0.00776(v _{d,ATS} + 46.1 mi/h	
		v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	86.6 %	
Percent Time-Spent-Following		Analysis Direction (d)	Opposing Direction (c)	
		Analysis Direction (0)	Opposing Direction (0)	
Passenger-car equivalents for trucks, E-	(Exhibit 15-18 or 15-19)	1.7	1.6	
Passenger-car equivalents for RVs, E _R	(Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-venicle adjustment factor, $T_{HV}=1/2$	$(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.82	0.88	
Directional flow rate ² μ (pc/h) μ /////	Dil 15-16 Of EX 15-17)	303	420	
Base percent time-spent-following ⁴ BP	$\frac{b}{1 + W, PTSF + g, PTSF}$		25.4	
Dase percent time-spent-tollowing ', BPTSF _d (%)=100(1-6°'d) Adi for no-passing zone f (Evhibit 15-21)		31.6		
Percent time-spent-following, PTSF (%)=BPTSF +f		51.0		
V _{o PTSE})	d np,PISE (a,PISE) d,PISE	4	8.6	
Level of Service and Other Performan	nce Measures			
Level of service, LOS (Exhibit 15-3)		С		
Volume to capacity ratio, v/c		0	0.20	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423			
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505			
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.6			
Bicycle Level of Service	-			
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	236.8			
Effective width, Wv (Eq. 15-29) ft	12.00			
Effective speed factor, S_t (Eq. 15-30)	4.79			
Bicycle level of service score, BLOS (Eq. 15-31)	5.75			
Bicycle level of service (Exhibit 15-4)	F			
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 $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.				

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET				
General Information	Site Information			
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2, 3, 4, & 5 EB 2012		
Project Description: Existing 2012	/ maryolo roa			
Input Data				
Lane width tt	Class I	highway 🔲 Class II		
Lane width tt	highway	Class III highway		
Land Shoulder width	Terrain			
Segment length, L _t mi	Grade Lengtl Peak-hour fa No-passing z	h mi Up/down ctor, PHF 0.95 cone 100%		
Analysis direction vol., V _d 349veh/h	Show North Arrow % Trucks and	d Buses , P _T 7%		
Opposing direction vol., V _o 234veh/h Shoulder width ft 1.0 Lane Width ft 11.0	% Recreation Access point	nal vehicles, P _R 17% s <i>mi 8</i> /mi		
Segment Length mi 3.0				
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2		
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1		
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908		
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.88	0.79		
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	454	343		
Free-Flow Speed from Field Measurement	Estimated Fr	ee-Flow Speed		
	Base free-flow speed ⁴ , BFFS	60.0 mi/h		
Mean speed of sample ³ S	Adj. for lane and shoulder width,	⁴ f _{LS} (Exhibit 15-7) 4.7 mi/h		
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 m			
Free-flow speed, FFS=S _{EM} +0.00776(v/ f _{HV ATS})	Free-flow speed, FFS (FSS=BF	FS-f _{LS} -f _A) 53.3 mi/h		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.1 mi/h	Average travel speed, ATS _d =FF	S-0.00776(v _{d,ATS} + 44.0 mi/h		
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	82.5 %		
Percent Time-Spent-Following	Applyoin Direction (d)	Opposing Direction (c)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7		
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	0.960	0.953		
Grade adjustment factor ¹ f (Evhibit 15-16 or Ev 15-17)	0.88	0.82		
Directional flow rate ² $v(pc/h) = V/(PHE^*f_{rev}, reve^*f_{rev}, reve^*f_{rev})$	435	315		
Base percent time-spent-following ⁴ BPTSF $(%)=100(1-e^{av_d})$		44.5		
Adi, for no-passing zone, $f_{}$ proc (Exhibit 15-21)	44 7			
Percent time-spent-following, PTSF (%)=BPTSF +f*(v,/v,+	++./			
Vopter)		70.4		
Level of Service and Other Performance Measures	<u> </u>			
Level of service, LOS (Exhibit 15-3)		D		
Volume to capacity ratio, v/c		0.27		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1305			
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1403			
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.5			
Bicycle Level of Service	•			
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	367.4			
Effective width, Wv (Eq. 15-29) ft	12.00			
Effective speed factor, S_t (Eq. 15-30)	4.79			
Bicycle level of service score, BLOS (Eq. 15-31)	5.97			
Bicycle level of service (Exhibit 15-4)	F			
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.				
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 				

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET				
General Information	Site Information			
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analvsis Year	Sterling Segment 2, 3, 4, & 5 WB 2012		
Project Description: Existing 2012	/ indigolo i out			
Input Data	2			
Shoulder width It Lane width It Lane width It Lane width It Segment length, Lt mi Analysis direction vol., V _d 234 veh/h Opposing direction vol., V _o 349 veh/h Shoulder width ft 1.0 Lane Width ft 3.0	Class I highway Terrain Grade Lengtl Peak-hour fa No-passing z % Trucks and % Recreation Access point	highway Class II Class III highway Level ✓ Rolling h mi Up/down ctor, PHF 0.95 cone 100% d Buses , P _T 7% hal vehicles, P _R 17% s mi 8/mi		
Average Travel Speed				
	Analysis Direction (d)	Opposing Direction (o)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2	2.0		
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1		
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920		
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.79	0.88		
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	343	454		
Free-Flow Speed from Field Measurement	Estimated Fr	ee-Flow Speed		
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i>	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, Adj. for access points ⁴ , f _A (Exhib	60.0 mi/h ⁴ f _{LS} (Exhibit 15-7) 4.7 mi/h it 15-8) 2.0 mi/h 50 f (1) 52 2 mi/h		
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.5 mi/h	Average travel speed, FFS (FSS=BF Average travel speed, ATS _d =FS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	FS-1 _{LS} -1 _A) 53.3 mi// S-0.00776(v _{d,ATS} + 44.6 mi/h 83.6 %		
Percent Time-Spent-Following	Applyoin Direction (d)	Opposing Direction (c)		
Decomposition of the fact truck $E_{\rm c}$ (E) which is 10 or 15 10				
Passenger-car equivalents for RVs E_ (Exhibit 15-18 or 15-19)	1.0	1.0		
Heavy-vehicle adjustment factor, $f_{\rm inv}=1/(1+P_{-}(E_{-}-1)+P_{-}(E_{-}-1))$	0.953	0.960		
Grade adjustment factor ¹ , $f_{n PTSF}$ (Exhibit 15-16 or Ex 15-17)	0.82	0.88		
Directional flow rate ² , $v_{\text{(pc/h)}} v_{i} = V_{i}/(\text{PHF}^{*}f_{\text{HV,PTSF}}^{*}f_{\text{a.PTSF}})$	315	435		
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	36.9			
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	44.7			
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	55.7			
*o,PTSF/				
Level of service, LOS (Exhibit 15-3)		D		
Volume to capacity ratio, v/c		0.20		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1448
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1521
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	83.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	246.3
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.77
Bicycle level of service (Exhibit 15-4)	F
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 EB 2012	
Project Description: Existing 2012		2012	
Input Data			
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 364veh/h Opposing direction vol., V _o 243veh/h Shoulder width ft 1.0 Lane Width ft 11.0	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 100% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi	
Segment Length mi 2.0			
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks. E ₊ (Exhibit 15-11 or 15-12)	2.0	2.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.89	0.79	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	468	357	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.0 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 4.7 & mi/h \\ t 15-8) & 2.0 & mi/h \\ FS-f_{LS}-f_{A}) & 53.3 & mi/h \\ F-0.00776(v_{d,ATS} + & 43.9 & mi/h \\ & 82.3 & \% \end{array}$	
Percent Time-Spent-Following	ŕ		
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.953	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.89	0.83	
Directional flow rate ⁺ , v_i (pc/n) $v_i = v_i / (PHF*t_{HV,PTSF}*t_{g,PTSF})$	449	323	
Base percent time-spent-tollowing ⁺ , BPISF _d (%)=100(1- $e^{av}d$)	45.0		
Auj. for no-passing zone, T _{np,PTSF} (Exhibit 15-21) Percent time-spent-following, PTSF (%)=BPTSF +f proc *(V_proc / V_proc +	43.2		
V _{o,PTSF})	7	0.1	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	D		
Volume to capacity ratio, v/c	0	.28	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1321			
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1403			
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.3			
Bicycle Level of Service	•			
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	383.2			
Effective width, Wv (Eq. 15-29) ft	12.00			
Effective speed factor, S_t (Eq. 15-30)	4.79			
Bicycle level of service score, BLOS (Eq. 15-31)	5.99			
Bicycle level of service (Exhibit 15-4)	F			
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 $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.				

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DIRECTIONAL TWO-LANE HIGHWA	Y SEGMENT WORK	SHEET
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 wb 2012
Project Description: Existing 2012		
Input Data		
Shoulder width ftLane width ftLane width ftLane width ft	Class I h	ighway 🔲 Class II Class III highway
Segment length, L _t mi	Terrain Grade Length Peak-hour fac No-passing zo	Level Rolling mi Up/down otor, PHF 0.95 one 100%
Analysis direction vol., V _d 243veh/h	% Trucks and	Buses, P _T 7%
Opposing direction vol., V364veh/hShoulder width ft1.0Lane Width ft11.0Segment Length mi2.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.79	0.89
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	357 468	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ . S _{ct}	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 4.7 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A) 53.3 n	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.5 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 44.4 mi/h
	v _{o,ATS}) - I _{np,ATS} Percent free flow speed, PFFS	83.4 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (c)
Descensor oor oor inglants for trucks E. (Evhibit 15, 10 or 15, 10)		
Passenger car equivalents for TUCKS, $E_T(Extinuit 15-16 of 15-19)$	1.7	1.0
Passenger-car equivalents for RVs, E_{R} (Exhibit 15-18 or 15-19)	0.052	0.060
Heavy-venicie adjustment factor, $I_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.903	0.90
Directional flow rate 2 (10/11) (10/11) (10/11)	0.00	140
	525	449 0 1
Base percent time-spent-following*, BPISF _d (%)=100(1-e ^{av} d)	38.1	
Adj. for no-passing zone, t _{np,PTSF} (Exhibit 15-21)	43.2	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 56.2	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	ח
Volume to capacity ratio. v/c	n	.21
to all to capabily railo, wo	0	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1448
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1538
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	83.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	255.8
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.79
Bicycle level of service (Exhibit 15-4)	F
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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APPENDIX F2 NO BUILD

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 EB 2043
Project Description: No Build Alternative		2040
Input Data		
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 459veh/h Opposing direction vol., V _o 307veh/h Shoulder width ft 1.0 Lane Width ft 11.0	Class I h highway Class I h highway G Terrain Grade Length Peak-hour fac No-passing zc % Trucks and % Recreation Access points	ighway Class II Class II highway Level M Rolling mi Up/down tor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 3.0		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.94	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	551	416
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.2 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 4.7 & mi/h \\ t 15-8) & 2.0 & mi/h \\ SS-f_{LS}-f_{A}) & 53.3 & mi/h \\ F-0.00776(v_{d,ATS} + & 44.6 & mi/h \\ & 83.7 & \% \end{array}$
Percent Time-Spent-Following	í	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.4	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.973	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.95	0.86
Directional flow rate ² , v/pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	523	392
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d [*])	51.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	⊦ 66.4	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	ח
Volume to canacity ratio v/c	n	.32
volume to oupdoity ratio, we		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1392	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1468	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	83.7	
Bicycle Level of Service		
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	483.2	
Effective width, Wv (Eq. 15-29) ft	12.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	6.11	
Bicycle level of service (Exhibit 15-4)	F	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		
4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10		
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.		

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DIRECTIONAL TWO-LANE HIGHWA	Y SEGMENT WORK	SHEET
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 WB 2043
Project Description: No Build Alternative		
Input Data	-	
Shoulder width tt Lane width tt Lane width tt Lane width tt Segment length, L ₁ mi Analysis direction vol., V _d 307veh/h Opposing direction vol., V _o 459veh/h Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 3.0	Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level M Rolling mi Up/down ctor, PHF 0.95 one 20% I Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85	0.94
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	416 551	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.9 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS}	$f_{LS}(Exhibit 15-7) = 4.7 mi/h$ $t 15-8) = 2.0 mi/h$ $S-f_{LS}-f_A) = 53.3 mi/h$ $6-0.00776(v_{d,ATS} + 44.9 mi/h)$ $84.2 = 44.9$
Percent Time-Spent-Following		01.2 /0
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.4
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.973
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.86	0.95
Directional flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^*f_{HV,PTSF}^* f_{g,PTSF})$	392	523
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	44.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	55.9	
1 evel of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	1	D
Volume to capacity ratio, v/c	0	.24

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1505
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	323.2
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.91
Bicycle level of service (Exhibit 15-4)	F
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWA	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2, 3, 4, & 5 EB 2043
Project Description: No-Build	/ malyolo / out	2010
Input Data		
Shoulder width It		
Lane width	Class I H	nighway 🔲 Class II
Lane width	highway	Class III highway
Segment length, L ₁ mi	Terrain Grade Length	Level Rolling
Analysis direction vol., V _d 476veh/h	Peak-hour factor, PHF 0.95 No-passing zone 100 Show North Arrow % Trucks and Buses , P _T 7%	
Opposing direction vol., V 318veh/h	% Recreation	nal vehicles, $P_{\rm P}$ 17%
Shoulder width ft 1.0	Access points	s <i>mi 8</i> /mi
Lane Width ft 11.0 Seament Length mi 3.0		
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	566	431
Free-Flow Speed from Field Measurement	Estimated Fro	ee-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Maan aroad of complete S	Adj. for lane and shoulder width,	⁴ f _{LS} (Exhibit 15-7) <i>4.7 mi/h</i>
Total demand flow rate, both directions, ν	Adj. for access points ⁴ , f _A (Exhib	it 15-8) 2.0 mi/h
Free-flow speed, FFS= S_{rad} +0.00776(v/f_{LWATE})	Free-flow speed, FFS (FSS=BFI	=S-f _{LS} -f _A) 53.3 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.6 mi/h	Average travel speed, ATS _d =FFS	S-0.00776(v _{d,ATS} + 42.9 mi/h
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	80.5 %
Percent Time-Spent-Following	· · · · -·	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v_{f} (pc/h) v_{i} = $V_{i}/(PHF^{*f}_{HV,PTSF}^{*f}_{g,PTSF})$	529	401
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁻)	51.2	
Adj. for no-passing zone, t _{np,PTSF} (Exhibit 15-21)	38.3	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 73.0	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Volume to canacity ratio v/c	(0 1.33
volume to oupdoity ratio, we		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1408	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1488	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	80.5	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	501.1	
Effective width, Wv (Eq. 15-29) ft	12.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	6.13	
Bicycle level of service (Exhibit 15-4)	F	
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 $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.		
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.		

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General Information Site Information Analyst Highway / Direction of Travel Segment 2, 3, 4, & Agency or Company 11/21/2013 Date Performed 11/21/2013 Analysis Time Period Jurisdiction Project Description: No Build Alternative Input Data Input Data Imput Data Incluster width Imput Data Ingeneration Imput Data Class I highway Imput Data Imput Data Imput Data Imput Data <th>5</th>	5
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period 11/21/2013 Analysis Time Period 2043 Project Description: No Build Alternative Input Data Input Data Class I highway Class III highway Shoulder width tt Lane width tt Shoulder width tt Shoulder width tt Shoulder width tt Segment length, L mi	5
Project Description: No Build Alternative Input Data Class I highway Class I highway Class III highway Terrain Segment length, Lt M Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Terrain Class III highway Class III highway Terrain Class III h	
Input Data Shoulder width Lane width <	
Shoulder width tt Lane width tt Lane width tt Shoulder width tt Segment length, Lt mi	
Lane width It Lane width It Lane width It Segment length, Lt mi	
Lane width tt Segment length, Lt mi	s II
Segment length, Lt mi	
	Rolling m 95
Analysis direction vol., V _d 318veh/h No-passing zone % Trucks and Buses , P _T	100% 7 %
Opposing direction vol., Vo476veh/h% Recreational vehicles, PRShoulder width ft1.0Access points miLong Width ft11.0Access points mi	<i>17</i> % 8/mi
Segment Length mi 3.0	
Average Travel Speed	
Analysis Direction (d) Opposing Dir	ection (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12) 2.1 1.6	1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13) 1.1 1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$ 0.914 0.93	2
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9) 0.85 0.9	5
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$) 431 566	3
Free-Flow Speed from Field Measurement Estimated Free-Flow Speed	
Base free-flow speed ⁴ , BFFS	60.0 mi/h
Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7)	4.7 mi/h
Total demand flow rate, both directions, v Adj. for access points ⁴ , f _A (Exhibit 15-8)	2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV ATS}) Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A)	53.3 mi/h
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15) 2.0 mi/h Average travel speed, $ATS_d = FFS - 0.00776(v_{d,ATS} + 1.000)$	43.5 mi/h
v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	81.6 %
Percent Time-Spent-Following	action (a)
Analysis Direction (a) Opposing Dir	
Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)1.61.2	
Passenger-car equivalents for HVs, $E_{\rm R}$ (Exhibit 15-18 or 15-19) 1.0 1.0	
Ineavy-venicie adjustment factor, $H_{V}=1/(1+r_{T}(E_{T}-1)+r_{R}(E_{R}-1))$ 0.900 0.900 Grade adjustment factor, f (Exhibit 15-16 or Ex 15-17) 0.87 0.97	, ;
$\frac{1}{2} \frac{1}{2} \frac{1}$	
Base percent time-spent-following ⁴ BPTSE (%)=100(1- e^{av_d}) 45.0	
Adi, for no-passing zone, f _{er} proc (Exhibit 15-21)	
Percent time-spent-following, PTSF (%)=BPTSF +f = proc *(V + proc + V)	
$V_{a \text{ prsc}}$ (1.5)	
Level of Service and Other Performance Measures	
Level of service, LOS (Exhibit 15-3)	
Volume to capacity ratio, v/c 0.25	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	81.6
Bicycle Level of Service	•
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	334.7
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.93
Bicycle level of service (Exhibit 15-4)	F
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWA	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013	Highway / Direction of Travel From/To Jurisdiction	Sterling Segment 6 EB 2042
Project Description: No Build Alternative	Analysis real	2043
Input Data		
Shoulder width tt		
Lane width	Class I h	ighway 🔲 Class II
Shoulder width It	highway	Class III highway
Segment length, L _t mi	Terrain Level Roll Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 100'	
Analysis direction vol., V _d 495veh/h	Show North Arrow % Trucks and	Buses , P _T 7%
Opposing direction vol., V _o 331veh/h	% Recreation	al vehicles, P _R 17%
Shoulder width ft 1.0	Access points	<i>mi 8</i> /mi
Segment Length mi 2.0		
Average Travel Speed	İ	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.86
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	588 443	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 4.7 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV ATS})	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 53.3	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.6 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 42.7 mi/h
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	80.1 %
Percent Time-Spent-Following	· · · · · · · · · · · · · · · · · · ·	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	550	417
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	53.0	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	37.4	
Percent time-spent-following, $PTSF_{d}$ (%)= $BPTSF_{d}$ +f _{np,PTSF} *($v_{d,PTSF}$ / $v_{d,PTSF}$ +	+ 74.3	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	D
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio . v/c	n	л 35
volume to capacity ratio, v/c		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	80.1	
Bicycle Level of Service		
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	521.1	
Effective width, Wv (Eq. 15-29) ft	12.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	6.15	
Bicycle level of service (Exhibit 15-4)	F	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		
4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10		
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013	Highway / Direction of Travel From/To Jurisdiction	Sterling Segment 6 wb 2042	
Analysis Time Period Project Description: No Build Alternative	Analysis fear	2043	
Input Data			
Shoulder width ft		_	
Lane width tt	Class I h	ighway 📕 Class II	
Shoulder width ft	highway	Class III highway	
Segment length, L _t mi	Terrain ■ Level ■ Rolling Grade Length mi Peak-hour factor, PHF 0.95		
Analysis direction vol., V _d 331veh/h	Show North Arrow % Trucks and	Buses , P _T 7%	
Opposing direction vol., V _o 495veh/h	% Recreation	al vehicles, P _R 17%	
Lane Width ft 1.0	Access points	<i>o'</i> /111	
Segment Length mi 2.0			
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	2.1	1.8	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.86	0.95	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	443	588	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
	Base free-flow speed ⁴ , BFFS	60.0 mi/h	
Maan anod of complete	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 4.7 mi/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h	
Free-flow speed. FFS= S_{EAA} +0.00776(ν/f_{EVATE})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 53.3 mi∕h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.0 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 43.3 mi/h	
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	81.3 %	
Percent Time-Spent-Following	Apply sig Direction (d)	Opposing Direction (s)	
Descensor car on the lents for trucks $E_{\rm c}$ (Eybiblit 15, 18 or 15, 10)	Analysis Direction (d)		
Passenger-car equivalents for EVe E (Exhibit 15-18 or 15-19)	1.0	1.2	
Heavy-vehicle adjustment factor $f_{\rm rw}=1/(1+P_{\rm r}(E_{\rm r}-1)+P_{\rm r}(E_{\rm r}-1))$	0.960	0.986	
Grade adjustment factor ¹ , $f_{a, prec}$ (Exhibit 15-16 or Ex 15-17)	0.87	0.96	
Directional flow rate ² , v_{i} (pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{n PTSF})	417	550	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1- $e^{av_d}^b$)	46.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	37.4		
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF})$	62.2		
V _{o,PTSF})	<i>•</i>	<u> </u>	
Level of Service and Other Performance Measures		<u> </u>	
Level of service, LOS (Exhibit 15-3)		D	
volume to capacity ratio, v/c	0	.20	

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1626
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	81.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	348.4
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.94
Bicycle level of service (Exhibit 15-4)	F
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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APPENDIX F3 JUNEAU CREEK

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 EB 2043
Project Description: Cooper, G-South, & Juneau Alt		
Input Data	-	
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 459veh/h Opposing direction vol., V _o 307veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.8	Class I h highway Co Terrain Grade Length Peak-hour fac No-passing zc % Trucks and % Recreationa Access points	ighway Class II Class III highway Level Rolling mi Up/down tor, PHF 0.95 ne 20% Buses , P _T 7% al vehicles, P _R 17% <i>mi</i> 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.94	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS} * f_{HV,ATS})$	551	416
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ . S _{ree}	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	. 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 49.2 mi/h
	v _{o,ATS}) - T _{np,ATS} Percent free flow speed, PFFS	84.8 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks E (Evhibit 15-18 or 15-10)	1 4	1 6
Passenger-car equivalents for RVs E (Exhibit 15-18 or 15-19)	1.4	1.0
Heavy-vehicle adjustment factor $f_{\text{exc}} = 1/(1 + P_{\text{exc}} = 1) + P_{\text{exc}} = 1)$	0.973	0.960
Grade adjustment factor ¹ , $f_{a, proc}$ (Exhibit 15-16 or Ex 15-17)	0.95	0.86
Directional flow rate ² , $v_{\text{(pc/h)}} = V_{i} / (\text{PHF}^* f_{\text{HV PTSF}}^* f_{\sigma, \text{PTSF}})$	523	392
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	51.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +		
V _{o,PTSF})	60	
Level of Service and Other Performance Measures	1	
Level of service, LOS (Exhibit 15-3)	D	
volume to capacity ratio, V/C	0.	32

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1392
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1468
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	483.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.95
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

Exhibit 15-20 provides coefficients a and b for Equation 15-10.
 Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2011 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 WB 2043
Project Description: Cooper, G-South, & Juneau Alt	/ maryolo real	2040
Input Data		
Shoulder widthftLane widthftLane widthftLane widthftShoulder widthft	Class I highway Class II highway Class II highway Terrain Level Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 20% % Trucks and Buses, P _T 7%	
Analysis direction vol. V. 307veh/h		
Opposing direction vol., V _o 459veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 4.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)
	Analysis Direction (u)	
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E_D (Exhibit 15-11 or 15-13)	1.1	1.8
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85	0.94
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	416	551
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Maan aroad of complete	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{EM} +0.00776($v/f_{HV/ATS}$)	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 49.4 mi/h
	v _{o,ATS}) - I _{np,ATS} Percent free flow speed, PFFS	85.2 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.4
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.973
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.86	0.95
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	392	523
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	44.5	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	55.9	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Level 01 Service, LOS (EXTIDIT 15-3)	C 0.24	
	0	.27

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1505
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	85.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	323.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.75
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

Exhibit 15-20 provides coefficients a and b for Equation 15-10.
 Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 eb 2043
Project Description: Juneau Creek Alternative		
Input Data		
Shoulder widthft Lane widthft Lane widthft Shoulder widthft Segment length, L _t mi	Class I h highway Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 ober, PHF 0.95 one 0%
Analysis direction vol., v _d 333ven/n	% Procession	Duses, T_{T} 7 /8
Opposing direction vol., vo 223ven/n Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 4.0	Access points	s <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	12.1	1.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.2	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.551	0.966
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.76	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	837	243
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f_A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - $f_{np,ATS}$ Percent free flow speed, PEES	$f_{LS}(Exhibit 15-7)$ 0.0 mi/h t 15-8) 2.0 mi/h $F_{LS}-f_{LS}-f_{A}$) 58.0 mi/h $F_{C}-0.00776(v_{d,ATS} + 48.0 mi/h)$
Percent Time-Spent-Following	· · · · · · · · · · · · · · · · · · ·	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.950	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_i pc/h) $v_i = V_i / (PHF^*f_{HV,PTSF}^* f_{g,PTSF})$	369	236
Base percent time-spent-following ⁴ , $BPTSF_d(\%)=100(1-e^{av}d^b)$	36.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	1	4.8
Percent time-spent-following, $PTSF_d$ (%)=BPTSF_d+f_np,PTSF *($v_{d,PTSF} / v_{d,PTSF}$ +	45.1	
V _{o,PTSF})		
Level of service and other Performance Measures		С
Volume to capacity ratio, <i>v/c</i>	0	.49

h	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	649
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1603
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain.	the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

For the analysis direction only
 Exhibit 15-20 provides coefficients a and b for Equation 15-10.
 Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 wb 2043
Project Description: Juneau Creek Alternative		
Input Data	-	
Shoulder width	Class I h highway Constraint Grade Length Peak-hour fac No-passing zo % Trucks and % Recreationa Access points	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 tor, PHF 0.95 ne 0% Buses , P _T 7% al vehicles, P _R 17% <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	12.2	1.3
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.3	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.545	0.979
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.70	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	615	358
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i>	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h	Free-flow speed, FFS (FSS=BFF Average travel speed, $ATS_d=FFS$ $v_{o,ATS}$) - $f_{np,ATS}$ Percent free flow speed, PFFS	S-f _{LS} -f _A) 58.0 mi/h -0.00776(v _{d,ATS} + 49.0 mi/h 84.5 %
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.943	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v _/ (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	249	353
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁻)	29.4	
Adj. for no-passing zone, t _{np,PTSF} (Exhibit 15-21)	14.8	
Percent time-spent-tollowing, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	35.5	
^v o,PTSF ^J		
Level of Service and Other Performance Measures	1	<u>^</u>
Volume to capacity ratio v/c	0	36
reaction to support ratio, in a	0.	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	712
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1616
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	he of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

4. For the analysis direction only and the value value value.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 EB 2043
Project Description: Juneau Creek Alternative	, malfolo , oa	
Input Data	-	
Shoulder width It Lane width It Lane width It Segment length, Lt mi Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zc % Trucks and % Recreation Access points	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% <i>mi 8</i> /mi
Segment Length mi 3.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{τ} (Exhibit 15-11 or 15-12)	12.1	1.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.2	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.551	0.966
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.76	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	837	243
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 & \text{mi/h} \\ 60.0 & \text{mi/h} \\ 0.0 & \text{mi/h} \\ 15-8) & 2.0 & \text{mi/h} \\ \text{S-f}_{\text{LS}}\text{-f}_{\text{A}}) & 58.0 & \text{mi/h} \\ -0.00776(v_{\text{d},\text{ATS}} + & 48.0 & \text{mi/h} \\ & 82.7 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.950	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_{f} (pc/h) v_{i} = V_{i} /(PHF*f _{HV,PTSF} * f _{g,PTSF})	369	236
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁻)	36.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	14.8	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 45.1	
v _{o,} PTSF [/]		
Level of Service and Other Performance Measures	1	<u>с</u>
Volume to capacity ratio. v/c	n	49
		-

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	649
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1603
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	•
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 WB 2043
Project Description: Juneau Creek Alternative		
Input Data		
Analysis direction vol., V _d 223veh/h	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 ctor, PHF 0.95 one 0% Buses , P _T 7%
Opposing direction vol., Vo 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 3.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi
Average Travel Speed	Apolysis Direction (d)	Opposing Direction (a)
	Analysis Direction (d)	
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E_D (Exhibit 15-11 or 15-13)	12.2	1.3
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.545	0.979
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.70	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{a,ATS}$ * $f_{HV,ATS}$)	615	358
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h Percent Time-Spent-Following	Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	-0.00776(v _{d,ATS} + 49.0 mi/h 84.5 %
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.943	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v_{f} (pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	249	353
Base percent time-spent-tollowing ⁺ , BPISF _d (%)=100(1-e ^{av} d)	29.4	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *($v_{d,PTSF} / v_{d,PTSF}$ +	14.8 + 35.5	
I evel of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		C 26
	0	.30

1		
Capacity, C _{d,ATS} (Equation 15-12) pc/h	712	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1616	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.5	
Bicycle Level of Service	·	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.59	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		

4. For the analysis direction only and the value value value.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 EB 2043
Project Description: Juneau Creek Alternative		2010
Input Data		
Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width t	Class I h highway Co Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation: Access points	ighway Class II Class III highway Level ✓ Rolling mi Up/down tor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17%
Lane Width ft 12.0		
Segment Length mi 1.3		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.87	0.78
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	438	331
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776($v/f_{HV,ATS}$) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.5 mi/h	Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS	S-f _{LS} -f _A) 58.0 mi/h -0.00776(v _{d,ATS} + 50.5 mi/h
	v _{o,ATS}) - t _{np,ATS} Percent free flow speed, PFFS	87.1 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks E (Evhibit 15-18 or 15-10)	1 6	1 7
Passenger-car equivalents for RVs, $E_{\rm p}$ (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_B(E_B-1))$	0.960	0.953
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.88	0.82
Directional flow rate ² , v_i (pc/h) $v_i = V_i$ /(PHF*f _{HV,PTSF} * f _{g,PTSF})	415	300
Base percent time-spent-following ⁴ , BPTSF _d (%)= $100(1-e^{av}d^{b})$	42.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	23.0	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 55.4	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Level of service, LOS (Exhibit 15-3)		26
	0.	.20

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1378
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.	
3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 WB 2043
Project Description: Juneau Creek Alternative		
Input Data	2	
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 223veh/h Opposing direction vol., V _o 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class II highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 1.3		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{τ} (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.78	0.87
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	331	438
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) ⁻ f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ 60.0 \text{mi/h} \\ 15_{\text{LS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 2.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 58.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 58.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 50.7 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 87.5 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.953	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.82	0.88
Directional flow rate ² , v_{i} pc/h) v_{j} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	300	415
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^D)	35.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	23.0	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 45.0	
V _{o,PTSF})		
Level of Service and Other Performance Measures	T	D
Level of Service, LOS (EXTIDIT 15-3)		10
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Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.5	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	234.7	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.59	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00,as level terrain is of downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 EB 2043
Project Description: Juneau Creek Alternative		
Input Data	2	
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level M Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 1.2		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E ₊ (Exhibit 15-11 or 15-12)	2.0	2.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.87	0.78
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	438	331
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{<i>FM</i>} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.5 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) ⁻ f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ SS-f_{LS}-f_A) & 58.0 & mi/h \\ r-0.00776(v_{d,ATS} + & 50.5 & mi/h \\ & 87.1 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1./
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-venicie adjustment factor, $I_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.960	0.953
Grade adjustment factor, $I_{g,PTSF}$ (Exhibit 15-16 of EX 15-17)	415	300
Base percent time-spent-following ⁴ RPTSE $(%)=100(1-e^{av}a^{b})$	4	2.1
Adi. for no-passing zone, f_{ab} proc. (Exhibit 15-21)	31.9	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 60.6	
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0	.26

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1378
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.1
Bicycle Level of Service	·
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	•
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F.	
13. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 WB 2043
Project Description: Juneau Creek Alternative		
Input Data	-	
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 223veh/h Opposing direction vol., V _o 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class II highway Level ▼ Rolling mi Up/down otor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Segment Length mi 1.2		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E ₊ (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.78	0.87
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	331	438
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) ⁻ f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ SS-f_{LS}-f_{A}) & 58.0 & mi/h \\ F-0.00776(v_{d,ATS} + & 50.7 & mi/h \\ & 87.5 & \% \end{array}$
Percent Time-Spent-Following		· · · · · · · · · · · · · · · · · · ·
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.953	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.82	0.88
Directional flow rate ² , $v_{\text{(pc/h)}} = V_{\text{i}} (\text{PHF}^{*}f_{\text{HV,PTSF}} * f_{g,\text{PTSF}})$	300	415
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁻)	35.3	
Adj. for no-passing zone, t _{np,PTSF} (Exhibit 15-21)	2	3.0
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 45.0	
^v o,PTSF [/]		
Level of service and Other Performance measures		B
Volume to capacity ratio, <i>v/c</i>	0	 .19
}' / / /	•	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.5	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	234.7	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.59	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00,as level terrain is of downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 EB 2043
Project Description: Juneau Creek Alternative		
Input Data	4	
Shoulder widthttLane widthttLane widthttShoulder widthttShoulder widthttSegment length, Ltmi	Class I h highway Class I h Terrain Grade Length Peak-hour fac No-passing zo	ighway Class II Class III highway Level Rolling mi Up/down tor, PHF 0.95 pre 50%
Analysis direction vol., Va 495veh/h	Show North Arrow % Trucks and	Buses, P _T 7%
Opposing direction vol., Vo 331veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.0	% Recreation Access points	al vehicles, P _R <i>17</i> % <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.86
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	588	443
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.0 mi/h	Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS	f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h S-f _{LS} -f _A) 58.0 mi/h -0.00776(v _{d,ATS} + 40.0 mi/h
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	48.0 mi/m 82.7 %
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v _i /pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	550	417
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	53.0	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.6	
Percent time-spent-following, $PTSF_{d}$ (%)= $BPTSF_{d}$ +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 71.5	
V _{o,PTSF})		
Level of Service and Other Performance Measures		<u>л</u>
Volume to capacity ratio, <i>v/c</i>	0.	.35

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Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	521.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.99
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.	
3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 WB 2043
Project Description: Juneau Creek Alternative	/ indijele i edi	
Input Data	2	
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 331veh/h Opposing direction vol., V _o 495veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway Constrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down tor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi
Segment Length mi 2.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.86	0.95
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	443	588
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.0 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ 60.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ 15_{\text{CS}}(\text{Exhibit 15-7}) & 2.0 \text{mi/h} \\ 15_{\text{CS}}(\text{F}_{\text{LS}}, \text{F}_{\text{A}}) & 58.0 \text{mi/h} \\ -0.00776(v_{\text{d},\text{ATS}}, \text{F}) & 49.0 \text{mi/h} \\ 84.4 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.986
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.87	0.96
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	417	550
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁵)	46.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	1.	9.4
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	+ 54.5	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Level of service, LOS (Exhibit 15-3)		
	0.	.20

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1626
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	348.4
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.78
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/22/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 existing EB 2043
Project Description: Juneau Creek Alternative	rinalyolo roa	2010
Input Data		
Shoulder width ft		
Lane width	Class I H	nighway 🛛 🔽 Class II
Lane widthtt	highway	Class III highway
Segment length, L _t mi	Terrain Level Roll Grade Length mi Up/down Peak-hour factor, PHF 0.95	Level Rolling mi Up/down ctor, PHF 0.95
Analysis direction vol., V _d 142veh/h	Show North Arrow % Trucks and	d Buses , P _T 7%
Opposing direction vol., V _o 96veh/h Shoulder width ft 1.0 Lane Width ft 11.0	% Recreation Access points	nal vehicles, P _R 17% s <i>mi 8</i> /mi
Segment Length mi 4.0		
Average maver opeed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.5	2.7
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.891	0.880
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.71	0.67
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	236	171
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
	Base free-flow speed ⁴ , BFFS	55.0 mi/h
Maan speed of sample ³ S	Adj. for lane and shoulder width,	f _{LS} (Exhibit 15-7) 4.7 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhib	it 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{EM} +0.00776(v/ f _{HV ATS})	Free-flow speed, FFS (FSS=BFI	-S-f _{LS} -f _A) 48.3 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.6 mi/h	Average travel speed, ATS _d =FFS	S-0.00776(v _{d,ATS} + 41.6 mi/h
	v _{o,ATS}) - t _{np,ATS} Percent free flow speed, PFFS	86.1 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks. E ₊ (Exhibit 15-18 or 15-19)	1.8	1.8
Passenger-car equivalents for RVs. E _p (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_B(E_B-1))$	0.947	0.947
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.76	0.73
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	208	146
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	22.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	Ę	55.9
Percent time-spent-following, $PTSF_d(\%) = BPTSF_d + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 55.1	
V _{o,PTSF})		-
Level of Service and Other Performance Measures	1	2
Level of Service, LOS (EXTIDIT 15-3)		0 12
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Capacity, C _{d,ATS} (Equation 15-12) pc/h	0
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1223
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	149.5
Effective width, Wv (Eq. 15-29) ft	15.48
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	5.04
Bicycle level of service (Exhibit 15-4)	E
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	f the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/22/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 existing WB 2043
Project Description: Juneau Creek Alternative		
Input Data		
Shoulder widthft		
Lane width	Class I	lignway M Class II
Shoulder width ft	highway	Class III highway
•Segment length, L _t mi	Grade Length Peak-hour fac No-passing zu	Level M Rolling mi Up/down ctor, PHF 0.95 one 100%
Analysis direction vol., V _d 96veh/h	% Trucks and	I Buses , P _T /%
Opposing direction vol., V _o 142veh/h Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 4.0	% Recreation Access points	al vehicles, P _R 17% s <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.7	2.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.880	0.891
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.67	0.71
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	171	236
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 4.7 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV.ATS})	Free-flow speed, FFS (FSS=BFF	FS-f _{LS} -f _A) 53.3 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.8 mi/h	Average travel speed, ATS _d =FFS	6-0.00776(v _{d,ATS} + 46.3 mi/h
	v _{o,ATS}) - † _{np,ATS} Percent free flow speed, PFFS	86.9 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks E_ (Evhibit 15-18 or 15-19)	1.9	1 9
Passenger-car equivalents for RVs. E _n (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor. $f_{i,y}=1/(1+P_T(E_T-1)+P_D(E_D-1))$	0.941	0.941
Grade adjustment factor ¹ , $f_{a, PTSF}$ (Exhibit 15-16 or Ex 15-17)	0.73	0.76
Directional flow rate ² , $v_{\text{(pc/h)}} = V_{\text{i}} (\text{PHF}^{*}f_{\text{HV,PTSF}} * f_{a,\text{PTSF}})$	147	209
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	1	- 6.3
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	55.9	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	+	
v _{o,PTSF})	3	<i>3.4</i>
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		A
volume to capacity ratio, v/c		.09

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1167
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1296
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.9
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	101.1
Effective width, Wv (Eq. 15-29) ft	18.24
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	4.37
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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APPENDIX F4 G-SOUTH

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 EB 2043
Project Description: Cooper, G-South, & Juneau Alt	, malfolo i oal	
Input Data	-	
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 459veh/h Opposing direction vol., V _o 307veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.8	Class I h highway Constrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreations Access points	ighway Class II Class III highway Level Rolling mi Up/down tor, PHF 0.95 ne 20% Buses , P _T 7% al vehicles, P _R 17% <i>mi</i> 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.94	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	551	416
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	-0.00776(v _{d,ATS} + 49.2 mi/h 84.8 %
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.4	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
$\frac{1}{1} = \frac{1}{1} \left[\frac{1}{1} + 1$	0.575	0.900
Directional flow rate ² $v(pc/h) v = V/(PHE^*f_{res} + f_{res})$	523	392
Base percent time-spent-following ⁴ BPTSF .(%)=100(1- $e^{av_d}^{b}$)	5	1.3
Adi. for no-passing zone, f_{ab} proc. (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 66.4	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Level of service, LOS (Exhibit 15-3)		22 32
volume to capacity ratio, v/c	0.	02

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1392
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1468
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	483.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.95
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2011 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 WB 2043	
Project Description: Cooper, G-South, & Juneau Alt	/ maryolo real	2040	
Input Data			
Shoulder widthftLane widthftLane widthftLane widthftShoulder widthft	Class I highway Class II highway Class III highway		
Analysis direction vol. V. 307veh/h	Show North Arrow % Trucks and	Level Polling mi Up/down ctor, PHF 0.95 one 20% Buses, P _T 7%	
Opposing direction vol., V _o 459veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 4.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi	
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)	
	Analysis Direction (u)		
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E_D (Exhibit 15-11 or 15-13)	1.1	1.8	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85 0.94		
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	416 551		
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
	Base free-flow speed ⁴ , BFFS	60.0 mi/h	
Maan aroad of complete	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f_A (Exhibit 15-8) 2.0 m.		
Free-flow speed, FFS=S _{EM} +0.00776($v/f_{HV/ATS}$)	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 49.4 m		
	v _{o,ATS}) - I _{np,ATS} Percent free flow speed, PFFS	85.2 %	
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.973	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.86	0.95	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	392	523	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	44.5		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5		
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	55.9		
V _{o,PTSF})			
Level of Service and Other Performance Measures	1	0	
Level 01 Service, LOS (EXTIDIT 15-3)	<u> </u>		
	0	.27	

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1505
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	85.2
Bicycle Level of Service	•
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	323.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.75
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 EB 2043	
Project Description: G-South Alternative	, malfolo i oal	20.0	
Input Data	-		
Shoulder width	Class I h highway Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi	
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.85	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	566 431		
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed4, BFFS60.0Adj. for lane and shoulder width,4 f_{LS} (Exhibit 15-7)0.0Adj. for access points4, f_A (Exhibit 15-8)2.0Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A)58.0Average travel speed, ATS_d=FFS-0.00776($v_{d,ATS}$ +49.0 $v_{o,ATS}$) - $f_{np,ATS}$ Percent free flow speed, PFFS84.4		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6	
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	0.986	0.960	
Grade adjustment factor ¹ , $f_{p,p,r,r}$ (Exhibit 15-16 or Ex 15-17)	0.96	0.87	
Directional flow rate ² , $v_{(pc/h)} = V_{i}/(PHF^{*}f_{HV PTSF} f_{a PTSF})$	529	401	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1- $e^{av_d}^b$)	51.2		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.2		
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	66.1		
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)	D		
Volume to capacity ratio, v/c	0.33		

	_
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1408
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1488
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	501.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.97
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 WB 2043	
Project Description: G-South Alternative			
Input Data	_		
Shoulder width tt Lane width tt Lane width tt Lane width tt Segment length, Lt mi Analysis direction vol., Vd 318veh/h Opposing direction vol., Vd 476veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment length mi 4.5	Class I h highway Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ⊠ Rolling mi Up/down etor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% ami 8/mi	
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.1	1.8	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85 0.95		
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	431	566	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Base free-flow speed4, BFFS 60.0 Adj. for lane and shoulder width, 4 f _{LS} (Exhibit 15-7) 0.0 Adj. for access points4, f _A (Exhibit 15-8) 2.0 Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 58.0 Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 49.2 V _{0.ATS}) - f _{np.ATS} 49.2		
Percent Time-Spent-Following	Percent free flow speed, PFFS	84.8 %	
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.986	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.87	0.96	
Directional flow rate ² , v_{i} (pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	401	529	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	45.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.2		
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	56.3		
o,PTSF/			
Level of service. LOS (Exhibit 15-3)	С		
Volume to capacity ratio, v/c	0.25		

Capacity C (Equation 15-12) pc/b	1521
Capacity, Od,ATS (Equation 15-12) pc/11	1021
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	334.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.77
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.	
3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 EB 2043	
Project Description: G-South Alternative	/ indijele i edi		
Input Data	2		
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Segment length, L ₁ mi Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 1.1	Class I h highway Cass Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation: Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi	
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.87	0.78	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	438 331		
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Base free-flow speed4, BFFS 60.0 Adj. for lane and shoulder width,4 $f_{LS}(Exhibit 15-7)$ $0.0 \ n$ Adj. for access points4, f_A (Exhibit 15-8) $2.0 \ n$ Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A) 58.0 Average travel speed, ATS_d=FFS- $0.00776(v_{d,ATS} + v_{0,ATS}) - f_{np,ATS}$ $52.0 \ percent free flow speed PEFS$		
Percent Time-Spent-Following	í		
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.953	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.88	0.82	
Directional flow rate ² , v/pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	415	300	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} dັ)	42.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	14.1		
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	50.3		
V _{o,PTSF})			
Level of Service and Other Performance Measures	1	0	
Volume to canacity ratio v/c	<u> </u>		
volume to suparity ratio, we			

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1378
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	89.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

4. For the analysis direction only and the value value value.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013	Highway / Direction of Travel Sterling From/To Segment 3 Jurisdiction WB Analysis Year 2043		
Project Description: G-South Alternative	Analysis real 2045		
Input Data			
+ *	- 1		
Shoulder width			
	tt Class I highway Class II		
Shoulder width	highway Class III highway		
Segment length, L _t mi	Terrain Level W Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 0%		
Analysis direction vol., V _d 223veh/h	Show North Arrow % Trucks and Buses , P _T 7%		
Opposing direction vol., V _o 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0	% Recreational vehicles, P _R 17% Access points <i>mi</i> 8/mi		
Segment Length mi 1.1			
Average Travel Speed	Applyoic Direction (d) Operating Direction (d)		
	Analysis Direction (a) Opposing Direction (a))	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2 2.0		
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1 1.1		
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908 0.920		
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.78 0.87		
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	331 438		
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
	Base free-flow speed ⁴ , BFFS 60.0	<i>mi∕h</i>	
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 0.0 r	ni/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 /	ni/h	
Free-flow speed, FFS=S _{EM} +0.00776(<i>v</i> / f _{HV ATS})	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 58.0	<i>mi∕h</i>	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 m	h/h Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 50.7)	mi/h	
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS 87.5	%	
Percent Time-Spent-Following			
	Analysis Direction (a) Opposing Direction (a))	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7 1.6		
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0 1.0		
Heavy-venicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.953 0.960		
Grade adjustment factor', r _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	200 415		
Provide interior and the second seco	25.2		
Dase percent time-spent-tollowing ', BPTSF _d (%)=100(1-6 ^{**} d)	1/ 1		
Auj. Ioi no-passing zone, I _{np.PTSF} (EXIIIoit 15-21)	14.1		
Percent unie-spent-tonowing, PISF _d (%)=BPISF _d +T _{np,PTSF} $(v_{d,PTSF} / v_{d})$	41.2		
^v o,PTSF [/]			
Level of service and Other Performance Measures	В	R	
Volume to capacity ratio, v/c	0.19	0.19	

	_
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 EB 2043	
Project Description: G-South Alternative	Analysis Teal	2043	
Input Data			
Shoulder width tt	_	_	
Lane width	Class I h	ighway 🔲 Class II	
Shoulder width tt	highway	Class III highway	
Segment length, L _t mi	Terrain Level Roll Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 20%		
Analysis direction vol., V _d <i>333</i> veh/h	Show North Arrow % Trucks and	Buses , P _T 7%	
Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 12.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi	
Segment Length mi 3.5			
Average Travel Speed	Apolysis Direction (d)	Opposing Direction (c)	
	Analysis Direction (u)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.920	0.908	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.87	0.78	
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	438 331		
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
	Base free-flow speed ⁴ , BFFS	60.0 mi/h	
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 r		
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV ATS})	Free-flow speed, FFS (FSS=BFFS-f _{I S} -f _A) 58.0 /		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 52.0		
	v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	89.7 %	
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.953	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.88	0.82	
Directional flow rate ² , v/pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	415	300	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	42.1		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	31.9		
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	60.6		
v _{o,PTSF})			
Level of Service and Other Performance Measures		0	
Volume to capacity ratio v/c	C 0.26		
volume to oupdoity rulio, wo	0		
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290		
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Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1378		
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	89.7		
Bicycle Level of Service			
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5		
Effective width, Wv (Eq. 15-29) ft	24.00		
Effective speed factor, S_t (Eq. 15-30)	4.79		
Bicycle level of service score, BLOS (Eq. 15-31)	3.79		
Bicycle level of service (Exhibit 15-4)	D		
Notes	· · ·		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific		
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. 			

4. For the analysis direction only and the value value value.
4. For the analysis direction only
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.
6. Use alternative Exhibit 15-14 if some trucks operate at crawl speeds on a specific downgrade.

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 WB 2043
Project Description: G-South Alternative	/ indijele i bal	20.00
Input Data	2	
Shoulder width It Lane width It Lane width It Segment length, Lt mi Analysis direction vol., V _d 223veh/h Opposing direction vol., V _o 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 3.5	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% ami 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1 1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.78 0.87	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	331 438	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Base free-flow speed4, BFFS60.0 minAdj. for lane and shoulder width, 4 f _{LS} (Exhibit 15-7)0.0 minAdj. for access points4, f _A (Exhibit 15-8)2.0 minFree-flow speed, FFS (FSS=BFFS-f _{LS} -f _A)58.0 minAverage travel speed, ATSd=FFS-0.00776(vd,ATS +52.0 minvo,ATS) - fnp,ATSPercent for for speedPercent for for the formation of the speedPEES80.7 min	
Percent Time-Spent-Following		-
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.953	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.82	0.88
Directional flow rate ² , $v_{\text{(pc/h)}} = V_{\text{i}} (\text{PHF}^{*}f_{\text{HV,PTSF}} * f_{g,\text{PTSF}})$	300 415	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁻)	35.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	31.9	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 48.7	
v _{o,} PTSF [/]		
Level of service and Other Performance measures		
Volume to capacity ratio, v/c	<u> </u>	
· · · · · · · · · · · · · · · · · · ·		-

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	89.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 EB 2043
Project Description: G-South Alternative	/ indijele i bal	20.0
Input Data	2	
Shoulder width tt Lane width tt Lane width tt Lane width tt Segment length, Lt mi Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I highway Class II highway Class II highway Terrain Level Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 10% % Trucks and Buses , P _T 7% % Recreational vehicles, P _R 17% Access points mi 8/mi	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.87 0.78	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	438 331	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Base free-flow speed ⁴ , BFFS 60.0 mi Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 0.0 mi Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 mi Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 58.0 mi Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 52.0 mi v _{o,ATS}) - f _{np,ATS} Percent free flow speed PEES 89.7 %	
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1./
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	0.953
Grade adjustment factor ¹ f (Evhibit 15-16 or Ev 15-17)	0.88	0.82
Directional flow rate ² , $v(pc/h) = V/(PHF*f_{1}v_p = rate^{+} f_{1} = rate)$	415	300
Base percent time-spent-following ⁴ , BPTSF ₄ (%)=100(1- $e^{av_d}^b$)	42.1	
Adj. for no-passing zone, f _{nn PTSE} (Exhibit 15-21)	23.0	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	55.4	
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	C	
Volume to capacity ratio, v/c	0.26	

	-	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1290	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1378	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	89.7	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.79	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific	
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. 		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information		Site Information	
Analyst Agency or Company Date Performed Analysis Time Period	11/21/2013	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 WB 2043
Project Description: G-South Alternativ	e	, indiferent ear	
Input Data			
+	Shoulder width tt		
	Lane widthft	Class L h	ighway
	Lane width ft	highway	Class III highway
	Shoulder width ft	Terrain	Level Rolling
Segment length	, Լլ mi 🍡	Grade Length Peak-hour fac No-passing zo	n mi Up/down ctor, PHF 0.95 one 10%
Analysis direction vol., V _d 223v	eh/h	Show North Arrow % Trucks and	I Buses , P _T 7%
Opposing direction vol., V _o 333v	eh/h	% Recreation	al vehicles, P _R 17%
Shoulder width ft 6.0 Lane Width ft 12.0		Access points	s <i>mi 8</i> /mi
Segment Length mi 1.2			
Average Travel Speed			
		Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E		2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-venicle adjustment factor, f _{HV,ATS}	$S^{=1/(1+P_T(E_T-1)+P_R(E_R-1))}$	0.908	0.920
Grade adjustment factor', f _{g,ATS} (Exhib	it 15-9)	0.78 0.87	
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF)$	* ^t g,ATS ^{* †} HV,ATS ⁾	331 438	
Free-Flow Speed fro	m Field Measurement	Estimated Free-Flow Speed	
		Base free-flow speed ⁴ , BFFS	60.0 mi/n
Mean speed of sample ³ , S _{EM}	Adj. for lane and shoulder width, ⁴ f _{LS} (Exhibit 15-7) 0.		f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions,	v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 mi/h	
Free-flow speed, FFS=S _{FM} +0.00776(v/	(_{HV,ATS})	Free-flow speed, FFS (FSS=BFF	FS-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhib	oit 15-15) 0.0 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 52.0 mi/	
		v _{o,ATS}) - t _{np,ATS} Percent free flow speed, PFFS	89.7 %
Percent Time-Spent-Following		Applycic Direction (d)	Opposing Direction (c)
Passenger-car equivalents for trucks. E-	(Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs. E ₂	Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor. $f_{\rm LV}=1/$	(1+ P _T (E _T -1)+P _D (E _D -1))	0.953	0.960
Grade adjustment factor ¹ , fances (Exhib	bit 15-16 or Ex 15-17)	0.82	0.88
Directional flow rate ² , $v_{\rm i}$ pc/h) $v_{\rm i} = V_{\rm i}/(\rm PHF)$		300	415
Base percent time-spent-following ⁴ , BPT	$FSF_{d}(\%) = 100(1 - e^{av_{d}}^{b})$	35.3	
Adj. for no-passing zone, f _{np.PTSF} (Exhit	pit 15-21)	23.0	
Percent time-spent-following, PTSF,(%)	=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} +	+	
v _{o,PTSF})	u ,, - ,,,	45.0	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)		В	
Volume to capacity ratio, v/c		0.19	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	89.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 EB 2043
Project Description: G-South Alternative		2040
Input Data		
Shoulder width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 495veh/h Opposing direction vol., V _o 331veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 50% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Segment Length mi 2.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks E ₋ (Exhibit 15-11 or 15-12)	1.8	2 1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932 0.914	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.86
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	588 443	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Base free-flow speed4, BFFS60.0 mAdj. for lane and shoulder width, 4 f _{LS} (Exhibit 15-7)0.0 mi/.Adj. for access points4, f _A (Exhibit 15-8)2.0 mi/.Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A)58.0 mAverage travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + $v_{o,ATS}$) - f _{np,ATS} 50.0 m	
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , $v_{f}(pc/h) v_{i} = V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	550 417	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d)	53.0	
Aaj. tor no-passing zone, t _{np,PTSF} (Exhibit 15-21)	32.6	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 71.5	
^v o,PTSF ^J		
I of service LOS (Evbibit 15-3)		
Volume to canacity ratio v/c	U	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	521.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.99
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 WB 2043
Project Description: G-South Alternative		
Input Data	2	
Analysis direction vol., V _d 331veh/h Opposing direction vol., V _d 495veh/h Shoulder width t Segment length, L ₁ mi	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level Rolling mi Up/down ctor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.86 0.95	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	443 588	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.0 mi/h	Base free-flow speed4, BFFS60.0 mAdj. for lane and shoulder width,4 f_{LS} (Exhibit 15-7)0.0 mi/.Adj. for access points4, f_A (Exhibit 15-8)2.0 mi/.Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A)58.0 mAverage travel speed, ATS_d=FFS-0.00776($v_{d,ATS}$ +50.0 m $v_{o,ATS}$) - $f_{np,ATS}$ Percent free flow speed PEFS86.2 %	
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.960	0.986
Diractional flow rate 2 v(ac/b) ::) / (/DUT*t + t	0.87	0.96
Directional now rate, v_{i} pc/ii) $v_{j} = v_{i}/(PTF_{HV,PTSF}^{-1}g,PTSF)$	41/ 550	
Dase percent time-spent-totiowing ', BPTSF _d (%)=100(1-6 ^{av} d) Addi for no-passing zone f (Evbibit 15-21)	46.1	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{d,PTSF})$	54.5	
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	C	
Volume to capacity ratio, v/c	0.26	

•		
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1626	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.2	
Bicycle Level of Service	•	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	348.4	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.78	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00,as level terrain is o downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		

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APPENDIX F5 COOPER CREEK

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 EB 2043
Project Description: Cooper, G-South, & Juneau Alt	, malfolo i oal	
Input Data	-	
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 459veh/h Opposing direction vol., V _o 307veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.8	Class I highway Class II highway Class III highway Terrain Level Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 20% % Trucks and Buses , P _T 7% % Recreational vehicles, P _R 17% Access points mi 8/mi	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.94 0.85	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	551 416	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 58.0 m	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	-0.00776(v _{d,ATS} + 49.2 mi/h 84.8 %
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.4	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
$\frac{1}{1} = \frac{1}{1} \left[\frac{1}{1} + 1$	0.575	0.900
Directional flow rate ² $v(pc/h) v = V/(PHE^*f_{res} + f_{res})$	523	392
Base percent time-spent-following ⁴ BPTSF .(%)=100(1- $e^{av_d}^{b}$)	51.3	
Adi. for no-passing zone, f_{ab} proc. (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} +	66.4	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Level of service, LOS (Exhibit 15-3)		
volume to capacity ratio, v/c	0.	02

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1392		
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1468		
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.8		
Bicycle Level of Service			
Directional demand flow rate in outside lane, <i>v_{OL}</i> (Eq. 15-24) veh/h	483.2		
Effective width, Wv (Eq. 15-29) ft	24.00		
Effective speed factor, S_t (Eq. 15-30)	4.79		
Bicycle level of service score, BLOS (Eq. 15-31)	3.95		
Bicycle level of service (Exhibit 15-4)	D		
Notes			
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific		
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10			

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2011 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 WB 2043	
Project Description: Cooper, G-South, & Juneau Alt	/ maryolo real	2040	
Input Data			
Shoulder width ftLane widthtLane widthtLane widtht tShoulder widthtt	Class I h	ighway 🗖 Class II Class III highway	
Analysis direction vol. V. 307veh/h	Show North Arrow % Trucks and	Level Polling mi Up/down ctor, PHF 0.95 one 20% Buses, P _T 7%	
Opposing direction vol., V _o 459veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 4.0	% Recreation Access points	al vehicles, P _R 17% : <i>mi 8</i> /mi	
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)	
	Analysis Direction (u)		
Passenger-car equivalents for trucks, E_T (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E_D (Exhibit 15-11 or 15-13)	1.1	1.8	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914 0.932		
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85 0.94		
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	416 551		
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
	Base free-flow speed ⁴ , BFFS	60.0 mi/h	
Maan aroad of complete	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 mi		
Free-flow speed, FFS=S _{EM} +0.00776($v/f_{HV/ATS}$)	Free-flow speed, FFS (FSS=BFFS-f _{IS} -f _A) 58.0 m		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 49.4 mi/		
	v _{o,ATS}) - I _{np,ATS} Percent free flow speed, PFFS	85.2 %	
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.4	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.960	0.973	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.86	0.95	
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	392	523	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	44.5		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	26.5		
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	55.9		
V _{o,PTSF})			
Level of Service and Other Performance Measures			
Volume to capacity ratio v/c	C		
volume to oupdoity ratio, we	0		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1505
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	85.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	323.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.75
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Explicit 15-20 provides coefficients a and b for Equation 15-10	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 EB 2043
Project Description: Cooper Creek Alternative		2010
Input Data		
Shoulder width It Image: Segment length, Lt Shoulder width Image: Segment length, Lt mi Segment length, Lt mi Image: Shoulder width It Image: Segment length, Lt mi Image: Shoulder width It Image: Segment length, Lt mi Image: Shoulder width It Image: Segment length, Lt mi Image: Shoulder width It Image: Shoulder width It	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ⊠ Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Segment Length mi 4.5		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (s)
Descenses on envirolente for trucks E (Evibilit 15, 11 or 15, 10)	Analysis Direction (d)	Opposing Direction (0)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HVATC} = 1/(1 + P_T(E_T - 1) + P_P(E_P - 1))$	0.932 0.914	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{a,ATS}$ * $f_{HV,ATS}$)	566 431	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS60.0Adj. for lane and shoulder width, 4 f _{LS} (Exhibit 15-7)0.0 mAdj. for access points ⁴ , f _A (Exhibit 15-8)2.0 mFree-flow speed, FFS (FSS=BFFS-f _{LS} -f _A)58.0Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} +49.0v _{o,ATS}) - f _{np,ATS} Percent free flow speed PEFS84.4	
Percent Time-Spent-Following		-
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v_{f} (pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	529	401
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d)	51.2	
Adj. for no-passing zone, t _{np,PTSF} (Exhibit 15-21)	26.2	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$. 66.1	
V _{o,PTSF} /		
Level of Service and Other Performance Measures	1	ח
Volume to canacity ratio v/c		
volume to oupdoity ratio, we		

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1408
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1488
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	501.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.97
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 WB 2043	
Project Description: Cooper Creek Alternative			
Input Data			
Shoulder widthft Lane widthft Lane widthft Shoulder widthft Segment length, L _t mi	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo	ighway Class II Class III highway Level Rolling mi Up/down ctor, PHF 0.95 one 30%	
Analysis direction vol., V _d 318veh/h	% Trucks and	Buses, P _T /%	
Opposing direction vol., V _o 476veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 4.5	% Recreation Access points	ai venicies, P _R 17% : <i>mi 8</i> /mi	
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.1	1.8	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.914 0.932		
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85	0.95	
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	431	566	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.2 mi/h	Base free-flow speed4, BFFS 60.0 mi Adj. for lane and shoulder width,4 f_{LS} (Exhibit 15-7) 0.0 mi Adj. for access points4, f_A (Exhibit 15-8) 2.0 mi Free-flow speed, FFS (FSS=BFFS- f_{LS} - f_A) 58.0 mi Average travel speed, ATSd=FFS-0.00776(vd,ATS + 49.1 mi $v_{0,ATS}$) - $f_{np,ATS}$ 24.6 mi		
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.986	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.87	0.96	
Directional flow rate ² , v_{i} pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	401 529		
Base percent time-spent-following ⁴ , $BPTSF_d(\%)=100(1-e^{av}d^b)$	45.0		
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	28.6		
Percent time-spent-following, $PTSF_{d}(\%) = BPTSF_{d} + f_{np,PTSF} * (v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	57.3		
v _{o,PTSF} /			
Level of service, LOS (Exhibit 15-3)		С	
Volume to capacity ratio, v/c	0.25		

•	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	334.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.77
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 EB 2043
Project Description: Cooper Creek Alternative	/ indijele i edi	
Input Data	2	
Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0	Class I h highway Cass Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreations Access points	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% <i>mi</i> 8/mi
Segment Length mi 1.0		
Average Travel Speed	1	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	12.1	1.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.2 1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.551 0.966	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.76 1.00	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	837 243	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM}	Base free-flow speed4, BFFS60.0Adj. for lane and shoulder width,4 fLS(Exhibit 15-7)0.0	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit 15-8) 2.0 mi/	
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV,ATS})	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 58.0 mi/l	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS} 48.0 mi/	
Percent Time Sport Following	Percent free flow speed, PFFS	82.7 %
revent rime-opent-ronowing	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.950	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , $v_{f}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	369	236
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	36.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	14.8	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 45.1	
v _{o,PTSF})		
Level of Service and Other Performance Measures	T	0
Volume to capacity ratio v/c	C	
volume to oupdoity ratio, we	0.	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	649
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1603
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 WB 2043	
Project Description: Cooper Creek Alternative	· · · · · · · · · · · · · · · ·		
Input Data	•		
Segment length, L _t mi	Class I H highway Terrain Grade Length Peak-hour fac No-passing zer	highway Class II Class III highway Level Rolling A 4.00 mi Up/down 4.0 ctor, PHF 0.95 one 0%	
Analysis direction vol., V _d 223veh/h Opposing direction vol., V _o 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.0	% Trucks and % Recreation Access points	n Buses , P _T 7% al vehicles, P _R 17% s <i>mi 8</i> /mi	
Average Travel Speed	Analysis Direction (d)	Opposing Direction (c)	
Dessences eeu eeuwelente fertrucke E. (Euwikis 15 11 er 15 10)			
Passenger-car equivalents for RVs, $E_{\rm R}$ (Exhibit 15-11 or 15-13)	1.3	1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.545	0.979	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.70 1.00		
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	615 358		
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Base free-flow speed4, BFFS 60.0 min Adj. for lane and shoulder width, ${}^4 f_{LS}$ (Exhibit 15-7) $0.0 \text{ min}/t$ Adj. for access points4, f_A (Exhibit 15-8) $2.0 \text{ min}/t$ Free-flow speed, FFS (FSS=BFFS-f_{LS}-f_A) 58.0 min		
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h Percent Time-Spent-Following	Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	6-0.00776(v _{d,ATS} + 49.0 mi/h 84.5 %	
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.1	
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f_{HV} =1/ (1+ $P_T(E_T$ -1)+ $P_R(E_R$ -1))	0.943	0.993	
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
	-		
Directional flow rate ² , $v_i(pc/h) v_i = V_i/(PHF^*f_{HV,PTSF}^*f_{g,PTSF})$	249	353	
Directional flow rate ² , $v_{i}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$ Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b})	249	353 19.4	
Directional flow rate ² , $v_{h}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$ Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b}) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	249 2 1	353 19.4 4.8	
Directional flow rate ² , $v_{h}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$ Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b}) Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *($v_{d,PTSF} / v_{d,PTSF}$	249 2 1 -	353 9.4 4.8 5.5	
Directional flow rate ² , v_{i} (pc/h) v_{i} =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF}) Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b}) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} · v _{d,PTSF})	249 2 1 - 3	353 19.4 4.8 15.5	
Directional flow rate ² , $v_{A}(pc/h) v_{I}=V_{I}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$ Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b}) Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} · $v_{o,PTSF}$) Level of Service and Other Performance Measures Level of service LOS (Exhibit 15-3)	249	353 19.4 4.8 15.5	

	-
Capacity, C _{d,ATS} (Equation 15-12) pc/h	712
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1616
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.5
Bicycle Level of Service	-
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	·
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 EB 2043
Project Description: Cooper Creek Alternative	/ indijele i edi	
Input Data		
Shoulder width It Lane width It Lane width It Segment length, Lt Shoulder width Analysis direction vol., V _d 333veh/h Opposing direction vol., V _o 223veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway Constrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi
Segment Length mi 2.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	12.1	1.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.2	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.551 0.966	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.76 1.00	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	837 243	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.7 mi/h	Base free-flow speed ⁴ , BFFS60.0 mAdj. for lane and shoulder width, 4 f _{LS} (Exhibit 15-7)0.0 mi/Adj. for access points ⁴ , f _A (Exhibit 15-8)2.0 mi/Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A)58.0 mAverage travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + v _{o,ATS}) - f _{np,ATS} 48.0 mPercent free flow speed, PEFS82.7 %	
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1./	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-venicle adjustment factor, $T_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.950	1.00
Grade adjustment factor, $I_{g,PTSF}$ (Exhibit 15-16 of Ex 15-17)	369	236
Base percent time-spent-followind ⁴ . BPTSF .(%)=100(1-e ^{av} d ^b)	36.1	
Adj. for no-passing zone, $f_{nn, DTSE}$ (Exhibit 15-21)	14.8	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	45.1	
Level of Service and Other Performance Measures	<u> </u>	
Level of service, LOS (Exhibit 15-3)	С	
Volume to capacity ratio, v/c	0.49	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	649
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1603
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	350.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.79
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 WB 2043
Project Description: Cooper Creek Alternative	· · · · · · · · · · · · · · · ·	
Input Data	•	
Analysis direction vol., V _d 223veh/h	Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and	nighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 ctor, PHF 0.95 one 0% I Buses , P _T 7%
Opposing direction vol., Vo 333veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.0	% Recreation Access points	al vehicles, P _R 17% s <i>mi 8</i> /mi
Average Travel Speed	Analysia Direction (d)	Opposing Divestion (s)
	Analysis Direction (d)	
Passenger-car equivalents for RVs, E_{T} (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E_{P} (Exhibit 15-11 or 15-13)	1.3	1.3
Heavy-vehicle adjustment factor, $f_{HV,ATS} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.545	0.979
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.70	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	615	358
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776($v/f_{HV,ATS}$) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h	Free-flow speed, FFS (FSS=BFF Average travel speed, ATS_d =FFS $V_{0,ATS}$) - $f_{np,ATS}$	FS-f _{LS} -f _A) 58.0 mi/h S-0.00776(v _{d,ATS} + 49.0 mi/h
Percent Time-Spent-Following	Percent free flow speed, PFFS	84.5 %
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.943	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v _i (pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	249	353
	29.4	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	1	
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{avd^b}) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	1	4.8
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d^b}) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} ·	1	<i>4.8</i> 5.5
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1- $e^{av_d}^b$) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} · v _{d,PTSF})	1	4.8 5.5
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b) Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21) Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} · v _{o,PTSF}) Level of Service and Other Performance Measures Level of service LOS (Exhibit 15-3)	3	4.8 5.5

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	712
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1616
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	234.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.59
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 EB 2043
Project Description: Cooper Creek Alternative	/ indijele i bal	
Input Data	2	
Shoulder width tt Lane width tt Lane width tt Lane width tt Segment length, Lt mi Analysis direction vol., Vd 476veh/h Opposing direction vol., Vd 318veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment length 14	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ⊠ Rolling mi Up/down ctor, PHF 0.95 one 100% Buses , P _T 7% al vehicles, P _R 17% ami 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	566	431
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.2 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} 60.0 & \text{mi/h} \\ 60.0 & \text{mi/h} \\ 0.0 & \text{mi/h} \\ 15-8) & 2.0 & \text{mi/h} \\ 60.00776(v_{d,ATS} + & 47.0 & \text{mi/h} \\ 81.1 & \% \end{array}$
Percent Time-Spent-Following	í	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v _i /pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	529	401
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} dັ)	51.2	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	3	8.3
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 73.0	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	Ω
Volume to canacity ratio v/c	^	ں 33
volume to oupdoity ratio, we		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1408
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1488
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	81.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	501.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.97
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain. 	f the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 WB 2043
Project Description: Cooper Creek Alternative	/ indijele i bal	20.00
Input Data	2	
Shoulder width It Lane width It Lane width It Segment length, Lt mi Analysis direction vol., V_d 318veh/h Opposing direction vol., V_o 476veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class II highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 100% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 1.4		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{τ} (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85	0.95
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	431	566
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.2 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 & mi/h \\ 60.0 & mi/h \\ 0.0 & mi/h \\ 15-8) & 2.0 & mi/h \\ 5S-f_{LS}-f_{A}) & 58.0 & mi/h \\ 6-0.00776(v_{d,ATS} + & 48.0 & mi/h \\ & 82.8 & \% \end{array}$
Percent Time-Spent-Following		· · · · · · · · · · · · · · · · · · ·
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.986
Grade adjustment factor', f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.87	0.96
Directional flow rate ⁻ , v_{f} (pc/n) v_{f} = $V_{f}/(PHF^{*t}_{HV,PTSF}^{*t} f_{g,PTSF})$	401	529
Base percent time-spent-tollowing ⁺ , BPTSF _d (%)=100(1-e ^{av} d)	45.0	
Auj. Ior no-passing zone, T _{np,PTSF} (Exhibit 15-21) Percent time-spent-following_PTSF (%)-RPTSFf */v / v	3	0.0
V _{o PTSE})	6	1.5
Level of Service and Other Performance Measures	I	
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0	.25

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.8
Bicycle Level of Service	· ·
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	334.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.77
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 EB 2043
Project Description: Cooper Creek Alternative		
Input Data	2	
Shoulder width tt Lane width tt Lane width tt Lane width tt Segment length, Lt mi Analysis direction vol., V _d 495veh/h Opposing direction vol., V _o 331veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 2.0	Class I h highway Class I h highway Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 25% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.86
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	588	443
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ f_{\text{LS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ t \ 15-8) & 2.0 \text{mi/h} \\ \text{S-f}_{\text{LS}} \cdot f_{\text{A}}) & 58.0 \text{mi/h} \\ \text{i-0.00776}(v_{\text{d},\text{ATS}} + \\ & 48.6 \text{mi/h} \\ & 83.8 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-venicie adjustment factor, $I_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.980	0.900
Grade adjustment factor, $I_{g,PTSF}$ (Exhibit 15-16 of Ex 15-17)	550	417
Base percent time-spent-followind ⁴ , BPTSF .(%)=100(1-e ^{av} d ^b)	5	3.0
Adj. for no-passing zone, $f_{np, DTSE}$ (Exhibit 15-21)	26.8	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	68.2	
Level of Service and Other Performance Measures	I	
Level of service, LOS (Exhibit 15-3)	D	
Volume to capacity ratio, v/c	0	.35

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	83.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	521.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.99
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 WB 2043
Project Description: Cooper Creek Alternative	/ indijele i edi	
Input Data	2	
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 331veh/h Opposing direction vol., V _o 495veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway C Crerrain Grade Length Peak-hour fac No-passing zc % Trucks and % Recreation Access points	ighway Class II Class III highway Level I Rolling mi Up/down tor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi
Segment Length mi 2.0		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.86	0.95
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	443	588
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.0 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) ⁻ f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ 60.0 \text{mi/h} \\ 15_{\text{LS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ 15_{\text{RS}}(\text{Exhibit 15-7}) & 2.0 \text{mi/h} \\ \text{S-f}_{\text{LS}}\text{-f}_{\text{A}}) & 58.0 \text{mi/h} \\ -0.00776(v_{\text{d},\text{ATS}} + 49.0 \text{mi/h} \\ 84.4 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.986
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.87	0.96
Directional flow rate ² , v_i (pc/h) $v_i = V_i$ /(PHF*f _{HV,PTSF} * f _{g,PTSF})	417	550
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ⁰)	46.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	1.	9.4
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 54.5	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Volume to canacity ratio v/c	^	26
volume to oupdoity ratio, we	•	

	1501	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1626	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.4	
Bicycle Level of Service	•	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	348.4	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.78	
Bicycle level of service (Exhibit 15-4)	D	
Notes	· · · · · · · · · · · · · · · · · · ·	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		

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APPENDIX F6 JUNEAU CREEK WITHOUT BRIDGE

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 EB 2043
Project Description: Juneau Creek Alt w/o bridge	, malyele real	
Input Data		
Analysis direction vol., V _o 307veh/h	Class I h highway Class I h highway Crerrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation	ighway Class II Class III highway Level ✓ Rolling mi Up/down ctor, PHF 0.95 one 20% I Buses , P _T 7% al vehicles, P _R 17%
Lane Width ft 6.0	Access points	<i>o</i> /1111
Segment Length mi 2.8		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks. E+ (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.94	0.85
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	551	416
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) ⁻ f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ FS-f_{LS}-f_A) & 58.0 & mi/h \\ S-0.00776(v_{d,ATS} + & 49.2 & mi/h \\ & 84.8 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.4	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.973	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.95	0.86
Directional flow rate ² , v_i (pc/h) $v_i = V_i$ /(PHF*f _{HV,PTSF} * f _{g,PTSF})	523	392
Base percent time-spent-following ⁴ , $BPTSF_d(\%)=100(1-e^{av}d^b)$	51.3	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	2	6.5
Percent time-spent-following, $PTSF_d$ (%)=BPTSF_d+f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	6	6.4
V _{0,PTSF})		
Level of Service and Other Performance Measures	1	
Level of Service, LOS (Exhibit 15-3)		и 32
roleme to equality ratio, wa	0	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1392
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1468
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	483.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.95
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one of downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15.20 provides coefficients a and b for Equation 15.10	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 1 wb 2043
Project Description: Juneau Creek Alt w/o bridge	/ indijele i bal	20.00
Input Data	2	
Analysis direction vol., V _d 307veh/h Opposing direction vol., V _o 459veh/h Shoulder width ti Shoulder width ti Shoulder width ti Segment length, L _t mi	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 4.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks. E ₊ (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.85	0.94
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	416	551
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ SS-f_{LS}-f_A) & 58.0 & mi/h \\ r-0.00776(v_{d,ATS} + & 49.4 & mi/h \\ & 85.2 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.4
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.960	0.973
Directional flow rate ² χ (pc/h) χ ///DHE*f *f	0.80	U.90
Base percent time-spent-following ⁴ BPTSE (%)=100(1- $a^{av}a^{b})$	4	4.5
Adj. for no-passing zone, $f_{rander ref}$ (Exhibit 15-21)	26.5	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF} *($v_{d,PTSF} / v_{d,PTSF}$ +	. 55.9	
Level of Service and Other Performance Measures	I	
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0	.24

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1505
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1609
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	85.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, v_{OL} (Eq. 15-24) veh/h	323.2
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.75
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00,as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 eb 2043
Project Description: Juneau Creek Alt w/o bridge		
Input Data		
T Shoulder widthtt		
Lane width tt	Class I hi	ghway 🔲 Class II
Lane width tt	highway 🔲 (Class III highway
\downarrow	Terrain Level Roll Grade Length 3.00 mi Up/dov Peak-hour factor, PHF 0.95 No-passing zone 0%	Level Rolling
Segment length, L _t mi		3.00 mi Up/down 4.0 tor, PHF 0.95 ne 0%
Analysis direction vol., V _d 380veh/h	Show North Arrow % Trucks and	Buses , P _T 7%
Opposing direction vol., V _o 255veh/h	% Recreationa	al vehicles, P _R 17%
Shoulder width ft 6.0	Access points	<i>mi 8</i> /mi
Segment Length mi 4.0		
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	1.4
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.951	0.973
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.78	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	539	276
Free-Flow Speed from Field Measurement	Estimated Free	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.6 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 50.1 mi/h
	v _{o,ATS}) ^{- f} _{np,ATS} Percent free flow speed, PFFS	86.3 %
Percent Time-Spent-Following	Analysia Directions (a)	Orange in a Direction (c)
$\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i$	Analysis Direction (d)	
Passenger-car equivalents for trucks, $E_T(Exhibit 15.10 \text{ m} 15.19)$	1.2	1.1
Passenger-car equivalents for RVs, E_{R} (Exhibit 15-18 or 15-19)	0.096	0.002
$\frac{1}{1} = \frac{1}{1} \left[\frac{1}{1} + 1$	1.00	1.00
Diractional flow rate $2 \times (20/b) \times 10^{10}$ Graduate 3×10^{-10} Graduate	1.00	270
Directional now rate, v_{i} (pc/n) $v_{j} = v_{i} / (r - r + HV, pTSF + Ig, pTSF)$	400	270
base percent time-spent-tollowing", BP1SF _d (%)=100(1- $e^{\alpha * d}$)	41.1	
Auj. Ior no-passing zone, r _{np,PTSF} (Exhibit 15-21)	14.4	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	49	9.7
V _{o,PTSF})		
		8
Volume to capacity ratio. v/c	0	
	0.	-

Capacity, C _{d,ATS} (Equation 15-12) pc/h	709
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1678
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	400.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.86
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 wb 2043
Project Description: Juneau Creek Alt w/o bridge	/ indijele i edi	
Input Data		
Shoulder width	Class I h highway Co Crease I h highway Co Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreations Access points	ighway Class II Class III highway Level Rolling 4.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% <i>mi</i> 8/mi
Segment Length mi 4.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	12.2	1.3
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.3	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.545	0.979
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.72	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	684	408
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} 60.0 & \text{mi/h} \\ f_{LS}(\text{Exhibit 15-7}) & 0.0 & \text{mi/h} \\ 15-8) & 2.0 & \text{mi/h} \\ \text{S-f}_{LS}\text{-}f_{A}) & 58.0 & \text{mi/h} \\ -0.00776(v_{d,ATS} + & 48.2 & \text{mi/h} \\ & 83.1 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.8	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.945	0.993
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate ² , v/pc/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})	284	403
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d [*])	33.1	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	14.3	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 39.0	
V _{o,PTSF})		
Level of Service and Other Performance Measures	[0
Volume to capacity ratio. v/c	0	40
H		-

1	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	747
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1622
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	83.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	268.4
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.65
Bicycle level of service (Exhibit 15-4)	D
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.	of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 EB 2043
Project Description: Juneau Creek Alt w/o bridge		
Input Data		
Analysis direction vol., V _d 380veh/h	Class I h highway Class I h highway Co Terrain Grade Length Peak-hour fac No-passing zo % Trucks and	ighway Class II Class III highway Level Rolling 2.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7%
Opposing direction vol., Vo 255veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 3.0	Access points	mi <i>8</i> /mi
Average Travel Speed	·	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	9.9	1.4
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.610	0.973
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.79	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	830 276	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed ⁴ , BFFS Adi. for lane and shoulder width, ⁴	60.0 mi/h f _{i c} (Exhibit 15-7) 0.0 mi/h
Mean speed of sample ³ , S _{FM}	Adi. for access points ⁴ , f, (Exhibit	(15-8) 2.0 mi/h
Free-flow speed EES-S $\pm 0.00776/v/f$	Free-flow speed, FFS (FSS=BFF	S-f _{Lo} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)1.6 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 47.8 mi/h
	v _{o,ATS}) ^{- f} _{np,ATS} Percent free flow speed, PFFS	82.5 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
	Analysis Direction (d)	
Passenger-car equivalents for RVs E (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor $f_{\rm ev} = 1/(1 + P_{\rm e}(E_{\rm e}-1) + P_{\rm e}(E_{\rm e}-1))$	1.000	0.993
Grade adjustment factor ¹ , $f_{a, PTSE}$ (Exhibit 15-16 or Ex 15-17)	0.99	1.00
Directional flow rate ² , $v_{\text{(pc/h)}} v_{i} = V_{i} / (\text{PHF}^{*}f_{\text{HV,PTSF}}^{*} f_{\text{a,PTSF}})$	404	270
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	41.0	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	14.4	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} +	+ 49.6	
V _{o,PTSF})		
Level of Service and Other Performance Measures	1	0
Volume to capacity ratio. v/c	<u> </u>	
rotante te capacity rate, 170	0.	

Capacity, C _{d,ATS} (Equation 15-12) pc/h	745
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1678
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.5
Bicycle Level of Service	-
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	400.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.86
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain. 	f the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3 WB 2043
Project Description: Juneau Creek Alt w/o bridge	/ indijele i edi	
Input Data		
Shoulder width	Class I h highway Constraint Grade Length Peak-hour fac No-passing zo % Trucks and % Recreations Access points	ighway Class II Class III highway Level Rolling 2.00 mi Up/down 4.0 tor, PHF 0.95 one 0% Buses , P _T 7% al vehicles, P _R 17% ami 8/mi
Segment Length mi 3.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks. E_{τ} (Exhibit 15-11 or 15-12)	10.0	1.3
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.2	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.600	0.979
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.73	1.00
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	613	408
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.3 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ f_{\text{LS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ t 15-8) & 2.0 \text{mi/h} \\ \text{S-f}_{\text{LS}}\text{-}f_{\text{A}}) & 58.0 \text{mi/h} \\ \text{-}0.00776(v_{\text{d},\text{ATS}} + \\ 48.7 \text{mi/h} \\ 84.0 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.993	0.993
Grade adjustment factor', f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.99	1.00
Base percent time-spent-following ⁴ RDTSE (9()=100(1 $a^{2V_a})$	212	2.1
Addi for no-passing zone f (Evhibit 15-21)	32.1	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *($v_{d,PTSF} / v_{d,PTSF}$ + $v_{o,PTSF}$)	37.9	
Level of Service and Other Performance Measures	I	
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0.	.36

Capacity, C _{d,ATS} (Equation 15-12) pc/h	829
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1682
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.0
Bicycle Level of Service	•
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	268.4
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.65
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	f the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 EB 2043
Project Description: Juneau Creek Alt w/o bridge		
Input Data	2	
Analysis direction vol., V _d 380veh/h Opposing direction vol., V _o 255veh/h Shoulder width ti Shoulder width ti Segment length, L ₁ mi	Class I h highway C Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down tor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% a mi 8/mi
Segment Length mi 1.3		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks E (Exhibit 15-11 or 15-12)	2 0	
Passenger-car equivalents for RVs, $E_{\rm R}$ (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.90	0.80
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	483	370
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS V _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rl} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ FS-f_{LS}-f_{A}) & 58.0 & mi/h \\ F-0.00776(v_{d,ATS} + & 50.0 & mi/h \\ & 86.1 & \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))$	0.960	0.953
Grade adjustment factor', f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.90	0.83
Directional flow rate, v_i (pc/n) $v_i = v_i / (PHF T_{HV,PTSF} T_{g,PTSF})$	463	6.0
Dase percent time-spent-totiowing ', BPTSF _d (%)=100(1- e^{4} d) Addi for no-passing zone f (Explicit 15-21)	46.9	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{d,PTSF})$		
Level of Service and Other Performance Measures	I	
Level of service, LOS (Exhibit 15-3)		C
Volume to capacity ratio, v/c	0	.28

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1336
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1419
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	400.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.86
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 4 WB 2043
Project Description: Juneau Creek Alt w/o bridge	•	
Input Data		
Analysis direction vol., V _d 255veh/h	Class I h highway Cass how North Arrow Show North Arrow Class I h highway Cass Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation	ighway Class II Class III highway Level M Rolling mi Up/down ctor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _B 17%
Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.3	Access points	<i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.80	0.90
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	370	483
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.2 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{rcrc} & 60.0 & mi/h \\ f_{LS}(Exhibit 15-7) & 0.0 & mi/h \\ t 15-8) & 2.0 & mi/h \\ S-f_{LS}-f_A) & 58.0 & mi/h \\ -0.00776(v_{d,ATS} + & 50.2 & mi/h \\ & 86.5 & \% \end{array}$
Percent Time-Spent-Following		
Passenger-car equivalents for trucks. E ₊ (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.7	Opposing Direction (o) 1.6
Passenger-car equivalents for RVs, $E_{\rm p}$ (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_B(E_B-1))$	0.953	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.83	0.90
Directional flow rate ² , $v_{i}(pc/h) v_{i} = V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	339	463
Base percent time-spent-following ⁴ , $BPTSF_d(\%)=100(1-e^{av}d^b)$	38.7	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	2	0.9
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	47.5	
v _{o,} PTSF [/]		
Level of service, LOS (Exhibit 15-3)		В
Volume to capacity ratio, v/c	0.	.22

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Capacity, C _{d,ATS} (Equation 15-12) pc/h	1464	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1554	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.5	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	268.4	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.65	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		
4. For the analysis direction only		
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 EB 2043
Project Description: Juneau Creek Alt w/o bridge	/ indijele i bal	2010
Input Data	2	
Analysis direction vol., V _d 380veh/h Opposing direction vol., V _o 255veh/h Shoulder width ft 6.0	Class I h highway Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level Rolling mi Up/down ctor, PHF 0.95 one 20% Buses , P _T 7% al vehicles, P _R 17% s mi 8/mi
Segment Length mi 1.2		
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.0	2.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.920	0.908
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.90	0.80
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	483 370	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{<i>FM</i>} Total demand flow rate, both directions, v Free-flow speed, FFS=S _{FM} +0.00776(v / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.4 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS}	$f_{LS}(Exhibit 15-7) = 0.0 \text{ mi/h}$ $f_{LS}(Exhibit 15-7) = 0.0 \text{ mi/h}$ $f_{LS}(F_{A}) = 2.0 \text{ mi/h}$ $f_{LS}(F_{A}) = 58.0 \text{ mi/h}$ $f_{LS}(F_{A}) = 50.0 \text{ mi/h}$
Percent Time-Spent-Following	Percent free flow speed, PFFS	86.1 %
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.7
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.960	0.953
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.90	0.83
Directional flow rate ² , $v_{i}(pc/h) = V_{i}(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	463	339
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	46.9	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	2	8.3
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 63.2	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	
Level of service, LOS (Exhibit 15-3)		<u>C</u>
volume to capacity ratio, V/C	0	.28

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1336
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1419
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	400.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.86
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 5 WB 2043
Project Description: Juneau Creek Alt w/o bridge	, malyolo i oai	
Input Data		
Analysis direction vol., V _d 255veh/h Opposing direction vol., V _o 380veh/h Shoulder width ti Shoulder width ti Shoulder width ti Segment length, L ₁ mi	Class I h highway Class I h highway Control Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level I Rolling mi Up/down ctor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi
Segment Length mi 1.2		
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	2.2	2.0
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.908	0.920
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.80	0.90
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	370	483
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi Free-flow speed, FFS (FSS=BFF	60.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.2 mi/h	Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	-0.00776(v _{d,ATS} + 50.2 mi/h 86.5 %
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))	0.953	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.83	0.90
Directional flow rate ² , $v_{f}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	339	463
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	3	8.7
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	20.9	
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	+ 47.5	
^v o,PTSF ^J		
Level of Service and Other Performance Measures	1	B
Volume to capacity ratio, v/c	0	

1		
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1464	
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1554	
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	86.5	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	268.4	
Effective width, Wv (Eq. 15-29) ft	24.00	
Effective speed factor, S_t (Eq. 15-30)	4.79	
Bicycle level of service score, BLOS (Eq. 15-31)	3.65	
Bicycle level of service (Exhibit 15-4)	D	
Notes		
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific	
2. If $v_i(v_d \text{ or } v_o) >= 1,700 \text{ pc/h}$, terminate analysisthe LOS is F.		
3. For the analysis direction only and for v>200 veh/h.		
4. For the analysis direction only		
5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.		

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DIRECTIONAL TWO-LANE HIGHWA	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 eb 2043
Project Description: Juneau Creek Alt w/o bridge	Analysis Teal	2040
Input Data	4	
Shoulder width tt		
Lane width	Class I h	ighway 🔲 Class II
Lane width ft	highway 🔲 🤇	Class III highway
Segment length, L _t mi	Grade Length Peak-hour fac	Level Rolling mi Up/down tor, PHF 0.95 pre 50%
Analysis direction vol., V _d 495veh/h	Show North Arrow % Trucks and	Buses , P _T 7%
Opposing direction vol., Vo331veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi2.0	% Recreation Access points	al vehicles, P _R 17% <i>mi 8</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.8	2.1
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.932	0.914
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.95	0.86
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$)	588 443	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed ⁴ , BFFS	60.0 mi/h
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 58.0 mi/h
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 2.0 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 48.0 mi/h
	^v o,ATS ^{) - I} np,ATS Percent free flow speed, PFFS	82.7 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.2	1.6
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.986	0.960
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.96	0.87
Directional flow rate ² , v_i (pc/h) $v_i = V_i$ (PHF*f _{HV,PTSF} * f _{g,PTSF})	550	417
Base percent time-spent-following ⁴ , BPTSF _d (%)= $100(1-e^{av}d^b)$	53.0	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	32.6	
Percent time-spent-following, $PTSF_d$ (%)= $BPTSF_d$ +f _{np,PTSF} *($v_{d,PTSF}$ / $v_{d,PTSF}$ +	+ 71.5	
V _{o,PTSF})		
Level of Service and Other Performance Measures		n
Volume to capacity ratio, v/c	0.	.35
T		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1423
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1505
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	521.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.99
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 6 WB 2043
Project Description: Juneau Creek Alt w/o bridge	/ indijele i edi	
Input Data	2	
Shoulder width It Lane width It Lane width It Segment length, Lt mi Analysis direction vol., V _d 331veh/h Opposing direction vol., V _o 495veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Class I h highway Constrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway Class II Class III highway Level ▼ Rolling mi Up/down tor, PHF 0.95 one 10% Buses , P _T 7% al vehicles, P _R 17% mi 8/mi
Segment Length mi 2.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)	2.1	1.8
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.914	0.932
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.86	0.95
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	443	588
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.0 mi/h	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibit Free-flow speed, FFS (FSS=BFF Average travel speed, ATS _d =FFS v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	$\begin{array}{c} 60.0 \text{mi/h} \\ f_{\text{LS}}(\text{Exhibit 15-7}) & 0.0 \text{mi/h} \\ t 15-8) & 2.0 \text{mi/h} \\ \text{SS-f}_{\text{LS}}\text{-}f_{\text{A}}) & 58.0 \text{mi/h} \\ -0.00776(v_{\text{d},\text{ATS}} + 49.0 \text{mi/h} \\ & 84.4 \% \end{array}$
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R-1))$	0.960	0.986
Grade adjustment factor', f _{g,PTSF} (Exhibit 15-16 or Ex 15-1/)	0.87	0.96
Directional flow rate, v_i pc/n) $v_i = v_i / (PHF T_{HV,PTSF} T_{g,PTSF})$	417	6.1
Dase percent time-spent-tonowing ', BPTSF _d (%)=100(1-e ^{4*} d) Addi for no-passing zone f (Evbibit 15-21)	46.1	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+v_{d,PTSF})$	54.5	
Level of Service and Other Performance Measures	<u>I</u>	
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0.	.26

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1521
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1626
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	84.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	348.4
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	3.78
Bicycle level of service (Exhibit 15-4)	D
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain. 	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15-20 provides coefficients a and b for Equation 15-10.	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 EB EXISTING (20%) 2043	
Project Description: Juneau Creek Alt w/o bridge	, that you i out	2010	
Input Data			
* chandle	4		
Lane width			
Lane width	Class In		
Shoulder width tt			
Segment length, L _t mi	Grade Length Peak-hour fac No-passing zo	mi Up/down tor, PHF 0.95 one 0%	
Analysis direction vol., V _d 95veh/h	Show North Arrow % Trucks and	Buses , P _T 7%	
Opposing direction vol., V _o 64veh/h Shoulder width ft 6.0 Lane Width ft 12.0	% Recreation Access points	al vehicles, P _R 1 <i>7</i> % <i>mi 8</i> /mi	
Segment Length mi 4.0			
Average Travel Speed	Anchusia Direction (d)	Opposing Direction (a)	
	Analysis Direction (d)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	2.7	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.951	0.880	
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.67	0.67	
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	157 114		
Free-Flow Speed from Field Measurement	rement Estimated Free-Flow Speed		
	Base free-flow speed ⁴ , BFFS	55.0 mi/h	
Mean speed of sample ³ S	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h	
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibit	15-8) 2.0 mi/h	
Free-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV.ATS})	Free-flow speed, FFS (FSS=BFF	S-f _{LS} -f _A) 53.0 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 0.5 mi/h	Average travel speed, ATS _d =FFS	-0.00776(v _{d,ATS} + 50.4 mi/h	
	v _{o,ATS}) ^{- f} np,ATS Percent free flow speed, PFFS	95.1 %	
Percent Time-Spent-Following	Anglistic Direction (d)	Orana sina Disastian (s)	
	Analysis Direction (0)		
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.9	
Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-venicie adjustment factor, $I_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.941	0.341	
Grade adjustment factor', r _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.75	0.73	
Directional now rate, $v_i(p;n) v_i = v_i((p;n) r_{HV,PTSF}^{A} r_{g,PTSF})$	140		
Dase percent time-spent-tollowing ', BPTSFd(%)=100(1-e**d)	16.4		
Auj. Ioi no-passing zone, i _{np,PTSE} (Exhibit 15-21)		1.0	
Percent time-spent-tonowing, $PISF_d$ (%)=BPISF_d+T np, PTSF (Vd, PTSF / Vd, PTSF	23.5		
v _{o,} PTSF [/]			
Level of service. LOS (Exhibit 15-3)			
Volume to capacity ratio, v/c	0.	0.09	
	7		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	0
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1167
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	95.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	100.0
Effective width, Wv (Eq. 15-29) ft	33.45
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	0.44
Bicycle level of service (Exhibit 15-4)	A
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain. 	of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 2 WB EXISTING (20%) 2043
Project Description: Juneau Creek Alt w/o bridge		
Input Data		
Analysis direction vol., V ₀ 95veh/h	Class I h highway Terrain Grade Length Peak-hour fac No-passing z % Trucks and % Recreation	nighway Class II Class III highway Level Rolling n mi Up/down ctor, PHF 0.95 one 0% i Buses , P _T 7% al vehicles, P _R 17%
Shoulder width ft 6.0	Access points	s <i>mi 8</i> /mi
Segment Length mi 4.0		
Average Travel Speed		4
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	2.7
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.951	0.880
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.67	0.67
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	106 170	
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
	Base free-flow speed ⁴ , BFFS	55.0 mi/h
Mean speed of sample ³ . Set	Adj. for lane and shoulder width, ⁴	f _{LS} (Exhibit 15-7) 0.0 mi/h
Total demand flow rate, both directions, v	Adj. for access points ⁴ , f _A (Exhibi	t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})	Free-flow speed, FFS (FSS=BFFS-f _{LS} -f _A) 53.0 mi/h	
Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 1.1 mi/h	Average travel speed, ATS _d =FFS-0.00776(v _{d,ATS} + 49.8 mi/h	
	v _{o,ATS}) - Inp,ATS Percent free flow speed, PFFS	93.9 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)	1.9	1.9
Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.926	0.926
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.73	0.73
Directional flow rate ² , $v_{h}(pc/h) v_{i}=V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$	100	148
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	11.6	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	1	1.8
Percent time-spent-following, $PTSF_{d}$ (%)=BPTSF_{d}+f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})	. 16.4	
V _{0,PTSF})		
Level of Service and Other Performance Measures	1	
Level 01 Service, LOS (EXTIDIT 15-3)	A	
volume to capacity ratio, we		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	1075
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1223
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	93.9
Bicycle Level of Service	-
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	67.4
Effective width, Wv (Eq. 15-29) ft	36.24
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	-0.74
Bicycle level of service (Exhibit 15-4)	A
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.	e of the base conditions. For the purpose of grade adjustment, specific
2. If $v_i(v_d \text{ or } v_o) >=1,700 \text{ pc/h}$, terminate analysisthe LOS is F. 3. For the analysis direction only and for v>200 veh/h. 4. For the analysis direction only 5. Exhibit 15 20 provides coefficients a and b for Equation 15 10.	

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General Information Site Information Apalogt Against Company Date Parton Highway (Totalion of Travel & Stelling Segment 4, 8, 5) Undedicion Stelling Segment 4, 8, 5) Undedicion Imput Data Imput Data Imput Data Imput Data put Data Imput Data Imput Data Imput Data Imput Data Imput Data Imput Data Imput Data Imput	DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET				
Analysis Highway / Direction of Travel Stanlag Project Company Data Performed 11/21/2013 Highway / Direction of Travel Stanlag Project Description: Juneau Creek AI with bindge Highway / Direction of Travel Stanlag Project Description: Juneau Creek AI with bindge Highway / Direction of Travel Stanlag Project Description: Juneau Creek AI with bindge Highway Class II highway Class II highway Analysis direction vol. Vo Segment length. L mit Highway Class II highway Travels and Bunes. Pr 7% Analysis direction vol. Vo Gowith Boolench Sorgenet Length mit 4.0 Access points Junes with an analysis direction (c) Opposing Direction (c) Passenge-car equivalents for Nex, Eq. (Exhibit 15-11 or 15-13) 1.1 1.1 1.1 1.1 Passenge-car equivalents for Nex, Eq. (Exhibit 15-11 or 15-13) 1.1 1.1 1.7 Passenge-car equivalents for Nex, Eq. (Exhibit 15-11 or 15-13) 1.1 1.1 1.1 Passenge-car equivalents for Nex, Eq. (Exhibit 15-11 or 15-13) 1.1 1.7 Passenge-car equivalents for Nex, Eq. (Exhibit 15-13) 3.6 mith Adj. for lara a	General Information		Site Information		
Project Description: Juncat/ Creek Alf worb bridge Description: Juncat/Second input Data	Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period		Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3, 4, & 5 EB Existing (30%) 2043	
Input Data Shoulder width It Interweidth Interweidth It Interweidth It Iterweidth It Segment Length Interweidth It Inghray Class II highway Class II highway Analysis direction vol. Vg 128-width Iter inghray Class II highway Class II highway Analysis direction vol. Vg 128-width Iter inghray Class II highway Class II highway Segment Length Iter inghray Iter inghray Iter inghray Iter inghray Iter inghray Soudoef width 6.0 Iter inghray Iter inghray Iter inghray Iter inghray Average Travel Speed Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, Er, (Exhibit 15-11 or 15-12) Iter inghray Iter inghray Mean speed of sample ³ , SpM 0.71 0.871 0.871 0.871 Mean speed of sample ³ , SpM Total domand flow rato, both directions, v Free-Flow Speed from Field Measurement Estimated Free-Flow Speed Base free flow speed, FFSS SpM -000776(w/ May 13) 3.6 mih Average travel speed, ATS_aFFS 0.00776(w/ May 14, SpC hibit 15-19 1.0 <td>Project Description: Juneau Creek Alt w/o bridge</td> <td></td> <td>rinalyolo roal</td> <td>2010</td>	Project Description: Juneau Creek Alt w/o bridge		rinalyolo roal	2010	
$ \begin{array}{ c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Input Data				
Inter widthI Lare widthI	+				
Lane widthLane widthSoulder widthSoulder widthSoulder widthSoulder widthSoulder widthClass III bighwayTarainLovel IP RollingParket Length, LiMailAnalysis direction vol., VA value Soulder widthClass III bighwayTarainLovel IP RollingParket Length, DiAnalysis direction vol., VA developAnalysis Direction (d)Opposing Direction (o)Passenger car equivalents for RVS, Eq. (Exhibit 15-11 or 15-13)1.11.1Analysis Direction (d)Opposing Direction (o)Passenger car equivalents for RVS, Eq. (Exhibit 15-11 or 15-13)1.1.11.1Car of the maximum factor, Ir_mATSAnalysis Direction (d)Opposing Direction (o)Passenger car equivalents for trucks, Eq. (Exhibit 15-10 or 15-13)1.1.11.1Car of the maximum factor, Ir_mATSAnalysis Direction (d)Opposing Direction (d)Opposing Direction (d)Analysis Direction (d)Op	Lane width	n			
$\begin{tabular}{ c c c c c } \hline begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Lane width	tt		nignway M Class II	
TerrainT	Shoulder width	<u>ft</u>	highway Class III highway Terrain Level V Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.95 No-passing zone 100%		
Analysis direction vol., V _a 142veh/h Shwe Kinth Arrow % Trucks and Buses, P _T 7% Opposing direction vol., V _a 90veh/h %. Recreational vehicles, P _R 7% Shoulder widh 6.0 %. Recreational vehicles, P _R 7% Shoulder widh 6.0 %. Recreational vehicles, P _R 7% Segment Length mi 4.0 Access points mi % Arrange Travel Speed Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12) 1.5 2.7 Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-13) 1.1 1.1 Heavy-vehicle adjustment factor, 1 _{(FU/ATS} =11 (1+ P _T (E _T -1)+P _R (E _R -1)) 0.951 0.880 Grade adjustment factor, 1 _{(GATS} (Exhibit 15-9) 0.71 0.67 Demand flow rate ² , v ₁ (pch) v ₁ =V ₁ /(PHF ⁴ (L _{ATS})* 221 171 Free-Flow Speed from Field Measurement Estimate Preve-Flow Speed 55.0 mi/h Adj. for ane and shoulder widh, ⁴ (L_Schibit 15-7) 0.0 mi/h 30.0 mi/h Adj. for ane and shoulder widh, ⁴ (Exhibit 15-8) 2.0 mi/h 30.0 mi/h Adj. for ane and shoulder widh, ⁴ (L_Schibit 15-9) 2.0 m	• Segment length, L _t mi	-			
Opposing direction vol., Vo 99veh h % Recreational vehicles, Pg 17% Should with t 6.0 8/mil 8/mil Segment Length mi 4.0 8/mil 8/mil Average Travel Speed Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12) 1.5 2.7 Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12) 1.1 1.1 Heavy-vehicle adjustment factor, f _{HV,ATS} (Exhibit 15-9) 0.71 0.67 Demand flow rate ² , (pc/h) y= V/ (PHF '[q,ATS 'H_{V,ATS}) 221 171 Free-Flow Speed from Field Measurement Estimated Free-Flow Speed 55.0 m/h Mean speed of sample ³ , S _{FM} Adj, for lane and shoulder width ⁴ [s](Exhibit 15-7) 0.0 m/h Free-flow speed, FFS Segmet 0.00776 (vf_{HVATS}) 3.6 m/h Average travel speed, ATS_g=FFS-4(s)(A) 53.0 m/h Adj, for nace angluvalents for trucks, E _T (Exhibit 15-18 or 15-19) 3.6 m/h Average travel speed, ATS_g=FFS-4(s)(A) 6.3 m/h Adj, for nace angluvalents for trucks, E _T (Exhibit 15-18 or 15-19) 1.8 1.8 8.7 % Percent Time-Spent-Following 1.0 0.73 0.73 0.73	Analysis direction vol., V _d 142veh/h		Show North Arrow % Trucks an	d Buses , P _T 7 %	
Land multing in 1 4.0 Average Travel Speed Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12) 1.1 1.1 Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-13) 1.1 1.1 Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-13) 1.1 1.1 Passenger-car equivalents for trucks, E _T (Exhibit 15-9) 0.71 0.880 Grade adjustment factor, f _{HVATS} (Exhibit 15-9) 0.71 0.677 Demand flow rate ² , v(pch) v ₁ =V/ (PHF f _{9,ATS} f _{14,ATS}) 221 171 Tree-Flow Speed from Field Measurement Estimated Free-Flow Speed Mage free-flow speed, BFS S _{5,M} Adj, for lane and shoulder widh, f _{14,S} (Exhibit 15-9) 0.0 mi/h Nation of the directions, v Free-flow speed, FFS S ₁₄ S(Shibit 15-9) Adj, for ane ad shoulder widh, f _{14,S} (Exhibit 15-9) 2.0 mi/h Not colspan="2">Colspan="2">Colspan= S ₂ S.0 mi/h <t< td=""><td>Opposing direction vol., V_o 96veh/h Shoulder width ft 6.0</td><td></td><td colspan="2">% Recreational vehicles, P_R 17% Access points <i>mi</i> 8/mi</td></t<>	Opposing direction vol., V _o 96veh/h Shoulder width ft 6.0		% Recreational vehicles, P _R 17% Access points <i>mi</i> 8/mi		
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Analysis Direction (d)Opposing Direction (o)Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12)1.52.7Passenger-car equivalents for RVs, E_{R} (Exhibit 15-11 or 15-13)1.11.1Heavy-vehicle adjustment factor, $I_{HV,ATS} = 1/ (1+ P_{T}(E_{T}-1)+P_{R}(E_{R}-1))$ 0.9510.880Grade adjustment factor, $I_{g,ATS}$ (Exhibit 15-9)0.710.67Demand flow rate ² , $v_{(PCh)} v_{=V/} (PHF^* I_{g,ATS} * I_{HV,ATS})$ 221171Tree-Flow Speed from Field MeasurementEstimated Free-Flow SpeedMage free-Flow speed, FS Estimated Free-Flow SpeedNot an intermed set of sample ³ , S_{FM} Total demand flow rate, both directions, v Free-Flow speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Free-Flow Speed, FS Estimated Flow Sp	Average Travel Speed		1	·	
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-11 or 15-12) 1.5 2.7 Passenger-car equivalents for RVs, E_{R} (Exhibit 15-11 or 15-12) 1.1 1.1 Heavy-vehicle adjustment factor, $t_{WATS}^{-}=1/(1+P_{T}(E_{T}-1)+P_{R}(E_{R}-1))$) 0.951 0.880 Grade adjustment factor, t_{QATS} (Exhibit 15-9) 0.71 0.67 Demand flow rate ² , v_{i} (pc/h) $v_{-}V_{i}$ (PHF' t_{QATS}^{-*} t_{HVATS}) 221 177 Pree-Flow Speed from Field Measurement Estimated Free-Flow Speed 55.0 mi/h Mean speed of sample ³ , S_{FM} Adj. for lare and shoulder width, 4_{LS} (Exhibit 15-7) 0.0 mi/h Adj. for lare action speed, FFS S _{PM} +0.00776(v f_{HVATS}) Ade in or access points ⁴ , 4_{LS} (Exhibit 15-15) 3.6 mi/h Nearge travel speed, ATS_g=FFS-0.00776(v $d_{ATS} + \frac{1}{46.3 mi/h}$ Yearge travel speed, PFS (FSS=BFFS-1) 87.4% Percent Time-Spent-Following Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, E_{T} (Exhibit 15-18 or 15-19) 1.0 1.0 Heavy-vehicle adjustment factor ¹ , $t_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17) 0.76 0.73 Passenger-car equivalents for trucks, E_{T} (Exhibit 15-16 or Ex 15-17) 0.76 0.73 Intertore time-spent-following			Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)1.11.1Heavy-vehicle adjustment factor, f _{HVATS} =1/(1+ P _T (E _T -1)+P _R (E _R -1))0.9510.880Grade adjustment factor, f _{AATS} (Exhibit 15-9)0.710.67Demand flow rate ² , v ₁ (pch) v ₂ -V ₁ /(PHF' f _{GATS} 'f _{HVATS})221171Tree-Flow Speed from Field MeasurementEstimated Free-Flow SpeedFree-Flow Speed from Field MeasurementBase free-flow speed ⁴ , BFFSMean speed of sample ³ , S _{FM} So mi/hAdj. for lace and shoulder width, ⁴ f _{LS} (Exhibit 15-7)0.0 mi/hAdj. for access points ⁴ , f _A (Exhibit 15-7)0.0 mi/hAdj. for access points ⁴ , f _A (Exhibit 15-7)0.0 mi/hAdj. for access points ⁴ , f _A (Exhibit 15-7)0.0 mi/hAdj. for access points ⁴ , f _A (Exhibit 15-7)0.0 mi/hAdj. for access points ⁴ , f _A (Exhibit 15-7)0.0 mi/hAverage travel speed, AFS (FS SBFS+5, f _{LS} f _A)53.0 mi/hAverage travel speed, AFS (FS CSBFS+5, f _{LS} f _A)53.0 mi/hAverage travel speed, AFS (FS CSBFS+5, f _{LS} f _A)53.0 mi/hAverage travel speed, AFS (FS CSBFS+5, f _{LS} f _A)53.0 mi/hParcent Time-Spent-FollowingAdj. for no-passing zone, f _{np,ATS} (Exhibit 15-18 or 15-19)1.81.8Passenger-car equivalents for Trucks, E _T (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjust	Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-	-12)	1.5	2.7	
$\begin{split} & Heavy-vehicle adjustment factor, $$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$$	Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-1	3)	1.1	1.1	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_T)$	_R (E _R -1))	0.951 0.880		
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)		0.71	0.67	
Free-Flow Speed from Field MeasurementEstimated Free-Flow Speed.Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, v55.0 m/hAdj. for lane and shoulder width, ⁴ t_{LS} (Exhibit 15-7)0.0 m/hAdj. for access points ⁴ , t_A (Exhibit 15-8)2.0 m/hAdj. for no-passing zones, $t_{np,ATS}$ (Exhibit 15-15)3.6 m/hAdj. for no-passing zones, $t_{np,ATS}$ (Exhibit 15-15)3.6 m/hAdj. for no-passing zones, $t_{np,ATS}$ (Exhibit 15-16)3.6 m/hPercent Time-Spent-FollowingAnalysis Direction (d)Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)1.8Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)1.0Inection of the method speed, $t_{np,TSF}$ (Exhibit 15-16 or Ex 15-17)0.76Oracle adjustment factor, t_{h_PTSF} ($t_{g,PTSF}$)208Direction allow rate ² , $v_{(pCh)}$ $v_{(pCh)}$ $v_{(pTSF)}$ $t_{g,PTSF}$ 208Adj. for no-passing zone, $t_{np,PTSF}$ (Exhibit 15-16 or Ex 15-17)0.76Oracle adjustment factor, t_{h_PTSF} ($t_{g,PTSF}$)208Directional flow rate ² , $v_{(pCh)}$ $v_{(pCh)}$ $v_{(p-TSF)}$ $t_{g,PTSF}$ 208Adj. for no-passing zone, $t_{np,PTSF}$ (Exhibit 15-21) 55.1 Percent time-spent-following, PTSF _d (%)=100(1-e ^{av} d ^b) 55.1 Percent time-spent-following, PTSF _d (%)=100(1-e ^{av} d ^b) 55.1 Level of Service, LOS (Exhibit 15-3) C Vo, pTSF b C Vo, pTSF b C Vo, pTS c C Vo, pTS c C Vo, pTS c C Vol	Demand flow rate ² , v_i (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$		221 171		
Base free-flow speed*, BFFS55.0m/hMean speed of sample3. SFM Total demand flow rate, both directions, vAdj. for lane and shoulder width, ${}^{4}I_{LS}$ (Exhibit 15-7)0.0m/hFree-flow speed, FFS=SFM+0.00776(vf HV,ATS)Adj. for access points4, fA (Exhibit 15-8)2.0m/hAdj. for no-passing zones, f_np,ATS (Exhibit 15-15)3.6m/hAverage travel speed, ATS_a=FFS-0.00776(vd,ATS + v_0,ATS) - f_np,ATS46.3m/hPercent Time-Spent-FollowingAnalysis Direction (d)Opposing Direction (o)Passenger-car equivalents for trucks, ET (Exhibit 15-18 or 15-19)1.81.81.8Passenger-car equivalents for RVs, ER (Exhibit 15-16 or Ex 15-17)0.760.731.01.01.0Heavy-vehicle adjustment factor 1, f _{HV} =1/ (1+ PT(ET-1)+PR(ER-1))0.760.731.61.61.6Base precent time-spent-following4, BPTSF_d(%)=100(1-e ^{av} d ⁵)2.081461.61.61.6Base precent time-spent-following4, BPTSF_d(%)=100(1-e ^{av} d ⁵)2.05.91.61.61.6Percent time-spent-following4, BPTSF_d(%)=100(1-e ^{av} d ⁵)2.2.31.41.61.61.6Base precent time-spent-following4, BPTSF_d(%)=BPTSF_d+f np,PTSF ¹ V_d,PTSF Free-Flow Speed from Field Measuremen	nt	Estimated Fr	ee-Flow Speed		
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, vAdj. for lane and shoulder width, $^4 f_{LS}$ (Exhibit 15-7)0.0 mi/hFree-flow speed, FFS=S _{FM} +0.00776(v/ f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)3.6 mi/hFree-flow speed, FFS (FSS=BFFS-t _{LS} -f_A)53.0 mi/hAdj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)3.6 mi/hAverage travel speed, ATS_a=FFS-0.00776(v_d,ATS + V_o,ATS) - f _{np,ATS} Percent free flow speed, PFFS87.4 %Percent Time-Spent-FollowingAnalysis Direction (d)Opposing Direction (o)Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19)1.81.8Passenger-car equivalents for RVs, E _R (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1))0.9470.947Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v/(pc/h) v ₁ =V ₁ /(PHF*f _{HV,PTSF} * f _{g,PTSF})208146Base percent time-spent-following, BTSF _d (%)=BPTSF _d +f np,PTSF [*] (v _{d,PTSF} / v _{d,PTSF} + v _{0,PTSF})55.9Percent time-spent-following, PTSF _d (%)=BPTSF _d +f np,PTSF [*] (v _{d,PTSF} / v _{d,PTSF} + v _{0,PTSF})55.1Correct free flow speed, PFSLevel of Service and Other Performance MeasuresLevel of Service and Other Performance MeasuresLevel of Service and Other Performance MeasuresLevel of Service and Other Performance Measures <td colsp<="" td=""><td></td><td></td><td>Base free-flow speed⁴, BFFS</td><td>55.0 mi/h</td></td>	<td></td> <td></td> <td>Base free-flow speed⁴, BFFS</td> <td>55.0 mi/h</td>			Base free-flow speed ⁴ , BFFS	55.0 mi/h
Mathematical demand flow rate, both directions, vAdj. for access points ⁴ , f _A (Exhibit 15-8)2.0 mi/hFree-flow speed, FFS=S _{FM} +0.00776(vf f _{HV,ATS})Adj. for access points ⁴ , f _A (Exhibit 15-8)2.0 mi/hAdj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)3.6 mi/hAverage travel speed, AFS_=FS-fL_S f _A)53.0 mi/hAdj. for no-passing zones, f _{np,ATS} (Exhibit 15-15)3.6 mi/hAverage travel speed, AFS_=FS-0.00776(vd_ATS + vo,ATS) - fnp,ATS Percent free flow speed, PFFS87.4 %Percent Time-Spent-FollowingTotal demand flow rate, CEX, ETC (Exhibit 15-18 or 15-19)1.81.81.81.8Passenger-car equivalents for trucks, ETC (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ PT(ET-1)+PR(ER-1))0.9470.947Grade adjustment factor, f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v(pCr/h) v _i =V _i /(PHF*f _{HV,PTSF} * f _{g,PTSF})208146Base percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} / v _{d,PTSF} + v _{o,PTSF})55.1Vo,PTSF)55.1Level of Service and Other Performance MeasuresLevel of Service and Other Performance MeasuresLevel of Service and Other Performance MeasuresLevel of Service and Other Performance MeasuresLowLowLowCVolume to capacity ratio	Mean speed of sample ³ Sec.		Adj. for lane and shoulder width,	⁴ f _{LS} (Exhibit 15-7) 0.0 mi/h	
Free-flow speed, FFS = S_{FM} + 0.00776 (v/ f_{HV,ATS}) Adj. for no-passing zones, f_{np,ATS} (Exhibit 15-15)3.6 mi/hFree-flow speed, FFS (FSS=BFFS-f_LS-f_A)53.0 mi/hAdj. for no-passing zones, f_{np,ATS} (Exhibit 15-15)3.6 mi/hAverage travel speed, ATS_d=FFS - 0.00776 (v_d,ATS + V_0,ATS) - f_{np,ATS} Percent free flow speed, PFFS87.4 %Percent Time-Spent-FollowingAnalysis Direction (d)Opposing Direction (c)Passenger-car equivalents for trucks, E_T(Exhibit 15-18 or 15-19)1.81.8Passenger-car equivalents for RVS, E_R (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, f_{HV}=1/ (1+ P_T(E_T-1)+P_R(E_R-1))0.9470.947Grade adjustment factor, f_g_PTSF (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v/(pc/h) v_i=V/(PHF*f_HV,PTSF* f_{g,PTSF})208146Base percent time-spent-following ⁴ , BPTSF_d(%)=100(1-e ^{AV} d)55.155.1Percent time-spent-following, PTSF_d(%)=BPTSF_d+f_np,PTSF * (v_d,PTSF / v_d,PTSF + V_d,PT	Total demand flow rate, both directions, v		Adj. for access points ⁴ , f _A (Exhib	vit 15-8) 2.0 mi/h	
Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)3.6 mi/hAverage travel speed, $ATS_d = FFS \cdot 0.00776(v_{d,ATS} + 46.3 mi/h v_{o,ATS}) - f_{np,ATS}$ Percent free flow speed, $PFFS$ 87.4 %Percent Time-Spent-FollowingAnalysis Direction (d)Opposing Direction (o)Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)1.81.8Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ 0.9470.947Grade adjustment factor, $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v_{J} (pc/h) $v_{j}=V_{J}$ (PHF*f_{HV,PTSF}* f_{g,PTSF})208146Base percent time-spent-following ⁴ , BPTSF_d(%)=100(1-e^{av_d})55.955.1Percent time-spent-following, PTSF_d(%)=BPTSF_d*f_{np,PTSF}*(v_{d,PTSF} + v_{d,PTSF} + v_{d,PTSF})55.155.1Level of Service, LOS (Exhibit 15-3)C0.12	Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS})		Free-flow speed, FFS (FSS=BF	FS-f _{LS} -f _A) 53.0 mi/h	
Vo,ATS) 1 ⁿ p,ATS Percent free flow speed, PFFS 87.4 % Percent Time-Spent-Following Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19) 1.8 1.8 Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-19) 1.0 1.0 Heavy-vehicle adjustment factor, f _{HV} =1/ (1+ P _T (E _T -1)+P _R (E _R -1)) 0.947 0.947 Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17) 0.76 0.73 Directional flow rate ² , v/(pc/h) v ₌ V/(PHF*f _{HV,PTSF} * f _{g,PTSF}) 208 146 Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b) 22.3 5.9 Percent time-spent-following, PTSF _d (%)=BPTSF d+f np,PTSF *(v _{d,PTSF} + v _{d,PTSF} + v _{d,PTSF} + v _{d,PTSF} + v _{d,PTSF} 5.1 v_o,PTSF) 5.1 5.1	Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.6 mi/h Average travel speed, AT		Average travel speed, ATS _d =FF	=FFS-0.00776(v _{d,ATS} + 46.3 mi/h	
Percent Time-Spent-Following Image: Passenger-car equivalents for trucks, ET (Exhibit 15-18 or 15-19) Analysis Direction (d) Opposing Direction (o) Passenger-car equivalents for RVs, ET (Exhibit 15-18 or 15-19) 1.8 1.8 Passenger-car equivalents for RVs, ET (Exhibit 15-18 or 15-19) 1.0 1.0 Heavy-vehicle adjustment factor, fHV=1/(1+PT(ET-1)+PR(ER-1)) 0.947 0.947 Grade adjustment factor ¹ , fg,PTSF (Exhibit 15-16 or Ex 15-17) 0.76 0.73 Directional flow rate ² , v/(pc/h) vi=Vi/(PHF*fHV,PTSF* fg,PTSF) 208 146 Base percent time-spent-following ⁴ , BPTSFd(%)=100(1-e ^{avd} b) 22.3 55.9 Percent time-spent-following, PTSFd(%)=BPTSFd+fnp,PTSF*(vd,PTSF/vd,PTSF+ vd,PTSF* 55.1 55.1 Vo,PTSF) 55.1 55.1 55.1 Level of Service and Other Performance Measures 55.1 55.1 Level of service, LOS (Exhibit 15-3) C 55.1 Volume to capacity ratio, v/c 0.12 0.12			v _{o,ATS}) - f _{np,ATS} Percent free flow speed, PFFS	87.4 %	
Analysis Direction (d)Opposing Direction (d)Opposing Direction (d)Passenger-car equivalents for trucks, E_T (Exhibit 15-18 or 15-19)1.81.8Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ 0.9470.947Grade adjustment factor, $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v_{f} (pc/h) $v_{j}=V_{j}/(PHF*f_{HV,PTSF}*f_{g,PTSF})$ 208146Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d})22.355.9Percent time-spent-following, PTSF _d (%)=BPTSF _d +f np,PTSF *(v_{d,PTSF}/v_{d,PTSF}+ $v_{o,PTSF}$)55.155.1Level of Service and Other Performance MeasuresLevel of service, LOS (Exhibit 15-3)CVolume to capacity ratio, v/c 0.12	Percent Time-Spent-Following		Anglusia Dingstian (d)	Organization (c)	
Passenger-car equivalents for trucks, E_{T} (Exhibit 15-18 or 15-19) 1.8 1.8 Passenger-car equivalents for RVs, E_{R} (Exhibit 15-18 or 15-19) 1.0 1.0 Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_{T}(E_{T}-1)+P_{R}(E_{R}-1))$ 0.947 0.947 Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17) 0.76 0.73 Directional flow rate ² , $v_{/pC/h}$ $v_{i}=V_{i}/(PHF*f_{HV,PTSF}* f_{g,PTSF})$ 208 146 Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b) 22.3 23 Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21) 55.9 55.1 Percent time-spent-following, PTSF _d (%)=BPTSF _d +f np,PTSF *(v _{d,PTSF} / v _{d,PTSF} + $v_{o,PTSF}$) 55.1 Level of Service and Other Performance Measures 55.1 Level of service, LOS (Exhibit 15-3) C Volume to capacity ratio, v/c 0.12			Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for RVs, E_{R} (Exhibit 15-18 or 15-19)1.01.0Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_{T}(E_{T}-1)+P_{R}(E_{R}-1))$ 0.9470.947Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , $v/(pc/h) v_{i}=V_{i}/(PHF*f_{HV,PTSF}*f_{g,PTSF})$ 208146Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av_d b})22.322.3Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)55.955.9Percent time-spent-following, PTSF _d (%)=BPTSF _d +f np,PTSF *(v_{d,PTSF} / v_{d,PTSF} + v_{o,PTSF})55.155.1Level of Service and Other Performance MeasuresC0.12	Passenger-car equivalents for trucks, E _T (Exhibit 15-18 or 15-	19)	1.8	1.8	
Heavy-venicle adjustment factor, $f_{HV} = 1/(1 + P_T(E_T^{-1}) + P_R(E_R^{-1}))$ 0.9470.947Grade adjustment factor ¹ , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)0.760.73Directional flow rate ² , v_{i} (pc/h) $v_{i} = V_{i}/(PHF^{*}f_{HV,PTSF}^{*}f_{g,PTSF})$ 208146Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)22.3Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)55.9Percent time-spent-following, PTSF _d (%)=BPTSF _d +f np,PTSF *(V _{d,PTSF} / V _{d,PTSF} + $V_{o,PTSF}$)55.1Level of Service and Other Performance MeasuresCLevel of service, LOS (Exhibit 15-3)CVolume to capacity ratio, v/c 0.12	Passenger-car equivalents for RVs, E_R (Exhibit 15-18 or 15-1	9)	1.0	1.0	
Grade adjustment factor , f_g,PTSF (Exhibit 15-16 or EX 15-17)0.750.73Directional flow rate2, v_{l} (pc/h) v_{l} = V_{l} /(PHF*f_HV,PTSF* f_g,PTSF)208146Base percent time-spent-following4, BPTSF_d(%)=100(1-eav_d ^b)22.3Adj. for no-passing zone, f_np,PTSF (Exhibit 15-21)55.9Percent time-spent-following, PTSF_d(%)=BPTSF_d+f_np,PTSF *(v_d,PTSF + v_d,PTSF + v_{d,PTSF})55.1Level of Service and Other Performance MeasuresCLevel of service, LOS (Exhibit 15-3)CVolume to capacity ratio, v/c 0.12	Heavy-venicie adjustment factor, $t_{HV} = 1/(1 + P_T(E_T-1) + P_R(E_R))$	-1))	0.947	0.947	
Directional now rate , $v_A p C/n$ $v_i = v_i / (PHP^-H_{HV,PTSF}^- I_{g,PTSF})$ 200140Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)22.3Adj. for no-passing zone, $f_{np,PTSF}$ (Exhibit 15-21)55.9Percent time-spent-following, PTSF _d (%)=BPTSF _d +f $_{np,PTSF}$ *($v_{d,PTSF}$ / $v_{d,PTSF}$ +55.1Vo,PTSF)55.1Level of Service and Other Performance MeasuresCLevel of service, LOS (Exhibit 15-3)0.12	Grade adjustment factor', $T_{g,PTSF}$ (Exhibit 15-16 or EX 15-17)		208	0.75	
Dase percent time-spent-following , Br FSr _d ($^{(*)}$ =100(1-e a)22.5Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)55.9Percent time-spent-following, PTSF _d ($^{(*)}$ =BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} / v _{d,PTSF} + $v_{o,PTSF}$)55.1Level of Service and Other Performance MeasuresCLevel of service, LOS (Exhibit 15-3)CVolume to capacity ratio, v/c 0.12	Base percent time spect following ⁴ PDTSE (9() 100(1 $-3^{2})$)	200	22.3	
Percent time-spent-following, PTSF _d (%)=BPTSF _d +f _{np,PTSF} *(v _{d,PTSF} /v _{d,PTSF} + 55.1 V _{o,PTSF}) 55.1 Level of Service and Other Performance Measures C Volume to capacity ratio, v/c 0.12	Dase percent time-spent-following, $DPTSP_{d}(\%)=100(1-6\%)d$ Addi for no-passing zone f (Evhibit 15-21))	55.0		
Vo,PTSF) 55.1 Level of Service and Other Performance Measures C Volume to capacity ratio, v/c 0.12	Parcent time-spent-following PTSE (%)_RPTSE (f *	(y / y ·	00.9		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c 0.12	$d^{(0)} = D^{(0)} + 10^{(0)} + $	ヽ [•] d,PTSF ′ [●] d,PTSF ⁺	55.1		
Level of service, LOS (Exhibit 15-3) C Volume to capacity ratio, v/c 0.12	10,P15F/				
Volume to capacity ratio, v/c 0.12	Level of service, LOS (Exhibit 15-3)		С		
	Volume to capacity ratio, v/c		0.12		

Capacity, C _{d,ATS} (Equation 15-12) pc/h	0
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1223
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	149.5
Effective width, Wv (Eq. 15-29) ft	29.22
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	1.97
Bicycle level of service (Exhibit 15-4)	В
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst Agency or Company Date Performed 11/21/2013 Analysis Time Period	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Sterling Segment 3, 4, & 5 WB EXISTING (30%) 2035
Project Description: Juneau Creek Alt w/o bridge	, ,	
Input Data		
Shoulder width It Lane width It Lane width It Lane width It Segment length, L ₁ mi Analysis direction vol., V _d 96veh/h Opposing direction vol., V _o 142veh/h Shoulder width ft 6.0	Class I h highway Control Terrain Grade Length Peak-hour fac No-passing zo % Trucks and % Recreation Access points	ighway ♥ Class II Class III highway ■ Level ♥ Rolling ■ mi Up/down ctor, PHF 0.95 one 100% I Buses , P _T 7% al vehicles, P _R 17% § mi 8/mi
Lane Width ft 12.0		
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E _T (Exhibit 15-11 or 15-12)	1.5	2.5
Passenger-car equivalents for RVs, E _R (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.951	0.891
Grade adjustment factor ¹ , f _{g,ATS} (Exhibit 15-9)	0.67	0.71
Demand flow rate ² , v_i (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$)	159 236	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample ³ , S _{FM} Total demand flow rate, both directions, <i>v</i>	Base free-flow speed ⁴ , BFFS Adj. for lane and shoulder width, ⁴ Adj. for access points ⁴ , f _A (Exhibi	55.0 mi/h f _{LS} (Exhibit 15-7) 0.0 mi/h t 15-8) 2.0 mi/h
Free-flow speed, FFS=S _{FM} +0.00776(<i>v</i> / f _{HV,ATS}) Adj. for no-passing zones, f _{np,ATS} (Exhibit 15-15) 3.8 mi/h	Average travel speed, FFS (FSS=BFF Average travel speed, $ATS_d=FFS$ $v_{o,ATS}$) - $f_{np,ATS}$ Percent free flow speed, PFFS	S-0.00776(v _{d,ATS} + 46.1 mi/h 87.0 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (a)
Passangar car aquivalants for trucks E (Evhibit 15, 19 or 15, 10)	1 R	
Passenger-car equivalents for RVs. E _T (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.947	0.947
Grade adjustment factor ¹ , f _{g,PTSF} (Exhibit 15-16 or Ex 15-17)	0.73	0.76
Directional flow rate ² , v_i (pc/h) $v_i = V_i$ /(PHF*f _{HV,PTSF} * f _{g,PTSF})	146	208
Base percent time-spent-following ⁴ , BPTSF _d (%)=100(1-e ^{av} d ^b)	16.2	
Adj. for no-passing zone, f _{np,PTSF} (Exhibit 15-21)	5	5.9
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	39.3	
v _{o,PTSF})		
Level of Service and Other Performance Measures	1	
Level of service, LOS (Exhibit 15-3)	A	
	0	.03

•	
Capacity, C _{d,ATS} (Equation 15-12) pc/h	1167
Capacity, C _{d,PTSF} (Equation 15-13) pc/h	1296
Percent Free-Flow Speed PFFS _d (Equation 15-11 - Class III only)	87.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v _{OL} (Eq. 15-24) veh/h	101.1
Effective width, Wv (Eq. 15-29) ft	33.36
Effective speed factor, S_t (Eq. 15-30)	4.79
Bicycle level of service score, BLOS (Eq. 15-31)	0.47
Bicycle level of service (Exhibit 15-4)	A
Notes	
 Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain. 	ne of the base conditions. For the purpose of grade adjustment, specific
 If v_i(v_d or v_o) >=1,700 pc/h, terminate analysisthe LOS is F. For the analysis direction only and for v>200 veh/h. For the analysis direction only Exhibit 15-20 provides coefficients a and b for Equation 15-10. 	

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