Appendix 5 HCS Analysis Worksheets

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Lotus to N Shingle El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Analysis direction vol., V <sub>d</sub> 449veh/h Opposing direction vol., V <sub>o</sub> 218veh/h	Show North Arrow Show North Arrow	Class III highway Level Rolling mi Up/down ctor, PHF 0.89 one 100%
Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 0.6	Access points	s <i>mi 1/</i> mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.8	2.2
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.984	0.977
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.95	0.79
Demand flow rate <sup>2</sup> , <i>v<sub>j</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	540	317
Free-Flow Speed from Field Measurement		ee-Flow Speed
Mean speed of sample3, $S_{FM}$ 55Total demand flow rate, both directions, v55Free-flow speed, FFS= $S_{FM}$ +0.00776(v/ $f_{HV,ATS}$ )3.8 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)3.8 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	t 15-8) mi/h <sup>-</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 58.5 mi/h
Percent Time-Spent-Following	Anglusia Dispetien (4)	Organiza Disasting (c)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.2	Opposing Direction (o) 1.7
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.996	0.986
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.96	0.82
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	528	303
Base percent time-spent-following <sup>4</sup> , $BPTSF_{d}(\%)=100(1-e^{av_{d}^{b}})$	49.4	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	36.4	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	7	2.5
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		D
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		D .37
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13-0889 5H 2 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1428
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	82.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	504.5
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.42
Bicycle level of service score, BLOS (Eq. 15-31)	10.84
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is o downgrade segments are treated as level terrain.</li> </ol>	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 HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB N Shingle to Lotus El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Shoulder width         It           Lane width         It           Lane width         It           Shoulder width         It           Shoulder width         It           Segment length, Lt         mi	Terrain Grade Length Peak-hour fac No-passing z	Class III highway Level Rolling mi Up/down ctor, PHF 0.72
Analysis direction vol., V <sub>d</sub> 218veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 2 %
Opposing direction vol., V449veh/hShoulder width ft1.0Lane Width ft11.0Segment Length mi0.6	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi
Average Travel Speed	Analysis Direction (d)	Opposing Direction (a)
$\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i=1}^{n} \sum_{i$	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	2.1	1.7 1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.978	0.986
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.83	0.97
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	373	652
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample3, SFM50Total demand flow rate, both directions, vFree-flow speed, FFS=SFM+0.00776(v/ fHV,ATS)Adj. for no-passing zones, fnp,ATS (Exhibit 15-15)1.8 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	t 15-8) <i>mi/h</i> <sup>-</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 51.7 <i>mi/h</i>
Percent Time-Spent-Following		
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.6	Opposing Direction (o) 1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.988	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.85	0.97
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	360	643
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	43.7	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	32.5	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	5	5.4
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		С
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		.22
	,	

13-0889 5H 4 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1626
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1666
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	81.2
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	302.8
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.42
Bicycle level of service score, BLOS (Eq. 15-31)	10.59
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the bas downgrade segments are treated as level terrain.</li> </ol>	se conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB N Shingle to Ponderosa El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Analysis direction vol., V <sub>d</sub> 196veh/h Opposing direction vol., V <sub>o</sub> 195veh/h	Show North Arrow	Class III highway Level Rolling mi Up/down ctor, PHF 0.89 one 100%
Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 0.5	Access points	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	2.3	2.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.987	0.987
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	0.77	0.77
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	290	288
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
Mean speed of sample3, S FM44Total demand flow rate, both directions, v44Free-flow speed, FFS=S FM+0.00776(v/ f HV,ATS )3.4 mi/hAdj. for no-passing zones, f np,ATS (Exhibit 15-15)3.4 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) 45.5 <i>mi/h</i>
Percent Time-Spent-Following		Organiza Disection (c)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.7	Opposing Direction (o) 1.7
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.993	0.993
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.81	0.81
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	274	272
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	30.4	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	59.2	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	6	50.1
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	· · · · · · · · · · · · · · · · · · ·	C 0.19
Volume to capacity ratio, v/c	ι ι	

13-0889 5H 6 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1418
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	82.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	220.2
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.17
Bicycle level of service score, BLOS (Eq. 15-31)	10.15
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	ne of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10.</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	From/To Jurisdiction	Green Valley Road - EB Ponderosa to N Shingle El Dorado County 2014
Project Description: GVR Corridor Analysis	Analysis I car	2014
Input Data		
Shoulder width ft Lane width ft Lane width ft Lane width ft	Class I h	ighway                  Class Ⅱ Class Ⅲ highway
L ↓ Shoulder width ft _ ■ Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zo	Level Rolling mi Up/down ctor, PHF 0.75 one 100%
Analysis direction vol., V <sub>d</sub> 195veh/h	70 Tracks and	
Opposing direction vol., V <sub>o</sub> 196veh/h         Shoulder width ft       1.0         Lane Width ft       11.0         Segment Length mi       0.5	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	2.2	2.2
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.988
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	0.80	0.80
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$ )	329	331
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
N 1 1 3 0	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44 Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFF	S-f <sub>LS</sub> -f <sub>A</sub> ) 45.5 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 3.1 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	5-0.00776(v <sub>d,ATS</sub> + 37.3 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	81.8 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.7	1.7
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.993	0.993
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.83	0.83
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	315	317
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	35.2	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	55.1	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	6	2.7
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		0
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		C .22
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13-0889 5H 8 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1412
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1453
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	81.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	260.0
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.17
Bicycle level of service score, BLOS (Eq. 15-31)	10.24
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain.</li> </ol>	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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Ponderosa to Cameron Park El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data		
Analysis direction vol., V <sub>d</sub> 341veh/h	Show North Arrow Show North Arrow Show North Arrow Show North Arrow Show North Arrow Show North Arrow	Class III highway Level Rolling mi Up/down tor, PHF $0.81$ one $100\%$ Buses , P <sub>T</sub> $1\%$ al vehicles, P <sub>R</sub> $0\%$
Shoulder width ft 1.0 Lane Width ft 12.0	Access points	Sinn Sinn
Segment Length mi 3.0		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, $E_{\tau}$ (Exhibit 15-11 or 15-12)	1.3	1.4
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997	0.996
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	422	342
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample3, $S_{FM}$ 52Total demand flow rate, both directions, vFree-flow speed, FFS= $S_{FM}$ +0.00776(v/ $f_{HV,ATS}$ )Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)3.2 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , $f_A$ (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS $v_{o,ATS}$ ) - $f_{np,ATS}$ Percent free flow speed, PFFS	t 15-8) mi/h <sup>-</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 54.7 mi/h
Percent Time-Spent-Following	Angluzia Dispetian (d)	Organiza Disection (c)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.0	Opposing Direction (o) 1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	421	341
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	43.9	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	46.1	
Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *( $v_{d,PTSF} / v_{d,PTSF}$ +	6	9.4
V <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c		.25

13-0889 5H 10 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1698
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	83.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	421.0
Effective width, Wv (Eq. 15-29) ft	13.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	10.47
Bicycle level of service (Exhibit 15-4)	F
Notes	•
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain.</li> </ol>	e of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Cameron Park Dr to Ponderosa El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Segment length, L <sub>t</sub> mi		
Analysis direction vol., V <sub>d</sub> 276veh/h Opposing direction vol., V <sub>o</sub> 341veh/h Shoulder width ft 1.0 Lane Width ft 12.0 Segment Length mi 3.0	Show North Arrow % Trucks and	one 100% Buses , P <sub>T</sub> 1 % al vehicles, P <sub>R</sub> 0%
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, $E_T$ (Exhibit 15-11 or 15-12)	1.3	1.2
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	0.997	0.998
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> = <i>V</i> <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	419	518
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
Mean speed of sample3, S44Total demand flow rate, both directions, v44Free-flow speed, FFS=S $FM$ +0.00776(v/ fAdj. for no-passing zones, f $n_{p,ATS}$ (Exhibit 15-15)2.2 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> <sup>=</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 46.1 <i>mi/h</i>
Percent Time-Spent-Following		
Descender oprigreigente fosterelle. E. (Erkihit 45.40 45.40)	Analysis Direction (d) 1.0	Opposing Direction (o) 1.0
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, $E_R$ (Exhibit 15-18 or 15-19)	1.000	1.000
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) ) Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	418	517
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1- $e^{av_d}^b$ )	45.7	
Adj. for no-passing zone, f <sub>np.PTSF</sub> (Exhibit 15-21)	40.2	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF})$	+	33.7
v <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service and Other Performance measures		С
Volume to capacity ratio, v/c		0.25

13-0889 5H 12 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1697
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	79.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	418.2
Effective width, Wv (Eq. 15-29) ft	13.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	10.46
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain.</li> </ol>	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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Cameron Park Dr to Bass Lake El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder widthftLane widthft	Class   I	nighway 🔲 Class II
Lane width tt Shoulder width ft Segment length, L <sub>t</sub> mi	highway Terrain Grade Length Peak-hour fau No-passing z	ctor, PHF 0.73
Analysis direction vol., V <sub>rt</sub> 603veh/h	Show North Arrow % Trucks and	
Opposing direction vol., V <sub>o</sub> 392veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 0.7	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed	Anglusia Dingetian (d)	Organiza Disasting (c)
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.2 1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.998
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	827	538
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 47	Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFF	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15)       2.2 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	20 //
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	75.3 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>/</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	826	537
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av<sub>d</sub><sup>b</sup></sup> )	68.7	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)		7.9
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$	٤	5.6
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		с
Volume to capacity ratio, v/c	C	.49

13-0889 5H 14 of 89

	1
Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1697
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	75.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v<sub>OL</sub></i> (Eq. 15-24) veh/h	826.0
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.15
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain.</li> </ol>	e of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Bass Lake to Cameron Park Dr El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ft	Class   h	ighway 🔲 Class II
Lane width ft Shoulder width ft Segment length, L <sub>t</sub> mi	highway Terrain Grade Length Peak-hour fac	
Analysis direction vol., V <sub>d</sub> 392veh/h	Show North Arrow % Trucks and	one 100%
Opposing direction vol., V <sub>o</sub> 603veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 0.7	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.2	1.1 1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	546	838
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 46	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> ) Adi, for no-passing zones, f (Exhibit 15-15) 1.2 mi/h	Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS	20 / 1
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.2 mi/h	$v_{o,ATS}$ ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	37.1 m/n
Percent Time-Spent-Following	Percent free flow speed, PFFS	75.6 %
r drouw nine opener onening	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	544	837
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av<sub>d</sub><sup>b</sup>)</sup>	58.0	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	2	7.4
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$	- 6	8.8
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		с
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		.32
• •	-	

13-0889 5H 16 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1698
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	75.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	544.4
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.94
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the downgrade segments are treated as level terrain.</li> </ol>	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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Bass Lake to Deer Valley El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Analysis direction vol., V <sub>d</sub> 570veh/h Opposing direction vol., V <sub>o</sub> 307veh/h	highway highway Terrain Grade Length Peak-hour far No-passing zi Show North Arrow % Trucks and	ctor, PHF 0.90 one 100%
Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.4	Access points	s <i>mi 2/</i> mi
Average Travel Speed	••••••••••••••••••••••••••••••••••••••	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.7	2.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.993	0.989
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.97	0.86
Demand flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	658	401
Free-Flow Speed from Field Measurement		ee-Flow Speed
Mean speed of sample3, $S_{FM}$ 61Total 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)2.9 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) 65.5 <i>mi/h</i>
Percent Time-Spent-Following		
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.0	Opposing Direction (o) 1.6
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.994
Grade adjustment factor <sup>1</sup> , $f_{a,PTSF}$ (Exhibit 15-16 or Ex 15-17)	0.98	0.87
Directional flow rate <sup>2</sup> , $v_i(\text{pc/h}) = V_i(\text{PHF}*f_{\text{HV,PTSF}}*f_{g,\text{PTSF}})$	646	394
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av<sub>d</sub>b</sup> )	58.1	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	3	33.0
Percent time-spent-following, $PTSF_d$ (%)=BPTSF_d+f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTS</sub>	F <sup>+</sup> 7	78.6
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		D
Volume to capacity ratio, v/c		0.42

13-0889 5H 18 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1521
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	83.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	633.3
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)	2.40
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Deer Valley to Bass Lake El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Analysis direction vol., V <sub>d</sub> 307veh/h Opposing direction vol., V <sub>o</sub> 570veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length i 1.4	highway highway Terrain Grade Length Peak-hour far No-passing z % Trucks and	ctor, PHF 0.61 one 100% d Buses , P <sub>T</sub> 1 % nal vehicles, P <sub>R</sub> 0%
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.8	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.997
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.95	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	534	937
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
Mean speed of sample3, $S_{FM}$ 58Total demand flow rate, both directions, $v$ 58Free-flow speed, FFS= $S_{FM}$ +0.00776( $v$ / $f_{HV,ATS}$ )1.3 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)1.3 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) 60.4 <i>mi/h</i>
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.2	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.998	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.96	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	525	934
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	58.1	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	2	23.9
Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTSF</sub>	6	6.7
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, <i>v/c</i>	C	0.31

13-0889 5H 20 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1695
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	79.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	503.3
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)	2.28
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00,as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	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	

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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	From/To Jurisdiction	Green Valley Road - WB Deer Valley to Malcolm El Dorado County 2014
Project Description: GVR Corridor Analysis	Analysis Tea	2014
Input Data		
Shoulder width ft Lane width ft Lane width ft	Class I h	<b>o y</b>
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zo	tor, PHF 0.92 one 100%
Analysis direction vol., V <sub>d</sub> 581veh/h	% Trucks and	
Opposing direction vol., V305veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi1.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% <i>mi</i> 2/mi
Average Travel Speed	Analysis Direction (d)	Opposing Direction (c)
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.7 1.1	2.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.97	0.85
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	651	390
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 48	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, <i>v</i> Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV.ATS</sub> )	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.8 mi/h	Average travel speed, ATS <sub>d</sub> =FFS v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	20 / 1
Demand Time Open to United	Percent free flow speed, PFFS	79.3 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.6
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.98	0.87
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> (PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	644	381
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	57.2	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)		3.0
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	7	7.9
v <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		D
Volume to capacity ratio, v/c		43

13-0889 5H 22 of 89

Capacity, C <sub>d ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1513
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	79.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	631.5
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)	2.19
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the t downgrade segments are treated as level terrain.</li> </ol>	base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Malcolm to Deer Valley El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data		
Shoulder width	Class I h highway Terrain Grade Length Peak-hour far No-passing z % Trucks and	Class III highway Level Rolling mi Up/down ctor, PHF 0.59 one 100%
Opposing direction vol., V <sub>o</sub> 581veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.8	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.992	0.997
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	0.95	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	549	988
Free-Flow Speed from Field Measurement		e-Flow Speed
Mean speed of sample3, $S_{FM}$ 54Total demand flow rate, both directions, $v$ 54Free-flow speed, FFS=S <sub>FM</sub> +0.00776( $v$ / $f_{HV,ATS}$ )1.1Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)1.1	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	t 15-8) mi/h <sup>-</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 56.4 mi/h
Percent Time-Spent-Following	1 <b>.</b>	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d)	Opposing Direction (o) 1.0
Passenger-car equivalents for RVs, $E_{R}$ (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.96	1.00
Directional flow rate <sup>2</sup> , $v_i(pc/h) v_i = V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	540	985
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	59.4	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	22.7	
Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTSF</sub> +	. 6	7.4
v <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0	0.32

13-0889 5H 24 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1695
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	76.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{ m OL}$ (Eq. 15-24) veh/h	516.9
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)	2.30
Bicycle level of service (Exhibit 15-4)	В
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 <sub>i</sub> (v <sub>d</sub> or v <sub>o</sub> ) >=1,700 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	

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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodAM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Malcolm to Silva Valley Pkwy El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder widthftLane widthftLane widthftLane widthftft	Class I highway Class II highway Class III highway Terrain Class III highway Terrain Level Rolling Grade Length mi Peak-hour factor, PHF 0.88 No-passing zone 85%	
Segment length, L <sub>t</sub> mi		
Analysis direction vol., V <sub>d</sub> 618veh/h	Show North Arrow % Trucks and	I Buses , P <sub>T</sub> 1 %
Opposing direction vol., V <sub>o</sub> 310veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.7	% Recreational vehicles, P <sub>R</sub> 0% Access points <i>mi</i> 2/mi	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999 0.997	
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	703	353
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 64	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, v	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	20 //
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 3.1 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	5-0.00776(v <sub>d,ATS</sub> + 57.5 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	83.6 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	1.000	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	702	353
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av<sub>d</sub><sup>b</sup>)</sup>	60.0	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	31.0	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$	+ 80.6	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		D .41
	0	וד.

13-0889 5H 26 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1698
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	83.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	702.3
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)	2.45
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain.</li> </ol>	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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of TravelGreen Valley Road - EBFrom/ToSilva Valley Pkwy to MalcolmJurisdictionEl Dorado CountyAnalysis Year2014	
Project Description: GVR Corridor Analysis		
Input Data		
Shoulder widthtt	🗌 Class I highway 🗹 Class II	
Lane width ft Shoulder width ft Segment length, L <sub>t</sub> mi	highway ☐ Class III highway Terrain ☑ Level ☐ Rolling Grade Length mi Up/down Peak-hour factor, PHF 0.88	
Analysis direction vol., V <sub>d</sub> 310veh/h	Show North Arrow No-passing zone 85% % Trucks and Buses , P <sub>T</sub> 1%	
Opposing direction vol., Vo618veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi1.7	% Recreational vehicles, P <sub>R</sub> 0% Access points <i>mi</i> 2/mi	
Average Travel Speed	Analysis Direction (d) Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.3         1.1	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0 1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997 0.999	
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00 1.00	
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$ )	353 703	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS mi/h	
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 54 Total demand flow rate, both directions, $v$	Adj. for lane and shoulder width, ${}^4 f_{LS}$ (Exhibit 15-7)mi/hAdj. for access points ${}^4$ , $f_A$ (Exhibit 15-8)mi/h	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 56.4 mi/h	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.6 mi/h	Average travel speed, ATS <sub>d</sub> =FFS-0.00776(v <sub>d,ATS</sub> + 46.7 mi/h	
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS 82.7 %	
Percent Time-Spent-Following	Analysis Direction (d) Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.1 1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	0.999 1.000	
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00 1.00	
Directional flow rate <sup>2</sup> , $v_i(pc/h) v_i = V_i/(PHF*f_{HV,PTSF}*f_{g,PTSF})$	353 702	
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	43.7	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	31.0	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF})$	+ 54.1	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures	В	
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>	0.21	

13-0889 5H 28 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1698
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	82.7
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	352.3
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)	2.10
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain.</li> </ol>	e of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Silva Valley Pkwy to EDH Blvd El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data		
Shoulder width ft Lane width ft	Class I f	ighway 🗹 Class II
Lane width It	highway	Class III highway
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zi	ctor, PHF 0.87 one 100%
Analysis direction vol., V <sub>d</sub> 693veh/h	70 Trucks and	
Opposing direction vol., Vo334veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi0.4	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 0/mi
Average Travel Speed	Analysis Disasting (d)	Organiza Disasting (c)
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.997
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	797	385
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 40	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, <i>v</i>	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	20 / 1
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.8 mi/h	33.4	
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	73.6 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	797	384
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	64.2	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	28.5	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	83.4	
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c	D 0.47	
volume to capacity ratio, v/c	0	וד.

13-0889 5H 30 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1698
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	73.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v<sub>OL</sub></i> (Eq. 15-24) veh/h	796.6
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.47
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain.</li> </ol>	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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB EDH Blvd to Silva Valley Pkwy El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data		
Shoulder width ft Lane width ft Lane width ft	Class I h	
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing z	ctor, PHF 0.80
Analysis direction vol., V <sub>d</sub> 334veh/h	Show North Arrow % Trucks and	l Buses , P <sub>T</sub> 1 %
Opposing direction vol., Vo693veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi0.4	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 0/mi
Average Travel Speed	Analysis Disasting (d)	Ornering Direction (c)
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.3	1.0 1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	419	866
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS mi/h	
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44 Total demand flow rate, both directions, $v$	Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFF	-S-f <sub>LS</sub> -f <sub>A</sub> ) 46.6 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.2 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	S-0.00776(v <sub>d,ATS</sub> + 35.4 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	76.1 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	417	866
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	50.2	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (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})	58.7	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		с
Volume to capacity ratio, v/c		.25

13-0889 5H 32 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	76.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	417.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.15
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain.</li> </ol>	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	

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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	From/To Jurisdiction	Green Valley Road - WB EDH Blvd to Francisco Dr El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder widthft		
Lane width	└ Class I highway ✓ Class II highway □ Class III highway Terrain ✓ Level □ Rolling	
t Shoulder widthtt		
Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing zo	tor, PHF 0.87
Analysis direction vol., V <sub>d</sub> 999veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., V <sub>o</sub> 373veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 0.4	% Recreation: Access points	al vehicles, P <sub>R</sub> 0% <i>mi</i> 1/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.0	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.997
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	1148	430
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) mi/h
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibit	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFF	S-f <sub>LS</sub> -f <sub>A</sub> ) 51.8 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.6 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	-0.00776(v <sub>d,ATS</sub> + 36.9 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	71.3 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	1148	429
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	78.0	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	21.6	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	+ 93.7	
V <sub>o,PTSF</sub> )	5	
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	E 0.68	
Volume to capacity ratio, <i>v/c</i>	0.	.00

13-0889 5H 34 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	71.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	1148.3
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.32
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the downgrade segments are treated as level terrain.</li> </ol>	e base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Francisco Dr to EDH Blvd El Dorado County 2014	
Project Description: GVR Corridor Analysis			
Input Data			
Analysis direction vol., V <sub>d</sub> 373veh/h Opposing direction vol., V <sub>o</sub> 999veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Show North Arrow	Class III highway Level Rolling mi Up/down ctor, PHF $0.82$ one $100\%$ d Buses , P <sub>T</sub> $1\%$ hal vehicles, P <sub>R</sub> $0\%$	
Segment Length mi 0.4			
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.2	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	1.000	
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00	
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i / (PHF^* f_{g,ATS}^* f_{HV,ATS})$	456	1218	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed		
Mean speed of sample3, $S_{FM}$ 46Total demand flow rate, both directions, $v$ 46Free-flow speed, $FFS=S_{FM}+0.00776(v/f_{HV,ATS})$ 10Adj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)1.0	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFf Average travel speed, ATS <sub>d</sub> =FFS v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) 48.9 <i>mi/h</i>	
Percent Time-Spent-Following	-		
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000	
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate <sup>2</sup> , v <sub>/</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	455	1218	
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	56.9		
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	19.8		
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d + f_{np,PTSF} *(v_{d,PTSF} / v_{d,PTSF})$	+ 62.3		
V <sub>o,PTSF</sub> )			
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		C 0.27	
	ں ر	. 21	

13-0889 5H 36 of 89

1	1
Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	71.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	454.9
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.85
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.</li> </ol>	e of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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# MULTILANE HIGHWAYS WORKSHEET(Direction 2)

## ×

	Site Information	
VZK KAI 8/20/2014 AM	Highway/Direction to Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Sophia Pkwy to Francisco Dr El Dorado County 2014
dor Analysis		
	Des. (N)	🗌 Plan. (vp)
1340	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub>	0.79 3
) 1.00	%RVs, P <sub>R</sub> General Terrain: Grade Length (mi) Up/Down % Number of Lanes	0 Grade 1.35 4.00 2
tments		
1.00 3.5	E <sub>R</sub> f <sub>HV</sub>	3.0 0.930
	Calc Speed Adj and	d FFS
12.0 12.0 0 59.0	f <sub>LW</sub> (mi/h) f <sub>LC</sub> (mi/h) f <sub>A</sub> (mi/h) f <sub>M</sub> (mi/h) FFS (mi/h)	59.0
	Design	
911 60.0 15.2 B	<u>Design (N)</u> Required Number of Lanes, N Flow Rate, v <sub>p</sub> (pc/h) Max Service Flow Rate (pc/h/ Design LOS	
	KAI 8/20/2014 AM dor Analysis 1340 1340 1.00 <b>.tments</b> 1.00 3.5 12.0 12.0 12.0 0 59.0 911 60.0 15.2	VZK       Highway/Direction to Travel         KAI       From/To         J20/2014       Jurisdiction         AM       Analysis Year         dor Analysis       Des. (N)         1340       Peak-Hour Factor, PHF         %Trucks and Buses, P <sub>T</sub> %Trucks and Buses, P <sub>T</sub> )       %RVs, P <sub>R</sub> General Terrain:       Grade Length (mi)         1.00       Up/Down %         Number of Lanes       Number of Lanes         12.0       f <sub>LW</sub> (mi/h)         12.0       f <sub>LW</sub> (mi/h)         12.0       f <sub>LW</sub> (mi/h)         59.0       FFS (mi/h)         Design (N)         911       Design (N)         911       Flow Rate, v <sub>p</sub> (pc/h)         60.0       Max Service Flow Rate (pc/h/         15.2       Design LOS

#### MULTILANE HIGHWAYS WORKSHEET(Dir 2)

Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	848.1	
Effective width, $W_v$ (Eq. 15-29) ft	24.00	
Effective speed factor, $S_t$ (Eq. 15-30)	4.62	
Bicycle level of service score, BLOS (Eq. 15-31)	2.63	
Bicycle level of service (Exhibit 15-4)	С	
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13-0889 5H 39 of 89

# MULTILANE HIGHWAYS WORKSHEET(Direction 1)

## х

Volume, V (veh/h) 606 AADT(veh/h) Peak-Hour Prop of AADT (veh/d) Peak-Hour Direction Prop, D DDHV (veh/h) Driver Type Adjustment 1.00 Calculate Flow Adjustmen	2014	Highway/Direction to Travel From/To Jurisdiction Analysis Year es. (N) Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi) Up/Down %	Green Valley Road - EB Sophia Pkwy to Francisco Dr El Dorado County 2014 Plan. (vp) 0.81 6 0 Grade 1.35
Oper.(LOS)         Flow Inputs         Volume, V (veh/h)       606         AADT(veh/h)       606         Peak-Hour Prop of AADT (veh/d)       Peak-Hour Direction Prop, D         DDHV (veh/h)       DHV (veh/h)         Driver Type Adjustment       1.00		Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi)	0.81 6 0 Grade
Flow Inputs         Volume, V (veh/h)       606         AADT(veh/h)       9         Peak-Hour Prop of AADT (veh/d)       9         Peak-Hour Direction Prop, D       0         DDHV (veh/h)       1.00         Calculate Flow Adjustment       1.00	F 9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi)	0.81 6 0 Grade
Volume, V (veh/h) 606 AADT(veh/h) Peak-Hour Prop of AADT (veh/d) Peak-Hour Direction Prop, D DDHV (veh/h) Driver Type Adjustment 1.00 Calculate Flow Adjustmen		%Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi)	6 0 Grade
AADT(veh/h) Peak-Hour Prop of AADT (veh/d) Peak-Hour Direction Prop, D DDHV (veh/h) Driver Type Adjustment 1.00 Calculate Flow Adjustmen		%Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain: Grade Length (mi)	6 0 Grade
Peak-Hour Direction Prop, D DDHV (veh/h) Driver Type Adjustment 1.00 Calculate Flow Adjustment	(	General Terrain: Grade Length (mi)	Grade
		Number of Lanes	-4.00 2
-	its		2
þ		E <sub>R</sub>	1.2
E <sub>T</sub> 1.5		f <sub>HV</sub>	0.971
Speed Inputs		Calc Speed Adj and F	FFS
Lane Width, LW (ft)12.0Total Lateral Clearance, LC (ft)12.0Access Points, A (A/mi)0Median Type, M60.0FFS (measured)60.0Base Free-Flow Speed, BFFS		f <sub>LW</sub> (mi/h) f <sub>LC</sub> (mi/h) f <sub>A</sub> (mi/h) f <sub>M</sub> (mi/h) FFS (mi/h)	60.0
Operations		Design	
Operational (LOS)Flow Rate, vp (pc/h/ln)385Speed, S (mi/h)60.0D (pc/mi/ln)6.4LOSA	I	<u>Design (N)</u> Required Number of Lanes, N Flow Rate, v <sub>p</sub> (pc/h) Max Service Flow Rate (pc/h/ln) Design LOS	

#### MULTILANE HIGHWAYS WORKSHEET(Dir 1)

Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	374.1	
Effective width, W <sub>v</sub> (Eq. 15-29) ft	24.00	
Effective speed factor, $S_t$ (Eq. 15-30)	4.62	
Bicycle level of service score, BLOS (Eq. 15-31)	3.05	
Bicycle level of service (Exhibit 15-4)	C	
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Page 2 of 2

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	From/To Jurisdiction	Green Valley Road - WB Sophia Pkwy to County Line El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ft Lane width ft Lane width ft Shoulder width ft Segment length, Lt mi	Class I h highway C Terrain Grade Length Peak-hour fac	Class III highway           Image: Solution of the second s
Analysis direction vol., V <sub>d</sub> 1255veh/h Opposing direction vol., V <sub>o</sub> 595veh/h Shoulder width ft 8.0 Lane Width ft 12.0 Segment Length mi 0.2 Average Travel Speed	Show North Arrow % Trucks and	one 100% Buses , P <sub>T</sub> 2 % al vehicles, P <sub>R</sub> 0%
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.0	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.998
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	1589	755
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
Mean speed of sample3, $S_{FM}$ 55Total 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)1.6 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	15-8) mi/h S-f <sub>LS</sub> -f <sub>A</sub> ) 64.7 mi/h
Percent Time-Spent-Following		
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.0	Opposing Direction (o) 1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	1589	753
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	87.5	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	1	4.2
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	9	7.1
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures	1	-
Level of service, LOS (Exhibit 15-3)		E
Volume to capacity ratio, v/c	0	.93

13-0889 5H 42 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	69.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	1588.6
Effective width, Wv (Eq. 15-29) ft	28.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.01
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is o downgrade segments are treated as level terrain.</li> </ol>	ne of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10.</li> </ol>	

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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     AM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB County Line to Sophia Pkwy El Dorado County 2014	
Project Description: GVR Corridor Analysis		2011	
Input Data	-		
Analysis direction vol., V <sub>d</sub> 595veh/h Segment length, L <sub>t</sub> mi Analysis direction vol., V <sub>d</sub> 1255veh/h Shoulder width ft 8.0 Lane Width ft 12.0	Show North Arrow % Trucks and	Class III highway Level Rolling mi Up/down ctor, PHF 0.89 one 100% d Buses , P <sub>T</sub> 2 % al vehicles, P <sub>R</sub> 0%	
Segment Length mi 0.2			
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, $E_{T}$ (Exhibit 15-11 or 15-12)	1.1	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	0.998	1.000	
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00	
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> = <i>V</i> <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	670	1410	
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed	
Mean speed of sample3, S FM53Total demand flow rate, both directions, v53Free-flow speed, FFS=S FM+0.00776(v/ f HV,ATS )6000000000000000000000000000000000000	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) 57.6 <i>mi/h</i>	
Percent Time-Spent-Following			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	1.000	1.000 1.00	
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)			
Directional flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )		669 1410	
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av_d<sup>b</sup></sup> )	70.2		
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21) Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTSF</sub>	+	4.9	
V <sub>o,PTSF</sub> )	7	75.0	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3)		D	
Volume to capacity ratio, v/c	0	0.39	

13-0889 5H 44 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	70.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	668.5
Effective width, Wv (Eq. 15-29) ft	28.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.57
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the ba downgrade segments are treated as level terrain.</li> </ol>	ase 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. Evident 4.5.20 sector only for a product of the sector of the se	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Lotus to N Shingle El Dorado County 2014
Project Description: GVR Corridor Analysis		
Input Data	T	
Shoulder width ft Lane width ft Lane width ft Shoulder width ft Segment length, L <sub>1</sub> mi	Class I highway	Class III highway
	Peak-hour fac No-passing ze	otor, PHF 0.85 Dne 100%
Analysis direction vol., V <sub>d</sub> 263veh/h	% Trucks and	
Opposing direction vol., Vo       510veh/h         Shoulder width ft       1.0         Lane Width ft       11.0         Segment Length mi       0.6	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi
Average Travel Speed	T	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	2.1	1.7
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.978	0.986
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.84	0.97
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	377	627
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 55	Adj. for lane and shoulder width, <sup>4</sup>	20
Total demand flow rate, both directions, v	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 57.1 mi/h	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.9 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	6-0.00776(v <sub>d,ATS</sub> + 47.4 mi/h
Percent Time-Spent-Following	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	83.1 %
rercent Time-Spent-ronowing	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.6	1.2
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	0.988	0.996
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.85	0.97
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	368	621
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	43.3	
Adj. for no-passing zone, f <sub>np.PTSF</sub> (Exhibit 15-21)	3	3.6
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	5	5.8
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		C .22
· ····································	l	

13-0889 5H 46 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1626
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1649
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	83.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	309.4
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.42
Bicycle level of service score, BLOS (Eq. 15-31)	10.60
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	ne of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10.</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB N Shingle to Lotus El Dorado County 2014
Project Description: GVR Corridor Analysis	5	
Input Data		
Analysis direction vol., V <sub>d</sub> 510veh/h	Show North Arrow	Class III highway Level Rolling mi Up/down ctor, PHF 0.86 one 100% d Buses , P <sub>T</sub> 2 %
Opposing direction vol., V <sub>o</sub> 263veh/h Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 0.6	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.7	2.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.986	0.978
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	0.97	0.83
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	620	377
Free-Flow Speed from Field Measurement		ee-Flow Speed
Mean speed of sample3, $S_{FM}$ 50Total demand flow rate, both directions, v50Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ $f_{HV,ATS}$ )2.9 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)2.9 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	it 15-8) <i>mi/h</i> FS-f <sub>LS</sub> -f <sub>A</sub> ) <i>54.0 mi/h</i>
Percent Time-Spent-Following	Angluzia Dispetian (d)	One oping Direction (c)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d)	Opposing Direction (o) 1.6
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.996	0.988
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.97	0.85
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	614	364
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	56.5	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	33.8	
Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTSF</sub> +	7	7.7
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures Level of service, LOS (Exhibit 15-3)		D
Volume to capacity ratio, v/c		0.42

13-0889 5H 48 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1478
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	80.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	593.0
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.42
Bicycle level of service score, BLOS (Eq. 15-31)	10.93
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	From/To Jurisdiction	Green Valley Road - WB N Shingle to Ponderosa El Dorado County 2014
Project Description: GVR Corridor Analysis	Analysis I car	2014
Input Data		
Shoulder width ft Lane width ft	Class I h	ighway 🗹 Class II
Lane widthtt \$houlder widthtt \$Segment length, L <sub>1</sub> mi	highway Terrain Grade Length	Class III highway
Analysis direction vol., V <sub>d</sub> 178veh/h	Show North Arrow % Trucks and	ctor, PHF 0.79 one 100%
Opposing direction vol., V <sub>o</sub> 273veh/h	% Recreation	al vehicles, P <sub>R</sub> 0%
Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 0.5	Access points	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	2.2	2.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.988	0.989
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.77	0.86
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> = <i>V</i> <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	296	406
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	20 / 1
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.7 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	3-0.00776(v <sub>d,ATS</sub> + 37.3 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	82.1 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.7	1.6
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.993	0.994
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.81	0.87
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	280	400
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	32.9	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	48.9	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	+ 53.0	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures	Г	D
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		B .18
volume to capacity ratio, v/c	0	. 10

13-0889 5H 50 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1515
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1521
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	82.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	225.3
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.17
Bicycle level of service score, BLOS (Eq. 15-31)	10.16
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the bas downgrade segments are treated as level terrain.</li> </ol>	se 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. Further to 200 venture of for the analysis direction only	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Ponderosa to N Shingle El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Analysis direction vol., V <sub>d</sub> 273veh/h Opposing direction vol., V <sub>o</sub> 178veh/h	highway Terrain Grade Lengt Peak-hour fa No-passing a % Trucks an	actor, PHF 0.89 zone 100%
Shoulder width ft 1.0 Lane Width ft 11.0 Segment Length mi 0.5	Access point	IV.
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	2.1	2.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.989	0.987
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	0.83	0.75
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$ )	374 270	
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44 Total demand flow rate, both directions, $v$	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhib	20
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> ) Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 3.5 mi/h	Free-flow speed, FFS (FSS=BF Average travel speed, ATS <sub>d</sub> =FF v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	EG / Y
Percent Time-Spent-Following		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.6	1.8
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.994	0.992
Grade adjustment factor <sup>1</sup> , $f_{g,PTSF}$ (Exhibit 15-16 or Ex 15-17)	0.85	0.80
Directional flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i$ = $V_i$ /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> ) Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av_d<sup>b</sup></sup> )	363 252	
Adj. for no-passing zone, f <sub>np.PTSF</sub> (Exhibit 15-21)	36.8 53.2	
Percent time-spent-following, $PTSF_d$ (%)=BPTSF_d+f_np,PTSF *( $v_{d,PTSF} / v_{d,PTSF}$		
V <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		С

13-0889 5H 52 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1401
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	81.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v<sub>OL</sub></i> (Eq. 15-24) veh/h	306.7
Effective width, Wv (Eq. 15-29) ft	12.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.17
Bicycle level of service score, BLOS (Eq. 15-31)	10.32
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one o downgrade segments are treated as level terrain.</li> </ol>	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		
Seneral Information Site Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Ponderosa to Cameron Park El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ftLane width ftLane width ftLane width ft	Class I h	
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zo	one 0.87
Analysis direction vol., V <sub>d</sub> 208veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., V348veh/hShoulder width ft1.0Lane Width ft12.0Segment Length mi3.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% : <i>mi 3</i> /mi
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passanger car equivalents for trucks E (Exhibit 15.11 or 15.12)	1.5	1.3
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12) Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.995	0.997
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	240	401
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample3, S <sub>FM</sub> 52Total demand flow rate, both directions, v	Adj. for lane and shoulder width, $f_{LS}$ (Exhibit 15-7) $mi/h$ Adj. for access points $f_A$ (Exhibit 15-8) $mi/h$	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> )Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15)2.8 mi/h	Free-flow speed, FFS (FSS=BFFS- $f_{LS}$ - $f_A$ ) 53.6 Average travel speed, ATS <sub>d</sub> =FFS-0.00776( $v_{d,ATS}$ + 45.9	
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	85.6 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.1	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.999	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	239	400
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	29.2	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	50.1	
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + $	+ 47.9	
V <sub>o,PTSF</sub> )	7	
Level of Service and Other Performance Measures	1	2
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c	B 0.14	
volume to capacity ratio, v/c	0	. 17

13-0889 5H 54 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1695
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1698
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	85.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, <i>v<sub>OL</sub></i> (Eq. 15-24) veh/h	239.1
Effective width, Wv (Eq. 15-29) ft	13.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	10.18
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00,as level terrain is one of the bas downgrade segments are treated as level terrain.</li> </ol>	se conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Cameron Park Dr to Ponderosa El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data		
Shoulder width ft tt Lane width tt	Class   r	ighway 🗹 Class II
Lane width tt	highway Terrain	Class III highway
Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing z	n mi Up/down ctor, PHF <i>0.81</i>
Analysis direction vol., V <sub>d</sub> 348veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., Vo208veh/hShoulder width ft1.0Lane Width ft12.0Segment Length mi3.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi 3</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.3	1.4
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.997	0.996
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	431	258
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	EG /A
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 3.6 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	6-0.00776(v <sub>d,ATS</sub> + 37.7 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	80.8 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	430	257
Base percent time-spent-following <sup>4</sup> , $BPTSF_d(\%)=100(1-e^{av_d}^b)$	41.5	
Adj. for no-passing zone, f <sub>np.PTSF</sub> (Exhibit 15-21)	47.0	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 70.9	
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		D .25
volume to capacity ratio, v/c	0	.20

13-0889 5H 56 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1698
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	80.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	429.6
Effective width, Wv (Eq. 15-29) ft	13.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	10.48
Bicycle level of service (Exhibit 15-4)	F
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	e of the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>Exhibit 15-20 provides coefficients a and b for Equation 15-10.</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Cameron Park Dr to Bass Lake El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder widthft		nighway 🔲 Class II
Lane width ft		Class III highway
t Shoulder widthtt		
• Segment length, L <sub>t</sub> mi	Show North Arrow % Trucks and	n mi Up/down ctor, PHF 0.92 one 100%
Analysis direction vol., V <sub>d</sub> 477veh/h	70 Trucks and	
Opposing direction vol., Vo679veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi0.7	% Recreation Access point:	nal vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	520	739
Free-Flow Speed from Field Measurement	Estimated Fr	ee-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 47	Adj. for lane and shoulder width,	<sup>4</sup> f <sub>LS</sub> (Exhibit 15-7) <i>mi/h</i>
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhib	it 15-8) <i>mi/h</i>
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFI	FS-f <sub>LS</sub> -f <sub>A</sub> ) 50.7 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.5 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	S-0.00776(v <sub>d,ATS</sub> + 39.4 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	77.8 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	518	738
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	55.1	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	30.9	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 67.8	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>	C 0.31	
volume to capacity ratio, we		

13-0889 5H 58 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1698
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	77.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	518.5
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.91
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the downgrade segments are treated as level terrain.</li> </ol>	e base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information	Site Information	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Bass Lake to Cameron Park Dr El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ft tt	Class I I	nighway 🔲 Class II
Lane width ft		Class III highway
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fai No-passing z	n mi Up/down ctor, PHF 0.95
Analysis direction vol., V <sub>d</sub> 679veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., V <sub>o</sub> 477veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 0.7	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.998
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	715	503
Free-Flow Speed from Field Measurement		ee-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 46	Adj. for lane and shoulder width,	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhib	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFI	20 / 1
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.3 <i>mi/h</i>	Average travel speed, $ATS_d = FFS$	S-0.00776(v <sub>d,ATS</sub> + 39.5 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	77.1 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	715	502
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av<sub>d</sub>b</sup> )	63.6	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	31.9	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF}+$		32.3
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>	(	C 0.42
		· · -

13-0889 5H 60 of 89

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Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1697
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	77.1
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	714.7
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.08
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain.</li> </ol>	f the base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>	

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Bass Lake to Deer Valley El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data		
Shoulder width ftt	Class I h	ighway 🗹 Class II
Lane width tt	_	Class III highway
Segment length, L	Terrain Grade Length	Level Rolling mi Up/down
Analysis direction vol., V <sub>d</sub> 367veh/h	Show North Arrow % Trucks and	one 100%
Opposing direction vol., V <sub>o</sub> 599veh/h		al vehicles, P <sub>R</sub> 0%
Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.4	Access points	
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.9	1.6
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.991	0.994
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.91	0.98
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	473	715
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 61	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 63.9 m	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.7 mi/h	53.0	
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	82.9 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.4	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	0.996	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.92	0.99
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	466	704
Base percent time-spent-following <sup>4</sup> , $BPTSF_d(\%)=100(1-e^{av_d}^b)$	51.7	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	31.6	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$	+ 64.3	
V <sub>o,PTSF</sub> )	ĺ	-
Level of Service and Other Performance Measures		0
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		C .28
	0	

13-0889 5H 62 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1656		
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1683		
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	82.9		
Bicycle Level of Service			
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	426.7		
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)	2.20		
Bicycle level of service (Exhibit 15-4)	В		
Notes			
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain.</li> </ol>	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		
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	From/To Jurisdiction	Green Valley Road - EB Deer Valley to Bass Lake El Dorado County 2014
Project Description: GVR Corridor Analysis	Analysis real	2014
Input Data		
Shoulder width ft	Class I h	ighway 🗹 Class II
Lane width tt.	_	
t Shoulder widthtt		Class III highway
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zo	one 0.87
Analysis direction vol., V <sub>d</sub> 599veh/h	% Trucks and	
Opposing direction vol., Vo       367veh/h         Shoulder width ft       6.0         Lane Width ft       12.0         Segment Length mi       1.4	% Recreation Access points	al vehicles, P <sub>R</sub> 0% a <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.6	2.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.994	0.990
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.98	0.91
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	707	468
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 58	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) mi/h
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibit 15-8) <i>mi/h</i>	
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 62.7 m	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.9 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	-0.00776(v <sub>d,ATS</sub> + 50.7 mi/h
Demonst Time Openet Fellowing	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	80.8 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.4
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	1.000	0.996
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.99	0.91
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	695	465
Base percent time-spent-following <sup>4</sup> , $BPTSF_d(\%)=100(1-e^{av_d^b})$	62.3	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	31.8	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$	+ 81.4	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		D 11
Volume to capacity ratio, <i>v/c</i>	0	.44

13-0889 5H 64 of 89

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Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0	
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1592	
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	80.8	
Bicycle Level of Service		
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	688.5	
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)	2.44	
Bicycle level of service (Exhibit 15-4)	В	
Notes		
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the downgrade segments are treated as level terrain.</li> </ol>	te base conditions. For the purpose of grade adjustment, specific	
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> </ol>		

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DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET		
General Information Site Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	From/To Jurisdiction	Green Valley Road - WB Deer Valley to Malcolm El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width tt	Class I h	ighway 🗹 Class II
Lane width ft		Class III highway
t Shoulder widtht	Terrain	Level V Rolling
Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing zo	mi Up/down etor, PHF 0.77 one 100%
Analysis direction vol., V <sub>d</sub> 385veh/h	70 Trucks and	
Opposing direction vol., Vo664veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi1.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% <i>mi</i> 2/mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.8	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.95	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	526	862
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 48	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) mi/h
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibit	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 51.0 m	
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.3 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	-0.00776(v <sub>d,ATS</sub> + 39.0 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	76.4 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.4	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	0.96	1.00
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	521	862
Base percent time-spent-following <sup>4</sup> , $BPTSF_{d}(\%)=100(1-e^{av_{d}^{b}})$	56.7	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	26.0	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF}+$	+ 66.5	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)	C Old	
Volume to capacity ratio, v/c	0.31	

13-0889 5H 66 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	76.4
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	500.0
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)	2.07
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00,as level terrain is one of downgrade segments are treated as level terrain.</li> </ol>	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     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Malcolm to Deer Valley El Dorado County 2014
Project Description: GVR Corridor Analysis	, malyolo i cal	
Input Data		
Analysis direction vol., V <sub>d</sub> 664veh/h Opposing direction vol., V <sub>o</sub> 385veh/h Shoulder width ft 6.0 Lane Width ft 12.0	Show North Arrow % Trucks and	Class III highway Level Rolling mi Up/down ctor, PHF 0.80 one 100% I Buses , P <sub>T</sub> 1 % al vehicles, P <sub>R</sub> 0%
Segment Length mi 1.0 Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.4	1.8
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.1	1.1
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.996	0.992
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	0.99	0.94
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	842	516
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample3, S FM54Total demand flow rate, both directions, v54Free-flow speed, FFS=S FM+0.00776(v/ $f_{HV,ATS}$ )2.7 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)2.7 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	t 15-8) mi/h <sup>T</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 59.2 mi/h
Percent Time-Spent-Following	<b>I -</b>	
Passenger-car equivalents for trucks, E <sub>⊤</sub> (Exhibit 15-18 or 15-19)	Analysis Direction (d) 1.0	Opposing Direction (o) 1.4
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}$ =1/ (1+ $P_T(E_T-1)+P_R(E_R-1)$ )	1.000	0.996
Grade adjustment factor <sup>1</sup> , f <sub>a.PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	0.95
Directional flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i$ =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	830	509
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	68.0	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	2	7.0
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF})$	+ 84.7	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		D
Volume to capacity ratio, v/c	0	.51

13-0889 5H 68 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1629
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	77.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	830.0
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)	2.54
Bicycle level of service (Exhibit 15-4)	С
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one downgrade segments are treated as level terrain.</li> </ol>	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	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Malcolm to Silva Valley Pkwy El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ftLane width ftLane width ftLane width ftShoulder width ftSegment length, Lt mi	highway highway Terrain Grade Length Peak-hour far No-passing z	ctor, PHF 0.80
Analysis direction vol., V <sub>d</sub> 412veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., V715veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi1.7	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed	Anglusia Dispetien (1)	Organiza Disasting (c)
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.2	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i$ = $V_i$ / (PHF* $f_{g,ATS}$ * $f_{HV,ATS}$ )	516	894
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
Mean speed of sample3, $S_{FM}$ 64Total demand flow rate, both directions, $v$ 64Free-flow speed, FFS= $S_{FM}$ +0.00776( $v$ / $f_{HV,ATS}$ )1.3 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)1.3 mi/h	Adj. for access points4, f <sub>A</sub> (Exhibit 15-8)mi/Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> )67.2	
Percent Time-Spent-Following	1	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	515	894
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	56.9	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	24.8	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 66.0	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		0
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>	C 0.30	
· · · · · · · · · · · · · · · · · · ·		

13-0889 5H 70 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	81.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	515.0
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)	2.29
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is on downgrade segments are treated as level terrain.</li> </ol>	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	

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		
Analyst VZK Agency or Company KAI Date Performed 8/20/2014 Analysis Time Period PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Silva Valley Pkwy to Malcolm El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data	-	
Shoulder width ft	Class I f	
Shoulder width ft	highway Terrain	Class III highway
■ Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing z	n mi Up/down ctor, PHF 0.92 one 85%
Analysis direction vol., V <sub>d</sub> 715veh/h	Show North Arrow % Trucks and	I Buses , P <sub>T</sub> 1 %
Opposing direction vol., V <sub>o</sub> 412veh/h Shoulder width ft 6.0 Lane Width ft 12.0 Segment Length mi 1.7	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 2/mi
Average Travel Speed	<b>I</b>	
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV,ATS</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	0.999	0.997
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	778	449
Free-Flow Speed from Field Measurement	Estimated Free-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 54	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	-S-f <sub>LS</sub> -f <sub>A</sub> ) 59.6 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.7 <i>mi/h</i>	Average travel speed, ATS <sub>d</sub> =FFS	6-0.00776(v <sub>d,ATS</sub> + 47.3 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	79.5 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	777	448
Base percent time-spent-following <sup>4</sup> , $BPTSF_d(\%)=100(1-e^{av_d}^b)$	65.6	
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	28.9	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	+ 83.9	
V <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		D .46
	0	

13-0889 5H 72 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	79.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	777.2
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)	2.50
Bicycle level of service (Exhibit 15-4)	С
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of downgrade segments are treated as level terrain.</li> </ol>	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 or 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 HIGHWA	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	From/To Jurisdiction	Green Valley Road - WB Silva Valley Pkwy to EDH Blvd El Dorado County 2014
Project Description: GVR Corridor Analysis	Analysis I car	2014
Input Data		
Shoulder widthft	Class I h	ighway 🗹 Class II
Lane width		
Shoulder width tt		Class III highway
Segment length, L <sub>t</sub> mi	Show North Arrow % Trucks and	one 0.88
Analysis direction vol., V <sub>d</sub> 486veh/h	70 Tracks and	•
Opposing direction vol., Vo699veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi0.4	% Recreation Access points	al vehicles, P <sub>R</sub> 0% : <i>mi 0</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.999
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i$ / (PHF* $f_{g,ATS} * f_{HV,ATS}$ )	553	795
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 40	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) mi/h
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	S-f <sub>LS</sub> -f <sub>A</sub> ) 43.8 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.2 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	-0.00776(v <sub>d,ATS</sub> + 32.1 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	73.3 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	552	794
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	5	8.1
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	2	8.7
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	6	9.9
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		C 22
Volume to capacity ratio, <i>v/c</i>	0	.32

13-0889 5H 74 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1698
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	73.3
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	552.3
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.29
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is or downgrade segments are treated as level terrain.</li> </ol>	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	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB EDH Blvd to Silva Valley Pkwy El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder width ft tt tt	Class   I	ighway 🗹 Class II
Lane width	_	Class III highway
t_Shoulder widthtt		
Segment length, L <sub>t</sub> mi	Show North Arrow % Trucks and	n mi Up/down ctor, PHF 0.93 one 100%
Analysis direction vol., V <sub>d</sub> 699veh/h	// Trucks and	
Opposing direction vol., V486veh/hShoulder width ft6.0Lane Width ft12.0Segment Length mi0.4	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi 0</i> /mi
Average Travel Speed		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.2
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.998
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	752	524
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 44	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>LS</sub> (Exhibit 15-7) <i>mi/h</i>
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibit	t 15-8) <i>mi/h</i>
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV.ATS</sub> )	Free-flow speed, FFS (FSS=BFF	FS-f <sub>LS</sub> -f <sub>A</sub> ) 49.4 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.2 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	G-0.00776(v <sub>d,ATS</sub> + 37.3 mi/h
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	75.5 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g.PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	752	523
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	6	5.1
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)		0.4
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF} + v_{d,PTSF})$	6	3.0
v <sub>o,PTSF</sub> )		
Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		D .44
volume to capacity ratio, v/c	ن ا	. דד

13-0889 5H 76 of 89

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Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	75.5
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	751.6
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.44
Bicycle level of service (Exhibit 15-4)	В
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	

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 HIGHW	AY SEGMENT WORK	SHEET
General Information	Site Information	
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB EDH Blvd to Francisco Dr El Dorado County 2014
Project Description: GVR Corridor Analysis		2011
Input Data	T	
Analysis direction vol., V <sub>d</sub> 404veh/h Opposing direction vol., V <sub>o</sub> 702veh/h	Show North Arrow Show Show Show Show Show Show Show Show	Class III highway Level Rolling mi Up/down ctor, PHF 0.88 one 100% d Buses , P <sub>T</sub> 1 % al vehicles, P <sub>R</sub> 0%
Shoulder width ft 6.0 Lane Width ft 12.0	Access points	s <i>mi 1</i> /mi
Segment Length mi 0.4		
Average Travel Speed	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, $E_{T}$ (Exhibit 15-11 or 15-12)	1.2	1.1
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.998	0.999
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> = <i>V</i> <sub>i</sub> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	460	799
Free-Flow Speed from Field Measurement	Estimated Fre	ee-Flow Speed
Mean speed of sample3, $S_{FM}$ 44Total demand flow rate, both directions, v44Free-flow speed, FFS= $S_{FM}$ +0.00776(v/ $f_{HV,ATS}$ )1.2 mi/hAdj. for no-passing zones, $f_{np,ATS}$ (Exhibit 15-15)1.2 mi/h	Base free-flow speed <sup>4</sup> , BFFS Adj. for lane and shoulder width, <sup>4</sup> Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi Free-flow speed, FFS (FSS=BFF Average travel speed, ATS <sub>d</sub> =FFS V <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	t 15-8) <i>mi/h</i> <sup>-</sup> S-f <sub>LS</sub> -f <sub>A</sub> ) 47.1 <i>mi/h</i>
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , v <sub>i</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	459	798
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	5	2.4
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	2	8.8
Percent time-spent-following, PTSF <sub>d</sub> (%)=BPTSF <sub>d</sub> +f <sub>np,PTSF</sub> *(v <sub>d,PTSF</sub> / v <sub>d,PTSF</sub> +	6	2.9
V <sub>o,PTSF</sub> ) Level of Service and Other Performance Measures		
Level of service, LOS (Exhibit 15-3)		С
Volume to capacity ratio, v/c	0	.27

13-0889 5H 78 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1698
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	76.6
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{OL}$ (Eq. 15-24) veh/h	459.1
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.85
Bicycle level of service (Exhibit 15-4)	В
Notes	
1. Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the downgrade segments are treated as level terrain.	base conditions. For the purpose of grade adjustment, specific
<ol> <li>If v<sub>i</sub>(v<sub>d</sub> or v<sub>o</sub>) &gt;=1,700 pc/h, terminate analysisthe LOS is F.</li> <li>For the analysis direction only and for v&gt;200 veh/h.</li> <li>For the analysis direction only</li> <li>For the analysis direction only</li> </ol>	

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	AY SEGMENT WORK	SHEET
General Information	Site Information	
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	From/To Jurisdiction	Green Valley Road - EB Francisco Dr to EDH Blvd El Dorado County 2014
Project Description: GVR Corridor Analysis		2014
Input Data		
Shoulder widthft		
Lane width	Class I h	
Shoulder width ft	Terrain	Class III highway
Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing zo	ctor, PHF 0.93
Analysis direction vol., V <sub>d</sub> 702veh/h	Show North Arrow % Trucks and	Buses , P <sub>T</sub> 1 %
Opposing direction vol., V <sub>o</sub> 404veh/h Shoulder width ft 6.0 Lane Width ft 12.0	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi
Segment Length mi         0.4           Average Travel Speed         Image: Comparison of the second se		
	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.3
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	0.999	0.997
Grade adjustment factor <sup>1</sup> ,  f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub></i> = <i>V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	756	436
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed
	Base free-flow speed <sup>4</sup> , BFFS	mi/h
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 46	Adj. for lane and shoulder width, <sup>4</sup>	
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi	t 15-8) mi/h
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFF	S-f <sub>LS</sub> -f <sub>A</sub> ) 51.5 mi/h
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 2.6 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	6-0.00776(v <sub>d,ATS</sub> + 39.6 mi/h
Present Time Operat 5- Hamilton	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	77.0 %
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	755	434
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	6	4.1
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	3	0.4
Percent time-spent-following, $PTSF_d(\%)=BPTSF_d+f_{np,PTSF}*(v_{d,PTSF}/v_{d,PTSF}+$	8	3.4
V <sub>o,PTSF</sub> )	l	-
Level of Service and Other Performance Measures		D
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, v/c		D .44
	0	

13-0889 5H 80 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	77.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	754.8
Effective width, Wv (Eq. 15-29) ft	24.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	2.10
Bicycle level of service (Exhibit 15-4)	В
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	

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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# MULTILANE HIGHWAYS WORKSHEET(Direction 2)

## х

	Site Information	
VZK KAI 8/20/2014 PM	Highway/Direction to Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Sophia Pkwy to Francisco Dr El Dorado County 2014
dor Analysis		
	Des. (N)	Plan. (vp)
966	Peak-Hour Factor, PHF %Trucks and Buses, P <sub>T</sub> %RVs_P	0.88 3 0
1.00	General Terrain: Grade Length (mi) Up/Down %	Grade 1.35 4.00 2
tments		
1.00	E <sub>R</sub>	3.0
3.5	f <sub>HV</sub>	0.930
	Calc Speed Adj and	d FFS
12.0 12.0 0 59.0	f <sub>LW</sub> (mi/h) f <sub>LC</sub> (mi/h) f <sub>A</sub> (mi/h) f <sub>M</sub> (mi/h) FFS (mi/h)	59.0
	Design	
590 60.0 9.8 A	<u>Design (N)</u> Required Number of Lanes, N Flow Rate, v <sub>p</sub> (pc/h) Max Service Flow Rate (pc/h/ Design LOS	
	KAI 8/20/2014 PM dor Analysis 966 966 1.00 3.5 1.00 3.5 12.0 12.0 12.0 12.0 59.0 59.0 59.0	VZK       Highway/Direction to Travel         KAI       From/To         8/20/2014       Jurisdiction         PM       Analysis Year         dor Analysis       Des. (N)         966       Peak-Hour Factor, PHF $\%$ Trucks and Buses, P <sub>T</sub> $\%$ RVS, P <sub>R</sub> General Terrain:       Grade         Grade       Length (mi)         1.00       Up/Down %         Number of Lanes       Number of Lanes         stments       Calc Speed Adj and         12.0 $f_{LW}$ (mi/h)         12.0 $f_{LC}$ (mi/h)         12.0 $f_{LW}$ (mi/h)         59.0       FFS (mi/h)         59.0       Filow Rate, v <sub>p</sub> (pc/h)         60.0       9.8

#### MULTILANE HIGHWAYS WORKSHEET(Dir 2)

Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	548.9	
Effective width, W <sub>v</sub> (Eq. 15-29) ft	24.00	
Effective speed factor, S <sub>t</sub> (Eq. 15-30)	4.62	
Bicycle level of service score, BLOS (Eq. 15-31)	2.40	
Bicycle level of service (Exhibit 15-4)	В	
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# MULTILANE HIGHWAYS WORKSHEET(Direction 1)

## х

	Site Information	
VZK KAI 8/20/2014 PM	Highway/Direction to Travel From/To Jurisdiction Analysis Year	Green Valley Road - EB Sophia Pkwy to Francisco Dr El Dorado County 2014
dor Analysis		
	Des. (N)	🗌 Plan. (vp)
	%Trucks and Buses, P <sub>T</sub> %RVs, P <sub>R</sub> General Terrain:	0.95 6 0 Grade
1.00	Grade Length (mi) Up/Down % Number of Lanes	1.35 -4.00 2
stments		
1.00 1.5	E <sub>R</sub> f <sub>HV</sub>	1.2 0.971
	Calc Speed Adj ar	nd FFS
12.0 12.0 0 60.0	f <sub>LW</sub> (mi/h) f <sub>LC</sub> (mi/h) f <sub>A</sub> (mi/h) f <sub>M</sub> (mi/h) FFS (mi/h)	60.0
	Design	
738 60.0 12.3 B	Flow Rate, v <sub>p</sub> (pc/h)	
	KAI 8/20/2014 PM dor Analysis 1363 1363 1.00 1.00 1.00 1.00 1.00 1.5 12.0 0 60.0 738 60.0 12.3	VZK       Highway/Direction to Travel         KAI       From/To         8/20/2014       Jurisdiction         PM       Analysis Year         dor Analysis       Des. (N)         1363       Peak-Hour Factor, PHF $^{1363}$ Peak-Hour Factor, PHF $^{1363}$ Peak-Hour Factor, PHF $^{1363}$ Peak-Hour Factor, PHF $^{10}$ WRVs, P <sub>R</sub> General Terrain:       Grade         Grade       Length (mi)         1.00       Up/Down %         Number of Lanes       Stments         1.00       E <sub>R</sub> 1.5       f <sub>HV</sub> Calc Speed Adj ar         12.0       f <sub>LC</sub> (mi/h)         12.0       f <sub>LC</sub> (mi/h)         60.0       FFS (mi/h)         Design         Design (N)         738       Flow Rate, v <sub>p</sub> (pc/h)         60.0       Max Service Flow Rate (pc/)         12.3       Design LOS

#### MULTILANE HIGHWAYS WORKSHEET(Dir 1)

Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	717.4
Effective width, W <sub>v</sub> (Eq. 15-29) ft	24.00
Effective speed factor, S <sub>t</sub> (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	3.38
Bicycle level of service (Exhibit 15-4)	С
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Page 2 of 2

DIRECTIONAL TWO-LANE HIGHWAY SEGMENT WORKSHEET			
General Information	Site Information		
Analyst     VZK       Agency or Company     KAI       Date Performed     8/20/2014       Analysis Time Period     PM	Highway / Direction of Travel From/To Jurisdiction Analysis Year	Green Valley Road - WB Sophia Pkwy to County Line El Dorado County 2014	
Project Description: GVR Corridor Analysis		2011	
Input Data			
Shoulder widthftLane widthftLane widthftLane widthft	Class I h	nighway	
Segment length, L <sub>t</sub> mi	Terrain Grade Length Peak-hour fac No-passing zo	Level Rolling mi Up/down ctor, PHF 0.88 one 100%	
Analysis direction vol., V <sub>d</sub> 693veh/h	// Trucks and		
Opposing direction vol., Vo1278veh/hShoulder width ft8.0Lane Width ft12.0Segment Length mi0.2	% Recreation Access points	al vehicles, P <sub>R</sub> 0% s <i>mi</i> 1/mi	
Average Travel Speed		Opposing Direction (a)	
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.1	1.0 1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	0.998	1.000	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$ Grade adjustment factor <sup>1</sup> , $f_{g,ATS}$ (Exhibit 15-9)	1.00	1.000	
Demand flow rate <sup>2</sup> , $v_i$ (pc/h) $v_i = V_i / (PHF* f_{g,ATS} * f_{HV,ATS})$	789	1452	
Free-Flow Speed from Field Measurement		e-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h	
	Adj. for lane and shoulder width, <sup>4</sup>	f <sub>Lo</sub> (Exhibit 15-7) <i>mi/h</i>	
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 55	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi		
Total demand flow rate, both directions, $v$	Free-flow speed, FFS (FSS=BFF		
Free-flow speed, FFS=S <sub>FM</sub> +0.00776(v/ f <sub>HV,ATS</sub> ) Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 0.9 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	6-0.00776(v <sub>d ATS</sub> +	
	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	69.8 %	
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Heavy-vehicle adjustment factor, f <sub>HV</sub> =1/ (1+ P <sub>T</sub> (E <sub>T</sub> -1)+P <sub>R</sub> (E <sub>R</sub> -1) )	1.000	1.000	
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v</i> <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	788	1452	
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	75.3		
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	1	14.5	
Percent time-spent-following, $PTSF_{d}(\%)=BPTSF_{d}+f_{np,PTSF}*(v_{d,PTSF} / v_{d,PTSF})$		0.4	
V <sub>o,PTSF</sub> )	°	0.7	
Level of Service and Other Performance Measures			
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		D .46	
volume to capacity ratio, we	0		

13-0889 5H 86 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	1700
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	69.8
Bicycle Level of Service	
Directional demand flow rate in outside lane, $v_{\rm OL}$ (Eq. 15-24) veh/h	787.5
Effective width, Wv (Eq. 15-29) ft	28.00
Effective speed factor, S <sub>t</sub> (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.65
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00, as level terrain is one of the ba downgrade segments are treated as level terrain.</li> </ol>	se 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. Further 15.20 movides coefficients a code b for Equation 15.10	

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		
AnalystVZKAgency or CompanyKAIDate Performed8/20/2014Analysis Time PeriodPM	From/To Jurisdiction	Green Valley Road - EB County Line to Sophia Pkwy El Dorado County 2014	
Project Description: GVR Corridor Analysis		2014	
Input Data			
Shoulder width ft Lane width tt	Class I h	ighway 🗹 Class II	
Lane width It	highway Class III highway Terrain V Level Rolling		
Segment length, L <sub>t</sub> mi	Grade Length Peak-hour fac No-passing zo % Trucks and	one 0.92	
Analysis direction vol., V <sub>d</sub> 1278veh/h		al vehicles, P <sub>R</sub> 0%	
Opposing direction vol., V693veh/hShoulder width ft8.0Lane Width ft12.0Segment Length mi0.2	Access points	IX IX	
Average Travel Speed			
	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-11 or 15-12)	1.0	1.1	
Passenger-car equivalents for RVs, E <sub>R</sub> (Exhibit 15-11 or 15-13)	1.0	1.0	
Heavy-vehicle adjustment factor, $f_{HV,ATS}=1/(1+P_T(E_T-1)+P_R(E_R-1))$	1.000	0.998	
Grade adjustment factor <sup>1</sup> , f <sub>g,ATS</sub> (Exhibit 15-9)	1.00	1.00	
Demand flow rate <sup>2</sup> , <i>v<sub>i</sub></i> (pc/h) <i>v<sub>i</sub>=V<sub>i</sub></i> / (PHF* f <sub>g,ATS</sub> * f <sub>HV,ATS</sub> )	1389	755	
Free-Flow Speed from Field Measurement	Estimated Fre	e-Flow Speed	
	Base free-flow speed <sup>4</sup> , BFFS	mi/h	
Mean speed of sample <sup>3</sup> , S <sub>FM</sub> 53	Adj. for lane and shoulder width, <sup>4</sup>		
Total demand flow rate, both directions, $v$	Adj. for access points <sup>4</sup> , f <sub>A</sub> (Exhibi		
Free-flow speed, FFS=S <sub>FM</sub> +0.00776( <i>v</i> / f <sub>HV,ATS</sub> )	Free-flow speed, FFS (FSS=BFFS-f <sub>LS</sub> -f <sub>A</sub> ) 62.9 mi/h		
Adj. for no-passing zones, f <sub>np,ATS</sub> (Exhibit 15-15) 1.6 mi/h	Average travel speed, ATS <sub>d</sub> =FFS	i-0.00776(v <sub>d,ATS</sub> + 44.7 mi/h	
Present Time Operat 5- Hamilton	v <sub>o,ATS</sub> ) - f <sub>np,ATS</sub> Percent free flow speed, PFFS	71.0 %	
Percent Time-Spent-Following	Analysis Direction (d)	Opposing Direction (o)	
Passenger-car equivalents for trucks, E <sub>T</sub> (Exhibit 15-18 or 15-19)	1.0	1.0	
Passenger-car equivalents for RVs, E <sub>R</sub> (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) )	1.000	1.000	
Grade adjustment factor <sup>1</sup> , f <sub>g,PTSF</sub> (Exhibit 15-16 or Ex 15-17)	1.00	1.00	
Directional flow rate <sup>2</sup> , v <sub>/</sub> (pc/h) v <sub>i</sub> =V <sub>i</sub> /(PHF*f <sub>HV,PTSF</sub> * f <sub>g,PTSF</sub> )	1389	753	
Base percent time-spent-following <sup>4</sup> , BPTSF <sub>d</sub> (%)=100(1-e <sup>av</sup> d <sup>b</sup> )	84.4		
Adj. for no-passing zone, f <sub>np,PTSF</sub> (Exhibit 15-21)	15.1		
Percent time-spent-following, $PTSF_{d}$ (%)= $BPTSF_{d}$ +f <sub>np,PTSF</sub> *( $v_{d,PTSF}$ / $v_{d,PTSF}$ +	9	4.2	
v <sub>o,PTSF</sub> )			
Level of Service and Other Performance Measures	r	<i>г</i>	
Level of service, LOS (Exhibit 15-3) Volume to capacity ratio, <i>v/c</i>		E .82	
	0.	.02	

13-0889 5H 88 of 89

Capacity, C <sub>d,ATS</sub> (Equation 15-12) pc/h	0
Capacity, C <sub>d,PTSF</sub> (Equation 15-13) pc/h	1700
Percent Free-Flow Speed PFFS <sub>d</sub> (Equation 15-11 - Class III only)	71.0
Bicycle Level of Service	
Directional demand flow rate in outside lane, v <sub>OL</sub> (Eq. 15-24) veh/h	1389.1
Effective width, Wv (Eq. 15-29) ft	28.00
Effective speed factor, $S_t$ (Eq. 15-30)	4.62
Bicycle level of service score, BLOS (Eq. 15-31)	1.94
Bicycle level of service (Exhibit 15-4)	В
Notes	
<ol> <li>Note that the adjustment factor for level terrain is 1.00,as level terrain is o downgrade segments are treated as level terrain.</li> </ol>	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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