APPENDIX 21-3 (R) Intersection Analysis Worksheets

I-75 between NW 138 Street and Palmetto Expressway (SR 826)

BASIC FREEWAY SEGMENTS WORKSHEET Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 mida 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 EB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed June 2008 Jurisdiction Miami-Dade Existing PM Peak Analysis Time Period Analysis Year 2007 Project Description Beacon Countyline DRI (Third Sufficiency) - #06257 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 5053 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 %RVs, P_R Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_T 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} I/mi Interchange Density 0.50 f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1356 pc/h/ln f_p) pc/h f_p) 70.0 mi/h mi/h $D = v_p / S$ 19.4 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS CRequired Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 V - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

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Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 miih 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 WB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed June 2008 Jurisdiction Miami-Dade Existing PM Peak Analysis Time Period Analysis Year 2007 Project Description Beacon Countyline DRI (Third Sufficiency) - #06257 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 6059 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 %RVs, P_R Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_T 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} I/mi Interchange Density 0.50 f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1626 pc/h/ln f_p) pc/h f_p) 69.3 mi/h mi/h $D = v_p / S$ 23.5 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS С Required Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 V - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

BASIC FREEWAY SEGMENTS WORKSHEET

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Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 mida 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 EB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed June 2008 Jurisdiction Miami-Dade Analysis Time Period Future wo Project PM Peak Analysis Year 2018 Project Description Beacon Countyline DRI (Third Sufficiency) - #06257 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 6894 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 %RVs, P_R Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_T 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} I/mi Interchange Density 0.50 f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1850 pc/h/ln f_p) pc/h f_p) 67.3 mi/h mi/h $D = v_p / S$ 27.5 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 V - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

BASIC FREEWAY SEGMENTS WORKSHEET

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Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 mida 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 WB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed June 2008 Jurisdiction Miami-Dade Analysis Time Period Future wO Project PM Peak Analysis Year 2018 Project Description Beacon Countyline DRI (Third Sufficiency) - #06257 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 7391 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 %RVs, P_R Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_T 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} I/mi Interchange Density 0.50 f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 1984 pc/h/ln f_p) pc/h f_p) 65.2 mi/h mi/h $D = v_p / S$ 30.5 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 V - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

BASIC FREEWAY SEGMENTS WORKSHEET

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BASIC FREEWAY SEGMENTS WORKSHEET Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 mida 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 EB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed June 2008 Jurisdiction Miami-Dade Analysis Time Period Future w Project PM Peak Analysis Year 2018 Project Description Beacon Countyline DRI (Third Sufficiency) - #06257 Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 7669 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 %RVs, P_R Peak-Hr Prop. of AADT, K 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_{T} 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} I/mi Interchange Density 0.50 f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 2059 pc/h/ln f_p) pc/h f_p) 63.6 mi/h mi/h $D = v_p / S$ 32.3 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

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Speed (mi/h) Free-Flow Speed FFS = 75 mith Application | Input Output 70 miih 70 Operational (LOS) FFS, N, v_D LOS, S, D 65 mith N. S. D. 60 midh Design (N) FFS, LOS, v_D 60 Average Passenger-Car 55 mith FFS, LOS, N Design (v_p) v_B, S, D LOS, S, D Planning (LOS) FFS, N, AADT Planning (N) FFS, LOS, AADT N, S, D 40 Planning (v_o) FFS, LOS, N v_p, S, D 30 · 1200 1600 Flow Rate (pc/h/ln) General Information Site Information Analyst Highway/Direction of Travel 175 WB DPA Agency or Company From/To NW 138 Street to SR 826 Date Performed Jurisdiction Miami-Dade June 2008 Analysis Time Period Future w Project PM Peak Analysis Year 2018 Project Description Oper.(LOS) Des.(N) Planning Data Flow Inputs Volume, V 7739 Peak-Hour Factor, PHF 0.95 veh/h AADT %Trucks and Buses, P_⊤ veh/day 4 Peak-Hr Prop. of AADT, K %RVs, P_R 0 Peak-Hr Direction Prop. D General Terrain: Level $DDHV = AADT \times K \times D$ veh/h Grade Length mi 1.00 Up/Down % Driver type adjustment Calculate Flow Adjustments f_p 1.00 E_{R} 1.2 E_{T} 1.5 0.980 $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]$ Calc Speed Adj and FFS Speed Inputs Lane Width 12.0 ft \mathbf{f}_{LW} mi/h Rt-Shoulder Lat. Clearance 6.0 ft mi/h f_{LC} Interchange Density 0.50 I/mi f_{ID} mi/h Number of Lanes, N 4 f_N mi/h FFS (measured) 70.0 mi/h **FFS** 70.0 mi/h Base free-flow Speed, BFFS mi/h LOS and Performance Measures Design (N) Design (N) Operational (LOS) Design LOS $v_p = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ $v_{D} = (V \text{ or DDHV}) / (PHF x N x f_{HV} x)$ 2077 pc/h/ln f_p) pc/h f_p) 63.2 mi/h mi/h $D = v_p / S$ 32.8 pc/mi/ln $D = v_n / S$ pc/mi/ln LOS D Required Number of Lanes, N **Factor Location** Glossary N - Number of lanes S - Speed f_{LW} - Exhibit 23-4 E_P - Exhibits23-8, 23-10 V - Hourly volume D - Density f_{LC} - Exhibit 23-5 E_T - Exhibits 23-8, 23-10, 23-11 Flow rate FFS - Free-flow speed f_p - Page 23-12 f_N - Exhibit 23-6 LOS - Level of service BFFS - Base free-flow speed LOS, S, FFS, v_p - Exhibits 23-2, 23-3 f_{ID} - Exhibit 23-7 DDHV - Directional design hour volume

BASIC FREEWAY SEGMENTS WORKSHEET

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NW 170 STREET / NW 87 AVENUE

ALL-WAY STOP CONTROL ANALYSIS Site Information **General Information** NW 170 St/NW 87 Avenue Intersection Analyst DPA Jurisdiction Miami Lakes/MDC Agency/Co. Analysis Year 2007 Date Performed 10/13/2008 Analysis Time Period PM Peak Period Project ID Beacon Countyline DRI East/West Street: NW 170 Street North/South Street: NW 87 Avenue Volume Adjustments and Site Characteristics Eastbound Westbound Approach R R Movement Volume (veh/h) 50 4 124 75 177 6 %Thrus Left Lane Approach Northbound Southbound Movement R R 50 103 Volume (veh/h) 6 91 168 9 %Thrus Left Lane Eastbound Westbound Northbound Southbound L2 L2 L1 L2 L1 L1 L2 L1 TR LTR LTR **LTR** Configuration L PHF 0.95 0.95 0.95 0.95 0.95 Flow Rate (veh/h) 56 394 153 293 6 2 % Heavy Vehicles 2 2 2 2 2 1 No. Lanes 1 1 Geometry Group 5 4a 2 2 Duration, T 0.25 Saturation Headway Adjustment Worksheet Prop. Left-Turns 1.0 0.0 0.3 0.0 0.6 Prop. Right-Turns 0.0 0.1 0.5 0.6 0.0 Prop. Heavy Vehicle 0.0 0.0 0.0 0.0 0.0 hLT-adj 0.5 0.5 0.2 0.2 0.2 0.2 0.2 0.2 -0.7 hRT-adj -0.7 -0.6 -0.6 -0.6 -0.6 -0.6 -0.6 hHV-adi 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 hadj, computed 0.5 -0.0 -0.2 -0.3 0.1 **Departure Headway and Service Time** hd, initial value (s) 3.20 3.20 3.20 3.20 3.20 x, initial 0.01 0.05 0.35 0.14 0.26 hd, final value (s) 5.35 6.90 6.34 5.21 5.55 x, final value 0.01 0.10 0.23 0.45 0.57 Move-up time, m (s) 2.3 2.0 2.0 2.0 Service Time, t_s (s) 4.6 4.0 3.2 3.3 3.5 Capacity and Level of Service Eastbound Westbound Northbound Southbound L1 L2 L1 L2 L1 L2 L1 L2 Capacity (veh/h) 256 306 644 403 543 Delay (s/veh) 9.68 9.73 14.88 13.04 9.91 LOS Α Α В Α В Approach: Delay (s/veh) 9.73 14.88 9.91 13.04 LOS В Α В Α Intersection Delay (s/veh) 13.09 Intersection LOS В

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HCS+™ DETAILED REPORT General Information Site Information NW 170 Street/87 Avenue Intersection Analyst DPA Area Type All other areas Agency or Co. Jurisdiction Miami Lakes/MDC Date Performed 10/13/2008 2018 w Comm Improvements Time Period Future without Project Analysis Year Project ID Beacon Countyline DRI Volume and Timing Input EB **WB** NB SB LT TH RT LT TH RT LT TH RT LT TH RT Number of Lanes, N1 0 0 2 0 2 0 1 0 1 1 1 1 LTR Lane Group L TR L TR L TR Volume, V (vph) 59 105 320 100 128 125 209 53 164 94 233 69 % Heavy Vehicles, %HV 0 0 0 0 0 0 0 0 0 0 0 0 Peak-Hour Factor, PHF 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 0.95 Pretimed (P) or Actuated (A) Α Α Α Α Α Α Α 2.0 Start-up Lost Time, I1 2.0 2.0 2.0 2.0 2.0 2.0 2.0 Extension of Effective Green, e 2.0 2.0 2.0 2.0 2.0 2.0 Arrival Type, AT 3 3 3 3 3 3 3 Unit Extension, UE 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Filtering/Metering, I 1.000 1.000 1.000 1.000 1.000 1.000 1.000 Initial Unmet Demand, Qb 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Ped / Bike / RTOR Volumes 0 0 0 0 0 0 0 0 0 0 0 0 Lane Width 12.0 12.0 12.0 12.0 12.0 12.0 12.0 Parking / Grade / Parking Ν 0 Ν Ν 0 Ν Ν 0 Ν 0 Ν Parking Maneuvers, Nm Buses Stopping, NB 0 0 0 0 0 0 0 Min. Time for Pedestrians, Gp 3.2 3.2 3.2 3.2 Phasing EW Perm 03 04 NS Perm 06 80 02 07 G= G = 30.0G = 48.0G = G= G = G = G = Timing Y = Y = Y = 6Y = Y = Y = 6Y = Y = Duration of Analysis, T = 0.25Cycle Length, C = 90.0 Lane Group Capacity, Control Delay, and LOS Determination NΒ SB EB LT LT RT TH RT LT TΗ RT TH RT LT TH Adjusted Flow Rate, v 62 216 487 56 272 245 410 Lane Group Capacity, c 470 939 759 301 1140 370 1174 v/c Ratio, X 0.13 0.23 0.64 0.19 0.24 0.66 0.35 Total Green Ratio, g/C 0.53 0.53 0.33 0.33 0.33 0.33 0.53 Uniform Delay, d₄ 25.7 22.6 10.5 11.2 14.9 21.3 21.7 Progression Factor, PF 1.000 1.000 1.000 1.000 1.000 1.000 1.000 Delay Calibration, k 0.11 0.24 0.11 0.11 0.11 0.22 0.11 Incremental Delay, d₂ 0.1 0.1 1.9 0.3 0.1 4.4 0.2 Initial Queue Delay, d₃ 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Control Delay 10.7 11.3 16.7 21.6 21.8 30.0 22.8 Lane Group LOS В В В С С С С Approach Delay 16.7 11.2 21.8 25.5 Approach LOS В В С С $X_{\rm C} = 0.65$ Intersection Delay 20.1 Intersection LOS С

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					Н	CS+ [™]	DFT	ΔΙΙ	FD	RF	PO	RT							
General Info	ormation						<u> </u>		Site In										
Analyst Agency or C	DPA	18						I	Interse Area 7 Jurisd	ecti yp	on e	NV All Mia	oth ami	70 Stree ner area Lakes/	s MD	С			
Time Period	Future wit	h Pro	oject					Analysis Year 2018 w Comm Improvements						•					
									Projec	t IE)	Be	acc	n Coun	tylii	ne D	RI		
Volume and	l Timing Inpu	t	1				1		14/5			1					1		
			LT	EI TH		RT	LT	1	WB TH	1	RT	LT		NB TH			LT	SB TH	RT
Number of L	anes N1		1	1	1	0	0	_		-;-	0	1		2			1	2	0
Lane Group	u1103, 141		1	TR			-		 LTR	╁		<u> </u>		TR		,	1	TR	
Volume, V (v	/ph)		147		7	105	128	!	212	1	209	55		164	g)4	233	320	109
% Heavy Ve	. ,		0	0		0	0		0	1	0	0		0	()	0	0	0
Peak-Hour F	actor, PHF		0.95	0.98	5	0.95	0.95		0.95	0	.95	0.95	5	0.95	0.9	95	0.95	0.95	0.95
	or Actuated (A)	A	A		Α	A		Α		Α	A		A	1	١	A	Α	Α
Start-up Los			2.0	2.0			_	_	2.0			2.0		2.0	_		2.0	2.0	
	Effective Gre	en, e		2.0)			_	2.0	_		2.0		2.0	_		2.0	2.0	
Arrival Type, Unit Extension			3.0	3.0					3.0	_		3.0		3.0	_		3.0	3.0	-
Filtering/Met			1.000					\dashv	3.0 1.000	_		1.00) <u>(</u>	1.000			1.000	1.000	-
	Demand, Qb		0.0	0.0				\dashv	0.0	+		0.0		0.0			0.0	0.0	
	RTOR Volume	es	0	0		0	0		0	1	0	0		0	()	0	0	0
Lane Width			12.0	12.0)				12.0	1		12.0)	12.0			12.0	12.0	
Parking / Gra	ade / Parking		N	0		N	N		0		N	N		0		I	N	0	N
Parking Man	euvers, Nm																		
Buses Stopp	ing, Nв		0	0					0			0		0			0	0	
Min. Time fo	r Pedestrians,	Gp		3.2	2				3.2					3.2				3.2	
Phasing	EW Perm		02			3		04			S Pe			06			07)8
Timing	G = 48.0	G =		G			G =				= 30	0.0	G			G =		G =	
	Y = 6 Analysis, $T = 0$	Y =		Y	=		Y =		ļ	Y :	= 6		Y	= /cle Len	- Ath	<u>Y =</u>		Y =	
	Capacity, Co		y Dol	21/ 20/	41	OS Do	tormir	nati	ion				<u>C)</u>	/cie Len	igin	, C =	= 90.0		
Lane Group	Сарасну, С)//L/C	i Dei	EB	u L	US Del	termin		WB		1			NB			1	SB	
			LT	TH		RT	LT	-	TH	R	Т	LT	1	TH	R	Т	LT	TH	RT
Adjusted Flo	w Rate, v	1	155	424				5	78			58		272			245	452	
Lane Group	Capacity, c	4	120	973				6	644			279		1140			370	1160	
v/c Ratio, X		0.	37	0.44				0.	90			0.21	(0.24			0.66	0.39	
Total Green	Ratio, g/C	0.	53	0.53				0.	53			0.33	(0.33			0.33	0.33	
Uniform Dela	ay, d ₁	12	2.2	12.8				18	3.8			21.5	2	21.7			25.7	23.0	
Progression	Factor, PF	1.	000	1.000				1.0	000			1.000		1.000			1.000	1.000	
Delay Calibr	ation, k	0.	11	0.11				0.4	42			0.11	(0.11			0.24	0.11	
Incremental	Delay, d ₂	(0.6	0.3				1:	5.4			0.4		0.1			4.4	0.2	
Initial Queue	Delay, d ₃	0	0.0	0.0				0.	.0			0.0		0.0			0.0	0.0	
Control Dela	у	1	2.8	13.1				3.	4.2			21.9		21.8			30.0	23.2	
Lane Group	LOS		В	В				(С			С		С			С	С	
Approach De	elay		13	.0			3	4.2	2			2	21.	8			25.6		
Approach LC	os		Ε	3				С					С					С	
Intersection	Delay		24	.0			X _C =	0.0	81			Inters	ect	ion LOS	3			С	
							U			_							ļ		

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NW 170 STREET / NW 78 AVENUE

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	Τ\	NO-WAY STOP	CONTRO	DL SU	JMM.	ARY					
General Information			Site Ir	nform	atio	n					
Analyst	DPA		Interse	Intersection				NW 170 Street/78 Avenue			
Agency/Co.			Jurisdi	ction			Miami Lakes/MD		<u>.</u>		
Date Performed	10/13/200		Analys	is Year			2008 - Ex				
Analysis Time Period	PM Peak	Period									
Project Description Bea		PRI									
East/West Street: NW 17						NW 78 A	venue				
Intersection Orientation:			Study F	Period (hrs):	0.25					
Vehicle Volumes and	d Adjustment										
Major Street	<u> </u>	Eastbound	1 .				Westbou	<u>nd</u>			
Movement	1	2	3			4	5		6		
\\aluma \(\rangle \rangle \ran	L	Т	R 159			L	Т		R		
Volume (veh/h) Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95		
Hourly Flow Rate, HFR							1	_			
(veh/h)	5	0	167			0	0		0		
Percent Heavy Vehicles	2					0					
Median Type				Undi	vided	1					
RT Channelized			0						0		
Lanes	1	0	1			0	0		0		
Configuration	L		R								
Upstream Signal		0				0					
Minor Street		Northbound			Southbou	ınd					
Movement	7	8	9			10	11		12		
	L	T	R			L	Т		R		
Volume (veh/h)	214	431					295		9		
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95		
Hourly Flow Rate, HFR (veh/h)	225	453	0			0	310		9		
Percent Heavy Vehicles	2	2	0			0	2		2		
Percent Grade (%)		0					0				
Flared Approach		N					N				
Storage		0					0				
RT Channelized			0						0		
Lanes	1	1	0			0	1		0		
Configuration	L	T							TR		
Delay, Queue Length, an	d Level of Servi	ce									
Approach	Eastbound	Westbound		Northb	ound		(Southboo	ınd		
Movement	1	4	7	8		9	10	11	12		
Lane Configuration	L		L	Т					TR		
v (veh/h)	5		225	450	3				319		
C (m) (veh/h)	1623		519	882	2				722		
v/c	0.00		0.43	0.5					0.44		
95% queue length	0.01		2.17	3.0			†		2.27		
Control Delay (s/veh)	7.2		17.1	13.			1		13.9		
LOS	A		C	13.			+		13.3 B		
Approach Delay (s/veh)				14.		ļ	+	13.9			
		 					+				
Approach LOS			В		В						

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	T\	NO-WAY STOP	CONTRO	DL SU	MM	ARY			
General Information			Site Ir	nform	atio	n			
Analyst	DPA		Intersection			NW 170 S	Street/78	Avenue	
Agency/Co.			Jurisdi	ction			Miami Lal		
Date Performed	10/13/200		Analys	is Year			2018 Futu	oject	
Analysis Time Period	PM Peak	Period							
Project Description Bea)RI							
East/West Street: NW 17						NW 78 A	venue		
Intersection Orientation:			Study F	Period (hrs):	0.25			
Vehicle Volumes and	d Adjustment								
Major Street		Eastbound	1 -				Westbou	nd	
Movement	1	2	3			4	5		6
\	L _	T	R			L	T		R
Volume (veh/h) Peak-Hour Factor, PHF	5 0.95	0.95	275 0.95			0.95	0.95		0.95
Hourly Flow Rate, HFR			1				1		
(veh/h)	5	0	289			0	0		0
Percent Heavy Vehicles	2					0			
Median Type		·		Undi	vided	1			
RT Channelized			0						0
Lanes	1	0	1			0	0		0
Configuration	L		R						
Upstream Signal		0					0		
Minor Street		Northbound			Southboo	ınd			
Movement	7	8	9			10	11		12
	L	T	R			L	Т		R
Volume (veh/h)	293	444					304		9
Peak-Hour Factor, PHF	0.95	0.95	0.95			0.95	0.95		0.95
Hourly Flow Rate, HFR (veh/h)	308	467	0			0	320		9
Percent Heavy Vehicles	2	2	0			0	2		2
Percent Grade (%)		0					0		
Flared Approach		N					N		
Storage		0	1				0		
RT Channelized	1	1	0						0
Lanes	1	1	0			0	1		0
Configuration	L	T					1	ĺ	TR
Delay, Queue Length, an	d Level of Servi	ce	· ·					· · · · · · · · · · · · · · · · · · ·	
Approach	Eastbound	Westbound		Northb	ound		;	Southbou	nd
Movement	1	4	7	8		9	10	11	12
Lane Configuration	L		L	Т					TR
v (veh/h)	5		308	46	7				329
C (m) (veh/h)	1623		<i>4</i> 58	882	2		1		618
v/c	0.00		0.67	0.5	3		1		0.53
95% queue length	0.01		4.89	3.1			†		3.14
Control Delay (s/veh)	7.2		27.5	13.			†		17.3
LOS	A A		D D	B			+	 	C
Approach Delay (s/veh)				19.		<u> </u>	 	17.3	
Approach LOS		<u> </u>		19. C			+	C 77.3	
Apploacii LOS				U			1		22/2000 2.40 DI

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General Information			Site Ir	nformat	ion					
Analyst DPA			Interse		.1011	N/W/ 170 S	Stroot/79 Au	(00110		
Agency/Co.	DPA		Jurisdi			NW 170 Street/78 Avenue Miami Lakes/MDC				
Date Performed	10/13/200	<u> </u>		is Year		2018 Future w Project				
Analysis Time Period	PM Peak		Allalys	is i cai		20101 ata	2018 Future w Project			
Project Description Bea	!									
East/West Street: NW 17		'INI	North/S	outh Stre	eet: <i>NW 78 /</i>	Δνοημο				
ntersection Orientation:					s): 0.25	-veriue				
			lotady i	criou (iii	3). 0.20					
Vehicle Volumes and	a Adjustment					\\/ a ath a	.a. al			
Major Street Movement	1	Eastbound	3		4	Westbou	na	6		
viovement	1 L	2 	R		<u>4</u>	5 T		R		
/olume (veh/h)	5	'	417		L	<u>'</u>		N		
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95		
Hourly Flow Rate, HFR	1	1								
(veh/h)	5	0	438		0	0		0		
Percent Heavy Vehicles	2			T	0					
Median Type		<u>.</u>		Undivid	ded	-				
RT Channelized			0					0		
_anes	1	0	1	- 	0	0		0		
Configuration	i	 	R							
Jpstream Signal		0	 			0				
Minor Street		Northbound			Southbou	ınd				
Movement	7	8	9		10	11	inu	12		
VIOVETTICITE	,	T	R		L	Т Т		R		
/olume (veh/h)	356	450	 		<u>L</u>	319		9		
Peak-Hour Factor, PHF	0.95	0.95	0.95		0.95	0.95		0.95		
Hourly Flow Rate, HFR			1							
(veh/h)	374	473	0		0	335		9		
Percent Heavy Vehicles	2	2	0		0	2		2		
Percent Grade (%)		. 0	<u> </u>			0	,			
Flared Approach		N	1			N				
Storage	+	0	+			0				
RT Channelized	+	 	0					0		
	1	1	0		0	1		0		
_anes Configuration	1	T	+ -		U	+ '		TR		
	<u> </u>							IΠ		
Delay, Queue Length, an		1	1	N		<u> </u>				
Approach	Eastbound	Westbound		Northbou			Southbound			
Movement	1	4	7	8	9	10	11	12		
ane Configuration	L		L	Т				TR		
/ (veh/h)	5		374	473				344		
C (m) (veh/h)	1623		358	882				511		
//C	0.00		1.04	0.54		1		0.67		
95% queue length	0.01		12.88	3.26		+	 	4.99		
· ·	7.2				+	+	 			
Control Delay (s/veh)			94.6	13.7	_	_		25.4		
_OS	Α		F	В				D		
Approach Delay (s/veh)				49.4			25.4			
Approach LOS			E			D				

All-Way Stop Control

		ALL-W	AY STOP (CONTROL A	ANALYSIS							
General Information				Site Inform	ation							
Analyst	DPA			Intersection			0 Street/78 Avenu	е				
Agency/Co.				Jurisdiction			mi Lakes/MDC					
Date Performed	10/20/2			Analysis Year		2018 F	2018 Future w Project w Imps					
Analysis Time Period	•	k Period										
Project ID Beacon Countyline DRI East/West Street: NW 170 Stree				No other (Constants of the	AUA/ 70 A							
				North/South Str								
Volume Adjustments an	d Site Chara		Eastbound			Wo	Westbound					
Approach Movement	 		T	R	L	vve	T	R				
Volume (veh/h)	5	Î	0	417	0		0	0				
%Thrus Left Lane		i i										
Approach	ĺ		Northbound		Ì	Sou	thbound					
Movement	L		T	R	L		Т	R				
Volume (veh/h)	35	6	<i>4</i> 50	0	0		319	9				
%Thrus Left Lane												
	East	bound	We	estbound	Norti	hbound	South	hbound				
	L1	L2	L1	L2	L1	L2	L1	L2				
Configuration	L	R	1		L	T	TR	 				
PHF	0.95	0.95			0.95	0.95	0.95	1				
Flow Rate (veh/h)	5	438	1	1	374	473	344	İ				
% Heavy Vehicles	2	2	1	ĺ	2	2	2	ĺ				
No. Lanes	2	2	1	Ö	1	2	1	<u>.</u> 1				
Geometry Group		1	1			5	3	3b				
Duration, T			•	0	.25							
Saturation Headway Ad	justment Wo	rksheet										
Prop. Left-Turns	1.0	0.0			1.0	0.0	0.0					
Prop. Right-Turns	0.0	1.0	1		0.0	0.0	0.0	1				
Prop. Heavy Vehicle	0.0	0.0	+		0.0	0.0	0.0	1				
hLT-adj	0.2	0.2	+		0.5	0.5	0.2	0.2				
hRT-adj	-0.6	-0.6	+		-0.7	-0.7	-0.6	-0.6				
hHV-adj	1.7	1.7	+		1.7	1.7	1.7	1.7				
hadj, computed	0.2	-0.6	+		0.5	0.0	0.0	1.7				
		<u> </u>			0.5	0.0	0.0					
Departure Headway and	-0	1		1				1				
hd, initial value (s)	3.20	3.20			3.20	3.20	3.20	ļ				
x, initial	0.00	0.39	+		0.33	0.42	0.31					
hd, final value (s)	6.83	6.02	+		7.18	6.67	6.85					
x, final value Move-up time, m (s)	0.01	0.73	- 		0.75	0.88	0.65					
	 	.0	+			.3	1	.0 T				
Service Time, t _s (s)	4.8	4.0			4.9	4.4	4.9					
Capacity and Level of S	ervice											
	East	bound	We	estbound	Norti	hbound	South	hbound				
	L1	L2	L1	L2	L1	L2	L1	L2				
Capacity (veh/h)	255	586	1		500	538	513					
Delay (s/veh)	9.90	23.69	1		28.12	40.01	21.92	İ				
LOS	A	C	 		D	E	C	1				
Approach: Delay (s/veh)	1		+	1		<u> </u>		.92				
	 2	3.54	+									
LOS	ļ	С				D	1 (<u> </u>				
Intersection Delay (s/veh)	-				9.01							
Intersection LOS	1				D							

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NW 122 STREET / NW 97 AVENUE

TWO-WAY STOP CONTROL SUMMARY								
General Information	Site Information							
Analyst DPA	Intersection	NW 122 St & NW 97 Ave						
Agency/Co.	Jurisdiction	City of Hialeah						
Date Performed	Analysis Year							
Analysis Time Period Existing Peak Hour								
Project Description Beacon Countline DRI - #06257								
East/West Street: NW 122 Street	North/South Street: NM	/ 97 Avenue						
Intersection Orientation: East-West	Study Period (hrs): 0.25	5						

Vehicle Volumes and	l Adjustmen	ts					
Major Street		Eastbound		Westbound			
Movement	1	2	3	4	5	6	
	L	Т	R	L	T	R	
Volume (veh/h)	75	239	1	2	185	157	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	81	259	1	2	201	170	
Percent Heavy Vehicles	2			0			
Median Type			Undi	ivided			
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LTR			LTR			
Upstream Signal		0			0		
Minor Street		Northbound			Southbound		
Movement	7	8	9	10	11	12	
	L	Т	R	L	T	R	
Volume (veh/h)	0	0	0	93	0	42	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	0	0	0	101	0	45	
Percent Heavy Vehicles	0	0	0	2	0	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	1	1	0	
Configuration		LTR		L		TR	

Delay, Queue Length, a	Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	1	Northbound	t	Southbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	LTR	LTR		LTR		L		TR	
v (veh/h)	81	2		0		101		45	
C (m) (veh/h)	1188	1316				325		753	
v/c	0.07	0.00				0.31		0.06	
95% queue length	0.22	0.00				1.29		0.19	
Control Delay (s/veh)	8.3	7.7				21.0		10.1	
LOS	Α	Α				С		В	
Approach Delay (s/veh)				•			17.6		
Approach LOS							С		

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TWO-WAY STOP CONTROL SUMMARY								
General Information	Site Information							
Analyst DPA	Intersection NW 12	22 St & NW 97 Ave						
Agency/Co.	Jurisdiction City of	f Hialeah						
Date Performed	Analysis Year							
Analysis Time Period Fut wo proj Peak Hour								
Project Description Beacon Countline DRI - #06257								
East/West Street: NW 122 Street	North/South Street: NW 97 Avenue							
Intersection Orientation: East-West	Study Period (hrs): 0.25							

Vehicle Volumes and	d Adjustmen	ts					
Major Street		Eastbound		Westbound			
Movement	1	2	3	4	5	6	
	L	Т	R	L	T	R	
Volume (veh/h)	78	249	20	2	192	162	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	84	270	21	2	208	176	
Percent Heavy Vehicles	2			2			
Median Type			Undi	ivided			
RT Channelized			0			0	
Lanes	0	1	0	0	1	0	
Configuration	LTR			LTR			
Upstream Signal		0			0		
Minor Street		Northbound			Southbound		
Movement	7	8	9	10	11	12	
	L	Т	R	L	T	R	
Volume (veh/h)	1	0	1	96		43	
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	
Hourly Flow Rate, HFR (veh/h)	1	0	1	104	0	46	
Percent Heavy Vehicles	2	2	2	2	0	2	
Percent Grade (%)		0			0		
Flared Approach		N			N		
Storage		0			0		
RT Channelized			0			0	
Lanes	0	1	0	1	0	1	
Configuration		LTR		L		R	

Delay, Queue Length, and Level of Service								
Approach	Eastbound	Westbound	ľ	Northbound	b	S		
Movement	1	4	7	8	9	10	11	12
Lane Configuration	LTR	LTR		LTR		L		R
v (veh/h)	84	2		2		104		46
C (m) (veh/h)	1174	1271		406		305		743
v/c	0.07	0.00		0.00		0.34		0.06
95% queue length	0.23	0.00		0.01		1.47		0.20
Control Delay (s/veh)	8.3	7.8		13.9		22.8		10.2
LOS	Α	Α		В		С		В
Approach Delay (s/veh)				13.9			18.9	·
Approach LOS				В			С	

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TWO-WAY STOP CONTROL SUMMARY								
General Information		Site Information						
Analyst Agency/Co. Date Performed Analysis Time Period	DPA Fut w proj Peak Hour	Intersection Jurisdiction Analysis Year	NW 122 St & NW 97 Ave					
Project Description Beacon Countline DRI - #06257								
East/West Street: NW 122 Street North/South Street: NW 97 Avenue								
Intersection Orientation:	East-West	Study Period (hrs): (),25					

Vehicle Volumes and	d Adjustmen	ts				
Major Street		Eastbound			Westbound	
Movement	1	2	3	4	5	6
	L	Т	R	L	Т	R
Volume (veh/h)	78	287	20	2	209	163
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	84	311	21	2	227	177
Percent Heavy Vehicles	2			2		
Median Type			Undi	vided		
RT Channelized			0			0
Lanes	0	1	0	0	1	0
Configuration	LTR			LTR		
Upstream Signal		0			0	
Minor Street		Northbound			Southbound	
Movement	7	8	9	10	11	12
	L	Т	R	L	Т	R
Volume (veh/h)	1	0	1	97		43
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Hourly Flow Rate, HFR (veh/h)	1	0	1	105	0	46
Percent Heavy Vehicles	2	2	2	2	0	2
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	1	0	1	0	1
Configuration		LTR		L		R

Delay, Queue Length, and Level of Service												
Approach	Eastbound	Westbound	ľ	Northbound	d	S	outhbound					
Movement	1	4	7	8	9	10	11	12				
Lane Configuration	LTR	LTR		LTR		L		R				
v (veh/h)	84	2		2		105		46				
C (m) (veh/h)	1155	1227		372		277		724				
v/c	0.07	0.00		0.01		0.38		0.06				
95% queue length	0.23	0.00		0.02		1.70		0.20				
Control Delay (s/veh)	8.4	7.9		14.7		25.7		10.3				
LOS	Α	Α		В		D		В				
Approach Delay (s/veh)				14.7	,		21.0	ĺ				
Approach LOS				В			С					

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NW 122 STREET / NW 87 AVENUE

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					Н	CS+	тм	DETA	IL	ED I	RE	EPOF	RT								
General Info	ormation								Site Information												
Analyst Agency or Co Date Perform									1	Inters Area Jurisc	Ту	ре				2 St & N er areas		87 <i>F</i>	lve		
Time Period	Existing Pe	ook L	lour						1	Analy	sis	Year									
Time Penod	Existing Fe	ак п	ioui							Proje			E	3ea ‡062		n County 7	yline	e DF	₹/ -		
Volume and	Timing Input																				
					EB					WB						NB				SB	
			LT	_	TH	RT		LT		TH		RT		LT		TH	-	RT	LT	TH	RT
Number of La	anes, N1		1	_	2	0		1	_	1		1	_	2		2	0)	2	2	0
Lane Group	1.		L	4	TR	141	_	L		T 100		R	4	L		TR		40	L	TR	105
Volume, V (v			156	_	394	117	_	201	_	426		333	4	236	·	858	-	16	246	626	125
% Heavy Ver			2	4	2	2		2	4	2	_	2	4	2		2	0.9		2	2	2 0.97
	<u>`</u>	. \	0.97	4	0.97	0.97		0.97	_	0.97	_	0.97		.97		0.97	-		0.97	0.97	
Start-up Lost	or Actuated (A	\)	A 2.0	\dashv	A 2.0	Α		2.0	4	A 2.0		A 2.0		<u>A</u> 2.0		A 2.0	Α	1	A 2.0	A 2.0	Α
	Effective Gree	n e	2.0	\dashv	2.0	╁		2.0	\dashv	2.0		2.0		2.0		2.0	十		2.0	2.0	
Arrival Type,		. ı, 	3	ᅱ	3	+		3	_	3		3		3		3	十		3	3	\vdash
Unit Extension			3.0	ᅱ	3.0			3.0	\dashv	3.0		3.0		3.0		3.0	t		3.0	3.0	
Filtering/Mete			1.000	9	1.000	1		1.000)	1.000	5	1.000		.00	0	1.000	Τ		1.000	1.000	
Initial Unmet			0.0	寸	0.0			0.0		0.0		0.0		0.0		0.0	Π		0.0	0.0	
	RTOR Volumes	3	0		0	0		0		0		33	十	0		0	0)	0	0	0
Lane Width			12.0		12.0			12.0		12.0		12.0	1	2.0		12.0			12.0	12.0	
Parking / Gra	de / Parking		Ν		0	N		N		0		N		N		0	٨	I	N	0	N
Parking Man	euvers, Nm																				
Buses Stopp	ing, Nв		0		0			0		0		0		0		0			0	0	
Min. Time for	Pedestrians,	Gp			3.2					3.2						3.2				3.2	
Phasing	Excl. Left	EW	Perm)	0	3		0-	4		E	Excl. L	_eft		N:	S Perm			07	0	8
Timing	G = 12.0		35.0		G =			G =			G	$\hat{s} = 21$	1.0	_		= 45.0		G =		G =	
	Y = 3	Y =	5		Y =			Y =			Υ	= 4		-		= 5		Y =		Y =	
	nalysis, T = <i>0.</i>														Су	cle Lenç	gth,	C =	130.0		
Lane Group	Capacity, Co	ntrol	Delay			S De	tei	rminati													
		\vdash		_	EB	DT	+	1 =		WB		<u></u>	<u> </u>		_	NB			1	SB	LDT
A 11 / 1 F1		-	LT		Н	RT	╁	LT		TH		RT	L.		+	TH	R	l	LT	TH	RT
Adjusted Flov	w Rate, v	1	161	5	27		╧	207	4	139	3	309	24	3		1005			254	774	
Lane Group (Capacity, c	2	231	_	22			312		502	4	126	87		┿	1206			996	1197	
v/c Ratio, X			70	0.5	-		╁		_	87	┢	73	0.2		┿).83			0.26	0.65	
Total Green I			40	0.2			+		_	27	_	27	0.5		+).35			0.55	0.35	
Uniform Dela	<u> </u>	-	0.1	41			+	28.0	_	5.4	₩	3.1	17.		+	39.1			19.6	35.8	
Progression		_	.000	_	000		╁	1.000		000	┢	000	1.0		╁	1.000			1.000	1.000	
Delay Calibra		_	26	0.1			+			40	┢	29	0.1		().37			0.11	0.22	<u> </u>
Incremental [<u> </u>	-	8.9	₩	0.9		+	5.2	_	5.7	-	6.1	0		+	5.2			0.1	1.2	
	, ,			0.0		.0	₩	0.0	0.0		┿	0.0			0.0	0.0					
			33.2	_	1.1	┢	9.2	17		4	44.2			19.7	37.0	<u> </u>					
Lane Group LOS D D C						E		D	В			D			В	D					
				51					_	39.0			32.7								
					D D C																
	Intersection Delay $X_C = $				$X_{C} =$	0.8							on LOS				D				
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Detailed Report Page 1 of 1

					Н	CS+	^M [DETA	IL	ED I	RE	POF	RT							
General Info	rmation								3	Site Information										
Analyst	DPA									nters					122 St & 1		37 <i>A</i>	lve		
Agency or Co										Area -			Α	ıı ot	her areas	;				
Date Perform	ned									Jurisd										
Time Period	Fut wo pro	j Pea	ık Hot	ır						Analy	SIS	Year			on Count	ulino	חב	01		
									F	Project ID Beacon Countyline DRI - #06257										
Volume and	Timing Input																	í		
					EB	1		ļ		WB	1				NB			ļ	SB	
			LT		TH	RT		LT	4	TH		RT		<u>.T</u>	TH	R	Γ	LT	TH	RT
Number of La	anes, N1		1		2 TR	0		1 L	4	1 T		1 R		2	2 TR	0		2 L	2 TR	0
Lane Group Volume, V (v	nh)		161		461	121		208	4	469		351		<u>-</u> 44	924	12		258	679	129
% Heavy Vel	· '		2		2	2		200	╅	2	_	2			2	2	<u> </u>	2	2	2
Peak-Hour F	· · · · · · · · · · · · · · · · · · ·		0.97).97	0.97		0.97	-	0.97	\dashv	0.97		97	0.97	0.97	7	0.97	0.97	0.97
	or Actuated (A	4)	A	_	A	A		A	一	A		A	7		A	A		A	A	A
Start-up Lost		•/	2.0		2.0	╁		2.0	寸	2.0	\dashv	2.0	2		2.0	<u> </u>		2.0	2.0	 ^
	Effective Gree	n, e	2.0		2.0			2.0	_	2.0		2.0	2		2.0	1		2.0	2.0	
Arrival Type,			3		3			3	Ī	3		3		3	3			3	3	
Unit Extension			3.0		3.0			3.0	Ī	3.0		3.0	3.	0	3.0	Ĺ		3.0	3.0	
Filtering/Mete	ering, I		1.000	0 1	.000			1.000)	1.000	2	1.000) 1.	000	1.000			1.000	1.000	
Initial Unmet	Demand, Qb		0.0	(0.0			0.0		0.0		0.0	0	.0	0.0			0.0	0.0	
	RTOR Volume	s	0		0	0		0		0		33	(0	0		0	0	0
Lane Width			12.0	_	2.0			12.0	_	12.0		12.0	_	2.0	12.0			12.0	12.0	$oxed{oxed}$
Parking / Gra			Ν	4	0	N		N		0		N	/	V	0	Ν		N	0	Ν
Parking Man									Ц											$oxed{oxed}$
Buses Stopp			0		0			0		0		0		0	0			0	0	
	Pedestrians,	· ·	<u> </u>		3.2					3.2	•				3.2				3.2	
Phasing	Excl. Left		Perm		0:	3	_	04	4		_	xcl. L		_	NS Perm			07		8
Timing	G = 12.0	G = Y =	35.0		G =		긕	G =			_	i = 21 $= 4$.0		6 = 45.0 $7 = 5$		<u>G =</u>		G = Y =	
Duration of A	Y = 3 nalysis, T = 0.		5	\dashv	Y =			Y =			Υ	= 4			ycle Len		Y =		Y =	
	Capacity, Co		Dela	v. ar	nd LO	S Det	er	minati	ion	<u> </u>					by old Long	9.11, \		700.0		
,	, ,,		•		В					NΒ					NB				SB	
			LT	Th	1	RT	L	LT	T	ТН	F	RT	LT		TH	RT		LT	TH	RT
Adjusted Flov	w Rate, v	1	166	60	00		2	214	4	84	3	28	252		1077			266	833	
Lane Group	Capacity, c	2	220	92	5		2	284	5	02	4	26	900)	1206			1054	1198	
v/c Ratio, X		0.	75	0.6	5		0.	.75	0.9	96	0.	77	0.28		0.89			0.25	0.70	
Total Green I	Ratio, g/C	0.	40	0.27	7		0.	.40	0.2	27	0.2	27	0.55		0.35			0.55	0.35	
Uniform Dela	ıy, d ₁	3	1.1	42.	1		2	8.8	46	6.9	43	3.8	17.7		40.2			20.6	36.6	
Progression	Factor, PF	1.	.000	1.00	00		1.	.000	1.0	000	1.	000	1.00	0	1.000			1.000	1.000	
Delay Calibra	ation, k	0.	31	0.23	3		0.	.31	0.4	47	0.	32	0.11		0.42			0.11	0.26	
Incremental [Delay, d ₂	1	3.8	1.0	6		1	10.9	31	1.1	8	3.4	0.2		8.8			0.1	1.8	
Initial Queue	Delay, d ₃	0	0.0	0.0)		C	0.0	0.	0	0.	.0	0.0		0.0			0.0	0.0	
Control Delay	Control Delay 44.9 43.7				3	39.6	78	3. <i>0</i>	5	2.2	17.	9	49.0			20.8	38.4			
Lane Group I	Lane Group LOS D D					D	Ε		I)	В		D			С	D			
Approach De	Approach Delay 43.9				61	.7				43.1					34.1					
Approach LC	Approach LOS D				E	E D (С										
Intersection [Delay		45	.4				$X_C = 0$	0.8	37			Inte	rse	ction LOS	5			D	
	pyright © 2005 University of Florida, All Rights Reserved									+ TM V							0/00/0000	3:02 PM		

HCS+[™] DETAILED REPORT General Information Site Information Intersection NW 122 St & NW 87 Ave Analyst DPA Area Type All other areas Agency or Co. Jurisdiction Date Performed Analysis Year Time Period Fut w proj Peak Hour Beacon Countyline DRI -Project ID #06257

Volume and	Timing Input	t												
				EB			WB			NB			SB	
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of L	anes, N1		1	2	0	1	1	1	2	2	0	2	2	0
Lane Group			L	TR		L	T	R	L	TR		L	TR	
Volume, V (v	rph)		174	471	129	208	474	358	248	925	120	273	682	135
% Heavy Ve	hicles, %HV		2	2	2	2	2	2	2	2	2	2	2	2
Peak-Hour F	actor, PHF		0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Pretimed (P)	or Actuated (A	۹)	Α	A	Α	Α	Α	Α	Α	A	Α	Α	Α	Α
Start-up Lost	t Time, I1		2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Extension of	Effective Gree	en, e	2.0	2.0		2.0	2.0	2.0	2.0	2.0		2.0	2.0	
Arrival Type,	AT		3	3		3	3	3	3	3		3	3	
Unit Extension	on, UE		3.0	3.0		3.0	3.0	3.0	3.0	3.0		3.0	3.0	
Filtering/Met	ering, I		1.000	1.000		1.000	1.000	1.000	1.00	0 1.000		1.000	1.000	
Initial Unmet	Demand, Qb		0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Ped / Bike / I	RTOR Volume	S	0	0	0	0	0	33	0	0	0	0	0	0
Lane Width			12.0	12.0		12.0	12.0	12.0	12.0	12.0		12.0	12.0	
Parking / Gra	ade / Parking		Ν	0	N	N	0	N	Ν	0	N	N	0	N
Parking Man	euvers, Nm													
Buses Stopp	ing, Nв		0	0		0	0	0	0	0		0	0	
Min. Time fo	r Pedestrians,	Gp		3.2			3.2			3.2			3.2	
Phasing	Excl. Left	ΕV	EW Perm		3	04		Excl. Le	eft	NS Perm		07)8
Timing	G = 12.0 $G = 35.0$		G =		G =		G = 21.	0	0 G = 45.0		G =			
	Timing $Y = 3$ $Y = 5$				Y = Y = 4 Y = 5 Y =			= Y =						
Duration of Analysis, T = 0.25 Cycle Length, C = 130.0														

Lane Group Capacity, Co	ontrol Del	lay, and	LOS D	etermin	ation							
		EB			WB			NB		SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	179	619		214	489	335	256	1078		281	842	
Lane Group Capacity, c	220	924		277	502	426	903	1206		1055	1197	
v/c Ratio, X	0.81	0.67		0.77	0.97	0.79	0.28	0.89		0.27	0.70	
Total Green Ratio, g/C	0.40	0.27		0.40	0.27	0.27	0.55	0.35		0.55	0.35	
Uniform Delay, d ₁	31.5	42.3		28.9	47.1	44.0	17.8	40.2		20.7	36.7	
Progression Factor, PF	1.000	1.000		1.000	1.000	1.000	1.000	1.000		1.000	1.000	
Delay Calibration, k	0.35	0.24		0.32	0.48	0.33	0.11	0.42		0.11	0.27	
Incremental Delay, d ₂	20.4	1.9		12.7	33.4	9.4	0.2	8.8		0.1	1.9	
Initial Queue Delay, d ₃	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	
Control Delay	51.8	44.2		41.6	80.5	53.5	18.0	49.1		20.9	38.6	
Lane Group LOS	D	D		D	F	D	В	D		С	D	
Approach Delay	45	5.9	,	6	3.8		4	3.1			34.2	
Approach LOS	I)			E			D			С	
Intersection Delay	46	5.3		$X_{c} =$	0.88		Interse	ction LO	S		D	

HCS+[™] DETAILED REPORT Site Information **General Information** Analyst DPA Intersection NW 122 St & NW 87 Ave Agency or Co. Area Type All other areas **Date Performed** Jurisdiction Fut w proj w Imps Peak Hour Analysis Year Time Period Beacon Countyline DRI -Project ID #06257 **Volume and Timing Input** EB **WB** NB SB LT TH RT LT TH RT LT TH RT TH RT LT Number of Lanes, N1 2 2 0 2 2 0 0 2 1 1 1 1 Т TR L TR L R L TR Lane Group L Volume, V (vph) 471 358 925 682 174 129 208 474 248 120 273 135 % Heavy Vehicles, %HV 2 2 2 2 2 2 2 2 2 2 2 2 Peak-Hour Factor, PHF 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 0.97 Pretimed (P) or Actuated (A) Α Α Α Α Α Α Α Α Α 2.0 Start-up Lost Time, I1 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 Extension of Effective Green, 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 Arrival Type, AT 3 3 3 3 3 3 3 3 3 Unit Extension, UE 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 Filtering/Metering, I 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 Initial Unmet Demand, Qb 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Ped / Bike / RTOR Volumes 33 0 0 0 0 0 0 0 0 0 0 0 Lane Width 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 Parking / Grade / Parking Ν 0 Ν Ν 0 Ν Ν 0 Ν Ν 0 Ν Parking Maneuvers, Nm Buses Stopping, NB 0 0 0 0 0 0 0 0 0 3.2 3.2 3.2 3.2 Min. Time for Pedestrians, Gp **EW Perm** NS Perm Phasing Excl. Left 03 04 Excl. Left 07 80 G = 44.0G = 12.0G = 40.0G = G= G = 17.0G =G = Timing Y = 3Y = 5Y = Y = Y = 4Y = 5Y = Y = Duration of Analysis, T = 0.25Cycle Length, C = 130.0 Lane Group Capacity, Control Delay, and LOS Determination WB NB SB EΒ LT TH RT LT TH RT LT TH RT LT TH RT Adjusted Flow Rate, v 179 619 214 489 335 256 1078 281 842 Lane Group Capacity, c 243 1056 314 573 487 802 1180 963 1171 v/c Ratio, X 0.74 0.59 0.68 0.85 0.69 0.32 0.91 0.29 0.72 Total Green Ratio, g/C 0.44 0.31 0.44 0.31 0.31 0.51 0.34 0.51 0.34 Uniform Delay, d₁ 28.2 38.0 25.4 42.2 39.5 20.4 41.2 23.4 37.6 Progression Factor, PF 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 1.000 Delay Calibration, k 0.29 0.18 0.25 0.39 0.26 0.11 0.43 0.11 0.28 Incremental Delay, d₂ 11.2 0.9 5.9 11.9 4.1 0.2 10.9 0.2 2.2

0.0

31.3

0.0

54.2

0.0

43.6

0.0

20.7

0.0

52.1

0.0

23.6

0.0

39.8

0.0

39.4

0.0

38.9

Initial Queue Delay, do

Control Delay

Intersections at NW 170 Street / HEFT Ramps

TWO-WAY STOP CONTROL SUMMARY										
General Information	Site Information									
Analyst DPA Agency/Co. Date Performed Analysis Time Period Fut w proj Peak Hour	Intersection NW 170 St & HEFT West Ramp Jurisdiction Analysis Year									
roject Description Beacon Countyline DRI (Second Sufficiency) - #06257										
East/West Street: NW 170 Street	North/South Street: HEFT West Ramp									

Study Period (hrs): 0.25

				· /		
Vehicle Volumes and	Adjustments	3				
Major Street		Eastbound			Westbound	
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume (veh/h)						397
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	0	0	441
Percent Heavy Vehicles	0			2		
Median Type			Una	livided		
RT Channelized			0			0
Lanes	0	0	0	0	0	1
Configuration						R
Upstream Signal		0			0	
Minor Street		Northbound			Southbound	
Movement	7	8	9	10	11	12
	L	Т Т	R	L	Т	R
Volume (veh/h)				450		
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	0	500	0	0
Percent Heavy Vehicles	0	0	2	0	0	0
Percent Grade (%)		0	•		0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	0	1	0	0
Configuration				L		
Dolay Ougus Longth and	I I aval of Comit					

Delay, Queue Length, and Level of Service													
Approach	Eastbound	Westbound		Northbound		s	Southbound						
Movement	1	4	7	8	9	10	11	12					
Lane Configuration						L							
v (veh/h)						500							
C (m) (veh/h)						1029							
v/c						0.49							
95% queue length						2.72							
Control Delay (s/veh)						11.8							
LOS						В							
Approach Delay (s/veh)							11.8						
Approach LOS							В						

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Intersection Orientation: East-West

TWO-WAY STOP CONTROL SUMMARY										
General Information		Site Information								
Analyst Agency/Co. Date Performed Analysis Time Period	DPA Fut w proj Peak Hour	Intersection Jurisdiction Analysis Year	NW 170 St & HEFT East Ramp							
Project Description Beaco	on Countyline DRI - #06257									
East/West Street: NW 170	Street	North/South Street: /	HEFT East Ramp							
Intersection Orientation: East-West Study Period (hrs): 0.25										

				().		
Vehicle Volumes and	d Adjustmen	ts				
Major Street		Eastbound			Westbound	
Movement	1	2	3	4	5	6
	L	Т	R	L	Т	R
Volume (veh/h)		397			450	607
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	441	0	0	500	674
Percent Heavy Vehicles	0			0		
Median Type		·	Und	ivided		
RT Channelized			0			0
Lanes	0	2	0	0	1	1
Configuration		T			T	R
Upstream Signal		0			0	
Minor Street		Northbound			Southbound	
Movement	7	8	9	10	11	12
	L	Т	R	L	Т	R
Volume (veh/h)			278			
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR (veh/h)	0	0	308	0	0	0
Percent Heavy Vehicles	0	0	2	0	0	0
Percent Grade (%)		0			0	
Flared Approach		N			N	
Storage		0			0	
RT Channelized			0			0
Lanes	0	0	1	0	0	0
Configuration			R			

Delay, Queue Length, and Level of Service												
Approach	Eastbound	Westbound		Northbound	t	S	outhbound					
Movement	1	4	7	8	9	10	11	12				
Lane Configuration					R							
v (veh/h)					308							
C (m) (veh/h)					784							
v/c					0.39							
95% queue length					1.88							
Control Delay (s/veh)					12.5							
LOS					В							
Approach Delay (s/veh)				12.5				,				
Approach LOS				В								

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NW 170 Street /NW 102 Avenue

HCS+[™] **DETAILED REPORT** General Information Site Information Intersection NW 170 St & NW 102 Ave Analyst DPA Area Type All other areas Agency or Co. Jurisdiction Date Performed Analysis Year Future w Project Time Period Fut w proj Peak Hour Beacon Countyline DRI (Second Sufficiency) -Future w Project Project ID

Volume and Timing Input												
Volume and Timing Input												
					1							
LT		RT	<u> </u> LT	<u> </u> TH	RT	<u>LT</u>	TH	RT	<u>LT</u>	<u> </u> TH	RT	
	2	1	1	2		1		1				
	T	R	L	T		L		R				
	348	336	140	390		677		293				
	2	2	2	2		2		2				
	0.90	0.90	0.90	0.90		0.90		0.90				
	Α	Α	Α	Α		Α		Α				
	2.0	2.0	2.0	2.0		2.0		2.0				
	2.0	2.0	2.0	2.0		2.0		2.0				
	3	3	3	3		3		3				
	3.0	3.0	3.0	3.0		3.0		3.0				
	1.000	1.000	1.000	1.000) [1.000		1.000				
	0.0	0.0	0.0	0.0	ĺ	0.0		0.0		ĺ		
0	0	51	0	0		0	0	43				
	12.0	12.0	12.0	12.0		12.0		12.0				
N	0	N	N	0	N	N	0	N				
	0	0	0	0		0		0				
	3.2		3.2		,		3.2			,	'	
Perm	m 03		04		NB Only	,	06		07	0	 8	
31.0	G =		G =				G =		G =		G =	
4	Y =		Y =		Y = 4	Υ	=	= Y =		Y =		
Duration of Analysis, T = 0.25						С	ycle Len	gth, C =	90.0			
		2 T 348 2 0.90 A 2.0 2.0 3 3.0 1.000 0.0 0 0 12.0 N 0 3.2 Perm 03 31.0 G =	LT TH RT 2 1 T R 348 336 2 2 0.90 0.90 A A 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3.0 3.0 1.000 1.000 0.0 0.0 0 0 51 12.0 12.0 N 0 N 0 0 3.2 Perm 03 31.0 G =	LT TH RT LT 2 1 1 T R L 348 336 140 2 2 2 0.90 0.90 0.90 A A A 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3.0 3.0 3.0 1.000 1.000 1.000 0.0 0.0 0.0 0 0 51 0 12.0 12.0 12.0 N 0 N N 0 0 0 0 3.2 0 0 0 3.2 0 0 0	LT TH RT LT TH 2 1 1 2 T R L T 348 336 140 390 2 2 2 2 0.90 0.90 0.90 0.90 A A A A 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3 3.0 3.0 3.0 3.0 1.000 1.000 1.000 1.000 0.0 0.0 0.0 0.0 0 0 51 0 0 0 0 12.0 12.0 12.0 N 0 N N 0 0 0 0 0 0 3.2 3.2 3.2	LT TH RT LT TH RT 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 1 2 1 2 1 2 1 2 </td <td>LT TH RT LT TH RT LT 2 1 1 2 1 T R L T L 348 336 140 390 677 2 2 2 2 2 0.90 0.90 0.90 0.90 0.90 A A A A A 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3 3 3.0 3.0 3.0 3.0 3.0 1.000 1.000 1.000 1.000 1.000 0.0 0 0 0 0 0 12.0 12.0 12.0 12.0 12.0 N 0 N N N N N</td> <td>LT TH RT LT TH RT LT TH 2 1 1 2 1 1 T R L T L L 348 336 140 390 677 2 2 2 2 2 0.90 0.90 0.90 0.90 0.90 A A A A A 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3 3 3.0 3.0 3.0 3.0 3.0 1.000 1.000 1.000 1.000 1.000 0.0 0.0 0.0 0.0 0.0 0 0 51 0 0 0 0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 N 0</td> <td>LT TH RT LT TH RT LT TH RT 2 1 1 2 1</td> <td>LT TH RT LT LT RT LT LT RT LT TH RT LT TH RT LT LT<</td> <td>LT TH RT LT R A A A A A A A A A A A</td>	LT TH RT LT TH RT LT 2 1 1 2 1 T R L T L 348 336 140 390 677 2 2 2 2 2 0.90 0.90 0.90 0.90 0.90 A A A A A 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3 3 3.0 3.0 3.0 3.0 3.0 1.000 1.000 1.000 1.000 1.000 0.0 0 0 0 0 0 12.0 12.0 12.0 12.0 12.0 N 0 N N N N N	LT TH RT LT TH RT LT TH 2 1 1 2 1 1 T R L T L L 348 336 140 390 677 2 2 2 2 2 0.90 0.90 0.90 0.90 0.90 A A A A A 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 2.0 3 3 3 3 3 3.0 3.0 3.0 3.0 3.0 1.000 1.000 1.000 1.000 1.000 0.0 0.0 0.0 0.0 0.0 0 0 51 0 0 0 0 12.0 12.0 12.0 12.0 12.0 12.0 12.0 N 0	LT TH RT LT TH RT LT TH RT 2 1 1 2 1	LT TH RT LT TH RT LT TH RT LT TH RT LT TH RT LT TH RT LT TH RT LT LT RT LT LT RT LT TH RT LT TH RT LT LT<	LT TH RT LT R A A A A A A A A A A A	

Lane Group Capacity, Control Delay, and LOS Determination												
	EB				WB			NB		SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v		387	317	156	433		752		278			
Lane Group Capacity, c		1222	1354	416	1576		826		739			
v/c Ratio, X		0.32	0.23	0.38	0.27		0.91		0.38			
Total Green Ratio, g/C		0.34	0.86	0.46	0.44		0.47		0.47			
Uniform Delay, d ₁		21.7	1.2	15.0	15.8		22.3		15.5			
Progression Factor, PF		1.000	1.000	1.000	1.000		1.000		1.000			
Delay Calibration, k		0.11	0.11	0.11	0.11		0.43		0.11			
Incremental Delay, d ₂		0.2	0.1	0.6	0.1		14.1		0.3			
Initial Queue Delay, d ₃		0.0	0.0	0.0	0.0		0.0		0.0			
Control Delay		21.9	1.3	15.6	15.9		36.4		15.8			
Lane Group LOS		С	Α	В	В		D		В			
Approach Delay	12	12.6		1.	15.8).8			,	•
Approach LOS	I	В			В			С				
Intersection Delay	21	21.5			$X_{C} = 0.69$			ction LOS	S	С		

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NW 170 Street /NW 97 Avenue

HCS+™ DETAILED REPORT General Information Analyst DPA Agency or Co. Date Performed Time Period Fut w proj Peak Hour HCS+™ DETAILED REPORT Site Information Intersection NW 170 St & NW 97 Ave Area Type All other areas Jurisdiction Analysis Year Breiest ID Beacon Countyline DRI -

Project ID

#06257

Volume and Timing Input																
				EB	EB		WB			NB				SB		
			LT	TH	RT	LT	TH	RT	LT		TH	RT	LT	TH	RT	
Number of L	anes, N1			1	1	1	1		1			1				
Lane Group				T	R	L	Τ		L			R				
Volume, V (vph)			393	253	45	248		28	3		100					
% Heavy Vehicles, %HV			2	2	2	2		2			2					
Peak-Hour Factor, PHF			0.90	0.90	0.90	0.90		0.90			0.90					
Pretimed (P)	or Actuated (A)		Α	A	Α	Α		<u> </u>			Α				
Start-up Lost Time, I1			2.0	2.0	2.0	2.0		2.0			2.0					
Extension of	Effective Gre	en, e		2.0	2.0	2.0	2.0		2.0			2.0				
Arrival Type,	, AT			3	3	3	3		3			3				
Unit Extension	on, UE			3.0	3.0	3.0	3.0		3.0			3.0				
Filtering/Met	ering, I			1.000	1.000	1.000	1.000)	1.00	00		1.000				
Initial Unmet	Demand, Qb			0.0	0.0	0.0	0.0		0.0			0.0				
Ped / Bike / I	RTOR Volume	es	0	0	23	0	0		0		0	10				
Lane Width				12.0	12.0	12.0	12.0		12.0)		12.0				
Parking / Gra	ade / Parking		N	0	N	N	0	N	N		0	Ν				
Parking Man	euvers, Nm															
Buses Stopp	Buses Stopping, NB			0	0	0	0		0			0				
Min. Time for Pedestrians, Gp			3.2	,	3.2		2		3.2							
Phasing	EW Perm		02	03		04		NB Onl	y	06			07		8	
Timing	G = 40.0	G =		G =		G =		G = 40.0	0	G =		G =		G =		
Timing	Y = 5	Y =		Y =		Y =		Y = 5		Y = Y		Y =		Y =		
Duration of Analysis, T = 0.25				Cycle Length, C = 90.0												

Lane Group Capacity, Control Delay, and LOS Determination													
		EB			WB			NB			SB		
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT	
Adjusted Flow Rate, v		437	256	50	276		314		100				
Lane Group Capacity, c		828	704	305	828		787		704				
v/c Ratio, X		0.53	0.36	0.16	0.33		0.40		0.14				
Total Green Ratio, g/C		0.44	0.44	0.44	0.44		0.44		0.44				
Uniform Delay, d ₁		18.1	16.6	15.0	16.3		16.9		14.8				
Progression Factor, PF		1.000	1.000	1.000	1.000		1.000		1.000				
Delay Calibration, k		0.13	0.11	0.11	0.11		0.11		0.11				
Incremental Delay, d ₂		0.6	0.3	0.3	0.2		0.3		0.1				
Initial Queue Delay, d ₃		0.0	0.0	0.0	0.0		0.0		0.0				
Control Delay		18.8	16.9	15.2	16.5		17.2		14.9				
Lane Group LOS		В	В	В	В		В		В				
Approach Delay	18.1		16.3			16	5.7	·		•			
Approach LOS	В		В			l I	3						
Intersection Delay	17.3		X _C =	$X_{c} = 0.46$			ction LC	S	В				

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NW 162 Street /NW 107 Avenue

ALL-WAY STOP CONTROL ANALYSIS Site Information **General Information** Intersection NW 162 St & NW 107 Ave DPA Analyst Jurisdiction Agency/Co. Analysis Year Date Performed Analysis Time Period Fut w proj Peak Hour Project ID Beacon Countyline DRI - #06257 East/West Street: NW 162 St North/South Street: NW 107 Avenue Volume Adjustments and Site Characteristics Eastbound Westbound Approach R R Movement 0 Volume (veh/h) 351 0 0 0 5 %Thrus Left Lane Approach Northbound Southbound Movement R R 79 176 Volume (veh/h) 0 158 2 0 %Thrus Left Lane Eastbound Westbound Northbound Southbound L1 L2 L1 L2 L1 L2 L1 L2 LT TR R R Configuration L L PHF 0.90 0.90 0.90 0.90 0.90 0.90 Flow Rate (veh/h) 390 87 175 2 195 5 % Heavy Vehicles 0 0 0 0 0 0 2 2 No. Lanes 0 2 Geometry Group 1 5 5 Duration, T 0.25 Saturation Headway Adjustment Worksheet Prop. Left-Turns 1.0 0.0 0.0 0.0 1.0 0.0 Prop. Right-Turns 0.0 1.0 0.0 1.0 0.0 0.0 Prop. Heavy Vehicle 0.0 0.0 0.0 0.0 0.0 0.0 hLT-adj 0.2 0.2 0.5 0.5 0.5 0.5 hRT-adj -0.6 -0.6 -0.7-0.7 -0.7 -0.7 hHV-adi 1.7 1.7 1.7 1.7 1.7 1.7 hadj, computed 0.2 -0.6 0.0 -0.7 0.5 0.0 **Departure Headway and Service Time** hd, initial value (s) 3.20 3.20 3.20 3.20 3.20 3.20 x, initial 0.35 0.00 0.08 0.16 0.00 0.17 hd, final value (s) 5.22 5.28 4.48 5.93 6.49 5.98 x, final value 0.01 0.14 0.25 0.00 0.32 0.57 Move-up time, m (s) 2.0 2.3 2.3 Service Time, t_s (s) 3.3 2.5 3.6 2.9 4.2 3.7 Capacity and Level of Service Eastbound Westbound Northbound Southbound L1 L2 L1 L2 L1 L2 L1 L2 Capacity (veh/h) 640 337 425 252 445 255 Delay (s/veh) 15.10 7.51 9.68 9.21 11.52 9.61 LOS С Α Α Α Α В Approach: Delay (s/veh) 15.01 9.66 11.50 LOS С Α В Intersection Delay (s/veh) 12.56 Intersection LOS

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NW 162 Street /NW 97 Avenue

TWO-WAY STOP CONTROL SUMMARY									
General Information Site Information									
Analyst Agency/Co. Date Performed Analysis Time Period	DPA 4/3/2008 PM Peak	Intersection Jurisdiction Analysis Year	NW 97 Avenue/NW 162 Street						
Project Description									
East/West Street: NW 16	32 Street	North/South Street: NW 97 Avenue							
Intersection Orientation:	North-South	Study Period (hrs): (0.25						
Vohicle Volumes and	A Adjustments								

Vehicle Volumes and	d Adjustmer	nts								
Major Street		Northbound			Southbound					
Movement	1	2	3	4	5	6				
	L	Т	R	L	Τ	R				
Volume (veh/h)	92	221			208	74				
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly Flow Rate, HFR (veh/h)	102	245	0	0	231	82				
Percent Heavy Vehicles	2			0						
Median Type		Undivided								
RT Channelized			0			0				
Lanes	1	2	0	0	2	1				
Configuration	L	T			T	R				
Upstream Signal		0			0					
Minor Street		Eastbound			Westbound					
Movement	7	8	9	10	11	12				
	L	Т	R	L	T	R				
Volume (veh/h)	162		203							
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90				
Hourly Flow Rate, HFR (veh/h)	180	0	225	0	0	0				
Percent Heavy Vehicles	2	0	0	0	0	0				
Percent Grade (%)		0	,		0					
Flared Approach		N			N					
Storage		0			0					
RT Channelized			0			0				
Lanes	1	0	1	0	0	0				
Configuration	L		R							

Delay, Queue Length, a	and Level of Se	ervice							
Approach	Northbound	Southbound	,	Westbound	l	Eastbound			
Movement	1	4	7	8	9	10	11	12	
Lane Configuration	L					L		R	
v (veh/h)	102					180		225	
C (m) (veh/h)	1244					422		921	
v/c	0.08					0.43		0.24	
95% queue length	0.27					2.09		0.96	
Control Delay (s/veh)	8.2					19.7		10.2	
LOS	Α					С		В	
Approach Delay (s/veh)							14.4		
Approach LOS							В		

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NW 162 Street /NW 97 Avenue

HCS+[™] DETAILED REPORT General Information Site Information Intersection NW 156 St & NW 97 Ave Analyst DPA Area Type All other areas Agency or Co. Jurisdiction **Date Performed** Analysis Year Time Period Fut w proj Peak Hour Beacon Countyline DRI -

Project ID

#06257

Volume and	Timing Input	t												
				EB			WB			NB			SB	
			LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Number of La	anes, N1		1		1				1	2			2	1
Lane Group			L		R				L	T			T	R
Volume, V (v	ph)		105		629				285	208			360	51
% Heavy Vel	hicles, %HV		0		2				2	0			0	0
Peak-Hour F	actor, PHF		0.90		0.90				0.90	0.90			0.90	0.90
Pretimed (P)	or Actuated (A	۹)	Α		Α				Α	Α			Α	Α
Start-up Lost	Time, I1		2.0		2.0				2.0	2.0			2.0	2.0
Extension of	Effective Gree	en, e	2.0		2.0				2.0	2.0			2.0	2.0
Arrival Type,	AT		3		3				3	3			3	3
Unit Extension	on, UE		3.0		3.0				3.0	3.0			3.0	3.0
Filtering/Met	ering, I		1.000		1.000				1.000	1.000			1.000	1.000
Initial Unmet	Demand, Qb		0.0		0.0				0.0	0.0			0.0	0.0
Ped / Bike / I	RTOR Volume	s	0	0	64				0	0		0	0	6
Lane Width			12.0		12.0				12.0	12.0			12.0	12.0
Parking / Gra	ade / Parking		N	0	N				N	0	N	N	0	N
Parking Man	euvers, Nm													
Buses Stopp	ing, Nв		0		0				0	0			0	0
	r Pedestrians,	Gp		3.2	1			<u>'</u>		3.2	'		3.2	.1
Phasing	EB Only		02	0	3	04		NS Per	m	NB Only		07		08
	G = 27.0	G =		G =		G =		G = 42.		6 = 8.0	G =		G =	
Timing	Y = 5	Y =		Y =		Y =		Y = 5	Y	= 3	Y =		Y =	
Duration of Analysis, T = 0.25									С	ycle Len	gth, C =	90.0	1.	

Lane Group Capacity, Con	trol Dela	ay, and	LOS De	etermin	ation		·					
		EB			WB			NB			SB	
	LT	TH	RT	LT	TH	RT	LT	TH	RT	LT	TH	RT
Adjusted Flow Rate, v	117		628				317	231			400	50
Lane Group Capacity, c	542		668				710	2211			1688	754
v/c Ratio, X	0.22		0.94				0.45	0.10			0.24	0.07
Total Green Ratio, g/C	0.30		0.42				0.64	0.61			0.47	0.47
Uniform Delay, d ₁	23.6		24.9				10.3	7.3			14.4	13.2
Progression Factor, PF	1.000		1.000				1.000	1.000			1.000	1.000
Delay Calibration, k	0.11		0.45				0.11	0.11			0.11	0.11
Incremental Delay, d ₂	0.2		21.4				0.4	0.0			0.1	0.0
Initial Queue Delay, d ₃	0.0		0.0				0.0	0.0			0.0	0.0
Control Delay	23.8		46.3				10.8	7.3			14.5	13.2
Lane Group LOS	С		D				В	Α			В	В
Approach Delay	42	.8					S).3	,		14.3	
Approach LOS	L)						A			В	
Intersection Delay	24	.9		X _C =	0.78		Interse	ction LO	S		С	

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Ramp Roadway Analysis

Ramp Roadway Analysis Beacon Countyline DRI

			Ramp		-	Trucks (2) Capacity			AM Peak Hour Conditions					PM Peak Hour Conditions						
Ramp	# of	FF	Capacity	PHF	ı	(veh/hr)			Exisiting Future wo		Future w Ex		Exis	isiting Futu		re wo Future w		ire w		
Kump	Lanes	Speed	(pc/hr) (1)		I-75	HEFT	Avg	(3)	٧	V/C	٧	V/C	v	V/C	v	V/C	v	V/C	V	V/C
HEFT NEB to I-75 NB On-Ramp	2	45	4,100	0.95	5.6%	8.1%	6.9%	3,766	1,410	0.37	1,862	0.49	1,929	0.51	2,542	0.68	3,333	0.89	3,662	0.97
I-75 SB to HEFT SWB Off-Ramp	2	45	4,100	0.95	5.6%	8.1%	6.9%	3,766	3,300	0.88	4,251	1.13	4,542	1.21	1,510	0.40	2,059	0.55	2,207	0.59
HEFT NB to NW 170 St Off Ramp	1	35	2,000	0.95	NA	8.1%	NA	1,826	NA	NA	NA	NA	NA	NA	NA	NA	119	0.07	283	0.16
NW 170 St to HEFT NB On Ramp	1	35	2,000	0.95	NA	8.1%	NA	1,826	NA	NA	NA	NA	NA	NA	NA	NA	126	0.07	612	0.34
HEFT SB to NW 170 St Off Ramp	1	35	2,000	0.95	NA	8.1%	NA	1,826	NA	NA	NA	NA	NA	NA	NA	NA	180	0.10	402	0.22
NW 170 St to HEFT NB On Ramp	1	35	2,000	0.95	NA	8.1%	NA	1,826	NA	NA	NA	NA	NA	NA	NA	NA	122	0.07	455	0.25
NW 138 St EB I-75 On Ramp	1	35	2,000	0.95	5.6%	NA	NA	1,848	1,122	0.61	1,421	0.77	1,578	0.85	964	0.52	1,639	0.89	2,414	1.31
NW 138 St WB I-75 Off Ramp	2	35	3,800	0.95	5.6%	NA	NA	3,512	638	0.18	1,380	0.39	2,055	0.59	763	0.22	1,147	0.33	1,495	0.43
					I-75	SR 826	Avg													
175 EB to SR 826 SB Ramp (3)	1	45	2,100	0.95	5.6%	4.7%	5.1%	1,945	2,172	1.12	2,507	1.29	2,563	1.32	1,811	0.93	2,324	1.19	2,599	1.34
Gratigny WB to SR 826 SB Ramp (3)	1	45	2,100	0.95	5.6%	4.7%	5.1%	1,945	614	0.32	698	0.36	698	0.36	920	0.47	1,103	0.57	1,103	0.57
Combined Ramp @ Merge	2	45	4,100	0.95	5.6%	4.7%	5.1%	3,797	2,786	0.73	3,185	0.84	3,241	0.85	2,731	0.72	3,427	0.90	3,702	0.97
SR 826 NB to I 75 WB Ramp	2	45	4,100	0.95	5.6%	4.7%	5.1%	3,797	1,545	0.41	1,881	0.50	2,121	0.56	3,177	0.84	3,635	0.96	3,758	0.99

- (1) Ramp Capacity obtained from Exhibit 25-3, Appropriate Capacity of Ramp Roadways, of the Highway Capacity Manual.
- (2) Adjustment Factor for Heavy Vehicles: f HV = 1 / (1 + Avg Truck or Expressway Truck Factor (1.5 - 1)) as calculated in equation 21-4 in page 21-7 of the HCM 2000.
- (3) Consistent with methdology provided by FTP, the service volume is obatined by muliplying the Ramp Capacity times the peak hour factor, the corresponding truck factor, and a population factor of 1.0.

HEFT NB TO 175 NB DIVERGE

Oanawal ! (-		KANIP	S AND RAM			האס	ncel					
General Infor				Site Infor								
Analyst	DPA			eeway/Dir of Tra		HEFT						
Agency or Company	0/25/	2007		nction		I-75 NI	В					
Date Performed Analysis Time Period	9/25/			risdiction alysis Year		2007 /	M Dook He	N. IF				
Project Description				lalysis real		200 <i>1 F</i>	AM Peak Ho	Jui				
Inputs	Deacon County	yiiile DKI (TIIIIu	Sufficiency)									
-		Terrain: Level							D	A .I:		
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	ım Adj		
Yes On									☐ Yes	☐ On		
✓ No ✓ Off									™ No	☐ Off		
- _{up} = ft									L _{down} =	ft		
ир		S	_{FF} = 70.0 mph		S _{FR} = 5	55.0 mp	oh					
$V_{\rm u} = {\rm veh/h}$			•	show lanes, L _A ,					$V_D =$	veh/h		
Conversion to	pc/h Und	der Base C		A	D K P							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	fp	v = V/PHF	x f _{HV} x f _p		
Freeway	3951	0.95	Level	6	0	0	.971	1.00	42	84		
Ramp	1410	0.95	Level	6	0		.971	1.00	15			
UpStream	1410	0.70	LGVCI	U U	-	1	. / / 1	1.00	10	4 7		
DownStream		† †										
30W10W0d111		Merge Areas		<u> </u>				Diverge Areas				
Estimation of					Estimat	ion c						
		(D)			 			\(\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	' \D			
	$V_{12} = V_F$							= V _R + (V _F - V				
·EQ =		ation 25-2 or Equation (E	•		L _{EQ} =		(Equation 25-	8 or 25-9)			
P _{FM} =		$P_{FD} =$		0.	450 using E	quation (Exh	ibit 25-12)					
/ ₁₂ =	pc/h				V ₁₂ =		27	769 pc/h				
V_3 or V_{av34}	pc/h	(Equation 25	-4 or 25-5)		V ₃ or V _{av34}		15	515 pc/h (Eq u	uation 25-1	or 25-16)		
$ s V_3 \text{ or } V_{av34} > 2,700$	0 pc/h? Tye:	s 🗆 No				24 > 2,7		Yes ☑ No		,		
Is V ₃ or V _{av34} > 1.5 *												
f Yes,V _{12a} =		Equation 25	.8)		Is V_3 or $V_{av34} > 1.5 * V_{12}/2$							
	<u> </u>	(Lqualion 25	-0)					C/II (Equation	125-10)			
Capacity Che	_	1 0-		100.50	Capacit	y Cii		1 0		1,00,50		
	Actual	L Ca	pacity	LOS F?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual		apacity	LOS F?		
					V _F		4284	Exhibit 25-1	14 7200	No		
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	2755	Exhibit 25-1	7200	No		
					V_R		1529	Exhibit 25-	3 4400	No		
Flow Entering	n Merae In	fluence A	rea		Flow En	terir	na Merc	je Influenc	e Area			
	Actual		Desirable	Violation?			Actual	Max Desira		Violation?		
V _{R12}	-	Exhibit 25-7			V ₁₂	_	2769	Exhibit 25-14	4400:All	No		
Level of Servi	ice Detern	<u> </u>	f not F)	<u> </u>	<u> </u>			terminatio	Į.			
		•			<u> </u>				•	<i>')</i>		
$D_R = 5.475 + 0.0$	• • •	0.0070 V ₁₂ -	0.00021 LA		1			0086 V ₁₂ - 0.	oooa rD			
$O_R = (pc/mi/l)$ LOS = (Exhibit)	•						c/mi/ln)					
OS = (Exhibit					Speed L	<u> </u>	bit 25-4)	<u> </u>				
•												
$M_S = (Exibit 25)$	•				ľ	•	xhibit 25	•				
	ihit 25-19)				S_R = 61.4 mph (Exhibit 25-19)							
$S_R = mph (Exh)$	1011 20 10)				I.							
	ibit 25-19)				$S_0 = 74$	1.8 mpł	h (Exhibit	25-19)				

Phone: Fax: E-mail: _____Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Existing Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB Jurisdiction: Analysis Year: 2007 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 3951 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 55.0 mph Volume on ramp 1410 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway		Ramp		Adjacent Ramp
Volume, V (vph)	3951		1410		vph
Peak-hour factor, PHF	0.95		0.95		
Peak 15-min volume, v15	1040		371		V
Trucks and buses	6		б		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	용	0.00	%	%
Length	0.00 t	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

```
1.00
                                               1.00
Driver population factor, fP
Flow rate, vp
                                    4284
                                               1529
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 2769 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         4284
                                      7200
                                                    No
     Fi F
                         2755
                                      7200
                                                    No
    v = v - v
         F R
     FΟ
                         1529
                                      4400
                                                    No
     R
                         1515 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    2769
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -12.4 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.306
                                          S
Space mean speed in ramp influence area,
                                         S = 61.4
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 74.8
                                                      mph
Space mean speed for all vehicles,
                                        S = 65.6
                                                      mph
```

0.971

Heavy vehicle adjustment, fHV

Conoral Infor	nation	IV-VIAIL C	S AND RAM			1110	,, , <u> </u>					
General Infori				Site Infor			NED					
Analyst Agency or Company	DPA			eeway/Dir of Tranction		HEFT I						
Date Performed	0/25/9	2007				I-75 NE	В					
Date Periormed Analysis Time Period	9/25/2			risdiction nalysis Year		2007 F	DA Dook Lie	our				
Project Description	Existi			ialysis real		2007 P	PM Peak Ho	Jui				
Inputs	beacon County	yiine DRI (Tiliiu	Sufficiency									
•		Terrain: Level							D	A .I.		
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj		
☐ Yes ☐ On									•			
									☐ Yes	Cn On		
✓ No ✓ Off									✓ No	☐ Off		
_ 44									I –	ft		
_{-up} = ft			_{FF} = 70.0 mph		S _{ER} = 5	55 0 mr	nh		L _{down} =	11		
/ _u = veh/h]			111)3.0 III	JII		V _D =	veh/h		
u				show lanes, L _A ,	L_{D}, V_{R}, V_{f}							
Conversion to		der Base C	Conditions	•								
(pc/h)	() (a b /b m)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$x f_{HV} x f_{n}$		
" '	(Veh/hr)	0.05	11	ļ.,						· · · г		
Freeway	5713	0.95	Level	6	0		.971	1.00		94		
Ramp	2542	0.95	Level	6	0	0	.971	1.00	27	56		
UpStream		 		<u> </u>	<u> </u>	_						
DownStream		l Merge Areas		<u>. </u>				L Diverge Areas				
Estimation of	· · · · · · · · · · · · · · · · · · ·	werge Areas			Estimat	ion		Diverge Areas				
Estimation of	V ₁₂				ESuman	1011	712 IC					
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	$= V_R + (V_F - V_I)$	$_{R})P_{FD}$			
- _{EQ} =		L _{EQ} =		(Equation 25-8	3 or 25-9)						
P _{FM} =		P _{FD} =		,	.450 using E c	•	nihit 25-12)					
	pc/h	Equation (E	W. 151 20 0)					303 pc/h	juditori (Exi	1101(25 12)		
/ ₁₂ =	•	/F /: 05	4 05 5)		V ₁₂ =			•				
V_3 or V_{av34}		(Equation 25	-4 or 25-5)		V_3 or V_{av34}			891 pc/h (Equ	ation 25-1	5 or 25-16)		
Is V_3 or $V_{av34} > 2,700$					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No							
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$							
f Yes,V _{12a} =	pc/h (Equation 25	-8)		If Yes,V _{12a} = pc/h (Equation 25-18)							
Capacity Che	cks				Capacit	v Ch	ecks					
	Actual	Ca	pacity	LOS F?		, , , , ,	Actual	Ca	pacity	LOS F?		
	riotadi		φασιτή	20011	V _F	$\neg \neg$	6194	Exhibit 25-1	' 	No		
.,		F 1 " " 6 = =										
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	3438	Exhibit 25-1	4 7200	No		
					V_R		2756	Exhibit 25-3	3 4400	No		
Flow Entering	Merge In	fluence A	rea		Flow En	terir	ng Merc	ge Influenc	e Area			
Ĭ	Actual	ii .	Desirable	Violation?		_	Actual	Max Desiral		Violation?		
V _{R12}		Exhibit 25-7			V ₁₂		4303	Exhibit 25-14	4400:All	No		
Level of Servi	ce Detern		f not F)	<u>I</u>				eterminatio				
		•								• /		
$D_R = 5.475 + 0.0$	• • •	0.0076 V ₁₂ -	0.00021 L _A		1			.0086 V ₁₂ - 0.0	nooa rD			
$P_{R} = (pc/mi/l)$	•				1	8 (pc /	mi/ln)					
.OS = (Exhibit	25-4)				LOS = A	(Exhi	bit 25-4)					
	ination				Speed L	Deter	rminatio	on				
Speed Detern					' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' 		xhibit 25					
•	_10\				1			•				
Speed Determ M _S = (Exibit 25	•				S = E0	2 1 mnh	ո /⊑vhih:±	25-101				
$M_S = $ (Exibit 25 $S_R = $ mph (Exhi	bit 25-19)				I	-	h (Exhibit					
$M_{\rm S} =$ (Exibit 25) $S_{\rm R} =$ mph (Exhi	bit 25-19)				I	-	h (Exhibit h (Exhibit					

Phone: Fax: E-mail: _____Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Existing Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB Jurisdiction: Analysis Year: 2007 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 5713 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 55.0 mph Volume on ramp 2542 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	5713	2542	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1503	669	v
Trucks and buses	6	6	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    6194
                                               2756
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 4303 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         6194
                                      7200
                                                    No
     Fi F
                         3438
                                      7200
                                                    No
    v = v - v
         F R
     FΟ
                         2756
                                      4400
                                                    No
     R
                        1891 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    4303
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 0.8 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
                                         D = 0.416
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 58.4
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 73.3
                                                     mph
Space mean speed for all vehicles,
                                        S = 62.2
                                                     mph
```

1.00

0.971

Heavy vehicle adjustment, fHV

Conoral Info	mation	IVAIVIE	S AND RAM			IVIVO							
General Infor				Site Infor									
Analyst	DPA			eeway/Dir of Tr		HEFT I							
Agency or Company	0.10.5.1	0007		nction		I-75 NE	3						
Date Performed	9/25/			risdiction		2010 4	M D l . I I						
Analysis Time Period Project Description		e without Projection		nalysis Year	•	2018 A	M Peak Ho	our					
nputs	beacon County	yılıle DRI (TIII'u	Sufficiency)										
•		Terrain: Level							D .	Λ !'			
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj			
Yes On									☐ Yes	☐ On			
No □ Off									✓ No	☐ Off			
_{-up} = ft									L _{down} =	ft			
/		S	$_{FF}$ = 70.0 mph		$S_{FR} = 5$	55.0 mp	oh		V _D =	veh/h			
/ _u = veh/h			Sketch (show lanes, L _A ,	L_{D}, V_{R}, V_{f}				V D —	VGII/II			
Conversion to	pc/h Und	der Base (Conditions										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	x f _{HV} x f _p			
Freeway	6015	0.95	Level	6	0	0	.971	1.00	65	522			
Ramp	1862	0.95	Level	6	0	0	.971	1.00	20)19			
UpStream													
DownStream					ļ								
		Merge Areas						Diverge Areas					
Estimation of	v ₁₂				Estimati	ion c	of v ₁₂						
	V ₁₂ = V _F	(P _{EM})					V ₁₂ =	= V _R + (V _F - V _I	_B)P _{ED}				
-EQ =		ation 25-2 or	25-3)		L _{EQ} =			Equation 25-8					
		P _{FD} =			450 using Ed	•	nihit 25 12)						
P _{FM} = / _	pc/h	Equation (E	Ariibit 20 0)					•	quation (Exi	11011 23-12)			
/ ₁₂ =	•	/F +: 0.F	4 05 5		V ₁₂ =			045 pc/h					
/ ₃ or V _{av34}		(Equation 25	-4 or 25-5)		V ₃ or V _{av34}			477 pc/h (Equ	ation 25-1	5 or 25-16)			
Is V_3 or $V_{av34} > 2,700$					Is V ₃ or V _{av34} > 2,700 pc/h? Yes No								
Is V_3 or $V_{av34} > 1.5$ *	$V_{12}/2 = Ye$	s 🗏 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No								
Yes,V _{12a} =	pc/h ((Equation 25	-8)		If Yes,V _{12a} = pc/h (Equation 25-18)								
Capacity Che	cks				Capacity	y Ch	ecks						
	Actual	Ca	apacity	LOS F?			Actual	Ca	pacity	LOS F?			
					V _F		6522	Exhibit 25-1	4 7200	No			
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V ₂	4503	Exhibit 25-1	4 7200	No			
FU						·ĸ				_			
	. 84 - '	(1			V _R		2019	Exhibit 25-3		No			
Flow Entering		ii .		Violeti0	Flow En			ge Influence		WalatiO			
	Actual	1	Desirable	Violation?			Actual	Max Desirat		Violation?			
V _{R12}		Exhibit 25-7	-		V ₁₂		4045	Exhibit 25-14	4400:All	No			
Level of Servi		•			+			terminatio		<i>F)</i>			
$D_R = 5.475 + 0.0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A			$O_R = 4$.252 + 0.	0086 V ₁₂ - 0.0	0009 L _D				
O _R = (pc/mi/l	n)				D _R = -1	.5 (pc	/mi/ln)						
.OS = (Exhibit	25-4)				1	(Exhi	bit 25-4)						
Speed Detern					Speed D			on					
•					 ' 								
3	•				$D_S = 0.350$ (Exhibit 25-19) $S_R = 60.2$ mph (Exhibit 25-19)								
S_R = mph (Exhi	bit 25-19)				_ ``								
						uumnk		/h 1(1)					
$S_0 = mph (Exhi$	bit 25-19) bit 25-14)				l *		ı (Exhibit ı (Exhibit	•					

Phone: E-mail: Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 AM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6015	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	1862	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph
Position of adjacent ramp

Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent
			Ramp
Volume, V (vph)	6015	1862	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1583	490	V
Trucks and buses	6	6	왕
Recreational vehicles	0	0	왕
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	. mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
Flow rate, vp
                                    6522
                                               2019
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 4045 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
                         6522
                                      7200
                                                    No
    v = v
     Fi F
                         4503
                                      7200
                                                    No
    v = v - v
         F R
     FΟ
                         2019
                                     4400
                                                    No
     R
                         2477 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    4045
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -1.5 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.350
                                          S
Space mean speed in ramp influence area,
                                         S = 60.2
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 71.0
                                                     mph
Space mean speed for all vehicles,
                                        S = 63.9
                                                     mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

Concret lafa	motion	KAIVIP	S AND RAM			'NN3)11EE I			
General Info				Site Infor						
Analyst	DPA			eeway/Dir of Tra		HEFT				
Agency or Company		2007		nction		I-75 NI	В			
Date Performed	9/25/			risdiction		2010 5	M Daak III			
Analysis Time Perio Project Description		e without Projection		alysis Year		2018 F	PM Peak Ho	bur		
Inputs	Deacon County	yiiile DRI (Tilliu	Sufficiency							
•		Terrain: Level							<u>.</u>	Λ !'
Jpstream Adj Ramp		Tellalli. Level							Downstrea Ramp	am Adj
☐ Yes ☐ O	N								☐ Yes	On
✓ No ☐ O	f								✓ No	☐ Off
- _{up} = ft									L _{down} =	ft
ир		S	_{FF} = 70.0 mph		S _{FR} =	55.0 mp	ph			
/ _u = veh/l	1		' '	show lanes, L _A ,					$V_D =$	veh/h
Conversion	o pc/h Un	der Base (· · · · · · · · · · · · · · · · · · ·						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		${\rm f}_{\rm HV}$	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	8393	0.95	Level	6	0	0	.971	1.00	91	00
Ramp	3333	0.95	Level	6	0	0	.971	1.00	36	14
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation o	f v ₁₂				Estimat	tion (of v ₁₂			
	V ₁₂ = V _F	(P _{EM})			i		V ₁₂ =	= V _R + (V _F - V	_)P_D	
- _{EQ} =	(5 11 05 0 05 0)			(= ''						
				1 2 2				sibit OF 10\		
				P _{FD} = 0.450 using Equation (Exhibit 25-12				IIDIL 23-12)		
₁₂ = pc/h				V ₁₂ =			083 pc/h			
V_3 or V_{av34}					V_3 or V_{av34}			017 pc/h (Eq u		5 or 25-16)
Is V_3 or $V_{av34} > 2.70$								Yes No		
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2	s 🗏 No			Is V_3 or V_{a_1}	_{/34} > 1.5	5 * V ₁₂ /2 『	Yes 🗹 No		
f Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} :	=	6	400 pc/h (Equ	ation 25-1	8)
Capacity Che	ecks				Capacit	ty Ch	ecks			
	Actual	Ca	apacity	LOS F?			Actual	Ca	apacity	LOS F?
	ĺ	ĺ			V_{F}		9100	Exhibit 25-1	4 7200	Yes
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$			Exhibit 25-1	_	No
*FO		EMIDIC 20-7								
					V _R		3614	Exhibit 25-3		No
Flow Enterin	, 	ii .		\# + + + - \	Flow E			ge Influenc		\n \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	Actual	i r	Desirable	Violation?	<u> </u>		Actual	Max Desiral	T	Violation?
V _{R12}	<u> </u>	Exhibit 25-7	<u> </u>		V ₁₂		6083	Exhibit 25-14	4400:All	No
Level of Serv		•			ł			eterminatio		F)
$D_R = 5.475 + 0$.00734 v _R +	0.0078 V ₁₂ -	0.00627 L _A			$D_R = 4$	1.252 + 0.	.0086 V ₁₂ - 0.	0009 L _D	
O _R = (pc/mi	/ln)				D _R = 1	8.8 (pc	c/mi/ln)			
OS = (Exhib	it 25-4)				LOS = F	(Exhi	bit 25-4)			
Speed Deteri	mination				Speed I	Deter	rminatio	on		
$M_{\rm S} = $ (Exibit 2	5-19)				$D_s = 0$.493 (E	Exhibit 25	-19)		
	•					,	h (Exhibit	,		
'R = IIIIII (EXI	· ·				l		•	· ·		
$S_R^=$ mph (Exhibit 25-19) $S_0^=$ mph (Exhibit 25-19)					$S_0 = 70.2 \text{ mph (Exhibit 25-19)}$					
	nibit 25-19) nibit 25-14)				l *		` h (Exhibit	· ·		

Fax:

Phone:
E-mail:
_____Diver

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

_____Freeway Data______

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	8393	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	3333	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent	
			Ramp	
Volume, V (vph)	8393	3333	vpl	n.
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	2209	877	V	
Trucks and buses	6	6	%	
Recreational vehicles	0	0	%	
Terrain type:	Level	Level		
Grade	0.00 %	0.00	% %	
Length	0.00 mi	0.00	mi mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
Driver population factor, fP
                                    9100
Flow rate, vp
                                               3614
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 6083 pc/h
                 12 R
                         F R FD
                  _____Capacity Checks____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         9100
                                     7200
                                                    Yes
     Fi F
    v = v - v
                        5486
                                     7200
                                                    No
         F R
     FΟ
                        3614
                                     4400
                                                    No
     R
                        3017 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     Yes
    3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
If yes, v = 6400
                                     (Equation 25-18)
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                    6400
                                 4600
                                                     No
    V
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 18.8 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.493
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 56.2
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 70.2
                                                     mph
Space mean speed for all vehicles,
                                        S = 59.7
                                                     mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

Conoral Info	mation	IVAINIL	S AND RAM			i vivo	,, , L L I			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr 		HEFT I				
Agency or Company	0.105.1	0007		nction	ļ	I-75 NE	В			
Date Performed	9/25/			risdiction		2010 4	M Daak III			
Analysis Time Period		e with Project		nalysis Year	•	2018 A	M Peak Ho	our		
Project Description Inputs	Beacon County	Jiine DRI (Thira	Sufficiency)							
•		Terrain: Level							<u>.</u>	A 11
Jpstream Adj Ramp		Terrairi. Levei							Downstrea Ramp	am Adj
Yes On									☐ Yes	☐ On
™ No ☐ Off									✓ No	☐ Off
_{run} = ft										ft
- _{up} = #		S	_{FF} = 70.0 mph		S _{ER} = 5	5 0 mr	nh		L _{down} =	10
/ _u = veh/h				show lanes, L _A ,	1 11	13.0 HI	J11		$V_D =$	veh/h
Conversion to	pc/h Und	der Base (<u> </u>	D K F				l .	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	6111	0.95	Level	6	0	0	.971	1.00	66	26
Ramp	1929	0.95	Level	6	0		.971	1.00	-	91
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v ₁₂				Estimati	ion c	of v ₁₂			
	V ₁₂ = V _F	(P _{EM})					V ₄₂ =	= V _R + (V _F - V	_D)P _{ED}	
(5				(5 (1 05 0 05 0)						
				L_{EQ} = (Equation 25-8 or 25-9) P_{FD} = 0.450 using Equation (Exhibit 25-12)				" " 05 40)		
using Equation (Exhibit 25-5)				P _{FD} =			_	quation (Exi	11DIT 25-12)	
₁₂ = pc/h					V ₁₂ =			132 pc/h		
or V _{av34} pc/h (Equation 25-4 or 25-5)				V ₃ or V _{av34}			494 pc/h (Equ	ation 25-1	5 or 25-16)	
V_3 or $V_{av34} > 2,700$ pc/h? Yes No				Is V ₃ or V _{av3}	$_{34} > 2.7$	700 pc/h? [Tyes ✓ No			
$\text{s V}_3 \text{ or V}_{\text{av34}} > 1.5 \text{ V}_{12}/2 \text{ Yes } \text{No}$					Is V ₃ or V _{av3}	₃₄ > 1.5	5 * V ₁₂ /2 [Yes 🗹 No		
f Yes,V _{12a} =	pc/h (Equation 25	-8)		If Yes,V _{12a} =		ŗ	oc/h (Equation	125-18)	
Capacity Che	cks	` '	·		Capacity		ecks		· ·	
capacity circ	Actual	Ca	apacity	LOS F?		, , , , ,	Actual	Ca	pacity	LOS F?
	Hotaai	l ĭ	puolty	20011	V _F		6626	Exhibit 25-1	' 	No
		Evhibit of 7			<u> </u>					+
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	4535	Exhibit 25-1	_	No
					V _R		2091	Exhibit 25-3	3 4400	No
Flow Entering	Merge In	fluence A	rea		Flow En	terir	ng Merç	ge Influenc	e Area	
	Actual	Max [Desirable	Violation?			Actual	Max Desiral	ole	Violation?
V _{R12}		Exhibit 25-7			V ₁₂] -	4132	Exhibit 25-14	4400:All	No
Level of Servi	ice Detern	nination (i	f not F)		Level of	Ser	vice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A			$O_{R} = 4$.252 + 0.	.0086 V ₁₂ - 0.0	0009 L _D	
O _R = (pc/mi/l		14	/\			• •	/mi/ln)	14	5	
OS = (Exhibit	•						bit 25-4)			
Speed Detern	<u> </u>				Speed D	<u> </u>		on		
$M_{\rm S} = $ (Exibit 25					 ' 		xhibit 25			
	•				1	•	n (Exhibit	,		
	Ť				l '`		,	,		
S _R = mph (Exhibit 25-19)					S ₀ = 71.0 mph (Exhibit 25-19)					
$S_0 = \text{mph } (Exh)$	ibit 25-19)				S = 63		n (Exhibit			

Phone: E-mail:

Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 AM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Dat

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6111	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	1929	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph
Position of adjacent ramp

Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	6111	1929	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1608	508	V
Trucks and buses	6	6	8
Recreational vehicles	0	0	8
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    6626
                                               2091
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 4132 pc/h
                 12 R
                          F R FD
                   _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         6626
                                      7200
                                                     No
     Fi F
                         4535
                                      7200
                                                     No
    v = v - v
         F R
     FΟ
                         2091
                                      4400
                                                     No
     R
                         2494 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                      No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    4132
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -0.7 pc/mi/ln
Density,
                                        12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.356
                                          S
Space mean speed in ramp influence area,
                                         S = 60.0
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 71.0
                                                      mph
Space mean speed for all vehicles,
                                        S = 63.7
                                                      mph
```

0.971

Heavy vehicle adjustment, fHV

Canaral Infa	motion	NAMIN	S AND RAM			, INNO	AIEE I			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		HEFT				
Agency or Company		0007		nction		I-75 N	В			
Date Performed	9/25/			risdiction		2010 5	DA Daak III			
Analysis Time Perior Project Description		e with Project		alysis Year		20181	PM Peak Ho	Dur		
Inputs	Deacon County	yiiile DRI (Tiliiu	Sufficiency							
•		Terrain: Level							l	A 1:
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj
☐ Yes ☐ Or	1								☐ Yes	☐ On
™ No □ Of	f								✓ No	☐ Off
- _{up} = ft									L _{down} =	ft
ир		S	_{FF} = 70.0 mph		S _{FR} = 5	55.0 mj	ph			
$l_{\rm u} = {\rm veh/r}$	1		' '	show lanes, L _A ,					$V_D =$	veh/h
Conversion t	o pc/h Und	der Base (· · · · · · · · · · · · · · · · · · ·						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		${\sf f}_{\sf HV}$	f _p	v = V/PHF	$xf_{HV}xf_p$
Freeway	8859	0.95	Level	6	0	0).971	1.00	96	05
Ramp	3662	0.95	Level	6	0	0).971	1.00	39	70
UpStream										
DownStream										
		Merge Areas			<u> </u>			Diverge Areas		
Estimation o	f v ₁₂				Estimat	ion d	of v ₁₂			
	V ₁₂ = V _F	(P _{EM})			ĺ		V ₁₂ =	= V _R + (V _F - V	_B)P _{ED}	
(5					(=					
P _{FM} =	_	Equation (L	ATIIDIL 25-5)		1 .5					
1 ₁₂ =	pc/h				$V_{12} = 6506 \text{ pc/h}$					
V_3 or V_{av34}		(Equation 25	-4 or 25-5)		V_3 or V_{av34} 3099 pc/h (Equation 25-15 or 25-16)					
Is V_3 or $V_{av34} > 2,70$					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					
$V_3 \text{ or } V_{av34} > 1.5$	* V ₁₂ /2	s 🗏 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$					
f Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} =	=	6	905 pc/h (Eq u	ation 25-18	3)
Capacity Che	ecks				Capacit	y Ch	ecks			
	Actual	Ca	apacity	LOS F?			Actual	Ca	apacity	LOS F?
			. ,		V _F		9605	Exhibit 25-1	<u>' 1</u>	Yes
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- \/		Exhibit 25-1		No
*FO		EXHIBIT 20-7				* * R				
	<u> </u>				V _R		3970	Exhibit 25-3		No
Flow Entering				I .a	Flow En			ge Influenc		1
	Actual	† 	Desirable	Violation?	<u> </u>		Actual	Max Desiral		Violation?
V _{R12}		Exhibit 25-7			V ₁₂		6506	Exhibit 25-14	4400:All	No
Level of Serv		•						eterminatio	•	<i>F)</i>
$D_R = 5.475 + 0$.00734 v _R +	0.0078 V ₁₂ -	0.00627 L _A		[$O_R = 4$	1.252 + 0.	.0086 V ₁₂ - 0.	0009 L _D	
O _R = (pc/mi/	′ln)				$D_R = 23$	3.1 (p c	c/mi/ln)			
OS = (Exhib	it 25-4)				LOS = F	(Exhi	bit 25-4)			
Speed Deteri	nination				Speed L	Detei	rminatio	on		
M _S = (Exibit 2	5-19)				$D_s = 0.$.525 (E	Exhibit 25	-19)		
	nibit 25-19)				S _R = 55	5.3 mpl	h (Exhibit	25-19)		
	nibit 25-19)				l ''		` h (Exhibit	· ·		
√∩ HIDHI(⊑XI				I *		•	· ·			
	nibit 25-14)				IS = 58	Q Q mnl	h (Exhibit	25_15\		

Phone: E-mail: Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data_
---------	-------

Type of analysis	Diverge	
Number of lanes in freeway	3	
Free-flow speed on freeway	70.0	mph
Volume on freeway	8859	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	3662	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

_____Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	8859	3662	vph
Peak-hour factor, PHF	0.95	0.95	_
Peak 15-min volume, v15	2331	964	V
Trucks and buses	6	6	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
Flow rate, vp
                                    9605
                                               3970
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.450 Using Equation 0
                 FD
                v = v + (v - v) P = 6506 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         9605
                                     7200
                                                    Yes
     Fi F
                         5635
                                     7200
                                                    No
    v = v - v
         F R
     FΟ
                         3970
                                     4400
                                                    No
     R
                        3099 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     Yes
    3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
If yes, v = 6905
                                     (Equation 25-18)
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    6905
                                                     No
    V
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 23.1 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.525
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 55.3
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 70.2
                                                     mph
Space mean speed for all vehicles,
                                        S = 58.8
                                                     mph
```

0.971

1.00

Heavy vehicle adjustment, fHV

			RAMP	S AND RAM	IP JUNCTI	ONS WO	RKS	HEET			
Genera	al Infori	nation			Site Infor	mation					
Analyst		DPA			reeway/Dir of Tra	avel	HEFT N	IEB			
Agency or					unction		I-75 NB				
Date Perfo		9/25/2			urisdiction						
Analysis Ti			e with Project v		nalysis Year		2018 A	M Peak H	our		
_	scription	Beacon County	yline DRI (Third	Sufficiency)							
Inputs	Adi Domo		Terrain: Leve							Downstrea	m Adi
Upstream / Yes										Ramp	III Auj
										☐ Yes	On
✓ No	☐ Off									✓ No	☐ Off
L _{up} =	ft									L _{down} =	ft
V _u =	veh/h		S	$_{FF} = 70.0 \text{ mph}$ Sketch (show lanes, L _A ,	$S_{FR} = 5$ L_{D}, V_{P}, V_{f}	5.0 mp	h		V _D =	veh/h
Convei	rsion to	pc/h Und	der Base (Conditions	Λ.	D IX I					
(pc	ĺ	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway		6111	0.95	Level	6	0	0.	971	1.00	662	26
Ramp		1929	0.95	Level	6	0	0.	971	1.00	209	91
UpStream					1		1				
DownStrea											
			Merge Areas						Diverge Areas		
Estima	tion of	v ₁₂				Estimati	ion o	f v ₁₂			
		V ₁₂ = V _F	(P _{EM})			İ		V ₁₂ =	= V _R + (V _F - V	′ _R)P _{ED}	
L _{EQ} =	(5					L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =			Equation (E	,		P _{FD} = 0.260 using Equation (Exhibit 25-12)					
V ₁₂ =		pc/h	_900.0 (2			$V_{12} = 3012 \text{ pc/h}$					
		•	(Equation 25	4 or 25 5)		1 ·-					
V ₃ or V _{av34}				-4 0i 25-5)		V ₃ or V _{av34} 1310 pc/h (Equation 25-15 or 25-16)					
		pc/h? TYes				Is V ₃ or V _{av34} > 2,700 pc/h? Yes No					
		V ₁₂ /2				Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
If Yes,V _{12a}			(Equation 25	-8)		If Yes,V _{12a} =			oc/h (Equation	n 25-18)	
Capaci	ty Che		1 -		1	Capacit	y Ch				1
		Actual	C	apacity	LOS F?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual		apacity	LOS F?
						V _F		5633	Exhibit 25-		No
V _F	-0		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	3542	Exhibit 25-	14 9600	No
						V_R		2091	Exhibit 25-	3 4400	No
Flow E	ntering		fluence A		1	Flow Entering Merge Influence Area					ī
\/		Actual	1	Desirable	Violation?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual	Max Desira		Violation?
V _R			Exhibit 25-7			V ₁₂		012	Exhibit 25-14	4400:All	No
			nination (i						eterminatio	•	F)
$D_R = 5.475 + 0.00734 \text{ v}_R + 0.0078 \text{ V}_{12} - 0.00627 \text{ L}_A$					$D_R = 4.252 + 0.0086 V_{12} - 0.0009 L_D$						
D _R = (pc/mi/ln)						$D_{R} = -10.3 \text{ (pc/mi/ln)}$					
LOS = (Exhibit 25-4)								oit 25-4)			
Speed Determination						Speed L					
M _S = (Exibit 25-19)						ľ	•	xhibit 25	•		
11		bit 25-19)				l ''		(Exhibit	•		
0		bit 25-19)				ľ	•	(Exhibit	•		
	• •	bit 25-14)						(Exhibit	25-15)		
right © 2005	5 University	of Florida, All Ri	ights Reserved			HCS+TM	Version	5.21		Generated: 10	0/21/2008 1:4

Phone: E-mail: Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project w Imps

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 AM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Data	
--------------	--

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	70.0	mph
Volume on freeway	6111	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	1929	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	6111	1929	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1608	508	V
Trucks and buses	6	6	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    6626
                                               2091
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3012 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         5633
                                      9600
                                                    No
     Fi F
                         3542
                                      9600
                                                    No
    v = v - v
         F R
     FΟ
                         2091
                                     4400
                                                    No
     R
                        1310 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3012
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -10.3 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.356
                                          S
Space mean speed in ramp influence area,
                                         S = 60.0
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 75.6
                                                     mph
Space mean speed for all vehicles,
                                        S = 66.4
                                                     mph
```

0.971

Heavy vehicle adjustment, fHV

			P JUNCTI						
mation			Site Infor						
DPA			eeway/Dir of Tra	avel	HEFT				
			ınction		I-75 N	В			
			nalysis Year		2018 F	PM Peak Ho	our		
Beacon County	iline DRI (Third	Sufficiency)							
	Torrein, Lovel								
	Terrain: Level							Downstrea Ramp	ım Adj
								☐ Yes	☐ On
								✓ No	☐ Off
								L _{down} =	ft
	S	= 70.0 mph		S _{-D} =	55.0 mg	oh		down	
		· •	show lanes, L,					$V_D =$	veh/h
pc/h Und	der Base C		A	D K F				ļ	
V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$
8859	0.95	Level	6	0	0	.971	1.00	96	05
3662	0.95	Level	6	0	0	.971	1.00	39	70
	Merge Areas						Diverge Areas		
v ₁₂				Estima	tion c	of v ₁₂			
	(P _{EM})			ĺ		V ₄₀ =	= V _D + (V _F - V		
					(= ', ', ', ', ', ', ', ', ', ', ', ', ',				
		,							
_	Equation (E)	KHIIDIL ∠5-5)		I					
•									
		·4 or 25-5)		V ₃ or V _{av34} 1374 pc/h (Equation 25-15 or 25-16)					
) pc/h? 🥅 Yes	s □ No			Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					
V ₁₂ /2	s 🗆 No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
		-8)						25-18)	
cks		,						,	
	Ca	nacity	LOS F?		.,	1	Ca	nacity	LOS F?
. iotadi	T	<u></u>		V_			_		No
	Fyb;b;t 0F 7			<u> </u>					
	EXMIDIT 25-7						_		No
						3970			No
Merge In				Flow E	nterir	ng Merg			
Actual	Max C)esirable	Violation?			Actual	Max Desiral	ole	Violation?
	Exhibit 25-7			V ₁₂		4936	Exhibit 25-14	4400:All	No
ce Detern	nination (i	f not F)		+					F)
)0734 v _R + (0.0078 V ₁₂ -	0.00627 L _A			$D_R = 4$.252 + 0.	0086 V ₁₂ - 0.0	0009 L _D	
n)				$D_R = 6$.2 (pc /	mi/ln)			
25-4)				1	(Exhi	bit 25-4)			
nination				Speed	Deter	minatio	on		
M _S = (Exibit 25-19)					.525 (E	xhibit 25	-19)		
-19)							•		
•				$S_{D} = 5$	5.3 mnł	ı (Exhibit	25-19)		
ibit 25-19)				I ''		n (Exhibit	•		
•				$S_0 = 7$	5.3 mpl	n (Exhibit n (Exhibit n (Exhibit	25-19)		
	Future Beacon County Property V (Veh/hr) 8859 3662 V (Veh/hr) (Equation of the period of the p	Terrain: Level S	Future with Project w Imps Beacon Countyline DRI (Third Sufficiency) Terrain: Level S FF = 70.0 mph Sketch (D pc/h Under Base Conditions V (Veh/hr) PHF Terrain 8859 0.95 Level 3662 0.95 Level Merge Areas V12 V12 = VF (PFM) (Equation 25-2 or 25-3) using Equation (Exhibit 25-5) pc/h pc/h (Equation 25-4 or 25-5) D pc/h Yes No pc/h (Equation 25-8) Cks Actual Capacity Exhibit 25-7 D Merge Influence Area Actual Max Desirable Exhibit 25-7 D Opc/19 Exhibit 25-7 D Merge Influence Area Actual Max Desirable Exhibit 25-7 D DOPC/19 Exhibit 25-7 D Merge Influence Area Actual Max Desirable Exhibit 25-7 D Opc/19 Exhibit 25-7 D O	9/25/2007	S	S	S	S	Post Project with Project with project

Fax:

_____Diverge Analysis______

Phone: E-mail:

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project w Imps

Freeway/Dir of Travel: HEFT NEB Junction: I-75 NB

Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

______Freeway Data______

Type of analysis

Number of lanes in freeway

Free-flow speed on freeway

Volume on freeway

Diverge

5

70.0 mph

8859 vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	3662	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	1500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	-	
Volume, V (vph)	8859	3662		vph	
Peak-hour factor, PHF	0.95	0.95			
Peak 15-min volume, v15	2331	964		V	
Trucks and buses	6	6		%	
Recreational vehicles	0	0		%	
Terrain type:	Level	Level			
Grade	0.00 %	0.00	% %	;	
Length	0.00 m	0.00	mi m	ni	
Trucks and buses PCE, ET	1.5	1.5			
Recreational vehicle PCE, ER	1.2	1.2			

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    9605
                                               3970
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 4936 pc/h
                 12 R
                          F R FD
                   _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         7684
                                      9600
                                                     No
    v = v
     Fi F
                         3714
                                      9600
                                                     No
    v = v - v
         F R
     FΟ
                         3970
                                      4400
                                                    No
     R
                         1374 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
         V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    4936
                                                      No
    V
     12
             ___Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 6.2 pc/mi/ln
Density,
                                        12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation____
                                         D = 0.525
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 55.3
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 75.3
                                                      mph
Space mean speed for all vehicles,
                                        S = 61.1
                                                      mph
```

0.971

Heavy vehicle adjustment, fHV

HEFT NB TO 175 NB MERGE

Canaral Infa		MPS AND F	CAMIL 2014									
General Inforr				Site Infor								
Analyst Agency or Company	DPA		eeway/Dir of Tr nction	ravel HEFT NEB TO I-75 NB								
Date Performed	9/27/	2007		risdiction								
Analysis Time Period	Exist		Ar	nalysis Year		2007	AM Peak H	Hour				
Project Description	Beacon County	yline DRI (Third :	Sufficiency)									
nputs												
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	eam Adj		
Yes On									Yes	☐ On		
✓ No ☐ Off									✓ No	☐ Off		
_{-up} = ft									L _{down} =	ft		
$V_u = veh/h$ Sketch (show lanes, L					$S_{FR} = 55.0 \text{ mph}$				V _D =	veh/h		
Conversion to	pc/h Und	der Base C	onditions						•			
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PH	F x f _{HV} x f _p		
Freeway	4413	0.95	Level	6	0	0).971	1.00		4785		
Ramp	1410	0.95	Level	6	0	0).971	1.00		1529		
UpStream												
DownStream		Marge Areas		<u> </u>	-			Diverge Area	200			
Merge Areas Estimation of v ₁₂					Diverge Areas Estimation of V ₁₂							
		/D \					12					
	$V_{12} = V_F$	• • • • • • • • • • • • • • • • • • • •	>				V ₁₂ =	= V _R + (V _F -	$V_R)P_{FD}$			
_{-EQ} = (Equation 25-2 or 25-3)					L _{EQ} = (Equation 25-8 or 25-9)							
P _{FM} = 0.199 using Equation (Exhibit 25-5)					P _{FD} = using Equation (Exhibit 25-12)							
V ₁₂ = 952 pc/h				$V_{12} = pc/h$								
V ₃ or V _{av34} 1916 pc/h (Equation 25-4 or 25-				V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)								
3)				Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No								
Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No							
Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No If Yes, $V_{12a} =$ 1914 pc/h (Equation 25-8)					If Yes, $V_{12a} = pc/h$ (Equation 25-18)							
f Yes,V _{12a} =		pc/h (Equatior	n 25-8)		120		· - · •	po,11 (Eque				
Capacity Checks				10050	Capacity Checks							
	Actual	<u>Ca</u>	oacity	LOS F?	\ \/		Actua		Capacity 14	LOS F?		
	,	[V _F			Exhibit 2				
V_{FO}	6314	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R	ļ	Exhibit 2				
					V_R		<u></u>	Exhibit 2	25-3			
Flow Entering Merge Influence Area				Flow Entering Merge Influence Area								
	Actual	1	esirable	Violation?		\perp	Actual		esirable	Violation?		
V _{R12}	3443	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1				
Level of Servi		•							tion (if no	ot F)		
$D_{R} = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	627 L _A) _R = 4	4.252 + (0.0086 V ₁₂ ·	- 0.0009 L _D			
$D_R = 26.3 \text{ (pc/mi/ln)}$				D _R = (pc/mi/ln)								
_OS = C (Exhibi	t 25-4)				LOS = (E	Exhib	it 25-4)					
Speed Determination				Speed Determination								
M _S = 0.349 (Exibit 25-19)					$D_s = $ (Exhibit 25-19)							
_	Exhibit 25-19)				S _R = mph (Exhibit 25-19)							
	Exhibit 25-17)				1							
~0 00.0 mpn (t		, ' '										
	S = 63.0 mph (Exhibit 25-14)						$S = mph (Exhibit 25-15)$ $HCS+^{TM} Version 5.21$ Generated: 10/21/2008					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Existing Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2007 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 4413 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 1410 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 1410 4413 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 371 1161 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

ે

mi

용

шi

```
4785
                                               1529
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.199 Using Equation 4
                 FM
                v = v (P) = 952
                                      pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         6314
                                      9600
                                                     No
     FO
                         1916 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1914
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                    1914
                                 4400
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 26.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.349
                                          S
Space mean speed in ramp influence area,
                                          S = 60.2
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 66.6
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 63.0
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

Camaral 1 f-		VIPS AND I	RAMP JUNG			<u>.cı</u>						
General Inforr				Site Infor				_				
Analyst Agency or Company	DPA	0007	eeway/Dir of Tr nction	Travel HEFT NEB TO I-75 NB								
Date Performed	9/27/			risdiction	,	007 DM D	سيمار المرس					
Analysis Time Period Project Description	Exist		alysis Year	4	2007 PM P	eak Hour						
Inputs	beacon Count	yılıle DKI (TIII'U .	Sufficiency)									
Jpstream Adj Ramp		Terrain: Level							Downstre	am Adj		
☐ Yes ☐ On									Ramp Yes	☐ On		
✓ No ☐ Off									✓ No	□ Off		
- _{up} = ft									L _{down} =	ft		
$V_u = veh/h$	S _{FF} = 70.0 mph					$S_{FR} = 55.0 \text{ mph}$				veh/h		
Conversion to	pc/h Und	der Base C	onditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}		f _p	v = V/PH	F x f _{HV} x f _p		
Freeway	5899	0.95	Level	6	0	0.971		1.00		6396		
Ramp	2542	0.95	Level	6	0	0.971		1.00		2756		
UpStream												
DownStream												
Merge Areas					Diverge Areas							
Estimation of	v ₁₂				Estimati	on of v	12					
	V ₁₂ = V _F	(P _{FM})					V ₄₀ = V ₅	+ (V ₋ - \	/ _D)P-5			
-EQ = (Equation 25-2 or 25-3)					$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{FO} =$ (Equation 25-8 or 25-9)							
P _{FM} = 0.046 using Equation (Exhibit 25-5)					,							
$V_{12} = 292 \text{ pc/h}$					P _{FD} = using Equation (Exhibit 25-12)							
2052 //- /				$V_{12} = pc/h$								
V ₃ or V _{av34} 5) Solution 25-4 or 25-				V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)								
Is V_3 or $V_{av34} > 2,700$ pc/h? \checkmark Yes \checkmark No					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No							
Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No							
If Yes, V _{12a} = 996 pc/h (Equation 25-8)					If Yes,V _{12a} = pc/h (Equation 25-18)							
Capacity Che		, , ,	,		Capacity	/ Chec	ks					
,	Actual	Ca	pacity	LOS F?		_	Actual	C	Capacity	LOS F?		
			· · · ·		V _F			Exhibit 25	<u> </u>			
V-	9152	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V_		Exhibit 25		1		
V _{FO}	7 I J Z	LAHIDIL 20-7		INU	—	*R			_	_		
					V _R Exhibit							
Flow Entering Merge Influence Area				Flow Entering Merge Influence Area								
	Actual		esirable	Violation?	.,	Actua	_	Max Des	sırable	Violation?		
V _{R12}	3752	Exhibit 25-7	4600:All	No	V ₁₂			ibit 25-14		<u>L</u>		
Level of Servi		•			Level of				•	ot F)		
$D_{D} = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	627 L _A		D	$P_{R} = 4.25$	2 + 0.008	36 V ₁₂ -	0.0009 L _D			
IX.	D _R = 28.1 (pc/mi/ln)				D _R = (pc/mi/ln)							
• • • • • • • • • • • • • • • • • • • •					LOS = (E	xhibit 25	-4)					
.,	it 25-4)		Speed Determination				Speed Determination					
$D_R = 28.1 \text{ (pc/s)}$ LOS = D (Exhibit)	<u> </u>				Speed L							
D _R = 28.1 (pc/l LOS = D (Exhibition (Exh	ination				` ' 		9)					
$D_R = 28.1 \text{ (pc/s)}$ $LOS = D \text{ (Exhibit)}$ $Speed Determine$ $M_S = 0.394 \text{ (Exib)}$	nination it 25-19)				$D_s = (E_s)$	xhibit 25-1						
$D_R = 28.1 \text{ (pc/model)}$ $D_R = 28.1 \text{ (pc/model)}$ $D_R = D \text{ (Exhibit)}$ $D_R = D (Exhibit)$	nination it 25-19) Exhibit 25-19)				D _s = (Ex	xhibit 25-1 oh (Exhibit	25-19)					
$D_R = 28.1 \text{ (pc/molecular)}$ $D_R = 28.1 \text{ (pc/molecular)}$ $D_R = D \text{ (Exhibited)}$ $D_R $	nination it 25-19)				$D_{S} = (E)$ $S_{R} = m_{F}$ $S_{0} = m_{F}$	xhibit 25-1	25-19) 25-19)					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Existing Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2007 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 5899 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 2542 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions______ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5899 2542 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1552 669 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

ે

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```
6396
                                               2756
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.046 Using Equation 4
                 FM
                v = v (P) = 292
                                     pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         9152
                                      9600
                                                     No
     FO
                         3052 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 996
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    996
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 28.1 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation____
Intermediate speed variable,
                                          M = 0.394
                                          S
Space mean speed in ramp influence area,
                                          S = 59.0
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 60.2
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

Canaval Info		MPS AND I	(7 (1))							
General Infori				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel	HEFT N	NEB TO I-	75 NB		
Agency or Company	0.10=1	2007		nction						
Date Performed	9/27/			risdiction						
Analysis Time Period		e without Projec		nalysis Year		2018 A	M Peak H	our		
Project Description	Beacon County	yline DRI (Third:	Sufficiency)							
nputs		<u> </u>								
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	eam Adj
Yes On									☐ Yes	☐ On
™ No									✓ No	Off
_{-up} = ft									L _{down} =	ft
		S _F	$_{\rm F} = 70.0 {\rm mph}$		$S_{FR} = 5$	5.0 mp	h		,	. //
$V_{\rm u} = {\rm veh/h}$			Sketch (show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				$V_D =$	veh/h
Conversion to	pc/h Und	der Base C	onditions	· ·						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	5908	0.95	Level	6	0	0.9	971	1.00		6406
Ramp	1862	0.95	Level	6	0	0.9		1.00		2019
UpStream	1002	5.75	20101	l 	 	1	···	1.00	+	
DownStream						†			+	
		Merge Areas						Diverge Area	as	
Estimation of		. 3			Estimation of v ₁₂					
		(D)			1		<u></u>			
	$V_{12} = V_F$	• • • • • • • • • • • • • • • • • • • •	,				V ₁₂ =	$V_R + (V_F -$	$V_R)P_{FD}$	
-EQ =	(Equa	ation 25-2 or 2	25-3)		L _{EQ} =			(Equation	25-8 or 25-	9)
P _{FM} =	0.138	using Equation	on (Exhibit 25-5)		P _{FD} =			•	ation (Exhibi	•
/ ₁₂ =	882 p	c/h			1			pc/h	(=/////////	· ·- ·-/
	•	pc/h (Equatio	n 25-4 or 25-		V ₁₂ =			•	05.45	F 47)
V_3 or V_{av34}	5)	, (= 40000	20		V ₃ or V _{av34}				on 25-15 or 2	b-16)
Is V_3 or $V_{av34} > 2,700$) pc/h?	s 🗏 No			Is V ₃ or V _{av3}					
Is V_3 or $V_{av34} > 1.5$ *					Is V ₃ or V _{av3}	₃₄ > 1.5	* V ₁₂ /2 \parallel	Yes 🗆	No	
f Yes,V _{12a} =		pc/h (Equation	n 25 - 8)		If Yes, V _{12a} =	:		pc/h (Equa	ation 25-18))
124		po/ii (Equatioi	125-0)		124			· ` '		
Capacity Che		1 ^	naaitu	100.50	Capacity	y Cne			Concelle	100.50
	Actual	Ca	pacity	LOS F?		-+	Actual		Capacity	LOS F?
					V _F			Exhibit 2	25-14	
V_{FO}	8425	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14	
. 5					V _R			Exhibit :	25-3	
Elow Entorino	Maras	fluoros A-	· · · · · · · · · · · · · · · · · · ·	<u> </u>	 	40 ":	o 1/1	ļ		
Flow Entering	Actual		ea esirable	Violation?	riow En		g werg ctual		<i>nce Area</i> esirable	Violation?
					\/	A	ciuai		1	violation?
V _{R12}	3025	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		
Level of Servi		•							tion (if n	
$D_R = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	1627 L _A			$O_R = 4$.252 + 0	.0086 V ₁₂ ·	- 0.0009 L _D	
$O_{R} = 22.8 \text{ (pc/s)}$	mi/ln)				$D_R = (p)$	c/mi/lr	า)			
_OS = C (Exhib					1	xhibit	•			
Speed Determ					Speed D			on		
•					 			<i>511</i>		
$M_{\rm S} = 0.308 (Exib.)$	•					xhibit 2				
$S_R = 61.4 \text{ mph } ($	Exhibit 25-19)				S _R = m _l	ph (Exh	iibit 25-19)			
					$S_0 = m_1$	ph (Exh	ibit 25-19)	1		
	Exhibit 25-19)				U		,			
$S_0 = 61.1 \text{ mph (}$	Exhibit 25-19) Exhibit 25-14)						ibit 25-15)			

Phone: Fax: E-mail: _______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future without Project Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 5908 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 1862 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5908 1862 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1555 490 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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6406
Flow rate, vp
                                               2019
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.138 Using Equation 4
                 FM
                v = v (P) = 882
                                     pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         8425
                                      9600
                                                     No
     FO
                         2762 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1006
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    1006
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 22.8 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.308
                                          S
Space mean speed in ramp influence area,
                                          S = 61.4
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 61.2
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

General Infori	mation			Site Infor	mation					
Analyst	DPA		Fr	reeway/Dir of Tr		HEFT NEB TO	I-75 NR			
Agency or Company	DIA			unction	I	ILI I NED IOI	, , , , ND			
Date Performed	9/27/	2007		urisdiction						
nalysis Time Period	Futu	re without Projec	t Aı	nalysis Year	2	2018 PM Peak I	Hour			
roject Description										
nputs										
pstream Adj Ramp		Terrain: Level						Downstre Ramp	am Adj	
Yes On								Yes	☐ On	
No Gff								✓ No	☐ Off	
up = ft								L _{down} =	ft	
ир		S	= 70.0 mph		$S_{FR} = 51$	5.0 mph		1		
$u'_{u} = veh/h$			Sketch (show lanes, L _A ,	L_{D}, V_{R}, V_{f}			$V_D =$	veh/h	
Conversion to	pc/h Un	der Base C		, , , , , , , , , , , , , , , , , , ,	D IX I			ı		
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	F x f _{HV} x f _p	
reeway	7184	0.95	Level	6	0	0.971	1.00		7789	
Ramp	3333	0.95	Level	6	0	0.971	1.00		3614	
UpStream										
DownStream										
Tating attack of		Merge Areas			Fatire - 1	on of	Diverge Areas	5		
stimation of	V ₁₂				∟stimati	on of v ₁₂				
	$V_{12} = V_F$	(P _{FM})				٧ -	= V _R + (V _F - \	/ \P		
EQ =	(Equ	ation 25-2 or	25-3)		_	1 2 -	Equation 2		2)	
r _{EM} =		using Equat	on (Exhibit 25-		L _{EQ} =				•	
	5)				P _{FD} =		using Equa	tion (Exhibit	(25-12)	
12 =	-479 r				V ₁₂ =		pc/h			
₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}		pc/h (Equation		5-16)	
s V_3 or $V_{av34} > 2,700$	5) nr/h? 🔽 🗸	o E No				•	Yes N			
					Is V ₃ or V _{av3}	$_4 > 1.5 * V_{12}/2$	☐ Yes ☐ N	0		
$V_{3} \text{ or } V_{av34} > 1.5 *$. 05.0		If Yes,V _{12a} =		pc/h (Equat	ion 25-18)		
Yes,V _{12a} =		pc/h (Equatio	n 25-8)							
Capacity Che		1 0	nacity	100.50	∪apacity 	/ Checks	ı I o	'anacity	100 50	
	Actual	I	pacity	LOS F?	V _F	Actua	Exhibit 25	apacity	LOS F?	
΄,					<u> </u>	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	_	_	_	
V_{FO}	11403	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	· V _R	Exhibit 25	-14		
					V _R		Exhibit 2	5-3		
low Entering	Merge In	1			Flow En	tering Mei	rge Influen		_	
	Actual	i 	esirable	Violation?		Actual	Max Des	sirable	Violation?	
V _{R12}	6003	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-14			
evel of Servi	ice Deterr	nination (i	not F)		Level of	Service D	eterminat	ion (if no	ot F)	
$D_R = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.0	0627 L _A		D _R = 4.252 + 0.0086 V ₁₂ - 0.0009 L _D					
_R = 45.3 (pc/	mi/ln)				$D_R = (p_0)$	c/mi/ln)				
OS = F (Exhibi	it 25-4)					xhibit 25-4)				
Speed Determ					<u> </u>	eterminat	ion			
1 _S = 1.806 (Exib						xhibit 25-19)	•			
· ·							9)			
_ 10 /	⊏XHIIDIL ZD-19)				S _R = mph (Exhibit 25-19)					
R= 19.4 mph (I	F., Likit 0F 40'				S = mr	h (Eyhihit 25 1	S ₀ = mph (Exhibit 25-19)			
₀ = 61.1 mph (I	Exhibit 25-19) Exhibit 25-14)				I * .	oh (Exhibit 25-1 oh (Exhibit 25-1				

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future without Project Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 7184 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph 3333 Volume on ramp vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 7184 3333 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1891 877 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

용

шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
7789
Flow rate, vp
                                                3614
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                                (Equation 25-2 or 25-3)
                 ΕQ
                       -0.062 Using Equation 4
                 FM
                v = v (P) = -479 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                         Actual
                                      Maximum
                         11403
                                      9600
                                                     Yes
     FO
                         4134 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
          V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2389
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                      Violation?
                                 4400
                    2389
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 45.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                   _____Speed Estimation____
Intermediate speed variable,
                                          M = 1.806
                                          S
Space mean speed in ramp influence area,
                                          S = 19.4
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 28.7
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

Conoral Info		MPS AND I	CAMIL DOIL							
General Infori				Site Infor			NED TO	75 NS		
Analyst Agency or Company	DPA			eeway/Dir of Tranction	avel	HEFT	NEB TO I-	/5 NB		
Date Performed	9/27/	/2007		risdiction						
Analysis Time Period		re with Project		nalysis Year		2018 A	AM Peak H	our		
Project Description				iarysis i cai		2010 P	AIVI F CAN I I	Oui		
Inputs	Deacon Count	yiiic Diti (Tiliu	Summer Cricy)							
Jpstream Adj Ramp		Terrain: Level							Downstre	am Adj
☐ Yes ☐ On									Ramp ☐ Yes	□ On
™ No									✓ No	☐ Off
- _{-un} = ft									L _{down} =	ft
_ _{up} = ft		S	_F = 70.0 mph		S _{FR} = 5	5.0 mp	ph			
/ _u = veh/h		<u>'</u>	•	show lanes, L _A ,					V _D =	veh/h
Conversion to		der Base C	onditions	1						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f_p	v = V/PH	$= x f_{HV} x f_{p}$
Freeway	5908	0.95	Level	6	0	0.	.971	0.90		7117
Ramp	1929	0.95	Level	6	0	0.	.971	1.00		2091
UpStream										
DownStream										
		Merge Areas			<u> </u>	_		Diverge Are	as	
Estimation of	v ₁₂				Estimat	ion c	of v ₁₂			
	$V_{12} = V_{F}$	(P _{FM})					V. =	V _R + (V _F -	V _D)P _E	
-EQ =		ation 25-2 or 2	25-3)		_				^{VR/'} FD 25-8 or 25-9	3)
P _{FM} =			on (Exhibit 25-5)		L _{EQ} =					•
	916 p		(ENHIDIT ZUJU)		P _{FD} =				ation (Exhibit	25-12)
/ ₁₂ =	•	c/n pc/h (Equatio	o 25-4 or 25		V ₁₂ =			pc/h		
V_3 or V_{av34}	5100 5)	po/ii (⊏quatioi	1 20-4 UI 20-		V_3 or V_{av34}				on 25-15 or 25	1-16)
Is V ₃ or V _{av34} > 2,700	- /	s 🗆 No			Is V ₃ or V _{av3}	34 > 2,7	700 pc/h?	☐ Yes ☐	No	
Is V_3 or $V_{av34} > 1.5$ *					Is V ₃ or V _{av3}	₃₄ > 1.5	5 * V ₁₂ /2	☐ Yes ☐	No	
f Yes,V _{12a} =		s = No pc/h (Equatio	n 25-8\		If Yes,V _{12a} =				ation 25-18)	
Capacity Che		porti (Equation	120-0)		Capacit			- ` '		
Japacity Cile	Actual	Co	nacity	LOS F?	Toapacii.	y CII		1	Capacity	LOS F?
	ACIUdi	La Ca	pacity	LUSF(17	\dashv	Actual	Fulsibit.	1	LUST?
					V _F			Exhibit		
V_{FO}	9208	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit:	25-14	
					V_R			Exhibit	25-3	
Flow Entering	Merge In	nfluence Ar	rea		Flow En	terir	ng Mer	ge Influe	nce Area	
Ĭ	Actual		esirable	Violation?		_	Actual		esirable	Violation?
V _{R12}	3808	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1	4	
Level of Servi	ce Deterr	nination (if	not F)	-		Ser	vice De	etermina	tion (if no	ot F)
		0.0078 V ₁₂ - 0.00							- 0.0009 L _D	-
$D_{R} = 28.9 \text{ (pc/s)}$		14	//		L	c/mi/l		12	D	
OS = D (Exhib					1		t 25-4)			
Speed Determ					Speed Determination					
$M_{\rm S} = 0.403 (Exib.)$					<u> </u>	xhibit 2				
_	Exhibit 25-19)				1		hibit 25-19)		
S_{R} = 58.7 mph (I					1	•	hibit 25-19			
144 17					1	אוו עבאו	111DIL 23-19	ı		
$S_0 = 61.1 \text{ mph (I)}$ S = 60.1 mph (I)	Exhibit 25-19) Exhibit 25-14)					•	hibit 25-15			

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 5908 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph 1929 Volume on ramp vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5908 1929 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1555 508 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

ે

mi

용

шi

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7117
Flow rate, vp
                                               2091
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.129 Using Equation 4
                 FM
                v = v (P) = 916
                                     pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         9208
                                      9600
                                                     No
     FO
                         3100 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1717
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                      Violation?
                                 4400
                    1717
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 28.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.403
                                          S
Space mean speed in ramp influence area,
                                          S = 58.7
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 60.1
                                                      mph
```

0.90

0.971

1.00

Heavy vehicle adjustment, fHV

General Infori		MPS AND		Site Infor					
nalyst	DPA		Er	eeway/Dir of Tra		HEFT NEB TO	L75 NR		
gency or Company	DFA			eeway/Dir or 11. Inction	uvoi F	ILI I INLD IU	I-19 IND		
ate Performed	9/27/	/2007		risdiction					
nalysis Time Period		re with Project	Ar	nalysis Year	2	018 PM Peak	Hour		
roject Description				<u> </u>					
nputs			•						
pstream Adj Ramp		Terrain: Level						Downst Ramp	ream Adj
Yes On								Yes	☐ On
No Gff								✓ No	☐ Off
_{up} = ft								L _{down} =	ft
ıμ		S	_{FF} = 70.0 mph		S _{FR} = 55	5.0 mph			
u = veh/h			Sketch (show lanes, L _A ,				$V_D =$	veh/h
Conversion to	pc/h Un	der Base (Conditions						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	V = V/P	HF x f _{HV} x f _p
reeway	7184	0.95	Level	6	0	0.971	1.00		7789
Ramp	3662	0.95	Level	6	0	0.971	1.00		3970
JpStream									
DownStream									
- 47		Merge Areas					Diverge Area	IS	
stimation of	v ₁₂				∟stimati	on of v ₁₂			
	$V_{12} = V_F$	(P _{FM})				\/	- \/ ± (\/	\/ \P	
_{EQ} =	(Equ	ation 25-2 or	25-3)			^V 12	$= V_R + (V_F -$		- 0)
- _M =	-0.106	using Equat	ion (Exhibit 25-		L _{EQ} =		(Equation 2		•
	5)				P _{FD} =		using Equa	ation (Exhi	bit 25-12)
2 =	-826 r				V ₁₂ =		pc/h		
or V _{av34}		pc/h (Equatio	on 25-4 or 25-		V_3 or V_{av34}		pc/h (Equation		25-16)
	5) nr/h? 🔽 🗸	o E No			Is V ₃ or V _{av34}	$_4 > 2,700 \text{ pc/h}^2$? Tyes T	No	
$5 V_3 \text{ or } V_{av34} > 2,700$					Is V ₃ or V _{av34}	$_4 > 1.5 * V_{12}/2$	☐ Yes ☐ N	No	
$5 V_3 \text{ or } V_{av34} > 1.5 *$.		If Yes, V _{12a} =		pc/h (Equa		8)
/es,V _{12a} =		pc/h (Equatio	n 25-8)			- 01	· •		
apacity Che			anacity.	100.53	Capacity	Checks		Canadhi	100 50
	Actual		apacity	LOS F?	1/	Actua	Exhibit 2	Capacity 5 14	LOS F?
		[V _F	,,		_	
V_{FO}	11759	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	· V _R	Exhibit 2	5-14	
					V _R		Exhibit 2	25-3	
low Entering		1			Flow En		rge Influei		_
	Actual	Ti T	Desirable	Violation?		Actual	Max De		Violation?
V _{R12}	6359	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-14		
evel of Servi					Level of	Service L	Determina	tion (if i	not F)
$D_R = 5.475 + 0$	0.00734 v _R +	0.0078 V ₁₂ - 0.0	0627 L _A		D	_R = 4.252 +	0.0086 V ₁₂ -	0.0009 L	D
R = 47.9 (pc/	mi/ln)				$D_R = (p_0)$	c/mi/ln)			
DS = F (Exhibi	t 25-4)				LOS = (E	xhibit 25-4)			
peed Determ					Speed Determination				
_S = 2.480 (Exib						(hibit 25-19)	-		
•							9)		
	xhibit 25-19)				S _R = mph (Exhibit 25-19)				
	EURIUM OF 40°				S ₀ = mph (Exhibit 25-19)				
)= 61.1 mph (l	Exhibit 25-19) xhibit 25-14)				1	h (Exhibit 25-1 h (Exhibit 25-1			

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 7184 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 3662 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 7184 3662 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1891 964 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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шi

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7789
                                                3970
Flow rate, vp
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                                (Equation 25-2 or 25-3)
                 ΕQ
                       -0.106 Using Equation 4
                 FM
                v = v (P) = -826 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         11759
                                      9600
                                                     Yes
     FO
                         4307 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
          V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2389
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                      Violation?
                                 4400
                    2389
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 47.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                   _____Speed Estimation___
Intermediate speed variable,
                                          M = 2.480
                                          S
Space mean speed in ramp influence area,
                                          S = 0.5
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                           0
Space mean speed for all vehicles,
                                          S = 1.0
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

0		MPS AND I	1711111 0011							
General Infori				Site Infor						
Analyst Agency or Company Date Performed	DPA 9/27/		Ju Ju	eeway/Dir of Tra Inction Irisdiction	avel	HEFT	NEB TO I-	-75 NB		
Analysis Time Period		e with Project w		nalysis Year	2018 AM Peak Hour					
Project Description	Beacon Count	yline DRI (Third	Sufficiency)							
Inputs									1	
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	am Adj
Yes On									☐ Yes	☐ On
✓ No									✓ No	☐ Off
_ _{up} = ft									L _{down} =	ft
$V_u = veh/h$		S	$_{F} = 70.0 \text{ mph}$ Sketch (show lanes, L _A ,	$S_{FR} = 5$ $L_{D_f} V_{D_f} V_f$	55.0 mp	ph		V _D =	veh/h
Conversion to	pc/h Un	der Base C		A	א ט א י					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	5908	0.95	Level	6	0	0.	.971	1.00		6406
Ramp	1929	0.95	Level	6	0	0.	.971	1.00		2091
UpStream										
DownStream		<u> </u>						Diam 1		
Entimentian of		Merge Areas			Folime = 1	ia		Diverge Are	as	
Estimation of	v ₁₂				Estimat	ion (υτ V ₁₂			
	$V_{12} = V_F$	(P _{FM})					V ₄₀ =	: V _R + (V _F -	V _D)P _C	<u> </u>
- _{EQ} =	(Equ	ation 25-2 or 2	25-3)		L ₅₀ =		12		25-8 or 25-9	9)
P _{FM} =	0.129	using Equation	n (Exhibit 25-5)		L _{EQ} = P ₌₌ =			•	ation (Exhibit	•
/ ₁₂ =	627 p		, /		P _{FD} =				auon (EXHIDII	20-12 <i>)</i>
	•	pc/h (Equatio	n 25-4 or 25-		V ₁₂ =			pc/h	on 1E 1E ~~ 1	. 14 \
V_3 or V_{av34}	5)		-		V_3 or V_{av34} pc/h (Equation 25-15 or 29 ls V_3 or $V_{av34} > 2,700$ pc/h? Yes No			0-10)		
Is V_3 or $V_{av34} > 2,700$					1					
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2 ▼ Ye	s 🗏 No					5 V ₁₂ /2	☐ Yes ☐		
f Yes,V _{12a} =	1947	pc/h (Equatio	n 25-8)		If Yes,V _{12a} =	=		pc/h (Equa	ation 25-18)	
Capacity Che	cks				Capacit	y Ch	<u>ieck</u> s			
	Actual	Ca	pacity	LOS F?			Actual		Capacity	LOS F?
					V _F	\neg		Exhibit 2	25-14	
V_{FO}	6960	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _D		Exhibit 2	25-14	
	-				V _R			Exhibit		
Elow Entorino	Moros In	fluonos	·02			tori:	na Mar		nce Area	
Flow Entering	Actual		esirable	Violation?	I IOW EII	1	Actual		esirable	Violation?
V _{R12}	4038	Exhibit 25-7	4600:All	No	V ₁₂	+-'	. ioidui	Exhibit 25-1		v iolation:
Level of Servi				INO	*	F S0"	vice D		tion (if no)
		•							•	<i>,</i> , ,
	10	0.0078 V ₁₂ - 0.00	JUZI LA					7.0000 V ₁₂	- 0.0009 L _D	
$D_{R} = 30.7 \text{ (pc/s)}$						c/mi/	,			
LOS = D (Exhib					<u> </u>		it 25-4)			
Speed Determ	ination				Speed Determination					
$M_S = 0.449$ (Exib	it 25-19)				$D_s = (E_s)^T$	xhibit	25-19)			
	Exhibit 25-19)				S _R = m	ph (Ex	hibit 25-19))		
	Exhibit 25-19)				1	ph (Ex	hibit 25-19))		
	Exhibit 25-14)					nh (Fv	hibit 25-15	()		
5 = 00.9 (()	_//////////////////////////////////////					pπ (∟∧	HIIDIL ZJ-15	')		

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w PM Imps Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 5908 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 1929 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5908 1929 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1555 508 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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6406
Flow rate, vp
                                               2091
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.129 Using Equation 4
                 FM
                v = v (P) = 627
                                     pc/h
                 12 F FM
                     _____Capacity Checks____
                         Actual
                                      Maximum
                                                    LOS F?
                         6960
                                      9600
                                                     No
     FO
                         2121 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1947
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    1947
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.7 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.449
                                          S
Space mean speed in ramp influence area,
                                          S = 57.4
                                                      mph
                                          R
                                          S = 66.5
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 60.9
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

General Infor	mation			Site Infor	mation				_
Analyst Agency or Company	DPA			reeway/Dir of Tra		HEFT NEB TO I	-75 NB		
Date Performed		2007		urisdiction					
nalysis Time Period		re with Project w		nalysis Year	2	2018 PM Peak I	Hour		
roject Description	Beacon Count	yline DRI (Third	Sufficiency)						
nputs pstream Adj Ramp		Terrain: Level						Downstre	am Adi
Yes On								Ramp	•
▼ No □ Off								☐ Yes ☑ No	☐ On ☐ Off
un = ft								L _{down} =	ft
_{-up} = ft		S	_{FE} = 70.0 mph		S _{FR} = 5	5.0 mph			
$v_{\rm u} = {\rm veh/h}$				show lanes, L _A ,				$V_D =$	veh/h
Conversion to	pc/h Un	der Base C	Conditions		<u> </u>				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	F x f _{HV} x f _p
reeway	7184	0.95	Level	6	0	0.971	1.00		7789
Ramp	3662	0.95	Level	6	0	0.971	1.00	<u> </u>	3970
UpStream DownStream				 	-		 		
JOWNSHEAM		Merge Areas			 	1	Diverge Areas	<u>. </u>	
Estimation of					Estimati	on of v ₁₂	_		
	V ₁₂ = V _F	(P _{EM})							
·EQ =		ation 25-2 or	25-3)			V ₁₂ =	= V _R + (V _F - V		
P _{FM} =			ion (Exhibit 25-		L _{EQ} =		(Equation 2		•
	5)				P _{FD} =		using Equat	tion (Exhibit	: 25-12)
12 =	-590 r				V ₁₂ =		pc/h		
₃ or V _{av34}	3080 5)	pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}	0.700 #.0	pc/h (Equation		5-16)
s V ₃ or V _{av34} > 2,70		s No				•	☐ Yes ☐ N		
s V ₃ or V _{av34} > 1.5 *							☐ Yes ☐ N		
Yes,V _{12a} =		c/h (Equation	25-8)		If Yes,V _{12a} =		pc/h (Equat	ion 25-18)	
Capacity Che	cks				Capacity	/ Checks			
	Actual	Ca	apacity	LOS F?		Actua		apacity	LOS F?
					V _F		Exhibit 25	-14	
V_{FO}	9540	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R	Exhibit 25	-14	
		<u> </u>			V _R		Exhibit 25	5-3	
low Entering	Merge In	fluence A	rea		Flow En	tering Mer	ge Influen	ce Area	
	Actual	i 	Desirable	Violation?		Actual	Max Des		Violation?
V _{R12}	4140	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-14		
evel of Serv					1		eterminati	•	ot F)
$D_R = 5.475 +$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.0	0627 L _A		D	$_{R} = 4.252 + 0$	0.0086 V ₁₂ - 0	0.0009 L _D	
$O_{R} = 30.6 \text{ (pc)}$	/mi/ln)				$D_R = (p_1)^2$	c/mi/ln)			
OS = D (Exhib	it 25-4)				LOS = (E	xhibit 25-4)			
Speed Detern	eed Determination				Speed Determination				
$M_{\rm S} = 0.472 (Exik)$	 oit 25-19)				$D_s = (E)$	khibit 25-19)			
					S _R = mp	h (Exhibit 25-1	9)		
$S_{R} = 56.8 \text{ mph } ($	EMINDIC 20 17)								
	Exhibit 25-19)				1	h (Exhibit 25-1	9)		

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: HEFT NEB TO I-75 NB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 7184 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 55.0 mph Volume on ramp 3662 vph Length of first accel/decel lane 850 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 7184 3662 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1891 964 V Trucks and buses 6 6 응 Recreational vehicles 0 %

Level Level

%

1.5

1.2

mi

1.5

1.2

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mi

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Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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7789
                                                3970
Flow rate, vp
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                                (Equation 25-2 or 25-3)
                 ΕQ
                       -0.106 Using Equation 4
                 FM
                v = v (P) = -590 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         9540
                                      9600
                                                     No
     FO
                         3080 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      Yes
          V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 170
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                      Violation?
                                 4400
                    170
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.6 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                   _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.472
                                          S
Space mean speed in ramp influence area,
                                          S = 56.8
                                                      mph
                                          R
Space mean speed in outer lanes,
                                          S = 61.1
                                                      mph
                                           0
Space mean speed for all vehicles,
                                          S = 59.1
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

175 SB TO HEFT SWB DIVERGE

Canaval Infa	motion	INAIVIE	S AND RAM							
General Infor				Site Infor						
Analyst Agency or Company Date Performed	DPA 9/25/	2007	Ju	eeway/Dir of Tr nction risdiction	avel [75 SB	TO HEFT	SWB		
Analysis Time Period	d Existi	ing	An	nalysis Year	2	2007 A	AM Peak Ho	our		
Project Description	Beacon County	yline DRI (Third	Sufficiency)							
nputs										
Jpstream Adj Ramp		Terrain: Leve	I						Downstrea Ramp	ım Adj
Yes Or									Yes	On
✓ No ☐ Of	f								✓ No	Off
- _{up} = ft		s	_{FF} = 70.0 mph		S _{FR} = 5!	5.0 mr	oh		L _{down} =	ft
$V_{\rm u} = {\rm veh/h}$	ı			show lanes, L _A ,	111	۰.۰۰ ۲۰۰۱			$V_D =$	veh/h
Conversion t	o pc/h Und	der Base (Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	11801	0.95	Level	4	0	0	.980	1.00	126	571
Ramp	3300	0.95	Level	4	0	0	.980	1.00	35	43
UpStream		$oxed{\Box}$								
DownStream]	<u> </u>						<u></u>		
Entire atia		Merge Areas			Folian et			Diverge Areas		
Estimation of					Estimati	on c	οτ V ₁₂			
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	= V _R + (V _F - V	_R)P _{FD}	
- _{EQ} =	(Equa	ation 25-2 or	25-3)		L _{EQ} =		(Equation 25-8	8 or 25-9)	
P _{FM} =	using	Equation (E	Exhibit 25-5)		P _{FD} =			260 using Ed	•	ibit 25-12)
/ ₁₂ =	pc/h	. ,	,		V ₁₂ =			257 pc/h	(-/-	- '-,
V_3 or V_{av34}	•	(Equation 25	-4 or 25-5)		V ₃ or V _{av34}			140 pc/h (Equ	lation 25-1	5 or 25-16\
, ₃ or v _{av34} Is V ₃ or V _{av34} > 2,70			. 5. 25 5)			. > 27		Yes 🗹 No		, oi 20-10)
Is V_3 or $V_{av34} > 1.5$			0)					Yes No		
Yes,V _{12a} =	·	(Equation 25	-0)		If Yes, V _{12a} =			oc/h (Equation	ı ∠ɔ-1ၓ)	
Capacity Che	1	T		1	Capacity	/ Ch	i			T
	Actual	C	apacity	LOS F?	ļ		Actual	_	apacity	LOS F?
					V _F		10137	Exhibit 25-1		Yes
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	6594	Exhibit 25-1	9600	No
					V_R		3543	Exhibit 25-	3 4400	No
Flow Entering	g Merae In	fluence A	rea	8.		terir	ng Merc	ge Influenc	e Area	,
	Actual		Desirable	Violation?	1 222		Actual	Max Desira		Violation?
V _{R12}		Exhibit 25-7			V ₁₂		5257	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern		f not F)	<u>I</u>				terminatio		
$D_R = 5.475 + 0.$								0086 V ₁₂ - 0.	•	- /
) _R = (pc/mi/		12			1		:/mi/ln)	- 12 0.	- 300 - D	
	,				1					
.OS = (Exhibi	· · · · · · · · · · · · · · · · · · ·				ļ	`	bit 25-4)			
Speed Deterr	nination				Speed D					
$M_S = $ (Exibit 28)	5-19)				l ~	•	xhibit 25	•		
$S_R = mph (Exh$	ibit 25-19)				$S_R = 56$.4 mpł	n (Exhibit	25-19)		
	ibit 25-19)				$S_0 = 71$.2 mpł	n (Exhibit	25-19)		
	ibit 25-14)				S = 62	.6 mph	n (Exhibit	25-15)		
	,									

Phone: Fax: E-mail: ______Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Existing Freeway/Dir of Travel: I75 SB TO HEFT SWB Junction: Jurisdiction: Analysis Year: 2007 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 11801 Volume on freeway vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 55.0 mph Volume on ramp 3300 vph 500 Length of first accel/decel lane ft Length of second accel/decel lane 500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	11801	3300		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	3106	868		V
Trucks and buses	4	4		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	0.00 %	0.00	%	%
Length	0.00 mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
1.00
Driver population factor, fP
                                    1.00
Flow rate, vp
                                    12671
                                               3543
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 5257 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         10137
                                      9600
                                                    Yes
     Fi F
                         6594
                                      9600
                                                    No
    v = v - v
         F R
     FΟ
                         3543
                                      4400
                                                    No
     R
                         2440 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    5257
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 36.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.487
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 56.4
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 71.2
                                                     mph
```

S = 62.6

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

Conquel lafe	mo4!	IVAINIL	S AND RAM			·IVOL				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra	avel 17	'5 SB T	O HEFT S	SWB		
Agency or Company Date Performed	9/25/	2007		nction risdiction						
Analysis Time Period				alysis Year	2)	007 DI.	/I Peak Ho	ur		
Project Description				lalysis i cai		007 FIV	II FEAK I IU	ui		
Inputs	Deacon County	AIIIC DIXI (TIIIU	Summericy							
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	ım Adj
☐ Yes ☐ On									Yes	On
✓ No ☐ Off									✓ No	Off
_{-up} = ft									L _{down} =	ft
/ _u = veh/h		S	_{FF} = 70.0 mph Sketch (s	show lanes, L _A ,	$S_{FR} = 55$ $L_{D_f}V_{P_f}V_{f}$	i.0 mph	1		V _D =	veh/h
Conversion to	pc/h Und	der Base C		Λ.	D K F			J.		
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	7039	0.95	Level	4	0	0.9	80	1.00	75	58
Ramp	1510	0.95	Level	4	0	0.9	80	1.00	16	21
UpStream										
DownStream					ļ					
	,	Merge Areas						iverge Areas		
Estimation of	v ₁₂				Estimation	on 01	V ₁₂			
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	V _R + (V _F - V _F	R)P _{FD}	
- _{EQ} =	(Equa	ation 25-2 or	25-3)		L _{EQ} =		- (I	Equation 25-8	or 25-9)	
P _{FM} =		Equation (E	•		P _{FD} =		•	260 using Eq	•	ibit 25-12)
/ ₁₂ =	pc/h	1	,		V ₁₂ =			72 pc/h	(EAII	
12 - V ₃ or V _{av34}	•	Equation 25	4 or 25-5)		V ₁₂ – V ₃ or V _{av34}			72 pc/11 37 pc/h (Equ	ation 25 45	5 or 25 46
	•		7 OI 20-0)			\ 2 7A			auun 20-13	01 20-10
$ s V_3 \text{ or } V_{av34} > 2,700$								Yes ☑ No		
Is V_3 or $V_{av34} > 1.5$ *			2)		1	> 1.5		Yes ✓ No	0= 15'	
Yes,V _{12a} =		Equation 25	-8)		If Yes,V _{12a} =			c/h (Equation	25-18)	
Capacity Che	cks				Capacity	Che	cks			
	Actual	Ca	pacity	LOS F?			Actual	_	pacity	LOS F?
					V _F		6047	Exhibit 25-14	4 9600	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	V_{R}	4426	Exhibit 25-14	9600	No
					V _R		1621	Exhibit 25-3	4400	No
Flow Entering	ı Merae In	fluence A	rea		-	erine		e Influence		
1011 Entering	Actual	_	Desirable	Violation?	, 10W E110		ctual	Max Desirab		Violation?
V _{R12}		Exhibit 25-7		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	V ₁₂	1	772	Exhibit 25-14	4400:All	No
Level of Servi	ice Detern		f not F)			1		terminatio		
$D_R = 5.475 + 0.0$		•			}			0086 V ₁₂ - 0.0		' /
• •	• •	0.0070 V ₁₂	0.00021 LA			-		12 - 0.0	,505 <u>-</u> D	
$O_R = (pc/mi/l)$	•				I	6 (pc/ı 	•			
OS = (Exhibit					<u> </u>		it 25-4)			
Speed Detern					Speed De					
$M_S = $ (Exibit 25)	5-19)				, and a	•	hibit 25-	•		
$S_R = mph (Exh)$	ibit 25-19)				$S_{R} = 61.2$	2 mph	(Exhibit	25-19)		
	ibit 25-19)				$S_0 = 74.3$	3 mph	(Exhibit	25-19)		
S = mph (Exh)	ibit 25-14)					7 mph	(Exhibit	25-15)		
	,									

Fax:

Phone:
E-mail:
Dive

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007 Analysis time period: Existing

Freeway/Dir of Travel: I75 SB TO HEFT SWB

Junction: Jurisdiction:

Analysis Year: 2007 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

_____Freeway Data______

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	70.0	mph
Volume on freeway	7039	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	1510	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist? No

Volume on adjacent ramp vph
Position of adjacent ramp

Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7039	1510	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1852	397	V
Trucks and buses	4	4	8
Recreational vehicles	0	0	8
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
                                               1.00
Driver population factor, fP
                                    7558
Flow rate, vp
                                               1621
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                L =
                               (Equation 25-8 or 25-9)
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2772 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         6047
                                      9600
                                                     No
    v = v
     Fi F
                         4426
                                      9600
                                                     No
    v = v - v
         F R
     FΟ
                         1621
                                      4400
                                                    No
     R
                         1637 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                      No
     3 or av34
                > 1.5 v /2
                                      No
Is
         V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    2772
                                                      No
    V
     12
             ___Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 14.6 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
                                         D = 0.314
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 61.2
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 74.3
                                                      mph
Space mean speed for all vehicles,
                                        S = 67.7
                                                      mph
```

0.980

Heavy vehicle adjustment, fHV

Concret Info	rmation	IVAINI (S AND RAM							
General Info				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel 17	75 SB	TO HEFT S	SWB		
Agency or Compar Date Performed	•	/2007		Inction Irisdiction						
		/2007				040 41	45 111			
Analysis Time Peri		re without Project		nalysis Year	2	018 AI	√ Peak Hou	ur		
Project Description	Beacon Count	yline DRI (Third	Sufficiency)							
nputs		Townsin, Lovel						1		
Jpstream Adj Ram	•	Terrain: Level							Downstrea Ramp	ım Adj
☐ Yes ☐ C)n								☐ Yes	On
☑ No (Off								✓ No	Off
									IV INO	II OII
- _{up} = ft									L _{down} =	ft
		S	_{FF} = 70.0 mph		$S_{FR} = 55$	i.0 mpl	ı			
$v_{\rm u}=$ veh	/h		Sketch (:	show lanes, L _A ,	$L_{D_f}V_{D_f}V_f$				$V_D =$	veh/h
Conversion	to pc/h Un	der Base C		^	DICE					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	1	f _{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	13899	0.95	Level	4	0	0.9	980	1.00	149	923
Ramp	4251	0.95	Level	4	0	_	980	1.00		64
UpStream	1	1	× - +-	<u> </u>		† <u> </u>			10	-
DownStream	1	 				ĺ				
		Merge Areas		•		•	Ď	iverge Areas		
Estimation of		•			Estimation	on o	f V ₁₂	•		
		(D)						\/ \/ \	\D	
	$V_{12} = V_F$		0= 0)					$V_R + (V_F - V_F)$		
EQ =		ation 25-2 or	•		L _{EQ} =		(E	equation 25-8	3 or 25-9)	
P _{FM} =	using	Equation (E	xhibit 25-5)		P _{FD} =		0.2	260 using Eq	juation (Ext	nibit 25-12)
′ ₁₂ =	pc/h				V ₁₂ = 6481 pc/h					
V ₃ or V _{av34}	•	(Equation 25-	-4 or 25-5)		V ₃ or V _{av34} 2729 pc/h (Equation 25-15 or 25-16)					
$ s V_3 \text{ or } V_{av34} > 2,$			/			> 271		Yes No		
$ s V_3 \text{ or } V_{av34} > 1.$			->		1	/ × 1.5		Yes Vo		
Yes,V _{12a} =	<u> </u>	(Equation 25-	-8)		If Yes,V _{12a} =			39 pc/h (Equ	ation 25-18	3)
Capacity Ch	ecks				Capacity	Che	ecks			
	Actual	Ca	pacity	LOS F?			Actual	Ca	pacity	LOS F?
					V _F		11939	Exhibit 25-1	4 9600	Yes
V_{FO}		Exhibit 25-7			$V_{FO} = V_F$	V	7375	Exhibit 25-1	4 9600	No
. FO		ZATIIDIT ZO /				· K		_	-	
					V _R		4564	Exhibit 25-3		Yes
Flow Enterio	_	1		T	Flow Ent	1		e Influence		1
	Actual	i i	Desirable	Violation?		Α	ctual	Max Desirab	ole	Violation?
V_{R12}	1	Exhibit 25-7			V ₁₂	6	481	Exhibit 25-14	4400:All	No
Level of Ser	vice Deterr	nination (i	f not F)			Serv	rice Det	terminatio	n (if not	F)
$D_R = 5.475 +$		•			 			0086 V ₁₂ - 0.0	<u> </u>	•
) _R = (pc/m	* *	12	А		L .	•	mi/ln)	12	ט	
	,						,			
	bit 25-4)						it 25-4)			
Speed Dete	rmination				Speed D					
$M_{\rm S} = $ (Exibit	25-19)				$D_{\rm S} = 0.5^{\circ}$	79 (E)	khibit 25-	19)		
	hibit 25-19)				S _R = 53.8	8 mph	(Exhibit 2	25-19)		
) _D										
	(hihit 25 10)				$S_0 = 70^{\circ}$	mnh	(Exhibit :	25-19)		
$S_0 = \text{mph (E)}$	khibit 25-19) khibit 25-14)				ľ	•	(Exhibit 2 (Exhibit 2	•		

Phone: Fax: E-mail: ______Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Future without Project Freeway/Dir of Travel: I75 SB TO HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 13899 Volume on freeway vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 55.0 mph Volume on ramp 4251 vph

_____Adjacent Ramp Data (if one exists)_____

500

500

ft

ft

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Length of first accel/decel lane

Length of second accel/decel lane

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)	13899		4251			vph
Peak-hour factor, PHF	0.95		0.95			
Peak 15-min volume, v15	3658		1119			v
Trucks and buses	4		4			%
Recreational vehicles	0		0			%
Terrain type:	Level		Level			
Grade	0.00 %		0.00	%	%	
Length	0.00 m	i	0.00	mi	m	i
Trucks and buses PCE, ET	1.5		1.5			
Recreational vehicle PCE, ER	1.2		1.2			

```
Driver population factor, fP
                                   1.00
                                               1.00
Flow rate, vp
                                   14923
                                               4564
                                                                   pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 6481 pc/h
                 12 R
                         F R FD
                  _____Capacity Checks____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                        11939
                                     9600
                                                    Yes
     Fi F
    v = v - v
                        7375
                                     9600
                                                   No
         F R
     FΟ
                        4564
                                     4400
                                                    Yes
     R
                        2729 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     Yes
    3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
If yes, v = 6539
                                     (Equation 25-18)
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    6539
                                                     No
    V
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 47.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.579
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 53.8
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 70.2
                                                     mph
```

S = 60.1

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

Consuel les		KANIP	S AND RAM			rror				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel 17	'5 SB T	O HEFT S	SWB		
Agency or Company Date Performed	9/25/2	2007		nction risdiction						
Analysis Time Perioc		e without Projec		alysis Year	2)	010 DN	1 Peak Ho	ur		
Project Description				larysis i car		0 10 1 IV	TI Cak IIO	ui		
Inputs	Doddon odding	Jiii O D T T (T T III G	Cumorency							
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	ım Adj
Yes Or	ı								Yes	☐ On
✓ No ☐ Off	f								✓ No	Off
- _{up} = ft									L _{down} =	ft
		S	_{FF} = 70.0 mph		$S_{FR} = 55$.0 mph	l			l. /l.
/ _u = veh/h			Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}				$V_D =$	veh/h
Conversion to	o pc/h Und	der Base C	Conditions					.		
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	9412	0.95	Level	4	0	0.9	80	1.00	101	106
Ramp	2059	0.95	Level	4	0	0.9	80	1.00	22	11
UpStream										
DownStream								<u>. </u>		
Fatimatian at	!	Merge Areas			Cotine otic			iverge Areas		
Estimation of	V ₁₂				Estimation	10 חכ	V ₁₂			
	$V_{12} = V_{F}$	(P _{FM})					V ₁₂ =	$V_R + (V_F - V_F)$	R)P _{FD}	
-EQ =	(Equa	ation 25-2 or	25-3)		L _{EQ} =		(1	Equation 25-8	or 25-9)	
P _{FM} =		Equation (E	•		P _{FD} =		•	260 using Eq	•	ibit 25-12)
/ ₁₂ =	pc/h	. (•		V ₁₂ =			38 pc/h	- \	- ,
V_3 or V_{av34}	•	(Equation 25	-4 or 25-5)		V ₃ or V _{av34}			73 pc/h (Equa	ation 25-16	5 or 25-16
, ₃ or v _{av34} Is V ₃ or V _{av34} > 2,70			. 5. 25 5,			> 2 70		73 pc/li (Equa	uuon 20-10	01 20-10
Is V_3 or $V_{av34} > 1.5$			0)		1	> 1.3		Yes ✓ No	05.40\	
Yes,V _{12a} =		(Equation 25	-8)		If Yes,V _{12a} =	<u> </u>		c/h (Equation	25-18)	
Capacity Che	v	_			Capacity	Che				
	Actual	Ca	pacity	LOS F?		\dashv	Actual		pacity	LOS F?
					V _F		8085	Exhibit 25-14		No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$ -	V_R	5874	Exhibit 25-14	9600	No
					V_R		2211	Exhibit 25-3	4400	No
Flow Entering	n Merae In	fluence A	rea		-	erine		e Influence	e Area	
	Actual	7	Desirable	Violation?	12 2		ctual	Max Desirab		Violation?
V _{R12}		Exhibit 25-7			V ₁₂		738	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern		f not F)					terminatio		
$D_R = 5.475 + 0.$		•						0086 V ₁₂ - 0.0	•	- /
• •	• • • • • • • • • • • • • • • • • • • •	12				•		12 0.0	-D	
	•				I	9 (pc/r				
OS = (Exhibi					<u> </u>		it 25-4)			
Speed Detern	nination				Speed De					
M _S = (Exibit 2	5-19)				, and a	•	hibit 25-	•		
	ibit 25-19)				$S_{R} = 59.7$	7 mph	(Exhibit	25-19)		
	ibit 25-19)				$S_0 = 72.2$	2 mph	(Exhibit	25-19)		
S = mph (Exh	ibit 25-14)						(Exhibit	•		

Phone: E-mail: Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future without Project Freeway/Dir of Travel: I75 SB TO HEFT SWB

Junction: Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data
	Baca

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	70.0	mph
Volume on freeway	9412	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	2059	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	9412	2059	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2477	542	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    10106
                                               2211
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3738 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         8085
                                     9600
                                                    No
     Fi F
                         5874
                                     9600
                                                    No
    v = v - v
         F R
     FΟ
                         2211
                                     4400
                                                    No
     R
                         2173 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3738
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 22.9 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence C
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.367
                                          S
Space mean speed in ramp influence area,
                                         S = 59.7
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 72.2
                                                     mph
```

S = 65.8

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

0		KAIVIP	S AND RAM			\N3	HEEI				
General Infor				Site Infor							
Analyst Agency or Company	DPA		Ju	eeway/Dir of Tr nction	avel [75 SB	TO HEFT	SWB			
Date Performed	9/25/			risdiction							
Analysis Time Period		e with Project		alysis Year	2	2018 A	M Peak Ho	our			
Project Description	Beacon County	/line DRI (Thira	Sufficiency)								
nputs		Terrain: Level							- ·	A 1:	
Jpstream Adj Ramp ☐ Yes ☐ On		Terrain. Lever							Downstrea Ramp	am Adj	
res i On									☐ Yes	☐ On	
✓ No ☐ Off	:								✓ No	Off	
-up = ft									L _{down} =	ft	
ир		S	_{FF} = 70.0 mph		S _{FR} = 55	5.0 mp	oh				
$V_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}				V _D =	veh/h	
Conversion to	pc/h Und	der Base C	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$	
Freeway	14190	0.95	Level	4	0	0	.980	1.00	152	236	
Ramp	4542	0.95	Level	4	0	0	.980	1.00	48	77	
UpStream						Ļ					
DownStream		1						N			
Estimation of		Merge Areas			Fatimati	00.6		Diverge Areas			
Estimation of					Estimati	UII C					
	$V_{12} = V_F$	(P _{FM})					V ₁₂ =	$V_R + (V_F - V_I)$	$_{R})P_{FD}$		
-EQ =	(Equa	ation 25-2 or	25-3)		L _{EQ} =		(Equation 25-8	3 or 25-9)		
P _{FM} =	using	Equation (E	xhibit 25-5)		P _{FD} =		0.	260 using Ed	juation (Exh	nibit 25-12)	
/ ₁₂ =	pc/h				V ₁₂ =		6	778 pc/h			
V_3 or V_{av34}	•	Equation 25	-4 or 25-5)		V_3 or V_{av34} 2705 pc/h (Equation 25-15 or 25-16)						
Is V ₃ or V _{av34} > 2,70			,			, > 2.7		Yes No	u0		
Is V_3 or $V_{av34} > 1.5$ *								Yes ✓ No			
f Yes,V _{12a} =		Equation 25	_Q)		If Yes, $V_{12a} =$			789 pc/h (Equ	otion OF 19	٥١	
Capacity Che		Lqualion 23	-0)		Capacity			769 pc/11 (⊑qu	allon 25-10	5)	
зарасну спе		C	pacity	LOS F?	Сараспу	<i>- CII</i>	ı	Co	nacity	LOS F?	
	Actual		apacity	LUST	\/	-	Actual	Exhibit 25-1	pacity		
		F 1 " " 6= =			V _F		12189			Yes	
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	7312	Exhibit 25-1	_	No	
	<u> </u>	<u> </u>		<u></u>	V_R		4877	Exhibit 25-3	4400	Yes	
Flow Entering	g Merge In	_			Flow En	terir	ng Merg	e Influenc			
	Actual	Max [Desirable	Violation?			Actual	Max Desirat	ole	Violation?	
V _{R12}		Exhibit 25-7			V ₁₂		6778	Exhibit 25-14	4400:All	No	
Level of Serv	ice Detern	nination (i	f not F)		Level of	Ser	vice De	terminatio	n (if not	F)	
$D_R = 5.475 + 0.$	00734 v _R + (0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0.0	0009 L _D		
	ln)				D _R = 49.	.1 (pc	:/mi/ln)		_		
$O_R = (pc/mi/$	·				1		bit 25-4)				
					Speed D			on			
OS = (Exhibi											
Speed Determ	nination				<u> </u>	07 (F	xhihit 25	-19)			
Speed Determ M _S = (Exibit 28	nination 5-19)				$D_{s} = 0.6$	•	xhibit 25	,			
$Speed\ Detern$ $M_S = (Exhibit 25)$ $S_R = mph (Exhibit 25)$	nination 5-19) ibit 25-19)				$D_{s} = 0.6$ $S_{R} = 53.$.0 mpł	n (Exhibit	25-19)			
$Speed$ Determined $M_S = (Exhibit 28)$ $S_R = (Exhibit 28)$ $S_R = mph (Exhibit 28)$ $S_0 = mph (Exhibit 28)$	nination 5-19)				$D_{s} = 0.6$ $S_{R} = 53.$ $S_{0} = 70.$.0 mpt .2 mpt		25-19) 25-19)			

Phone: Fax: E-mail: ______Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I75 SB TO HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 14190 vph _____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	55.0	mph
Volume on ramp	4542	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

_____Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist? No Volume on adjacent ramp

Volume on adjacent ramp vph
Position of adjacent ramp

Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent
			Ramp
Volume, V (vph)	14190	4542	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	3734	1195	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 m	i mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

______Conversion to pc/h Under Base Conditions_____

```
Driver population factor, fP
                                    1.00
                                               1.00
Flow rate, vp
                                    15236
                                               4877
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 6778 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         12189
                                     9600
                                                    Yes
     Fi F
                         7312
                                     9600
                                                    No
    v = v - v
         F R
     FΟ
                         4877
                                     4400
                                                    Yes
     R
                         2705 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     Yes
    3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
If yes, v = 6789
                                     (Equation 25-18)
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    6789
                                                     No
    V
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 49.1 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.607
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 53.0
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 70.2
                                                     mph
```

S = 59.4

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

General Info	rmation	IVAIIII (S AND RAM	Site Infor			<u> 1</u>				
						75.05.5	O UEET :	MD			
Analyst	DPA			eeway/Dir of Tr	avei 17	/5 SB T	O HEFT S	WB			
Agency or Compan Date Performed	y 9/25/	2007		nction risdiction							
					2	010 DI	4 D l . I I				
Analysis Time Perio		re with Project		nalysis Year	2	018 PN	1 Peak Hou	ır			
Project Description	Beacon Count	yline DRI (Third	Sufficiency)								
nputs		Torrain: Loyal									
Jpstream Adj Ram		Terrain: Level							Downstrea Ramp	ım Adj	
Yes C	n								☐ Yes	On	
™ No □ O	ıff										
110	11								✓ No	Off	
_{-up} = ft									L _{down} =	ft	
ир		S	_{FF} = 70.0 mph		$S_{FR} = 55$	5.0 mph]				
$t_{\rm u} = {\rm veh/}$	h			show lanes, L _A ,	111	·			$V_D =$	veh/h	
Conversion	to pc/h Un	der Base C		A, A,	טי אי וי						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f_p	v = V/PHF	x f _{HV} x f _p	
Freeway	9560	0.95	Level	4	0	0.9	80	1.00	102	264	
Ramp	2207	0.95	Level	4	0	0.9		1.00	23		
UpStream	2201	5.70		 	 	5.7		1.00	23		
DownStream		 		 		1	+				
	н	Merge Areas		<u> </u>	Ť T	1	Di	iverge Areas			
Estimation o		J			Estimation	on of		J			
		/D \						\/ . \\/ \\ \	\D		
	$V_{12} = V_F$							$V_R + (V_F - V_I)$			
·EQ =	(Equ	ation 25-2 or	25-3)		L _{EQ} =		(E	quation 25-8	3 or 25-9)		
P _{FM} =	using	Equation (E	xhibit 25-5)		P _{FD} =		0.2	60 using Ed	uation (Exh	nibit 25-12)	
/ ₁₂ =	pc/h		•		$V_{12} = 3889 \text{ pc/h}$						
	•	(Equation 25	-4 or 25-5\								
or V _{av34}	•		- 		V_3 or V_{av34} 2161 pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? Yes \checkmark No						
Is V_3 or $V_{av34} > 2.7$											
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2	s 🗌 No			1	₁ > 1.5 *	V ₁₂ /2	Yes 🗹 No			
Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} =		po	c/h (Equation	25-18)		
Capacity Ch	ecks				Capacity	Che	cks				
. ,	Actual	Ca	apacity	LOS F?	<u>, , , , , , , , , , , , , , , , , , , </u>	T	Actual	Са	pacity	LOS F?	
	1	Ť	. ,	1	V _F		8212	Exhibit 25-1		No	
\ /	1	F., b. 1, 1, 0, 5, 7			<u> </u>	, 					
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	· v _R	5842	Exhibit 25-1		No	
					V_R		2370	Exhibit 25-3	3 4400	No	
Flow Enterin	g Merge In	fluence A	rea		Flow Ent	terino	g Merae	e Influenc	e Area		
	Actual	1	Desirable	Violation?			ctual	Max Desirat		Violation?	
V _{R12}	1	Exhibit 25-7			V ₁₂	1		Exhibit 25-14	4400:All	No	
Level of Ser	vice Determ		f not E\	I		l .					
		•						erminatio	•	<i>'')</i>	
$D_R = 5.475 + 0$		υ.υυ/8 V ₁₂ -	0.00627 L _A					0086 V ₁₂ - 0.0	nona r ^D		
$P_R = (pc/m)$	i/ln)				$D_R = 24.$	2 (pc/r	mi/ln)				
.OS = (Exhib	oit 25-4)				LOS = C (Exhibi	it 25-4)				
Speed Deter	<u> </u>				Speed D	<u> </u>		n			
•							hibit 25-1				
$M_{\rm S} = $ (Exibit 2	•				I. *	,		•			
S_R = mph (Ex	hibit 25-19)				, · · ·	•	(Exhibit 2	•			
	hihit 25-10)				$S_0 = 72.3 \text{ mph (Exhibit 25-19)}$						
$S_0 = \text{mph } (Ex)$	111011 23-13)										
	hibit 25-19)				S = 65.	5 mph	(Exhibit 2	25-15)			

Phone: Fax: E-mail: _____Diverge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/25/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I75 SB TO HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 9560 Volume on freeway vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 55.0 mph Volume on ramp 2207 vph 500 Length of first accel/decel lane ft Length of second accel/decel lane 500 ft

Distance to adjacent ramp ft

Does adjacent ramp exist?

Position of adjacent ramp Type of adjacent ramp

Volume on adjacent ramp

Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 9560 2207 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 581 2516 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type: 0.00 % 0.00 % 용 Grade 0.00 mi 0.00Length mi шi Trucks and buses PCE, ET 1.5 1.5 Recreational vehicle PCE, ER 1.2 1.2

______Adjacent Ramp Data (if one exists)_____

No

_____Conversion to pc/h Under Base Conditions_____

vph

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    10264
                                               2370
                                                                   pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3889 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         8212
                                     9600
                                                    No
     Fi F
                        5842
                                     9600
                                                    No
    v = v - v
         F R
     FΟ
                         2370
                                     4400
                                                    No
     R
                        2161 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3889
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 24.2 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence C
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.381
                                          S
Space mean speed in ramp influence area,
                                         S = 59.3
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 72.3
                                                     mph
```

S = 65.5

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

175 SB TO HEFT SWB DIVERGE

Canaval lata		WIF 3 AND F	RAMP JUNG							
General Infori				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel	I-75 SB	to HEFT	SWB		
Agency or Company Date Performed	9/27/	2007		nction risdiction						
Analysis Time Period				alysis Year		2007 11	M Peak H	our		
Project Description				larysis i cai	•	2001 AI	VII Cak II	oui		
Inputs	Deacon Count	yiiic Diti (Tiliu .	bulliciency)							
Jpstream Adj Ramp		Terrain: Level							Downstre	am Adi
Yes Con									Ramp	ani Auj
103 1 011									☐ Yes	On
✓ No ✓ Off									✓ No	Off
•										
- _{up} = ft			70.0 mnh		C [`0 0 mnl	<u> </u>		L _{down} =	ft
/ _u = veh/h		3 F	_F = 70.0 mph Sketch (s	show lanes, L _a ,	$S_{FR} = 50.0 \text{ mph}$ $A_i, L_{D_i}, V_{P_i}, V_{f_i}$				$V_D =$	veh/h
Conversion to	pc/h Un	der Base C		A	D K P					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	2751	0.95	Level	4	0	0.9	180	1.00	+	2954
Ramp	3300	0.95	Level	4	0	0.9		1.00		3543
UpStream	3300	0.70	FCACI	1 4		0.9	00	1.00		JUTJ
DownStream						1	$\overline{}$		1	
		Merge Areas						Diverge Are	as_	
Estimation of					Estimati	ion o		<u>~</u>		
		(P)								
	$V_{12} = V_F$)				$V_{12} =$	$V_R + (V_F -$	$V_R)P_{FD}$	
-EQ =		ation 25-2 or 2	•		L _{EQ} =			(Equation	25-8 or 25-	9)
P _{FM} =	0.555	using Equation	n (Exhibit 25-5)		P _{FD} =			using Equ	ation (Exhibit	t 25-12)
/ ₁₂ =	1639	pc/h			V ₁₂ =			pc/h	·	•
V_3 or V_{av34}	1315	pc/h (Equatior	25-4 or 25-		V ₃ or V _{av34}			•	on 25-15 or 2!	5-16)
	5)				1	< 2.7 <i>1</i>				0 10)
Is V_3 or $V_{av34} > 2,700$								Yes 🗆		
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No						Yes T		
f Yes,V _{12a} =	1688	pc/h (Equatior	า 25-8)		If Yes,V _{12a} =	:		pc/h (Equa	ation 25-18)	
Capacity Che	cks				Capacity	y Che	ecks			
	Actual	Ca	oacity	LOS F?			Actual		Capacity	LOS F?
					V _F			Exhibit 2	25-14	
V_{FO}	6497	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V ₂		Exhibit 2	25-14	
* FO	UT / I	EXHIBIT 20-1		110	—	· R				
					V _R			Exhibit :		
Flow Entering				\ \(\frac{1}{2} \)	Flow En				nce Area	4
	Actual	1	esirable	Violation?	.,	A	ctual		esirable . I	Violation?
V _{R12}	5231	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		
Level of Servi									tion (if no	
$D_R = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	627 L _A			$O_{R} = 4.$	252 + 0	.0086 V ₁₂	- 0.0009 L _D	
$D_{R} = 20.2 \text{ (pc/s)}$	mi/ln)				$D_R = (p)$	c/mi/lr	n)			
	it 25-4)				LOS = (E	xhibit	25-4)			
LOS = C (Exhib					Speed D			on		
`					 '	xhibit 2!				
Speed Detern	it 25-19)						,			
Speed Detern M _S = 0.660 (Exib	•				1	ph (Exhi	ibit 25-19)		
Speed Determ $M_S = 0.660$ (Exib $S_R = 51.5$ mph (Exhibit 25-19)				S _R = m		ibit 25-19)			
Speed Detern $M_S = 0.660 \text{ (Exito}$ $S_R = 51.5 \text{ mph (i)}$ $S_0 = 67.2 \text{ mph (i)}$	•				$S_R = m_F$ $S_0 = m_F$	ph (Exh	ibit 25-19) ibit 25-19) ibit 25-15))		

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Existing Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2007 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 2751 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 3300 vph 1200 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 2751 3300 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 724 868 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

용

шi

```
2954
                                               3543
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 1639 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         6497
                                      7200
                                                     No
     FO
                         1315 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1688
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1688
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 20.2 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.660
                                          S
Space mean speed in ramp influence area,
                                          S = 51.5
                                                      mph
                                          R
                                          S = 67.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 54.0
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Canaral Info		III O AND I	RAMP JUNG			<u> '</u>			
General Infor				Site Infor					
Analyst	DPA			eeway/Dir of Tr	avel	I-75 SB to I	HEFT SWB		
Agency or Company	0.10=1	2007		nction					
Date Performed	9/27/			risdiction					
Analysis Time Period				alysis Year		2007 PM P	eak Hour		
Project Description	Beacon County	yline DRI (Third	Sufficiency)						
nputs		<u> </u>							
Jpstream Adj Ramp		Terrain: Level						Downstre Ramp	eam Adj
Yes On								☐ Yes	☐ On
✓ No ☐ Off								✓ No	Off
_{-up} = ft								L _{down} =	ft
		S F	$_{\rm F} = 70.0 {\rm mph}$		$S_{FR} = 5$	5.0 mph		\ ,	. //
$V_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$			$V_D =$	veh/h
Conversion to	pc/h Und	der Base C	onditions					•	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	2424	0.95	Level	4	0	0.980	1.00		2603
Ramp	1510	0.95	Level	4	0	0.980	1.00		1621
UpStream		† †	-		<u> </u>	1	1	1	
DownStream		† †				1			
		Merge Areas		•			Diverge Are	as	
Estimation of		-			Estimati	ion of v			
		(D \			 		<u></u>		
	$V_{12} = V_F$	• • • • • • • • • • • • • • • • • • • •	25.0)			\	$V_{12} = V_R + (V_F -$	$V_R)P_{FD}$	
L _{EQ} =		ation 25-2 or 2	,		L _{EQ} =		(Equation	25-8 or 25-	9)
P _{FM} =	0.555	using Equation	on (Exhibit 25-5)		P _{FD} =		usina Eau	ation (Exhibi	t 25-12)
/ ₁₂ =	1445	pc/h			V ₁₂ =		pc/h	(=	/
		pc/h (Equatio	n 25-4 or 25-				-	OF 1F O	Г 1/\
V_3 or V_{av34}	5)	(= -			V ₃ or V _{av34}			on 25-15 or 2	5-16)
Is V_3 or $V_{av34} > 2,700$	pc/h? TYe	s 🗹 No					oc/h? ☐ Yes ☐		
Is V_3 or $V_{av34} > 1.5$ *					Is V ₃ or V _{av3}	$_{34} > 1.5 * V.$	₁₂ /2	No	
f Yes,V _{12a} =		pc/h (Equation	n 25-8\		If Yes,V _{12a} =			ation 25-18))
Capacity Che		po/ii (Equatioi	125-01		Capacity				
сарасну СП е		0.5	nacity	I OC TO	Capacity	1	1	Capacity	100.00
	Actual	L Ca	pacity	LOS F?	+ .,	- '	Actual	Capacity	LOS F?
		1 1			V_{F}		Exhibit 2	25-14	
V_{FO}	4224	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R	Exhibit 2	25-14	
					V _R		Exhibit	25-3	
Flow Entering	Merge In	ifluence A	·	<u> </u>		toring	Merge Influe		<u> </u>
TOW EINERING	Actual		esirable	Violation?	FIOW EII	Actua		erice Area esirable	Violation?
	3108	Exhibit 25-7	4600:All	No	\/	Aciua	Exhibit 25-1	1	v ioiation:
V _{R12}				INU	V ₁₂	Comete			<u> </u>
Level of Servi		•					e Determina	•	
.,		0.0078 V ₁₂ - 0.00	1021 L _A				2 + 0.0086 V ₁₂	- 0.0009 L _D	
$D_R = 4.5 \text{ (pc/n)}$					I " "	c/mi/ln)			
$_{-}OS = A (Exhib)$	it 25-4)				LOS = (E	xhibit 25	-4)		
	nination				Speed D	Determi	nation		
Speed Detern					$D_s = (E)$	xhibit 25-19	9)		
	bit 25-19)				1		05.40\		
M _S = -0.021 (Exi	•				S _R = mi	ph (Exhibit:	25-19)		
$M_S = -0.021$ (Exi $S_R = 70.6$ mph (Exhibit 25-19)				I '` '	ph (Exhibit : ph (Exhibit :			
$S_R = 70.6 \text{ mph } (S_0 = 67.8 \text{ mph } ($	•				$S_0 = m_i$	ph (Exhibit) ph (Exhibit) ph (Exhibit)	25-19)		

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Existing Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2007 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 2424 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 55.0 mph Volume on ramp 1510 vph 1200 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 2424 1510 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 638 397 V Trucks and buses 4 4 응 Recreational vehicles 0 ે Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

용

шi

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2603
Flow rate, vp
                                               1621
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 1445 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         4224
                                      7200
                                                     No
     FO
                         1158 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1487
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1487
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 4.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence A
                  _____Speed Estimation___
                                         M = -0.021
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 70.6
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 67.8
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 69.8
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Conoral Info		MPS AND I	ANI JUN			<u> I</u>				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel I	I-75 SB to	HEFT SWB			
Agency or Company	0.107.1	2007		nction						
Date Performed	9/27/			risdiction	,	0040 414				
Analysis Time Period		e without Projec		alysis Year		2018 AM F	Peak Hour			
Project Description	Beacon County	yline DRI (Third:	oufficiency)							
nputs		Tamain, Lavel								
Jpstream Adj Ramp		Terrain: Level							ownstre amp	eam Adj
Yes On								Г	Yes	On
✓ No ☐ Off								V	No	Off
_{-up} = ft								L _d	lown =	ft
		S _F	_F = 70.0 mph		$S_{FR} = 5$	5.0 mph				la /la
$I_u = veh/h$			Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}			\frac{1}{2}	_D =	veh/h
Conversion to	pc/h Und	der Base C	onditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	, 1	, v	= V/PH	F x f _{HV} x f _p
Freeway	3405	0.95	Level	4	0	0.980	1.0	10		3656
Ramp	4251	0.95	Level	4	0	0.980		10		4564
UpStream	.=					1	1			
DownStream						ĺ	\neg	<u> </u>		
		Merge Areas		,		,	Diverg	e Areas		
Estimation of	V ₁₂				Estimati	ion of	V ₁₂			
	V ₁₂ = V _F	(P)						01 11:		
_		• • • • • • • • • • • • • • • • • • • •)E 2\				$V_{12} = V_R +$. –	
-EQ =		ation 25-2 or 2	•		L _{EQ} =		(Equa	ition 25-8	3 or 25-9	9)
P _{FM} =			n (Exhibit 25-5)		P _{FD} =		using	Equation	າ (Exhibit	25-12)
V ₁₂ =	2029	pc/h			V ₁₂ =		pc/h			
V ₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		-	Equation 25	5-15 or 25	5-16)
	5)	_			I	< 2 7nn	-	•	. 10 01 20	,
Is V_3 or $V_{av34} > 2,700$							pc/h? TYes			
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No					$I_{12}/2 \Box \text{ Yes}$			
f Yes,V _{12a} =	2089	pc/h (Equation	า 25-8)		If Yes,V _{12a} =		pc/h (Equation	25-18)	
Capacity Che	cks				Capacity	y Chec	ks			
· ·	Actual	Ca	pacity	LOS F?			Actual	Сара	acity	LOS F?
	-				V _F		1	hibit 25-14	1	
	0220	Evhibit 25.7		Voc		- \/		hibit 25-14		\dashv
V_{FO}	8220	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	⁻ VR			+	-
					V _R			hibit 25-3		
Flow Entering					Flow En		Merge In			
	Actual	Max D	esirable	Violation?		Actu		Nax Desira	ble	Violation?
V _{R12}	6653	Exhibit 25-7	4600:All	No	V ₁₂		Exhibi	25-14		
Level of Servi	ice Detern	nination (if	not F)		1	Servic	e Detern	ination	า (if no	ot F)
		0.0078 V ₁₂ - 0.00					52 + 0.0086		_	
O _R = 30.8 (pc/	.,	12	И			c/mi/ln)		14	U	
OS = F (Exhib					1	xhibit 25	5_4)			
<u> </u>					<u> </u>					
Speed Detern	nination				Speed D					
$M_{S} = 2.915 \text{ (Exit)}$	oit 25-19)					xhibit 25-1				
-5 2.710 (2.11)	(Evhihit 25-10)				S _R = mr	oh (Exhibit	25-19)			
-	(LAHIDIL 23-17)									
S_R = -11.6 mph					$S_0 = m_F$	oh (Exhibit	t 25-19)			
$S_{R}^{=}$ -11.6 mph	Exhibit 25-19)				I * .	oh (Exhibit oh (Exhibit				

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future without Project Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 3405 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 55.0 mph 4251 Volume on ramp vph 1200 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3405 4251 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 896 1119 V Trucks and buses 4 4 응 Recreational vehicles 0 ે Level Level Terrain type: %

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

mi

1.5

1.2

1.5

1.2

용

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3656
                                               4564
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2029 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         8220
                                      7200
                                                     Yes
     FO
                         1627 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2089
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2089
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.8 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 2.915
                                          S
Space mean speed in ramp influence area,
                                         S = -11.6
                                                      mph
                                          R
                                         S = 66.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S =
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

matics			CTIONS W					
nation			Site Infor					
DPA			eeway/Dir of Tr	avel	I-75 SB to I	HEFT SWB		
0.10=1	12007							
			ialysis Year		2018 PM P	eak Hour		
Beacon County	yline DRI (Third :	Sufficiency)						
	l.						1	
	Terrain: Level						Downstre Ramp	eam Adj
							☐ Yes	On
							✓ No	☐ Off
							L _{down} =	ft
	S _F	•			5.0 mph		V- =	veh/h
		Sketch (s	show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$			VD -	VCII/II
pc/h Und	<u>der Base C</u>	onditions						
V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	$F \times f_{HV} \times f_{p}$
3813	0.95	Level	4	0	0.980	1.00		4094
2059	0.95	Level	4	0	0.980	1.00		2211
	Merge Areas			<u> </u>			as	
V ₁₂				Estimati	ion of v	12		
V ₁₂ = V _E	(P _{EM})					/ -\/ +(\/ -	\/ \P	
		25-3)			`			0)
, ,		•		L _{EQ} =				•
		in (Exhibit 25-5)		P _{FD} =		using Equ	ation (Exhibi	t 25-12)
•				V ₁₂ =		pc/h		
	pc/h (Equatior	า 25-4 or 25-				pc/h (Equati	on 25-15 or 2	5-16)
- /	- · ·			1	> 2.700 r			,
2339	pc/h (Equatior	า 25-8)		ii res, v _{12a} =	: 	pc/n (Equa	ation 25-18)	
cks				Capacity	y Chec	ks		
Actual	Ca	pacity	LOS F?			Actual	Capacity	LOS F?
				V _F		Exhibit 2	25-14	
6305	Exhibit 25-7		No		- V _C	Exhibit 1	25-14	<u> </u>
0000	EXHIBIT 20-1		110	—	· K			-
	<u></u>							
			\/\(\text{l}_{\alpha}\) \(\text{l}_{\alpha}\)	Flow En				
	1			.,	Actua		1	Violation?
			No	1	<u></u>			
							•	
).00734 v _R + ().0078 V ₁₂ - 0.00	1627 L _A			$O_{R} = 4.25$	2 + 0.0086 V ₁₂	- 0.0009 L _D	
mi/ln)				$D_R = (p)$	c/mi/ln)			
t 25-4)					xhibit 25	-4)		
ination				Speed D		,		
					xhibit 25-19			
it 25-19)				IC	nh / [le ! le ! l			
it 25-19) Exhibit 25-19)				I '` '	ph (Exhibit			
				1	ph (Exhibit ph (Exhibit			
	Futur Beacon County Popc/h Unit V (Veh/hr) 3813 2059 V12 V12 V12 V12 V12 V12 V12 V1	Terrain: Level Terrain: Level	9/27/2007 Ju Future without Project Ar Beacon Countyline DRI (Third Sufficiency) Terrain: Level	Future without Project Analysis Year Beacon Countyline DRI (Third Sufficiency) Terrain: Level	9/27/2007 Future without Project Season Countyline DRI (Third Sufficiency)	S	S	9/27/2007 Future without Project Analysis Year 2018 PM Peak Hour Beacon Countyline DRI (Third Sufficiency)

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future without Project Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 3813 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 55.0 mph 2059 Volume on ramp vph 1200 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3813 2059 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1003 542 V Trucks and buses 4 4 응 Recreational vehicles 0 ે Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

용

шi

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4094
Flow rate, vp
                                               2211
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 2272 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         6305
                                      7200
                                                     No
     FO
                         1822 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2339
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2339
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 15.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.261
                                          S
Space mean speed in ramp influence area,
                                         S = 62.7
                                                      mph
                                          R
                                         S = 65.5
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 63.4
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

_			MPS AND I	KAMP JUNG							
Genera	l Inforn				Site Infor						
Analyst	•	DPA			eeway/Dir of Tr	avel	I-75 S	B to HEFT	SWB		
Agency or (Date Perfor		0.107.1	2007		nction risdiction						
Date Perior Analysis Tir		9/27/			nalysis Year		2010	AM Dook I	lour		
			e with Project yline DRI (Third		iaiysis reai		2010 F	AM Peak H	1001		
Inputs	cription L	beacon County	yiiile DKi (Tililu	Sumciency)							
_	ldi Domn		Terrain: Level							Downstre	oom Adi
Jpstream A			Torrain. Lovor							Ramp	eam Auj
☐ Yes	☐ On									☐ Yes	On
✓ No	Off									✓ No	☐ Off
										l.	
-up =	ft									L _{down} =	ft
./ _	veh/h		S _F	$_{\rm F} = 70.0 {\rm mph}$		$S_{FR} = 5$	5.0 m	ph		V _D =	veh/h
√ _u =	ven/n			Sketch (show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				VD -	VCH/H
Conver	sion to	pc/h Und	der Base C	onditions		_					
(pc/	/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		${\sf f}_{\sf HV}$	f _p	v = V/PH	$IF \times f_{HV} \times f_{p}$
Freeway		3405	0.95	Level	4	0	0.	.980	1.00		3656
Ramp	<u> </u>	4542	0.95	Level	4	0		.980	1.00		4877
UpStream						<u> </u>					
DownStrea	ım										
			Merge Areas			ļ			Diverge Are	as	
Estima	tion of	v ₁₂				Estimat	ion (of v ₁₂			
		V ₁₂ = V _F	(P _{EM})			ĺ		\/ -	-\/ +(\/ -	\/ \D	
- _{EQ} =			ation 25-2 or 2	25-3)		ļ.		v ₁₂ -	= V _R + (V _F -		0)
P _{FM} =		, .		n (Exhibit 25-5)		L _{EQ} =			•	25-8 or 25-	•
				III (EXHIBIT 25-5)		P _{FD} =			• .	ation (Exhibi	t 25-12)
/ ₁₂ =		2029		05 4 05		V ₁₂ =			pc/h		
V_3 or V_{av34}		1627 [pc/h (Equation	1 25-4 OF 25-		V_3 or V_{av34}			pc/h (Equati	on 25-15 or 2	5-16)
Is V ₂ or V ₂	> 2,700	pc/h? ☐ Ye:	s 🔽 No			Is V ₃ or V _{av}	34 > 2,	700 pc/h?	☐ Yes ☐	No	
		/ ₁₂ /2				Is V ₃ or V _{av}	₃₄ > 1.	5 * V ₁₂ /2	☐ Yes ☐	No	
f Yes,V _{12a}		·=) OF 9\		If Yes,V _{12a} =				ation 25-18)
	ty Chec		pc/h (Equation	1 25-8)				nooko			,
Сарасп	ty Cried	Actual	1 00	pacity	LOS F?	Capacit	y Cr	Actua	1	Capacity	LOS F?
		Actual	Ca	pacity	LUST!	\/	\dashv	Actua	Exhibit 2	<u> </u>	LUSF!
			1 1			V _F					
V _F	О	8533	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14	
			1 1			V_R			Exhibit	25-3	
Flow E	ntering	Merge In	fluence Ar	ea		Flow En	iterii	ng Mer	ge Influe	nce Area	7
		Actual		esirable	Violation?			Actual	Max D	esirable	Violation?
V_{R1}	12	6966	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1	4	
		ce Detern	nination (if	not F)	-		Ser	vice D	etermina	tion (if n	ot F)
			0.0078 V ₁₂ - 0.00			Ti			0.0086 V ₁₂		
O _R =	33.1 (pc/n		12	Н			c/mi/		12	L	•
-R LOS =	F (Exhibit							it 25-4)			
						<u>`</u>			ion		
	Determ					Speed L			IUII		
J	.026 (Exibit					ľ		25-19)	2)		
S _R = -4	42.7 mph (E	Exhibit 25-19)				I ''		thibit 25-19			
	6.2 mph (E	xhibit 25-19)				$S_0 = m$	ph (Ex	hibit 25-19	9)		
U						l _c	ı /⊏		-\		
O .	nph (Exhibi	t 25-14)				S = m	pn (Ex	hibit 25-15	o)		

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 3405 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 55.0 mph 4542 Volume on ramp vph Length of first accel/decel lane 1200 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)______ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3405 4542 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 896 1195 V Trucks and buses 4 4 응 Recreational vehicles 0 ે Level Level Terrain type:

용

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

용

шi

```
3656
Flow rate, vp
                                               4877
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 2029 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         8533
                                      7200
                                                     Yes
     FO
                         1627 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2089
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                     Violation?
                                 4400
                    2089
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 33.1 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 4.026
                                          S
Space mean speed in ramp influence area,
                                         S = -42.7
                                                      mph
                                          R
                                         S = 66.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S =
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Oama::::1 ! f-		WIFS AIND I	RAMP JUN			<u> </u>				
General Infori				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel I	I-75 SB to	HEFT SW	В		
Agency or Company	0/07/	10007		unction						
Date Performed	9/27/			ırisdiction	,	0040 444				
Analysis Time Period		re with Project w		nalysis Year		2018 AM F	Peak Hour			
Project Description	Beacon County	yline DRI (Third)	oufficiency)							
Inputs									1	
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	eam Adj
☐ Yes ☐ On									Yes	☐ On
✓ No ☐ Off									✓ No	Cff Off
_{-up} = ft									L _{down} =	ft
		S _F	$_{\rm F} = 70.0 {\rm mph}$		$S_{FR} = 5$	0.0 mph			V _D =	veh/h
V _u = veh/h			Sketch (show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				v _D –	ven/m
Conversion to	pc/h Und	der Base C	onditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	,	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	3405	0.95	Level	4	0	0.980		1.00		3656
Ramp	4542	0.95	Level	4	0	0.980		1.00	1	4877
UpStream						<u> </u>				
DownStream										
		Merge Areas						erge Area	s	
Estimation of	v ₁₂				Estimati	ion of v	12			
	V ₁₂ = V _F	(P _{EM})			 			. () /	\/ \P	
l <u> </u>		• • • • • • • • • • • • • • • • • • • •	25_2\				$V_{12} = V_R$	•		
L _{EQ} =		ation 25-2 or 2	,		L _{EQ} =		(Ed	quation 2	25-8 or 25-9	9)
P _{FM} =			n (Exhibit 25-5)		P _{FD} =		usi	ng Equa	ition (Exhibit	25-12)
V ₁₂ =	596 p	c/h			V ₁₂ =		pc/	'n		
V_3 or V_{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		•		n 25-15 or 25	5-16)
	5)	_			Is V ₃ or V _{av34}	> 2 700	-	•		,
Is V_3 or $V_{av34} > 2,700$										
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2 № Ye	s 🗏 No			Is V ₃ or V _{av3}					
f Yes,V _{12a} =	1140	pc/h (Equation	า 25-8)		If Yes,V _{12a} =		pc/	h (Equa	tion 25-18)	
Capacity Che	cks				Capacity	v Chec	ks			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Actual	Ca	pacity	LOS F?			Actual	(Capacity	LOS F?
		<u> </u>	- ·J	1	V _F	$\neg \vdash$		Exhibit 2	' 1 '	
V	7700	Entrice 3		NI.		\ <u>\</u>				$\overline{}$
V_{FO}	7729	Exhibit 25-7		No	$V_{FO} = V_{F}$	- v _R		Exhibit 2		
					V_R			Exhibit 2	5-3	
Flow Entering	Merge In	fluence Ar	ea		Flow En	tering	Merge	Influer	nce Area	
ĭ	Actual		esirable	Violation?		Actu		Max De		Violation?
V_{R12}	6017	Exhibit 25-7	4600:All	No	V ₁₂		Exl	nibit 25-14		
1.				<u> </u>		Servic			ion (if no	ot F)
Level of Servi		•							0.0009 L _D	/
	5.50,07 1 R C	0.0070 v ₁₂ - 0.00	A				0.00	12	5.5505 L _D	
$D_R = 5.475 + 0$!/I.m\				'` ''	c/mi/ln)				
$D_R = 5.475 + 0$ $D_R = 21.9 \text{ (pc/s)}$					LOS = (E	xhibit 25	5-4)			
$D_R = 21.9 \text{ (pc/s)}$ LOS = C (Exhibited)	it 25-4)				<u>`</u>					
$D_{R} = 5.475 + 0$ $D_{R} = 21.9 \text{ (pc/}$ $D_{S} = C \text{ (Exhibite}$	it 25-4)				Speed D		ination			
$D_R = 5.475 + 0$ $D_R = 21.9 \text{ (pc/}$ $LOS = C \text{ (Exhibited)}$ Speed Determine	it 25-4)				Speed D					
$D_R = 5.475 + 0$ $D_R = 21.9 \text{ (pc/}$ $LOS = C \text{ (Exhibited Speed Determine)}$ $M_S = 1.471 \text{ (Exist}$	it 25-4) nination it 25-19)				Speed D D _s = (E)	Determ xhibit 25-1	9)			
$D_{R} = 5.475 + 0$ $D_{R} = 21.9 \text{ (pc/}$ $LOS = C \text{ (Exhibition of the context)}$ $COS = C (Exhibition of $	it 25-4) nination it 25-19) Exhibit 25-19)				Speed D $D_{s} = (E_{s})$ $S_{R} = m_{p}$	Determ ox xhibit 25-1 ph (Exhibit	9) : 25-19)			
$D_{R} = 5.475 + 0$ $D_{R} = 21.9 \text{ (pc/}$ $D_{S} = C \text{ (Exhibited Speed Determine)}$ $D_{S} = 1.471 (Exibhited Speed Sp$	it 25-4) nination it 25-19)				$\begin{array}{ccc} \textbf{Speed D} \\ \textbf{D}_{\text{S}} = & (\textbf{E} \\ \textbf{S}_{\text{R}} = & \textbf{mp} \\ \textbf{S}_{0} = & \textbf{mp} \end{array}$	Determ xhibit 25-1	9) : 25-19) : 25-19)			

Phone: Fax: E-mail: DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: I-75 SB to HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 AM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph Volume on freeway 3405 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 4542 Volume on ramp vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3405 4542 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 896 1195 V Trucks and buses 4 4 응 Recreational vehicles 0 ે Level Level

%

1.5

1.2

mi

1.5

1.2

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mi

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шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
3656
Flow rate, vp
                                               4877
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 596
                                     pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         7729
                                      9600
                                                     No
     FO
                         1128 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1140
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    1140
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 1.471
                                          S
Space mean speed in ramp influence area,
                                          S = 28.8
                                                      mph
                                          R
                                          S = 68.7
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 33.1
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

O11 '		WIFO AND I	RAMP JUN						
General Inforr				Site Infor					
Analyst	DPA			eeway/Dir of Tr	avel I	1-75 SB TO	HEFT SWB		
Agency or Company Date Performed	9/27/	2007		Inction Irisdiction					
Analysis Time Period		zoo <i>r</i> re with Project w		nalysis Year	,	2018 PM Pe	ook Hour		
Project Description				iaiysis i cai		2016 PIVI PE	ак пои		
Inputs	beacon Count	yiiile DKI (Tililu	Sufficiency)						
-		Terrain: Level						Downstra	om Adi
Jpstream Adj Ramp ☐ Yes ☐ On		Terrain. Lever						Downstre Ramp	eam Adj
Yes On								☐ Yes	On
✓ No ✓ Off								✓ No	☐ Off
								l.	
_{-up} = ft			70.0			F.O. I		L _{down} =	ft
V _{.,} = veh/h		SF	$_{\rm F} = 70.0 {\rm mph}$		$S_{FR} = 5$	5.0 mph		$V_D =$	veh/h
V _u = veh/h			Sketch (show lanes, L _A ,	L_{D}, V_{R}, V_{f}			• В	VOII/II
Conversion to	pc/h Und	der Base C	onditions						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	$F \times f_{HV} \times f_{p}$
Freeway	3874	0.95	Level	4	0	0.980	1.00		4159
Ramp	2207	0.95	Level	4	0	0.980	1.00		2370
UpStream									
DownStream									
		Merge Areas					Diverge Are	as	
Estimation of	V ₁₂				Estimati	on of v	12		
	V ₁₂ = V _F	(P _{EM})				1	/ _ \/ _ \/	. \/ \D	
		ation 25-2 or 2	25-3)			V	$V_{12} = V_R + (V_F - V_F)$		۵)
- _{EQ} =			•		L _{EQ} =		` .	25-8 or 25-	•
P _{FM} =			n (Exhibit 25-5)		P _{FD} =		using Equ	ation (Exhibit	25-12)
V ₁₂ =	678 p				V ₁₂ =		pc/h		
V_3 or V_{av34}		pc/h (Equation	n 25-4 or 25-		V_3 or V_{av34}		pc/h (Equat	ion 25-15 or 25	5-16)
Is V_3 or $V_{av34} > 2,700$	5)) nc/h? □ ∨o.	o V No			1	_{s4} > 2,700 p	c/h? ☐ Yes ☐	No	
							₂ /2		
Is V_3 or $V_{av34} > 1.5$ *					If Yes, V _{12a} =			ation 25-18)	
f Yes,V _{12a} =		pc/h (Equation	า 25-8)		120			alion 25-10)	
Capacity Che	cks			,	Capacity	y Check	rs		,
	Actual	Ca	pacity	LOS F?		A	ctual	Capacity	LOS F?
					V_{F}		Exhibit	25-14	
V_{FO}	5615	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R	Exhibit	25-14	
10	-				V _R	-1\	Exhibit		
<u> </u>		<u> </u>		<u> </u>			ļ		
Flow Entering				Violetiano	FIOW En		Merge Influe		4
	Actual		esirable	Violation?		Actua		esirable	Violation?
V _{R12}	3668	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-1		
Level of Servi		•					e Determina	•	ot F)
D E 47E (0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	627 L _A			$P_{R} = 4.252$	2 + 0.0086 V ₁₂	- 0.0009 L _D	
$D_{R} = 5.4/5 + 0$	ni/ln)				$D_R = (p)$	c/mi/ln)			
• • • • • • • • • • • • • • • • • • • •					LOS = (E	xhibit 25-	4)		
.,	it 25-4)				<u> </u>	Petermii	•		
$D_R = 4.8 \text{ (pc/m)}$ LOS = A (Exhibit)					Speeu L				
D _R = 4.8 (pc/m LOS = A (Exhibition (Exhi	nination				` ' 				
$D_R = 4.8 \text{ (pc/m)}$ $D_R = 4.8 \text{ (pc/m)}$ $D_R = A \text{ (Exhibit)}$ $D_R = A \text{ (Exhibit)}$ $D_R = A \text{ (Exhibit)}$ $D_R = A \text{ (Exhibit)}$	nination bit 25-19)				$D_s = (E_s)$	xhibit 25-19)		
$D_R = 4.8 \text{ (pc/m}$ LOS = A (Exhibition of the context) Speed Determine $M_S = -0.021 \text{ (Exitor of the context)}$ $S_R = 70.6 \text{ mph (Bottom)}$	nination bit 25-19) Exhibit 25-19)				D _s = (Ex	xhibit 25-19 oh (Exhibit 2) 25-19)		
$D_R = 4.8 \text{ (pc/m}$ LOS = A (Exhibition of the context) Speed Determine $M_S = -0.021 \text{ (Exist)}$ $S_R = 70.6 \text{ mph (Expression of the context)}$ $S_0 = 68.3 \text{ mph (Expression of the context)}$	nination bit 25-19)				$D_{S} = (E)$ $S_{R} = m_{F}$ $S_{0} = m_{F}$	xhibit 25-19) 25-19) 25-19)		

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w imp Freeway/Dir of Travel: I-75 SB TO HEFT SWB Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 70.0 mph 3874 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 55.0 mph 2207 Volume on ramp vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3874 2207 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1019 581 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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4159
                                               2370
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 678 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         5615
                                      9600
                                                     No
     FO
                         1283 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1298
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1298
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 4.8 pc/mi/ln
Level of service for ramp-freeway junction areas of influence A
                  _____Speed Estimation___
                                         M = -0.021
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 70.6
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 68.3
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 69.8
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

HEFT / NW 170 STREET INTERCHANGE

General Inf	ormation	- IVAINII C	S AND RAM	Site Infor						
Jenerai IIII	Ormation			Site inion		HEET/I	\ \\\\ 170 S	TREET NB		
nalyst	DPA		F	reeway/Dir of Tr	2VAI	DIVER		INLLIND		
agency or Compa				unction						
ate Performed	9/25/			urisdiction						
nalysis Time Pe		re with Project w		nalysis Year		2018 P	M Peak H	our		
	on Beacon Count	yline DRI (Third	Sufficiency)							
nputs		Terrain: Level								
pstream Adj Rai	mp	remain: Lever							Downstrea Ramp	ım Adj
Yes 🗆	On									— •
	0"								☐ Yes	☐ On
No 🗆	Off								✓ No	Off
up = ft									L _{down} =	ft
		S	_{FF} = 55.0 mph		S _{FR} = 4	10.0 mp	h			
u = vel	h/h	1	Sketch (show lanes, L _A ,	$L_{D_f}V_{D_f}V_f$				V _D =	veh/h
Conversion	n to pc/h Und	der Base C	Conditions	, ,	D IC I					
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f	f	v = V/PHF	yf yf
(pc/11)	(Veh/hr)	PHF	renam	70 TTUCK	/0KV	ᆚ	f _{HV}	f _p	V — V/I I II	^ 'HV ^ 'p
reeway	8531	0.95	Level	6	0		971	1.00		49
Ramp	283	0.95	Level	6	0	0.	971	1.00	30	07
JpStream Stream		++				-				
OownStream		Merge Areas		ļ				<u>l</u> Diverge Areas		
stimation		Merge Areas			Estimat	ion c		Diverge Areas		
		(5)			Loamac				,,,	
	$V_{12} = V_F$							= V _R + (V _F - V		
EQ =	, ,	ation 25-2 or	•		L _{EQ} =		(Equation 25-8	3 or 25-9)	
FM =	using	Equation (Ex	xhibit 25-5)		P _{FD} =		0	.436 using Ed	quation (Exh	nibit 25-12)
12 =	pc/h				V ₁₂ =		3	400 pc/h		
₃ or V _{av34}	pc/h	(Equation 25-	-4 or 25-5)		V_3 or V_{av34}		2	000 pc/h (Equ	ation 25-1	5 or 25-16
$_{3} V_{3} \text{ or } V_{av34} > 2$	2,700 pc/h? 🦳 Ye	s 🗏 No			Is V ₃ or V _{av3}	34 > 2,7	'00 pc/h?	Tyes ✓ No		
$V_{3} \text{ or } V_{av34} > 1$	I.5 * V ₁₂ /2	s 🗆 No			Is V ₃ or V _{av}	3 ₄ > 1.5	* V ₁₂ /2	Tyes ✓ No		
Yes,V _{12a} =		(Equation 25-	-8)		If Yes,V _{12a} =			oc/h (Equation	25-18)	
Capacity C	hecks		·		Capacit		ecks			
<u>, , , , , , , , , , , , , , , , , , , </u>	Actual	Ca	pacity	LOS F?	<u>, , , , , , , , , , , , , , , , , , , </u>		Actual	Ca	pacity	LOS F?
			•		V _F		7400	Exhibit 25-1		No
	I	Exhibit 25-7			$V_{FO} = V_{F}$	- V-	7093	Exhibit 25-1		No
V					" ' F() - ' V F	۲R			+	_
V _{FO}		LAHIDIL 25-7) II / 100	No
					V _R		307	Exhibit 25-3		
	ing Merge In	fluence A			V _R		g Merç	ge Influenc	e Area	
low Enter	ing Merge In	nfluence Ai	rea Desirable	Violation?	V _R		ig Merç Actual	ge Influenc Max Desiral	e Area	
Flow Enter	Actual	Max E Exhibit 25-7	Desirable	Violation?	Flow En	(ng Merç Actual 3400	ge Influenc Max Desiral Exhibit 25-14	e Area ble 4400:All	No
V _{R12}	Actual ervice Determ	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	Flow En	Ser	Actual 3400 vice De	ge Influenc Max Desiral Exhibit 25-14 eterminatio	e Area ole 4400:All n (if not	No
V _{R12}	Actual	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	Flow En	Ser	Actual 3400 vice De	ge Influenc Max Desiral Exhibit 25-14	e Area ole 4400:All n (if not	No
Flow Entero V_{R12} evel of Se $D_R = 5.475 +$	Actual ervice Determ	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V _R Flow En	Ser O _R = 4	Actual 3400 vice De	ge Influenc Max Desiral Exhibit 25-14 eterminatio	e Area ole 4400:All n (if not	No
V _{R12} .evel of Se D _R = 5.475 +	Actual ervice Determ - 0.00734 v _R +	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V _R Flow En	$\begin{array}{c} F & Ser \\ O_R = 4 \\ O.0 & (pc \\ O.0) \end{array}$	Actual 3400 vice De	ge Influenc Max Desiral Exhibit 25-14 eterminatio	e Area ole 4400:All n (if not	No
Flow Enters V_{R12} evel of Se $D_R = 5.475 + (pc/r)$ $CS = (Exh$	Actual Prvice Determ - 0.00734 v _R + mi/ln) hibit 25-4)	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V _R Flow En	F Ser D _R = 4 0.0 (pc (Exhil	Actual 3400 Vice De .252 + 0 /mi/ln) bit 25-4)	Max Desiral Exhibit 25-14 Eterminatio	e Area ole 4400:All n (if not	No
V _{R12} evel of Se D _R = 5.475 + O _R = (pc/r OS = (Exh	Actual Prvice Determination Actual Actual	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V _R Flow En V ₁₂ Level of C C C C C C C C C	F Service Applied to the service of	Actual 3400 vice De .252 + 0. /mi/ln) bit 25-4)	Max Desiral Exhibit 25-14 Eterminatio .0086 V ₁₂ - 0.0	e Area ole 4400:All n (if not	No
Flow Enters V_{R12} Level of Se $D_R = 5.475 + \frac{1}{1}$ $D_R = \frac{1}$ $D_R = \frac{1}{1}$	Actual Prvice Determination Actual Actual Actual	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V _R Flow En V ₁₂ Level of C C C C C C C C C	F Ser O _R = 4 O.0 (pc (Exhill Deter 391 (E	Actual 3400 vice De .252 + 0 /mi/ln) bit 25-4) vimination	Max Desiral Exhibit 25-14 Exerminatio .0086 V ₁₂ - 0.0	e Area ole 4400:All n (if not	No
Flow Enters V_{R12} Level of Se $D_R = 5.475 + 600$ $C_R = (Exhibit)$ $C_S = (Exhibit)$ $C_S = (Exhibit)$ $C_R = (Exhibit)$ $C_R = (Exhibit)$ $C_R = (Exhibit)$	Actual Prvice Determination t 25-19) Exhibit 25-19)	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V ₁₂ Level of D _R = 29 LOS = D Speed L D _S = 0.0 S _R = 49	F Service 200 (Exhill Determine 200 (Exhill	Actual 3400 Vice De .252 + 0. /mi/ln) bit 25-4) mination xhibit 25	Max Desiral Exhibit 25-14 Eterminatio .0086 V ₁₂ - 0.0 On -19) 25-19)	e Area ole 4400:All n (if not	No
Flow Entero V_{R12} Level of Se $D_R = 5.475 + C_{R} = C_$	Actual Prvice Determination Actual Actual Actual	nfluence Al Max E Exhibit 25-7 mination (in	Desirable f not F)	Violation?	V ₁₂ Level of D _R = 29 LOS = D Speed L S _R = 49 S ₀ = 56	F Ser O _R = 4 O.0 (pc (Exhill Deter 391 (E 0.9 mph	Actual 3400 vice De .252 + 0 /mi/ln) bit 25-4) vimination	Max Desiral Exhibit 25-14 Exerminatio .0086 V ₁₂ - 0.0 On -19) 25-19)	e Area ole 4400:All n (if not	

Phone: E-mail:

Fax:

_____Diverge Analysis_____

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project with Imps Freeway/Dir of Travel: HEFT/NW 170 STREET NB DIVERGE

Junction: Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0 mp)h
Volume on freeway	8531 vp)h

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	40.0	mph
Volume on ramp	283	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	8531	283	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2245	74	v
Trucks and buses	6	6	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
                                               1.00
Driver population factor, fP
Flow rate, vp
                                    9249
                                               307
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 3400 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         7400
                                     9000
                                                    No
     Fi F
                         7093
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                         307
                                     2100
                                                    No
     R
                         2000 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3400
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 29.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence D
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.391
                                          S
Space mean speed in ramp influence area,
                                         S = 49.9
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 56.4
                                                     mph
```

S = 53.2

mph

0.971

0.971

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

0		KAWP	S AND KA	MP JUNCTI		וכאאי	1661			
General Info	rmation			Site Infor	mation	115570	NA 170 OT	DEET OR		
Analyst	DPA			Freeway/Dir of Tr	avel HEFT/NW 170 STREET SB DIVERGE					
Agency or Compan						ייי א רויר	<i>_</i>			
Date Performed	9/25/2	2007		Jurisdiction						
Analysis Time Period Future with Project with Imps Analysis Year					2018 PN	A Peak Ho	ur			
Project Description	Beacon County	line DRI (Third	Sufficiency)							
Inputs										
Jpstream Adj Ramp	•	Terrain: Leve	I						Downstrea Ramp	m Adj
☐ Yes ☐ O	'n								Yes	☐ On
☑ No □ O	off								✓ No	Off
- _{up} = ft									L _{down} =	ft
$V_{u} = veh/$	'h	S	FF = 55.0 mph		S _{FR} =	40.0 mph	1		V _D =	veh/h
Conversion		lor Pasa ((show lanes, L _A ,	L_D, V_R, V_f				т Б	
(pc/h)	V	PHF	Terrain	%Truck	%Rv	f	HV	f _p	v = V/PHF	x f _{uv} x f _r
Freeway	(Veh/hr) 6282	0.95	Level	6	0	0.9		1.00	681	
Ramp	402	0.95	Level	6	0	0.9		1.00	43	
UpStream	402	0.95	Level	0	U	0.9	771	1.00	43	0
DownStream										
Estimation o		Merge Areas			Estimat	tion o	<u>D</u>	iverge Areas		
Estimation o					ESuma	ion o				
	$V_{12} = V_F$							$V_R + (V_F - V_F)$		
-EQ =	(Equa	ation 25-2 or	25-3)		L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =	using	Equation (E	Exhibit 25-5)		$P_{FD} = 0.436$ using Equation (Exhibit 25-12)					
V ₁₂ =	pc/h				V ₁₂ =		27	70 pc/h		
V ₃ or V _{av34}	pc/h (Equation 25	5-4 or 25-5)		V ₃ or V _{av34}		15	10 pc/h (Equ	ation 25-15	or 25-16
Is V ₃ or V _{av34} > 2,7			,			> 2.70		Yes ☑ No		
Is V_3 or $V_{av34} > 1.5$								Yes Vo		
	· -		. 0/						OF 10)	
f Yes,V _{12a} =		Equation 25	9-8)		If Yes,V _{12a}			c/h (Equation	25-18)	
Capacity Ch				T	Capacit	ty Che				1
	Actual	C	apacity	LOS F?	ļ ,,	-	Actual		pacity	LOS F
					V _F		5790	Exhibit 25-1	4 9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	5354	Exhibit 25-1	4 9000	No
					V_R		436	Exhibit 25-3	2100	No
Flow Enterin	ng Merge In	fluence A	rea		Flow Er	nterin	g Merg	e Influence	e Area	
	Actual	0	Desirable	Violation?		`	ctual	Max Desirab		Violation
V_{R12}		Exhibit 25-7			V ₁₂	2	770	Exhibit 25-14	4400:All	No
Level of Serv	vice Detern	nination (i	f not F)			f Serv	rice De	terminatio	n (if not l	=)
$D_R = 5.475 + 0$	0.00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A			$D_R = 4.2$	252 + 0.0	0086 V ₁₂ - 0.0	0009 L _D	
O _R = (pc/mi	i/ln)				$D_R = 2$	3.6 (pc /i	mi/ln)			
• •	oit 25-4)						it 25-4)			
Speed Deter					Speed I			n		
$M_{\rm S} = $ (Exibit 2					† *		chibit 25-			
-					$S_{R}^{=}$ 49.8 mph (Exhibit 25-19)					
-	hibit 25-19)				S ₀ = 58.3 mph (Exhibit 25-19)					
• •	hibit 25-19)				Ĭ	•	,	·		
, mpii (EX	111011 20-14)				D - 0	אווו ד.ט וווין דיי	(Exhibit 2	20-10)		

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Generated: 10/21/2008 1:56 PM

Phone: E-mail: Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 9/25/2007

Analysis time period: Future with Project with Imps Freeway/Dir of Travel: HEFT/NW 170 STREET SB DIVERGE

Junction: Jurisdiction:

Analysis Year: 2018 PM Peak Hour

Description: Beacon Countyline DRI (Third Sufficiency)

_____Freeway Data______

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6282	vph

_____Off Ramp Data______

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	40.0	mph
Volume on ramp	402	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	6282	402	vph	
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1653	106	V	
Trucks and buses	6	6	%	
Recreational vehicles	0	0	%	
Terrain type:	Level	Level		
Grade	0.00 %	0.00 %	8	
Length	0.00 mi	0.00 mi	mi	
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
1.00
                                               1.00
Driver population factor, fP
Flow rate, vp
                                    6811
                                               436
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                       0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 2770 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         5790
                                      9000
                                                     No
     Fi F
                         5354
                                      9000
                                                     No
    v = v - v
         F R
     FΟ
                         436
                                      2100
                                                    No
     R
                         1510 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                      No
     3 or av34
                > 1.5 v /2
                                      No
Is
         V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    2770
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 23.6 pc/mi/ln
Density,
                                        12
                      R
Level of service for ramp-freeway junction areas of influence C
                _____Speed Estimation_____
                                         D = 0.402
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 49.8
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 58.3
                                                      mph
```

S = 53.9

mph

0.971

0.971

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

Conoral Info		MPS AND F									
General Inform				Site Information of True eeway/Dir of True			/N.N.A.Z. = = = =	T ND 1455	_		
Analyst					avel	HEFT	/NW 170 S	T NB MERGE	_		
Agency or Company Date Performed	9/27/	2007		Inction Irisdiction							
				2242 2442							
Analysis Time Period Future with Project w Imps Analysis Year Project Description Beacon Countyline DRI (Third Sufficiency)						20181	PM Peak H	10ur			
Inputs	beacon County	yiiile DRI (TIIIIu .	Sufficiency)								
		Terrain: Level							Davination	Λ -l:	
Jpstream Adj Ramp		Terrain. Lever							Downstre Ramp	eam Adj	
☐ Yes ☐ On									☐ Yes	☐ On	
✓ No ☐ Off									✓ No	☐ Off	
_{-up} = ft									L _{down} =	ft	
		S _F	$_{\rm F} = 55.0 {\rm mph}$		$S_{FR} = 4$	40.0 m	ph		_	vah/h	
$V_{\rm u} = {\rm veh/h}$			Sketch (show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				$V_D =$	veh/h	
Conversion to	pc/h Und	der Base C	onditions						•		
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	fp	v = V/PH	F x f _{HV} x f _p	
Freeway	8268	0.95	Level	6	0	0	.971	1.00	1	8964	
Ramp	612	0.95	Level	6	0		.971	1.00		664	
UpStream											
DownStream											
		Merge Areas			Diverge Areas						
Estimation of	v ₁₂				Estimat	ion (of v ₁₂				
	V ₁₂ = V _F	(P _{EM})					\/ -	· \/ _ ± /\/	\/ \P		
- _{EQ} =		、 ™ ′ ation 25-2 or 2	25-3)		$V_{12} = V_R + (V_F - V_R)P_{FD}$						
	, ,		•		L _{EQ} = (Equation 25-8 or 25-9)						
P _{FM} =			n (Exhibit 25-5)		P _{FD} = using Equation (Exhibit 25-12)						
I ₁₂ =	1772		05.4 05		V ₁₂ =			pc/h			
V_3 or V_{av34}	2346 5)	pc/h (Equation	1 25-4 or 25-		V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)						
Is V ₃ or V _{av34} > 2,700	,	e V No			•	₃₄ > 2,	700 pc/h?	☐ Yes ☐	No		
Is V_3 or $V_{av34} > 2,760$								□ Yes □			
			OE 0\		If Yes, V _{12a} =		12		ation 25-18))	
f Yes, V _{12a} =		pc/h (Equation	า ∠5-ช)		12.0		!	, (= que			
Capacity Che		1 -		1 100 50	Capacit	y Cr			2 "	10055	
	Actual	Ca	oacity	LOS F?			Actual		Capacity	LOS F?	
					V _F			Exhibit 2	25-14		
V_{FO}	7128	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14		
					V_R			Exhibit 2	25-3		
Flow Entering	Merge In	fluence Ar	ea	1	 	nteri	na Mer			<u> </u>	
on	Actual		esirable	Violation?	Flow Entering Merge Influe			esirable	Violation?		
V _{R12}	3249	Exhibit 25-7	4600:All	No	V ₁₂		-	Exhibit 25-1	1	1	
Level of Servi					1	f Sa	rvice D	etermina		ot F)	
		0.0078 V ₁₂ - 0.00						0.0086 V ₁₂ -	•		
• •	.,	7.0070 v ₁₂ - 0.00	UZILA		1			7.0000 V ₁₂	0.0009 L _D		
$O_{R} = 27.4 \text{ (pc/s)}$					I '' "	oc/mi/ 	,				
_OS = C (Exhibi					<u> </u>		it 25-4)				
Speed Determ	ination				Speed L	Dete	rminati	ion			
M _S = 0.381 (Exib	it 25-19)				$D_{S} = (E$	xhibit	25-19)				
_	- Exhibit 25-19)				S _R = mph (Exhibit 25-19)						
	Exhibit 25-19)				S ₀ = mph (Exhibit 25-19)						
0 , ,	Exhibit 25-14)						hibit 25-15				
S = 49.9 mph (E	- XIIIIIII 773-141										

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: HEFT/NW 170 ST NB MERGE Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 8268 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 40.0 mph Volume on ramp 612 vph 500 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 8268 612 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 2176 161 V Trucks and buses 6 6 응 Recreational vehicles 0 % Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

용

шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
_____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.274 Using Equation 4
                 FM
                v = v (P) = 1772 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7128
                                      9000
                                                     No
     FO
                         2346 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2585
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                     Violation?
                                 4400
                    2585
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.4 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.381
                                          S
Space mean speed in ramp influence area,
                                         S = 50.0
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 49.8
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 49.9
                                                      mph
```

1.00

8964

0.971

pcph

1.00

664

Heavy vehicle adjustment, fHV

Driver population factor, fP

Flow rate, vp

Oana:::11:-f-		MPS AND F									
General Inform				Site Infor							
Analyst					avel	HEFT	/NW 170 S	ST SB MERGE	<u>-</u>		
Agency or Company Date Performed	9/27/	2007		unction urisdiction							
				2018 PM Peak Hour							
	alysis Time Period Future with Project w Imps Analysis Year oject Description Beacon Countyline DRI (Third Sufficiency)					2018	PIVI Peak F	10UI			
nputs	seacon Count	yılıne DRI (TIIII u .	Sufficiency)								
•		Terrain: Level							Downstra	om Adi	
Jpstream Adj Ramp ✓ Yes ✓ On		Torrum. Lever							Downstre Ramp	am Auj	
res i Oii									Yes	On	
✓ No ✓ Off									✓ No	Off	
_ 44										ft	
_{-up} = ft		9	_F = 55.0 mph		S _{FR} = 4	10 0 m	nh		L _{down} =		
/ _u = veh/h		J F		show lanes, L _A ,		1 0.0 III	ірп		V _D =	veh/h	
Conversion to	pc/h Un	der Base C	onditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		\boldsymbol{f}_{HV}	f _p	v = V/PH	$F \times f_{HV} \times f_{p}$	
Freeway	5893	0.95	Level	6	0	0).971	1.00		6389	
Ramp	455	0.95	Level	6	0	0).971	1.00		493	
UpStream											
DownStream								<u>. </u>			
Father attended		Merge Areas			F -4': 1		- f	Diverge Area	as		
Estimation of	V ₁₂				Estimat	ion (of V ₁₂				
	$V_{12} = V_{F}$	(P _{FM})					V =	- V _D + (V ₋ -	V _D)P ₋₅		
- _{EQ} =	(Equa	ation 25-2 or 2	25-3)		$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{FO} =$ (Equation 25-8 or 25-9)						
P _{FM} =		using Equation	•)	, ,						
/ ₁₂ =	1435		(EMINDIC 2010)	,	P _{FD} = using Equation (Exhibit 25-12)						
		oc/n oc/h (Equatior	25-4 or 25		V ₁₂ =			pc/h			
V_3 or V_{av34}	5)	John (Lyualioi	1 20-4 UI 20-		V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)						
Is V ₃ or V _{av34} > 2,700	- /	s 🗹 No			Is V ₃ or V _{av}	₃₄ > 2,	,700 pc/h?	☐ Yes ☐	No		
Is V_3 or $V_{av34} > 1.5$ *					Is V ₃ or V _{av}	₃₄ > 1.	.5 * V ₁₂ /2	☐ Yes ☐	No		
f Yes,V _{12a} =		oc/h (Equation	25-8)		If Yes,V _{12a} =				ation 25-18)		
Capacity Chec		John (Equation	. 20 0)		Capacit	v C	hecks	-			
опрасту Сп е С	Actual	Ca	pacity	LOS F?	Japacit	<i>y UI</i>	Actua	ı İ	Capacity	LOS F?	
	riciual		oucity	F031;	V _F		Actua	Exhibit 2	<u> </u>	LU31'!	
	F0.46				<u> </u>						
V _{FO}	5349	Exhibit 25-7		No	$V_{FO} = V_{F}$	- v _R		Exhibit 2		-	
					V_R			Exhibit 2	25-3		
Flow Entering	Merge In	fluence Ar	ea		Flow En	iteri	ng Mer	ge Influe	nce Area		
	Actual		esirable	Violation?			Actual	Max D	esirable	Violation?	
V _{R12}	2435	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1	4		
Level of Servi	ce Detern	nination (if	not F)	-	}	f Sei	rvice D	etermina	tion (if no	ot F)	
		0.0078 V ₁₂ - 0.00			1			0.0086 V ₁₂ ·	•		
D _R = 21.1 (pc/i	.,	12	А			c/mi/		12	U		
_OS = C (Exhibi					1		it 25-4)				
`					<u> </u>			ion			
Speed Determ					Speed L			iOH			
$M_S = 0.326$ (Exib	$M_{\rm S} = 0.326 \text{ (Exibit 25-19)}$					$D_s = (Exhibit 25-19)$					
$S_R = 50.8 \text{ mph (B}$	Exhibit 25-19)				S _R = mph (Exhibit 25-19)						
	Exhibit 25-19)				S ₀ = mph (Exhibit 25-19)						
•	Exhibit 25-14)				S = mph (Exhibit 25-15)						
5 = 51.2 IIIpii (t	-MIDIC 20 1 1)				P	h (r.	MINDIC 20 TO	")			

Phone: Fax: E-mail: _____Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 9/27/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: HEFT/NW 170 ST SB MERGE Junction: Jurisdiction: Analysis Year: 2018 PM Peak Hour Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5893 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 40.0 mph Volume on ramp 455 vph Length of first accel/decel lane 500 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5893 455 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1551 120 V Trucks and buses 6 6 응 Recreational vehicles 0 %

Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

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шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
6389
Flow rate, vp
                                               493
                                                                   pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.296 Using Equation 4
                 FM
                v = v (P) = 1435 pc/h
                 12 F FM
                    _____Capacity Checks_____
                                                    LOS F?
                                      Maximum
                         Actual
                         5349
                                      9000
                                                    No
     FO
                         1710 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1942
                                      (Equation 25-8)
        12A
                    __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1942
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.1 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation____
Intermediate speed variable,
                                         M = 0.326
                                          S
Space mean speed in ramp influence area,
                                         S = 50.8
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 51.6
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 51.2
                                                      mph
```

1.00

0.971

1.00

Heavy vehicle adjustment, fHV

NW 138 STREET EB TO I 75 EB RAMP MERGE

<u> </u>		IVIPS AND	RAMP JUN							
General In				Site Infor						
Analyst	DPA	1		eeway/Dir of Tr		1 75 EE				
Agency or Comp Date Performed	•	/2007		ınction ırisdiction		NW 13	88 S I			
Date Performed Analysis Time Pe		/2007		nalysis Year		2007 /	AM Peak			
	eriod Exis on Beacon Coun			iaiysis i cai		200 <i>1 F</i>	AIVI PEAK			
nputs	on beacon coun	tyline DKI (Tilliu	Sufficiency)							
Jpstream Adj Ra	mn	Terrain: Level							Downstre	am Δdi
	On								Ramp	·
103	OII								Yes	On
✓ No	Off								✓ No	☐ Off
£ı.									I .	ft
_{-up} = ft		9	_{re} = 55.0 mph		S _{FR} = 5	50 0 mr	nh		L _{down} =	It
/ _u = ve	h/h	3	•	show lanes, L _A)U.U 111µ	JII		$V_D =$	veh/h
	n to pc/h Un	der Base C		Show lanes, L _A	LD, VR, Vf/					
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f _{HV}	fp	v = V/PH	F x f _{HV} x f _p
	(Veh/hr) 5173	0.95	Lovol	4	0	_	980	1.00		5554
Freeway	_		Level		<u> </u>		-			
Ramp UpStream	1122	0.95	Level	4	0	0.	980	1.00	-	1205
DownStream	_	+ +			 	+			+	
50Wilott Gain		Merge Areas		J.	<u> </u>			Diverge Area	is	
Estimation					Estimat	ion c		<u> </u>		
	V ₁₂ = V _F	(P)			 			\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
_		nation 25-2 or	25-3)				V ₁₂ =	$V_R + (V_F -$		
-EQ =	• •		•		L _{EQ} = P _{FD} =			(Equation		•
P _{FM} =		0.223 using Equation (Exhibit 25-5)						using Equa	ation (Exhibi	t 25-12)
12 =	1240	•			V ₁₂ =			pc/h		
₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}			pc/h (Equation	on 25-15 or 2	5-16)
	5)	a W Nia				24 > 2,7	700 pc/h?	☐ Yes ☐ I		
	2,700 pc/h?							☐ Yes ☐ I		
	1.5 * V ₁₂ /2 ▽ Y €				If Yes, V _{12a} =			pc/h (Equa		1
Yes,V _{12a} =		pc/h (Equatio	n 25-8)		124			po/ii (Eque		
Capacity C	1	1 0	11	1.00.50	Capacit	y Ch		Î	0 "	1 100 50
	Actual	Ca	pacity	LOS F?	\/		Actual	_	Capacity	LOS F
					V _F			Exhibit 2	_	
V_{FO}	6759	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14	
					V_R			Exhibit 2	25-3	
low Enter	ing Merge lı	nfluence Ai	'ea	_	Flow En	terir	ng Mer	ge Influe	nce Area	
	Actual	7	esirable	Violation?	ļ	<i>j</i>	Actual		esirable	Violation?
V _{R12}	3426	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		
evel of Se	ervice Deteri	mination (i	not F)		Level of	Ser	vice D	etermina	tion (if n	ot F)
$D_{R} = 5.47$	'5 + 0.00734 v _R +	0.0078 V ₁₂ - 0.00	0627 L _A			$O_R = 4$	1.252 + 0	.0086 V ₁₂ -	0.0009 L _D	
O _R = 27.3	(pc/mi/ln)				$D_R = (p)$	c/mi/l	ln)			
.OS = C (E	xhibit 25-4)				LOS = (E	Exhibi	t 25-4)			
Speed Dete	ermination				Speed L	Deter	rminati	on		
M _S = 0.371	(Exibit 25-19)				$D_s = (E_s)^T$	xhibit 2	25-19)			
	ph (Exhibit 25-19)				1	ph (Exl	hibit 25-19)		
	•				"					
S ₀ = 50.8 mph (Exhibit 25-19)				S ₀ = mph (Exhibit 25-19) S = mph (Exhibit 25-15)						
	S = 50.5 mph (Exhibit 25-14)				K	nh // w	hihit 74 74	1		

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5173 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph Volume on ramp 1122 vph Length of first accel/decel lane 700 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5173 1122 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1361 295 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type: % ે 용 Grade

mi

1.5

1.2

1.5

1.2

mi

шi

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
5554
Flow rate, vp
                                               1205
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.223 Using Equation 4
                 FM
                v = v (P) = 1240 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                                    LOS F?
                                      Maximum
                         Actual
                         6759
                                      9000
                                                     No
     FO
                         2157 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2221
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2221
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 27.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.371
                                          S
Space mean speed in ramp influence area,
                                         S = 50.2
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 50.8
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 50.5
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Ganaral Infor		5 7110 1	RAMP JUN							
General Infor			Г	Site Infor		175 50				
Analyst Agency or Company	DPA			eeway/Dir of Tranction		I 75 EB	-			
Date Performed	10/2/	2007		risdiction		NW 138 ST				
						2007 DM D	ook			
Analysis Time Period				nalysis Year	•	2007 PM P	еак			
Project Description Inputs	Beacon Count	yline DRI (Third	Sufficiency)							
-		Terrain: Level						Downstra	om Adi	
Jpstream Adj Ramp		Terrain. Lever						Downstre Ramp	eam Adj	
☐ Yes ☐ On								Yes		
									☐ On	
✓ No ✓ Off								✓ No	☐ Off	
_ 41								=	ft	
_{-up} = ft		S _{FF} = 55.0 mph			c _ 5	.0 0 mph		L _{down} =	10	
V _u = veh/h		J F	•		$S_{FR} = 50.0 \text{ mph}$ $V_D = V$					
				show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$					
Conversion to	pc/h Und	der Base C	onditions	1						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	${\sf f}_{\sf HV}$	f _p	v = V/PH	$F x f_{HV} x f_{p}$	
Freeway	4089	0.95	Level	4	0	0.980	1.00	_	4390	
Ramp	964	0.95	Level	2	0	0.990	1.00		1025	
UpStream	704	0.70	FEAGI	<u> </u>	U U	0.770	1.00	_	IUZJ	
DownStream		+		 	 	1	- 	_		
	·	Merge Areas		<u> </u>		1	Diverge Ar	eas		
Estimation of	V ₄₂	. 3			Estimati	ion of v		-		
		(D)								
	$V_{12} = V_F$					'	$V_{12} = V_{R} + (V_{F})$	- V _R)P _{FD}		
-EQ =		ation 25-2 or 2	•		L _{EQ} =		(Equation	n 25-8 or 25-	9)	
P _{FM} =	P _{FM} = 0.246 using Equation (Exhibit 25-5)						, ,	uation (Exhibi	•	
/ ₁₂ =	1079 ।	$P_{FD} = V_{12} = V_{12}$					pc/h	(=/	- - /	
	1655 i	pc/h (Equation	1 25-4 or 25-					tion OF 1F or O	5 16)	
V_3 or V_{av34}	5)				V ₃ or V _{av34}	0.700		tion 25-15 or 2	u-10 <i>)</i>	
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🦳 Ye	s 🗹 No					oc/h? Tyes T			
Is V_3 or $V_{av34} > 1.5$ *							₁₂ /2			
f Yes,V _{12a} =		pc/h (Equation	າ 25-8)		If Yes,V _{12a} =	:	pc/h (Equ	uation 25-18)		
Capacity Che		(= 400.00	/		Capacity	v Chec	ks			
- specif one	Actual	Ca	pacity	LOS F?			Actual	Capacity	LOS F?	
	, totadi	T			V _F			25-14	20011	
	.			.		, 			_	
V_{FO}	5415	Exhibit 25-7		No	$V_{FO} = V_{F}$	- v _R		25-14		
		<u> </u>		<u></u>	V_R		Exhibit	25-3		
Flow Entering	Merge In	fluence Ar	ea		Flow En	tering	Merge Influ	ence Area		
	Actual	1	esirable	Violation?		Actua		Desirable	Violation?	
V _{R12}	2781	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-	14		
Level of Servi				<u> </u>		Servic	e Determin		ot F)	
		0.0078 V ₁₂ - 0.00			`		2 + 0.0086 V ₁₂	•		
$D_{R} = 3.473$ (pc)	10	1.33.3 • 12 0.00	- A		1	••	- · · · · · · · · · · · · · · · · · · ·	<u>-</u> D		
75 - 77 3 INC					I '' ''	oc/mi/ln)				
**					LOS = (Exhibit 25-4)					
_OS = C (Exhib	nination	Speed Determination					nation			
_OS = C (Exhib					$D_s = (E_s)$	xhibit 25-19	9)			
Speed Detern										
$Speed$ Determined $M_S = 0.314$ (Exist	oit 25-19)				S _R = m	ph (Exhibit	25-19)			
COS = C (Exhibition (Exhibi	oit 25-19) Exhibit 25-19)				I '` '					
LOS = C (Exhibition (Exhibition of Exhibition (Exhibition of Exhibition oit 25-19)				$S_0 = m_i$	ph (Exhibit ph (Exhibit ph (Exhibit	25-19)				

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 4089 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph Volume on ramp 964 vph Length of first accel/decel lane 700 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 4089 964 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1076 254 V Trucks and buses 4 2 응 Recreational vehicles 0 % Level Level Terrain type: % ે 용 Grade

mi

1.5

1.2

1.5

1.2

mi

шi

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
4390
Flow rate, vp
                                               1025
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.246 Using Equation 4
                 FM
                v = v (P) = 1079 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         5415
                                      9000
                                                     No
     FO
                         1655 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1756
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1756
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 22.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation____
Intermediate speed variable,
                                         M = 0.314
                                          S
Space mean speed in ramp influence area,
                                         S = 50.9
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 52.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 51.5
                                                      mph
```

1.00

0.990

1.00

Heavy vehicle adjustment, fHV

General Infor		MPS AND I	CAMIL OOM									
			Г	Site Infor		175 55						
Analyst Agency or Company	DPA			eeway/Dir of Tranction		I 75 EB	СТ					
Agency or Company Date Performed	10/0/	2007		inction irisdiction		NW 138	31					
	10/2/					2010 ^*	/ Dook					
Analysis Time Perioc Project Description		e without Projec		nalysis Year		2018 AN	vi reak					
Inputs	Deacon Count	yiille DRI (Tilliu	Sufficiency)									
-		Terrain: Level							Downstra	om Adi		
Jpstream Adj Ramp		Terrain. Lever							Downstream Adj Ramp			
Yes Or	l								☐ Yes	☐ On		
✓ No ☐ Off	:								✓ No	☐ Off		
- _{up} = ft									L _{down} =	ft		
		S _{FF} = 55.0 mph			$S_{FR} = 5$	0.0 mph	1			l. /l.		
V _u = veh/h			Sketch (show lanes, L _A ,	$V_{D} = V_{A}, V_{D}, V_{B}, V_{D}$					veh/h		
Conversion to	pc/h Un	der Base C	onditions	1		1	ı					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	HV	f_p	v = V/PH	$F \times f_{HV} \times f_{p}$		
Freeway	5946	0.95	Level	4	0	0.9	80	1.00		6384		
Ramp	1421	0.95	Level	4	0	0.9	80	1.00		1526		
UpStream												
DownStream		<u></u>										
=	•	Merge Areas						Diverge Are	as			
Estimation of	V ₁₂				Estimat	ion o	t v ₁₂					
	V ₁₂ = V _F	(P _{FM})					V =	V _R + (V _F -	V ₂)P			
- _{EQ} =		ation 25-2 or 2	25-3)		_					0)		
) _{EM} =			on (Exhibit 25-5)		L _{EQ} =			•	25-8 or 25-	•		
FM / _		P _{FD} =				ation (Exhibit	25-12)					
/ ₁₂ =	1169		0E 4 0= 0E		V ₁₂ = pc/h							
V_3 or V_{av34}	2607 5)	pc/h (Equation	1 20-4 01 25-		V_3 or V_{av34}				on 25-15 or 25	5-16)		
Is V_3 or $V_{av34} > 2,70$		s 🔽 No			Is V ₃ or V _{av3}	34 > 2,70	00 pc/h?	☐ Yes ☐	No			
Is V_3 or $V_{av34} > 2,75$					Is V ₃ or V _{av}	₃₄ > 1.5	* V ₁₂ /2	☐ Yes ☐	No			
			. 25 Q\		If Yes, V _{12a} =				ation 25-18)			
f Yes,V _{12a} =		pc/h (Equation	ı 20-ö)		124			, (-1•				
Capacity Che	ń.	1 ^	a a a itu	100.50	Capacit	y Cne			Concelle	100.50		
	Actual	Ca	pacity	LOS F?	.,		Actual	- ,	Capacity	LOS F?		
					V _F			Exhibit				
V_{FO}	7910	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit	25-14			
					V_R			Exhibit	25-3			
Flow Entering	Merge In	fluence Ar	ea		1	terin	g Mer	ge Influe	nce Area	<u> </u>		
	Actual	1	esirable	Violation?		_	ctual		esirable	Violation?		
V_{R12}	4079	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1				
Level of Serv	ice Deterr		not F)			Serv	rice De		tion (if no	ot F)		
		0.0078 V ₁₂ - 0.00			1				- 0.0009 L _D			
$D_{R} = 32.2 \text{ (pc)}$		12	А		1	c/mi/ln		12	- 10			
						LOS = (Exhibit 25-4)						
Speed Detern					Speed E			on				
$M_{S} = 0.481 (Exil$						xhibit 25						
	•				1)				
// / / / / / / / / / / / / / / / /	Exhibit 25-19)				S _R = mph (Exhibit 25-19)							
	Tubibit of 40			S ₀ = mph (Exhibit 25-19)								
$S_0 = 49.9 \text{ mph} $	Exhibit 25-19) Exhibit 25-14)				'		ibit 25-19 _. ibit 25-15)					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future without Project Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5946 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph 1421 Volume on ramp vph Length of first accel/decel lane 700 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5946 1421 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1565 374 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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6384
Flow rate, vp
                                               1526
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.183 Using Equation 4
                 FM
                v = v (P) = 1169 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                                    LOS F?
                                      Maximum
                         Actual
                         7910
                                      9000
                                                     No
     FO
                         2607 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2553
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2553
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 32.2 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.481
                                          S
Space mean speed in ramp influence area,
                                          S = 48.7
                                                      mph
                                          R
                                          S = 49.9
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 49.3
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

		WIPS AND	RAMP JUN			<u> </u>				
General Info				Site Infor						
Analyst	DPA			eeway/Dir of Tr		I 75 EB				
Agency or Company	•	10007		nction		NW 138 S	T			
Date Performed		/2007		risdiction		2010 DM	Do ale			
Analysis Time Peric Project Description		re without Projec		nalysis Year	•	2018 PM I	Реак			
nputs	Deacon Count	yiiile DRI (TIIIIu	Sufficiency)							
-	_	Terrain: Level							Daymatrı	a a ma A di
Jpstream Adj Ramp		Torrain. Lever							Downstre Ramp	eam Adj
☐ Yes ☐ O	n								☐ Yes	On
™ No □ O	ff								✓ No	Off
									INO	
-up = ft									L _{down} =	ft
/	L	S	$_{\rm F} = 55.0 \rm mph$		$S_{FR} = 5$	60.0 mph			V _D =	veh/h
/ _u = veh/	h		Sketch (show lanes, L _A	$L_{D'}V_{R'}V_{f}$				v _D –	ven/n
Conversion	to pc/h Un	der Base C	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{H\}	,	f_p	v = V/PH	IF x f _{HV} x f _p
Freeway	5256	0.95	Level	4	0	0.980	,	1.00		5643
Ramp	1639	0.95	Level	4	0	0.980		1.00	1	1760
UpStream	1	1 1								
DownStream										
		Merge Areas						verge Area	IS	
Estimation o	of v ₁₂				Estimati	ion of	V ₁₂			
	V ₁₂ = V _F	(P _{EM})			İ		\/ _ \/	+ (\/ -	\/ \D	
- _{EQ} =		ation 25-2 or	25-3)					_R + (V _F -		0)
P _{FM} =	, ,		on (Exhibit 25-5)		L _{EQ} =		•	•	25-8 or 25-	•
			JII (EXIIIDII 25-5)		P _{FD} =				ation (Exhibi	t 25-12)
/ ₁₂ =	868 p		- OF 4 OF		V ₁₂ =		•	c/h		
V_3 or V_{av34}	2387 5)	pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}		p	c/h (Equatio	on 25-15 or 2	5-16)
Is V ₃ or V _{av34} > 2,7	•	s 🔽 No			Is V ₃ or V _{av3}	₃₄ > 2,700	pc/h? 🥅	Yes □	No	
Is V_3 or $V_{av34} > 1.5$					Is V ₃ or V _{av3}	₃₄ > 1.5 * \	/ ₁₂ /2	Yes □	No	
f Yes,V _{12a} =			n 25 9\		If Yes, V _{12a} =				tion 25-18)
Capacity Ch		pc/h (Equatio	11 23-0)		120			` '		,
Sapacity Cit	Actual	Co	pacity	LOS F?	Capacit		Actual	Î	Capacity	LOS F?
	Acidal		ρασιτή	LU31 !	V _F	_	notual	Exhibit 2	· 1 ·	LUSF
						., -		+	_	
V_{FO}	7403	Exhibit 25-7		No	$V_{FO} = V_{F}$	- v _R		Exhibit 2		
					V_R			Exhibit 2	25-3	
Flow Enterin	g Merge In	fluence A	rea		Flow En	tering	Merge	Influe	nce Area	1
	Actual	1	esirable)	Violation?		Actu	ial	Max De	esirable	Violation?
V _{R12}	4017	Exhibit 25-7	4600:All	No	V ₁₂		E	xhibit 25-14	1	
Level of Serv	vice Detern	nination (in	f not F)	-		Servic	e Det	ermina	tion (if n	ot F)
		0.0078 V ₁₂ - 0.00			_				0.0009 L _D	
**	c/mi/ln)	12	А			c/mi/ln)		12	D	
	ibit 25-4)				I '\ "	Exhibit 2	5-41			
· · · · · · · · · · · · · · · · · · ·					<u> </u>			<u> </u>		
					Speed D			1		
•	.:L:1 OF 10\				L	xhibit 25-1	•			
$M_{\rm S} = 0.468 (Ex$	•									
M _S = 0.468 (Ex	(Exhibit 25-19)				I "	ph (Exhibi				
$S_R = 48.9 \text{ mph}$	•				I ''	ph (Exhibi [.] ph (Exhibi [.]				

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future without Project Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5256 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph 1639 Volume on ramp vph 700 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions______ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5256 1639 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1383 431 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

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mi

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```
5643
                                               1760
Flow rate, vp
                                                                   pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.154 Using Equation 4
                 FM
                v = v (P) = 868
                                     pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         7403
                                      9000
                                                    No
     FO
                         2387 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2257
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                     Violation?
                    2257
                                 4400
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 31.6 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.468
                                          S
Space mean speed in ramp influence area,
                                         S = 48.9
                                                      mph
                                          R
                                         S = 50.7
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 49.7
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

O		MIL2 AND	RAMP JUNG			<u> </u>			
General Infor				Site Infor					
Analyst	DPA			eeway/Dir of Tr		I 75 EB			
Agency or Company		10007		nction		NW 138 ST			
Date Performed		/2007		risdiction					
Analysis Time Period		re with Project		alysis Year		2018 AM Pe	ak		
Project Description	Beacon Count	yline DRI (Third	Sufficiency)						
Inputs		Terrain: Level						<u> </u>	
Jpstream Adj Ramp		remain: Lever						Downstre Ramp	eam Adj
Yes Or	1							☐ Yes	☐ On
✓ No	f							✓ No	☐ Off
								INO	III OII
- _{up} = ft								L _{down} =	ft
		S	_F = 55.0 mph		$S_{FR} = 5$	50.0 mph		,	la //a
$V_{\rm u} = {\rm veh/h}$	1		Sketch (s	show lanes, L _A	$L_{D_{f}}V_{R_{f}}V_{f}$		$V_D =$	veh/h	
Conversion t	o pc/h Un	der Base C	onditions						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	F x f _{HV} x f _p
Freeway	5946	0.95	Level	4	0	0.980	1.00		6384
Ramp	1578	0.95	Level	4	0	0.980	1.00		1694
UpStream		1			1	1			
DownStream		1 1		ĺ		1		1	
		Merge Areas					Diverge Are	as	
Estimation of	f v ₁₂				Estimat	ion of v	2		
	V ₁₂ = V _F	(P _{5M})			†	-		\/ \D	
_			25_2\		[V	$_{12} = V_R + (V_F -$		
-EQ =	, ,	ation 25-2 or	25-3) on (Exhibit 25-5)		L _{EQ} =		(Equation	25-8 or 25-	9)
P _{FM} =		P _{FD} =		using Equ	ation (Exhibi	t 25-12)			
/ ₁₂ =	1035	pc/h	$V_{12} = pc/h$						
V ₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-	V ₃ or V _{av34}		•	on 25-15 or 2	5-16)	
	5)	_				< 2.700 pc	/h? TYes		- 10,
Is V_3 or $V_{av34} > 2,70$									
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2	s 🗆 No					/2 Yes		
f Yes,V _{12a} =		pc/h (Equatio	า 25-8)		If Yes,V _{12a} =	=	pc/h (Equa	ation 25-18))
Capacity Che	ecks		· · · · · · · · · · · · · · · · · · ·		Capacit	y Check	S		
	Actual	Ca	pacity	LOS F?			ctual	Capacity	LOS F?
					V _F		Exhibit 2	25-14	
V _{FO}	8078	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V ₋	Exhibit 2	25-14	\neg
* FO	0070	EMIDIC 23-7		INU		* R			
	<u> </u>				V _R		Exhibit		
Flow Entering	1	1		\#\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Flow En		lerge Influe		1
	Actual	7 7	esirable	Violation?	 	Actual		esirable . •	Violation?
V _{R12}	4247	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-1		
Level of Serv	rice Deterr	nination (if	not F)		Level of	Service	Determina	tion (if n	ot F)
	0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	627 L _A			$O_{R} = 4.252$	+ 0.0086 V ₁₂	- 0.0009 L _D	
$D_{R} = 5.475 +$	c/mi/ln)				$D_R = (p)$	oc/mi/ln)	_	_	
• • • • • • • • • • • • • • • • • • • •	,					Exhibit 25-4	4)		
O _R = 33.4 (pc	hit 25-4)				`		,		
$D_R = 33.4 \text{ (pc)}$ LOS = D (Exhilition)					Snood				
D _R = 33.4 (pc LOS = D (Exhil Speed Deterr	mination				Speed D				
$D_R = 33.4 \text{ (pc)}$ LOS = D (Exhill) Speed Deterr $M_S = 0.524 \text{ (Exhill)}$	mination bit 25-19)				$D_s = (E$	Exhibit 25-19)			
$D_R = 33.4 \text{ (pc)}$ $LOS = D \text{ (Exhill)}$ $Speed Deterr$ $M_S = 0.524 \text{ (Exhill)}$ $S_R = 48.2 \text{ mph}$	mination bit 25-19) (Exhibit 25-19)				$D_s = (E_s)$	Exhibit 25-19) ph (Exhibit 2	5-19)		
$D_R = 33.4 \text{ (pc)}$ $LOS = D \text{ (Exhill)}$ $Speed Deterr$ $M_S = 0.524 \text{ (Exhill)}$ $S_R = 48.2 \text{ mph}$	mination bit 25-19)				$D_s = (E_s)$	Exhibit 25-19)	5-19)		

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5946 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph 1578 Volume on ramp vph Length of first accel/decel lane 700 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5946 1578 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1565 415 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

ે

mi

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шi

```
6384
                                               1694
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.162 Using Equation 4
                 FM
                v = v (P) = 1035 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                                    LOS F?
                                      Maximum
                         Actual
                         8078
                                      9000
                                                     No
     FO
                         2674 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2553
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2553
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 33.4 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.524
                                          S
Space mean speed in ramp influence area,
                                         S = 48.2
                                                      mph
                                          R
                                         S = 49.9
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 49.0
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Canaval Inter		MPS AND I	(7 (1011 - 0 0 1 1)							
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		I 75 EB				
Agency or Company				nction		NW 138 ST	-			
Date Performed	10/2/			risdiction						
Analysis Time Period	Futur	e with Project	Ar	nalysis Year		2018 PM P	eak			
Project Description	Beacon Count	yline DRI (Third	Sufficiency)							
Inputs										
Jpstream Adj Ramp		Terrain: Level						Downstro Ramp	eam Adj	
☐ Yes ☐ On								☐ Yes	On	
M No ☐ Off	:							₩ No	Off	
-up = ft		S -	_F = 55.0 mph		S _{FR} = 5	50 0 mnh		L _{down} =	ft	
V _u = veh/h		J ,	•	show lanes, L _A ,	1 11	V _D =	veh/h			
Conversion to	pc/h Un	der Base C	onditions			4				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV} f _p		V = V/PH	$IF \times f_{HV} \times f_{p}$	
Freeway	5256	0.95	Level	4	0	0.980	1.00		5643	
Ramp	2414	0.95	Level	4	0	0.980	1.00		2592	
UpStream		 		 	 	1 3.700	1.50			
DownStream				İ	1	1		<u> </u>		
		Merge Areas		<u> </u>	1	1	Diverge A	Areas		
Estimation of	V ₄₂				Estimat	ion of v				
	V ₁₂ = V _F	(P)								
						'	$V_{12} = V_{R} + (V_{R})$	' _F - V _R)P _{FD}		
-EQ =		ation 25-2 or 2	•		L _{EQ} =		(Equati	on 25-8 or 25-	9)	
) _{FM} =	0.050	using Equation	n (Exhibit 25-5)		P _{FD} =			quation (Exhibi	•	
/ ₁₂ =	282 p	c/h					_	Tacada (EVIII)	0 /	
	-	pc/h (Equatio	25-4 or 25-		V ₁₂ =		pc/h			
V_3 or V_{av34}	5)	porti (Equation	1 20 7 01 20		V_3 or V_{av34}			uation 25-15 or 2	5-16)	
Is V_3 or $V_{av34} > 2,70$		s V No			Is V ₃ or V _{av3}	₃₄ > 2,700 p	oc/h? 🔲 Yes	□ No		
					Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
Is V_3 or $V_{av34} > 1.5$ *			:		If Yes, V _{12a} =			quation 25-18)	
Yes,V _{12a} =		pc/h (Equatio	า 25-8)		124		• ` `	quation 20-10	,	
Capacity Che	cks				Capacit	y Chec	ks			
	Actual	Ca	pacity	LOS F?		- F	Actual	Capacity	LOS F?	
					V _F		Exhi	bit 25-14		
V	8235	Exhibit 25-7		No		- V.		bit 25-14	1	
V_{FO}	0233	LAHIDIL 20-/		INU	$V_{FO} = V_{F}$	^V R				
					V _R		Exhi	bit 25-3		
Flow Entering		ì			Flow En			uence Area	1	
	Actual	Max D	esirable	Violation?		Actua	ıl Ma	x Desirable	Violation?	
V_{R12}	4849	Exhibit 25-7	4600:AII	No	V ₁₂	1	Exhibit 2	5-14		
Level of Serv	ice Detern	nination (if	not F)	•		Servic	e Determi	nation (if n	ot F)	
		0.0078 V ₁₂ - 0.00			`			₁₂ - 0.0009 L _D		
$O_{R} = 37.7 \text{ (pc)}$		12	И		1	c/mi/ln)		12 L	•	
OS = E (Exhibit 25-4)						xhibit 25	-4)			
Speed Detern		Speed Determination								
•						xhibit 25-19				
9					1					
S_{R} = 45.3 mph (Exhibit 25-19)				$S_R = m$	ph (Exhibit	25-19)			
				S ₀ = mph (Exhibit 25-19)						
	Exhibit 25-19)						S = mph (Exhibit 25-15)			
$b_0 = 50.7 \text{ mph} ($					1		•			

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future with Project Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5256 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-flow speed on ramp 50.0 mph 2414 Volume on ramp vph 700 Length of first accel/decel lane ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions______ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5256 2414 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1383 635 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

ે

mi

용

шi

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5643
                                               2592
Flow rate, vp
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.050 Using Equation 4
                 FM
                v = v (P) = 282
                                     pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         8235
                                      9000
                                                     No
     FO
                         2680 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2257
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual
                           Max Desirable
                                                     Violation?
                    2257
                                 4400
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 37.7 pc/mi/ln
Level of service for ramp-freeway junction areas of influence E
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.749
                                          S
Space mean speed in ramp influence area,
                                          S = 45.3
                                                      mph
                                          R
                                          S = 50.7
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 47.4
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

		MIL2 AND	RAMP JUNG							
General Info				Site Infor						
Analyst	DPA			eeway/Dir of Tr		I 75 EB				
Agency or Compan	•			nction		NW 138 ST				
Date Performed		2007		risdiction						
Analysis Time Perio		re with Project w		alysis Year		2018 AM P€	eak			
Project Description	Beacon Count	yline DRI (Third	Sufficiency)							
Inputs		<u> </u>								
Jpstream Adj Ram _l — —		Terrain: Level						Downstre Ramp	eam Adj	
☐ Yes ☐ O)n							☐ Yes	☐ On	
™ No □ O	off							✓ No	☐ Off	
								l.		
$_{-up} = ft$			_{re} = 55.0 mph		$S_{FR} = 5$	50.0 mph		L _{down} =	ft	
V _u = veh/	'h	3	•	show lanes, L _A		0.0 mpn		$V_D =$	veh/h	
Conversion	to pc/h Un	der Base C	Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	${\sf f}_{\sf HV}$	fp	v = V/PH	$F \times f_{HV} \times f_{p}$	
Freeway	5946	0.95	Level	4	0	0.980	1.00		6384	
Ramp	1578	0.95	Level	4	0	0.980	1.00		1694	
UpStream										
DownStream										
		Merge Areas					Diverge Are	as		
Estimation o	of v ₁₂				Estimat	ion of v	12			
	V ₁₂ = V _F	(P _{EM})				1.		\/ \D		
=		ation 25-2 or	25-3)			V	$V_{12} = V_R + (V_F - V_F)$		->	
-EQ =	, -		,		L _{EQ} =			25-8 or 25-	•	
P _{FM} =			on (Exhibit 25-5)		P _{FD} =		using Equ	ation (Exhibi	t 25-12)	
/ ₁₂ =	1334	•	/h							
V ₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		•	on 25-15 or 2	5-16)	
	5)					a. > 2.700 no			,	
Is V_3 or $V_{av34} > 2.7$					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					
Is V_3 or $V_{av34} > 1.5$	5 * V ₁₂ /2	s 🗏 No								
f Yes,V _{12a} =	2553	pc/h (Equatio	n 25-8)		If Yes,V _{12a} =	=	pc/n (Equa	ation 25-18))	
Capacity Ch	ecks				Capacit	y Check	S			
	Actual	Ca	pacity	LOS F?		A	ctual	Capacity	LOS F?	
					V _F		Exhibit :	25-14		
V_{FO}	8078	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V ₅	Exhibit :	25-14		
- FO	1 3370			1,10		·ĸ			+	
	1	<u> </u>			V _R	, ; -	Exhibit			
Flow Enterin		1		\#\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Flow En		lerge Influe		1	
	Actual	7	esirable	Violation?	 	Actual	_	esirable	Violation?	
	4247	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-1			
V _{R12}	vice Deterr	nination (i	not F)		Level of	Service	e Determina	tion (if n	ot F)	
	2 0.0	0 0078 V - 0 00	0627 L _A			$O_{R} = 4.252$	2 + 0.0086 V ₁₂	- 0.0009 L _D		
Level of Serv	+ 0.00734 v _R +	0.0070 12 0.00			$D_R = (p)$	oc/mi/ln)				
Level of Ser D _R = 5.475		0.0070 v ₁₂ 0.00			K \r^					
Level of Service $D_R = 5.475 \cdot 0$ $D_R = 25.9 \text{ (p)}$	+ 0.00734 v _R + 0.0c/mi/ln)	0.0070 V ₁₂ 0.00				Exhibit 25-	4)			
Level of Service $D_R = 5.475$ $D_R = 25.9$ (p $D_R = 25.9$ (Exhibit)	+ 0.00734 v _R + 1 oc/mi/ln) nibit 25-4)	0.0070 \$12 0.00			LOS = (E	Exhibit 25-				
Level of Service $D_R = 5.475$ $D_R = 25.9$ (p. LOS = C (Exh. Speed Determine)	+ 0.00734 v _R + 1 oc/mi/ln) hibit 25-4) mination	0.0070 V ₁₂ 0.00			LOS = (E	Determir	nation			
Level of Service $D_R = 5.475$ $D_R = 25.9$ (p. $D_S = C$ (Exh. $D_S = D_S = D_S$) $D_S = D_S = D_S$	+ 0.00734 v _R + 1 oc/mi/ln) nibit 25-4) rmination kibit 25-19)	0.0070 V ₁₂ 0.00			LOS = (E Speed L D _S = (E	Determir Exhibit 25-19	nation			
$\begin{array}{c} \textbf{Level of Ser} \\ \textbf{D}_{R} = 5.475 \\ \textbf{D}_{R} = & 25.9 \text{ (p} \\ \textbf{LOS} = & \textbf{C (Exh} \\ \textbf{Speed Deter} \\ \textbf{M}_{S} = & 0.404 \text{ (Exh} \\ \textbf{S}_{R} = & 49.8 \text{ mph} \\ \end{array}$	+ 0.00734 v _R + 1 oc/mi/ln) hibit 25-4) finination kibit 25-19) n (Exhibit 25-19)	0.0070 V ₁₂ 0.00			LOS = (E Speed L $D_s = (E_s)^2$ $S_R = m_s$	Determir Exhibit 25-19 ph (Exhibit 2	nation) 25-19)			
$\begin{array}{c} \text{D}_{\text{R}} = 5.475 \\ \text{D}_{\text{R}} = 25.9 \text{ (p} \\ \text{LOS} = \text{C (Exh} \\ \text{Speed Deter} \\ \text{M}_{\text{S}} = 0.404 \text{ (Exh} \\ \text{S}_{\text{R}} = 49.8 \text{ mph} \\ \text{S}_{0} = 49.9 \text{ mph} \\ \end{array}$	+ 0.00734 v _R + 1 oc/mi/ln) nibit 25-4) rmination kibit 25-19)	0.0070 V ₁₂ 0.00			$\begin{array}{c} \text{LOS} = & \text{(E} \\ \textbf{Speed L} \\ \textbf{D}_{\text{S}} = & \text{(E} \\ \textbf{S}_{\text{R}} = & \text{m} \\ \textbf{S}_{0} = & \text{m} \end{array}$	Determir Exhibit 25-19	nation) 25-19)			

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w imp Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5946 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 1578 Volume on ramp vph 700 Length of first accel/decel lane ft Length of second accel/decel lane 500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions______ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5946 1578 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1565 415 V Trucks and buses 4 4 응 Recreational vehicles

0

Level

1.5

1.2

ે

mi

Level

1.5

1.2

%

mi

Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

%

용

шi

```
6384
                                               1694
Flow rate, vp
                                                                   pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.209 Using Equation 0
                 FM
                v = v (P) = 1334 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         8078
                                      9000
                                                    No
     FO
                         2525 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                     12
If yes, v = 2553
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2553
                                                     No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence C
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.404
                                          S
Space mean speed in ramp influence area,
                                         S = 49.8
                                                     mph
                                          R
                                         S = 49.9
Space mean speed in outer lanes,
                                                     mph
                                          0
Space mean speed for all vehicles,
                                         S = 49.8
                                                     mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Consuel Int		WIFS AND I	RAMP JUN						
General Infor				Site Infor					
Analyst	DPA			eeway/Dir of Tr		I 75 EB			
Agency or Company				ınction		NW 138 ST			
Date Performed	10/2/	2007		ırisdiction					
Analysis Time Period	l Futur	re with Project w	Imps Ar	nalysis Year		2018 PM Pe	eak		
Project Description	Beacon Count	yline DRI (Third	Sufficiency)						
Inputs									
Jpstream Adj Ramp		Terrain: Level						Downstre Ramp	eam Adj
☐ Yes ☐ On	ı								☐ On
M No ☐ Off	f							✓ No	☐ Off
- _{up} = ft		S	_F = 55.0 mph		S _{FR} = 5	50.0 mph		L _{down} =	ft
V _u = veh/h		9	•	show lanes, L _A ,	1 1 1	V _D =	veh/h		
Conversion to	o pc/h Un	der Base C	onditions						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	${\sf f}_{\sf HV}$	f _{HV} f _p		$F \times f_{HV} \times f_{p}$
Freeway	5256	0.95	Level	4	0	0.980	1.00		5643
Ramp	2414	0.95	Level	4	0	0.980	1.00		2592
UpStream					1	1		\neg	
DownStream									
		Merge Areas					Diverge Are	as	
Estimation of	V ₁₂				Estimat	ion of v			
	V ₁₂ = V _F	(P)			 				
			OF 0)			V	$V_{12} = V_R + (V_F)$		
-EQ =	, -	ation 25-2 or	,		L _{EQ} =		(Equation	25-8 or 25-	9)
P _{FM} =	0.209	using Equation	n (Exhibit 25-5)		P _{FD} =		usina Eau	uation (Exhibit	t 25-12)
/ ₁₂ =	1179	pc/h			V ₁₂ =		pc/h	\=	· - /
		pc/h (Equatio	n 25-4 or 25-				•	ion OF 1F 0	F 1/)
V_3 or V_{av34}	5)	, (= 4			V_3 or V_{av34}			ion 25-15 or 25	b-16)
Is V_3 or $V_{av34} > 2,70$		s 🗹 No			Is V ₃ or V _{av3}	$_{34} > 2,700 pc$	c/h? ☐ Yes ☐	No	
Is V_3 or $V_{av34} > 1.5$ *					Is V ₃ or V _{av}	₃₄ > 1.5 * V ₁	₂ /2	No	
			25.0\		If Yes, V _{12a} =			ation 25-18)	
Yes, V _{12a} =		pc/h (Equation	ı ∠ɔ-ŏ)				. ` ` .		
Capacity Che	1	1		1	Capacit			<u> </u>	
	Actual	Ca	pacity	LOS F?		A	ctual	Capacity	LOS F?
					V_{F}		Exhibit	25-14	
V_{FO}	8235	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _P	Exhibit	25-14	
10					V _R	-1\	Exhibit		_
					-	11 -			
Flow Entering		1		VI 1 1 2	Flow En		lerge Influe		1
	Actual	i i	esirable	Violation?	 	Actual	_	Desirable	Violation?
V _{R12}	4849	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-		
Level of Serv	ice Deterr	nination (it	not F)		Level of	Service	e Determina	ition (if no	ot F)
$D_R = 5.475 +$	0.00734 V _R + 0	0.0078 V ₁₂ - 0.00)627 L _A			$D_{R} = 4.252$	2 + 0.0086 V ₁₂	- 0.0009 L _D	
$O_{R} = 30.2 \text{ (pc)}$	/mi/ln)	:=	• •			oc/mi/ln)	12	D	
OS = D (Exhib						Exhibit 25-	4)		
		<u> </u>							
Speed Determination					Speed L				
	oit 25-19)				$D_{S} = (E$	xhibit 25-19)		
$M_{S} = 0.629 \text{ (Exil)}$					$S_R = m$	ph (Exhibit 2	25-19)		
9	(Exhibit 25-19)								
$S_{R} = 46.8 \text{ mph} ($	(Exhibit 25-19)				1	ph (Exhibit 2	25-19)		
$S_{R} = 46.8 \text{ mph } (S_{0} = 50.7 \text{ mph } ($	(Exhibit 25-19) (Exhibit 25-19) (Exhibit 25-14)				$S_0 = m$	ph (Exhibit 2 ph (Exhibit 2	•		

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: I 75 EB Junction: NW 138 ST Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5256 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp Free-flow speed on ramp 50.0 mph 2414 Volume on ramp vph 700 Length of first accel/decel lane ft Length of second accel/decel lane 500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions______ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5256 2414 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1383 635 V Trucks and buses 4 4 응

0

Level

1.5

1.2

ે

mi

Level

1.5

1.2

%

mi

%

용

шi

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

Terrain type:

Grade Length

```
5643
                                               2592
Flow rate, vp
                                                                   pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.209 Using Equation 0
                 FM
                v = v (P) = 1179 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         8235
                                      9000
                                                    No
     FO
                         2232 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                     12
If yes, v = 2257
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                    2257
                                 4400
                                                     No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.2 pc/mi/ln
Level of service for ramp-freeway junction areas of influence D
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.629
                                          S
Space mean speed in ramp influence area,
                                         S = 46.8
                                                     mph
                                          R
                                         S = 50.7
Space mean speed in outer lanes,
                                                     mph
                                          0
Space mean speed for all vehicles,
                                         S = 48.3
                                                     mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

175 WB TO NW 138 STREET WB RAMP DIVERGE

		RAMP	S AND RAM	P JUNCTI	ONS WO	RKS	HEET			
General Infor	mation			Site Infor						
Analyst	DPA		Fr	eeway/Dir of Tr	avel I	75 WE	3			
Agency or Company			Ju	ınction	1	NW 13	8 STREET			
Date Performed	10/2/2			ırisdiction						
Analysis Time Period				nalysis Year	2007 AM Peak					
Project Description	Beacon County	line DRI (Third	Sufficiency)							
Inputs		h								
Upstream Adj Ramp		Terrain: Leve			Downsti Ramp					m Adj
☐ Yes ☐ Or	1				☐ Yes ☐					On
✓ No	f								✓ No	☐ Off
- _{-un} = ft									l. =	ft
_{-up} = ft		S	_{FF} = 55.0 mph		S _{FR} = 5	0 0 mp	h		L _{down} =	
veh/h	ı		• •	show lanes, L _A ,	$V_{-} = V_{-}$					veh/h
Conversion t	o pc/h Und	der Base (Conditions							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	4893	0.95	Level	4	0	0.	980	1.00	525	54
Ramp	638	0.95	Level	4	0	0.	980	1.00	68	5
UpStream										
DownStream										
		Merge Areas			<u> </u>			Diverge Areas		
Estimation of	f v ₁₂				Estimati	on c	of v ₁₂			
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	V _R + (V _F - V _F	P _{FD}	
- _{EQ} =	.= .	ation 25-2 or	25-3)		L _{EQ} =			Equation 25-8		
P _{FM} =	, , , , , , , , , , , , , , , , , , ,						,	260 using Eq		ihit 25-12)
V ₁₂ =	pc/h				$V_{12} = 1736 \text{ pc/h}$					1011 20 12)
V ₃ or V _{av34}	•	(Equation 25	-4 or 25-5)		V ₃ or V _{av34} 1496 pc/h (Equation 25-15 or 2					or 25 16
v ₃ or v _{av34} Is V ₃ or V _{av34} > 2,70			4 01 23 3)			< 2.7		Tyes ☑ No	alion 25-15	01 23-10
Is V_3 or $V_{av34} > 1.5$			0)					Yes No		
f Yes,V _{12a} =	<u>.</u>	(Equation 25	-8)		If Yes,V _{12a} =			391 pc/h (Equ	ation 25-18	3)
Capacity Che	Actual		apacity	LOS F?	Capacity	y Chi	Actual	Ca	pacity	LOS F?
	Actual		арасну	LOST:	V _F	$\overline{}$	4729	Exhibit 25-1	1	No
\ /		E 1 11 11 0E 7			-	\ <u></u>				_
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	4044	Exhibit 25-1	+	No
	<u> </u>	<u> </u>			V _R		685	Exhibit 25-3		No
Flow Entering	g Merge In Actual	1	rea Desirable	Violation?	Flow En		ig Merg Actual	Max Desirab		Violation
V _{R12}	Actual	Exhibit 25-7	JUSII ANIC	violatiUH!	V ₁₂		1736	Exhibit 25-14	4400:All	No
Level of Serv	ico Dotorn	<u>. </u>	f not E)	<u> </u>				eterminatio		
		•)
$D_{R} = 5.475 + 0.$ $D_{R} = (pc/mi/s)$	• • •	0.0076 V ₁₂ -	0.00027 L _A					0086 V ₁₂ - 0.0	Joos L _D	
	•				I) (pc/r				
OS = (Exhibi						<u> </u>	oit 25-4)			
Speed Deterr					Speed D					
M _S = (Exibit 25-19)					$D_S = 0.295$ (Exhibit 25-19) $S_R = 51.2$ mph (Exhibit 25-19)					
	nibit 25-19)				I ''		,	,		
• •	ibit 25-19)				ľ		(Exhibit	,		
··	nibit 25-14)				S = 55	.4 mph	(Exhibit	25-15)		
right © 2005 Universit	y of Florida, All Ri	ights Reserved			HCS+TM \	√ersion	5.21		Generated: 10)/21/2008 3

Phone: Fax: E-mail: _____Diverge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 WB Junction: NW 138 STREET Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 4893 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 50.0 mph Volume on ramp 638 vph Length of first accel/decel lane 500 ft Length of second accel/decel lane 500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp ft Distance to adjacent ramp ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway		Ramp		Adjacent
					Ramp
Volume, V (vph)	4893		638		vph
Peak-hour factor, PHF	0.95		0.95		
Peak 15-min volume, v15	1288		168		V
Trucks and buses	4		4		8
Recreational vehicles	0		0		8
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

```
Flow rate, vp
                                   5254
                                               685
                                                                   pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 1736 pc/h
                 12 R
                         F R FD
                  _____Capacity Checks____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                        4729
                                     9000
                                                    No
     Fi F
                        4044
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                        685
                                     4100
                                                    No
     R
                        1496 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     No
    3 or av34
                > 1.5 v /2
                                     Yes
Is
        V
     3 or av34
                      12
If yes, v = 1891
                                     (Equation 25-18)
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    1891
                                                     No
    V
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 7.0 	pc/mi/ln
Density,
                                       12
                     R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
                                         D = 0.295
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 51.2
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 58.7
                                                     mph
```

S = 55.4

mph

0.980

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

Space mean speed for all vehicles,

Concret late:	motion	KAWI	S AND RAM			\N3	nice i			
General Infor				Site Infor			_			
Analyst	DPA			eeway/Dir of Tr		75 W				
Agency or Company				nction	N	W 13	88 STREET			
Date Performed	10/2/2			risdiction		007.5	NA D I			
Analysis Time Perioc Project Description				alysis Year		2007 P	PM Peak			
Inputs	beacon County	Alline DRI (TIIIIC	i Sufficiency)							
		Terrain: Leve	 I						D	A al:
Jpstream Adj Ramp		Torrairi. Leve	'						Downstrea Ramp	am Adj
	1								Yes	□ o
E										☐ On
✓ No ☐ Off	ļ								✓ No	Cff Off
- _{up} = ft									L _{down} =	ft
ир		S	_{FF} = 55.0 mph		S _{FR} = 50	0.0 mp	oh			
$V_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	111				$V_D =$	veh/h
Conversion to	o pc/h Und	der Base (DKP				<u>.</u>	
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f x f
, ,	(Veh/hr)				<u> </u>	 				
Freeway	6059	0.95	Level	4	0	+	.980	1.00		505
Ramp	763	0.95	Level	4	0	0	.980	1.00	8	19
UpStream DownStream										
Downsteam	<u> </u>	I I Merge Areas					ı	Diverge Areas		
Estimation of	F V 40	norgo / nodo			Estimati	on c		51701g07110u0		
		(D.)						\/ . (\/ \)	/ \D	
	$V_{12} = V_F$				l			= V _R + (V _F - V		
-EQ =		ation 25-2 or	•		L _{EQ} =		•	Equation 25-	·	
P _{FM} =	using	Equation (E	Exhibit 25-5)		P _{FD} =		0.	260 using E	quation (Ext	nibit 25-12)
/ ₁₂ =	pc/h				V ₁₂ =		20	044 pc/h		
V_3 or V_{av34}	pc/h	Equation 25	-4 or 25-5)		V_3 or V_{av34}		1	743 pc/h (Eq i	uation 25-1	5 or 25-16)
Is V_3 or $V_{av34} > 2,70$	0 pc/h?	s 🗏 No			Is V ₃ or V _{av3}	4 > 2,7	700 pc/h? [Tes ✓ No		
Is V_3 or $V_{av34} > 1.5$	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av3}	₄ > 1.5	5 * V ₁₂ /2	▼ Yes □ No		
f Yes,V _{12a} =		Equation 25	-8)		If Yes,V _{12a} =			212 pc/h (Eq i		8)
Capacity Che			-,		Capacity					
ouperenty ente	Actual	С	apacity	LOS F?			Actual	C	apacity	LOS F?
	1.500.	Ť	- 1: <i>y</i>		V _F		5530	Exhibit 25-	'	No
V		Exhibit 25-7			<u> </u>			Exhibit 25-	_	+
V_{FO}		באווטונ 25-/			$V_{FO} = V_{F}$	V _R				No
					V _R		819	Exhibit 25-		No
Flow Entering				1	Flow En	_		ge Influenc		1
	Actual	' 	Desirable	Violation?		1	Actual	Max Desira	1	Violation?
V _{R12}		Exhibit 25-7			V ₁₂		2044	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern	nination (i	f not F)					terminatio	•	F)
$D_R = 5.475 + 0.$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	1.252 + 0.	0086 V ₁₂ - 0.	.0009 L _D	
O _R = (pc/mi/	ln)				$D_R = 9.8$	(pc/	mi/ln)			
_OS = (Exhibi	t 25-4)				LOS = A ((Exhi	bit 25-4)			
Speed Determination					Speed D	`		on		
•							xhibit 25			
3	•					•	h (Exhibit	,		
	ibit 25-19)				l ''		,	•		
	ibit 25-19)				ľ		h (Exhibit	•		
>= mph (Exh	ibit 25-14)				S = 54.	.9 mpł	n (Exhibit	25-15)		
yright © 2005 University		ights Reserved			$S = 54.$ $HCS+^{TM} V$			∠5-15)	Generated: 1	0/21/200

Phone: Fax: E-mail: _____Diverge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 WB Junction: NW 138 STREET Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 6059 vph _____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	763	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

_____Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist?

No

Volume on adjacent ramp vph
Position of adjacent ramp

Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent	
			Ramp	
Volume, V (vph)	6059	763	vph	
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1594	201	V	
Trucks and buses	4	4	%	

_____Conversion to pc/h Under Base Conditions_____

Recreational vehicles

Terrain type:

Grade

Length

Conductor DCR FF

Trucks and buses PCE, ET 1.5 1.5
Recreational vehicle PCE, ER 1.2 1.2

```
6505
Flow rate, vp
                                              819
                                                                  pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2044 pc/h
                 12 R
                         F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                        5530
                                     9000
                                                    No
     Fi F
    v = v - v
                        4711
                                     9000
                                                    No
         F R
     FΟ
                        819
                                     4100
                                                    No
     R
                        1743 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
               > 2700 pc/h?
                                     No
    3 or av34
                > 1.5 v /2
                                     Yes
Is
        V
     3 or av34
                      12
If yes, v = 2212
                                     (Equation 25-18)
        12A
                   _Flow Entering Diverge Influence Area____
                                Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    2212
                                                     No
    V
            ____Level of Service Determination (if not F)______
                    D = 4.252 + 0.0086 v - 0.009 L = 9.8 pc/mi/ln
Density,
                                       12
                     R
Level of service for ramp-freeway junction areas of influence A
               _____Speed Estimation_____
                                         D = 0.307
Intermediate speed variable,
                                         S
Space mean speed in ramp influence area,
                                        S = 51.0
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 57.8
                                                     mph
Space mean speed for all vehicles,
                                        S = 54.9
                                                     mph
```

1.00

0.980 1.00

Heavy vehicle adjustment, fHV

Oama:::al !::f:		KANIP	S AND RAM			\n3	пссі			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		75 WE				
Agency or Company				nction	N	IW 13	8 STREET			
Date Performed	10/2/			risdiction	0	010 4	MD I			
Analysis Time Period Project Description		e without Projection		alysis Year		018 A	M Peak			
Inputs	Deacon County	yiiile DRI (Tiliiu	Sufficiency)							
-		Terrain: Level							.	A 1:
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj
☐ Yes ☐ On									☐ Yes	On
✓ No ☐ Off	:								✓ No	☐ Off
_ f t									l. =	ft
_{-up} = ft		S	_{FF} = 55.0 mph		S _{FR} = 50) () mn	h		L _{down} =	
/ _u = veh/h			• •	show lanes, L _∆ ,		J.O IIIP	11		$V_D =$	veh/h
Conversion to	pc/h Und	l der Base (Show lanes, L _A ,	-D' R' F'				<u> </u>	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	6557	0.95	Level	4	0	0.	980	1.00	70	140
Ramp	1380	0.95	Level	4	0	+	980	1.00	14	82
UpStream						1				
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v ₁₂				Estimation	on o	of v ₁₂			
	V ₁₂ = V _F	(P _{EM})					V ₄₀ =	= V _R + (V _F - V	B)PED	
-50 =		ation 25-2 or	25-3)		L ₅₀ =					
			L _{EQ} = (Equation 25-8 or 25-9)				sibit DE 10\			
P _{FM} =	_	Equation (E	XHIDIL 20-0)		P _{FD} = 0.260 using Equation (Exhibit 25-12)				IIDIL 25-12)	
pc/h			V ₁₂ = 2561 pc/h							
V_3 or V_{av34}		(Equation 25	-4 or 25-5)		V ₃ or V _{av34} 1535 pc/h (Equation 25-15 or 25-1			5 or 25-16)		
Is V_3 or $V_{av34} > 2,70$					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av34}	₄ > 1.5	* V ₁₂ /2	Yes 🗹 No		
f Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} = pc/h (Equation 25-18)					
Capacity Che	cks				Capacity	/ Ch	ecks			
•	Actual	Ca	apacity	LOS F?			Actual	Ca	apacity	LOS F?
					V_{F}		5632	Exhibit 25-1	9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_F$. V.	4150	Exhibit 25-1	_	No
* FO		EXHIBIT ZU-1				*R				
		(1			V _R	<u> </u>	1482	Exhibit 25-		No
Flow Entering		,		Violetiano	riow Ent	_		e Influenc		\/iolo#a=0
\ /	Actual	† 	Desirable	Violation?			Actual	Max Desira	1	Violation?
V _{R12}		Exhibit 25-7	e .=\		V ₁₂		2561	Exhibit 25-14	4400:All	No
Level of Serv		•			_			terminatio		<u>r)</u>
$D_R = 5.475 + 0.1$	• • • • • • • • • • • • • • • • • • • •	0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0.	0009 L _D	
O _R = (pc/mi/	ln)				$D_R = 12.8 \text{ (pc/mi/ln)}$					
OS = (Exhibi	t 25-4)				LOS = B (Exhib	oit 25-4)			
Speed Determination Speed Determination			on							
$M_{\rm S} = $ (Exibit 25)	5-19)				D _s = 0.3	66 (E	xhibit 25	-19)		
	,					•		,		
S _R = mph (Exhibit 25-19)										
	:L:4 OF 40	S_0 = mph (Exhibit 25-19) S = mph (Exhibit 25-14)			S_0 = 58.2 mph (Exhibit 25-19) S = 54.3 mph (Exhibit 25-15)					
$S_0 = \text{mph (Exh)}$					1	•	•	,		

Phone: E-mail: Fax:

_____Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: I 75 WB

Junction: NW 138 STREET

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data
rreway	Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6557	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	1380	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	6557	1380	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1726	363	v
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
                                               1.00
Driver population factor, fP
                                    7040
Flow rate, vp
                                               1482
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2561 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         5632
                                     9000
                                                    No
     Fi F
                         4150
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                         1482
                                     4100
                                                    No
     R
                        1535 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    2561
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 12.8 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.366
                                          S
Space mean speed in ramp influence area,
                                         S = 50.2
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 58.2
                                                     mph
Space mean speed for all vehicles,
                                        S = 54.3
                                                     mph
```

0.980

Heavy vehicle adjustment, fHV

<u> </u>	, •	KAMP	S AND RAM			KKS	HEEI			
General Info				Site Infor						
Analyst	DPA			eeway/Dir of Tr	avel	I 75 W	В			
Agency or Company	•			nction	I	NW 13	88 STREET	-		
Date Performed	10/2/			risdiction						
Analysis Time Perio		e withou Projec		nalysis Year		2018 F	PM Peak			
Project Description	Beacon County	yline DRI (Third	Sufficiency)							
nputs		-								
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	am Adj
Yes O	1								☐ Yes	☐ On
✓ No O	f								✓ No	☐ Off
- _{up} = ft									L _{down} =	ft
		S	_{FF} = 55.0 mph		S _{FR} = 5	0.0 mp	ph			
/ _u = veh/l	1		Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}				$V_D =$	veh/h
Conversion	o pc/h Und	der Base (Conditions		D K I					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		${\sf f}_{\sf HV}$	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	7391	0.95	Level	4	0	0	.980	1.00	79	936
Ramp	1147	0.95	Level	4	0	0	.980	1.00	12	232
UpStream										
DownStream										
	_	Merge Areas						Diverge Areas		
Estimation o	t V ₁₂				Estimati	on c	of V ₁₂			
	V ₁₂ = V _F	(P _{EM})					V ₁₂ =	= V _R + (V _F - V	' _B)P _{ED}	
- _{EQ} =		ation 25-2 or	25-3)		L _{EQ} = (Equation 25-8 or 25-9)					
	, ,	Equation (E	•		P_{FD} = 0.260 using Equation (Exhibit 25-12)					
P _{FM} =	_	Equation (E	ATTION 25-5)							
/ ₁₂ =	pc/h	/F /: 0.5	4 05 5)		$V_{12} = 2562 \text{ pc/h}$					
V_3 or V_{av34}		(Equation 25	-4 or 25-5)		V_3 or V_{av34} 1893 pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					
Is V_3 or $V_{av34} > 2.70$										
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2	s 🗌 No			Is V ₃ or V _{av3}	₃₄ > 1.5	5 * V ₁₂ /2	Yes 🗹 No		
Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} =		F	oc/h (Equation	า 25-18)	
Capacity Che	ecks				Capacity	y Ch	ecks			
	Actual	C	apacity	LOS F?			Actual	Ca	apacity	LOS F?
		ĺ			V _F		6349	Exhibit 25-1	14 9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- \/		Exhibit 25-1		No
*FO		EMIDIC 20-7				*R		_	_	
	<u></u>				V _R		1232	Exhibit 25-		No
Flow Enterin					Flow En			ge Influenc		1
	Actual	i	Desirable	Violation?	<u> </u>		Actual	Max Desira	1	Violation?
V _{R12}		Exhibit 25-7			V ₁₂		2562	Exhibit 25-14	4400:All	No
Level of Serv		•			+			eterminatio		<i>F</i>)
$D_R = 5.475 + 0$.00734 v _R +	0.0078 V ₁₂ -	0.00627 L _A			$O_R = 4$	1.252 + 0	.0086 V ₁₂ - 0.	0009 L _D	
O _R = (pc/mi	/ln)				D _R = 12	.8 (pc	c/mi/ln)			
.OS = (Exhib	it 25-4)				LOS = B	(Exhi	bit 25-4)			
Speed Deteri	mination				Speed D	eter	rminati	on		
M _S = (Exibit 2	5-19)				$D_s = 0.3$	344 (E	Exhibit 25	-19)		
	•				$S_R = 50$).5 mph	h (Exhibit	25-19)		
S _R = mph (Exhibit 25-19)					1		h (Exhibit	•		
; mnh /⊏vl					1 0	. ۱۰۰۰۱	,	/		
$S_0 = mph (Exist)$	nibit 25-14)				S = 54	1 mnl	h (Exhibit	25_15\		

Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: I 75 WB

Junction: NW 138 STREET

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Da	ata
------------	-----

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7391	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	1147	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7391	1147	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1945	302	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
                                    7936
Flow rate, vp
                                               1232
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2562 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         6349
                                      9000
                                                    No
     Fi F
                         5117
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         1232
                                     4100
                                                    No
     R
                        1893 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    2562
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 12.8 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
                                         D = 0.344
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 50.5
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 56.9
                                                     mph
```

S = 54.1

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Consuel lest		KANIP	S AND RAM			1113				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		75 WE				
Agency or Company				nction	N	IW 13	8 STREET			
Date Performed	10/2/			risdiction	0	010 4	MB			
Analysis Time Perioc Project Description		e with Project		alysis Year		018 A	M Peak			
Inputs	beacon County	yiiile DRI (TIIIIu	Sufficiency)							
-		Terrain: Level							<u> </u>	A 1:
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	ım Adj
☐ Yes ☐ Or										☐ On
No □ Off	:								✓ No	Off
_{-up} = ft									L _{down} =	ft
/		S	_{FF} = 55.0 mph		$S_{FR} = 50$).0 mp	h		V _D =	veh/h
$V_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				v D -	VCII/II
Conversion to		der Base C	Conditions		1	1			1	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	7232	0.95	Level	4	0	0.	980	1.00	77	65
Ramp	2055	0.95	Level	4	0	0.	980	1.00	22	06
UpStream										
DownStream					ļ					
-	•	Merge Areas						Diverge Areas		
Estimation of	V ₁₂				Estimation of v ₁₂					
	V ₁₂ = V _F	(P _{FM})					V ₁₂ =	: V _R + (V _F - V	/ _R)P _{FD}	
- _{EQ} =		ation 25-2 or	25-3)		L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =		Equation (E	,		P_{FD} = 0.260 using Equation (Exhibit 25-12)					
	pc/h	_ q.a (L								
/ ₁₂ =	•	(Equation Of	4 or 25 5\		$V_{12} = 3248 \text{ pc/h}$					
/ ₃ or V _{av34}		(Equation 25	-4 UI ZO-5)		V_3 or V_{av34} 1482 pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No					
Is V_3 or $V_{av34} > 2,70$										
Is V_3 or $V_{av34} > 1.5$					1			Yes 🗹 No		
Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} =		p	c/h (Equation	n 25-18)	
Capacity Che	cks				Capacity	' Ch	ecks			
	Actual	Ca	pacity	LOS F?			Actual	C	apacity	LOS F?
					V _F		6212	Exhibit 25-	14 9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_F$	- V ₂	4006	Exhibit 25-	14 9000	No
FU					V _R	К		Exhibit 25-		
		(1		<u> </u>	<u> </u>		2206			No
Flow Entering		i .		\" " C	Flow Ent	_		e Influenc		\" \ ' \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \
	Actual	î r	Desirable	Violation?	.,	1	Actual	Max Desira	Ĩ	Violation?
V _{R12}		Exhibit 25-7	-		V ₁₂		3248	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern	nination (i	f not F)					terminatio	_ •	<i>F)</i>
$D_R = 5.475 + 0.$	00734 v _R + (0.0078 V ₁₂ -	0.00627 L _A		D ₁	_R = 4	.252 + 0.	0086 V ₁₂ - 0.	.0009 L _D	
O _R = (pc/mi/	ln)				D _R = 18.	7 (pc	/mi/ln)			
.OS = (Exhibi	t 25-4)						oit 25-4)			
Speed Detern					Speed D	<u> </u>		<u></u>		
•										
$M_{\rm S} = $ (Exibit 25)	,				l "	•	xhibit 25	•		
S_R = mph (Exh	ibit 25-19)				I		(Exhibit	· ·		
	ibit 25-19)				$S_0 = 58.$	5 mph	(Exhibit	25-19)		
	ibit 25-14)				S = 53	3 mnh	(Exhibit	25-15)		
) = IIIpii (LXII	,				- 00.	o mpi	(LXIIIDIC	20 10)		

Fax:

Diverge Ana

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: I 75 WB

Junction: NW 138 STREET

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Emportors	Doto
Freeway	
<u>-</u>	

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7232	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2055	vph
Length of first accel/decel lane	500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7232	2055	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1903	541	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
Flow rate, vp
                                    7765
                                               2206
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3248 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         6212
                                      9000
                                                    No
     Fi F
                         4006
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2206
                                      4100
                                                    No
     R
                         1482 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    3248
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 18.7 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
                                         D = 0.432
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 49.4
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 58.5
                                                      mph
Space mean speed for all vehicles,
                                        S = 53.3
                                                      mph
```

0.980

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

-		RAMPS	AND KAI	MP JUNCTI		KKSHEET				
General Infori	mation			Site Infor	mation					
Analyst	DPA		F	Freeway/Dir of Tr	ravel	75 WB				
Agency or Company				Junction		NW 138 STREE	Τ			
Date Performed	10/2/	/2007	~	Jurisdiction						
Analysis Time Period	Futu	re with Project	I	Analysis Year		2018 PM Peak				
Project Description	Beacon Count	yline DRI (Third S	Sufficiency)							
Inputs										
Jpstream Adj Ramp		Terrain: Level						Downstrea Ramp	ım Adj	
Yes On								Yes	☐ On	
☑ No ☐ Off										
I INO I OII								✓ No	☐ Off	
- _{up} = ft							L	down =	ft	
•		S _F	= 55.0 mph		$S_{FR} = 5$	0.0 mph	,	,		
$V_{\rm u} = {\rm veh/h}$		(show lanes, L _A	L_{D}, V_{R}, V_{f}			/ _D =	veh/h			
Conversion to	pc/h Un	der Base C	onditions		<u> </u>					
(pc/h)	() (ab/br)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	= V/PHF	x f _{HV} x f _p	
Freeway	(Veh/hr)	0.05	Laval	1	0	_	<u>'</u>		09	
	7739	0.95	Level	4	0	0.980	1.00			
Ramp UpStream	1495	0.95	Level	4	0	0.980	1.00	10	05	
DownStream					<u> </u> 					
Downstream		Merge Areas					Diverge Areas			
Estimation of		e. ge 7 ii eue			Estimati	ion of v ₁₂	2.110.ge 7.11040			
		(D)					\/ · (\/ \/	\D		
$V_{12} = V_F (P_{FM})$					$V_{12} = V_R + (V_F - V_R)P_{FD}$					
-EQ =		ation 25-2 or 2	•		L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =	using	Equation (Ex	hibit 25-5)		P _{FD} = 0.260 using Equation (Exhibit 25-12)					
/ ₁₂ =	pc/h				V ₁₂ = 2916 pc/h					
V_3 or V_{av34}	pc/h	(Equation 25-4	4 or 25-5)		V ₃ or V _{av34} 1866 pc/h (Equation 25-15 or 25-16)					
Is V_3 or $V_{av34} > 2,700$) pc/h?	s 🗆 No					☐ Yes ☑ No			
Is V_3 or $V_{av34} > 1.5$ *					1	•	☐ Yes ☑ No			
f Yes,V _{12a} =		(Equation 25-8	2)		If Yes, V _{12a} =	· · · · · · · · · · · · · · · · · · ·	pc/h (Equation	25 19)		
	·	(Equation 25-6)		120		pc/ii (Equation	23-10)		
Capacity Che		1 0		1 100 50	Capacit	y Checks	. 1		1	
	Actual	Cap	acity	LOS F?		Actua		acity	LOS F?	
					V_{F}	6648	Exhibit 25-14	9000	No	
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R 5043	Exhibit 25-14	9000	No	
					V_R	1605	Exhibit 25-3	4100	No	
Flow Entering	Morgo Ir	ofluence Ar	02	<u> </u>	 			Aroa		
TOW LINEINING	Actual	1	esirable	Violation?	Plow Entering Merge Influence Area Actual Max Desirable Violation?					
V	ricidai	Exhibit 25-7	Silabic	Violation:	V ₁₂	2916	Exhibit 25-14	4400:All	No	
V _{R12}	ioo Dotow		no4 []			_				
Level of Servi					1		etermination	_	r)	
$D_R = 5.475 + 0.0$)0734 v _R +	0.0078 V ₁₂ - 0	.00627 L _A			$O_{R} = 4.252 + 0$	0.0086 V ₁₂ - 0.0	009 L _D		
O _R = (pc/mi/l	n)				$D_R = 15$.8 (pc/mi/ln)				
OS = (Exhibit	25-4)				LOS = B	(Exhibit 25-4)				
Speed Detern	nination				Speed D	Determinati	on			
					_	377 (Exhibit 25				
9 ,	,					.1 mph (Exhibi	•			
S_R = mph (Exhibit 25-19)					1		•			
S ₀ = mph (Exhibit 25-19)					$S_0 = 57.0 \text{ mph (Exhibit 25-19)}$					
-	S = mph (Exhibit 25-19) S = mph (Exhibit 25-14)					.7 mph (Exhibi	-			

Phone: E-mail:		Fax	ζ:				
	Diver	ge Analy	/sis_				
Analyst: Agency/Co.:	DPA						
Date performed:	10/2/2007						
Analysis time period:	Future with Pr	oject					
Freeway/Dir of Travel:	I 75 WB						
Junction:	NW 138 STREET						
Jurisdiction:							
Analysis Year:	2018 PM Peak						
Description: Beacon Co	untyline DRI (T	hird Suf	Efici	ency)			
	Free	way Data	a				
Type of analysis		Di	iverg	re			
Number of lanes in free	way		_				
Free-flow speed on free	way	5.5	5.0		mph		
Volume on freeway		77	739		vph		
	Off R	amp Data	a				
		D.	!1 ₋ +				
Side of freeway Number of lanes in ramp		2	ight				
Free-Flow speed on ramp			0.0		mph		
Volume on ramp	,		195		vph		
Length of first accel/d	lecel lane		00		ft		
Length of second accel/			0 0		ft		
	Adjacent Ramp	Data (i	if on	e exist	s)		
		(-			· /		
Does adjacent ramp exis		No)				
Volume on adjacent ramp					vph		
Position of adjacent ra	mp						
Type of adjacent ramp	m.m.				£Ł		
Distance to adjacent ra	ımp				ft		
Con	version to pc/h	Under E	Base	Conditi	ons		
Junction Components		Freeway		Ramp		Adjacent Ramp	
Volume, V (vph)		7739		1495		_	vph
Peak-hour factor, PHF		0.95		0.95			
Peak 15-min volume, v15		2037		393			V
Trucks and buses		4		4			%
Recreational vehicles		0		0			%
Terrain type:		Level		Level			
Grade		0.00	왕	0.00	% .	9	<u> </u>

mi 0.00

1.5

1.2

mi

шi

0.00

1.5

1.2

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
Driver population factor, fP
                                      1.00
                                                  1.00
Flow rate, vp
                                      8309
                                                  1605
                                                                       pcph
                    _____Estimation of V12 Diverge Areas_
                 L =
                                 (Equation 25-8 or 25-9)
                  ΕQ
                         0.260 Using Equation 0
                  FD
                 v = v + (v - v) P = 2916 pc/h
                           F R FD
                  12
                     R
                       _____Capacity Checks____
                                                       LOS F?
                          Actual
                                        Maximum
                          6648
                                        9000
                                                       No
    v = v
     Γi
          F
                          5043
                                        9000
                                                       No
       = v - v
     FΟ
          F
              R
                          1605
                                        4100
                                                       No
     R
                          1866 pc/h (Equation 25-15 or 25-16)
     3 or av34
Is
        V
                 > 2700 pc/h?
                                       No
     3 or av34
                 > 1.5 v /2
                                       No
Ts
          V
     3 or av34
                        12
If yes, v
                                        (Equation 25-18)
        12A
                     _Flow Entering Diverge Influence Area__
                                   Max Desirable
                     Actual
                                                        Violation?
                     2916
                                   4600
                                                        No
    V
     12
                                                                            !
               __Level of Service Determination (if not F)_____
                      D = 4.252 + 0.0086 \text{ v} - 0.009 \text{ L} = 15.8 \text{ pc/mi/ln}
Density,
                       R
                                          12 D
Level of service for ramp-freeway junction areas of influence B
                    __Speed Estimation____
                                           D = 0.377
Intermediate speed variable,
                                            S
Space mean speed in ramp influence area,
                                           S = 50.1
                                                        mph
                                            R
Space mean speed in outer lanes,
                                            S = 57.0
                                                        mph
                                            0
```

S = 53.7

mph

0.980

0.980

Heavy vehicle adjustment, fHV

175 EB TO SR 826 SB RAMP DIVERGE

Onna:::-!! (KANIP	S AND RAM			KN3	пссі			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		75 EE				
Agency or Company	10/0/	2007		nction	,	SR 826	6 SB			
Date Performed	10/2/			risdiction	,	2007 4	M Dools			
Analysis Time Period Project Description				alysis Year		200 <i>1 P</i>	M Peak			
	Deacon County	yiiile DRI (TIlliu	Sufficiency)							
Inputs		Terrain: Level							<u></u>	
Jpstream Adj Ramp		Terrairi. Lever							Downstrea Ramp	ım Adj
Yes On	l								☐ Yes	On
✓ No ☐ Off	:								✓ No	Off
- _{up} = ft									L _{down} =	ft
		S	_{FF} = 55.0 mph		$S_{FR} = 50$	0.0 mp	oh			
$V_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}				$V_D =$	veh/h
Conversion to	pc/h Und	der Base C		A	D K P					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	6295	0.95	Level	4	0	0	.980	1.00	67	59
Ramp	2172	0.95	Level	4	0		.980	1.00	23	
UpStream	2172	0.73	LCVCI	7	 	 	. 700	1.00	23	<u> </u>
DownStream						\top				
		Merge Areas						Diverge Areas		
Estimation of	V ₁₂	•			Estimati	ion c	of V ₁₂	-		
	V ₁₂ = V _F	(D)			<u> </u>			- \/ . (\/ \.	/ \D	
			0.5.0)		<u> </u>			= V _R + (V _F - V		
_Q = (Equation 25-2 or 25-3)			L _{EQ} = (Equation 25-8 or 25-9)							
P _{FM} =	using	using Equation (Exhibit 25-5)			P_{FD} = 0.436 using Equation (Exhibit 25-12)				nibit 25-12)	
/ ₁₂ =	pc/h			V ₁₂ = 3821 pc/h						
V_3 or V_{av34}	pc/h	(Equation 25								
$ s V_3 \text{ or } V_{av34} > 2,70$	0 pc/h? Tye:	s 🗆 No				, > 2,7		Tyes ☑ No		,
Is V ₃ or V _{av34} > 1.5 *								Yes ✓ No		
f Yes,V _{12a} =		Equation 25	-8)		If Yes,V _{12a} =			oc/h (Equation		
Capacity Che		(Lqualion 25	-0)					on (Equation	11 23-10)	
зарасну спе	ŭ	I 0.	an a altri	100.50	Capacity	CII		1 0	an a aitu	LOCES
	Actual	l Ca	pacity	LOS F?			Actual	i	apacity	LOS F?
					V _F		5746	Exhibit 25-	14 9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	3414	Exhibit 25-	14 9000	No
					V_R		2332	Exhibit 25-	-3 2100	Yes
low Entering	n Merae In	fluence A	rea	ı	<u> </u>	terir	na Merc	ge Influenc	e Area	
	Actual		Desirable	Violation?			Actual	Max Desira		Violation?
V _{R12}		Exhibit 25-7			V ₁₂		3821	Exhibit 25-14	1	No
Level of Serv	ica Datarr	1	f not E)	<u> </u>	+			eterminatio	1	
		•							•	' /
$D_R = 5.475 + 0.0$	• • •	υ.υυ/ο ν ₁₂ -	0.00021 L _A		1			0086 V ₁₂ - 0.	.0009 L _D	
$O_R = (pc/mi/c)$	·						:/mi/ln)			
OS = (Exhibi						<u> </u>	bit 25-4)			
Speed Detern					Speed D					
$M_S = $ (Exibit 25)	5-19)					•	xhibit 25	•		
S_{R} = mph (Exh	ibit 25-19)				$S_R = 49$.2 mpł	n (Exhibit	25-19)		
.,	ibit 25-19)				$S_0 = 60$.3 mpł	n (Exhibit	25-19)		
					ľ	•	n (Exhibit	•		
S = mph (Exh	IDIL 25-141						(XI III)	ZJ-1:11		

Phone: Fax: E-mail: _____Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 6295 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-Flow speed on ramp 50.0 mph Volume on ramp 2172 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 6295 2172 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1657 572 V

4

0

1.5

1.2

Level

4

0

0.00 % 0.00 %

0.00 mi 0.00

Level

1.5

1.2

mi

응

%

용

шi

Trucks and buses

Terrain type:

Grade

Length

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
1.00
Driver population factor, fP
                                    1.00
                                    6759
Flow rate, vp
                                               2332
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 3821 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         5746
                                      9000
                                                    No
     Fi F
                         3414
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2332
                                      2100
                                                    Yes
     R
                         962 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3821
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 23.6 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.443
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 49.2
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 60.3
                                                     mph
```

S = 52.5

mph

0.980

0.980

Heavy vehicle adjustment, fHV

notion	IXAIII (S AND RAM			VIVOI IL	<u>- </u>				
nation			Site Infor							
DPA			-							
10/0/	2007			S	K 826 SB					
				າ	007 DM D	oak				
			luly313 T Cul		.007 1 101 1	cak				
zeacon county	Jimo Bra (Tima	Summerie y								
	Terrain: Level								m Adj	
								•	☐ On	
								✓ No	Off	
								-down =	ft	
	S	_{FF} = 55.0 mph		$S_{FR} = 50$).0 mph		ļ	,		
		Sketch (s	show lanes, L _A ,	$L_{D_f}V_{R_f}V_f$				V _D =	veh/h	
pc/h Unc	der Base C			D IX I						
V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}		f _p	v = V/PHF	x f _{HV} x f _p	
5053	0.95	Level	4	0	0.980		1.00	54	25	
1811	0.95	Level	4	0	0.980		1.00	19	44	
				ļ						
				ļ						
	vierge Areas			Fatimati	on of w		erge Areas			
^v 12				Estimation	OTI OT V	12				
$V_{12} = V_{F}$	(P _{FM})					$V_{12} = V$	R + (V _F - V _F	P _{FD}		
_{EQ} = (Equation 25-2 or 25-3)			L _{FO} = (Equation 25-8 or 25-9)							
using Equation (Exhibit 25-5)								ibit 25-12)		
using Equation (Exhibit 25-5)								,	,	
·				1			•	tion 25-15	or 25-16)	
or V_{av34} pc/h (Equation 25-4 or 25-5) V_3 or $V_{av34} > 2,700$ pc/h? Yes No					. > 2 700 r				0. 20 .0,	
		0)		1				OF 10\		
	Equation 25	-0)		120			1 (Equation	25-16)		
	1 0-		1.00.50	Capacity	1		0	14	LLOCEO	
Actual		ірасіту	LUSF?	\ \/			<u> </u>	1	LOS F?	
									No	
	Exhibit 25-7			$V_{FO} = V_F$	· V _R 2	2939	Exhibit 25-14	9000	No	
				V_R		1944	Exhibit 25-3	2100	No	
Merge In	fluence A	rea		Flow Ent	tering l	Merge	Influence	Area		
Actual			Violation?						Violation?	
	Exhibit 25-7			V ₁₂	3225	E	xhibit 25-14	4400:All	No	
ce Detern	nination (i	f not F)			Servic	e Dete	rminatio	n (if not	F)	
	•							_	•	
• •	12	Α		I '			14	5		
•				1		•				
ination				Speed D	<u> </u>					
madon				'						
4.0\				$D_{s} = 0.4$	08 (Exhil	JIL ∠3-15	")			
•						S _R = 49.7 mph (Exhibit 25-19)				
-19) bit 25-19)				1			•			
•				$S_0 = 60.$	7 mph (E: 3 mph (E: 9 mph (E:	xhibit 25	5-19)			
	Existi Beacon County Popc/h Und V (Veh/hr) 5053 1811 V12 V12 V12 V12 V ₁₂ = V _F (Equation of the pc/h (exist) of the pc	Terrain: Level Terrain: Level	Terrain: Level S FF = 55.0 mph Sketch (: D PC/h Under Base Conditions V (Veh/hr) PHF Terrain 5053 0.95 Level 1811 0.95 Level Merge Areas V12 V12 = VF (PFM) (Equation 25-2 or 25-3) using Equation (Exhibit 25-5) pc/h pc/h (Equation 25-4 or 25-5) D PC/h? Yes No No pc/h (Equation 25-8) CKS Actual Capacity Exhibit 25-7 Merge Influence Area Actual Max Desirable Exhibit 25-7 CE Determination (if not F) 10734 VR + 0.0078 V12 - 0.00627 LA n)	S	Secon Countyline DRI (Third Sufficiency) Secon Countyline DRI (Third Sufficiency)	Secon Countyline DRI (Third Sufficiency) Secon Countyline DRI (Third Sufficiency)	Second Countyline DRI (Third Sufficiency) Second Countyline DRI (Third Sufficiency)	Junction Junisdiction Junisdiction Junisdiction Junisdiction Analysis Vear 2007 PM Peak	Junction SR 826 SB Junction SR 826 SB Junction Analysis Year 2007 PM Peak	

Phone: Fax: E-mail: _____Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5053 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 1 Free-Flow speed on ramp 50.0 mph Volume on ramp 1811 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5053 1811 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1330 477 V Trucks and buses 4 4 응 Recreational vehicles

0

0.00 % 0.00 %

0.00 mi 0.00

Level

1.5

1.2

mi

Level

1.5

1.2

Terrain type:

Grade

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

%

용

шi

```
1.00
                                               1.00
Driver population factor, fP
Flow rate, vp
                                    5425
                                               1944
                                                                   pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 3225 pc/h
                 12 R
                         F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                        4883
                                     9000
                                                    No
     Fi F
    v = v - v
                        2939
                                     9000
                                                    No
         F R
     FΟ
                        1944
                                     2100
                                                    No
     R
                        829 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3225
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 18.5 pc/mi/ln
Density,
                                       12
                     R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.408
                                          S
Space mean speed in ramp influence area,
                                         S = 49.7
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 60.3
                                                     mph
```

S = 52.9

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Consuel Int		KANIP	S AND RAM			CAN	ncel					
General Infor				Site Infor								
Analyst	DPA			eeway/Dir of Tr		75 EB						
Agency or Company	4.0.10.1			nction	S	SR 826	SB					
Date Performed	10/2/			risdiction		2010 4	MD I					
Analysis Time Period		e without Project		nalysis Year		2018 A	M Peak					
Project Description	Beacon County	Jiine DRI (Thira	Sufficiency)									
nputs		Terrain: Level								A 11		
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj		
☐ Yes ☐ On									☐ Yes	☐ On		
✓ No ☐ Off	:								✓ No	☐ Off		
- _{up} = ft									L _{down} =	ft		
ир		S	_{FF} = 55.0 mph		S _{ER} = 50	0.0 mp	h					
$V_{\rm u} = {\rm veh/h}$				show lanes, L _A ,	111	'			$V_D =$	veh/h		
Conversion to	pc/h Und	der Base C										
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$x f_{HV} x f_{p}$		
Freeway	7493	0.95	Level	4	0	0.	980	1.00	80)45		
Ramp	2507	0.95	Level	4	0	0.	980	1.00	26	592		
UpStream												
DownStream												
		Merge Areas			ļ			Diverge Areas				
Estimation of	v ₁₂				Estimati	on o	of v ₁₂					
	V ₁₂ = V _F	(P _{EM})					V ₄₀ =	V _R + (V _F - V _I	D)P _{ED}			
(5			/F (* 05.0)									
- _{EQ} =	· · ·							, ,				
P _{FM} =	ŭ	Equation (E									IIDIL 25-12)	
/ ₁₂ =	pc/h				V ₁₂ =			324 pc/h				
V_3 or V_{av34}		(Equation 25	-4 or 25-5)		V_3 or V_{av34}			1056 pc/h (Equation 25-15 or 25-16)				
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🥅 Yes	s 🗏 No				•		Tyes ✓ No				
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av3}	₄ > 1.5	5 * V ₁₂ /2	Tyes ✓ No				
f Yes,V _{12a} =	pc/h ((Equation 25	-8)		If Yes,V _{12a} =		ŗ	c/h (Equation	25-18)			
Capacity Che	cks				Capacity	/ Ch	ecks					
	Actual	Ca	apacity	LOS F?			Actual	Ca	pacity	LOS F?		
			, ,		V _F		6436	Exhibit 25-1	 	No		
V		Exhibit 25-7			$V_{FO} = V_{F}$	- \/	3744	Exhibit 25-1		No		
V_{FO}		LAHIDIL 20-7				γ R				+		
					V _R		2692	Exhibit 25-3		Yes		
Flow Entering		ii .		1	Flow En	_		ge Influenc		•		
	Actual	` 	Desirable	Violation?		/	Actual	Max Desirat		Violation?		
V_{R12}		Exhibit 25-7			V ₁₂		1324	Exhibit 25-14	4400:All	No		
Level of Serv		•			+			terminatio		<i>F)</i>		
$D_R = 5.475 + 0.$	00734 v _R + (0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0.0	0009 L _D			
O _R = (pc/mi/	ln)				$D_R = 27.$.9 (pc	/mi/ln)					
OS = (Exhibi	t 25-4)				1	(Exhib	oit 25-4)					
Speed Detern					Speed D	`		on				
M _S = (Exibit 25	5-19)				$D_{s} = 0.4$	75 (E	xhibit 25	-19)				
	ibit 25-19)				1	•	(Exhibit	•				
	•				l ''		(Exhibit	•				
າ∝= mnn (⊢⊻h	ibit 25-19)						•	•				
	ibit 25-14)				S = 52	Λ '	(Exhibit	05 45				

Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: I 75 EB
Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway D	ata_
-----------	------

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7493	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2507	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7493	2507	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1972	660	V
Trucks and buses	4	4	8
Recreational vehicles	0	0	8
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	8
Length	0.00 mi	0.00 m	i mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
                                               1.00
Driver population factor, fP
                                    8045
Flow rate, vp
                                               2692
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 4324 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         6436
                                      9000
                                                    No
     Fi F
                         3744
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2692
                                      2100
                                                    Yes
     R
                         1056 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    4324
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 27.9 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.475
                                          S
Space mean speed in ramp influence area,
                                         S = 48.8
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 60.1
                                                     mph
```

S = 52.0

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Congral lafe	ma4!	KANIP	S AND RAM			VIVOI IL				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		75 EB				
Agency or Company				nction	S	SR 826 SB				
Date Performed	10/2/			risdiction	0	010 DM D				
Analysis Time Period		e without Project		nalysis Year		018 PM P	еак			
Project Description	Beacon County	yline DRI (Thira	Suniciency)							
nputs		Terrain: Level						1.		
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	m Adj
Yes On									Yes	☐ On
✓ No ✓ Off	1								✓ No	☐ Off
									INO	
_{-up} = ft									L _{down} =	ft
		S	$_{FF} = 55.0 mph$		$S_{FR} = 50$).0 mph		,	\/ -	veh/h
$l_{\rm u} = {\rm veh/h}$			Sketch (s	show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$				$V_D =$	ven/n
Conversion to	•	der Base C	Conditions	1		1	í			
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	,	f _p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	6895	0.95	Level	4	0	0.980		1.00	74	03
Ramp	2324	0.95	Level	4	0	0.980		1.00	24	95
UpStream										
DownStream										
		Merge Areas			<u> </u>			erge Areas		
Estimation of	v ₁₂				Estimation	on of v	12			
	V ₁₂ = V _F	(P _{EM})					V ₁₂ = V	/ _R + (V _F - V _R)P _{ED}	
EQ = (Equation 25-2 or 25-3)			(5 (1 05 0 05 0)							
	<u> </u>			, ,					ihit 25 12)	
P _{FM} =	,			P _{FD} =				uation (Exi	IDIL 25-12)	
/ ₁₂ =					V ₁₂ =) pc/h		
V_3 or V_{av34}					V_3 or V_{av34}			pc/h (Equa	tion 25-15	or 25-16)
Is V_3 or $V_{av34} > 2,700$					Is V ₃ or V _{av34}	-				
s V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av34}	₁ > 1.5 * V	₁₂ /2	Yes 🗹 No		
Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes, V _{12a} =		pc/	h (Equation	25-18)	
Capacity Che	cks				Capacity	Chec	ks			
	Actual	Ca	apacity	LOS F?			Actual	Car	pacity	LOS F?
					V _F		5923	Exhibit 25-14	9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$		3428	Exhibit 25-14		No
* FO		EATHOR 20-1				_		 		+
					V _R		2495	Exhibit 25-3		Yes
Flow Entering				1	Flow Ent			Influence		
	Actual	 	Desirable	Violation?		Actu		Max Desirab		Violation?
V _{R12}		Exhibit 25-7			V ₁₂	3990) <u>E</u>	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern	nination (i	f not F)		Level of	Servic	e Dete	erminatio	n (if not	F)
$D_R = 5.475 + 0.0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A		D	$_{R} = 4.25$	2 + 0.00	0.00 N ₁₂ - 0.0	0009 L _D	
O _R = (pc/mi/l			•			1 (pc/mi/		· -		
.OS = (Exhibi	•				1	Exhibit 2	•			
					<u> </u>			•		
Speed Detern					Speed D					
$M_{\rm S} = $ (Exibit 25)	5-19)				I. "	58 (Exhi l		•		
\hat{S}_{R} = mph (Exh	ibit 25-19)				$S_R = 49.$	1 mph (E	xhibit 2	5-19)		
	ibit 25-19)				$S_0 = 60.$	3 mph (E	xhibit 2	5-19)		
	ibit 25-14)				S = 52.	2 mph (E	xhihit 2!	5-15)		
) – IIIIII (L \II							71 11 DIL 2-1			

Fax:

Diverge	Analysis_

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: I 75 EB
Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6895	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2324	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent
			Ramp
Volume, V (vph)	6895	2324	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1814	612	v
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
7403
Flow rate, vp
                                               2495
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 3990 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         5923
                                     9000
                                                    No
     Fi F
                        3428
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                         2495
                                     2100
                                                    Yes
     R
                        966 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3990
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 25.1 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
                                         D = 0.458
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 49.1
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 60.3
                                                     mph
Space mean speed for all vehicles,
                                        S = 52.2
                                                     mph
```

0.980

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

0	1'	KAMP	S AND RAM			KN3	ПЕЕТ			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		75 EE				
Agency or Company Date Performed	10/0/	2007		nction		SR 826) SR			
Date Performed Analysis Time Period	10/2/			risdiction	,	0010 A	M Dook			
Project Description		e with Project		alysis Year		2018 A	M Peak			
Inputs	Deacon County	yiiile DKI (TIIIIu	Sufficiency)							
-		Terrain: Level							Downstra	m Adi
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	am Adj
										□ 0
E E. o	,								☐ Yes	☐ On
☑ No ☐ Off	•								✓ No	Off
_{rup} = ft									L _{down} =	ft
up		S	_{FF} = 55.0 mph		S _{FR} = 50	0.0 mp	h			
$t_{\rm u} = {\rm veh/h}$			•	show lanes, L _A ,		·			$V_D =$	veh/h
Conversion to	nc/h Hn/	dor Rasa (Show lanes, EA	-D' R' F					
1	y pc/11 one					1	. 1		1	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	7650	0.95	Level	4	0	0.	.980	1.00	82	214
Ramp	2563	0.95	Level	4	0	0.	.980	1.00	27	'52
UpStream		1				1				
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v ₁₂				Estimati	ion c	of v ₁₂			
	V ₁₂ = V _F	(P ₅ ,,)					V.a =	= V ₂ + (V ₋ - \	/ ₅)P ₅₅	
($V_{12} = V_R + (V_F - V_R)P_{FD}$						
·EQ =	(Equation 25-2 or 25-3)				L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =					P _{FD} = 0.436 using Equation (Exhibit 25-12				nibit 25-12)	
' ₁₂ =	•	pc/h			$V_{12} = 4418 \text{ pc/h}$					
or V_{av34} pc/h (Equation 25-4 or 25-5)				V_3 or V_{av34} 1077 pc/h (Equation 25-15 or 25-				5 or 25-16)		
$ s V_3 \text{ or } V_{av34} > 2,70$	0 pc/h?	s 🗏 No			Is V ₃ or V _{av3}	, ₄ > 2,7	'00 pc/h? [TYes ✓ No)	
Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No				Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No						
Yes,V _{12a} = pc/h (Equation 25-8)				If Yes,V _{12a} =			c/h (Equatio			
Capacity Che		<u> </u>	,		Capacity			\ 1	,	
Jupuoney Circ	Actual	Ca	pacity	LOS F?		1	Actual		apacity	LOS F?
	, ioidai	T T	.paonj		V _F		6572	Exhibit 25-	' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' '	No
V		F., L 1 1 05 3			<u> </u>			_	_	
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	3820	Exhibit 25-		No
					V_R		2752	Exhibit 25-	-3 2100	Yes
Flow Entering	Merge In	fluence A	rea		Flow En	terir	ng Merg	ge Influenc	e Area	
	Actual		Desirable	Violation?		_	Actual	Max Desira		Violation?
V _{R12}		Exhibit 25-7			V ₁₂		4418	Exhibit 25-14	4400:All	No
Level of Servi	ice Detern	<u> </u>	f not F)	<u> </u>	+			terminatio		
$D_R = 5.475 + 0.0$		•			 			0086 V ₁₂ - 0	•	- /
		12			1			12 0	-D	
) _R = (pc/mi/l	•				I '`		/mi/ln)			
.OS = (Exhibit						<u> </u>	oit 25-4)			
Speed Detern	nination				Speed D	eter)	minatio	on		
$M_{\rm S} = $ (Exibit 25	5-19)				$D_{\rm S} = 0.4$	181 (E	xhibit 25	-19)		
	,				1	.8 mpt	(Exhibit	25-19)		
S _R = mph (Exhibit 25-19)										
	S ₀ = mph (Exhibit 25-19)				S ₀ = 60.0 mph (Exhibit 25-19)					
S_0 mph (Exh	ibit 25-19) ibit 25-14)				ľ		i (Exhibit i (Exhibit	•		

Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7650	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2563	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7650	2563	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2013	674	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    8214
                                               2752
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 4418 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         6572
                                      9000
                                                    No
     Fi F
                         3820
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2752
                                      2100
                                                    Yes
     R
                        1077 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    4418
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 28.7 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.481
                                          S
Space mean speed in ramp influence area,
                                         S = 48.8
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 60.0
                                                     mph
```

S = 52.0

mph

0.980

0.980

Heavy vehicle adjustment, fHV

0		KAMPS	S AND RAM			KNS				
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		75 EE				
Agency or Company	4.0.10.1			nction		SR 826	SB			
Date Performed	10/2/			risdiction						
Analysis Time Period		e with Project		alysis Year		2018 P	M Peak			
Project Description	Beacon County	yline DRI (Thira	Sufficiency)							
Inputs		Torroin, Lovel							L	
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	am Adj
Yes On									☐ Yes	☐ On
✓ No ✓ Off									✓ No	Off
- _{up} = ft									L _{down} =	ft
$V_{\rm u} = {\rm veh/h}$		S	_{FF} = 55.0 mph Sketch (s	show lanes, L _A ,	$S_{FR} = 50$ L_D, V_D, V_S	0.0 mp	bh		V _D =	veh/h
Conversion to	pc/h Und	der Base C		A ^r	ט' א' וי					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	x f _{HV} x f _p
Freeway	7670	0.95	Level	4	0	0.	.980	1.00	82	235
Ramp	2599	0.95	Level	4	0	_	.980	1.00		91
UpStream	20//	0.70	LUVUI	7	 	+	. , 00	1.00	21	, i
DownStream		1				1				
		Merge Areas						Diverge Areas		
Estimation of		<u> </u>			Estimati	on c				
		/D)						\/ . (\/ \)	/ \D	
	$V_{12} = V_F$				l			= V _R + (V _F - V		
-EQ =	, ,	ation 25-2 or	,		L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =	using	using Equation (Exhibit 25-5)				P _{FD} = 0.436 using Equation (Exhibit 25-12				nibit 25-12)
/ ₁₂ =	pc/h			V ₁₂ = 4446 pc/h						
/ ₃ or V _{av34}					V ₃ or V _{av34} 1071 pc/h (Equation 25-15 or 25-				5 or 25-16)	
s V ₃ or V _{av34} > 2,700 pc/h? Yes No				Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No						
								Yes Mo		
	V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No 'es, $V_{12a} =$ pc/h (Equation 25-8)									
Yes,V _{12a} =		(Equation 25	-8)		If Yes,V _{12a} =			c/h (Equatio	n 25-18)	
Capacity Che					Capacity	/ Ch	ecks			
	Actual	Ca	pacity	LOS F?			Actual	C	apacity	LOS F?
					V_{F}		6588	Exhibit 25-	14 9000	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- V _R	3797	Exhibit 25-	14 9000	No
					V _R		2791	Exhibit 25-	_	Yes
Elow Entoring	Moras I-	fluoros	ro2	<u> </u>	<u> </u>	40 ⊬ !~				162
Flow Entering			Desirable	Violation?	FIOW EII	_	Actual	ge Influenc Max Desira		Violation?
\/	Actual	i 	ว _{ตอแ} ลมโซ	v iOlatiOH?	\/	1			1	i
V _{R12}		Exhibit 25-7			V ₁₂		4446	Exhibit 25-14	4400:All	No
Level of Servi		•						termination		F)
$D_R = 5.475 + 0.0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0.	0009 L _D	
P _R = (pc/mi/l	n)				$D_R = 29$.0 (pc	:/mi/ln)			
OS = (Exhibit	25-4)				LOS = F((Exhil	bit 25-4)			
Speed Detern	<u> </u>				Speed D	•		on		
•							xhibit 25			
M _S = (Exibit 25-19)						•		•		
					S _R = 48.7 mph (Exhibit 25-19)					
					c	4 .	/F	05.40\		
$S_0 = \text{mph (Exh)}$	ibit 25-19) ibit 25-14)				ľ		n (Exhibit n (Exhibit	·		

Fax:

Diverge	Analysis_
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Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

_	
F'reeway	Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7670	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	1	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2599	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane		ft

______Adjacent Ramp Data (if one exists)_____

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7670	2599	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2018	684	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    8235
                                               2791
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.436 Using Equation 8
                 FD
                v = v + (v - v) P = 4446 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         6588
                                      9000
                                                    No
     Fi F
                         3797
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2791
                                      2100
                                                    Yes
     R
                         1071 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                    4446
                                 4600
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 29.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.484
                                          S
Space mean speed in ramp influence area,
                                         S = 48.7
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 60.1
                                                      mph
```

S = 51.9

mph

0.980

0.980

Heavy vehicle adjustment, fHV

0	1'	KANIP	S AND RAM			KN3	пссі			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		75 EB				
Agency or Company				ınction		SR 826	SB			
Date Performed	10/2/2			ırisdiction	_					
Analysis Time Period		e with Project w		nalysis Year	2	2018 A	M Peak			
Project Description	Beacon County	/line DRI (Third	Sufficiency)							
nputs		Tamaia, Laval								
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	am Adj
☐ Yes ☐ On									☐ Yes	☐ On
✓ No ☐ Off									✓ No	☐ Off
- _{un} = ft									L _{down} =	ft
_{-up} = ft		S	_{FF} = 55.0 mph		S _{ER} = 50	am 0.0	h		down	
$V_{\rm u} = {\rm veh/h}$				show lanes, L _A ,	111				$V_D =$	veh/h
Conversion to	pc/h Und	der Base (A	D K P					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	x f _{HV} x f _p
Freeway	7650	0.95	Level	4	0	0.	980	1.00	82	214
Ramp	2563	0.95	Level	4	0	0.	980	1.00	27	'52
UpStream										
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	v ₁₂				Estimati	on o	of v ₁₂			
	V ₁₂ = V _F	(P _{EM})					V ₄₀ =	= V _R + (V _F - V _I		
-a =	(5 11 05 0 05 0)				 =			Equation 25-8		
- _{EQ} =					L _{EQ} =				•	-:L:L OF 40\
P _{FM} =					P _{FD} =			260 using Ed	quation (Ext	110IT 25-12)
/ ₁₂ =	pc/h				V ₁₂ =			745 pc/h		
or V _{av34} pc/h (Equation 25-4 or 25-5)				V_3 or V_{av34}			413 pc/h (Equ	ation 25-1	5 or 25-16)	
$V_3 \text{ or } V_{av34} > 2,700 \text{ pc/h?} \text{ Yes } \text{ No}$				Is V_3 or V_{av3}	₄ > 2,7	00 pc/h?	Tyes ✓ No			
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗆 No			Is V ₃ or V _{av3}	₄ > 1.5	* V ₁₂ /2	Tyes ✓ No		
f Yes,V _{12a} =		Equation 25	-8)		If Yes,V _{12a} =			c/h (Equation	25-18)	
Capacity Che	cks	· •	,		Capacity				,	
oupuicity circ	Actual	Ca	apacity	LOS F?		1	Actual	Ca	pacity	LOS F?
	. iotaai	† Ť			V _F		6572	Exhibit 25-1	 	No
V		Evelie of 7			<u> </u>	\/ 			_	+
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	3820	Exhibit 25-1		No
					V _R		2752	Exhibit 25-3		No
Flow Entering	Merge In				Flow En	terin	g Merg	ge Influenc		
	Actual	Max [Desirable	Violation?		1	Actual	Max Desirat	ole	Violation?
V _{R12}		Exhibit 25-7			V ₁₂	3	3745	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern	nination (i	f not F)		Level of	Serv	vice De	terminatio	n (if not	F)
$D_R = 5.475 + 0.0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0.0	0009 L _D	
O _R = (pc/mi/l	n)				$D_R = 5.0$	(pc/r	mi/ln)			
OS = (Exhibit	25-4)				1	(Exhib	oit 25-4)			
Speed Detern	nination				Speed D	<u> </u>		on		
M _S = (Exibit 25	 5-19)				$D_{\rm S} = 0.4$	181 (E	xhibit 25	-19)	<u></u>	<u></u>
	ibit 25-19)				1	•	(Exhibit	•		
	,				l '`		•	•		
סיי– וווטח (בxh	ibit 25-19)				S ₀ = 58.7 mph (Exhibit 25-19)					
	ibit 25-14)				S = 52	/1	(Exhibit	OF 45\		

Copyrigh

Fax:

Diverge	Analysis

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project w imp

Freeway/Dir of Travel: I 75 EB
Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7650	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2563	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	7650	2563	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2013	674	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    8214
                                               2752
                                                                   pcph
                 _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3745 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         6572
                                     9000
                                                    No
     Fi F
                        3820
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                         2752
                                     4100
                                                    No
     R
                        1413 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3745
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 5.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.481
                                          S
Space mean speed in ramp influence area,
                                         S = 48.8
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 58.7
                                                     mph
```

S = 52.6

mph

0.980

0.980

Heavy vehicle adjustment, fHV

		RAMP	S AND RAM			KKS	HEET			
General Infor	mation			Site Infor						
Analyst	DPA		Fre	eeway/Dir of Tr	avel I	75 EE	3			
Agency or Company				nction	5	SR 826	6 SB			
Date Performed	10/2/			risdiction						
Analysis Time Period		e with Project v	<u> </u>	nalysis Year	2	2018 F	PM Peak			
Project Description	Beacon County	yline DRI (Third	d Sufficiency)							
nputs		l							ĺ	
Jpstream Adj Ramp		Terrain: Leve	·l						Downstrea Ramp	am Adj
Yes Or	1								☐ Yes	☐ On
✓ No	f								✓ No	☐ Off
- _{up} = ft									L _{down} =	ft
ир		S	_{FF} = 55.0 mph		S _{FR} = 50	0.0 mp	oh			
$l_{\rm u} = {\rm veh/h}$	l		• •	show lanes, L _A ,					$V_D =$	veh/h
Conversion t	o pc/h Und	der Base (-t	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	7670	0.95	Level	4	0	0	.980	1.00	82	235
Ramp	2599	0.95	Level	4	0	0	.980	1.00	27	791
UpStream	ĺ									
DownStream										
		Merge Areas						Diverge Areas		
Estimation of	^f v ₁₂				Estimati	on c	of v ₁₂			
	V ₁₂ = V _F	(P ₅₁₄)					V., . =	= V _R + (V _F - \	/ _D)P _{ED}	
_	(5				_			Equation 25		
-EQ =	using Equation (Exhibit 25-5)				L _{EQ} =		•	•	•	" " 05 40)
P _{FM} =	_	Equation (E	EXHIDIL 25-5)		P _{FD} =			260 using E	quation (Exi	nibit 25-12)
/ ₁₂ =					V ₁₂ =			778 pc/h		
or V _{av34} pc/h (Equation 25-4 or 25-5)				V_3 or V_{av34}			405 pc/h (Eq		5 or 25-16)	
$V_3 \text{ or } V_{av34} > 2,70$	0 pc/h?	s 🗏 No			Is V ₃ or V _{av3}	4 > 2,7	700 pc/h? 🛭	TYes ✓ No)	
Is V_3 or $V_{av34} > 1.5$	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av3}	4 > 1.5	5 * V ₁₂ /2	TYes ✓ No)	
f Yes, V _{12a} =		(Equation 25	5-8)		If Yes,V _{12a} =			oc/h (Equatio		
Capacity Che		` '	,		Capacity				,	
oupainty one	Actual	C	apacity	LOS F?			Actual	C	apacity	LOS F?
	7.0.00	i i	apaonj		V _F		6588	Exhibit 25-		No
W		Evhibit OF 7				. \ /		_	_	+
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	v _R	3797	Exhibit 25-	_	No
					V _R		2791	Exhibit 25		No
Flow Entering	g Merge In	1			Flow En	terir	ng Merg	ge Influenc		
	Actual	Max	Desirable	Violation?			Actual	Max Desira	able	Violation?
V_{R12}		Exhibit 25-7			V ₁₂		3778	Exhibit 25-14	4400:All	No
Level of Serv	ice Detern	nination (i	if not F)		Level of	Ser	vice De	termination	on (if not	<i>F</i>)
$D_R = 5.475 + 0.$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _Δ		D	_R = 4	.252 + 0.	0086 V ₁₂ - 0	.0009 L _D	
O _R = (pc/mi/	• • •	1.4	,,				mi/ln)	1.2	5	
OS = (Exhibi	•				1		bit 25-4)			
Speed Determ					Speed D	`		on		
•					 ' 		xhibit 25			
3	•				1		n (Exhibit	•		
	ibit 25-19)				1		,	•		
	ibit 25-19)				ľ		n (Exhibit	•		
= mph (Exh	ibit 25-14)				S = 52.	.5 mpł	า (Exhibit	25-15)		
ight © 2005 University	y of Florida, All R	ights Reserved			HCS+TM V	ersion/	5.21		Generated: 1	0/21/2008 2:

Fax:

_____Diverge Analysis_____

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project w imp

Freeway/Dir of Travel: I 75 EB
Junction: SR 826 SB

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway D	ata_
-----------	------

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	7670	vph

_____Off Ramp Data______

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2599	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	500	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

Junction Components		Freeway		Adjacent		
					Ramp	
	7670		2599			vph
	0.95		0.95			
	2018		684			v
	4		4			%
	0		0			%
	Level		Level			
	0.00	용	0.00	8	8	
	0.00	mi	0.00	mi	m	i
	1.5		1.5			
ER	1.2		1.2			
	ER	7670 0.95 2018 4 0 Level 0.00 0.00	7670 0.95 2018 4 0 Level 0.00 % 0.00 mi 1.5	7670 2599 0.95 0.95 2018 684 4 4 0 0 Level Level 0.00 % 0.00 0.00 mi 0.00 1.5 1.5	7670 2599 0.95 0.95 2018 684 4 4 0 0 Level Level 0.00 % 0.00 % 0.00 mi 0.00 mi 1.5 1.5	Ramp 7670 2599 0.95 0.95 2018 684 4 4 0 0 Level Level 0.00 % 0.00 % % 0.00 mi 0.00 mi m 1.5 1.5

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    8235
                                               2791
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3778 pc/h
                 12 R
                          F R FD
                   _____Capacity Checks_____
                                      Maximum
                                                   LOS F?
                        Actual
                         6588
                                      9000
                                                    No
    v = v
     Fi F
                         3797
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2791
                                     4100
                                                    No
     R
                        1405 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
         V
     3 or av34
                      12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3778
                                                     No
    V
     12
             ___Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 5.2 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
                                         D = 0.484
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 48.7
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 58.8
                                                     mph
```

S = 52.5

mph

0.980

0.980

Heavy vehicle adjustment, fHV

175 EB TO SR 826 SB RAMP MERGE

<u> </u>		WIPS AND	RAMP JUN									
General Info				Site Infor								
Analyst	3		-									
Agency or Compang Date Performed	•	2007		ınction ırisdiction		SR 826	SR					
Analysis Time Period Existing Analysis Year Project Description Beacon Countyline DRI (Third Sufficiency)					2007 AM Peak							
nputs	Deacon Count	yiiile DKI (Tililu	Sumciency)									
Jpstream Adj Ramı	<u> </u>	Terrain: Level							Downstre	am Adi		
Yes On									Ramp			
									☐ Yes	☐ On		
☑ No ○	ff								✓ No	☐ Off		
									1. =	ft		
_{-up} = ft	S _{FF} = 55.0 mph				$S_{FR} = 50.0 \text{ mph}$				L _{down} =	10		
y = veh/h Sketch (show lanes, I					111				$V_D =$	veh/h		
Conversion	to pc/h Un	ı der Base C		Show lands, LA	-Di Ri Fi							
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	: HV	f _p	v = V/PH	F x f _{HV} x f _p		
Freeway	2983	0.95	Level	4	0	0.9	80	1.00	1	3203		
Ramp	2786	0.95	Level	4	0	0.9	-	1.00	†	2991		
UpStream									1			
DownStream												
		Merge Areas						Diverge Area	is			
Estimation o	of v ₁₂				Estimati	ion o	f v ₁₂					
	V ₁₂ = V _F	(P _{EM})			1		\/	\/ . (\/	\/ \D			
===		$V_{12} = V_R + (V_F - V_R)P_{FD}$										
Equation 25-2 or 25-3)					$L_{EQ} = $ (Equation 25-8 or 25-9)							
P _{FM} = 0.555 using Equation (Exhibit 25-5)					P _{FD} = using Equation (Exhibit 25-12)							
$V_{12} = 1778 \text{ pc/h}$					V ₁₂ = pc/h							
V ₃ or V _{av34} 1425 pc/h (Equation 25-4 or 25- 5)					V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)							
Is V_3 or $V_{av34} > 2,700 \text{ pc/h}$? Yes Vo					Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No							
Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No					Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No							
					If Yes, $V_{12a} = pc/h$ (Equation 25-18)							
Yes, V _{12a} =		pc/n (Equatio	1 25-8)		120			1 (1				
Capacity Ch	Actual		pacity	LOS F?	Capacit	y Che	Actual	1	Capacity	LOS F?		
	Actual		распу	LUST	\/	_	Actual	Exhibit 2	' ' ' '	LUST		
		[_,			V _F	,, 						
V_{FO}	6194	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit 2				
					V_R			Exhibit 2	25-3			
Flow Entering Merge Influence Area					Flow Entering Merge Influer					1		
	Actual	1	esirable	Violation?		A	ctual		esirable	Violation?		
V _{R12}	4821	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1	4			
Level of Serv	vice Deterr	nination (ii	not F)		Level of	Serv	ice De	etermina	tion (if n	ot F)		
D _R = 5.475	+ 0.00734 v _R + 0	0.0078 V ₁₂ - 0.00)627 L _A			$O_{R} = 4.$.252 + 0	.0086 V ₁₂ -	0.0009 L _D			
$D_{R} = 13.5 \text{ (pc/mi/ln)}$					$D_R = (pc/mi/ln)$							
LOS = B (Exhibit 25-4)						LOS = (Exhibit 25-4)						
Speed Determination						Speed Determination						
M _S = 0.355 (Exibit 25-19)					$D_S = $ (Exhibit 25-19)							
vis - 0.300 (E)		-										
E0.4	S _R = 50.4 mph (Exhibit 25-19)						· · ·					
					S	nh /Evh	ihit 25 10	١				
$S_0 = 51.9 \text{ mph}$	(Exhibit 25-19) (Exhibit 25-14)				l °		ibit 25-19) ibit 25-15)					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 2983 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 2786 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 2983 2786 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 785 733 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type: % ે જ 용 Grade

mi

1.5

1.2

1.5

1.2

mi

шi

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
3203
Flow rate, vp
                                               2991
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 1778 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         6194
                                      6750
                                                     No
     FO
                         1425 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1830
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1830
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 13.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.355
                                          S
Space mean speed in ramp influence area,
                                         S = 50.4
                                                      mph
                                          R
                                         S = 51.9
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 50.7
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Camaral 1		WIFS AND	RAMP JUNG			<u> </u>			
General Info				Site Infor					
Analyst	DPA			eeway/Dir of Tr		I 75 EB			
Agency or Company Date Performed	•	/2007		nction		SR 826 SB			
		/2007		risdiction		00070140			
Analysis Time Perio				nalysis Year		2007PM Pea	iK		
Project Description	Beacon Count	yline DRI (Third	Sufficiency)						
nputs		Terrain: Level						<u></u>	Λ. Ι'
Jpstream Adj Ramp	•	Terrain. Lever						Downstre Ramp	eam Adj
Yes O	'n							☐ Yes	☐ On
™ No □ O	Off							✓ No	☐ Off
								I NO	
- _{up} = ft					L _{down} =	ft			
		S	$_{\rm F} = 55.0 \rm mph$		$S_{FR} = 5$	50.0 mph		_	vah/h
/ _u = veh/	h		Sketch (s	show lanes, L _A	L_{D}, V_{R}, V_{f}		$V_D =$	veh/h	
Conversion	to pc/h Un	der Base C	onditions	_	_	-			
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	${\sf f}_{\sf HV}$	f _p	v = V/PH	$IF \times f_HV \times f_p$
Freeway	4300	0.95	Level	4	0	0.980	1.00		4617
Ramp	2731	0.95	Level	4	0	0.980	1.00		2932
UpStream									
DownStream									
		Merge Areas					Diverge Are	as	
Estimation o	of v ₁₂				Estimat	ion of v	2		
	V ₁₂ = V _F	(P _{EM})			†	-		\/ \D	
=			25-3)		[V	$_{12} = V_R + (V_F -$		
L_{EQ} = (Equation 25-2 or 25-3) L_{EQ} = 0.555 using Equation (Exhibit 25-5) P_{EQ} = P_{EQ} =							(Equation	25-8 or 25-	9)
P _{FM} =		P _{FD} =		using Equ	ation (Exhibi	t 25-12)			
/ ₁₂ =	2562	$V_{12} = pc/h$							
/ ₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		•	on 25-15 or 2	5-16)
	5)	_				> 2 700 nc	/h? Yes		· · -/
Is V_3 or $V_{av34} > 2.7$									
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2 ☑ Ye	s 🗌 No					/2 Yes		
f Yes,V _{12a} =	2638	pc/h (Equatio	n 25-8)		If Yes,V _{12a} =	=	pc/h (Equa	ation 25-18))
Capacity Ch	ecks				Capacit	y Check	s		
	Actual	Ca	pacity	LOS F?		Ac	ctual	Capacity	LOS F?
		Ι Γ			V _F		Exhibit 2	25-14	
V_{FO}	7549	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _D	Exhibit 2	25-14	
FU	'3''					K			
	100	<u> </u>			V _R	<u> </u>	Exhibit		
Flow Enterin	1	1		V(:-1-4! C	Flow En		lerge Influe		1
	Actual	7	esirable	Violation?	 	Actual		esirable	Violation?
V _{R12}	5570	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-1		
Level of Serv					Level of	Service	Determina	tion (if n	ot F)
	+ 0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	0627 L _A			$O_{R} = 4.252$	+ 0.0086 V ₁₂	- 0.000 9 L _D	
D _R = 5.475	/m-://m				$D_R = (p)$	oc/mi/ln)		_	
•)C/MI/IN)					Exhibit 25-4	4)		
$O_{R} = 19.4 \text{ (p)}$					-~~ \ L		,		
$D_R = 19.4 \text{ (p}$ $LOS = F (Exhi$	ibit 25-4)				Speed F	Determin	ation		
D _R = 19.4 (p LOS = F (Exhi Speed Deter	ibit 25-4)				Speed D				
$D_R = 19.4 \text{ (p}$ $LOS = F \text{ (Exhi})$ $LOS = F \text{ (Exhi})$ $LOS = O.894 \text{ (Exhi})$	rmination xibit 25-19)				$D_s = (E$	Exhibit 25-19)			
$D_R = 19.4 \text{ (p}$ $LOS = F \text{ (Exhi})$ $COS = F $	ibit 25-4)				$D_s = (E_s)$	Exhibit 25-19) ph (Exhibit 2	5-19)		
$D_R = 19.4 \text{ (p}$ $LOS = F \text{ (Exhi})$ $Speed Deter$ $M_S = 0.894 \text{ (Exhi})$ $S_R = 43.4 \text{ mph}$	rmination xibit 25-19)				$D_s = (E_s)$	Exhibit 25-19)	5-19)		

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2007PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 4300 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 2731 Volume on ramp vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 4300 2731 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1132 719 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type: % ે જ 용 Grade

mi

1.5

1.2

1.5

1.2

mi

шi

Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
4617
                                                2932
Flow rate, vp
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2562 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7549
                                      6750
                                                     Yes
     FO
                         2055 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2638
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    2638
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 19.4 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.894
                                          S
Space mean speed in ramp influence area,
                                          S = 43.4
                                                      mph
                                          R
                                          S = 49.7
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 44.9
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

		MINS AND	RAMP JUN			<u> </u>									
General Info				Site Infor											
Analyst	DPA			eeway/Dir of Tr		I 75 EB									
Agency or Compai	•	10007		inction		SR 826 SI	3								
Date Performed		/2007		risdiction		0040 484									
Analysis Time Peri		re without Projec		nalysis Year		2018 AM I	Реак								
Project Description	Beacon Count	yline DRI (Thira	Sufficiency)												
nputs		Terrain: Level							<u> </u>	A 1:					
Jpstream Adj Ran	np	Terrairi. Lever							Downstre Ramp	eam Adj					
☐ Yes ☐ (On								· ·						
									☐ Yes	☐ On					
™ No	Off				✓ No	☐ Off									
_{run} = ft									L _{down} =	ft					
- _{up} = ft		S	$S_{FF} = 55.0 \text{ mph}$ $S_{FR} = 50.0 \text{ mph}$												
/ _u = veh	/h		•	show lanes, L _A					$V_D =$	veh/h					
Conversion	to nc/h Hn	dor Raso (SHOW Idinos, EA	-Di Ri Fi										
	V PC/II OII			<u> </u>	1	1 .	1		1						
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{H\}	<i>'</i>	f_p	V = V/PH	$F x f_{HV} x f_{p}$					
Freeway	3989	0.95	Level	4	0	0.980)	1.00		4283					
Ramp	3185	0.95	Level	4	0	0.980	, i	1.00		3420					
UpStream															
DownStream															
		Merge Areas						verge Area	IS						
Estimation	of v ₁₂				Estimat	ion of	v ₁₂								
	V ₁₂ = V _F	(P _{EM})			1		\/ _\/	. (\/	\/ \D						
=	(Equ					_R + (V _F -		۵)							
-EQ = O _		L _{EQ} =		•	•	25-8 or 25-	•								
P _{FM} =	0077							sing Equa	ation (Exhibi	t 25-12)					
/ ₁₂ =	2377	•	05.4		V ₁₂ =		po	c/h							
V_3 or V_{av34}	1906 5)	pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}		po	:/h (Equatio	on 25-15 or 2	5-16)					
Is V ₃ or V _{av34} > 2,	•	e V No			Is V ₃ or V _{av3}	₃₄ > 2,700	pc/h? 🥅	Yes □ I	No						
					Is V ₃ or V _{av3}										
Is V_3 or $V_{av34} > 1$.			- 05 0)		If Yes, V _{12a} =				tion 25-18))					
Yes,V _{12a} =		pc/h (Equatio	n 25-8)		120			, (= 900							
Capacity Ch	1	1		1	Capacit					í					
	Actual	Ca	pacity	LOS F?	 		Actual	_	Capacity	LOS F?					
					V _F			Exhibit 2	5-14						
V_{FO}	7703	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _R		Exhibit 2	5-14						
					V_R			Exhibit 2	25-3						
Flow Enteri	na Merae In	ofluence A	rea			terina	Merge		nce Area						
10W LINCIN	Actual	0)esirable	Violation?	1 1011 211	Actu		Max De		Violation?					
V _{R12}	5867	Exhibit 25-7	4600:All	No	V ₁₂	7.00		xhibit 25-14	1	Violationi					
Level of Sei				110		Sorvie			tion (if n	ot <i>E</i>)					
		•			1				•						
• • •	+ 0.00734 V _R + 0	0.0076 V ₁₂ - 0.00	0027 L _A			• •	o∠ + 0.00	086 V ₁₂ -	0.0009 L _D						
	pc/mi/ln)				I " "	c/mi/ln)									
.OS = F (Ex	nibit 25-4)				LOS = (E	xhibit 25	5-4)								
Speed Dete	rmination				Speed L	Determ	inatio	<u> </u>							
	xibit 25-19)				$D_s = (E_s)^T$	xhibit 25-1	19)								
	MINIC 20 17)				L° `		•								
Λ _S = 1.248 (E	h (Evhihit 25 10)									S _R = mph (Exhibit 25-19)					
$M_{\rm S} = 1.248 \text{ (E}$ $S_{\rm R} = 38.8 \text{ mp}$					I '`										
$M_{\rm S} = 1.248 \text{ (E}$ $S_{\rm R} = 38.8 \text{ mp}$ $S_{\rm 0} = 50.2 \text{ mp}$	h (Exhibit 25-19) h (Exhibit 25-19) h (Exhibit 25-14)				$S_0 = m$	ph (Exhibi ph (Exhibi	t 25-19)								

Phone: Fax: E-mail: _______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future without Project Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 3989 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 3185 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp ft Distance to adjacent Ramp ______Conversion to pc/h Under Base Conditions_____

Freeway	Ramp	Adjacent	
		Ramp	
3989	3185		vph
0.95	0.95		
1050	838		V
4	4		%
0	0		%
Level	Level		
%	%		%
mi	m	i	mi
1.5	1.5		
1.2	1.2		
	3989 0.95 1050 4 0 Level % mi	3989 3185 0.95 0.95 1050 838 4 4 0 0 Level Level % % mi m 1.5 1.5	Ramp 3989 3185 0.95 0.95 1050 838 4 4 4 0 0 0 Level Level % % mi mi 1.5 1.5

```
4283
                                               3420
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2377 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7703
                                      6750
                                                     Yes
     FO
                         1906 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2447
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2447
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.4 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation____
Intermediate speed variable,
                                         M = 1.248
                                          S
Space mean speed in ramp influence area,
                                         S = 38.8
                                                      mph
                                          R
                                         S = 50.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 41.0
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

O	1 1 C :		MPS AND	AMIL 2014			<u> </u>			
General	ıntorn				Site Infor					
Analyst	\	DPA			eeway/Dir of Tr		I 75 EB			
Agency or C Date Perforr		40101	2007		nction		SR 826 SE	5		
		10/2/			risdiction		2010 DM C	\I.		
Analysis Tin			e without Project		alysis Year		2018 PM F	'eak		
	cription B	eacon Count	yline DRI (Third	Sufficiency)						
nputs			Terrain: Level						<u> </u>	A 1:
Jpstream A			Terrain. Lever						Downst Ramp	ream Adj
Yes	☐ On								☐ Yes	☐ On
✓ No	Off								✓ No	☐ Off
	- 0								I INO	III OII
-up =	ft				L _{down} =	ft				
			S	$_{\rm F} = 55.0 \rm mph$		$S_{FR} = 5$	0.0 mph			a la /la
/ _u =	veh/h			Sketch (s	show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$		$V_D =$	veh/h	
Conver	sion to	pc/h Und	der Base C	Conditions						
(pc/h	h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f _p	v = V/P	HF x f _{HV} x f _p
Freeway		5025	0.95	Level	4	0	0.980	1.00)	5395
Ramp		3427	0.95	Level	4	0	0.980	1.00) [3680
UpStream										
DownStrea	m									
			Merge Areas					Diverge	Areas	
Estimat	ion of v	V ₁₂				Estimat	ion of v	¹ 12		
		V ₁₂ = V _F	(P _{EM})			1	,	\/ _ \/ · /\	/ \/ \D	
=			ation 25-2 or	25-3)			,	$V_{12} = V_R + (')$		
-EQ =		, .		,		L _{EQ} =		, ,	ion 25-8 or 25	,
P _{FM} = 0.555 using Equation (Exhibit 25-5)						P _{FD} =		using E	Equation (Exhil	bit 25-12)
/ ₁₂ =			2994 pc/h V ₁₂ = pc/h							
V ₃ or V _{av34}			pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		•	quation 25-15 or	25-16)
	0.700	5)					> 2.700 (oc/h?	•	•
		pc/h? TYe								
Is V_3 or V_{av}	_{/34} > 1.5 * \	/ ₁₂ /2	s 🗏 No			1		1 ₁₂ /2		- \
f Yes,V _{12a} =	=	3082	pc/h (Equatio	n 25-8)		If Yes,V _{12a} =	•	pc/n (E	quation 25-18	3)
Capacit	y Chec	ks				Capacit	y Chec	ks		
		Actual	Ca	pacity	LOS F?			Actual	Capacity	LOS F?
	$\neg \top$					V _F	T	Exh	ibit 25-14	
V _F (_	9075	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V ₅	Fvh	ibit 25-14	
* F(⁻	,0,0					·ĸ			
						V _R			ibit 25-3	
Flow Er	ntering		fluence A		1 ,,,	Flow En			luence Are	1
	\longrightarrow	Actual	1 1	esirable	Violation?		Actua		ax Desirable	Violation?
V_{R1}	2	6762	Exhibit 25-7	4600:AII	No	V ₁₂	<u></u>	Exhibit	25-14	
Level of	f Service	e Detern	nination (it	not F)			Servic	e Determ	ination (if I	not F)
D _R =	5.475 + 0.	.00734 v _R + 0	0.0078 V ₁₂ - 0.00)627 L _A			$O_R = 4.25$	2 + 0.0086 \	/ ₁₂ - 0.0009 L	D
	28.3 (pc/m		14	71		1	c/mi/ln)		14	_
	•						,	(_4)		
	F (Exhibit	-				<u> </u>	xhibit 25			
Speed L						Speed L				
$M_S = 3.$.242 (Exibit	25-19)					xhibit 25-1			
	2.9 mph (E	xhibit 25-19)				$S_R = m$	ph (Exhibit	25-19)		
$S_R = 12$	1				S ₀ = mph (Exhibit 25-19)					
		xhibit 25-19)				$S_0 = m$	ph (Exhibit	25-19)		
$S_0 = 48$	8.4 mph (E	xhibit 25-19) xhibit 25-14)				I *	ph (Exhibit ph (Exhibit			

Phone: Fax: E-mail: _______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future without Project Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5025 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3427 Volume on ramp vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5025 3427 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1322 902 V

4

1.5

1.2

4

Level Level

%

mi

0

1.5

1.2

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mi

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%

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Trucks and buses

Terrain type:

Grade Length

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
5395
                                               3680
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2994 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         9075
                                      6750
                                                     Yes
     FO
                         2401 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 3082
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    3082
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 28.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation____
Intermediate speed variable,
                                         M = 3.242
                                          S
Space mean speed in ramp influence area,
                                         S = 12.9
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 48.4
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 15.8
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

		MIL2 AND	RAMP JUN								
General In				Site Infor							
Analyst	DPA	١		eeway/Dir of Tr		I 75 EE					
Agency or Comp	•	10007		unction		SR 82	6 SB				
Date Performed		/2007		urisdiction		0010 1					
Analysis Time P		re with Project		nalysis Year		2018 F	AM Peak				
	on Beacon Coun	tyline DRI (Tnira	Sufficiency)								
nputs		Terrain: Level							<u></u>	A 1:	
Jpstream Adj Ra	amp	Terrain. Lever							Downstre Ramp	eam Adj	
□ Yes □	On								1 '		
									☐ Yes	☐ On	
▼ No □	Off								✓ No	Off	
. _{up} = ft									L _{down} =	ft	
rup ''		S	_{=F} = 55.0 mph								
/ _u = ve	eh/h		•	show lanes, L _A	$S_{FR} = 5$,			$V_D =$	veh/h	
Conversio	n to pc/h Un	der Rase (3110W Idi1037 EA	-Di Ki Ki						
	V			1	1	1	,	,	1 ,,,,,	- , ,	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	V = V/PH	$F x f_{HV} x f_{p}$	
Freeway	3989	0.95	Level	4	0	0.	980	1.00		4283	
Ramp	3241	0.95	Level	4	0	0.	980	1.00		3480	
UpStream											
DownStream											
	-	Merge Areas				_		Diverge Area	is		
Estimation	of v ₁₂				Estimat	ion d	of v ₁₂				
	$V_{12} = V_{F}$	(P _{EM})					\/ _	·	\/ \D		
- _{EQ} =	(Equ				v ₁₂ –	V _R + (V _F -		0)			
P _{FM} =	1	L _{EQ} =			(Equation		•				
	0077 //							using Equa	ation (Exhibi	t 25-12)	
/ ₁₂ =		•	05.4 05		V ₁₂ =			pc/h			
V_3 or V_{av34}	1906 5)	pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}			pc/h (Equation	on 25-15 or 2	5-16)	
Is V _o or V o ₄ >	2,700 pc/h? <u> </u>	as V No				34 > 2,7	700 pc/h?	☐ Yes ☐ I	No		
	1.5 * V ₁₂ /2				Is V ₃ or V _{av}	34 > 1.5	5 * V ₁₂ /2	☐ Yes ☐ I	No		
			~ OF O\		If Yes, V _{12a} =			pc/h (Equa)	
Yes,V _{12a} =		pc/h (Equatio	n 25-8)		120						
Capacity C	1	1 0		1 100 50	Capacit	y Ch		Î	0 "	1 00 50	
	Actual		pacity	LOS F?	1	\dashv	Actual	_	Capacity	LOS F?	
					V _F			Exhibit 2			
V_{FO}	7763	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14		
					V_R			Exhibit 2	25-3		
Flow Enter	ring Merge li	nfluence Ai	rea		Flow En	terir	na Mer	ge Influe	nce Area)	
	Actual	1	Desirable	Violation?			Actual		esirable	Violation?	
V _{R12}	5927	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1	4		
	ervice Deter	mination (i	f not F)	<u> </u>	J	Ser	vice D	etermina		ot F)	
	75 + 0.00734 v _R +	•			+			.0086 V ₁₂ -	•		
	• •	0.0070 112 0.00	5027 L _A					.0000 112	0.0000 <u>L</u> D		
	(pc/mi/ln)				"	c/mi/l	,				
	Exhibit 25-4)				<u> </u>		t 25-4)				
Speed Det	ermination				Speed L	Deter	rminati	on			
M _S = 1.334	(Exibit 25-19)				$D_s = (E)$	xhibit 2	25-19)				
S _R = 37.7 mph (Exhibit 25-19)						S _R = mph (Exhibit 25-19)					
					1	ph (Ex	hibit 25-19)			
					I "						
0	nph (Exhibit 25-14)				S = m	nh (Fy	hibit 25-15)			

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph 3989 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3241 Volume on ramp vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3989 3241 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1050 853

4

1.5

1.2

4

Level Level

%

mi

0

1.5

1.2

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mi

Trucks and buses

Terrain type:

Grade Length

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

V

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%

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4283
                                               3480
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2377 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7763
                                      6750
                                                     Yes
     FO
                         1906 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2447
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2447
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 21.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation____
Intermediate speed variable,
                                          M = 1.334
                                          S
Space mean speed in ramp influence area,
                                          S = 37.7
                                                      mph
                                          R
                                          S = 50.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 40.0
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Concret Infor		III O AND I	RAMP JUNG							
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		I 75 EB				
Agency or Company				nction		SR 826	SB			
Date Performed	10/2/			risdiction						
Analysis Time Period		e with Project		nalysis Year		2018 P	M Peak			
Project Description	Beacon Count	yline DRI (Third	Sufficiency)							
nputs		1								
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	eam Adj
Yes On	l								☐ Yes	On
✓ No ☐ Off	:				✓ No	Coff Off				
-up = ft			EE O mnh		L _{down} =	ft				
V _u = veh/h) 5 F	S $_{FF}$ = 55.0 mph S_{FR} = 50.0 mph Sketch (show lanes, L_{A} , L_{D} , V_{R} , V_{f})							veh/h
Conversion to	pc/h Un	der Base C			- · · ·					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f_p	v = V/PH	$F x f_{HV} x f_{p}$
Freeway	5025	0.95	Level	4	0	0.9	980	1.00		5395
Ramp	3702	0.95	Level	4	0		980	1.00		3975
UpStream	3,02	5.75	20101	'	 			1.00	1	
DownStream		† †		i		1			1	
		Merge Areas		•				Diverge Are	as	
Estimation of		Estimat	ion c							
	V ₁₂ = V _F	(P _{EM})						V . (V)	\/ \D	
_					$V_R + (V_F -$					
-EQ =	Equation 25-2 or 25-3) = 0.555 using Equation (Exhibit 25-5) L_EQ = (Equation							(Equation	25-8 or 25-	9)
' _{FM} =		P _{FD} =			using Equ	ation (Exhibit	t 25-12)			
/ ₁₂ =	2994	2994 pc/h $V_{12} = pc/h$							•	•
/ ₃ or V _{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}			•	on 25-15 or 2	5-16)
	5)					, 17				J-10 <i>)</i>
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🥅 Ye	s 🗹 No						Yes =		
Is V_3 or $V_{av34} > 1.5$ *								Yes 🗆		
f Yes,V _{12a} =		pc/h (Equation	n 25-8)		If Yes,V _{12a} =	:		pc/h (Equa	ation 25-18))
Capacity Che		(= - 4001101	/		Capacit	y Ch	ecks			
, ,	Actual	Ca	pacity	LOS F?	1		Actual	1	Capacity	LOS F?
		T T			V _F	\neg		Exhibit		
W	0070	F., killing of 3		\/-		\ <u>\</u>				$\overline{}$
V_{FO}	9370	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- v _R		Exhibit		
					V _R			Exhibit	25-3	
Flow Entering	Merge In	fluence Ar	'ea		Flow En	terin	ig Mer	ge Influe	nce Area	
	Actual	Max D	esirable	Violation?		Α	ctual	Max D	esirable	Violation?
V _{R12}	7057	Exhibit 25-7	4600:AII	No	V ₁₂			Exhibit 25-1	4	
Level of Serv	ice Detern	nination (if	not F)	•		Ser	vice De	etermina	tion (if n	ot F)
		0.0078 V ₁₂ - 0.00			1				- 0.0009 L _D	
$O_{R} = 30.5 \text{ (pc)}$		12	Α		1	c/mi/l		12	D	
• •							,			
LOS = F (Exhib					`		: 25-4)	<u> </u>		
Speed Determ					Speed L			on		
M _S = 4.399 (Exibit 25-19)						xhibit 2				
$S_{R}^{=}$ -2.2 mph (Exhibit 25-19)				$S_R = m_I$	ph (Exh	nibit 25-19)		
	Exhibit 25-19)				$S_0 = m$	ph (Exh	nibit 25-19)		
> _∩ = 48.4 mpn (1 -					
$S_0 = 48.4 \text{ mph } (S_0 = M_0 + M_0 + M_0)$					S = m	ph (Fxh	nibit 25-15)		

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5025 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3702 Volume on ramp vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5025 3702 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1322 974 V Trucks and buses 4 4 응 Recreational vehicles 0 %

Level Level

%

1.5

1.2

mi

1.5

1.2

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mi

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Terrain type:

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
5395
                                               3975
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2994 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         9370
                                      6750
                                                     Yes
     FO
                         2401 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 3082
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    3082
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 30.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 4.399
                                          S
Space mean speed in ramp influence area,
                                         S = -2.2
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 48.4
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S =
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Concret Infer		MIF J AND I	RAMP JUN			<u> </u>				
General Infor			_	Site Infor						
Analyst	DPA			reeway/Dir of Tr		I 75 EB	. D			
Agency or Company Date Performed	10/0/	2007		unction urisdiction		SR 826 S	2R			
	10/2/					2010 414	I D I-			
Analysis Time Period		e with Project w		nalysis Year		2018 AM	i Peak			
Project Description	Beacon Count	yline DRI (Tnira	Sufficiency)							
Inputs		Terrain: Level							<u></u>	Λ !'
Jpstream Adj Ramp		Terrain. Lever							Downstre Ramp	am Adj
Yes On									Yes	On
✓ No ☐ Off	:									
I NO I OII									™ No	C Off
- _{up} = ft									L _{down} =	ft
		S _F	$_{\rm F} = 55.0 \rm mph$		$S_{FR} = 5$	0.0 mph			\/ _	veh/h
$V_{\rm u} = {\rm veh/h}$			Sketch (show lanes, $L_{A'}$	$L_{D'}V_{R'}V_{f}$		V _D =	ven/n		
Conversion to	onversion to pc/h Under Base Conditions									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV} f _p		v = V/PH	F x f _{HV} x f _p	
Freeway	3989	0.95	Level	4	0		0.980 1.00			4283
Ramp	3241	0.95	Level	4	0	0.98		1.00		3480
UpStream	JZ+1	0.73	Level	1	<u> </u>	0.70	,0	1.00	+	3400
DownStream		i i		1		1				
		Merge Areas						Diverge Are	as	
Estimation of		Estimat	ion of	V ₁₂						
	V ₁₂ = V _F	(P _{EM})					·-	\/ . (\/	\/ \D	
=		[$V_R + (V_F -$		_,			
-EQ =	0.000						• •	25-8 or 25-	•	
FM =)	$P_{FD} =$			using Equ	ation (Exhibit	25-12)			
/ ₁₂ =	698 p		$V_{12} = pc/h$							
V_3 or V_{av34}	1321 5)	pc/h (Equatio	n 25-4 or 25-		V_3 or V_{av34}			pc/h (Equati	ion 25-15 or 25	5-16)
Is V_3 or $V_{av34} > 2,70$		o W No			Is V ₃ or V _{av}	₃₄ > 2,70				
					Is V ₃ or V _{av3}					
Is V_3 or $V_{av34} > 1.5$ *			0= 0)		If Yes, V _{12a} =				ation 25-18)	
f Yes,V _{12a} =		pc/h (Equatio	n 25-8)		124			Po/11 (Equi	2011 20 10)	
Capacity Che	ń.	1 -		1	Capacit	y Che				1
	Actual	Ca	pacity	LOS F?	ļ ,,	_	Actual		Capacity	LOS F?
					V _F			Exhibit:	25-14	
V_{FO}	6821	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit :	25-14	
					V_R			Exhibit	25-3	
Flow Entering	n Merae In	fluence A	rea		1	terino	a Merc	ge Influe	nce Area	
	Actual	1	esirable	Violation?		_	tual		esirable	Violation?
V _{R12}	4816	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		
Level of Serv	ice Deterr		not F)	1		Serv	ice De		tion (if no	ot F)
		0.0078 V ₁₂ - 0.00			1				- 0.0009 L _D	,
O _R = 13.2 (pc		12	М		1	c/mi/ln)		12	U	
LOS = B (Exhib						xhibit 2				
Speed Detern					Speed L		,	<u> </u>		
speed Determ								UII		
	oit 25-19)				1	xhibit 25				
					$S_R = m$	un (EXNIK	oit 25-19)	1		
$S_{R} = 50.4 \text{ mph} ($	Exhibit 25-19)				1					
$S_{R} = 50.4 \text{ mph } ($	Exhibit 25-19) Exhibit 25-19)				1	ph (Exhib				

Phone: Fax: E-mail: _______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w PM Imps Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 3989 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 3241 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp	
Volume, V (vph)	3989	3241		vph
Peak-hour factor, PHF	0.95	0.95		
Peak 15-min volume, v15	1050	853		V
Trucks and buses	4	4		%
Recreational vehicles	0	0		%
Terrain type:	Level	Level		
Grade	%	%	9	8
Length	mi	m	ıi r	ni
Trucks and buses PCE, ET	1.5	1.5		
Recreational vehicle PCE, ER	1.2	1.2		

```
4283
                                               3480
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 698 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         6821
                                      9000
                                                     No
     FO
                         1321 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1336
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1336
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 13.2 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation____
Intermediate speed variable,
                                         M = 0.353
                                          S
Space mean speed in ramp influence area,
                                         S = 50.4
                                                      mph
                                          R
                                          S = 53.2
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 51.2
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Conquel lafe		WIF 3 AND I	RAMP JUN						
General Infor			_	Site Infor					
Analyst	DPA			eeway/Dir of Tr		I 75 EB			
Agency or Company Date Performed	40/0/	2007		Inction Inction		SR 826 SB			
	10/2/			urisdiction		2010 DM D	1-		
Analysis Time Period		e with Project w		nalysis Year		2018 PM P	<u> </u>		
Project Description	Beacon Count	yline DRI (Third)	Sufficiency)						
Inputs		Terrain: Level						L	
Jpstream Adj Ramp		Terrain: Lever						Downstre Ramp	eam Adj
Yes On								☐ Yes	☐ On
✓ No ☐ Off	1							✓ No	☐ Off
- _{up} = ft					L _{down} =	ft			
•		S _F	$_{\rm F} = 55.0 {\rm mph}$		$S_{FR} = 5$	0.0 mph		\/ _	veh/h
V _u = veh/h				show lanes, L _A ,	L_{D}, V_{R}, V_{f}		V _D =	ven/n	
Conversion to	pc/h Un	der Base C	onditions	1	1	1	1	1	
(pc/h)	v (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	$F \times f_{HV} \times f_{p}$
Freeway	5025	0.95	Level	4	0	0.980	1.00		5395
Ramp	3702	0.95	Level	4	0	0.980	1.00		3975
UpStream				ļ					
DownStream		<u> </u>			ļ				
=	•	Merge Areas					Diverge Ar	eas	
Estimation of	V ₁₂				Estimati	ion of v	12		
	V ₁₂ = V _F	(P _{FM})				1	V ₁₂ = V _R + (V _F	- V_\P_	
- _{EQ} =		ation 25-2 or 2	25-3)		_	v			0)
) _{EM} =	Color print Francisco (Fabilities F)							n 25-8 or 25-	•
FM _								uation (Exhibi	t 25-12)
/ ₁₂ =	880 pc/h 1664 pc/h (Equation 25-4 or 25-								
V_3 or V_{av34}	1664 5)	pc/n (Equation	1 25-4 Of 25-		V_3 or V_{av34}		pc/h (Equa	ation 25-15 or 2	5-16)
Is V ₃ or V _{av34} > 2,70		s V No				₃₄ > 2,700 p	c/h? ☐ Yes ☐	No	
							₂ /2		
Is V_3 or $V_{av34} > 1.5$ *			- 05 0)		If Yes, V _{12a} =			uation 25-18))
f Yes, V _{12a} =		pc/h (Equation	า 25-ช)		120				
Capacity Che	ir	1 .		100==	Capacit			0 "	
	Actual	Ca	pacity	LOS F?	 	A	ctual	Capacity	LOS F?
					V _F		Exhibi	t 25-14	
V_{FO}	8184	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R	Exhibi	t 25-14	
					V _R		Exhibi	t 25-3	
Flow Entering	n Merge In	fluence Ar		1		terina l	Merge Influ		<u> </u>
.on Littoring	Actual	1	esirable	Violation?	1.50. 211	Actua		Desirable	Violation?
V _{R12}	5658	Exhibit 25-7	4600:All	No	V ₁₂	13334	Exhibit 25	1	1
Level of Serv						Service	e Determin		of F)
		0.0078 V ₁₂ - 0.00			`		2 + 0.0086 V ₁₂		
	11	5.0070 v ₁₂ - 0.00	,021 LA		1		- + 0.0000 V ₁₂	2 - 0.0009 L _D	
$D_R = 19.6 \text{ (pc)}$					"	c/mi/ln)	.4)		
Speed Detern					Speed E	xhibit 25-			
									
•	oit 25-19)					xhibit 25-19			
M _S = 0.989 (Exil	•				mi	· · · · · · · · · · · · · · · · · · ·	/n_ IVI		
$M_S = 0.989 \text{ (Exilon S}_R = 42.1 \text{ mph (}$	Exhibit 25-19)				'` '	ph (Exhibit :			
$M_S = 0.989 \text{ (Exilon S}_R = 42.1 \text{ mph (}$	•				1	ph (Exhibit :			

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: I 75 EB Junction: SR 826 SB Jurisdiction: Analysis Year: 2018 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 5025 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3702 Volume on ramp vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)______ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5025 3702 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1322 974 V

4

1.5

1.2

4

Level Level

%

mi

0

1.5

1.2

ે જ

mi

응

%

용

шi

Trucks and buses

Terrain type:

Grade Length

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

```
5395
                                               3975
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 880 pc/h
                 12 F FM
                     _____Capacity Checks_____
                         Actual
                                      Maximum
                                                    LOS F?
                         8184
                                      9000
                                                     No
     FO
                         1664 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1683
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    1683
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 19.6 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.989
                                          S
Space mean speed in ramp influence area,
                                          S = 42.1
                                                      mph
                                          R
                                          S = 52.3
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 44.8
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

SR 826 NB TO I 75 WB RAMP DIVERGE

Onna:::-!! (KANIP	S AND RAM			KNO	пссі			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tra		SR 826				
Agency or Company	10/0/	2007		nction	I	75 W	В			
Date Performed Analysis Time Period	10/2/.			risdiction nalysis Year	,	2007 /	M Dook			
Project Description				iaiysis reai		200 <i>1 P</i>	M Peak			
Inputs	Deacon County	yiiile DKI (TIIIIu	Sufficiency)							
-		Terrain: Level							D	A -I:
Jpstream Adj Ramp		Terrain. Lever							Downstrea Ramp	ım Adj
☐ Yes ☐ On	1								1	
E E									☐ Yes	☐ On
✓ No ☐ Off									✓ No	Off
-un = ft									L _{down} =	ft
_{-up} = ft		S	_{FF} = 55.0 mph		S _{FR} = 50	0.0 mg	oh		down	
$V_{\rm u} = {\rm veh/h}$			•	show lanes, L _A ,					$V_D =$	veh/h
	o no/h Un	dor Paca (Show lanes, E _A ,	-D' R' F'					
Conversion to	y pc/ii one		onanions		1	1			1	
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f _p	v = V/PHF	$x f_{HV} x f_{p}$
Freeway	4919	0.95	Level	4	0	0	.980	1.00	52	81
Ramp	1545	0.95	Level	4	0		.980	1.00		59
UpStream									1	
DownStream										
		Merge Areas						Diverge Areas		
Estimation of		Estimati	ion c	of v ₁₂						
		†		V =	= V _R + (V _F - V	′_)P				
_		_			Equation 25-					
-EQ =		L _{EQ} =			•	•	" " 05 40)			
? _{FM} =		P _{FD} =			260 using E	quation (Exr	11DIT 25-12)			
/ ₁₂ =	pc/h				V ₁₂ =			463 pc/h		
V_3 or V_{av34}	•	(Equation 25	-4 or 25-5)		V_3 or V_{av34}			145 pc/h (Eq i		5 or 25-16)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? ☐ Ye:	s 🗏 No						Yes 🗹 No		
Is V_3 or $V_{av34} > 1.5$ *	V ₁₂ /2	s 🗆 No			Is V ₃ or V _{av3}	₃₄ > 1.5	5 * V ₁₂ /2	Yes 🗹 No		
f Yes,V _{12a} =	pc/h	(Equation 25	-8)		If Yes,V _{12a} =		p	c/h (Equation	n 25-18)	
Capacity Che	cks		·		Capacity		ecks			
, ,	Actual	Ca	pacity	LOS F?	<u> </u>		Actual	C	apacity	LOS F?
		Î Î	<u> </u>		V _F		4753	Exhibit 25-	' 1	No
W		Evhibit OF 7				- \/		_		
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	^v R		Exhibit 25-	_	No
					V _R		1659	Exhibit 25-		No
Flow Entering					Flow En			e Influenc		
	Actual	Max D	Desirable	Violation?		1	Actual	Max Desira	ble	Violation?
V_{R12}		Exhibit 25-7			V ₁₂	:	2463	Exhibit 25-14	4400:All	No
Level of Serv	nination (i		Level of	Ser	vice De	terminatio	n (if not	F)		
$D_R = 5.475 + 0.$	00734 v _R +	0.0078 V ₁₂ -	0.00627 L _∆		1			0086 V ₁₂ - 0.	<u> </u>	-
) _R = (pc/mi/	• •	12	^				/mi/ln)	12	D	
OS = (Exhibi	•					٠.	bit 25-4)			
						<u> </u>		<u> </u>		
Speed Detern	IIIIIation				Speed D					
$M_S = $ (Exibit 25)	5-19)					•	xhibit 25	•		
$S_R = mph (Exh)$	ibit 25-19)				$S_R = 50$.0 mpł	n (Exhibit	25-19)		
	ibit 25-19)				$S_0 = 59$.8 mpł	n (Exhibit	25-19)		
· · ·					S = 54	3 mnh	n (Exhibit	25-15)		
S = mph (Exhibit 25-14)					U 07	יטווו כ.		20-101		

Phone: Fax: E-mail: _____Diverge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 4919 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 50.0 mph Volume on ramp 1545 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 600 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway		Ramp	Adjac	ent
				Ramp	
Volume, V (vph)	4919		1545		vph
Peak-hour factor, PHF	0.95		0.95		
Peak 15-min volume, v15	1294		407		V
Trucks and buses	4		4		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

```
Driver population factor, fP
                                    1.00
                                               1.00
Flow rate, vp
                                    5281
                                               1659
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2463 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         4753
                                      9000
                                                    No
     Fi F
                         3094
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         1659
                                     4100
                                                    No
     R
                        1145 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    2463
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -7.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.382
                                          S
Space mean speed in ramp influence area,
                                         S = 50.0
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 59.8
                                                     mph
```

S = 54.3

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

ation DPA		Fre	Site Information of Transport o		R 826 N	NB			
			eeway/Dir of Tra	avel S	R 826 N	ΝB			
			notion						
10/0/2	2007		nction risdiction	I	75 WB				
10/2/2 Existir			nalysis Year	2	007 PM	Doak			
	rline DRI (Third		lary 313 T Car		007 1 101	I Cak			
dcorr county	inic Diti (Tima	<u>Summericy</u>							
	Terrain: Level								ım Adj
								Yes	☐ On
								✓ No	☐ Off
								L _{down} =	ft
	S	_{FF} = 55.0 mph		S _{FR} = 50).0 mph				
	·	Sketch (s	show lanes, L _A ,	L_{D}, V_{R}, V_{f}			V _D =	veh/h	
oc/h Unc	ler Base C		, A	D K I					
V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f⊦	HV	f _p	v = V/PHF	$x f_{HV} x f_{p}$
9040	0.95	Level	4	0	0.98	30	1.00	97	06
3177	0.95	Level	4	0	0.98	30	1.00	34	11
				ļ					
	Herge Areas						verge Areas		
12				<u> </u> ⊏stimatio	on of	V ₁₂			
$V_{12} = V_F$ ((P _{FM})					V ₁₂ = '	$V_R + \overline{(V_F - V_F)}$	R)P _{FD}	
(Equa	ation 25-2 or	25-3)		L _{FO} =		(E	quation 25-8	or 25-9)	
L _{EQ} = (Equation 25-2 or 25-3) P _{FM} = using Equation (Exhibit 25-5)						,	-	•	nibit 25-12)
•	, (2	,						, (E/III	20 12)
•	Faulation 25	-4 or 25-5)		1			•	ation 25 15	5 or 25 16
		7 OI 20-0)			< 2 7M			auon 20-13	J UI ZU-10,
					-				
		0)		1				05.40	
<u> </u>	Equation 25-	-8)		120			/h (Equation	25-18)	
			1	Capacity	Che				
Actual	Ca	ıpacity	LOS F?		_	Actual	<u> </u>		LOS F?
				—		7765			No
	Exhibit 25-7			$V_{FO} = V_F$	V_{R}	4354	Exhibit 25-1	9000	No
				V_R		3411	Exhibit 25-3	4100	No
Merge In	fluence A	rea		<u> </u>	terino		e Influence	e Area	
Actual	ii .		Violation?	13 =					Violation?
	 			V ₁₂	1			4400:All	No
	•								- /
• • •	12	- -A		· '			12 010	ט -	
				1		•			
				<u> </u>			n		
				 ' 					
9)				1	,		•		
S_R = mph (Exhibit 25-19)					υ mph (Exhibit 2	:5-19)		
•				lc -			- 40		
t 25-19) t 25-19) t 25-14)				ľ		Exhibit 2 Exhibit 2	,		
	V (Veh/hr) 9040 3177 12 V (Equal using pc/h (coc/h? Yes pc/h (coc/h? Yes pc/h (coc/h)) Actual Merge Interpretation 734 v R + Coc/h 125-4) Ination	pc/h Under Base C V (Veh/hr) PHF 9040 0.95 3177 0.95 Merge Areas /12 V ₁₂ = V _F (P _{FM}) (Equation 25-2 or using Equation (Expc/h pc/h (Equation 25-2) No pc/h (Equation 25-2) No pc/h (Equation 25-2) Exhibit 25-7 Merge Influence Areas Actual Case Exhibit 25-7 E Determination (interpretation) 1734 v _R + 0.0078 V ₁₂ - 0.0078 185-4) Ination	S FF 55.0 mph Sketch (: PC/h Under Base Conditions	S FF 55.0 mph Sketch (show lanes, LA	S F 55.0 mph S F 56.	S FF 55.0 mph S FR 50.0 mph Sketch (show lanes, L L L D V V V V V V V V V	S FF S5.0 mph S FR S0.0 mph Sketch (show lanes, L L L L L L L L L L	S FF 55.0 mph Sketch (show lanes, L _A , L _D , V _R , V _I)	S _{FF} = 55.0 mph S _{FR} = 50.0 mph V _D = Ves No No No No No No No N

Phone: Fax: E-mail: _____Diverge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Diverge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 9040 vph _____Off Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-Flow speed on ramp 50.0 mph Volume on ramp 3177 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 600 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent ramp vph Position of adjacent ramp Type of adjacent ramp Distance to adjacent ramp ft ______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway		Ramp		Adjacent Ramp
Volume, V (vph)	9040		3177		vph
Peak-hour factor, PHF	0.95		0.95		
Peak 15-min volume, v15	2379		836		V
Trucks and buses	4		4		%
Recreational vehicles	0		0		%
Terrain type:	Level		Level		
Grade	0.00	%	0.00	%	%
Length	0.00	mi	0.00	mi	mi
Trucks and buses PCE, ET	1.5		1.5		
Recreational vehicle PCE, ER	1.2		1.2		

```
1.00
Driver population factor, fP
                                    1.00
                                    9706
Flow rate, vp
                                               3411
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 4543 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                      Maximum
                                                   LOS F?
                         Actual
    v = v
                         7765
                                      9000
                                                    No
     Fi F
                         4354
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         3411
                                     4100
                                                    No
     R
                        1611 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                      (Equation 25-18)
If yes, v
        12A
                   _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                    4543
                                 4600
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 10.9 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence B
                _____Speed Estimation_____
                                         D = 0.540
Intermediate speed variable,
                                          S
Space mean speed in ramp influence area,
                                         S = 48.0
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 58.0
                                                     mph
```

S = 51.7

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

<u> </u>	4.	KAMPS	AND RAM			(N)	1661			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		SR 826				
Agency or Company	40101	2007		inction	Į	75 WB				
Date Performed	10/2/			risdiction		010 41	A Darah			
Analysis Time Period Project Description		re without Project		nalysis Year		.018 AN	преак			
	Beacon Count	yline DRI (Thila	Sufficiency)							
nputs		Terrain: Level							L .	
Jpstream Adj Ramp		remain: Lever							Downstrea	am Adj
☐ Yes ☐ On	ı								Ramp —	_
									☐ Yes	On
✓ No ✓ Off	:								✓ No	Off
un = ft									L _{down} =	ft
_{up} = ft		S.	₌₌ = 55.0 mph		S _{FR} = 50) () mph	1		-down	
/ _u = veh/h			•	chow lance I	110	o.o mpi			$V_D =$	veh/h
<u>u</u>		<u> </u>		show lanes, L _A ,	L _D , v _R , v _f)					
Conversion to		der Base C	onaitions	1	1	T			ī	
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f	: HV	f _p	v = V/PHF	$x f_{HV} x f_{p}$
reeway	5849	0.95	Level	4	0	0.9	080	1.00	62	280
Ramp	1881	0.95	Level	4	0	0.9		1.00)20
JpStream	1001	0.73	LCVCI			0.7	.00	1.00	20	720
DownStream		† 			1					
		Merge Areas						Diverge Areas		
Stimation of	timation of v ₁₂				Estimation of v ₁₂					
		(P)						= V _R + (V _F - V	\P	
	$V_{12} = V_F (P_{FM})$									
L _{EQ} = (Equation 25-2 or 25-3)					L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} = using Equation (Exhibit 25-5)					$P_{FD} = 0.260$ using Equation (Exhibit 25-12)				nibit 25-12)	
/ ₁₂ = pc/h				V ₁₂ =		28	383 pc/h			
V_3 or V_{av34}	pc/h	(Equation 25-	4 or 25-5)		V ₃ or V _{av34} 1227 pc/h (Equation 25-15 or 25-				5 or 25-16	
$V_{3} \text{ or } V_{av34} > 2,70$	0 pc/h? Ye	s □ No			Is V ₃ or V _{av34}	> 2,70	00 pc/h? [Tyes ✓ No		
s V ₃ or V _{av34} > 1.5 *	V ₁₂ /2	s 🗏 No						Yes ✓ No		
Yes,V _{12a} =		(Equation 25-	-8)		If Yes,V _{12a} =			c/h (Equation	25-18)	
Capacity Che		(= 4 a a a a a a a	<u> </u>		Capacity			(= quantie	0 .0,	
Japacity One	Actual	Ca	pacity	LOS F?	Oapacity		Actual	Ca	pacity	LOS F
	Actual		pacity	1 1031:	\/	_		1	<u> </u>	<u> </u>
					V _F	. 	5338	Exhibit 25-1		No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	· v _R	3318	Exhibit 25-1	_	No
					V_R		2020	Exhibit 25-3	3 4100	No
Flow Entering	g Merge In	fluence A	rea	· · · · · · · · · · · · · · · · · · ·	Flow En	terine	g Merc	je Influenc	e Area	
	Actual		esirable	Violation?			ctual	Max Desiral		Violation
V _{R12}		Exhibit 25-7			V ₁₂	28	883	Exhibit 25-14	4400:All	No
evel of Serv	ice Detern	1	f not F)		+			terminatio		
$D_R = 5.475 + 0.$		•						0086 V ₁₂ - 0.0		- /
	• • •	5.5575 V ₁₂						12 0.0	-000 <u>-</u> D	
$P_{R} = (pc/mi/c)$	·				I "	4 (pc/r	,			
OS = (Exhibi					}	`	it 25-4)			
Speed Detern	nination				Speed D	eterr	ninatio	on		
M _S = (Exibit 25	5-19)				$D_{s} = 0.4$	15 (E x	hibit 25	-19)		
	ibit 25-19)					6 mph	(Exhibit	25-19)		
K mbu (rvi)					1	•	(Exhibit	•		
					u - 11 U7.	HIGHT	、ニハロロロ			
S_0 mph (Exh S = mph (Exh	ibit 25-19) ibit 25-14)				1 *	•	` (Exhibit	OF 45\		

Phone: E-mail: Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway D	Data
-----------	------

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	5849	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	1881	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	600	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	5849	1881	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1539	495	V
Trucks and buses	4	4	8
Recreational vehicles	0	0	8
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                    1.00
Flow rate, vp
                                    6280
                                               2020
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 2883 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
    v = v
                         5338
                                      9000
                                                    No
     Fi F
                         3318
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         2020
                                      4100
                                                    No
     R
                         1227 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    2883
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -3.4 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.415
                                          S
Space mean speed in ramp influence area,
                                         S = 49.6
                                                     mph
                                          R
Space mean speed in outer lanes,
                                         S = 59.4
                                                     mph
```

S = 53.7

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

Onne ::: 11 f		KAMP	S AND RAM			KN3	ПССІ				
General Infor				Site Infor							
Analyst	DPA			eeway/Dir of Tra		SR 826					
Agency or Company				ınction	I	75 W	В				
Date Performed	10/2/			risdiction	,	2040 5					
Analysis Time Period		e without Project		nalysis Year		2018 P	PM Peak				
Project Description	Beacon County	yline DRI (Thira	Sufficiency)								
nputs		T							T		
Jpstream Adj Ramp		Terrain: Level							Downstrea Ramp	ım Adj	
Yes Or	1								☐ Yes	☐ On	
✓ No ☐ Of	f								✓ No	☐ Off	
- _{up} = ft									L _{down} =	ft	
		S	_{FF} = 55.0 mph		$S_{FR} = 50$	0.0 mp	oh		V _D =	veh/h	
/ _u = veh/h			Sketch (show lanes, L _A ,	L_{D}, V_{R}, V_{f}				v _D –	VEII/II	
Conversion t	o pc/h Und	der Base C	Conditions								
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		f_{HV}	f_p	v = V/PHF	$x f_{HV} x f_{p}$	
Freeway	10531	0.95	Level	4	0	0	.980	1.00	113	307	
Ramp	3635	0.95	Level	4	0	0	.980	1.00	39	03	
UpStream											
DownStream											
		Merge Areas						Diverge Areas			
Estimation of	v ₁₂	· · · ·		· · · ·	Estimati	on c	of v ₁₂				
	V ₁₂ = V _F	(P ₅₁₄)						= V _D + (V ₋ - V	′-)P		
_			25-3)		$V_{12} = V_R + (V_F - V_R)P_{FD}$ $L_{FO} =$ (Equation 25-8 or 25-9)						
-EQ =	, ,	ation 25-2 or	•		L _{EQ} =			•	•		
P _{FM} =	·	Equation (E	xnibit 25-5)		P _{FD} =			260 using E	quation (Exh	nibit 25-12)	
' ₁₂ =	pc/h				V ₁₂ =		52	240 pc/h			
V_3 or V_{av34}	•	(Equation 25	-4 or 25-5)		V_3 or V_{av34}		19	903 pc/h (Eq i	uation 25-15	5 or 25-16)	
$ s V_3 \text{ or } V_{av34} > 2,70$	0 pc/h?	s 🗆 No			Is V ₃ or V _{av3}	, ₄ > 2,7	700 pc/h?	Tyes ✓ No			
Is V_3 or $V_{av34} > 1.5$								Yes ✓ No			
Yes, V _{12a} =		(Equation 25	-8)		If Yes,V _{12a} =			oc/h (Equation			
Capacity Che		(= quanto : = = 0			Capacity			707 (= 400			
Supucity One	Actual		pacity	LOS F?	Oupuons	, 011	Actual		apacity	LOS F?	
	notual	T	ipacity	2031:	V _F		9046	Exhibit 25-	' 1	Yes	
						$\overline{}$		_			
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- v _R	5143	Exhibit 25-	_	No	
					V_R		3903	Exhibit 25-	3 4100	No	
Flow Entering	g Merge In	fluence A	rea		Flow En	terir	ng Merc	je Influenc	e Area		
`	Actual		Desirable	Violation?			Actual	Max Desira		Violation?	
V _{R12}		Exhibit 25-7			V ₁₂		5240	Exhibit 25-14	4400:All	No	
Level of Serv	ice Detern	1	f not F)	1	_			terminatio			
$D_R = 5.475 + 0.$		•						0086 V ₁₂ - 0.	<u> </u>	- /	
) _R = 0.475 F 0.	• •	12				• •	:/mi/ln)	12 0.	-D		
OS = (Exhibi	•					٠.	bit 25-4)				
Speed Deterr					Speed D	<u> </u>		<u> </u>			
-					- 						
$M_S = $ (Exibit 29)	5-19)					•	xhibit 25	•			
$S_R = mph (Exh$	ibit 25-19)				l ''	.4 mpł	n (Exhibit	25-19)			
	ibit 25-19)				$S_0 = 56$.8 mpł	n (Exhibit	25-19)			
	ibit 25-14)				S = 51	.0 mpł					
) =											

Phone: E-mail:

Fax:

______Diverge Analysis______

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future without Project

Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway Da	ta
------------	----

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	10531	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	3635	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	600	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	10531	3635	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2771	957	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
                                               1.00
Flow rate, vp
                                    11307
                                               3903
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 5240 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                        Actual
    v = v
                         9046
                                      9000
                                                    Yes
     Fi F
                         5143
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         3903
                                      4100
                                                    No
     R
                        1903 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    5240
                                                     No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 16.9 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.584
                                          S
Space mean speed in ramp influence area,
                                         S = 47.4
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 56.8
                                                     mph
```

S = 51.0

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

0		KANIP	S AND RAM			6/1/2	пссі			
General Infor				Site Infor						
Analyst	DPA			eeway/Dir of Tr		SR 826				
Agency or Company				nction	l	75 WE	3			
Date Performed	10/2/2			risdiction		2010 1	M.D. I			
Analysis Time Perioc Project Description		e with Project		nalysis Year		2018 A	M Peak			
Inputs	beacon County	yiirie DRI (Tilliu	Sufficiency)							
-		Terrain: Level							Downstras	m Adi
Jpstream Adj Ramp ☐ Yes ☐ Or		Terrain. Ecver							Downstrea Ramp	ım Aaj
	I								☐ Yes	☐ On
✓ No ✓ Off	f								✓ No	☐ Off
- _{un} = ft									L _{down} =	ft
-up = ft		S	_{FF} = 55.0 mph		S _{FR} = 50	0.0 mp	h		_aown	
/ _u = veh/h	l			show lanes, L _A ,		م ده			$V_D =$	veh/h
Conversion to	o pc/h Und	l der Base (Show lanes, L _A ,	D' R' f				<u>[</u>	
(pc/h)	V	PHF	Terrain	%Truck	%Rv		f_HV	fp	v = V/PHF	x f _{uv} x f _n
	(Veh/hr)	<u> </u>		ļ				'		
Freeway	6089	0.95	Level	4	0		980	1.00	65	
Ramp	2121	0.95	Level	4	0	0.	980	1.00	22	11
UpStream DownStream		 			<u> </u>	-			<u> </u>	
Downstream		Merge Areas						Diverge Areas		
Estimation of	V ₄₂	g			Estimati	on o				
		(D)						\/ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	' \D	
	$V_{12} = V_F$: V _R + (V _F - V		
-EQ =	, ,	ation 25-2 or	•		L _{EQ} =		•	Equation 25-8	•	
P _{FM} =	using	Equation (E	xhibit 25-5)		P _{FD} =		0.	260 using Ed	quation (Ext	nibit 25-12)
/ ₁₂ =	pc/h				V ₁₂ =		31	130 pc/h		
V_3 or V_{av34}	pc/h ((Equation 25	-4 or 25-5)		V_3 or V_{av34}		12	214 pc/h (Equ	uation 25-1	5 or 25-16)
Is V_3 or $V_{av34} > 2,70$	0 pc/h? 🔲 Yes	s 🗏 No			Is V ₃ or V _{av3}	4 > 2,7	00 pc/h? [Yes ✓ No		
Is V_3 or $V_{av34} > 1.5$	V ₁₂ /2	s 🗏 No			Is V ₃ or V _{av3}	₄ > 1.5	* V ₁₂ /2	Yes ✓ No		
f Yes,V _{12a} =		(Equation 25	-8)		If Yes,V _{12a} =			c/h (Equation	า 25-18)	
Capacity Che		(1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,	-,		Capacity			(1	,	
, , , , , , , , , , , , , , , , , , , ,	Actual	C	apacity	LOS F?			Actual	Ca	apacity	LOS F?
					V _F		5558	Exhibit 25-1	' ' ' 	No
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	- \/_	3281	Exhibit 25-1	_	No
*FO		EXHIBIT 20-7				*R		_		
	<u> </u>				V _R		2277	Exhibit 25-		No
Flow Entering		1		\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	Flow En	_		e Influenc		\n.
\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Actual	i 	Desirable	Violation?	.,		Actual	Max Desira	ĺ	Violation?
V _{R12}		Exhibit 25-7		<u> </u>	V ₁₂		3130	Exhibit 25-14	4400:All	No
Level of Serv		•			+			terminatio	•	F)
$D = 5.475 \pm 0$	00734 v _R + 0	0.0078 V ₁₂ -	0.00627 L _A		D	R = 4	.252 + 0.	0086 V ₁₂ - 0.	0009 L _D	
$D_{R} = 5.475 + 0.$	ln)				D _R = -1.	2 (pc /	mi/ln)			
• •					LOS = A	(Exhib	oit 25-4)			
O _R = (pc/mi/	t 25-4)				Speed D	<u> </u>		on		
$O_R = (pc/mi/cos)$										
O _R = (pc/mi/ OS = (Exhibi	nination					138 (E	xhibit 25	-19)		
$O_R = (pc/mi/s)$ OS = (Exhibit) Speed Determination $M_S = (Exhibit)$	nination 5-19)				$D_{\rm S} = 0.4$	•	xhibit 25 (Exhibit	•		
$D_R = (pc/mi/D_R)$ $D_R = (pc/mi/D_R)$	nination 5-19) hibit 25-19)				$D_{S} = 0.4$ $S_{R} = 49$.3 mph	(Exhibit	25-19)		
O_R = (pc/mi/ OS = (Exhibitation of the content of the conte	nination 5-19)				$D_{s} = 0.4$ $S_{R} = 49$ $S_{0} = 59$.3 mph .5 mph		25-19) 25-19)		

Phone: E-mail: Fax:

Diverge	Analysis_
---------	-----------

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB

Jurisdiction:

Analysis Year: 2018 AM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

Freeway	Data

Type of analysis	Diverge	
Number of lanes in freeway	5	
Free-flow speed on freeway	55.0	mph
Volume on freeway	6089	vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	2121	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	600	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist?

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	6089	2121	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	1602	558	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
1.00
Driver population factor, fP
Flow rate, vp
                                    6538
                                               2277
                                                                   pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 3130 pc/h
                 12 R
                          F R FD
                  _____Capacity Checks_____
                                     Maximum
                                                   LOS F?
                        Actual
    v = v
                         5558
                                     9000
                                                    No
     Fi F
                         3281
                                     9000
                                                    No
    v = v - v
         F R
     FΟ
                         2277
                                     4100
                                                    No
     R
                        1214 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                     No
Is
        V
     3 or av34
                      12
                                     (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                     Violation?
                    Actual
                                 4600
                    3130
                                                     No
    V
     12
            ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = -1.2 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence A
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.438
                                          S
Space mean speed in ramp influence area,
                                         S = 49.3
                                                     mph
                                         R
Space mean speed in outer lanes,
                                         S = 59.5
                                                     mph
```

S = 53.3

mph

0.980

1.00

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

Consuel leste	ma4!a=	KANIP	S AND RAM			NOTEE	<u> </u>		
General Infor				Site Infor					
Analyst	DPA			eeway/Dir of Tr		R 826 NB			
Agency or Company		2007		nction	I	75 WB			
Date Performed	10/2/			risdiction	0	010 DM D			
Analysis Time Period		e with Project		nalysis Year		018 PM Peak			
Project Description	Beacon County	/line DRI (Thira	Sumciency)						
nputs		Terrain: Level						<u> </u>	A 11
Jpstream Adj Ramp		Terrain. Lever						Downstre Ramp	am Adj
☐ Yes ☐ On								☐ Yes	☐ On
✓ No ✓ Off								✓ No	Off
_								l.	
_{-up} = ft			FF 0		0 50) O b		L _{down} =	ft
/,, = veh/h		5	FF = 55.0 mph		$S_{FR} = 50$	0.0 mpn		V _D =	veh/h
u				show lanes, L _A ,	L_{D}, V_{R}, V_{f}			J. D	V 011/11
Conversion to		der Base (Conditions	1					
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f _p	v = V/PHI	$F \times f_{HV} \times f_{p}$
Freeway	10654	0.95	Level	4	0	0.980	1.00	11	1439
Ramp	3758	0.95	Level	4	0	0.980	1.00	4	035
UpStream									
DownStream					ļ				
		Merge Areas			=		Diverge Areas	S	
Estimation of	v ₁₂				Estimation	on of v ₁₂			
	V ₁₂ = V _F	(P _{FM})				V ₁	$_{2} = V_{R} + (V_{F} -$	V _R)P _{FD}	
- _{EQ} =	(Equa	ation 25-2 or	25-3)		L _{EQ} =		(Equation 2	5-8 or 25-9)	
P _{FM} =	, ,	Equation (E	•		P _{FD} =		0.260 using	•	(hihit 25-12)
/ ₁₂ =	pc/h		2 20 0)		V ₁₂ =		5365 pc/h	Equation (E)	111011 20 12)
	•	Equation 25	1 or 25 5)		1		•		IE OE 40'
/ ₃ or V _{av34}			-4 01 25-5)		V ₃ or V _{av34}	. 2.700 na/h	1893 pc/h (E		15 01 25-16,
Is V_3 or $V_{av34} > 2,70$? ☐ Yes ☑ N		
Is V_3 or $V_{av34} > 1.5$ *					1		☐ Yes ☑ N		
Yes,V _{12a} =		Equation 25	-8)		If Yes,V _{12a} =		pc/h (Equati	on 25-18)	
Capacity Che	cks				Capacity	Checks			
	Actual	Ca	apacity	LOS F?		Actı	ıal	Capacity	LOS F?
					V_{F}	915	2 Exhibit 2!	5-14 9000	Yes
V_{FO}		Exhibit 25-7			$V_{FO} = V_{F}$	V _R 511	7 Exhibit 2	5-14 9000	No
. 🗸					V _R	403	5 Exhibit 2	25-3 4100	No
Flow Entering	Mergo In	fluence A	roa	<u> </u>	<u> </u>		erge Influer		140
TOW LINEINIG	Actual		Desirable	Violation?	I IOW EIIC	Actual	Max Desi		Violation?
\/	riciual	Exhibit 25-7	Johnabio	violatiOH;	V ₁₂	5365	Exhibit 25-1	1	No
V _{R12}	ioo Dotor-		f not E	<u> </u>					
Level of Servi		•					<u>Determinat</u>	•	· r)
$D_R = 5.475 + 0.0$	• • •	υ.υυ/8 V ₁₂ -	U.UU021 L _A		l .	•	0.0086 V ₁₂ -	v.0009 L _D	
O _R = (pc/mi/l	•				1	0 (pc/mi/ln)			
.OS = (Exhibi	<u> </u>					Exhibit 25-4	<u> </u>		
Speed Detern	nination				Speed D	etermina	tion		
$M_{\rm S} = $ (Exibit 25	5-19)				$D_{\rm S} = 0.5$	96 (Exhibit	25-19)		
	ibit 25-19)				S _R = 47.	3 mph (Exhi	bit 25-19)		
	ibit 25-19)				l .,	9 mph (Exhi	•		
7) IIIPII (LXII	•						•		
S = mph (Exh	ihit 25-14)				S = 50	Զ mnh /⊑vhi	bit 25-15)		

Phone: E-mail:

Fax:

_____Diverge Analysis_____

Analyst: DPA

Agency/Co.:

Date performed: 10/2/2007

Analysis time period: Future with Project

Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB

Jurisdiction:

Analysis Year: 2018 PM Peak

Description: Beacon Countyline DRI (Third Sufficiency)

______Freeway Data______

Type of analysis

Number of lanes in freeway

Free-flow speed on freeway

Volume on freeway

Diverge

5

mph

10654

vph

_____Off Ramp Data_____

Side of freeway	Right	
Number of lanes in ramp	2	
Free-Flow speed on ramp	50.0	mph
Volume on ramp	3758	vph
Length of first accel/decel lane	1500	ft
Length of second accel/decel lane	600	ft

______Adjacent Ramp Data (if one exists)______

Does adjacent ramp exist? No

Volume on adjacent ramp vph

Position of adjacent ramp Type of adjacent ramp

Distance to adjacent ramp ft

______Conversion to pc/h Under Base Conditions_____

Junction Components	Freeway	Ramp	Adjacent Ramp
Volume, V (vph)	10654	3758	vph
Peak-hour factor, PHF	0.95	0.95	
Peak 15-min volume, v15	2804	989	V
Trucks and buses	4	4	%
Recreational vehicles	0	0	%
Terrain type:	Level	Level	
Grade	0.00 %	0.00 %	%
Length	0.00 mi	0.00 mi	mi
Trucks and buses PCE, ET	1.5	1.5	
Recreational vehicle PCE, ER	1.2	1.2	

```
Driver population factor, fP
                                    1.00
                                               1.00
Flow rate, vp
                                    11439
                                               4035
                                                                    pcph
                  _____Estimation of V12 Diverge Areas__
                               (Equation 25-8 or 25-9)
                L =
                 ΕQ
                      0.260 Using Equation 0
                 FD
                v = v + (v - v) P = 5365 pc/h
                 12 R
                          F R FD
                   _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         9152
                                      9000
                                                     Yes
    v = v
     Fi F
                         5117
                                      9000
                                                    No
    v = v - v
         F R
     FΟ
                         4035
                                      4100
                                                    No
     R
                         1893 pc/h (Equation 25-15 or 25-16)
    3 or av34
Is
    v v
                > 2700 pc/h?
                                     No
     3 or av34
                > 1.5 v /2
                                      No
Is
        V
     3 or av34
                       12
                                      (Equation 25-18)
If yes, v
        12A
                    _Flow Entering Diverge Influence Area____
                                 Max Desirable
                                                      Violation?
                    Actual
                                 4600
                    5365
                                                      No
    V
     12
             ____Level of Service Determination (if not F)______
                     D = 4.252 + 0.0086 v - 0.009 L = 18.0 pc/mi/ln
Density,
                                       12
                      R
Level of service for ramp-freeway junction areas of influence F
                _____Speed Estimation_____
Intermediate speed variable,
                                         D = 0.596
                                          S
Space mean speed in ramp influence area,
                                         S = 47.3
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 56.9
                                                      mph
```

S = 50.8

mph

0.980

0.980

Heavy vehicle adjustment, fHV

Space mean speed for all vehicles,

SR 826 NB TO I 75 WB RAMP MERGE

		MIL2 AND I	RAMP JUN							
General Infor	mation			Site Infor						
Analyst	DPA			eeway/Dir of Tr		SR 82				
Agency or Company				ınction		I 75 W	VΒ			
Date Performed	10/2/			risdiction						
Analysis Time Period				nalysis Year		2007	AM Peak			
Project Description	Beacon County	yline DRI (Third	Sufficiency)							
nputs		Tamata Lauri							1	
Jpstream Adj Ramp		Terrain: Level							Downstre Ramp	eam Adj
Yes Or	1								☐ Yes	☐ On
✓ No	f									
110 1 01									✓ No	C Off
- _{up} = ft		,							L _{down} =	ft
		S	$_{\rm F} = 55.0 {\rm mph}$		S _{FR} =	50.0 m	nph		.,	1.71
$l_{\rm u} = {\rm veh/h}$	1		Sketch (:	show lanes, L _A ,	L_{D}, V_{R}, V_{f}				$V_D =$	veh/h
Conversion t		der Base C				1				
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv		${\sf f}_{\sf HV}$	f _p	v = V/PH	$F x f_{HV} x f_{p}$
Freeway	3348	0.95	Level	4	0	0).980	1.00		3595
Ramp	1545	0.95	Level	4	0	0).980	1.00		1659
UpStream										
DownStream										
		Merge Areas						Diverge Area	ıs	
Estimation of	^f v ₁₂				Estimat	tion	of v ₁₂			
	V ₁₂ = V _F	(P _{5M})					1/	V . (V)	\/ \D	
=		ation 25-2 or 2	25-3)				v ₁₂ =	= V _R + (V _F -		_,
-EQ =			ŕ		L _{EQ} = (Equation 25-8 or 25-9)					
P _{FM} =			n (Exhibit 25-5)		P _{FD} =		using Equation (Exhibit 25-12)			
/ ₁₂ =	1995				V ₁₂ =			pc/h		
V_3 or V_{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)					
	5)					.24 > 2	.700 pc/h?	☐ Yes ☐		,
Is V_3 or $V_{av34} > 2,70$					I			☐ Yes ☐		
Is V_3 or $V_{av34} > 1.5$	· -						.5 12/2			
Yes,V _{12a} =	2054	pc/h (Equatio	า 25-8)		If Yes,V _{12a} =	_		pc/h (Equa	111011 25-16	
Capacity Che	cks				Capacit	ty CI	hecks			
	Actual	Ca	pacity	LOS F?			Actua	1	Capacity	LOS F?
		1 1			V _F			Exhibit 2	5-14	
V_{FO}	5254	Exhibit 25-7		No	$V_{FO} = V_{F}$	V _D		Exhibit 2	5-14	
- FO	0201			110	V _R			Exhibit 2		
	<u> </u>	<u> </u>			4					
Flow Entering				1	Flow Er	_		ge Influe		1
	Actual		esirable	Violation?	 	_	Actual	`	esirable . I	Violation?
V _{R12}	3713	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		
Level of Serv	ice Detern	nination (if	not F)		Level o	f Sei	rvice D	etermina	tion (if n	ot F)
$D_R = 5.475 +$	$0.00734 \mathrm{V}_{\mathrm{R}} + 0$	0.0078 V ₁₂ - 0.00)627 L _A			$D_R = \frac{1}{2}$	4.252 + (0.0086 V ₁₂ -	0.0009 L _D	
D _R = 5.5 (pc/i	•		**		1	pc/mi/		12		
OS = A (Exhib					I		it 25-4)			
`	•				<u> </u>		,	ion		
Speed Deterr					Speed I			ЮП		
$M_{S} = 0.031 \text{ (Exi)}$	bit 25-19)] '		25-19)			
$S_R = 54.6 \text{ mph}$	(Exhibit 25-19)				$S_R = m$	nph (Ex	xhibit 25-19	9)		
	(Exhibit 25-19)				$S_0 = m$	nph (Ex	xhibit 25-19	9)		
	(Exhibit 25-14)				1 *	nph (Ex				
U					l _a					

Phone: E-mail:		Fax	:			
	Merge	Analysis	5			
Analyst:	DPA					
Agency/Co.: Date performed:	10/2/2007					
Analysis time period:						
Freeway/Dir of Travel:						
Junction:	I 75 WB					
Jurisdiction:						
Analysis Year:	2007 AM Peak					
Description: Beacon Co	untyline DRI (T	hird Sufi	ficiency)			
	Free	way Data_				
Type of analysis		Mei	rge			
Number of lanes in free	-	3				
Free-flow speed on free	way		. 0	mph		
Volume on freeway		334	18	vph		
	On R	amp Data_				
Side of freeway		Rig	rh t			
Number of lanes in ramp		2				
Free-flow speed on ramp			. 0	mph		
Volume on ramp		154	15	vph		
Length of first accel/d		150	00	ft		
Length of second accel/	decel lane	150	0 0	ft		
	Adjacent Ramp	Data (ii	one exist	s)		
Does adjacent ramp exis		No		b		
Volume on adjacent Ramp Position of adjacent Ra				vph		
Type of adjacent Ramp	шр					
Distance to adjacent Ra	qm			ft		
J	-					
Con	version to pc/h	Under Ba	ase Conditi	ons		
Junction Components		Freeway	Ramp		Adjacent Ramp	
Volume, V (vph)		3348	1545		_	vph
Peak-hour factor, PHF		0.95	0.95			
Peak 15-min volume, v15		881	407			V
Trucks and buses		4	4			%
Recreational vehicles		0	0			%
Terrain type:		Level	Level	9		%
Grade			%	%		6

mi

1.5

1.2

1.5

1.2

mi

mi

Length

Trucks and buses PCE, ET

```
3595
                                               1659
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 1995 pc/h
                 12 F FM
                     _____Capacity Checks____
                                      Maximum
                                                    LOS F?
                         Actual
                         5254
                                      6750
                                                     No
     FO
                         1600 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2054
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                    2054
                                 4400
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 5.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence A
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.031
                                          S
Space mean speed in ramp influence area,
                                         S = 54.6
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 51.3
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 53.6
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

<u> </u>		WIPS AND	RAMP JUN			<u> </u>						
General Info				Site Infor								
Analyst	DPA			eeway/Dir of Tr		SR 826 N	NB					
Agency or Company Date Performed		2007		nction risdiction		I 75 WB						
Date Performed Analysis Time Perio		2007		nalysis Year		2007 PM	Dook					
Project Description				iaiysis i cai		2007 PIVI	Peak					
Inputs	Deacon Count	yiiile DKI (Tililu	Sufficiency)									
-	`	Terrain: Level							Downstre	nam Adi		
Jpstream Adj Ramp									Ramp	am Auj		
☐ Yes ☐ O	n								☐ Yes	☐ On		
✓ No	ff								✓ No	Off		
									I INO			
_{-up} = ft									L _{down} =	ft		
/ - \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \	5	S	$_{\rm F} = 55.0 {\rm mph}$		$S_{FR} = 5$	0.0 mph			$V_D =$	veh/h		
/ _u = veh/l	1		Sketch (show lanes, L _A	$L_{D'}V_{R'}V_{f}$				V D -	VCII/II		
Conversion t	1	der Base C	Conditions	7	_				1			
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _H	IV	f_p	v = V/PH	$F x f_{HV} x f_{p}$		
Freeway	2882	0.95	Level	4	0	0.98	80	1.00		3094		
Ramp	3177	0.95	Level	4	0	0.98	80	1.00		3411		
UpStream												
DownStream												
		Merge Areas						Diverge Area	ıs			
Estimation o	f v ₁₂				Estimati	ion of	V ₁₂					
	V ₁₂ = V _F	(P _{EM})					V -	V _R + (V _F -	V)P			
- _{EQ} =		ation 25-2 or	25-3)							0)		
P _{FM} =	, ,		on (Exhibit 25-5)		L _{EQ} = (Equation 25-8 or 25-9)							
			OII (EXHIBIT 25-5)		P _{FD} =		ı	using Equa	Equation (Exhibit 25-12)			
1 ₁₂ =	1717	•	- 05 4 05		V ₁₂ =		ı	pc/h				
V_3 or V_{av34}	5)	pc/h (Equatio	11 25-4 01 25-		V_3 or V_{av34}			pc/h (Equation	on 25-15 or 2	5-16)		
Is V ₃ or V _{av34} > 2,70	,	s 🔽 No			Is V ₃ or V _{av3}	34 > 2,700	0 pc/h? [Yes 🗆 I	No			
Is V_3 or $V_{av34} > 1.5$					Is V ₃ or V _{av3}	₃₄ > 1.5 *	V ₁₂ /2	Yes 🗆 I	No			
f Yes, V _{12a} =	·=	pc/h (Equatio	n 25 9\		If Yes, V _{12a} =				tion 25-18)		
Capacity Che		pc/ii (Equalio	11 25-0)		120			•				
зарасну спе	Actual	Co	nacity	LOS F?	Capacit	y Che	Actual	1	Capacity	LOS F?		
	nciual		pacity	LU31 !	V _F	\dashv	notual	Exhibit 2	' 1 '	LUSF		
	.===				<u> </u>	, 			_			
V_{FO}	6505	Exhibit 25-7		No	$V_{FO} = V_{F}$	- v _R		Exhibit 2				
					V_R			Exhibit 2	25-3			
Flow Enterin	g Merge In	fluence A	rea		Flow En	tering	Merg	e Influe	nce Area	1		
	Actual	Max D	esirable)	Violation?		Act	tual	Max De	esirable	Violation?		
V_{R12}	5179	Exhibit 25-7	4600:All	No	V ₁₂		T	Exhibit 25-14	1			
Level of Serv	ice Deterr	nination (in	f not F)	-		Servi	ice De	termina	tion (if n	ot F)		
		0.0078 V ₁₂ - 0.00			_				0.0009 L _D			
) _R = 16.1 (p		12	М			c/mi/ln)		12	D			
	bit 25-4)				I '\ "	xhibit 2						
Speed Deteri					Speed E			<u> </u>				
speed Deteri					 	xhibit 25		<i>)</i> 11				
	ibit 25-19)				L		•					
						S _R = mph (Exhibit 25-19)						
	(Exhibit 25-19)				I "							
$S_R = 47.7 \text{ mph}$	(Exhibit 25-19) (Exhibit 25-19)				I ''		oit 25-19)					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Existing Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 2882 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 3177 vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 2882 3177 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 758 836 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type: % ે 용 Grade

mi

1.5

1.2

1.5

1.2

mi

шi

Length

Trucks and buses PCE, ET

```
3094
Flow rate, vp
                                               3411
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 1717 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         6505
                                      6750
                                                     No
     FO
                         1377 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1768
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    1768
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 16.1 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.563
                                          S
Space mean speed in ramp influence area,
                                          S = 47.7
                                                      mph
                                          R
                                          S = 52.0
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 48.5
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

		WIPS AND	RAMP JUN			<u> </u>									
General Info				Site Infor											
Analyst	DPA			Freeway/Dir of Travel SR 826 NB											
Agency or Company		10007		nction		I 75 WB									
Date Performed	10/2/			risdiction		2007 ANA	Dool								
Analysis Time Perio Project Description		re without Project		nalysis Year	•	2007 AM	Peak								
nputs	Deacon Count	yiiile DRI (Tiliid	Sumciency)												
-		Terrain: Level							Daywastre	a a ma A di					
Jpstream Adj Ramp)	Terrain. Lever							Downstre Ramp	eam Adj					
□ Yes □ O	n								1 '						
E	,,								☐ Yes	☐ On					
✓ No ☐ O	П								✓ No	Off					
- _{up} = ft									L _{down} =	ft					
ир		S	_E = 55.0 mph		S _{FR} = 5	0.0 mph									
$t_{\rm u} = {\rm veh/l}$	า	'	•	show lanes, L _A		·			$V_D =$	veh/h					
Conversion	to pc/h Uni	der Base C		. A	D. K. I.										
	V	PHF		%Truck	%Rv	f		f	V – V/DH	F x f _{HV} x f _p					
(pc/h)	(Veh/hr)	РПГ	Terrain	70 TTUCK	70RV	f _{H\}	V	f _p	V — V/F11	' ^ 'HV ^ 'p					
Freeway	4633	0.95	Level	4	0	0.980)	1.00		4974					
Ramp	1881	0.95	Level	4	0	0.980		1.00		2020					
UpStream		<u> </u>			ļ	 									
DownStream		Marga Arasa						iverse Area							
Estimation o		Merge Areas			Diverge Areas Estimation of v ₁₂										
Estimation o					ESumau	1011 01	V ₁₂								
	$V_{12} = V_F$	(P _{FM})					V ₁₂ = \	/ _R + (V _F -	$V_{\rm P})P_{\rm FD}$						
- _{EQ} =	(Equ	ation 25-2 or	25-3)		L _{EQ} =				25-8 or 25-	9)					
P _{FM} =	0.555	using Equation	n (Exhibit 25-5)		P _{FD} = using Equation (Exhibit 25-12)										
/ ₁₂ =	2761				II				Ation (Exhibi	(25-12)					
		pc/h (Equatio	n 25-4 or 25-		V ₁₂ =		•	oc/h	25 15 2	Γ 1/\					
V_3 or V_{av34}	5)	(1			V_3 or V_{av34} pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? \square Yes \square No										
Is V_3 or $V_{av34} > 2.7$	00 pc/h? 🥅 Ye	s 🗹 No													
Is V_3 or $V_{av34} > 1.5$	* V ₁₂ /2	s □ No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No										
f Yes,V _{12a} =		pc/h (Equatio	n 25-8)		If Yes,V _{12a} = pc/h (Equation 25-18)										
Capacity Ch			,		Capacit	v Ched	cks								
, , , , , , , , , , , , , , , , , , , 	Actual	Ca	pacity	LOS F?			Actual	1	Capacity	LOS F?					
				1	V _F			Exhibit 2	' ' ' '						
V	6994	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- \/		Exhibit 2							
V_{FO}	0774	LAHIDIC 25-7		163		*R									
					V _R			Exhibit 2							
Flow Enterin		1		1	Flow En	1	nce Area	1							
	Actual	1	esirable	Violation?	 ,,	Actı			esirable	Violation?					
V _{R12}	4862	Exhibit 25-7	4600:All	No	V ₁₂			Exhibit 25-1		<u></u>					
Level of Serv					+				tion (if n						
$D_{R} = 5.475 +$	- 0.00734 v _R + 0	0.0078 V ₁₂ - 0.00	0627 L _A			$O_{R} = 4.25$	52 + 0.0	0086 V ₁₂ -	0.0009 L _D						
$O_{R} = 14.3 \text{ (p)}$	c/mi/ln)				$D_R = (p)$	c/mi/ln)									
-	bit 25-4)					xhibit 2	5-4)								
.OS = F (Exhi					Speed D			n							
<u> </u>					 ' 										
Speed Deter			$M_S = 0.375$ (Exibit 25-19)							$D_{s} = (Exhibit 25-19)$					
Speed Determine The Speed	ibit 25-19)				L		S _R = mph (Exhibit 25-19)								
Speed Determine $M_S = 0.375$ (Ex. $S_R = 50.1$ mph	ibit 25-19) (Exhibit 25-19)				S _R = m _l	ph (Exhibi									
Speed Deter $M_S = 0.375 \text{ (Ex}$ $S_R = 50.1 \text{ mph}$ $S_0 = 49.1 \text{ mph}$	ibit 25-19)				$S_R = m_1$ $S_0 = m_1$		it 25-19)								

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future without Project Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 4633 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 1881 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 4633 1881 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1219 495 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level Terrain type:

%

1.5

1.2

mi

1.5

1.2

Grade Length

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

용

mi

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шi

```
4974
                                               2020
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 2761 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         6994
                                      6750
                                                     Yes
     FO
                         2213 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2842
                                      (Equation 25-8)
        12A
                    __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2842
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 14.3 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.375
                                          S
Space mean speed in ramp influence area,
                                         S = 50.1
                                                      mph
                                          R
Space mean speed in outer lanes,
                                         S = 49.1
                                                      mph
                                          0
Space mean speed for all vehicles,
                                         S = 49.8
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Concrol Infor		WII O AIND I	RAMP JUN			<u> '</u>						
General Infor			Г	Site Infor		CD 00/ ND						
Analyst Agency or Company	DPA			eeway/Dir of Tranction		SR 826 NB						
Date Performed	10/2/	2007		risdiction		I 75 WB						
	10/2/					2007 DM D	aak					
Analysis Time Period		re without Projec		nalysis Year	•	2007 PM P	еак					
Project Description Inputs	Beacon Count	yline DRI (Thira	Sumciency)									
•		Terrain: Level						Downstra	oom Adi			
Jpstream Adj Ramp ☐ Yes ☐ On		remain. Ecver						Downstre Ramp	eam Auj			
res i On								Yes	☐ On			
✓ No ☐ Off								✓ No	☐ Off			
- _{up} = ft								L _{down} =	ft			
•		S _F	$_{\rm F} = 55.0 {\rm mph}$		$S_{FR} = 5$	0.0 mph		\/ _	vob/b			
/ _u = veh/h			Sketch (show lanes, L _A ,	$L_{D'}V_{R'}V_{f}$			$V_D =$	veh/h			
Conversion to	pc/h Und	der Base C	onditions		1	1						
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	$F x f_{HV} x f_{p}$			
Freeway	3668	0.95	Level	4	0	0.980	1.00		3938			
Ramp	3635	0.95	Level	4	0	0.980	1.00		3903			
UpStream					<u> </u>							
DownStream												
		Merge Areas			Diverge Areas							
Estimation of	V ₁₂				Estimati	ion of v	12					
	V ₁₂ = V _F	(P _{FM})			ĺ	\	$V_{12} = V_R + (V_F)$	- \/ \P				
- _{EQ} =		ation 25-2 or 2	25-3)			`	, .		0)			
P =			on (Exhibit 25-5)		L_{EQ} = (Equation 25-8 or 25-9) P_{FD} = using Equation (Exhibit 25-12)							
FM ⁻			MT (EVIIINII 52-2)		P _{FD} =		using Eq	uation (Exhibi	t 25-12)			
/ ₁₂ =	2186	•	- OF 4 OF		V ₁₂ =		pc/h					
V_3 or V_{av34}	1/52 5)	pc/h (Equation	1 25-4 or 25-		V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)							
Is V ₃ or V _{av34} > 2,70		e V No			Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No							
							₂ /2					
Is V_3 or $V_{av34} > 1.5$ *			- 05 6)		If Yes, $V_{12a} = pc/h$ (Equation 25-18)							
f Yes,V _{12a} =		pc/h (Equation	า 25-8)		120				•			
Capacity Che		1 .		1	Capacity	1	T.					
	Actual	Ca	pacity	LOS F?	 		ctual	Capacity	LOS F?			
					V _F		Exhibi	t 25-14				
V_{FO}	7841	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _R	Exhibi	t 25-14				
					V _R		Exhibi	t 25-3				
Flow Entering	ı Merae In	i I		<u> </u>	Flow Entering Merge Influence Area							
.ou Littering	Actual	1	esirable	Violation?	, , , , , , , , , , , , , , , , , , ,	Actua		Desirable	Violation?			
V _{R12}	6153	Exhibit 25-7	4600:All	No	V ₁₂	1	Exhibit 25-		1			
Level of Serv				1		Servic	e Determin		ot F)			
		0.0078 V ₁₂ - 0.00			`		2 + 0.0086 V ₁₂	•				
$D_{R} = 23.5 \text{ (pc.)}$	10		А		1	oc/mi/ln)	3.3330 112	<u>,</u> 0.0000 - D				
						Exhibit 25	-4)					
					Speed D							
Speed Detern					' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' ' 							
Speed Detern					$D_{s} = (Exhibit 25-19)$							
M _S = 1.704 (Exit					S _R = mph (Exhibit 25-19)							
$M_S = 1.704 \text{ (Exit)}$ $S_R = 32.8 \text{ mph (}$	Exhibit 25-19)				1							
$M_S = 1.704 \text{ (Exitor)}$ $S_R = 32.8 \text{ mph (}$ $S_0 = 50.7 \text{ mph (}$					$S_0 = m_i$	ph (Exhibit) ph (Exhibit) ph (Exhibit)	25-19)					

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future without Project Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) _____Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph 3668 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 3635 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3668 3635 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 965 957 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

용

шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

```
3938
                                                3903
Flow rate, vp
                                                                    pcph
                   _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2186 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7841
                                      6750
                                                     Yes
     FO
                         1752 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2250
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    2250
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 23.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation____
Intermediate speed variable,
                                          M = 1.704
                                          S
Space mean speed in ramp influence area,
                                          S = 32.8
                                                      mph
                                          R
                                          S = 50.7
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 35.5
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

0		MIL2 WND	RAMP JUNG			<u>.cı</u>							
General Infor				Site Infor									
Analyst	DPA			eeway/Dir of Tr		SR 826 NB							
Agency or Company				nction	l	75 WB							
Date Performed	10/2/			risdiction	_								
Analysis Time Period		re with Project		alysis Year		2007 AM Pea	ıK						
Project Description	Beacon Count	yline DRI (Third	Sufficiency)										
Inputs		Terrain: Level						L					
Jpstream Adj Ramp		remain: Lever						Downstre Ramp	eam Adj				
☐ Yes ☐ Or	1							☐ Yes	☐ On				
✓ No	f							✓ No	☐ Off				
- _{up} = ft								L _{down} =	ft				
цρ		S	_{=F} = 55.0 mph		S _{FR} = 50	0.0 mph							
$V_{\rm u} = {\rm veh/h}$	1		Sketch (show lanes, L _A ,	L_{D}, V_{R}, V_{f}			$V_D =$	veh/h				
Conversion to	o pc/h Un	der Base C		· · · · · · · · · · · · · · · · · · ·									
(pc/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f_{HV}	f _p	v = V/PH	$F x f_{HV} x f_{p}$				
Freeway	5068	0.95	Level	4	0	0.980	1.00		5441				
Ramp	2121	0.95	Level	4	0	0.980	1.00	_	2277				
UpStream	1	1					1						
DownStream													
		Merge Areas					Diverge Are	as					
Estimation of	f v ₁₂				Estimati	on of v ₁	2						
	V ₁₂ = V _F	(P _{EM})			i i			\/ \D					
=		ation 25-2 or	25-3)		[V ₁	$_{2} = V_{R} + (V_{F} - V_{F})$		- >				
-EQ = O _			,		L _{EQ} = (Equation 25-8 or 25-9)								
- FM =		• .	on (Exhibit 25-5)		P _{FD} = using Equation (Exhibit 25-12)								
/ ₁₂ =	3020	•			V ₁₂ =		pc/h						
V_3 or V_{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34}		pc/h (Equat	on 25-15 or 2	5-16)				
	5)				Is V_3 or $V_{av34} > 2,700$ pc/h? \blacksquare Yes \blacksquare No								
Is V_3 or $V_{av34} > 2,70$													
Is V_3 or $V_{av34} > 1.5$					Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No If Yes, $V_{12a} = $ pc/h (Equation 25-18)								
f Yes,V _{12a} =		pc/h (Equatio	n 25-8)		11 Tes, v _{12a} =		pc/n (⊏qua	ation 25-18,					
Capacity Che	cks				Capacity	/ Checks	3						
	Actual	Ca	pacity	LOS F?		Act	tual	Capacity	LOS F?				
					V_{F}		Exhibit	25-14					
V_{FO}	7718	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _D	Exhibit	25-14					
FU					V _R	1	Exhibit		_				
		fl.,,,,,,,,,,		<u> </u>		4 - 11 - 11 - 11							
Flow Entering		1		Violetion?	FIOW EN		erge Influe		1				
\/	Actual	1 1	Desirable 4400-AU	Violation?	\/	Actual		esirable	Violation?				
V _{R12}	5386	Exhibit 25-7	4600:All	No	V ₁₂		Exhibit 25-1		- 1 5				
Level of Serv		` _			1		Determina						
		0.0078 V ₁₂ - 0.0	0627 L _A		D	$P_{R} = 4.252$	+ 0.0086 V ₁₂	- 0.0009 L _D					
10	c/mi/ln)				$D_R = (p)$	c/mi/ln)							
	•				LOS = (E	xhibit 25-4)						
O _R = 18.2 (pc							otion						
$D_R = 18.2 \text{ (pc)}$ $LOS = F \text{ (Exhibite)}$	oit 25-4)				Speed D	etermina	Speed Determination D = (Eyhihit 25.19)						
D _R = 18.2 (pc LOS = F (Exhib Speed Determ	oit 25-4) mination				' ' 		ation						
$D_R = 18.2 \text{ (pc)}$ $LOS = F \text{ (Exhibited Speed Determine)}$ $M_S = 0.722 \text{ (Exhibited Speed Determine)}$	bit 25-4) mination bit 25-19)				$D_s = (E)$	xhibit 25-19)							
$D_R = 18.2 \text{ (pc)}$ $LOS = F \text{ (Exhib)}$ $Speed Detern$ $M_S = 0.722 \text{ (Exilon)}$ $S_R = 45.6 \text{ mph} \text{ (pc)}$	bit 25-4) mination bit 25-19) (Exhibit 25-19)				$D_S = (E_S)$ $S_R = mp$	xhibit 25-19) oh (Exhibit 25	i-19)						
$D_{R} = 18.2 \text{ (pc)}$ $LOS = F \text{ (Exhibited Speed Determined Properties)}$ $M_{S} = 0.722 \text{ (Existed Properties)}$ $S_{R} = 45.6 \text{ mph} \text{ (sc)}$ $S_{0} = 48.3 \text{ mph} \text{ (sc)}$	bit 25-4) mination bit 25-19)				$D_{S} = (E)$ $S_{R} = mp$ $S_{0} = mp$	xhibit 25-19)	i-19) i-19)						

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future with Project Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph 5068 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 2121 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft _____Adjacent Ramp Data (if one exists)_____ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5068 2121 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1334 558 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

용

шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

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5441
Flow rate, vp
                                               2277
                                                                   pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                      0.555 Using Equation 0
                 FM
                v = v (P) = 3020 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                   LOS F?
                                      Maximum
                         Actual
                         7718
                                      6750
                                                    Yes
     FO
                         2421 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                     No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                     Yes
     3 or av34
                     12
If yes, v = 3109
                                      (Equation 25-8)
        12A
                    __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                    3109
                                 4400
                                                     No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 18.2 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                         M = 0.722
                                          S
Space mean speed in ramp influence area,
                                         S = 45.6
                                                     mph
                                          R
                                         S = 48.3
Space mean speed in outer lanes,
                                                     mph
```

0

S = 46.4

mph

0.980

1.00

0.980

Heavy vehicle adjustment, fHV

Driver population factor, fP

Space mean speed for all vehicles,

Concret Infor		III O AND I	RAMP JUNG			<u> </u>						
General Infor				Site Infor		00.007.55						
Analyst	DPA			eeway/Dir of Tr		SR 826 NB						
Agency or Company Date Performed	10/0/	2007		nction risdiction		I 75 WB						
	10/2/					2007 DM D	a ale					
Analysis Time Period Project Description		e with Project		nalysis Year	•	2007 PM P	еак <u> </u>					
Inputs	Deacon Count	yiille DRI (TIIIIu	Sumciency)									
-		Terrain: Level						Downstre	om Adi			
Jpstream Adj Ramp		Terrain. Lever						Downstre Ramp	eam Aaj			
☐ Yes ☐ On												
								☐ Yes	☐ On			
✓ No ✓ Off	:							✓ No	Off			
-un = ft								L _{down} =	ft			
_{-up} = ft		S	_{re} = 55.0 mph		$S_{FR} = 5$	i0 0 mnh		aown				
$V_{\rm u} = {\rm veh/h}$			•	show lanes, L _A ,	1 11	o.o mpn		$V_D =$	veh/h			
	/- 11	dor Doos C		silow laties, L _A ,	LD, VR, Vf)							
Conversion to	o pc/n und	1	onaitions	1	1	1	1	1				
(pc/h)	(Veh/hr)	PHF	Terrain	%Truck	%Rv	f _{HV}	f _p	v = V/PH	$F \times f_{HV} \times f_{p}$			
Freeway	3893	0.95	Level	4	0	0.980	1.00		4180			
Ramp	3758	0.95	Level	4	0	0.980	1.00	_	4035			
UpStream												
DownStream												
		Merge Areas			Diverge Areas							
Estimation of	v ₁₂				Estimati	ion of v	12					
	V ₁₂ = V _F	(P _{EM})				,	/ \/ . (\/	\/ \D				
=		ation 25-2 or 2	25-3)		$V_{12} = V_R + (V_F - V_R)P_{FD}$ (Equation 25-8 or 25.9)							
-EQ = D _			•		L _{EQ} = (Equation 25-8 or 25-9)							
FM =		• .	on (Exhibit 25-5)		P _{FD} = using Equation (Exhibit 25-12)							
/ ₁₂ =	2320				V ₁₂ = pc/h							
V_3 or V_{av34}		pc/h (Equatio	n 25-4 or 25-		V ₃ or V _{av34} pc/h (Equation 25-15 or 25-16)							
	5)	a W Nia			Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No							
Is V_3 or $V_{av34} > 2,70$							₂ /2					
Is V_3 or $V_{av34} > 1.5$ *					If Yes, V _{12a} = pc/h (Equation 25-18)							
f Yes,V _{12a} =		pc/h (Equatio	n 25-8)		120			1411011 25 10)				
Capacity Che	cks	4		,	Capacit	y Check	rs		,			
	Actual	Ca	pacity	LOS F?		A	ctual	Capacity	LOS F?			
					V_{F}		Exhibit	25-14				
V_{FO}	8215	Exhibit 25-7		Yes	$V_{FO} = V_{F}$	- V _R	Exhibit	25-14				
. •					V _R	-`\	Exhibit					
Clay Entarina	y Mayara 1	fluoros	·00	<u> </u>	+	torin: '						
Flow Entering	Actual	1		Violation?	LIOM EU	Actua	Merge Influe	ence Area Desirable	Violation?			
\/			esirable		\/	Actua	_		violation?			
V _{R12}	6423	Exhibit 25-7	4600:All	No	V ₁₂	<u> </u>	Exhibit 25-					
Level of Serv		<u>`</u>			1		e Determina					
		0.0078 V ₁₂ - 0.00	062/ L _A			$O_{R} = 4.252$	2 + 0.0086 V ₁₂	- 0.0009 L _D				
$O_{R} = 25.5 \text{ (pc.)}$	/mi/ln)				$D_R = (p)$	c/mi/ln)						
_OS = F (Exhib	it 25-4)				LOS = (E	xhibit 25-	-4)					
	nination				Speed D	Determi	nation					
Speed Detern					 ' 	xhibit 25-19						
Speed Detern	ni / 1- 1 7 1				1							
M _S = 2.273 (Exit					S _R = mph (Exhibit 25-19)							
$M_S = 2.273 \text{ (Exitor)}$ $S_R = 25.5 \text{ mph (}$	Exhibit 25-19)				1							
$M_S = 2.273 \text{ (Exitor)}$ $S_R = 25.5 \text{ mph (}$ $S_0 = 50.3 \text{ mph (}$					$S_0 = m_I$	ph (Exhibit 2 ph (Exhibit 2 ph (Exhibit 2	25-19)					

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007
Analysis time period: Future with Project Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 3893 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3758 Volume on ramp vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)______ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3893 3758 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1024 989 V Trucks and buses 4 4 응 Recreational vehicles 0 %

Level Level

%

1.5

1.2

mi

1.5

1.2

용

mi

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шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

```
4180
                                               4035
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.555 Using Equation 0
                 FM
                v = v (P) = 2320 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         8215
                                      6750
                                                     Yes
     FO
                         1860 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2388
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2388
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 25.5 pc/mi/ln
Level of service for ramp-freeway junction areas of influence F
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 2.273
                                          S
Space mean speed in ramp influence area,
                                          S = 25.5
                                                      mph
                                          R
                                          S = 50.3
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 28.5
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

			ILO AND I	RAMP JUN								
	nformatio				Site Infor							
Analyst		DPA			reeway/Dir of Tr		SR 82					
Agency or Co		46/5	007		unction		I 75 W	/B				
Date Performe		10/2/2			urisdiction		0010	AAA D				
Analysis Time			with Project w		nalysis Year		20187	AM Peak				
	ption Beacon	County	line DRI (Thira:	Sulliciency)								
Inputs			Terrain: Level							<u> </u>	A 1:	
Jpstream Adj	Ramp		Terrain. Lever							Downstre Ramp	eam Adj	
Yes	☐ On									I .		
-	- ~"									☐ Yes	☐ On	
✓ No	Off									✓ No	Off	
- _{up} =	ft									L _{down} =	ft	
ир			S	_F = 55.0 mph		S _{FR} = 5	50.0 m	ph				
/ _u =	veh/h		'	•	show lanes, L _A ,					$V_D =$	veh/h	
Conversi	on to pc/h	Und	ler Base C			יי אייזי						
	<u> </u>				0/ T	0/ D	T	4	,	. V/DI		
(pc/h)	(Veh	/hr)	PHF	Terrain	%Truck	%Rv		f _{HV}	f _p	V = V/PH	$F x f_{HV} x f_{p}$	
Freeway	5068	3	0.95	Level	4	0	0	.980	1.00		5441	
Ramp	212	1	0.95	Level	4	0	0	.980	1.00		2277	
UpStream					ļ	<u> </u>						
DownStream									D: A			
	n of u	IV	lerge Areas			Diverge Areas Estimation of v ₁₂						
=Sumauc	on of v ₁₂					ESumai	IOII	01 V ₁₂				
	V ₁₂	$_{2}$ = V_{F} (P _{FM})					V ₁₂ =	· V _R + (V _F -	$V_{\rm p})P_{\rm FD}$		
-EQ =		(Equa	tion 25-2 or 2	25-3)		L _{EQ} =		12	(Equation		9)	
P _{FM} =	0.	.209 u	using Equatio	n (Exhibit 25-5))	P _{FD} = using Equation (Exhibit 25-12)						
/ ₁₂ =		137 p								ation (Exhibi	(25-12)	
			c/h (Equatio	1 25-4 or 25-		V ₁₂ =			pc/h	25 15 2	Γ 1 <i>(</i>)	
V_3 or V_{av34}	5		()			V_3 or V_{av34} pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? \square Yes \square No						
Is V_3 or V_{av34}	> 2,700 pc/h? [Yes	✓ No									
Is V ₃ or V _{av34}	> 1.5 * V ₁₂ /2	Yes	□ No			Is V_3 or $V_{av34} > 1.5 * V_{12}/2$ Yes No						
f Yes,V _{12a} =	2	176 p	c/h (Equation	า 25-8)		If Yes,V _{12a} = pc/h (Equation 25-18)						
Capacity		-		,		Capacit	v Cł	necks				
•	Actu	ıal	Ca	oacity	LOS F?	<u> </u>		Actual		Capacity	LOS F?	
						V _F			Exhibit 2	25-14		
V_{FO}	771	8	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V.		Exhibit 2	25-14		
. 10	'''	0	EXHIBIT 20 7		140	V _R	·ĸ		Exhibit 2			
	<u> </u>		<u> </u>			-						
-low Ent	ering Merg	0			\/ialatiam2	Flow En	_		ge Influe		1	
	Actu		1	esirable	Violation?	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		Actual		esirable	Violation?	
V _{R12}	445		Exhibit 25-7	4600:All	No	V ₁₂		· -	Exhibit 25-1		1.5	
	Service De					_			etermina	•		
.,	.475 + 0.00734	v _R + 0.	.0078 V ₁₂ - 0.00	627 L _A		[) _R = 4	4.252 + 0	0.0086 V ₁₂ -	· 0.0009 L _D		
$O_R = 1$	0.9 (pc/mi/ln)					$D_R = (p)$	c/mi/	/ln)				
OS = B	(Exhibit 25-4)					LOS = (E	Exhib	it 25-4)				
Speed De	eterminatio	on				Speed L	Dete	rminati	ion			
•	06 (Exibit 25-19)					+-		25-19)				
	,					1 '		chibit 25-19))			
_ Eu,	3 mph (Exhibit 2	J-19)				I ''						
	•	L 10,				S ₀ = mph (Exhibit 25-19)						
$S_0 = 50.9$	9 mph (Exhibit 2 7 mph (Exhibit 2					ľ		khibit 25-19 Khibit 25-15				

Phone: Fax: E-mail: ______Merge Analysis_____ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w Imps Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2018 AM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data______ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph 5068 Volume on freeway vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph Volume on ramp 2121 vph 1500 Length of first accel/decel lane ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)______ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 5068 2121 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1334 558 V Trucks and buses 4 4 응 Recreational vehicles 0 % Level Level

%

1.5

1.2

mi

1.5

1.2

ે

mi

용

шi

Terrain type:

Grade Length

Trucks and buses PCE, ET

```
5441
Flow rate, vp
                                               2277
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 1137 pc/h
                 12 F FM
                     _____Capacity Checks____
                                                    LOS F?
                                      Maximum
                         Actual
                         7718
                                      9000
                                                     No
     FO
                         2152 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 2176
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                     Violation?
                                 4400
                    2176
                                                      No
     12A
            ____Level of Service Determination (if not F)______
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 10.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation___
Intermediate speed variable,
                                          M = 0.206
                                          S
Space mean speed in ramp influence area,
                                          S = 52.3
                                                      mph
                                          R
                                          S = 50.9
Space mean speed in outer lanes,
                                                      mph
```

0

S = 51.7

mph

0.980

1.00

0.980

1.00

Heavy vehicle adjustment, fHV

Driver population factor, fP

Space mean speed for all vehicles,

			WIPS AND	RAMP JUN								
Genera	I Inforn				Site Infor							
Analyst	_	DPA			eeway/Dir of Travel SR 826 NB							
Agency or (ınction		I 75 WB					
Date Perfor		10/2/			ırisdiction							
Analysis Tir			re with Project w	<u> </u>	nalysis Year		2007 PM	Peak				
	scription E	Beacon County	yline DRI (Third	Sufficiency)								
nputs			-									
Jpstream A			Terrain: Level							Downstre Ramp	eam Adj	
Yes	☐ On									☐ Yes	☐ On	
✓ No	☐ Off											
110	ı Oli									✓ No	Off	
-up =	ft									L _{down} =	ft	
			S	_F = 55.0 mph		$S_{FR} = 5$	0.0 mph					
/ _u =	veh/h			Sketch (show lanes, L _A	$L_{D_t}V_{D_t}V_t$				$V_D =$	veh/h	
Conver	sion to	pc/h Und	der Base C		· A	D. K. I						
(pc/	/h)	V (Veh/hr)	PHF	Terrain	%Truck	%Rv	f _H	v	f _p	v = V/PH	F x f _{HV} x f _p	
Freeway		3893	0.95	Level	4	0	0.980	0	1.00		4180	
Ramp	- 	3758	0.95	Level	4	0	0.980		1.00		4035	
UpStream	- 	5,00	5170	20101	'	 	5.75	-		+		
DownStream	am		† †			1		$\neg \uparrow$		1		
5.5.30			Merge Areas						Diverge Area	ns		
Estima	tion of		<u> </u>			Estimation of v ₁₂						
			(D)						_			
		$V_{12} = V_F$		o= o\				$V_{12} = $	$V_R + (V_F -$	$V_R)P_{FD}$		
-EQ =		, ,	ation 25-2 or	•		L _{EQ} = (Equation 25-8 or 25-9)						
P _{FM} =		0.209	using Equation	on (Exhibit 25-5)		P _{FD} = using Equation (Exhibit 25-12)						
V ₁₂ =		$V_{12} = pc/h$										
		874 p 1653 j	pc/h (Equatio	n 25-4 or 25-						on OE 15 0	E 1/\	
V_3 or V_{av34}		5)	. (]	-		V_3 or V_{av34} pc/h (Equation 25-15 or 25-16) Is V_3 or $V_{av34} > 2,700$ pc/h? Yes No						
Is V ₃ or V _{av}	_{v34} > 2,700	pc/h? TYe	s 🗹 No									
		V ₁₂ /2				Is V ₃ or V _{av3}	₃₄ > 1.5 *	V ₁₂ /2	Yes 🗀	No		
f Yes,V _{12a}		-=	pc/h (Equatio	n 25-8)		If Yes,V _{12a} =	=	ı	oc/h (Equa	ition 25-18))	
	ty Chec		porii (Equalio	11 20-0)		Capacit			• •	,		
Japaon	. y 	Actual		pacity	LOS F?	Joapaon		Actual	Î	Capacity	LOS F?	
	-	rictual		pacity	2031:	\/	\dashv	ricidal	Exhibit 2	<u> </u>	LU31 !	
						V _F			_	_		
V_{F}	:o	8215	Exhibit 25-7		No	$V_{FO} = V_{F}$	- V _R		Exhibit 2	25-14		
						V_R			Exhibit 2	25-3		
Flow F	nterina	Merae In	fluence A	rea		*	terina	Mero	e Influe	nce Area	<u> </u>	
		Actual	4	esirable	Violation?	 	Acti			esirable	Violation?	
V _{R1}	10	5707	Exhibit 25-7	4600:All	No	V ₁₂	7101		Exhibit 25-1	1	. ioidiloiii	
					INO		F C 2				ot <i>E</i> \	
			nination (it			1				tion (if no		
D _R =			0.0078 V ₁₂ - 0.00	062/L _A		[$V_{R} = 4.2$	52 + 0.	υυ86 V ₁₂ -	0.0009 L _D		
O _R =	19.9 (pc/r	ni/ln)				D _R = (pc/mi/ln)						
_OS =	B (Exhibit	25-4)				LOS = (E	Exhibit 2	25-4)				
Speed		-				Speed L			on .			
•						' ' 	Exhibit 25-					
5	.045 (Exibi	•										
		xhibit 25-19)				100	ph (Exhib					
	52.3 mph (F	xhibit 25-19)				$S_0 = m$	ph (Exhib	it 25-19)				
> ₀ = 5	/2.0p (2	,										
0		xhibit 25-14)				S = m	ph (Exhib	it 25-15)				

Phone: Fax: E-mail: ______Merge Analysis______ DPA Analyst: Agency/Co.: Date performed: 10/2/2007 Analysis time period: Future with Project w AM Imps Freeway/Dir of Travel: SR 826 NB Junction: I 75 WB Jurisdiction: Analysis Year: 2007 PM Peak Description: Beacon Countyline DRI (Third Sufficiency) ______Freeway Data_____ Type of analysis Merge Number of lanes in freeway Free-flow speed on freeway 55.0 mph Volume on freeway 3893 vph _____On Ramp Data_____ Side of freeway Right Number of lanes in ramp 2 Free-flow speed on ramp 50.0 mph 3758 Volume on ramp vph Length of first accel/decel lane 1500 ft Length of second accel/decel lane 1500 ft ______Adjacent Ramp Data (if one exists)______ Does adjacent ramp exist? No Volume on adjacent Ramp vph Position of adjacent Ramp Type of adjacent Ramp Distance to adjacent Ramp ft _____Conversion to pc/h Under Base Conditions_____ Freeway Adjacent Junction Components Ramp Ramp Volume, V (vph) 3893 3758 vph Peak-hour factor, PHF 0.95 0.95 Peak 15-min volume, v15 1024 989

4

1.5

1.2

4

Level Level

%

mi

0

1.5

1.2

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mi

Trucks and buses

Terrain type:

Grade Length

Recreational vehicles

Trucks and buses PCE, ET

Recreational vehicle PCE, ER

V

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%

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4180
                                               4035
Flow rate, vp
                                                                    pcph
                  _____Estimation of V12 Merge Areas__
                L =
                               (Equation 25-2 or 25-3)
                 ΕQ
                       0.209 Using Equation 0
                 FM
                v = v (P) = 874 pc/h
                 12 F FM
                     _____Capacity Checks_____
                                      Maximum
                                                    LOS F?
                         Actual
                         8215
                                      9000
                                                     No
     FO
                         1653 pc/h
                                     (Equation 25-4 or 25-5)
     3 or av34
Is
                > 2700 pc/h?
                                      No
         V
     3 or av34
                > 1.5 v / 2
Is
    v v
                                      Yes
     3 or av34
                      12
If yes, v = 1672
                                      (Equation 25-8)
        12A
                     __Flow Entering Merge Influence Area_
                    Actual Max Desirable
                                                      Violation?
                                 4400
                    1672
                                                      No
     12A
            ____Level of Service Determination (if not F)_____
Density, D = 5.475 + 0.00734 v + 0.0078 v - 0.00627 L = 19.9 pc/mi/ln
Level of service for ramp-freeway junction areas of influence B
                  _____Speed Estimation____
Intermediate speed variable,
                                          M = 1.045
                                          S
Space mean speed in ramp influence area,
                                          S = 41.4
                                                      mph
                                          R
                                          S = 52.3
Space mean speed in outer lanes,
                                                      mph
                                          0
Space mean speed for all vehicles,
                                          S = 44.2
                                                      mph
```

1.00

0.980

1.00

Heavy vehicle adjustment, fHV