Appendix N-1.G
(continued)
APPENDIX G

EXISTING TRAFFIC CONDITIONS BASIC FREEWAY SEGMENT LEVEL OF SERVICE CALCULATION WORKSHEETS
APPENDIX G-I

EXISTING TRAFFIC CONDITIONS
### Basic Freeway Segments Worksheet

**General Information**
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour

**Site Information**
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Cottonwood Springs Rd
- Jurisdiction:
- Analysis Year: Existing
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>1343 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>1343 veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>0</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>0</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>1343 veh/h</td>
</tr>
<tr>
<td>Peak-Hr Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>%RVs, P_R</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_t</td>
<td>1.5</td>
</tr>
<tr>
<td>E_r</td>
<td>1.2</td>
</tr>
<tr>
<td>f_HV</td>
<td>0.990</td>
</tr>
</tbody>
</table>

#### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
<td></td>
</tr>
<tr>
<td>f_LC</td>
<td></td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
</tbody>
</table>

#### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Design (N)</td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>11.0 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
</tr>
</tbody>
</table>

#### Glossary

- N: Number of lanes
- V: Hourly volume
- D: Density
- v_p: Flow rate
- LOS: Level of service
- DDHV: Directional design hour volume

### Factor Location

- E_r: Exhibits 11-10, 11-12
- f_LW: Exhibit 11-8
- E_r: Exhibits 11-10, 11-1, 11-13
- f_LC: Exhibit 11-9
- f_p: Page 11-18
- LOS, S, FFS, v_p: Exhibits 11-2, 11-3

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G-1

10/19/2015
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Paradise Valley
- **Jurisdiction**: Existing
- **Analysis Year**: Existing

### Flow Inputs
- **Volume, V**: 1344 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_hv = 1/E_T + P_T(E_R - 1) + P_R(E_R - 1)**

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/ mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **f_LW**: mph
- **f_LC**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
  - **v_p = (V or DDHV) / (PHF x N x f_hv)** pc/h/ln
  - **S**: 65.0 mph
  - **D = v_p / S**: 11.0 pc/mi/ln
  - **LOS**: A

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Design (N)
- **Design LOS**
- **Design N**

### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
**BASIC FREEWAY SEGMENTS WORKSHEET**

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Frontage Road
- **Jurisdiction**: Existing
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Oper.(LOS)**

### Flow Inputs
- **Volume, V**: 1344 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade %**:
- **Length mi**:
- **Up/Down %**:

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **f_HV = \frac{1}{1 + (f_p P_T - 1) + (P_R E_T - 1))} 0.990**
- **E_R**: 1.2

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **v_p = \frac{(V \text{ or DDHV}) \times f_HV}{(PHF \times N \times f_p)} 714**: pc/h/ln
- **S**: 65.0 mph
- **D = \frac{v_p}{S}**: 11.0 pc/mi/ln
- **LOS**: A

### Glossary
- **N** - Number of lanes
- **S** - Speed
- **V** - Hourly volume
- **D** - Density
- **v_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume
- **PHF** - Peak-Hour Factor
- **P_T** - %Trucks and Buses
- **P_R** - %RVs
- **f_p** - Peak-Hr Prop. of AADT
- **f_HV** - DDHV

### Design (N)
- **Design LOS**
- **Design (N)**
- **v_p = \frac{(V \text{ or DDHV}) \times f_HV}{(PHF \times N \times f_p)}** pc/h/ln
- **S**: mph
- **D = \frac{v_p}{S}**: pc/mi/ln
- **V_p** - Required Number of Lanes, N

### Factor Location
- **E_R** - Exhibits 11-10, 11-12
- **f_{LW}** - Exhibit 11-8
- **E_T** - Exhibits 11-10, 11-11, 11-13
- **f_{LC}** - Exhibit 11-9
- **f_p** - Page 11-18
- **TRD** - Page 11-11
- **LOS, S, FFS, v_p** - Exhibits 11-2, 11-3

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## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** AM Peak Hour

### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Dillon Road
- **Jurisdiction:** Existing

### Project Description
- **2-10-3136-2 Paradise Valley Specific Plan, Riverside County**

### Flow Inputs
- **Volume, V:** 1344 veh/h
- **Peak-Hour Prop. of AADT, K:** veh/day
- **Peak-Hr Direction Prop, D:** veh/h
- **DDHV = AADT x K x D:** veh/h

### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **E_{HV} = \frac{1}{1(f_p^2 + P_T(1 - E_T) + P_R(E_T - 1))} 0.990**

### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 2
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph

### Calc Speed Adj and FFS
- **f_{lw}:** mph
- **f_{lc}:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures
- **Operational (LOS):**
  - **v_p = (V or DDHV) / (PHF x N x f_{HV})** pc/h/ln
  - **x f_p:**
  - **S:** 65.0 mph
  - **D = v_p / S:** pc/mi/ln
  - **LOS:** A

### Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **v_p:** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume

### Factor Location
- **E_R:** Exhibits 11-10, 11-12
- **f_{lw}:** Exhibit 11-8
- **E_p:** Exhibits 11-10, 11-11, 11-13
- **f_{lc}:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

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<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
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<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
</tr>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Westbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of State Route 86</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
</tr>
<tr>
<td>Analysis Year</td>
<td></td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<table>
<thead>
<tr>
<th>Flow Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
</tr>
<tr>
<td>AADT</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculate Flow Adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td>f&lt;sub&gt;p&lt;/sub&gt;</td>
</tr>
<tr>
<td>E&lt;sub&gt;T&lt;/sub&gt;</td>
</tr>
<tr>
<td>E&lt;sub&gt;R&lt;/sub&gt;</td>
</tr>
<tr>
<td>f&lt;sub&gt;HV&lt;/sub&gt; = 1/[1+P&lt;sub&gt;T&lt;/sub&gt;(E&lt;sub&gt;T&lt;/sub&gt; - 1) + P&lt;sub&gt;R&lt;/sub&gt;(E&lt;sub&gt;R&lt;/sub&gt; - 1)] 0.990</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
</tr>
<tr>
<td>v&lt;sub&gt;p&lt;/sub&gt; = (V or DDHV) / (PHF x N x f&lt;sub&gt;HV&lt;/sub&gt;)</td>
</tr>
<tr>
<td>S = 65.0 mph</td>
</tr>
<tr>
<td>D = v&lt;sub&gt;p&lt;/sub&gt; / S</td>
</tr>
<tr>
<td>LOS = B</td>
</tr>
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<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
<td>S - Speed</td>
</tr>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v&lt;sub&gt;p&lt;/sub&gt; - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
<tr>
<td>E&lt;sub&gt;R&lt;/sub&gt; - Exhibits 11-10, 11-12</td>
<td>f&lt;sub&gt;LW&lt;/sub&gt; - Exhibit 11-8</td>
</tr>
<tr>
<td>E&lt;sub&gt;T&lt;/sub&gt; - Exhibits 11-10, 11-11, 11-13</td>
<td>f&lt;sub&gt;LC&lt;/sub&gt; - Exhibit 11-9</td>
</tr>
<tr>
<td>f&lt;sub&gt;p&lt;/sub&gt; - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v&lt;sub&gt;p&lt;/sub&gt; - Exhibits 11-2, 11-3</td>
<td></td>
</tr>
</tbody>
</table>

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**BASIC FREEWAY SEGMENTS WORKSHEET**

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<thead>
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<th>Site Information</th>
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</thead>
<tbody>
<tr>
<td>Analyst JT</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company LLG</td>
<td>From/To East of Golf Center Parkwy</td>
</tr>
<tr>
<td>Date Performed 9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period AM Peak Hour</td>
<td>Analysis Year Existing</td>
</tr>
<tr>
<td>Project Description 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td>Oper.(LOS) Des.(N) Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V | 2464 veh/h | Peak-Hour Factor, PHF 0.95 |
| AADT | veh/day | %Trucks and Buses, PT 2 |
| Peak-Hr Prop. of AADT, K | | %RVs, PR 0 |
| Peak-Hr Direction Prop, D | | General Terrain: Level |
| DDHV = AADT x K x D | veh/h | Grade % Length mi Up/Down % |

**Calculate Flow Adjustments**

| f_p | 1.00 | Er 1.2 |
| E_T | 1.5 | \( f_{HV} = \frac{1}{1 + PR(E_T - 1) + PR(E_R - 1)} \times 0.990 |

**Speed Inputs**

| Lane Width | ft | Calc Speed Adj and FFS |
| Rt-Side Lat. Clearance | ft | f_w mph |
| Number of Lanes, N | 4 | f_Lc mph |
| Total Ramp Density, TRD | ramps/mi | TRD Adjustment mph |
| FFS (measured) | 65.0 mph | FFS 65.0 mph |
| Base free-flow Speed, BFFS | mph |

**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_p = (V or DDHV) / (PHF x N x f_{HV} \times 655 pc/h/ln)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = V_p / S</td>
<td>10.1 pc/mi/ln</td>
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<tr>
<td>LOS</td>
<td>A</td>
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**Glossary**

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
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</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>V_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

**Factor Location**

| E_R - Exhibits 11-10, 11-12 | f_LW - Exhibit 11-8 |
| E_T - Exhibits 11-10, 11-11, 11-13 | f_Lc - Exhibit 11-9 |
| f_p - Page 11-18 | TRD - Page 11-11 |
| LOS, S, FFS, V_p - Exhibits 11-2, 11-3 | |

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### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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<tbody>
<tr>
<td>Analyst</td>
<td>JT</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
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<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Highway/Direction of Travel I-10 Westbound</td>
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<tr>
<td></td>
<td>From/To East of Jackson Street</td>
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<tr>
<td></td>
<td>Jurisdiction</td>
</tr>
<tr>
<td></td>
<td>Analysis Year Existing</td>
</tr>
<tr>
<td>Oper.(LOS)</td>
<td>Des.(N)</td>
</tr>
<tr>
<td>Planning Data</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

- **Volume, V**: 2859 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, P_T: 2
- **Peak-Hr Direction Prop, D**: %RVs, P_R: 0
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_HV = 1/(1+P_T(E_T - 1) + P_R(E_R - 1)): 0.990</td>
<td></td>
</tr>
</tbody>
</table>

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
<td></td>
</tr>
<tr>
<td>f_LC</td>
<td></td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

### Design (N)

- **Design (N)**
- **Design LOS**
- **v_p = (V or DDHV) / (PHF x N x f_HV): pc/h-ln**
- **x f_p):** pc/h-ln
- **S**: 65.0 mph
- **D = v_p / S**: 15.6 pc/mi/ln
- **LOS**: B
- **Required Number of Lanes, N**

### Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
<th>f_LW - Exhibit 11-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_LC - Exhibit 11-9</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
<td></td>
</tr>
</tbody>
</table>

Copyright © 2015 University of Florida, All Rights Reserved


file:///C:/Users/tucker/AppData/Local/Temp/f2kFAA.tmp 1/27/2016
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
</tr>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Westbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Monroe Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Existing</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

### Site Information

<table>
<thead>
<tr>
<th>Site Information</th>
<th>Peak-Hour Factor, PHF</th>
<th>%Trucks and Buses, PT</th>
</tr>
</thead>
<tbody>
<tr>
<td>%RVs, PR</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>General Terrain</td>
<td>Level</td>
<td></td>
</tr>
<tr>
<td>Grade %</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Length mi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>AADT (veh/day)</th>
<th>Peak-Hr Prop. of AADT, K (veh/day)</th>
<th>Peak-Hr Direction Prop, D</th>
</tr>
</thead>
<tbody>
<tr>
<td>3690</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Formula</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_{HV}</td>
<td>0.990</td>
</tr>
</tbody>
</table>

### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width (ft)</th>
<th>Rt-Side Lat. Clearance (ft)</th>
<th>Number of Lanes, N</th>
<th>Total Ramp Density, TRD (ramps/MI)</th>
<th>FFS (measured) (mph)</th>
<th>Base free-flow Speed, BFFS (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td>65.0</td>
<td></td>
</tr>
</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{FW}</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>f_{LC}</td>
<td>mph</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
<td>Design LOS</td>
</tr>
<tr>
<td>1308</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>65.0</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>20.1</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

### Glossary

- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
<th>f_{FW} - Exhibit 11-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
<td></td>
</tr>
</tbody>
</table>
# Basic Freeway Segments Worksheet

## General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour

## Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Jefferson Street
- Jurisdiction: Existing
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- Checkboxes: Oper.(LOS)
- Des.(N)
- Planning Data

## Flow Inputs
- Volume, V: 4201 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: %
- DDHV = AADT x K x D: veh/h
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, P<sub>T</sub>: 2
- %RVs, P<sub>R</sub>: 0
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down %

## Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_R \): 1.2
- \( E_T \): 1.5
- \( f_{HV} = \frac{1}{f_p(1 + E_T E_R^{-1}) + P_R E_R^{-1}} \): 0.990

## Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

## LOS and Performance Measures
- Operational (LOS)
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \): pc/h/ln
  - \( x f_p \): mph
  - \( S \): 64.9 mph
  - \( D = \frac{v_p}{S} \): pc/mi/ln
  - LOS: C

- Glossary
  - N: Number of lanes
  - V: Hourly volume
  - \( v_p \): Flow rate
  - LOS: Level of service
  - DDHV: Directional design hour volume

## Design (N)
- Design LOS
- Design (N)
- E<sub>R</sub>: Exhibits 11-10, 11-12
- E<sub>T</sub>: Exhibits 11-10, 11-11, 11-13
- F<sub>LW</sub>: Exhibit 11-8
- F<sub>LC</sub>: Exhibit 11-9
- f<sub>p</sub>: Page 11-18
- TRD: Page 11-11
- LOS, S, FFS, \( v_p \): Exhibits 11-2, 11-3

## Factor Location

---

**G-9**

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10/19/2015
### BASIC FREEWAY WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Washington Street
- **Jurisdiction**: Existing
- **Analysis Year**: Existing

#### Flow Inputs
- **Volume, V**: 4958 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0

#### Calculate Flow Adjustments
- \[ f_p = 1.00 \]
- \[ E_T = 1.5 \]
- \[ E_R = 1.2 \]
- \[ f_{HV} = \frac{1}{1 + f_p (E_T - 1) + P_R (E_R - 1)} \cdot 0.990 \]

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**: pc/h/ln
- **Design (N)**: pc/h/ln

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

#### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_{LW}**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

**General Information** | **Site Information**
---|---
Analyst: JT | Highway/Direction of Travel: I-10 Westbound
Agency or Company: LLG | From/To: East of Cook Street
Date Performed: 9/22/2015 | Jurisdiction: Existing
Analysis Time Period: AM Peak Hour | Analysis Year: Existing

**Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

- Oper.(LOS) □ Des.(N) □ Planning Data

---

### Flow Inputs

- **Volume, V:** 6338 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:** veh/h
- **DDHV = AADT x K x D:** veh/h

<table>
<thead>
<tr>
<th>Flow</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>6338veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop of AADT, K</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>veh/h</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

- **Peak-Hour Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain:** Level
- **Grade:** %
- **Length, mi:**
- **Up/Down %:**

### Calculate Flow Adjustments

- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1)) 0.990**

### Speed Inputs

- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 3
- **Total Ramp Density, TRD:** ramps/mi
- **FSS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FSS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

### Calc Speed Adj and FFS

- **f_{LW}**
- **f_{LC}**
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures

**Operational (LOS)**

- **v_p = (V or DDHV) / (PHF x N x f_{HV} x 246** pc/h/ln
- **S:** 54.9 mph
- **D = v_p / S:** 40.9 pc/mi/ln
- **LOS:**

<table>
<thead>
<tr>
<th>LOS</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x 246</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>54.9 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>40.9 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

| N | Number of lanes |
| N | Number of lanes |
| V | Hourly volume |
| D | Density |
| v_p | Flow rate |
| FFS | Free-flow speed |
| LOS | Level of service |
| BFFS | Base free-flow speed |
| DDHV | Directional design hour volume |

### Factor Location

- **E_R:** Exhibits 11-10, 11-12
- **f_{LW}:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_{LC}:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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10/19/2015
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Monterey Avenue
- Jurisdiction: Existing
- Analysis Year: 0

### Flow Inputs
- Volume, V: 5709 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: veh/h
- DDHV = AADT x K x D: veh/h

### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1+f_T(E_T-1) + f_R(E_R-1)} \times 0.990 \)

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

### Calc Speed Adj and FFS
- \( f_{LW} \)
- \( f_{LC} \)
- TRD Adjustment: mph
- FFS: 65.0 mph

### LOS and Performance Measures

### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

### Factor Location
- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

**General Information**
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

**Site Information**
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: West of Monterey Avenue
- **Jurisdiction**: Existing
- **Analysis Year**: Existing

**Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs
- **Volume, V**: 5650 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h

- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, PT**: 2
- **%RVs, PR**: 0
- **General Terrain**: Level

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = \frac{1}{[1+P_T(E_T - 1) + P_R(E_R - 1)]0.990}**

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 4
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **v_p = \frac{(V or DDHV)}{(PHF x N x f_{HV}} x f_p**
- **S**: 64.9 mph
- **D = \frac{v_p}{S}**
- **LOS**: C

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

#### Design (N)
- **Design LOS**
- **E_R - Exhibits 11-10, 11-12**
- **f_{LW} - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_{LC} - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** AM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** West of Monterey Avenue
- **Jurisdiction:** Existing

#### Flow Inputs
- **Volume, V:** 3782 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %RVs, P_R
- **Peak-Hr Direction Prop, D:** General Terrain: Level
- **DDHV = AADT x K x D:** veh/h
- **Peak-Hour Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi
- **Up/Down %**

#### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **E_R:** 1.2
- **f_{HV} = \frac{1}{1 + p_T(E_T - 1) + p_R(E_R - 1)}**
  
  \[ f_{HV} = 0.990 \]

#### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 4
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

#### LOS and Performance Measures

#### Calc Speed Adj and FFS
- **f_{LW}**
- **f_{LC}**

#### Design (N)
- **Design LOS**
- **Design (N)**

#### Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **D:** Density
- **v_p:** Flow rate
- **LOS:** Level of service
- **BFFS:** Base free-flow speed
- **DDHV:** Directional design hour volume

#### Factor Location
- **E_R:** Exhibits 11-10, 11-12
- **f_{LW}:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_{LC}:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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# Basic Freeway Segments Worksheet

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Monterey Avenue
- **Jurisdiction**: Existing

## Flow Inputs
- **Volume, V**: 3821 veh/h
- **AADT**: \(\text{veh/day}\)
- **Peak-Hr Prop. of AADT, K**: \(\text{veh/h}\)
- **Peak-Hr Direction Prop, D**: \(\text{veh/h}\)
- **Peak-Hr Factor, PHF**: 0.95
- **%Trucks and Buses, \(P_T\)**: 2
- **%RVs, \(P_R\)**: 0
- **General Terrain**: Level
- **Grade**: Up/Down %

## Calculate Flow Adjustments
- **\(f_p\)**: 1.00
- **\(E_T\)**: 1.5
- **\(f_{HV}\)**: \(1/\{1 + P_T(E_T - 1) + P_R(E_R - 1)\}\)
- **\(E_R\)**: 1.2

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

## Calc Speed Adj and FFS
- **\(f_{LW}\)**: mph
- **\(f_C\)**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

## LOS and Performance Measures
- **Operational (LOS)**
  - \(v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV} \times f_p)}\)
  - **S**: 65.0 mph
  - **D = \frac{v_p}{S}**: 20.8 pc/mi/ln
  - **LOS**: C

## Glossary
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **\(v_p\)**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

## Design (N)
- **Design LOS**
  - \(v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV} \times f_p)}\)
  - **S**: mph
  - **D = \frac{v_p}{S}**: pc/mi/ln
  - **Required Number of Lanes, N**

## Factor Location
- **\(E_R\)**: Exhibits 11-10, 11-12
- **\(f_{LW}\)**: Exhibit 11-8
- **\(E_T\)**: Exhibits 11-10, 11-11, 11-13
- **\(f_C\)**: Exhibit 11-9
- **\(f_p\)**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, \(v_p\)**: Exhibits 11-2, 11-3

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**BASIC FREEWAY SEGMENTS WORKSHEET**

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Cook Street
- **Jurisdiction**: Existing

### Flow Inputs
- **Volume, V**: 3327 veh/h
- **AADT**: 3327 veh/day
- **Peak-Hr Prop. of AADT, K**: Pe
- **Peak-Hr Direction Prop, D**: D
- **DDHV = AADT x K x D**: 65.0 veh/h

### Calculate Flow Adjustments
- **f_p** = 1.00
- **E_T** = 1.5
- **E_R** = 1.2
- **f_HV = (1+[1+P_T(E_T - 1) + P_R(E_R - 1)]0.990**: 1.00

### Speed Inputs
- **Lane Width**: 3 ft
- **Rt-Side Lat. Clearance**: 3 ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: 1179 pc/h/ln
- **FFS (measured)**: 65.0 mph

### Calc Speed Adj and FFS
- **f_LW**: mph
- **f_LC**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **D = v_p / S**: 18.1 pc/mi/ln

### Design (N)
- **Design LOS**
- **Required Number of Lanes, N**

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_LW**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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9/28/2015
**BASIC FREEWAY SEGMENTS WORKSHEET**

### General Information

- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** AM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information

- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Washington Street
- **Jurisdiction:** Existing
- **Analysis Year:**

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>AADT</th>
<th>Peak-Hr Prop. of AADT, K</th>
<th>Peak-Hr Direction Prop, D</th>
<th>DDHV = AADT x K x D</th>
</tr>
</thead>
<tbody>
<tr>
<td>2977 veh/h</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>%RVs, P_R</td>
<td>Grade</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2</td>
<td>0</td>
<td>% Up/Down %</td>
</tr>
</tbody>
</table>

- **Peak-Hour Factor, PHF:** 0.95
- **% Trucks and Buses, P_T:** 2
- **% RVs, P_R:** 0
- **General Terrain:** Level

### Calculate Flow Adjustments

- **f_p:** 1.00
- **E_T:** 1.5
- **E_R:** 1.2
- **f_{HV} = \frac{1}{1+P_T(E_T \cdot 1) + P_R(E_R \cdot 1)}:** 0.990

### Speed Inputs

- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 3
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

### Calc Speed Adj and FFS

- **f_{LW}:** mph
- **f_{LC}:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures

### Design (N)

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S 65.0 mph</td>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p )</td>
</tr>
<tr>
<td>D = \frac{v_p}{S} 16.2 pc/mln</td>
<td>S mph</td>
</tr>
<tr>
<td>LOS B</td>
<td>D = \frac{v_p}{S} pc/mln</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
<th>E_R - Exhibits 11-10, 11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
<td>f_{LW} - Exhibit 11-8</td>
</tr>
<tr>
<td>( v_p ) - Flow rate</td>
<td>FFS - Free-flow speed</td>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
</tbody>
</table>

**Factor Location**

- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
**BASIC FREEWAY WORKSHEET**

**BASIC FREEWAY SEGMENTS WORKSHEET**

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<td>Analyst</td>
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<td>Agency or Company</td>
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<td>Jurisdiction</td>
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<td>Analysis Year</td>
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<tr>
<td></td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

Flow Inputs

- **Volume, V**: 2694 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**:veh/h

**Calculate Flow Adjustments**

- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]: 0.990**

Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/MI
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

**Calc Speed Adj and FFS**

- **f_{LW}**
- **f_{LC}**
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

**LOS and Performance Measures**

**Operational (LOS)**

- **v_p = (V or DDHV) / (PHF x N x f_{HV})**: pc/h/ln
- **S**: 65.0 mph
- **D = v_p / S**: pc/mi/ln
- **LOS**: B

**Design (N)**

Design LOS

- **v_p = (V or DDHV) / (PHF x N x f_{HV})**: pc/h/ln
- **S**: mph
- **D = v_p / S**: pc/mi/ln

- **Required Number of Lanes, N**

**Glossary**

- **N** - Number of lanes
- **V** - Hourly volume
- **v_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

- **S** - Speed
- **D** - Density
- **FFS** - Free-flow speed
- **BFFS** - Base free-flow speed

**Factor Location**

- **E_R** - Exhibits 11-10, 11-12
- **f_{LW}** - Exhibit 11-8
- **E_T** - Exhibits 11-10, 11-11, 11-13
- **f_{LC}** - Exhibit 11-9
- **f_p** - Page 11-18
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p** - Exhibits 11-2, 11-3

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9/28/2015
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<td>I-10 Eastbound</td>
</tr>
<tr>
<td>Date Performed</td>
<td>From/To</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Jurisdiction</td>
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<tr>
<td>AM Peak Hour</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Project Description</td>
<td>Existing</td>
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<table>
<thead>
<tr>
<th>Flow Inputs</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2470 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>General Terrain:</td>
</tr>
<tr>
<td></td>
<td>Level</td>
</tr>
<tr>
<td></td>
<td>Grade % Length mi</td>
</tr>
<tr>
<td></td>
<td>Up/Down %</td>
</tr>
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<table>
<thead>
<tr>
<th>Calculate Flow Adjustments</th>
<th></th>
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<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>f_{HV} = 1/(1+P_T E_T + P_R E_R)</td>
<td>0.990</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
<th>Design (N)</th>
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<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</td>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>mph</td>
</tr>
<tr>
<td>LOS</td>
<td>pc/mi/ln</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
<td>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>V - Hourly volume</td>
<td>f_{LV} - Exhibit 11-8</td>
</tr>
<tr>
<td>v_p - Flow rate</td>
<td>E_T - Exhibits 11-10, 11-11 11-13</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td>BFFS - Base free-flow speed</td>
</tr>
</tbody>
</table>

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### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: Existing
- **Analysis Year**: Existing

#### Flow Inputs
- **Volume, V**: 1975 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**: %
- **Length**: mi
- **Up/Down %**:

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = \frac{1}{1+f_p(E_T - 1) + P_R(E_R - 1)}**
- **0.990**

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
- **Design (N)**
- **Design LOS**
- **v_p = \frac{(V or DDHV) \times (PHF \times N \times f_{HV})}{700}** pc/h/ln
- **S**: 65.0 mph
- **D = v_p / S**: 10.8 pc/mi/ln
- **LOS**: A

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **S**: Speed
- **D**: Density
- **f_p**: Flow rate
- **LOS**: Level of service
- **BFFS**: Base free-flow speed
- **DDHV**: Directional design hour volume

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# Basic Freeway Worksheet

## General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** AM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Golf Center Parkway
- **Jurisdiction:** Existing

## Flow Inputs
- **Volume, V:** 1829 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %Trucks and Buses, \( P_T \)
- **Peak-Hr Direction Prop, D:** %RVs, \( P_R \)
- **DDHV = AADT x K x D:** veh/h
- **Peak-Hour Factor, PHF:** 0.95
- **% Trucks and Buses, \( P_T \):** 2
- **% RVs, \( P_R \):** 0
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi

## Calculate Flow Adjustments
- \( f_p = \frac{1.00}{E_R} \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \) 0.990

## Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 3
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

## Calc Speed Adj and FFS
- \( f_{LV} \)
- \( f_{LC} \)
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

## LOS and Performance Measures
- \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
- \( S = 65.0 \) mph
- \( D = \frac{v_p}{S} \)
- **LOS:** A

## Design (N)
- **Operational (LOS):**
- \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
- \( S = 65.0 \) mph
- \( D = \frac{v_p}{S} \)
- **LOS:** A

## Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **V_p:** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume
- **S:** Speed
- **D:** Density
- **BFFS:** Base free-flow speed
- **E_R:** Exhibits 11-10, 11-12
- **f_{LV}:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_{LC}:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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</table>

#### Site Information

| Highway/Direction of Travel I-10 Eastbound |
| From/To East of State Route 86 |
| Jurisdiction |
| Analysis Year | Existing |

#### Flow Inputs

| Volume, V | 908 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, P_R |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D | veh/h |
| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, P_T | 2 |
| %RVs, P_R | 0 |
| Grade % | | Length mi |
| Up/Down % |

#### Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| f_HV = 1/[1 + p_T(E_T - 1) + p_R(E_R - 1)] | 0.990 |

#### Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

#### Calc Speed Adj and FFS

| TRD Adjustment | mph |
| FFS | 65.0 mph |

#### LOS and Performance Measures

| Operational (LOS) | Design (N) |
| v_p = (V or DDHV) / (PHF x N x f_HV) | Design LOS |
| x f_p | |
| S | 65.0 mph |
| D = v_p / S | 7.4 pc/mi/ln |
| LOS | A |
| Required Number of Lanes, N |

#### Glossary

| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| v_p - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume |

#### Factor Location

| E_R - Exhibits 11-10, 11-12 | f_LW - Exhibit 11-8 |
| E_T - Exhibits 11-10, 11-11, 11-13 | f_LC - Exhibit 11-9 |
| f_p - Page 11-18 | TRD - Page 11-11 |
| LOS, S, FFS, v_p - Exhibits 11-2, 11-3 |

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# BASIC FREEWAY SEGMENTS WORKSHEET

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<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

## Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>From/To</td>
<td>East of Dillon Road</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
</tr>
<tr>
<td>Analysis Year</td>
<td>Existing</td>
</tr>
</tbody>
</table>

## Flow Inputs

| Volume, V | 892 veh/h |
| AADT      | veh/day   |
| Peak-Hr Prop. of AADT, K   | %Trucks and Buses, P_T 2 |
| Peak-Hr Direction Prop, D  | %RVs, P_R 0 |
| DDHV = AADT x K x D        | Grade % Length mi |

## Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)

## Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

## Calc Speed Adj and FFS

- \( f_{LW} \) mph
- \( f_{LC} \) mph
- TRD Adjustment mph
- FFS 65.0 mph

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV}) \times f_p} ) 474 pc/h/ln</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

## Design (N)

- Design LOS
- Design Number of Lanes, N

## Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>( v_p ) - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

## Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_P \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
# Basic Freeway Segments Worksheet

## General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour

## Site Information
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Frontage Road
- Jurisdiction: Existing
- Analysis Year: Existing

## Project Description
- 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- Oper.(LOS)

## Flow Inputs
- **Volume, V** 892 veh/h
- **AADT** veh/day
- **Peak-Hr Prop. of AADT, K**
- **Peak-Hr Direction Prop, D**
- **DDHV = AADT x K x D** veh/h

## Calculate Flow Adjustments
- \[ f_p = 1.00 \]
- \[ E_T = 1.5 \]
- \[ f_{HV} = \frac{1}{1 + f_p(E_T - 1) + P_R(E_R - 1)0.990} \]

## Speed Inputs
- **Lane Width** ft
- **Rt-Side Lat. Clearance** ft
- **Number of Lanes, N** 2
- **Total Ramp Density, TRD** ramps/mi
- **FFS (measured)** 65.0 mph
- **Base free-flow Speed, BFFS** mph

## Speed Adjustments and FFS
- \[ f_{lW} \]
- \[ f_{lC} \]
- \[ TRD \text{ Adjustment} \]
- \[ FFS = 65.0 \text{ mph} \]

## LOS and Performance Measures
- **Operational (LOS)**
- \[ v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV} 474)} \text{ pc/h/ln} \]
- \[ S = 65.0 \text{ mph} \]
- \[ D = \frac{v_p}{S} = 7.3 \text{ pc/mi/ln} \]
- \[ LOS = A \]

## Glossary
- N - Number of lanes
- S - Speed
- V - Hourly volume
- D - Density
- \( v_p \) - Flow rate
- FFS - Free-flow speed
- BFFS - Base free-flow speed
- DDHV - Directional design hour volume

## Design (N)

## Factor Location
- \[ E_R \text{ - Exhibits 11-10, 11-12} \]
- \[ f_{lW} \text{ - Exhibit 11-8} \]
- \[ E_T \text{ - Exhibits 11-10, 11-11, 11-13} \]
- \[ f_{lC} \text{- Exhibit 11-9} \]
- \[ f_p \text{ - Page 11-18} \]
- \[ TRD \text{ - Page 11-11} \]

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

<table>
<thead>
<tr>
<th><strong>Site Information</strong></th>
<th><strong>Flow Inputs</strong></th>
<th><strong>Calculate Flow Adjustments</strong></th>
<th><strong>Speed Inputs</strong></th>
<th><strong>Calc Speed Adj and FFS</strong></th>
<th><strong>LOS and Performance Measures</strong></th>
<th><strong>Design (N)</strong></th>
<th><strong>Glossary</strong></th>
<th><strong>Factor Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway/Direction of Travel I-10 Eastbound</td>
<td>Peak-Hour Factor, PHF: 0.95</td>
<td>( f_p = 1.00 )</td>
<td>Lane Width</td>
<td>ft</td>
<td>Design LOS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>From/To East of Paradise Valley</td>
<td>%Trucks and Buses, ( P_T ): 2</td>
<td>( E_T = 1.5 )</td>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td>Design LOS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>%RVs, ( P_R ): 0</td>
<td>( f_{HV} = \frac{1}{[1+P_T(E_T - 1) + P_R(E_R - 1)][0.990]} )</td>
<td>Number of Lanes, ( N ): 2</td>
<td></td>
<td>Base free-flow speed, BFFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Existing</td>
<td>General Terrain: Level</td>
<td></td>
<td>Total Ramp Density, TRD</td>
<td>ramps/mt</td>
<td>TRD Adjustment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grade</td>
<td></td>
<td>FFS (measured)</td>
<td>65.0</td>
<td>mph</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Length</td>
<td></td>
<td>Base free-flow speed, BFFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up/Down %</td>
<td></td>
<td>mph</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Operational (LOS)
- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) pc/h/ln
- \( S = 65.0 \) mph
- \( D = \frac{v_p}{S} \) pc/mt/ln
- \( LOS = A \)

#### Design (N)
- \( E_R = \text{Exhibits 11-10, 11-12} \)
- \( f_{LV} = \text{Exhibit 11-8} \)
- \( E_T = \text{Exhibits 11-10, 11-11, 11-13} \)
- \( f_{LC} = \text{Exhibit 11-9} \)
- \( f_p = \text{Page 11-18} \)
- TRD = Page 11-11
- LOS, S, FFS, \( v_p \) = Exhibits 11-2, 11-3

#### Glossary
- \( N \) - Number of lanes
- \( V \) - Hourly volume
- \( v_p \) - Flow rate
- \( LOS \) - Level of service
- \( DDHV \) - Directional design hour volume

#### Factor Location
- \( HCS 2010^TM \) Version 6.70

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# BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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</thead>
<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To East of Cottonwood Springs Rd</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td>✅ Oper.(LOS)</td>
<td>☐ Des.(N)</td>
</tr>
<tr>
<td>☐ Planning Data</td>
<td></td>
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</table>

## Flow Inputs

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>899 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T = 0.95</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R = 2</td>
</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
<td>Grade</td>
</tr>
<tr>
<td>Calculate Flow Adjustments</td>
<td></td>
</tr>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>f_HV = 1/4(1 + P_T(E_T - 1) + P_R(E_T - 1))</td>
<td>0.990</td>
</tr>
</tbody>
</table>

## Speed Inputs

<table>
<thead>
<tr>
<th></th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
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## Speed and Performance Measures

<table>
<thead>
<tr>
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<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>(x f_p)</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D</td>
<td>7.4 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
</tr>
<tr>
<td>Design (N)</td>
<td></td>
</tr>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>(x f_p)</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
</tr>
</tbody>
</table>

## Glossary

- N - Number of lanes
- S - Speed
- V - Hourly volume
- D - Density
- v_p - Flow rate
- FFS - Free-flow speed
- BFFS - Base free-flow speed
- DDHV - Directional design hour volume
- LOS - Level of service

## Factor Location

- E_R - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_LC - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3
# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Cottonwood Springs Rd
- **Jurisdiction:** Existing

## Flow Inputs
- **Volume, V:** 1270 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:** veh/h
- **Peak-Hr Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain:** Level
- **Grade:**
- **Length:** mi
- **Up/Down %:**

## Calculate Flow Adjustments
- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **f_HV:** \( \frac{1}{(1 + \text{P_T}(E_T - 1) + \text{P_R}(E_R - 1))} \) 0.990

## Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 2
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

## Speed Adj and FFS
- **f_LW:** mph
- **f_LC:** mph
- **FFS Adjustment:** mph
- **TRD Adjustment:** mph

## LOS and Performance Measures
- **Operational (LOS):**
  - **v_p = (V or DDHV) / (PHF x N x f_HV x f_p):** pc/h/ln
  - **S:** 65.0 mph
  - **D = v_p / S:** 10.4 pc/mi/ln
- **LOS:** A

## Design (N)
- **Design (N):**
  - **v_p = (V or DDHV) / (PHF x N x f_HV x f_p):** pc/h/ln
  - **S:** mph
  - **D = v_p / S:** pc/mi/ln
  - **LOS:**

## Glossary
- **N:** Number of lanes
- **S:** Speed
- **V:** Hourly volume
- **D:** Density
- **v_p:** Flow rate
- **FFS:** Free-flow speed
- **BFFS:** Base free-flow speed
- **DDHV:** Directional design hour volume

## Factor Location
- **E_R:** Exhibits 11-10, 11-12
- **f_LW:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_LC:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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## BASIC FREeway SEgMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
<td>JT</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

- **Oper. (LOS)**
- **Des. (N)**
- **Planning Data**

### Flow Inputs

| Volume, V | 1265 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | veh/day | %Trucks and Buses, P_T | 2 |
| Peak-Hr Prop. of AADT, K | %RVs, P_R | General Terrain: Level | 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |  |
| DDHV = AADT x K x D | veh/h | Grade | % |
|  |  | Length | mi |
|  |  | Up/Down % |  |

### Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{(1 + P_T(E_T \cdot 1) + P_R(E_R \cdot 1))} \)

### Speed Inputs

| Lane Width | ft |  |
| Rt-Side Lat. Clearance | ft |  |
| Number of Lanes, N | 2 |  |
| Total Ramp Density, TRD | ramps/mi |  |
| FFS (measured) | 65.0 mph |  |
| Base free-flow Speed, BFSS | mph |  |

### Calc Speed Adj and FFS

| \( f_{LV} \) | mph |  |
| \( f_{LC} \) | mph |  |
| TRD Adjustment | mph |  |
| FFS | 65.0 mph |  |

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>672 pc/h/ln</td>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p )</td>
</tr>
<tr>
<td>65.0 mph</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>10.3 pc/mi/ln</td>
<td>mph</td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
</tr>
</tbody>
</table>

### Glossary

- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LV} \) - Exhibit 11-8
- \( E_P \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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9/28/2015
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Frontage Road
- Jurisdiction: Existing
- Analysis Year: Existing

### Flow Inputs
- **Volume, V**: 1265 veh/h
- **AADT**: veh/day
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, PT: 2
- %RVs, PR: 0
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down %

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **E_{HV}** = \( \frac{1}{1 + f_p (E_T - 1) + f_{PR} (E_R - 1)} \times 0.990 \)

### Speed Inputs
- **Lane Width**: ft
- **RT-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FSS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Speed Adj and FFS
- **f_{lw}**
- **f_{LC}**
- **TRD Adjustment**
- **FFS**: 65.0 mph

### LOS and Performance Measures

#### Operational (LOS)
- \( v_p = \frac{(V \ or \ DDHV)}{(PHF \ x \ N \ x \ f_{HV}} \)
- \( S = 65.0 \) mph
- **D** = \( v_p / S \)
- **PC/h/Ln**
- **LOS**
- **A**

#### Design (N)

#### Glossary
- **N** - Number of lanes
- **S** - Speed
- **V** - Hourly volume
- **D** - Density
- **v_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

### Factor Location
- **E_R** - Exhibits 11-10, 11-12
- **f_{lw}** - Exhibit 11-8
- **E_T** - Exhibits 11-10, 11-11, 11-13
- **f_{LC}** - Exhibit 11-9
- **f_p** - Page 11-18
- **TRD** - Page 11-11
- LOS, S, FFS, **v_p**
- Exhibits 11-2, 11-3
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Dillon Road
- **Jurisdiction:** Existing

### Flow Inputs
- **Volume, V:** 1265 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **Peak-Hr Direction Prop, D:** %
- **DDHV = AADT x K x D:** veh/h
- **Peak-Hour Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi
- **Up/Down %:**

### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **E_R:** 1.2
- **E_R = 1 + f_p + E_T:** 0.990

### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 2
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

### Calc Speed Adj and FFS
- **f_{LW}**
- **f_{LC}**
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_{p} \)
  - \( S = \frac{65.0 \text{ mph}}{10.3 \text{ pc/mi}} \)
  - \( D = \frac{10.3 \text{ pc/mi}}{A} \)

### Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **v_p:** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume

### Design (N)
- **Design LOS:**
- **Design LOS:**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_{p} \)
  - \( S = \frac{65.0 \text{ mph}}{10.3 \text{ pc/mi}} \)
  - \( D = \frac{10.3 \text{ pc/mi}}{A} \)

### Factor Location
- **E_R:** Exhibits 11-10, 11-12
- **f_{LW}:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_{LC}:** Exhibit 11-9
- **f_p:** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3
# BASIC FREEWAY WORKSHEET

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of State Route 86
- **Jurisdiction**: Existing

## Flow Inputs
- **Volume, V**: 1273 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h

## Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_HV = 1/[(1 + p_T)(E_T - 1) + p_R(E_R - 1)]0.990**

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed**: mph

## LOS and Performance Measures

### Operational (LOS)
- \[ v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \text{ pc/h/ln} \]
- \[ S = 65.0 \text{ mph} \]
- \[ D = \frac{v_p}{S} \text{ pc/mi/ln} \]
- **LOS**: A

### Design (N)
- **Design LOS**

## Glossary
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

## Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_LW**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
- **TRD**: Page 11-11

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10/19/2015
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Golf Center Parkway
- Jurisdiction: Existing

### Flow Inputs
- Volume, V: 2320 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_T: 2
- Peak-Hr Direction Prop, D: %RVs, P_R: 0
- DDHV = AADT x K x D: veh/h
- Grade: % Length: mi
- Peak-Hour Factor, PHF: 0.95
- General Terrain: Level

### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} = 0.990 \)

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 4
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

### LOS and Performance Measures
- Design LOS
- \( v_p = \frac{(V \ or \ DDHV) \times (PHF \times N \times f_{HV})}{f_p} = 617 \ pc/h/ln \)
- \( S = 65.0 \ mph \)
- \( D = \frac{v_p}{S} = 9.5 \ pc/ln/\mi \)
- \( LOS = A \)

### Design (N)
- Design LOS
- \( v_p = \frac{(V \ or \ DDHV) \times (PHF \times N \times f_{HV})}{f_p} \)
- \( S = 65.0 \ mph \)
- \( D = \frac{v_p}{S} \)
- \( LOS = A \)

### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### Factor Location
- E_R - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_LC - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
## BASIC FREEWAY WORKSHEET

### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Jackson Street
- Jurisdiction: Existing

### Site Information

#### Flow Inputs
- Volume, V: 2579 veh/h
- AADT: 2579 veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: %
- DDHV = AADT x K x D: veh/h

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( E_R \): 1.2
- \( f_{HV} = \frac{1}{1+P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990 \)

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### Calc Speed Adj and FFS
- \( f_{LW} \) mph
- \( f_{LC} \) mph
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures

#### Design (N)
- Operational (LOS)
- Design (N)
- Design LOS
- Required Number of Lanes, N

### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- BFFS - Base free-flow speed
- FFS - Free-flow speed
- E_p - Exhibits 11-10, 11-12
- f_{LW} - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_{LC} - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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1/27/2016
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<td>From/To</td>
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<td>Date Performed</td>
<td>Jurisdiction</td>
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<td>3488 veh/h</td>
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<td>Peak-Hr Prop. of AADT, K</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
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<td>DDHV = AADT x K x D</td>
<td>308 veh/h</td>
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<th>Calculate Flow Adjustments</th>
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<td>f_p</td>
<td>1.00</td>
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<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>f_{HV} = \frac{1}{1+\frac{P_T}{P_R}}</td>
<td>0.990</td>
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<td>Lane Width</td>
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<td>Total Ramp Density, TRD</td>
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<td>FFS (measured)</td>
<td>65.0 mph</td>
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<tr>
<td>Base free-flow Speed, BFFS</td>
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<th>LOS and Performance Measures</th>
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<td>Operational (LOS)</td>
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<tr>
<td>v_p = \frac{V}{1236 PC/HR}</td>
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<tr>
<td>x f_p)</td>
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<tr>
<td>S</td>
<td>65.0 mph</td>
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<tr>
<td>D = \frac{v_p}{S}</td>
<td>19.0 pc/mi/ln</td>
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<td>LOS</td>
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<td>N - Number of lanes</td>
<td>S - Speed</td>
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<td>V - Hourly volume</td>
<td>D - Density</td>
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<tr>
<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
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<tr>
<td>DDHV - Directional design hour volume</td>
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<table>
<thead>
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<th>Factor Location</th>
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<tbody>
<tr>
<td>E_R</td>
<td>1.2</td>
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<tr>
<td>TRD ADJUSTMENT</td>
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<tr>
<td>FFS</td>
<td>65.0 mph</td>
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<table>
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<th>Design (N)</th>
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<tbody>
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<td>Design (N)</td>
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<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>E_T</td>
<td>11-10-11, 11-12</td>
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<td>E_LW - Exhibit 11-8</td>
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<tr>
<td>f_{LW} - Exhibit 11-8</td>
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</tr>
<tr>
<td>f_T - Exhibit 11-11-11, 11-13</td>
<td></td>
</tr>
<tr>
<td>f_{LC} - Exhibit 11-9</td>
<td></td>
</tr>
<tr>
<td>TRD - Page 11-11</td>
<td></td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
<td></td>
</tr>
</tbody>
</table>
## BASIC FREEWAY WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: Existing

### Flow Inputs
- **Volume, V**: 3674 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain, Level**
- **Grade**: %
- **Length**: mi
- **Up/Down %**:

### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1 + \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)}} \times 0.990 \)

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **Calc Speed Adj**: mph
- **FFS**: 65.0 mph
- **TRD Adjustment**: mph

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \times 1302 \text{ pc/h/ln} \)
  - **S**: 65.0 mph
  - **D**: \( \frac{v_p}{S} \)
  - **LOS**: C

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Design (N)
- **Design LOS**:
- **Design (N)**
- **E_R - Exhibits 11-10, 11-12**
- **f_LW - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_LC - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

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10/19/2015
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

**General Information**
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

**Site Information**
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Washington Street
- **Jurisdiction**: Analysis Year: Existing

**Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs

- **Volume, V**: 4686 veh/h
- **AADD**: veh/day
- **Peak-Hr Prop. of AADD, K**: %RHs, Pr
- **Peak-Hr Direction Prop, D**: General Terrain: Level
- **DDHV = AADD x K x D**: veh/h

### Calculate Flow Adjustments

- **f_p**: 1.00
- **E_T**: 1.5
- **f_{HV} = 1[f_{P}(E_{T} - 1) + P_{R}(E_{R} - 1)]0.990**

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph

### Calc Speed Adj and FFS

- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures

- **v_p = (V or DDHV) / (PHF x N x f_{HV})**: 1661 pc/h/ln
- **S**: 64.0 mph
- **D = v_p / S**: 25.9 pc/mi/ln

### Glossary

- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Factor Location

- **E_{R}**: Exhibits 11-10, 11-12
- **v_{p}**: Flow rate
- **LOS, S, FFS**: Exhibits 11-2, 11-3
- **TRD**: Page 11-11

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### Basic Freeway Segments Worksheet

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
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<tr>
<td>Agency or Company</td>
<td>From/To East of Cook Street</td>
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<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
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<tr>
<td>Analysis Time Period</td>
<td>Analysis Year Existing</td>
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**Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

- Oper.(LOS) [ ]
- Des.(N) [ ]
- Planning Data [ ]

### Flow Inputs

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<th>Parameter</th>
<th>Value/Unit</th>
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<tr>
<td>Volume, V</td>
<td>5238 veh/h</td>
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<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>%RVs, P_R</td>
<td>0</td>
</tr>
<tr>
<td>General Terrain: Level</td>
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<tr>
<td>Grade % Length Up/Down %</td>
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### Calculate Flow Adjustments

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<thead>
<tr>
<th>Symbol</th>
<th>Formula</th>
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<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>( f_{HV} = \frac{1}{0.990} (1+0.5 P_T(E_T-1)+P_R(E_R-1)) )</td>
<td></td>
</tr>
</tbody>
</table>

### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value/Unit</th>
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<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
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<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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### LOS and Performance Measures

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<th>Formula</th>
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<td>( v_p = \frac{V \times DDHV}{PHF \times N \times f_{HV} \times f_p} )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>( S )</td>
<td>62.1 mph</td>
</tr>
<tr>
<td>( D = \frac{v_p}{S} )</td>
<td>29.9 pc/mi/ln</td>
</tr>
</tbody>
</table>

### Glossary

- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

### Factor Location

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<thead>
<tr>
<th>Design (N)</th>
<th>Design (N)</th>
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<td>Design LOS</td>
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**Operational (LOS)**

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<td>( v_p = \frac{V \times DDHV}{PHF \times N \times f_{HV} \times f_p} )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>( S )</td>
<td>62.1 mph</td>
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<tr>
<td>( D = \frac{v_p}{S} )</td>
<td>29.9 pc/mi/ln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
</tr>
</tbody>
</table>

**Factor Location**

<table>
<thead>
<tr>
<th>Design (N)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
</tbody>
</table>

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- \( TRD \) - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To East of Monterey Avenue</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year Existing</td>
</tr>
<tr>
<td></td>
<td>Project Description 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

**Flow Inputs**

- **Volume, V** 5394 veh/h
- **AADT** veh/day
- **Peak-Hr Prop. of AADT, K**
- **Peak-Hr Direction Prop, D**
- **DDHV = AADT x K x D** veh/h

- **Peak-Hour Factor, PHF** 0.95
- **%Trucks and Buses, P_T** 2
- **%RVs, P_R** 0
- **General Terrain:** Level
- **Grade % Length mi**
- **Up/Down %**

**Calculate Flow Adjustments**

- **f_p** 1.00
- **E_T** 1.5

\[ f_{HV} = \frac{1}{1 + f_p (E_T - 1) + P_T (E_T - 1)} \times 0.990 \]

**Speed Inputs**

- **Lane Width** ft
- **Rt-Side Lat. Clearance** ft
- **Number of Lanes, N** 3
- **Total Ramp Density, TRD** ramps/mi
- **FFS (measured)** 65.0 mph
- **Base free-flow Speed, BFFS** mph

**Calc Speed Adj and FFS**

- **f_w** mph
- **f_c** mph
- **TRD Adjustment** mph
- **FFS** 65.0 mph

**LOS and Performance Measures**

- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \) pc/h/ln
  - \( S \) 61.3 mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - \( LOS \) 31.2 pc/mi/ln

**Design (N)**

- Design LOS
- Design (N)
- Required Number of Lanes, N

**Glossary**

- **N** - Number of lanes
- **S** - Speed
- **V** - Hourly volume
- **D** - Density
- **v_p** - Flow rate
- **FFS** - Free-flow speed
- **BFFS** - Base free-flow speed
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

**Factor Location**

- \( f_p \) - Page 11-18
- \( E_T \) - Exhibits 11-10, 11-12
- \( f_{w} \) - Exhibit 11-8
- \( E_R \) - Exhibits 11-10, 11-11, 11-13
- \( f_{c} \) - Exhibit 11-9
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
# Basic Freeway Segments Worksheet

## General Information
<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
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</thead>
<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
</tr>
</tbody>
</table>

## Site Information
| Highway/Direction of Travel | I-10 Westbound |
| From/To | West of Monterey Avenue |
| Jurisdiction | |
| Analysis Year | Existing |
| Project Description | 2-10-3136-2 Paradise Valley Specific Plan, Riverside County |

### Flow Inputs

| Volume, V | 5340 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, PR |
| Peak-Hr Direction Prop, D | General Terrain: Level |

### Calculate Flow Adjustments

\[
f_p = 1.00, \quad E_R = 1.2, \quad E_T = 1.5, \quad f_{HV} = \frac{1}{1 + \frac{P_T}{1 + E_R}} \times \frac{P_R}{E_R} 0.990
\]

### Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 4 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

### Calc Speed Adj and FFS

| f_{LW} | mph |
| f_{LC} | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

### LOS and Performance Measures

| Operational (LOS) | Design (N) |
| \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \) | Design LOS |
| S | 65.0 mph |
| D | 21.8 pc/mi/ln |
| LOS | C |

### Glossary

- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **FFS**: Free-flow speed
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Factor Location

<p>| E_R - Exhibits 11-10, 11-12 |
| f_{LW} - Exhibit 11-8 |
| E_T - Exhibits 11-10, 11-11, 11-13 |
| f_{LC} - Exhibit 11-9 |
| f_p - Page 11-18 |
| TRD - Page 11-11 |
| LOS, S, FFS, v_p - Exhibits 11-2, 11-3 |</p>
<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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<td>JT</td>
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<tr>
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<tr>
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<td>9/22/2015</td>
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<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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</table>

**Oper.(LOS)**

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<tr>
<th>Flow Inputs</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3469 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculate Flow Adjustments</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_HV = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))</td>
<td>0.990</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
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<table>
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<th>LOS and Performance Measures</th>
<th>Design (N)</th>
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<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
</tr>
<tr>
<td>x f_p</td>
<td>x f_p</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>mph</td>
</tr>
<tr>
<td>LOS</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>B</td>
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<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
<td>S - Speed</td>
</tr>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

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<table>
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<tr>
<th>General Information</th>
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<tr>
<td>Analyst</td>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<tr>
<td>Date Performed</td>
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<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<table>
<thead>
<tr>
<th>Flow Inputs</th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
</tr>
<tr>
<td>AADT</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
</tr>
<tr>
<td>DDHV = AADT * K * D</td>
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</table>

<table>
<thead>
<tr>
<th>Flow Adjustment Calculations</th>
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</thead>
<tbody>
<tr>
<td>( f_p ) = 1.00</td>
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<tr>
<td>( E_T ) = 1.5</td>
</tr>
<tr>
<td>( f_{HV} ) = ( 1/(1 + P_T(E_T - 1) + P_R(E_R - 1)) )</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed Inputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
</tr>
<tr>
<td>Number of lanes, N</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
</tr>
<tr>
<td>FFS (measured)</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
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</table>

<table>
<thead>
<tr>
<th>Speed Adjustments and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LV} )</td>
</tr>
<tr>
<td>( f_{LC} )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times \frac{1242}{S} \times \frac{pc/h}{ln} )</td>
</tr>
<tr>
<td>( D = \frac{v_p}{S} \times \frac{pc/mi}{ln} )</td>
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</table>

<table>
<thead>
<tr>
<th>Glossary</th>
</tr>
</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
</tr>
<tr>
<td>V - Hourly volume</td>
</tr>
<tr>
<td>( v_p ) - Flow rate</td>
</tr>
<tr>
<td>LOS - Level of service speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
</tr>
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<table>
<thead>
<tr>
<th>Factor Location</th>
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<tbody>
<tr>
<td>Design (N)</td>
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</table>

<table>
<thead>
<tr>
<th>Design LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
</tr>
<tr>
<td>f_{LV} - Exhibit 11-8</td>
</tr>
<tr>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
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</tbody>
</table>

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10/19/2015
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Cook Street
- **Jurisdiction**: Existing
- **Analysis Year**:

### Flow Inputs
- **Volume, V**: 3715 veh/h
- **AADT**: 3715 veh/day
- **Peak-Hr Prop. of AADT, K**: Peak-Hour Factor, PHF 0.95
- **Peak-Hr Direction Prop, D**: %Trucks and Buses, \(P_T\) 2
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments
- **\(f_p\)**: 1.00
- **\(E_T\)**: 1.5
- **\(E_R\)**: 1.2
- **\(f_{HV}\)**: \(f_{HV} = \frac{1}{1+1+P_T(E_T - 1) + P_R(E_R - 1)}\) 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### LOS and Performance Measures
- **Operational (LOS)**
  - \(v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV}}\)
  - \(x f_p\)
  - \(S\): 65.0 mph
  - \(D = \frac{v_p}{S}\): 20.3 pc/mi/ln
  - \(LOS\)

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **\(v_p\)**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Glossary
- **S**: Speed
- **D**: Density
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed

### Factor Location
- **LOS, S, FFS, \(v_p\)**: Exhibits 11-2, Page 11-8
- **TRD - Page 11-11**
## BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
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<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
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<td>From/To</td>
<td>East of Washington Street</td>
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<td>Jurisdiction</td>
<td>Existing</td>
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### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Volume, V</td>
<td>3410 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
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<tr>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
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<tr>
<td>%RVs, P_R</td>
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<tr>
<td>General Terrain</td>
<td>Level</td>
</tr>
<tr>
<td>Grade %</td>
<td></td>
</tr>
<tr>
<td>Length mi</td>
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<tr>
<td>Up/Down %</td>
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### Calculate Flow Adjustments

<table>
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<th>Value</th>
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<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_{HV} = 1 / (f_p + E_T (E_R - 1) + P_R (E_R - 1))</td>
<td>0.990</td>
</tr>
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### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
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</tr>
<tr>
<td>f_{fW}</td>
<td>mph</td>
</tr>
<tr>
<td>f_{LC}</td>
<td></td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
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### LOS and Performance Measures

<table>
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<th>Value</th>
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<tbody>
<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>18.6 pc/mi/ln</td>
</tr>
<tr>
<td>LOS C</td>
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</tr>
<tr>
<td>Design (N)</td>
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<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td></td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
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<tr>
<td>Required Number of Lanes, N</td>
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### Glossary

<table>
<thead>
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<th>Parameter</th>
<th>Description</th>
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<tbody>
<tr>
<td>N</td>
<td>Number of lanes</td>
</tr>
<tr>
<td>V</td>
<td>Hourly volume</td>
</tr>
<tr>
<td>D</td>
<td>Density</td>
</tr>
<tr>
<td>v_p</td>
<td>Flow rate</td>
</tr>
<tr>
<td>LOS</td>
<td>Level of service</td>
</tr>
<tr>
<td>DDHV</td>
<td>Directional design hour volume</td>
</tr>
<tr>
<td>E_R</td>
<td>Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>f_{fW}</td>
<td>Exhibit 11-8</td>
</tr>
<tr>
<td>E_T</td>
<td>Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_{LC}</td>
<td>Exhibit 11-9</td>
</tr>
<tr>
<td>f_p</td>
<td>Page 11-18</td>
</tr>
<tr>
<td>TRD</td>
<td>Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p</td>
<td>Exhibits 11-2, 11-3</td>
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### Factor Location

<table>
<thead>
<tr>
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<tr>
<td>E_R</td>
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<tr>
<td>f_{fW}</td>
<td>Exhibit 11-8</td>
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<tr>
<td>E_T</td>
<td>Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_{LC}</td>
<td>Exhibit 11-9</td>
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<td>f_p</td>
<td>Page 11-18</td>
</tr>
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<td>TRD</td>
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</tr>
<tr>
<td>LOS, S, FFS, v_p</td>
<td>Exhibits 11-2, 11-3</td>
</tr>
</tbody>
</table>
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:**
- **Analysis Year:** Existing

### Flow Inputs
- **Volume, V (veh/h):** 2593
- **Peak-Hour Factor, PHF:** 0.95
- **AADT (veh/day):**
- **%Trucks and Buses, PT:** 2
- **Peak-Hr Prop. of AADT, K:**
- **%RVs, PR:** 0
- **Peak-Hr Direction Prop, D:**
- **General Terrain:** Level
- **DDHV = AADT x K x D (veh/h):**
- **Grade:**
- **Length (mi):**
- **Up/Down %:**

### Calculate Flow Adjustments
- **f_p (1.00):**
- **E_R (1.2):**
- **E_T (1.5):**
- **f_HV = 1/[1+f_p(E_T・1)+f_R(E_R・1)] 0.990:**

### Speed Inputs
- **Lane Width (ft):**
- **Rt-Side Lat. Clearance (ft):**
- **Number of Lanes, N:** 3
- **Total Ramp Density, TRD (ramps/mi):**
- **FFS (measured) (mph):** 65.0
- **Base free-flow Speed, BFFS (mph):**

### LOS and Performance Measures
- **Calc Speed Adj and FFS**
  - TRD Adjustment (mph)
  - FFS (mph)

### Design (N)
- **Design LOS**
  - Design (N)
  - Design LOS

### Glossary
- **N - Number of lanes**
- **V - Hourly volume**
- **v_p - Flow rate**
- **LOS - Level of service**
- **DDHV - Directional design hour volume**

### Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_p - Page 11-18**
- **f_LW - Exhibit 11-8**
- **f_T - Exhibits 11-10, 11-11, 11-13**
- **f_LC - Exhibit 11-9**
- **TRD - Page 11-11**

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<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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<td>JT</td>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<td>Analysis Year</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<table>
<thead>
<tr>
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<th></th>
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<tr>
<td>Volume, V</td>
<td>2265 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>%RVs, P_R</td>
<td>0</td>
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<tr>
<td>General Terrain: Level</td>
<td></td>
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<tr>
<td>Grade</td>
<td>%</td>
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<tr>
<td>Length</td>
<td>mi</td>
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<tr>
<td>Up/Down %</td>
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<table>
<thead>
<tr>
<th><strong>Calculate Flow Adjustments</strong></th>
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<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_{HV}</td>
<td>f_{HV} = 1/[1+f_p(E_T - 1) + P_R(E_T - 1)]0.990</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speed Inputs</strong></th>
<th><strong>Calc Speed Adj and FFS</strong></th>
</tr>
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<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
<tr>
<td>f_{LW}</td>
<td>mph</td>
</tr>
<tr>
<td>f_{LC}</td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
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</table>

<table>
<thead>
<tr>
<th><strong>LOS and Performance Measures</strong></th>
<th><strong>Design (N)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Design (N)</td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>12.4 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
</tr>
<tr>
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<table>
<thead>
<tr>
<th><strong>Glossary</strong></th>
<th><strong>Factor Location</strong></th>
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</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
<td>S - Speed</td>
</tr>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service speed</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
<tr>
<td>E_R - Exhibits 11-10, 11-12</td>
<td>f_{LW} - Exhibit 11-8</td>
</tr>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
<td></td>
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</table>

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HCS 2010™ Version 6.70 Generated: 10/19/2015 4:59 PM
## Basic Freeway Segments Worksheet

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
</tr>
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<tbody>
<tr>
<td>Analyst: JT</td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
</tr>
<tr>
<td>Agency or Company: LLG</td>
<td>From/To East of Jackson Street</td>
</tr>
<tr>
<td>Date Performed: 9/22/2015</td>
<td>Jurisdiction</td>
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<tr>
<td>Analysis Time Period: PM Peak Hour</td>
<td>Analysis Year: Existing</td>
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<tr>
<td>Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
<tr>
<td>☑ Oper.(LOS)</td>
<td>☐ Des.(N)</td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V (veh/h)</td>
<td>2012</td>
</tr>
<tr>
<td>AADT (veh/day)</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
<td>Grade % Length mi Up/Down %</td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

\[
\begin{align*}
 f_p & = 1.00 \\
 E_T & = 1.5 \\
 f_{HV} & = \frac{1}{1+[f_p(E_T - 1) + P_R(E_R - 1)]0.990}
\end{align*}
\]

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_{HV}</td>
<td></td>
</tr>
</tbody>
</table>

### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>RT-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
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</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>11.0 pc/mln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
<tr>
<td>Design (N)</td>
<td></td>
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<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
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</tbody>
</table>

### Glossary

- N: Number of lanes
- V: Hourly volume
- S: Speed
- Y_p: Flow rate
- LOS: Level of service
- DDHV: Directional design hour volume
- E_R: Exhibits 11-10, 11-12
- E_T: Exhibits 11-10, 11-11, 11-13
- f_p: Page 11-18
- f_{LVW}: Exhibit 11-8
- f_{LC}: Exhibit 11-9
- TRD: Page 11-11

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1/27/2016
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Golf Center/Parkway
- **Jurisdiction**: Existing

### Flow Inputs
- **Volume, V**: 1708 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 0
- **Peak-Hr Direction Prop, D**: veh/h
- **General Terrain**: Level
- **Grade**: % Length
- **Up/Down %**:

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **f_HV = 1/(1+P_f(E_R - 1) + P_R(E_R - 1))**: 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### LOS and Performance Measures
- **Operational (LOS)**
- **Design (N)**

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Design Location
- **E_R - Exhibits 11-10, 11-12**: f_{LW} - Exhibit 11-8
- **E_T - Exhibits 11-10, 11-11, 11-13**: f_{LC} - Exhibit 11-9
- **f_p - Page 11-18**: TRD - Page 11-11

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Generated: 1/27/2016 9:56 AM
## BASIC FREEWAY SEGMENTS WORKSHEET

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<td>Agency or Company</td>
<td>LLG</td>
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<td>Date Performed</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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- Oper.(LOS)  
- Des.(N)  
- Planning Data

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>837 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
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<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
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<tr>
<td>Peak-Hr Prop. of AADT, K</td>
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<td>%RVs, P_R</td>
<td>0</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>General Terrain: Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade % Length mi</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

- \( f_p \) = 1.00  
- \( E_T \) = 1.5

Calculation:

\[ f_{HV} = \frac{1}{1 + f_p (E_T - 1) + P_R (E_R - 1)} \times 0.990 \]

### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
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<tbody>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>65.0</td>
<td>mph</td>
</tr>
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</table>

### Calc Speed Adj and FFS

- \( f_{HW} \)  
- \( f_{LC} \)

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{V \times DDHV}{(PHF \times N \times f_{HV})} \times 445 ) pc/h/ln</td>
<td>( v_p = \frac{V \times DDHV}{(PHF \times N \times f_{HV})} \times 445 ) pc/h/ln</td>
</tr>
<tr>
<td>S = 65.0 mph</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS = A</td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

- N - Number of lanes  
- S - Speed  
- V - Hourly volume  
- D - Density  
- \( v_p \) - Flow rate  
- FFS - Free-flow speed  
- LOS - Level of service  
- BFFS - Base free-flow speed  
- DDHV - Directional design hour volume

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12  
- \( f_{LW} \) - Exhibit 11-8  
- \( E_T \) - Exhibits 11-10, 11-11, 11-13  
- \( f_{LC} \) - Exhibit 11-9  
- \( f_p \) - Page 11-18  
- TRD - Page 11-11  
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: Existing
- **Analysis Year**: Existing

### Flow Inputs
- **Volume, V**: 824 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2%
- **%RVs, P_R**: 0%
- **General Terrain**: Level
- **Grade %**:
- **Length mi**:
- **Up/Down %**:

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = 1/[f_{LV}(E_T - 1) + P_R(E_R - 1)]**: 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **f_{LV}**
- **f_{LC}**
- **TRD Adjustment**
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
- **v_p = (V or DDHV) / (PHF x N x f_{HV}**
- **S**: 65.0 mph
- **D = v_p / S**: 6.7 pc/mi/ln

### Design (N)
- **Design LOS**
- **Required Number of Lanes, N**

### Glossary
- **N - Number of lanes**
- **S - Speed**
- **V - Hourly volume**
- **D - Density**
- **v_p - Flow rate**
- **FFS - Free-flow speed**
- **LOS - Level of service**
- **BFFS - Base free-flow speed**
- **DDHV - Directional design hour volume**

### Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_{LV} - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_{LC} - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

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HCS 2010™ Version 8.70 Generated: 10/19/2015 4:59 PM
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Frontage Road
- **Jurisdiction**: Existing

### Project Description
- **2-10-3136-2 Paradise Valley Specific Plan, Riverside County**

### Flow Inputs
- **Volume, V**: 824 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = 1 \left( f_p + E_T \right) \cdot \left( 1 - \frac{E_R}{E_R - 1} \right) \cdot 0.990 \)

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed**, **BFFS**: mph

### LOS and Performance Measures
- **Operational (LOS)**
- **Design (N)**
  - Design LOS

### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

### Factor Location
- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LV} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

---

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Paradise Valley
- **Jurisdiction:** Existing
- **Analysis Year:**

## Flow Inputs
- **Volume, V:** 824 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D:** veh/h
- **Peak-Hour Factor, PHF:** 0.95
- **%Trucks and Buses, PT:** 2
- **%RVs, PR:** 0
- **General Terrain:** Level
- **Grade:**
- **Length:** mi
- **Up/Down %**

## Calculate Flow Adjustments
- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **f_{HV} = \frac{1}{1 + \frac{1}{E_T} (E_T - 1) + \frac{1}{E_R} (E_R - 1)} 0.990**

## Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 2
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

## LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S = 65.0 \text{ mph} \)
  - \( D = \frac{v_p}{S} \)
  - \( LOS = A \)
- **Design (N):**
  - Design LOS

## Glossary
- **N - Number of lanes**
- **V - Hourly volume**
- **v_p - Flow rate**
- **LOS - Level of service**
- **DDHV - Directional design hour volume**

## Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_{LV} - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_{LC} - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

**General Information**
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

**Site Information**
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Cottonwood Springs Rd
- **Jurisdiction**: Existing

**Flow Inputs**
- **Volume, V**: 825 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**: Up/Down %
- **Length**: mi

**Calculate Flow Adjustments**
- **E_R**: 1.2
- **f_HV** = \(1/(1+P_T (E_T - 1) + P_R (E_R - 1))\) 0.990

**Speed Inputs**
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

**Calc Speed Adj and FFS**
- **f_LH**: mph
- **f_LC**: mph

**LOS and Performance Measures**

**Operational (LOS)**
- **v_p** = \((V \text{ or } DDHV) / (PHF \times N \times f_{HV})\) 439 pc/h/ln
- **S**: 65.0 mph
- **D = v_p / S**: 6.8 pc/mi/ln

**Design (N)**
- **Design LOS**
- **Required Number of Lanes, N**

**Glossary**
- **N** - Number of lanes
- **V** - Hourly volume
- **v_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

**Factor Location**
- **E_R** - Exhibits 11-10, 11-12
- **f_LH** - Exhibit 11-8
- **E_T** - Exhibits 11-10, 11-11, 11-13
- **f_LC** - Exhibit 11-9
- **f_p** - Page 11-18
- **TRD** - Page 11-11
- **LOS, S, FFS, v_p** - Exhibits 11-2, 11-3
APPENDIX G-II

EXISTING WITH PROJECT TRAFFIC CONDITIONS
**BASIC FREEWAY SEGMENTS WORKSHEET**

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Cottonwood Springs Rd
- **Jurisdiction**: Existing + Project

**Oper.(LOS)** | **Des.(N)** | **Planning Data**
--- | --- | ---
☑️ | | |

### Flow Inputs
- **Volume, V**: 1412 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**:%
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**: %
- **Length**: mi
- **Up/Down %**:

**E_R** | **f_{HV}$$= \frac{1}{1+P_T(E_R - 1) + P_R(E_R - 1)}$$ 0.990**
--- | ---
1.2 | 1.5

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calculate Flow Adjustments

**f_p** | **E_T** | **f_{HV}$$= \frac{1}{1+P_T(E_R - 1) + P_R(E_R - 1)}$$ 0.990**
--- | --- | ---
1.00 | 1.5 | 1.2

### Calc Speed Adj and FFS

**f_{LV}** | **f_{LC}** | **FFS** | **TRD Adjustment** | **Design (N)**
--- | --- | --- | --- | ---
| mph | mph | mph | mph |

### LOS and Performance Measures

**Operational (LOS)**

**v_p = (V or DDHV) / (PHF x N x f_{HV}$$751$$)** pc/h/ln

<table>
<thead>
<tr>
<th>S</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>65.0</td>
<td></td>
</tr>
</tbody>
</table>

**D = v_p / S** pc/mi/ln

<table>
<thead>
<tr>
<th>B</th>
</tr>
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<tbody>
<tr>
<td>11.6</td>
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</tbody>
</table>

**LOS**

<table>
<thead>
<tr>
<th>N</th>
<th>Required Number of Lanes, N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed
- **DDHV**: Directional design hour volume

### Factor Location

- **E_R**: Exhibits 11-10, 11-12
- **f_{LV}**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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G-53

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10/19/2015
### BASIC FREEWAY WORKSHEET

#### GENERAL INFORMATION

**Analyst:** JT  
**Agency or Company:** LLG  
**Date Performed:** 9/22/2015  
**Analysis Time Period:** AM Peak Hour  

#### SITE INFORMATION

**Highway/Direction of Travel:** I-10 Westbound  
**From/To:** East of Paradise Valley  
**Jurisdiction:**  
**Analysis Year:** Existing + Project  

#### PROJECT DESCRIPTION

- **Project:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County  
- **Oper.(LOS):** ✔  
- **Des.(N):**  
- **Planning Data:**  

#### FLOW INPUTS

- **Volume, V:** 1516 veh/h  
- **AADT:** veh/day  
- **Peak-Hr Prop. of AADT, K:**  
- **Peak-Hr Direction Prop, D:** veh/h  
- **DDHV = AADT x K x D:**  

#### PEAK-HOUR FACTOR, PHF

**PHF:** 0.95  
**Trucks and Buses, PT:** 2  
**RVs, PR:** 0  
**General Terrain:** Level  
**Grade:** %  
**Length:** mi  
**Up/Down %:**  

#### FLOW ADJUSTMENTS

- **fp:** 1.00  
- **ET:** 1.5  
- **EHV = **  

#### SPEED INPUTS

- **Lane Width:** ft  
- **Rt-Side Lat. Clearance:** ft  
- **Number of Lanes, N:** 2  
- **Total Ramp Density, TRD:** ramps/mi  
- **FFS (measured):** 65.0 mph  
- **Base free-flow Speed, BFFS:** mph  

#### CALC SPEED ADJ AND FFS

- **fLW:** mph  
- **fLC:** mph  
- **TRD Adjustment:** mph  
- **FFS:** mph  

#### LOSS AND PERFORMANCE MEASURES

- **LOS and Performance Measures:**  
- **Operational (LOS):**  
- **Design (N):**  
- **Design LOS:**  
- **Required Number of Lanes, N:**  

#### GLOSSARY

- **N:** Number of lanes  
- **V:** Hourly volume  
- **D:** Density  
- **fp:** Flow rate  
- **PP:** Flow rate  
- **LOS:** Level of service  
- **DDHV:** Directional design hour volume  

#### FACTOR LOCATION

- **ER:** Exhibits 11-10, 11-12  
- **fLW:** Exhibit 11-8  
- **ET:** Exhibits 11-10, 11-11, 11-13  
- **fLC:** Exhibit 11-9  
- **fp:** Page 11-18  
- **TRD:** Page 11-11  
- **LOS:**  
- **S:** FFS, Vp - Exhibits 11-2, 11-3  

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Frontage Road
- **Jurisdiction**: Existing + Project
- **Analysis Year**:

#### Flow Inputs
- **Volume, V**: 2435 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \)
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \)
- **DDHV = AADT x K x D**: veh/h

#### Calculate Flow Adjustments
- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{1}{1+\frac{P_T}{P_R}(E_T - 1)} + \frac{P_R(E_R - 1)}{0.990} \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- \( f_{LW} \) = mph
- \( f_{LC} \) = mph
- **TRD Adjustment** = mph
- **FFS** = 65.0 mph

#### LOS and Performance Measures
- **Design LOS**
- **Design (N)**

#### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed

#### Factor Location
- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_P \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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10/19/2015
# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
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<tr>
<th>Analyst</th>
<th>JT</th>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
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<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

## Site Information
| Highway/Direction of Travel | I-10 Westbound |
| From/To | East of Dillon Road |
| Jurisdiction | Existing + Project |

## Flow Inputs
| Volume, V | 2435 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | % |
| Peak-Hr Direction Prop, D | veh/h |
| DDHV = AADT x K x D | veh/h |
| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, PT | 2 |
| %RVs, PR | 0 |
| General Terrain | Level |
| Grade | % |
| Length | mi |
| Up/Down % | |

## Calculate Flow Adjustments

### f_p
- 1.00

### E_R
- 1.2

### E_T
- 1.5

### f_{HV} = \frac{1}{1+PT(E_T \cdot 1) + PR(E_R \cdot 1)} = 0.990

## Speed Inputs
| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

## Calc Speed Adj and FFS
| f_{LW} | mph |
| f_{LC} | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

## LOS and Performance Measures
<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</td>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</td>
</tr>
<tr>
<td>S = 65.0 mph</td>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS</td>
<td>Required Number of Lanes, N</td>
</tr>
</tbody>
</table>

## Glossary
- N - Number of lanes
- V - Hourly volume
- D - Density
- v_p - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- FFS - Free-flow speed
- BFFS - Base free-flow speed

## Factor Location
- E_R - Exhibits 11-10, 11-12
- f_{LW} - Exhibit 11-8
- E_p - Exhibits 11-10, 11-11, 11-13
- f_{LC} - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of State Route 86
- **Jurisdiction**:
- **Analysis Year**: Existing + Project
- **Oper.(LOS)**

#### Site Information
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**: %
- **Length**: mi
- **Up/Down %**:

#### Flow Inputs
- **Volume, V**: 1925 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**:
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**:

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **E_T**: 1.5
- **f_HV = \frac{1}{\left[1+P_T(E_T - 1) + P_R(E_R - 1)\right]}**: 0.990

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/ mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_{LW}**: \text{mph}
- **f_{LC}**: \text{mph}
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operation (LOS)**
  - **v_p = \frac{(V \text{ or DDHV})}{PHF \times N \times f_{HV} \times \frac{1023}{f_p}}**: pc/h/ln
  - **S**: 65.0 mph
  - **D = \frac{v_p}{S}**: pc/mi/ln
  - **LOS**: B

#### Design (N)
- **Design (N)**
- **Design LOS**
  - **v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV} \times \frac{1023}{f_p})}**: pc/h/ln
  - **S**: mph
  - **D = \frac{v_p}{S}**: pc/mi/ln
  - **Required Number of Lanes, N**

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

#### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_{LW}**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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G-57
### Basic Freeway Segments Worksheet

#### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Golf Center Parkway
- Jurisdiction: 
- Analysis Year: Existing + Project
- Oper. (LOS): 
- Des. (N): 
- Planning Data: 

#### Flow Inputs
- Volume, V: 2994 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_T: 2
- Peak-Hr Direction Prop, D: %RVs, P_R: 0
- DDHV = AADT x K x D: veh/h
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down %:

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( E_R \): 1.2
- \( f_{HV} = \frac{1}{1 + P_T E_T} + P_R E_R \): 0.990

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 4
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### Calc Speed Adj and FFS
- \( f_{LV} \): mph
- \( f_{LC} \): mph
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures
- Operational (LOS): 

#### Design (N)
- Design (N)
- Design LOS

#### Glossary
- N: Number of lanes
- V: Hourly volume
- \( v_p \): Flow rate
- LOS: Level of service
- DDHV: Directional design hour volume
- S: Speed
- D: Density
- FFS: Free-flow speed
- BFFS: Base free-flow speed
- LOS: S, FFS, \( v_p \): Exhibits 11-2, 11-3
- E_R: Exhibits 11-10, 11-12
- E_T: Exhibits 11-10, 11-11, 11-13
- f_p: Page 11-18
- TRD: Page 11-11

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**Factor Location**
- \( f_{LV} \): Exhibit 11-8
- \( f_{LC} \): Exhibit 11-9
- TRD: Page 11-11

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1/27/2016
## Basic Freeway Segments Worksheet

### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Jackson Street
- Jurisdiction:
- Analysis Year:
- Existing + Project

### Flows Inputs
- Volume, V: 3172 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K:
- Peak-Hr Direction Prop, D:
- DDHV = AADT x K x D: veh/h

### Calculate Flow Adjustments
- $f_p = 1.00$
- $E_T = 1.5$
- $E_R = 1.2$
- $f_{HV} = \frac{1}{[1 + P_f(E_T - 1) + P_R(E_R - 1)]} \cdot 0.990$

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/MI
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

### Speed Adjustments and FFS
- $f_{1_{LV}}$ mph
- $f_{1_{LC}}$ mph
- TRD Adjustment: mph
- FFS: 65.0 mph

### LOS and Performance Measures
- Operational (LOS): $v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})}$ pc/h/ln
- Speed: $S = 65.0$ mph
- LOS: $D = \frac{v_p}{S}$ pc/mi/ln

### Glossary
- N - Number of lanes
- V - Hourly volume
- $v_p$ - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

### Design (N)
- Design LOS
- Design (N)
- Required Number of Lanes, N

### Factor Location
- $E_R$ - Exhibits 11-10, 11-12
- $f_{1_{LV}}$ - Exhibit 11-8
- $E_T$ - Exhibits 11-10, 11-11, 11-13
- $f_{1_{LC}}$ - Exhibit 11-9
- $f_p$ - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

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# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** AM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Monroe Street
- **Jurisdiction:** Existing + Project
- **Analysis Year:**

### Flow Inputs
- **Volume, V:** 4003 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:** veh/h
- **Peak-Hr Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi
- **Up/Down %**

### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **f_HV:** \( \frac{1}{(1 + P_T(E_T - 1) + P_R(E_R - 1))} \times 0.990 \)

### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 3
- **Total Ramp Density, TRD:** ramps/hi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \) pc/h/ln
  - \( S = 65.0 \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - **LOS:**

### Design (N)
- **Design LOS:
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \) pc/h/ln
  - \( S = \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - **Required Number of Lanes, N**

### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

### Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_LW - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_LC - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

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**BASIC FREEWAY SEGMENTS WORKSHEET**

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: Analysis Year
- **Existing + Project**

### Flow Inputs
- **Volume, V**: 4359 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, P_T
- **Peak-Hr Direction Prop, D**: %RVs, P_R
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = \frac{1}{(1+P_T(E_T - 1) + P_R(E_R - 1))}**: 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3 ramps/mi
- **TRD**: Total Ramp Density
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFSS**: mph

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or DDHV}) \times N \times f_{HV}}{f_p} \)
  - \( S = \frac{v_p}{D} \)
- **Design (N)**
  - \( v_p = \frac{(V \text{ or DDHV}) \times N \times f_{HV}}{f_p} \)
  - \( S = \frac{v_p}{D} \)

### Glossary
- N - Number of lanes
- V - Hourly volume
- D - Density
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed

### Factor Location
- E_R - Exhibits 11-10, 11-12
- f_{LV} - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_{LC} - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Flow Inputs**:
  - Volume, V: 5116 veh/h
  - AADT: veh/day
  - Peak-Hr Prop. of AADT, K: veh/h
  - Peak-Hr Direction Prop, D: veh/h
- **Calculate Flow Adjustments**:
  - $f_p = 1.00$
  - $E_T = 1.5$
- **Speed Inputs**:
  - Lane Width: ft
  - Rt-Side Lat. Clearance: ft
  - Number of Lanes, N: 3
  - Total Ramp Density, TRD: ramps/mi
  - FFS (measured): 65.0 mph
- **LOS and Performance Measures**:
  - Operational (LOS):
    - $v_p = (V or DDHV) / (PHF x N x f_{HV})$
    - $S = 62.6$ mph
    - $D = v_p / S$
    - LOS
  - Design (N):
    - Design LOS:
      - $v_p = (V or DDHV) / (PHF x N x f_{HV})$
      - $S = \text{mph}$
      - $D = v_p / S$
      - Required Number of Lanes, N
- **Glossary**:
  - N - Number of lanes
  - V - Hourly volume
  - $v_p$ - Flow rate
  - LOS - Level of service
  - DDHV - Directional design hour volume
  - S - Speed
  - D - Density
  - FFS - Free-flow speed
  - BFFS - Base free-flow speed

## Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Washington Street
- **Jurisdiction**: Existing + Project

## Flow Inputs
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0

## Speed Inputs
- **FFS (measured)**: 65.0 mph

## LOS and Performance Measures
- **Operational (LOS)**:
  - $v_p = (V or DDHV) / (PHF x N x f_{HV})$
  - $S = 62.6$ mph
  - $D = v_p / S$
  - LOS

## Design (N)
- **Design LOS**:
  - $v_p = (V or DDHV) / (PHF x N x f_{HV})$
  - $S = \text{mph}$
  - $D = v_p / S$
  - Required Number of Lanes, N

## Glossary
- N - Number of lanes
- V - Hourly volume
- $v_p$ - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

## Factor Location
- $E_R$ - Exhibits 11-10, 11-12
- $f_{LV}$ - Exhibit 11-8
- $E_P$ - Exhibits 11-10, 11-11, 11-13
- $f_{LC}$ - Exhibit 11-9
- $f_p$ - Page 11-18
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

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## BASIC FREEWAY SECTIONS WORKSHEET

### General Information
- **Analyst:** JT  
- **Agency or Company:** LLG  
- **Date Performed:** 9/22/2015  
- **Analysis Time Period:** AM Peak Hour  
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County  
- **Oper.(LOS):**  
- **Peak-Hour Factor, PHF:** 0.95  
- **%Trucks and Buses, \( P_T \):** 2  
- **%RVs, \( P_R \):** 0  
- **General Terrain:**  
  - **Level:**  
- **Grade % Length mi:**  
  - **Up/Down %:**

### Site Information
- **Highway/Direction of Travel:** I-10 Westbound  
- **From/To:** East of Cook Street  
- **Jurisdiction:**  
- **Analysis Year:** Existing + Project  
- **Existing + Project:**  
- **Planning Data:**

### Flow Inputs
- **Volume, \( V \):** 6465 veh/h  
- **AADT:** veh/day  
- **Peak-Hr Prop. of AADT, \( K \):** veh/h  
- **Peak-Hr Direction Prop, \( D \):** veh/h  
- **DDHV = AADT x K x D:** veh/h  

### Calculate Flow Adjustments
- \( f_p \):
  - 1.00  
- \( E_T \):
  - 1.5  
- \( f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \):
  - 0.990

### Speed Inputs
- **Lane Width:** ft  
- **Rt-Side Lat. Clearance:** ft  
- **Number of Lanes, \( N \):** 3  
- **Total Ramp Density, \( TRD \):** ramps/mi  
- **FFS (measured):** 65.0 mph  
- **Base free-flow Speed, \( BFFS \):** mph

### Calc Speed Adj and FFS
- \( f_{LW} \):
  - mph
- \( f_{LC} \):
  - mph
- **TRD Adjustment:** mph
- **FFS:** mph

### LOS and Performance Measures
- **Operating (LOS):**
  - **\( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} x f_p \):** pc/h/ln
  - **2291 pc/h/ln**
  - **53.7 mph**
  - **42.6 pc/mi/ln**

### Design (N)
- **Design LOS:** Design LOS
- **Design (N):** Design (N)
- **Required Number of Lanes, \( N \):** pc/mi/ln

### Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **\( v_p \):** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume

### Factor Location
- **LOS, S, FFS, \( v_p \):** Exhibits 11-2, 11-3
- **\( f_{LW} \):** Exhibit 11-8
- **\( f_{LC} \):** Exhibit 11-9
- **\( f_p \):** Page 11-18
- **TRD:** Page 11-11

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10/19/2015
### Basic Freeway Segments Worksheet

#### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Monterey Avenue
- Jurisdiction: Existing + Project

#### Flow Inputs
- Volume, V: 5774 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: veh/h
- DDHV = AADT x K x D: veh/h
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, P_T: 2
- %RVs, P_R: 0
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down %

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( E_R \): 1.2
- \( f_{HV} \): \( 1/(1+P_T(E_T - 1) + P_R(E_R - 1)) \times 0.990 \)

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### Calc Speed Adj and FFS
- \( f_{LW} \): mph
- \( f_{LC} \): mph
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures
- Operational (LOS)
- \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \times f_p \):
- \( S \): 59.1 mph
- \( D = v_p / S \): 34.6 pc/mi/ln
- LOS: D

#### Design (N)
- Design LOS
- \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \times f_p \):
- \( S \): mph
- \( D = v_p / S \):
- Required Number of Lanes, N

#### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed
- E_R - Exhibits 11-10, 11-12
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

#### Factor Location
- \( f_{LW} \) - Exhibit 11-8
- \( f_{LC} \) - Exhibit 11-9
- TRD - Page 11-11

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10/19/2015
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: West of Monterey Avenue

### Site Information
- **Jurisdiction**: Existing + Project

### Flow Inputs
- **Volume, V**: 5715 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade % Length mi **
- **Up/Down %**

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = 1/(1+P_T(E_T - 1) + P_R(E_R - 1))**: 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 4
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = (V or DDHV) / (PHF \times N \times f_{HV}) \)
  - \( x f_p \)
  - 1519 pc/h/ln
  - \( S \)
  - 64.8 mph
  - \( D = v_p / S \)
  - 23.4 pc/mi/ln
  - \( LOS \)
  - C

### Design (N)
- **Design LOS**
  - \( v_p = (V or DDHV) / (PHF \times N \times f_{HV}) \)
  - \( x f_p \)
  - pc/h/ln
  - \( S \)
  - mph
  - \( D = v_p / S \)
  - pc/mi/ln
- **Required Number of Lanes, N**

### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume
- **S**: Speed
- **D**: Density
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed

### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_{LW}**: Exhibit 11-8
- **E_p**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: West of Monterey Avenue
- **Jurisdiction**: Analysis Year
- **Existing + Project**

#### Flow Inputs
- **Volume, V**: 3843 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 
- **Peak-Hr Direction Prop, D**: veh/h
  - **Peak-Hr Factor, PHF**: 0.95
  - **%Trucks and Buses, PT**: 2
  - **%RVs, PR**: 0
  - **General Terrain**: Level
  - **Grade % Length mi Up/Down %**

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **E_T**: 1.5
- **f_HV = 1/(1+P_T(E_T - 1) + R_P(E_R - 1))**: 0.990

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 4
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Speed Settings
- **Calc Speed Adj and FFS**
- **f_LW**: mph
- **f_LC**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
  - S: 65.0 mph
  - D: \( \frac{v_p}{S} \)
  - LOS: B

#### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
  - S: mph
  - D: \( \frac{v_p}{S} \)
  - Required Number of Lanes, N

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume
- **E_R**: Exhibits 11-10, 11-12
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_LW**: Exhibit 11-8
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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<th>Site Information</th>
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<td>Highway/Direction of Travel I-10 Eastbound</td>
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<tr>
<td>Agency or Company LLG</td>
<td>From/To East of Monterey Avenue</td>
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<tr>
<td>Date Performed 9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period AM Peak Hour</td>
<td>Analysis Year Existing + Project</td>
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<td>Project Description 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<td>✓ Oper.(LOS)</td>
<td>☐ Des.(N)</td>
</tr>
</tbody>
</table>

### Flow Inputs

- Volume, V: 3882 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K:
- Peak-Hr Direction Prop, D:
- DDHV = AADT x K x D: veh/h
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, P_T: 2
- %RVs, P_R: 0
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down %

### Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1)]} \times 0.990 \)

### Speed Inputs

- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

### Calc Speed Adj and FFS

- \( f_{LW} \) mph
- \( f_{LC} \) mph
- TRD Adjustment: mph
- FFS: 65.0 mph

### LOS and Performance Measures

### Design (N)

### Glossary

- N - Number of lanes
- S - Speed
- V - Hourly volume
- D - Density
- \( v_p \) - Flow rate
- FFS - Free-flow speed
- LOS - Level of service
- BFFS - Base free-flow speed
- DDHV - Directional design hour volume

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_p \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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10/19/2015
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From-To**: East of Cook Street
- **Jurisdiction**: Existing + Project
- **Analysis Year**:

### Flow Inputs
- **Volume, V**: 3451 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \)
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \)
- **DDHV = AADT \times K \times D**: veh/h

### Flow Adjustments
- **\( f_p \)**: 1.00
- **\( E_T \)**: 1.5
- **\( E_R \)**: 1.2
- **\( f_{HV} = \frac{1}{1+(\frac{E_T^\prime}{1+1})+\frac{E_R^\prime}{1+1}} \)**: 0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Speed Adjustment and FFS
- **\( f_{LV} \)**: mph
- **\( f_{LC} \)**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
  - \( V_p = \frac{(V \text{ or DDHV}) \times f_{HV}^{1223}}{\text{pc/h/ln}} \)
  - \( S = 65.0 \text{ mph} \)
  - \( D = \frac{V_p}{S} = 18.8 \text{ pc/mi/ln} \)
  - **LOS**: C

### Design (N)
- **Design (N)**
  - **Design LOS**: pc/h/ln
  - **\( V_p = \frac{(V \text{ or DDHV}) \times f_{HV}^{1223}}{\text{pc/h/ln}} \)
  - **S**: mph
  - **D = \frac{V_p}{S}**: pc/mi/ln
  - **Required Number of Lanes, N**

### Glossary
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **\( V_p \)**: Flow rate
- **LOS**: Level of service
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed
- **DDHV**: Directional design hour volume

### Factor Location
- **\( E_R \)**: Exhibits 11-10, 11-12
- **\( f_{LV} \)**: Exhibit 11-8
- **\( E_T \)**: Exhibits 11-10, 11-11 11-13
- **\( f_{LC} \)**: Exhibit 11-9
- **\( f_p \)**: Page 11-18
- **LOS, S, FFS, V_p**: Exhibits 11-2, 11-3
- **TRD**: Page 11-11

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### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: AM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Washington Street
- Jurisdiction
- Analysis Year: Existing + Project
- Oper.(LOS) [ ]
- Des.(N) [ ]
- Planning Data [ ]

#### Flow Inputs
- Volume, V: 3133 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D: veh/h
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, P_T: 2
- %RVs, P_R: 0
- General Terrain: Level

#### Calculate Flow Adjustments
- E_T: 1.5
- E_R: 1.2
- f_HV = 1/(1+P_T(E_T - 1) + P_R(E_R - 1)) = 0.990

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### Calc Speed Adj and FFS
- f_LW
- f_LC
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures
- (V or DDHV) / (PHF x N x f_HV): pc/h/ln
- S: 65.0 mph
- D: veh_p / S: pc/mi/ln
- LOS: B

#### Design (N)
- Design LOS
- Required Number of Lanes, N

### Glossary
- N - Number of lanes
- V - Hourly volume
- S - Speed
- D - Density
- f_p - Flow rate
- FFS - Free-flow speed
- BFFS - Base free-flow speed
- LOS - Level of service
- DDHV - Directional design hour volume

### Factor Location
- E_R - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_LC - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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10/19/2015
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
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<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

### Site Information

| Highway/Direction of Travel I-10 Eastbound |
| From/To | East of Jefferson Street |
| Jurisdiction | Existing + Project |

### Flow Inputs

| Volume, V | 2850 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, \( P_T \) |
| Peak-Hr Direction Prop, D | %RVs, \( P_R \) |
| DDHV = AADT x K x D | veh/h |

### Calculate Flow Adjustments

- \( f_p = 1.00 \) \( E_R = 1.2 \)
- \( E_T = 1.5 \) \( f'_{HV} = \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1)]} \times 0.990 \)

### Speed Inputs

| Lane Width | Ft |
| Rt-Side Lat. Clearance | Ft |
| Number of Lanes, N | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base-free flow speed, BFFS | mph |

### Calc Speed Adj and FFS

| \( f_{LV} \) | mph |
| \( f_{LC} \) | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

### LOS and Performance Measures

### Design (N)

### Operational (LOS)

- \( v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV})(x f_p)} \times 1010 \) pc/h/ln
- \( S = 65.0 \) mph
- \( D = \frac{v_p}{S} = 15.5 \) pc/ln/mi

### Glossary

- \( N \) - Number of lanes
- \( V \) - Hourly Volume
- \( v_p \) - Flow rate
- \( LOS \) - Level of Service
- \( DDHV \) - Directional design hour volume

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LV} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- \( TRD \) - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
# BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
<td>JT</td>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
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<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Monroe Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Existing + Project</td>
</tr>
<tr>
<td>Oper.(LOS)</td>
<td>Des.(N)</td>
</tr>
</tbody>
</table>

## Flow Inputs

| Volume, V | 2783 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, P_T |
| Peak-Hr Direction Prop, D | %RVs, P_R |
| DDHV = AADT x K x D | veh/h |

### Calculate Flow Adjustments

- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1)]} \) = 0.990

## Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

### Calc Speed Adj and FFS

- \( f_{LW} \) mph
- \( f_{LC} \) mph
- TRD Adjustment mph
- FFS 65.0 mph

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p ) [986 \text{ pc/h/ln} ]</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = ( v_p / S )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>B</td>
</tr>
</tbody>
</table>

### Glossary

- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed
- E_R - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_LC - Exhibit 11-9
- f_p - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Oper.(LOS)**: ✔
- **Des.(N)**: ❌
- **Planning Data**: ❌

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: Level
- **Analysis Year**: Existing + Project

#### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2288 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Vehicles, PR</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>Grade</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, PT</td>
<td>2</td>
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<tr>
<td>%RVs, PR</td>
<td>0</td>
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</table>

#### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_HV</td>
<td>0.990</td>
</tr>
</tbody>
</table>

#### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

#### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
<td>mph</td>
</tr>
<tr>
<td>f_C</td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
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</table>

#### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Design (N)</td>
</tr>
<tr>
<td>V_p = (V or DDHV) / (PHF x N x f_HV) 811</td>
<td>pc/h(ln)</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = V_p / S</td>
<td>pc/mi(ln)</td>
</tr>
<tr>
<td>LOS</td>
<td>B</td>
</tr>
</tbody>
</table>

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **V_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

#### Factor Location

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R - Exhibits 11-10, 11-12</td>
<td>f_LW - Exhibit 11-8</td>
</tr>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_C - Exhibit 11-9</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, V_p - Exhibits 11-2, 11-3</td>
<td></td>
</tr>
</tbody>
</table>

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## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Golf Center Parkway
- **Jurisdiction**: Existing + Project
- **Analysis Year**: Planning Data

### Flow Inputs
- **Volume, V**: 2362 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, P_T
- **Peak-Hr Direction Prop, D**: %RVs, P_R
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_HV** = \(1/(1 + P_T(E_T - 1) + P_R(E_R - 1))\)

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS
- **f_LW**: mph
- **f_LC**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
- **Design (N)**

### Glossary
- **N** - Number of lanes
- **V** - Hourly volume
- **v_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

### Factor Location
- **E_R** - Exhibits 11-10, 11-12
- **E_T** - Exhibits 11-10, 11-11, 11-13
- **f_p** - Page 11-18
- **f_LW** - Exhibit 11-8
- **f_LC** - Exhibit 11-9
- **TRD** - Page 11-11

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**HCS 2010™ Version 6.70 Generated: 1/27/2016 10:03 AM**
### Basic Freeway Segments Worksheet

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<tr>
<td>Agency or Company</td>
<td>From/To East of State Route 86</td>
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<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
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<td>Analysis Time Period</td>
<td>Analysis Year Existing + Project</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>1441 veh/h</th>
<th>Peak-Hour Factor, PHF 0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, PT 2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td>%RVs, PR 0</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>General Terrain: Level</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade % Length mi</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{1}{1+P_T(E_R - 1)} + P_R(E_R - 1) \) \( 0.990 \)

#### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

#### Speed and Performance Measures

- \( f_{LW} \) mph
- \( f_{LC} \) mph
- TRD Adjustment mph
- FFS 65.0 mph

#### LOS and Performance Measures

- Design (N)
  - Design LOS
    - \( v_p = \frac{V}{N \times f_p} \times f_{HV} \) pc/h/ln
    - Design LOS
      - \( v_p = \frac{V}{N \times f_p} \) pc/h/ln
      - \( S \) mph
      - \( D = \frac{v_p}{S} \) pc/mi/ln
      - Required Number of Lanes, N

#### Glossary

- N - Number of lanes
- V - Hourly volume
- D - Density
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

#### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: Existing + Project
- **Analysis Year**:

#### Flow Inputs
- **Volume, V**: 1992 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**:

#### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1 + P_T(E_T \cdot 1 + P_R(E_R \cdot 1))} \cdot 0.990 \)
- \( E_R = 1.2 \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{V}{D} \cdot S \)
  - \( D = v_p / S \)
  - \( LOS = B \)

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **V_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

#### Design (N)
- **Design LOS**
  - \( v_p = \frac{V}{D} \cdot S \)
  - \( D = v_p / S \)
  - \( LOS = B \)
  - **N**: Required Number of Lanes

#### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_{LVW}**: Exhibit 11-8
- **E_P**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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10/19/2015
**BASIC FREEWAY SEGMENTS WORKSHEET**

**General Information**

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
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</table>

**Site Information**

| Highway/Direction of Travel | I-10 Eastbound |
| From/To                     | East of Frontage Road |
| Jurisdiction                |                      |
| Analysis Year               | Existing + Project   |

**Project Description**

| 2-10-3136-2 Paradise Valley Specific Plan, Riverside County |

**Flow Inputs**

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>AADT (veh/day)</th>
<th>Peak-Hour Factor, PHF</th>
<th>%Trucks and Buses, P_T</th>
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<tbody>
<tr>
<td>1992</td>
<td></td>
<td>0.95</td>
<td>2</td>
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<thead>
<tr>
<th>Peak-Hr Prop. of AADT, K %RVs, P_R</th>
<th>Peak-Hr Direction Prop, D General Terrain</th>
<th>Grade Length Up/Down %</th>
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<tr>
<td></td>
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**Calculate Flow Adjustments**

<table>
<thead>
<tr>
<th>f_p</th>
<th>E_R</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>1.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>E_T</th>
<th>f_HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>0.990</td>
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</table>

**Speed Inputs**

<table>
<thead>
<tr>
<th>Lane Width (ft)</th>
<th>Rt-Side Lat. Clearance (ft)</th>
<th>Number of Lanes, N</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Ramp Density, TRD (ramps/mi)</th>
<th>FFS (measured) (mph)</th>
<th>Base free-flow Speed, BFFS (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>65.0</td>
<td></td>
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</tbody>
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**Calc Speed Adj and FFS**

<table>
<thead>
<tr>
<th>f_LW</th>
<th>f_LC</th>
<th>f_HV</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>0.990</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>TRD Adjustment</th>
<th>FFS</th>
</tr>
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**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
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</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV) 1059 pc/h/ln</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x f_p ) S 65.0 mph D = v_p / S 16.3 pc/mi/ln</td>
<td>v_p = (V or DDHV) / (PHF x N x f_HV) 1059 pc/h/ln</td>
</tr>
<tr>
<td>LOS B</td>
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**Glossary**

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
<th>V - Hourly volume</th>
<th>D - Density</th>
<th>v_p - Flow rate</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>BFFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
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<td></td>
<td></td>
<td></td>
</tr>
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</table>

**Factor Location**

| E_R - Exhibits 11-10, 11-12 | f_LW - Exhibit 11-8 |
| E_R - Exhibits 11-10, 11-11, 11-13 | f_LC - Exhibit 11-9 |
| f_p - Page 11-18 | TRD - Page 11-11 |
| LOS, S, FFS, v_p - Exhibits 11-2, 11-3 |

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10/19/2015
## BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Paradise Valley
- **Jurisdiction**: Analysis Year Existing + Project
- **Oper. (LOS)**

### Flow Inputs

| Volume, V | 1055 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | veh/day | %Trucks and Buses, PT | 2 |
| Peak-Hr Prop. of AADT, K | %RVs, PR | 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D | veh/h | Grade % |

### Calculate Flow Adjustments

- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{1}{1+[E_T^{-1}]} \) 0.990

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>Ramps/MI</th>
<th>fLW</th>
<th>fLC</th>
<th>TRD Adj</th>
<th>FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>65.0</td>
</tr>
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### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_p = \frac{V \times DDHV}{PHF \times N \times f_{HV}} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D</td>
<td>8.6 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>A</td>
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### Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>V - Hourly volume</th>
<th>D - Density</th>
<th>( V_p ) - Flow rate</th>
<th>LOS - Level of service</th>
<th>DDHV - Directional design hour volume</th>
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### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
<th>f_{LW} - Exhibit 11-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R - Exhibits 11-10, 11-11 11-13</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>( f_p ) - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, ( V_p ) - Exhibits 11-2, 11-3</td>
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</tbody>
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**BASIC FREEWAY SEGMENTS WORKSHEET**

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<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To East of Cottonwood Springs Rd</td>
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<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year Existing + Project</td>
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</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V         | 964 veh/h |
| AADT              | veh/day   |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, P_T 2 |
| Peak-Hr Direction Prop, D | %RVs, P_R 0 |
| DDHV = AADT x K x D | veh/h |
|                   | $E_R = 1.2$ |

**Calculate Flow Adjustments**

| f_p     | 1.00 |
| E_T     | 1.5 |
| $f_{HV} = \frac{1}{(1 + P_T E_T + E_R)}$ | 0.990 |

**Speed Inputs**

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

**Calc Speed Adj and FFS**

| f_{IW} | mph |
| f_{LC} | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$v_p = \frac{(V \text{ or } DDHV) \times f_{HV}}{(PHF \times N \times f_p)}$</td>
<td>Design LOS</td>
</tr>
<tr>
<td>$S$ = 65.0 mph</td>
<td></td>
</tr>
<tr>
<td>$D = \frac{v_p}{S}$ = 7.9 pc/mi/ln</td>
<td></td>
</tr>
<tr>
<td>LOS A</td>
<td></td>
</tr>
</tbody>
</table>

**Glossary**

| N - Number of lanes | S - Speed |
| V - Hourly volume   | D - Density |
| $v_p$ - Flow rate   | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume |

**Factor Location**

| $E_R$ - Exhibits 11-10, 11-12 | $f_{LW}$ - Exhibit 11-8 |
| $E_T$ - Exhibits 11-10, 11-11, 11-13 | $f_{LC}$ - Exhibit 11-9 |
| $f_p$ - Page 11-18 | TRD - Page 11-11 |
| LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3 | |

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Cottonwood Springs Rd
- Jurisdiction: Existing + Project

#### Flow Inputs
- Volume, V: 1345 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_T: 2
- Peak-Hr Direction Prop, D: %RVs, P_R: 0
- DDHV = AADT x K x D: veh/h

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( f_{HV} = \frac{1}{1+P_T(E_T - 1) + P_R(E_R - 1)} \): 0.990
- \( E_R \): 1.2

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 2
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### LOS and Performance Measures
- Operational (LOS)
- Design (N)

#### Glossary
- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- D - Density
- S - Speed
- DDHV - Directional design hour volume

#### Factor Location
- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LVW} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information

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<td>Date Performed</td>
<td>9/22/2015</td>
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<td>PM Peak Hour</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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</tbody>
</table>

## Site Information

| Highway/Direction of Travel | I-10 Westbound |
| From/To                     | East of Paradise Valley |
| Jurisdiction                | Existing + Project |

## Flow Inputs

| Volume, V (veh/h) | 1451 |
| AADT (veh/day)   | |
| Peak-Hr Prop. of AADT, K | |
| Peak-Hr Direction Prop, D (veh/h) | |
| DDHV = AADT x K x D | |

| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, P_T | 2 |
| %RVs, P_R | 0 |

## Calculate Flow Adjustments

\[
E_T = 1.5 \\
E_R = 1.2 \\
f_{HV} = 1/1+P_T(E_T·1) + P_R(E_R·1)|0.990
\]

## Speed Inputs

| Lane Width (ft) | |
| Rt-Side Lat. Clearance (ft) | |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD (ramps/MI) | |
| FFS (measured) (mph) | 65.0 |
| Base free-flow Speed, BFFS (mph) | |

## Calc Speed Adj and FFS

| f_LW | mph |
| f_LC | mph |

## Speed and Performance Measures

| Operational (LOS) | Design (N) |
| v_p = (V or DDHV) / (PHF x N x f_HV) | v_p = (V or DDHV) / (PHF x N x f_HV) |
| x f_p | x f_p |
| S | 65.0 mph |
| D = v_p / S | 11.9 pc/mi/ln |
| LOS | B |

## Glossary

- N - Number of lanes
- V - Hourly volume
- \( v_p \) - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

## Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LW} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
### Flow Inputs

- **Volume, V:** 2405 veh/h
- **AADT:** 2405 veh/day
- **Peak-Hr Prop. of AADT, K:** 0
- **Peak-Hr Direction Prop, D:** 0
- **DDHV = AADT x K x D:** 1278 veh/h

### Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)

### Speed Inputs

- **Lane Width:** 12 ft
- **Rt-Side Lat. Clearance:** 12 ft
- **Number of Lanes, N:** 2
- **Total Ramp Density, TRD:** 65.0 ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow speed, BFFS:** 65.0 mph

### LOS and Performance Measures

- \( V_p = (V \text{ or DDHV}) / ([PHF \times N \times f_{HV}] \times f_p) \)
- \( S = 65.0 \text{ mph} \)
- \( D = V_p / S \)
- **LOS:**

### Glossary

- **N:** Number of lanes
- **V:** Hourly volume
- **\( V_p \):** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume

---

**Factor Location**

- **E_R:** Exhibits 11-10, 11-12
- **f_LW:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_LC:** Exhibit 11-9
- **\( f_p \):** Page 11-18
- **TRD:** Page 11-11
- **LOS, S, FFS, \( V_p \):** Exhibits 11-2, 11-3
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
<td>JT</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<td></td>
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<tr>
<td>Oper.(LOS)</td>
<td>Des.(N)</td>
</tr>
<tr>
<td>Planning Data</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

- **Volume, V**: 2405 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: % Trucks and Buses, $P_T$ 2
- **Peak-Hr Direction Prop, D**: % RVs, $P_R$ 0
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments

- $f_p = 1.00$
- $E_T = 1.5$
- $E_R = 1.2$
- $f_{HV} = \frac{1}{f_p + E_T (E_T - 1) + P_R (E_R - 1)} \times 0.990$

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS

- **f_{LW}** m/h
- **f_{LC}** m/h
- **FFS**: 65.0 m/h

### LOS and Performance Measures

- **Operational (LOS)**
- **Design (N)**

### Glossary

- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

### Factor Location

- **E_R**: Exhibits 11-10, 11-12
- **f_{LW}**: Exhibit 11-8
- **E_p**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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10/19/2015
# BASIC FREEWAY SEGMENTS WORKSHEET

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<th>JT</th>
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<td>Agency or Company</td>
<td>LLG</td>
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<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
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<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
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</table>

## Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Westbound</th>
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<tbody>
<tr>
<td>From/To</td>
<td>East of State Route 86</td>
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## Project Description

2-10-3136-2 Paradise Valley Specific Plan, Riverside County

<table>
<thead>
<tr>
<th>Oper.(LOS)</th>
<th>Des.(N)</th>
<th>Planning Data</th>
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</thead>
</table>

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>1825 veh/h</th>
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<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

## Calculate Flow Adjustments

\[
f_p = 1.00 \quad E_R = 1.2 \quad f_{HV} = \frac{1}{(1+P_T(E_T - 1) + P_R(E_R - 1))} \times 0.990
\]

## Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

## Speed Adj and FFS

<table>
<thead>
<tr>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
</tr>
<tr>
<td>f_LC</td>
</tr>
<tr>
<td>TRD Adjustment</td>
</tr>
<tr>
<td>FFS</td>
</tr>
</tbody>
</table>

## LOS and Performance Measures

\[
V_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{970} \quad \text{pc/h/ln}
\]

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

## Design (N)

### Design LOS

\[
v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{f_p} \quad \text{pc/h/ln}
\]

### Design (N)

\[
D = \frac{v_p}{S} \quad \text{pc/mi/ln}
\]

## Glossary

| N | Number of lanes |
| V | Hourly volume |
| v_p | Flow rate |
| LOS | Level of service |
| DDHV | Directional design hour volume |

| S | Speed |
| D | Density |
| FFS | Free-flow speed |
| BFFS | Base free-flow speed |

## Factor Location

<table>
<thead>
<tr>
<th>E_R</th>
<th>Exhibits 11-10, 11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
<td>Exhibit 11-8</td>
</tr>
<tr>
<td>E_p</td>
<td>Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_LC</td>
<td>Exhibit 11-9</td>
</tr>
<tr>
<td>f_p</td>
<td>Page 11-18</td>
</tr>
<tr>
<td>TRD</td>
<td>Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p</td>
<td>Exhibits 11-2, 11-3</td>
</tr>
</tbody>
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G-83
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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Golf Center Parkway
- **Jurisdiction**: Existing + Project

#### Flow Inputs
- **Volume, V**: 2872 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \)
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \)
- **DDHV = AADT x K x D**: veh/h

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( f_{HV} = \frac{1}{1+P_T(E_T - 1) + P_R(E_R - 1)} \cdot 0.990 \)
- \( E_R \): 1.2

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 4
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p \) = \( (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \cdot 763) \)
  - \( x \cdot f_p \)
  - **S**: 65.0 mph
  - **D = v_p / S**: 11.7 pc/mi/ln
  - **LOS**: B

#### Design (N)
- **Design LOS**
  - \( v_p \) = \( (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \cdot x \cdot f_p) \)
  - **S**: mph
  - **D = v_p / S**: pc/mi/ln

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume
- **S**: Speed
- **D**: Density
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed

#### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_{HW}**: Exhibit 11-8
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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1/27/2016
**BASIC FREEWAY segments WORKSHEET**

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<tr>
<td>Analyst</td>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
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<tr>
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<td>PM</td>
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<td>Peak Hour</td>
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<td>Analysis Year</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<table>
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<td>2903 veh/h</td>
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<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h Grade % Length mi</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>Calculate Flow Adjustments</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
</tr>
<tr>
<td>E_T</td>
</tr>
<tr>
<td>E_R</td>
</tr>
<tr>
<td>f_HV = 1/[1+(E_R * f_T + E_T * f_R)]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>V_p = (V or DDHV) / (PHF x N x f_HV x f_p)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = V_p / S</td>
<td>15.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>B</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>N - Number of lanes</td>
<td>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>V - Hourly volume</td>
<td>f_LW - Exhibit 11-8</td>
</tr>
<tr>
<td>V_p - Flow rate</td>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>f_HV - Exhibit 11-9</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td>f_p - Page 11-18</td>
</tr>
<tr>
<td></td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td></td>
<td>LOS, S, FFS, V_p - Exhibits 11-2, 11-3</td>
</tr>
</tbody>
</table>

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G-85

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# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Monroe Street
- **Jurisdiction**: Existing + Project
- **Analysis Year**:

<table>
<thead>
<tr>
<th>Flow Inputs</th>
<th></th>
<th>Site Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3812</td>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>AADT</td>
<td></td>
<td>%Trucks and Buses, PT</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td>%RVs, PR</td>
<td>0</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>General Terrain: Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
<td>Grade % Length mi</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
<td>E_R</td>
</tr>
<tr>
<td>E_T</td>
<td>1.5</td>
<td>f_HV</td>
</tr>
</tbody>
</table>

f_HV = 1/(1+PR(E_T-1) + PR(E_R-1))/0.990

### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow speed, BFFS**: mph

### Calc Speed Adj and FFS

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW</td>
<td></td>
<td>mph</td>
</tr>
<tr>
<td>f_LC</td>
<td></td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>65.0</td>
<td>mph</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

### Design (N)

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th></th>
<th>Design LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV) x f_p</td>
<td>1351 pc/h/ln</td>
<td>v_p = (V or DDHV) / (PHF x N x f_HV) x f_p</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>20.8 pc/mi/ln</td>
<td>mph</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
<td>pc/mi/ln</td>
</tr>
</tbody>
</table>

### Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
<th>V - Hourly volume</th>
<th>D - Density</th>
<th>v_p - Flow rate</th>
<th>LOS - Level of service</th>
<th>DDHV - Directional design hour volume</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
<th>f_LW - Exhibit 11-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_LC - Exhibit 11-9</td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
<td></td>
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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:**
- **Analysis Year:** Existing + Project

**Flow Inputs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3835</td>
</tr>
<tr>
<td>AADT</td>
<td></td>
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<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop., D</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

**Calculate Flow Adjustments**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$f_p$</td>
<td>1.00</td>
</tr>
<tr>
<td>$E_T$</td>
<td>1.5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Formula</th>
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</thead>
<tbody>
<tr>
<td>$E_R$</td>
<td>$f_{HV} = \frac{1}{1 + P_r(E_T - 1) + P_r(E_R - 1)}$</td>
</tr>
<tr>
<td></td>
<td>0.990</td>
</tr>
</tbody>
</table>

#### Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0</td>
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<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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**Calc Speed Adj and FFS**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>$f_{LV}$</td>
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<td>$f_{LC}$</td>
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**TRD Adjustment**

<table>
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<tr>
<th>Parameter</th>
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<tbody>
<tr>
<td>TRD</td>
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#### LOS and Performance Measures

<table>
<thead>
<tr>
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<th>Value</th>
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<tbody>
<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>$v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV}}$</td>
<td>1359 pc/h/ln</td>
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<tr>
<td>$S$</td>
<td>65.0</td>
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<td>$D = \frac{v_p}{S}$</td>
<td>20.9</td>
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<tr>
<td>LOS</td>
<td>C</td>
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**Design (N)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>$v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV}}$</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>$S$</td>
<td></td>
</tr>
<tr>
<td>$D = \frac{v_p}{S}$</td>
<td>pc/mi/ln</td>
</tr>
</tbody>
</table>

#### Glossary

- **N - Number of lanes**
- **V - Hourly volume**
- **$v_p - Flow rate**
- **LOS - Level of service**
- **DDHV - Directional design hour volume**

**Factor Location**

- **E_R - Exhibits 11-10, 11-12**
- **f_{LV} - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_{LC} - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, $v_p - Exhibits 11-2, 11-3**

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10/19/2015
# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information

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<th>Analyst</th>
<th>JT</th>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<tr>
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<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

## Site Information

| Highway/Direction of Travel | I-10 Westbound |
| From/To | East of Washington Street |
| Jurisdiction | Existing + Project |

## Flow Inputs

| Volume, V | 4847 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | |
| Peak-Hr Direction Prop. D | |
| DDHV = AADT x K x D | veh/h |

### Peak-Hour Factor, PHF

- PHF = 0.95

### %Trucks and Buses, P_T

- P_T = 2

### %RVs, P_R

- P_R = 0

### General Terrain, Level

### Grade % Length mi

### Up/Down %

## Calculate Flow Adjustments

| \( f_p \) | 1.00 |
| \( E_T \) | 1.5 |
| \( f_{HV} = \frac{1}{1+P_T(1-E_T) + P_R(E_T - 1)} \) | 0.990 |
| \( E_R \) | 1.2 |

## Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

## Calc Speed Adj and FFS

| \( f_{LV} \) | mph |
| \( f_{LC} \) | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

## LOS and Performance Measures

| \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) | pc/h/ln |
| S | 63.6 mph |
| D = \( \frac{v_p}{S} \) | 27.0 pc/mi/ln |
| LOS | |

## Design (N)

| Design LOS | |
| Design (N) | |
| \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) | pc/h/ln |
| S | mph |
| D = \( \frac{v_p}{S} \) | pc/mi/ln |

## Glossary

| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| \( v_p \) - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

## Factor Location

| \( E_R \) - Exhibits 11-10, 11-12 | \( f_{LV} \) - Exhibit 11-8 |
| \( E_T \) - Exhibits 11-10, 11-11, 11-13 | \( f_{LC} \) - Exhibit 11-9 |
| \( f_p \) - Page 11-18 | TRD - Page 11-11 |
| LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3 | |

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10/19/2015
# Basic Freeway Segments Worksheet

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Cook Street
- **Jurisdiction**: Existing + Project

## Flow Inputs
- **Volume, V**: 5366 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: % Trucks and Buses, P_T: 2
- **DDHV = AADT x K x D**: %RVs, P_R: 0

## Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **f_HV = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))**: 0.990
- **E_R**: 1.2

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow speed, BFFS**: mph

## LOS and Performance Measures
- **Operational (LOS)**
  - \( V_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \)
  - \( S = \frac{D}{\frac{v_p}{S}} \)
  - \( D = \frac{v_p}{S} \)
  - \( LOS = D \)

## Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

## Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_{HV} - Exhibit 11-8**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_{LC} - Exhibit 11-9**
- **f_p - Page 11-18**
- **TRD - Page 11-11**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**
# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

## Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Monterey Avenue
- **Jurisdiction**: Existing + Project

## Project Description
- **2-10-3136-2 Paradise Valley Specific Plan, Riverside County**

## Flow Inputs
- **Volume, V**: 5457 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**, %, **Length**, **mi**, **Up/Down %**

## Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = 1/(1+P_T(E_T - 1) + P_R(E_R - 1)) 0.990**

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

## Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

## LOS and Performance Measures

### Operational (LOS)
- \( V_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV}) \times f_p} \)
- **S**: 61.0 mph
- **D = v_p / S**: 31.7 pc/mi/ln
- **LOS**: D

### Design (N)
- **Design LOS**: Design (N)
- **Required Number of Lanes, N**: pc/mi/ln

## Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

## Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **v_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
- **f_{LW}**: Exhibit 11-8
- **f_{LC}**: Exhibit 11-9
- **TRD**: Page 11-11

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10/19/2015
### BASIC FREEWAY WORKSHEET

#### General Information
- **Analyst:** JT
- **Agency or Company:** LLG
- **Date Performed:** 9/22/2015
- **Analysis Time Period:** PM Peak Hour
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** West of Monterey Avenue
- **Jurisdiction:** Existing + Project

#### Flow Inputs
- **Volume, V (veh/h):** 5403
- **AADT (veh/day):**
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D (veh/h):**
- **Peak-Hour Factor, PHF:** 0.95
- **%Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0
- **General Terrain Level:**
- **Grade %:**
- **Length mi:**
- **Up/Down %:**

#### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **E_R:** 1.2
- **f_HV = 1/(1 + P_T(1 - E_T) + P_R(E_R - 1)) 0.990**

#### Speed Inputs
- **Lane Width ft:**
- **Rt-Side Lat. Clearance ft:**
- **Number of Lanes, N:** 4
- **Total Ramp Density, TRD ramps/mi:**
- **FFS (measured) mph:** 65.0
- **Base free-flow Speed, FFS mph:**

#### Speed Adj and FFS
- **f_LW:**
- **f_LC:**
- **TRD Adjustment mph:**
- **FFS mph:** 65.0

#### LOS and Performance Measures
- **Operational (LOS):**
  - **v_p = (V or DDHV) / (PHF x N x f_HV x f_p) 1436 pc/h/ln:**
  - **S mph:** 65.0
  - **D = v_p / S pc/mi/ln:** 22.1
  - **LOS:** C

#### Design (N)
- **Design LOS**
  - **v_p = (V or DDHV) / (PHF x N x f_HV x f_p) pc/h/ln:**
  - **S mph:**
  - **D = v_p / S pc/mi/ln:**
  - **Number of Lanes, N Required:**

#### Glossary
- **N - Number of lanes**
- **S - Speed**
- **V - Hourly volume**
- **D - Density**
- **v_p - Flow rate**
- **LOS - Level of service**
- **DDHV - Directional design hour volume**

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G-91

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Site Information**: Highway/Direction of Travel I-10 Eastbound From/To West of Monterey Avenue
- **Jurisdiction**: Existing + Project

#### Flow Inputs
- **Volume, V**: 3534 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade %**:
- **Length mi**:
- **Up/Down %**:

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_T**: 1.5
- **E_R**: 1.2
- **f_{HV} = 1/[(1+P_{T}(E_{R} - 1)) + P_{R}(E_{R} - 1)]**: 0.990

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 4
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_{LW}**: mph
- **f_{LC}**: mph

#### LOS and Performance Measures
- **v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)**: 939 pc/h/ln
- **S**: 65.0 mph
- **D = v_p / S**: 14.4 pc/mi/ln
- **LOS**: B

#### Design (N)
- **Design Number of Lanes**: N
- **Design LOS**:
- **v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)**: pc/h/ln
- **S**: mph
- **D = v_p / S**: pc/mi/ln
- **Required Number of Lanes, N**:

#### Glossary
- **N**: Number of lanes
- **V**: Hourly Volume
- **D**: Density
- **f_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume
- **BFFS**: Base free-flow speed

#### Factor Location
- **E_T - Exhibits 11-10, 11-12**: f_{LW} - Exhibit 11-8
- **E_R - Exhibits 11-10, 11-11, 11-13**: f_{LC} - Exhibit 11-9
- **f_p - Page 11-18**: TRD - Page 11-11
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

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### Basic Freeway Segments Worksheet

#### General Information

- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

#### Site Information

- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Monterey Avenue
- **Jurisdiction**: Existing + Project
- **Analysis Year**:

#### Project Description

- **2-10-3136-2 Paradise Valley Specific Plan, Riverside County**
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs

| Volume, V | 3570 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | veh/day | %Trucks and Buses, P_T | 2 |
| Peak-Hr Prop. of AADT, K | | %RVs, P_R | 0 |
| Peak-Hr Direction Prop, D | | General Terrain: | Level |

#### Calculate Flow Adjustments

- **f_p** | 1.00 |
- **E_T** | 1.5 |
- **E_R** | 1.2 |
- **f_{HV} = \frac{1}{[1+P_T(E_T \cdot 1) + P_R(E_R \cdot 1)]} 0.990**

#### Speed Inputs

- **Lane Width** | ft |
- **Rt-Side Lat. Clearance** | ft |
- **Number of Lanes, N** | 3 |
- **Total Ramp Density, TRD** | ramps/mi |
- **FFS (measured)** | 65.0 mph |
- **Base free-flow Speed, BFFS** | mph |

#### Speed Calculation

- **Calc Speed Adj and FFS**
  - \( f_{LW} \) |
  - \( f_{LC} \) |
  - TRD Adjustment |
  - FFS |
  - 65.0 mph |

#### LOS and Performance Measures

- **Operational (LOS)**
  - \( V_p = \frac{V \times DDHV}{PHF \times N \times f_{HV}^2} \times f_p \) pc/h/ln
  - \( S \) |
  - \( D = \frac{V_p}{S} \) |
  - LOS |

- **Design (N)**
  - Design LOS
  - \( v_p = \frac{V \times DDHV}{PHF \times N \times f_{HV}^2} \times f_p \) pc/h/ln
  - \( S \) |
  - \( D = \frac{V_p}{S} \) |
  - Required Number of Lanes, N |

#### Glossary

- **N** - Number of lanes
- **V** - Hourly volume
- **f_p** - Flow rate
- **LOS** - Level of service
- **DDHV** - Directional design hour volume

#### Factor Location

- **E_R** - Exhibits 11-10, 11-12
- **f_{LW}** - Exhibit 11-8
- **E_p** - Exhibits 11-10, 11-11, 11-13
- **f_{LC}** - Exhibit 11-9
- **f_p** - Page 11-18
- **TRD** - Page 11-11
- **LOS, S, FFS, v_p** - Exhibits 11-2, 11-3
BASIC FREEWAY SEGMENTS WORKSHEET

**General Information**

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<td>PM Peak Hour</td>
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<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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</tbody>
</table>

**Site Information**

| Highway/Direction of Travel | I-10 Eastbound |
| From/To                    | East of Cook Street |
| Jurisdiction               |                |
| Analysis Year              | Existing + Project |

**Flow Inputs**

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>3848</th>
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</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K (veh/h)</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
<td></td>
</tr>
</tbody>
</table>

**Peak-Hour Factor, PHF** 0.95

%Trucks and Buses, P_T 2

%RVs, P_R 0

General Terrain:

| Level |

**Calculate Flow Adjustments**

<table>
<thead>
<tr>
<th>f_p</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_T</td>
<td>1.5</td>
</tr>
</tbody>
</table>

\[ f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \]

**Speed Inputs**

<table>
<thead>
<tr>
<th>Lane Width (ft)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance (ft)</td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N (3)</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD (ramps/mi)</td>
<td></td>
</tr>
<tr>
<td>FFS (measured) (65.0 mph)</td>
<td></td>
</tr>
</tbody>
</table>

**Base free-flow Speed, BFFS** (mph)

**Calc Speed Adj and FFS**

<table>
<thead>
<tr>
<th>f_LW</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_C</td>
<td>mph</td>
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</table>

**LOS and Performance Measures**

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<tr>
<th>Operational (LOS)</th>
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</thead>
<tbody>
<tr>
<td>[ v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p ]</td>
</tr>
<tr>
<td>S (65.0 mph)</td>
</tr>
<tr>
<td>D = v_p / S (21.0 pc/mi/ln)</td>
</tr>
<tr>
<td>LOS</td>
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</tbody>
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**Design (N)**

<table>
<thead>
<tr>
<th>Design LOS</th>
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</thead>
<tbody>
<tr>
<td>[ v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p ]</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S (pc/mi/ln)</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
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</table>

**Glossary**

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

**Factor Location**

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW - Exhibit 11-8</td>
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<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
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<tr>
<td>f_C - Exhibit 11-9</td>
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<tr>
<td>f_p - Page 11-18</td>
</tr>
<tr>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
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</table>

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**BASIC FREEWAY WORKSHEET**

**BASIC FREEWAY SEGMENTS WORKSHEET**

<table>
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<td>LLG</td>
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<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
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<tr>
<td>Project Description</td>
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<tr>
<td>Highway/Direction of Travel</td>
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<tr>
<td>From/To</td>
<td>East of Washington Street</td>
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<td>Jurisdiction</td>
<td>Existing + Project</td>
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<td>Analysis Year</td>
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**Flow Inputs**

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3577 veh/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>veh/h</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
</tr>
</tbody>
</table>

**Peak-Hour Factor, PHF | 0.95 |

**%Trucks and Buses, P_T | 2 |

**%RVs, P_R | 0 |

**General Terrain: | Level |

**Grade | % |
| Length | mi |

**Up/Down %**

**Calculate Flow Adjustments**

| f_p | 1.00 |
| E_T | 1.5 |

**E_R | 1.2 |

**f_{HV} = \frac{1}{(1 + P_T \cdot (E_T \cdot 1) + P_R \cdot (E_R \cdot 1))} | 0.990 |

**Speed Inputs**

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

**Calc Speed Adj and FFS**

| f_{LW} | mph |
| f_{LC} | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

**LOS and Performance Measures**

| Design (N) |
| Design LOS |
| Required Number of Lanes, N |

| v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p | 1268 pc/h/ln |
| S | 65.0 mph |
| D = v_p / S | 19.5 pc/mi/ln |
| LOS | |

**Glossary**

| N | Number of lanes |
| V | Hourly volume |
| D | Density |
| f_p | Flow rate |
| LOS | Level of service |
| DDHV | Directional design hour volume |

**Factor Location**

| E_R | Exhibits 11-10, 11-12 |
| f_{LW} | Exhibit 11-8 |
| E_T | Exhibits 11-10, 11-11, 11-13 |
| f_{LC} | Exhibit 11-9 |
| f_p | Page 11-18 |
| TRD | Page 11-11 |
| LOS, S, FFS, v_p | Exhibits 11-2, 11-3 |

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### BASIC FREEWAY SEGMENTS WORKSHEET

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<td>LLG</td>
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<tr>
<td><strong>Date Performed</strong></td>
<td>9/22/2015</td>
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<tr>
<td><strong>Analysis Time Period</strong></td>
<td>PM Peak Hour</td>
</tr>
<tr>
<td><strong>Project Description</strong></td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td><strong>Highway/Direction of Travel</strong></td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td><strong>From/To</strong></td>
<td>East of Jefferson Street</td>
</tr>
<tr>
<td><strong>Jurisdiction</strong></td>
<td>Existing + Project</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Flow Inputs</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Volume, V</strong></td>
<td>2760 veh/h</td>
</tr>
<tr>
<td><strong>AADT</strong></td>
<td>veh/day</td>
</tr>
<tr>
<td><strong>Peak-Hr Prop. of AADT, K</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Peak-Hr Direction Prop, D</strong></td>
<td>veh/h</td>
</tr>
<tr>
<td><strong>DDHV = AADT x K x D</strong></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Calculate Flow Adjustments</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_p )</td>
<td>1.00</td>
</tr>
<tr>
<td>( E_T )</td>
<td>1.5</td>
</tr>
<tr>
<td>( E_R )</td>
<td>1.2</td>
</tr>
<tr>
<td>( f_{HV} = \frac{1}{(1 + P_T (E_T - 1) + P_R (E_R - 1))} )</td>
<td>0.990</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speed Inputs</strong></th>
<th><strong>Base free-flow Speed, BFFS</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lane Width</strong></td>
<td>ft</td>
</tr>
<tr>
<td><strong>Rt-Side Lat. Clearance</strong></td>
<td>ft</td>
</tr>
<tr>
<td><strong>Number of Lanes, N</strong></td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Ramp Density, TRD</strong></td>
<td>ramps/mi</td>
</tr>
<tr>
<td><strong>FFS (measured)</strong></td>
<td>65.0 mph</td>
</tr>
<tr>
<td><strong>Calc Speed Adj and FFS</strong></td>
<td><strong>Design (N)</strong></td>
</tr>
<tr>
<td><strong>f_{LW}</strong></td>
<td>mph</td>
</tr>
<tr>
<td><strong>f_{LC}</strong></td>
<td>mph</td>
</tr>
<tr>
<td><strong>TRD Adjustment</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FFS</strong></td>
<td>65.0 mph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>LOS and Performance Measures</strong></th>
<th><strong>Required Number of Lanes, N</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>( V_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>( S )</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>( D = \frac{V_p}{S} )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>( B )</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Glossary</strong></th>
<th><strong>Factor Location</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>N</strong> - Number of lanes</td>
<td>( E_R ) - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td><strong>V</strong> - Hourly volume</td>
<td>( f_{LW} ) - Exhibit 11-8</td>
</tr>
<tr>
<td><strong>v_p</strong> - Flow rate</td>
<td>( E_T ) - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td><strong>D</strong> - Density</td>
<td>( f_{LC} ) - Exhibit 11-9</td>
</tr>
<tr>
<td><strong>LOS</strong> - Level of service</td>
<td>( f_p ) - Page 11-18</td>
</tr>
<tr>
<td><strong>BFFS</strong> - Free-flow speed</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td><strong>speed</strong></td>
<td>LOS, S, FFS, ( v_p ) - Exhibits 11-2, 11-3</td>
</tr>
</tbody>
</table>
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Monroe Street
- **Jurisdiction**:  
- **Analysis Year**: Existing + Project

#### Flow Inputs
- **Volume, V**: 2601 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade**: %
- **Length**: mi
- **Up/Down %**: 

#### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1+P_T(E_T - 1) + P_R(E_R - 1)} \approx 0.990 \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- \( f_{LW} \)
- \( f_C \)
- TRD Adjustment
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \) pc/h/ln
  - \( S \) = 65.0 mph
  - \( D = \frac{v_p}{S} \) pc/mln
  - **LOS**: B

#### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \) pc/h/ln
  - \( S \) = mph
  - \( D = \frac{v_p}{S} \) pc/mln
  - **Required Number of Lanes, N**

#### Glossary
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

---

**Factor Location**
- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{LV} \) - Exhibit 11-8
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_C \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
- **TRD**: Page 11-11
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- Analyst: JT
- Agency or Company: LLG
- Date Performed: 9/22/2015
- Analysis Time Period: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Jackson Street
- Jurisdiction: Existing + Project

#### Flow Inputs
- Volume, V: 2348 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D: veh/h

#### Calculate Flow Adjustments
- $f_p$: 1.00
- $E_T$: 1.5
- $E_R$: 1.2
- $f_{HV} = \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1)]} = 0.990$

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

#### Calc Speed Adj and FFS
- $f_{LV}$: mph
- $f_{LC}$: mph
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures
- Design (N)
- Design LOS
- Required Number of Lanes, N

#### Operational (LOS)
- $v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})}$ pc/h/ln
- $S$: mph
- $D = \frac{v_p}{S}$ pc/mi/ln

#### Glossary
- N - Number of lanes
- V - Hourly volume
- $v_p$ - Flow rate
- LOS - Level of service
- DDHV - Directional design hour volume

#### Factor Location
- $E_R$ - Exhibits 11-10, 11-12
- $f_{LV}$ - Exhibit 11-8
- $E_T$ - Exhibits 11-10, 11-11, 11-13
- $f_{LC}$ - Exhibit 11-9
- $f_p$ - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

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1/27/2016
### General Information

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<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<td>9/22/2015</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
</tr>
</tbody>
</table>

### Site Information

| Highway/Direction of Travel | I-10 Eastbound |
| From/To                     | East of Golf Center Parkway |
| Jurisdiction                | Existing + Project |

Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs

- **Volume, V**: 2281 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: % Trucks and Buses, P\(_T\) = 2
- **Peak-Hr Direction Prop, D**: % RVs, P\(_R\) = 0

### Calculate Flow Adjustments

- **f\(_p\)**: 1.00
- **E\(_E\)**: 1.2
- **f\(_{HV} = 1/(1+P_T(E_E - 1) + P_R(E_E - 1)) = 0.990**

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

### Calc Speed Adj and FFS

- **f\(_{lw}\)**: mph
- **f\(_{lc}\)**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

### LOS and Performance Measures

- **v\(_p\)**: pc/h/ln
- **D = v\(_p\) / S**: pc/mi/ln
- **LOS**: B

### Design (N)

- **v\(_p\)**: pc/h/ln
- **D = v\(_p\) / S**: pc/mi/ln

### Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>V - Hourly volume</td>
<td>D - Density</td>
</tr>
<tr>
<td>v(_p) - Flow rate</td>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>BFFS - Base free-flow speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

### Factor Location

- **E\(_R\)**: Exhibits 11-10, 11-12
- **f\(_{lw}\)**: Exhibit 11-8
- **E\(_T\)**: Exhibits 11-10, 11-11, 11-13
- **f\(_{lc}\)**: Exhibit 11-9
- **f\(_p\)**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, v\(_p\)**: Exhibits 11-2, 11-3

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information

- **Analyst**: JT  
- **Agency or Company**: LLG  
- **Date Performed**: 9/22/2015  
- **Analysis Time Period**: PM Peak Hour  
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information

- **Highway/Direction of Travel**: I-10 Eastbound  
- **From/To**: East of State Route 86  
- **Jurisdiction**: Analysis Year  
- **Existing + Project**

## Flow Inputs

- **Volume, V**: 1410 veh/h  
- **AADT**: veh/day  
- **Peak-Hr Prop. of AADT, K**:  
- **Peak-Hr Direction Prop, D**: veh/h  
- **Peak-Hr Factor, PHF**: 0.95  
- **%Trucks and Buses, P_T**: 2  
- **%RVs, P_R**: 0  
- **General Terrain**: Level  
- **Grade %**:  
- **Length mi**:  
- **Up/Down %**:  

## Calculate Flow Adjustments

- **f_p**: 1.00  
- **E_T**: 1.5  
- **E_R**: 1.2  
- **f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))**: 0.990

## Speed Inputs

- **Lane Width**: ft  
- **Rt-Side Lat. Clearance**: ft  
- **Number of Lanes, N**: 2  
- **Total Ramp Density, TRD**: ramps/mi  
- **FFS (measured)**: 65.0 mph  
- **Base free-flow Speed, BFFS**: mph  

## Calc Speed Adj and FFS

- **f_{LW}**: mph  
- **f_{LC}**: mph  
- **TRD Adjustment**: mph  
- **FFS**: 65.0 mph

## LOS and Performance Measures

- **v_p = (V or DDHV) / (PHF x N x f_{HV})**: 750 pc/h/ln  
- **S**: 65.0 mph  
- **D = v_p / S**: 11.5 pc/ln/ln  
- **B**:  

## Design (N)

- **Design LOS**

## Glossary

- **N**: Number of lanes  
- **V**: Hourly volume  
- **v_p**: Flow rate  
- **LOS**: Level of service  
- **DDHV**: Directional design hour volume

## Factor Location

- **E_R - Exhibits**: 11-10, 11-12  
- **f_{LW} - Exhibit**: 11-8  
- **E_p - Exhibits**: 11-10, 11-11, 11-13  
- **f_{LC} - Exhibit**: 11-9  
- **f_p - Page**: 11-18  
- **TRD - Page**: 11-11  
- **LOS, S, FFS, v_p - Exhibits**: 11-2, 11-3

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

## Project Description
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: Existing + Project
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

## Flow Inputs
- **Volume, V**: 2007 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h

## Calculate Flow Adjustments
- **E_T**: 1.5
- **E_R**: 1.2
- **fHV**: \( 1/(1 + P_T + P_R) \)

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

## LOS and Performance Measures
- **Operational (LOS)**
- \( v_p = (V \times f_HV) / (PHF \times N \times f_p) \)
- **Design (N)**

## Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v_p**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume

## Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_HV**: Exhibit 11-8
- **V**: Exhibits 11-10, 11-11, 11-13
- **f_D**: Exhibit 11-9
- **LOS, S, FFS**: Exhibits 11-2, 11-3

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10/19/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Frontage Road
- **Jurisdiction**:
- **Analysis Year**: Existing + Project

#### Oper.(LOS) Flow Inputs
- **Volume, V**: 2007 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: veh/h
- **Peak-Hr Direction Prop, D**: veh/h
- **Peak-Hr Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **General Terrain**: Level
- **Grade % Length**: Up/Down %

#### Calculate Flow Adjustments
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( E_R \): 1.2
- \( f_{HV} = \frac{1}{(1 + f_p (E_T - 1) + P_R (E_R - 1))} \times 0.990 \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f_LW**, mph
- **f_LC**, mph
- **TRD Adjustment**, mph
- **FFS**, 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}) \times f_p} \times 10^6 \) pc/h/ln
  - \( S \): 65.0 mph
  - \( D = \frac{v_p}{S} \): 16.4 pc/mi/ln
  - **LOS**: B

#### Glossary
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow speed
- **DDHV**: Directional design hour volume

#### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}) \times f_p} \times 10^6 \) pc/h/ln
  - \( S \): mph
  - \( D = \frac{v_p}{S} \): pc/mi/ln
  - **Required Number of Lanes, N**

#### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_LW**: Exhibit 11-8
- **E_p**: Exhibits 11-10, 11-11, 11-13
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11

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10/19/2015
## BASIC FREEWAY WORKSHEET

### General Information

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<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
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<td>9/22/2015</td>
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<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
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<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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### Site Information

<table>
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<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
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</thead>
<tbody>
<tr>
<td>From/To</td>
<td>East of Paradise Valley</td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V | 1009 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | % |
| Peak-Hr Direction Prop, D | veh/h |
| DDHV = AADT x K x D | veh/h |
| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, PT | 2 |
| %RVs, PR | 0 |
| General Terrain | Level |
| Grade | % |
| Length | mi |
| Up/Down | % |

### Calculate Flow Adjustments

| fp | 1.00 |
| Es | 1.2 |
| f<sub>HV</sub> = (1 + PT(ES - 1) + PR(ER - 1)) | 0.990 |

### Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 2 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, BFFS | mph |

### Calc Speed Adj and FFS

| f<sub>LW</sub> | mph |
| f<sub>LC</sub> | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

### LOS and Performance Measures

| Design (N) |
| Design LOS |

### Glossary

| N | Number of lanes |
| V | Hourly volume |
| p | Flow rate |
| LOS | Level of service |
| DDHV | Directional design hour volume |

### Factor Location

| E<sub>R</sub> - Exhibits 11-10, 11-12 |
| f<sub>LW</sub> - Exhibit 11-8 |
| E<sub>P</sub> - Exhibits 11-10, 11-11, 11-13 |
| f<sub>LC</sub> - Exhibit 11-9 |
| f<sub>p</sub> - Page 11-18 |
| TRD - Page 11-11 |
| LOS, S, FFS, v<sub>p</sub> - Exhibits 11-2, 11-3 |
### Basic Freeway Segments Worksheet

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Cottonwood Springs Rd
- **Jurisdiction**: Existing + Project

#### Project Description
- **2-10-3136-2 Paradise Valley Specific Plan**, Riverside County

#### Flow Inputs
- **Volume, V**: 900 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \)
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \)
- **DDHV = AADT x K x D**: veh/h

#### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + \frac{P_T}{1} - \frac{P_R}{1} - 0.990} \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- \( f_{lw} \)
- \( f_{LC} \)
- **FFS Adjustment**: mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V or DDHV)}{(PHF \times N \times f_{HV})} \times f_p \times f_{HV} = 478 \ pc/h/ln \)
  - \( S = 65.0 \ mph \)
  - \( D = \frac{v_p}{S} \ pc/mi/ln \)

#### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V or DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S \)
  - \( D = \frac{v_p}{S} \ pc/mi/ln \)

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **LOS**: Level of Service
- **DDHV**: Directional design hour volume

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**Factor Location**

- \( E_R \): Exhibits 11-10, 11-12
- \( f_{lw} \): Exhibit 11-8
- \( f_{LC} \): Exhibit 11-9
- \( f_p \): Page 11-18
- \( TRD \): Page 11-11

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