APPENDIX H

FUTURE TRAFFIC CONDITIONS BASIC FREEWAY SEGMENT LEVEL OF SERVICE CALCULATION WORKSHEETS
APPENDIX H-I

YEAR 2035 TRAFFIC CONDITIONS
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>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></td>
<td>General Plan Buildout</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

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2955 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 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R 0</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>Grade % Length mi</td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

## Speed Inputs

<table>
<thead>
<tr>
<th>Property</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>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Property</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>1571 pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>64.6 mph</td>
</tr>
<tr>
<td>$D = v_p / S$</td>
<td>24.3 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

## Glossary

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

## Design (N)

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

## Factor Location

- **E_R** - Exhibits 11-10, 11-12
- **f_{lw}** - Exhibit 11-8
- **E_1** - 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 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>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 Paradise Valley |
| Jurisdiction              | General Plan Buildout |

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>2963</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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 (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 |
| Grade | % | Length | mi |
| Up/Down % |      |

## Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5  |

| f_HV = 1/(1+P_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 |
| Base free-flow Speed, BFFS | mph |

## Calc Speed Adj and FFS

| f_LW | mph |
| f_C | mph |
| TRD Adjustment | mph |
| FFS | 65.0 |

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
</tr>
<tr>
<td>x f_p</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

## Design (N)

| Design (N) |
| Design LOS |
| 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/ln/ln |

## 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_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 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:**
- **Analysis Year:** General Plan Buildout
- **Planning Data:**

## Flow Inputs
| Volume, V | 2963 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: Point | Up/Down % |
| DDHV = AADT x K x D | Grade | % | Length | mi |

## Calculate Flow Adjustments
- **fp:** 1.00
- **ET:** 1.5
- **fHV = 1/[(1+PRx(E_R - 1) + PRx(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
- **fLW:** mph
- **fLC:** 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 fHV)</td>
<td>v_p = (V or DDHV) / (PHF x N x fHV)</td>
</tr>
<tr>
<td>x fp</td>
<td>x fp</td>
</tr>
<tr>
<td>S</td>
<td>64.6 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>24.4 pc/mi</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

## Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **vp:** 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
- **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
### 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 Avenue 50
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout

#### Site Information
- **Oper.(LOS):**
- **Des.(N):**
- **Planning Data:**

#### Flow Inputs
- **Volume, V:** 2963 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **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:** %
- **Length:** mi
- **Up/Down %:**

#### Calculate Flow Adjustments
- $$f_P = 1.00$$
- $$E_R = 1.2$$
- $$f_{HV} = 1/(1+P_R(E_T - 1) + P_R(E_R - 1)) = 0.990$$

#### 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
- **BFFS:** mph

#### LOS and Performance Measures
- **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

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1/27/2016
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

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<thead>
<tr>
<th>Analyze</th>
<th>JT</th>
</tr>
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<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>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 | General Plan Buildout |

### Flow Inputs

| Volume, V | 3095 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

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

### 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

<table>
<thead>
<tr>
<th>Ln</th>
<th>f_p</th>
<th>f_LW</th>
<th>f_R</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
<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 = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>64.1 mph</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
<td>pc/mi</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

- 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

- E_R - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- E_T - Exhibits 11-10, 11-11, 11-13
- f_R - 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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of State Route 86
- **Jurisdiction**: General Plan Buildout

### Site Information
- **Analysis Year**: 2015
- **Oper.(LOS)**: ✔
- **Des.(N)**: ❏
- **Planning Data**: ❏

### Flow Inputs
- **Volume, V**: 3349 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**:
- **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**:
- **% Length**: mi
- **Up/Down %**:

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

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

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

### LOS and Performance Measures
- **Operational (LOS)**
- **Design (N)**
- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \)
  - 1780 pc/h/ln
- \( x f_p \)
  - 63.0 mph
- \( D = \frac{v_p}{S} \)
  - 28.3 pc/mi/ln
- **LOS**:
  - \( D = \frac{v_p}{S} \)
  - 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**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_LW - Exhibit 11-6**
- **f_VC - 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

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
</tr>
</thead>
<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>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>

| **Flow Inputs** |  |
|-----------------|-----------------|-----------------|
| Volume, V | 5840 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 |
| DDHV = AADT x K x D | veh/h | Grade | % |

<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>fHV = 1/(1 + P_T(1 + E_T)) + P_R(E_T - 1)</td>
<td>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>
</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>
</tbody>
</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 LOS</td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x fHV)</td>
<td>V_p = (V or DDHV) / (PHF x N x fHV)</td>
</tr>
<tr>
<td>x f_p</td>
<td>x f_p</td>
</tr>
<tr>
<td>S</td>
<td>64.7 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>24.0 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Glossary</strong></th>
<th><strong>Factor Location</strong></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>F_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>

ERP - 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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
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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 Jackson Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction General Plan Buildout</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Oper. (LOS)</td>
<td>Des. (N) Planning Data</td>
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### 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>
<th>Peak-Hr Prop. of AADT, K</th>
<th>%RVs, P_R</th>
<th>Peak-Hr Direction Prop, D</th>
<th>General Terrain:</th>
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<tbody>
<tr>
<td>6204</td>
<td></td>
<td>0.95</td>
<td>2</td>
<td>0</td>
<td>0</td>
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<td></td>
</tr>
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</table>

### Calculate Flow Adjustments

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

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

### Speed Inputs

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

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{LW}</th>
<th>f_{LC}</th>
<th>TRD Adjustment</th>
<th>FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>65.0 mph</td>
</tr>
</tbody>
</table>

### 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 = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S ( = v_p / D )</td>
<td>( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
</tr>
<tr>
<td>LOS ( = E )</td>
<td>S</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_{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**

<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>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>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>General Plan Buildout</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V | 7766 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/(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 |
| f_LW | |
| f_LC | |
| 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>Design LOS</td>
</tr>
<tr>
<td>2752 pc/h/ln</td>
<td>v_p = (V or DDHV) / (PHF x N x f_HV x f_p)</td>
</tr>
<tr>
<td>S = 39.1 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>

<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_LC - Exhibit 11-9</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td>f_p - Page 11-18</td>
</tr>
<tr>
<td>BFFS - Base free-flow speed</td>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</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
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout

## Site Information
- **Oper.(LOS):** ✓
- **Des.(N):** □
- **Planning Data:** □

### Flow Inputs
- **Volume, V:** 8257 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:** \( \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1) ]} \)
- **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

### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV) \times f_p}{(PHF \times N \times f_{HV})} \)
  - \( S = \frac{2926}{f_p} \text{ pc/h/ln} \)
  - \( D = \frac{v_p}{S} \text{ pc/ln} \)
  - \( LOS = \frac{91.5}{F} \text{ pc/ln} \)

### 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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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 Washington Street
- **Jurisdiction**: General Plan Buildout

#### Flow Inputs
- **Volume, V**: 9491 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**: %
- **Length**: mi
- **Up/Down %**:

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

#### 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

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

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

#### Factor Location
- **E_T**: Exhibits 11-10, 11-12
- **f_LW**: Exhibit 11-8
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **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
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Cook Street
- Jurisdiction: General Plan Buildout

### Site Information

### Flow Inputs
- Volume, V: 10946 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
- ET: 1.5
- ER: 1.2
- FHV = \frac{1}{(1+PT(ET - 1) + PR(ER - 1))} \times 0.990

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

### Calc Speed Adj and FFS
- f_{LW} MPH
- f_{LC} MPH
- TRD Adjustment MPH
- FFS MPH

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

### Design (N)
- Design LOS:
- Design (N):
- 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
- 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_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**: 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**: General Plan Buildout

#### Flow Inputs
- **Volume, V**: 10145 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**: 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)**
- **Design (N)**
  - Design LOS
  - **Design (N)**
    - **v_p = (V or DDHV) / (PHF x N x f_HV)** pc/h/ln
    - **v_p = (V or DDHV) / (PHF x N x f_HV)** pc/h/ln
    - **D = v_p / S** pc/mi/ln
    - **D = v_p / S** pc/mi/ln
    - **LOS**
      - **F**

#### 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**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**
- **TRD - Page 11-11**

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# 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>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
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</table>

## Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>From/To</td>
<td>West of Monterey Avenue</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout</td>
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</table>

## Project Description

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

**Oper.(LOS)**

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>10061</th>
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</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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 (veh/h)</td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<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>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

### 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</td>
<td>4</td>
</tr>
<tr>
<td>Total Ramp Density, TRD (ramps/mi)</td>
<td></td>
</tr>
<tr>
<td>FFS (measured) (mph)</td>
<td>65.0</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS (mph)</td>
<td></td>
</tr>
</tbody>
</table>

### Calc Speed Adj and FFS

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

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>v_p (pc/h/ln)</th>
<th>2674</th>
</tr>
</thead>
<tbody>
<tr>
<td>S (mph)</td>
<td>42.0</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>63.7</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
</tr>
</tbody>
</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 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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10/19/2015
# BASIC FREEWAY 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>
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</tbody>
</table>

## Project Description

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

- Oper.(LOS) ✓
- Des.(N)  
- Planning Data  
- General Plan Buildout

## Flow Inputs

| Volume, V | 5555 veh/h |
| AADT      | 2 veh/day  |
| Peak-Hr Prop. of AADT, K | 0 %RVs, P_R |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D | veh/h |

## Calculate Flow Adjustments

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

## 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

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

## Glossary

| N | Number of lanes |
| V | Hourly volume |
| 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
- \( E_p \) - 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 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:**
- **General Plan Buildout:**

#### Flow Inputs
- **Volume, V:** 5844 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
- **E_R:** 1.2
- **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:** 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**
- **FFS:** 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS):**
  - **V_p = (V or DDHV) / (PHF x N x f_{HV})**
  - **S:** 58.6 mph
  - **D = V_p / S:** 35.3 pc/mi/ln
  - **LOS:**

#### Design (N)
- **Design LOS:**
  - **V_p = (V or DDHV) / (PHF x N x f_{HV})**
  - **S:** mph
  - **D = V_p / S:** pc/mi/ln
  - **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_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: AM Peak Hour

### Site Information
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Cook Street
- Jurisdiction: General Plan Buildout

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

### Flow Inputs
- Volume, V: 5409 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
- \( E_R \): 1.2
- \( f_{HV} \): \( \frac{1}{1 + (E_T - 1) + (E_R - 1)} \)

### 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

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

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

### Glossary
- N: Number of lanes
- V: Hourly Volume
- \( V_p \): Flow rate
- LOS: Level of Service
- DDHV: Directive design hour volume

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

### Factor Location
- \( E_R \): Exhibits 11-10, 11-12
- \( E_T \): Exhibits 11-10, 11-11, 11-13
- \( f_{LW} \): Exhibit 11-8
- \( f_{LC} \): Exhibit 11-9
- \( f_t \): Page 11-18
- TRD: Page 11-11

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## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</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 Washington Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year General Plan Buildout</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td></td>
<td>Oper.(LOS) Des.(N) Planning Data</td>
</tr>
</tbody>
</table>

### Flow Inputs
- **Volume, V**: 5298 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 + P_T (E_T - 1) + P_R (E_R - 1)}**: 0.990

### Speed Inputs
- **Ramp Width**
- **Ret-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

### 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
- **D**: pc/h/ln
- **f_{p}**: pc/h/ln
- **f_{LC}**: mph
- **f_{LW}**: pc/mi/ln
- **D**: pc/mi/ln
- **LOS**: 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
- **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 Jefferson Street
- Jurisdiction: General Plan Buildout

**Flow Inputs**
- Volume, V: 4873 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
- Up/Down %

**Calculate Flow Adjustments**
- \( f_p \): 1.00
- \( E_T \): 1.5
- \( f_{HV} = \frac{1}{1 + P_t(E_T - 1) + P_r(E_T - 1)} \times 0.990 \)
- \( E_R \): 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**
- \( f_{LW} \): mph
- \( f_{LC} \): mph
- TRD Adjustment: mph
- FFS: 65.0 mph

**LOS and Performance Measures**
- \( V_p = \frac{(V \text{ or } DDHV) \times (PHF \times N \times f_{HV})}{1727} \) pc/h/ln
- S: 63.5 mph
- D = \( \frac{V_p}{S} \): pc/mi/ln
- LOS: D

**Design (N)**
- 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

**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**: East of Monroe Street
- **Jurisdiction**: General Plan Buildout

## Flow Inputs
- **Volume, V**: 4594 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
- $f_p = 1.00$
- $E_T = 1.5$
- $E_R = 1.2$
- $f_{HV} = \frac{1}{1 + \left( f_p (E_T - 1) + f_R (E_R - 1) \right)} 0.990$

## 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>$v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p$, $1628$ pc/h/ln</td>
<td>Design LOS</td>
</tr>
<tr>
<td>$S$, $64.3$ mph</td>
<td>$v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p$, $v_p$, $S$, $25.3$ pc/mi/ln</td>
</tr>
<tr>
<td>$D = \frac{v_p}{S}$, $C$</td>
<td>$D = \frac{v_p}{S}$, $pc/mi/ln$</td>
</tr>
<tr>
<td><strong>LOS</strong></td>
<td><strong>Required Number of Lanes, N</strong></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
- **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

## Factor Location

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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 Jackson Street
- **Jurisdiction:** General Plan Buildout
- **Analysis Year:**

### Flow Inputs
- **Volume, V:** 3820 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 + 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
- **f_{LW}** mph
- **f_{LC}** mph
- **TRD Adjustment** mph
- **FFS** mph

### LOS and Performance Measures
- **Design (N):**
- **Operational (LOS):**
  - **v_p = (V or DDHV) / (PHF x N x f_{HV})**
  - **f_{HV}:** 1.354 pc/h/ln
  - **S:** 65.0 mph
  - **D:** 20.8 pc/mi/ln
  - **LOS**
- **Design LOS:**
  - **v_p = (V or DDHV) / (PHF x N x f_{HV})**
  - **f_{HV}** pc/h/ln
  - **S** mph
  - **D:** PC/MI/IN
  - **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**

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## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

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

### Site Information

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3654 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, PT</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, PR</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>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>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3654 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
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</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, PT</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, PR</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>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>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
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</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td>f_{lw} mph</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
<td>f_{LC} mph</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
<td>TRD Adjustment mph</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td>FFS 65.0 mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</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 \text{ or DDHV}) / (PHF \times N \times f_{HV}) )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x ( f_p )</td>
<td>( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) )</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
<td>19.9 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
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<tr>
<td>pc/ln</td>
<td></td>
</tr>
<tr>
<td>mph</td>
<td></td>
</tr>
<tr>
<td>pc/mi/ln</td>
<td></td>
</tr>
</tbody>
</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 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>

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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 Eastbound
- **From/To**: East of State Route 86
- **Jurisdiction**: General Plan Buildout

## Site Information

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

## Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2584 veh/h</td>
<td>Peak-Hour Factor, PHF: 0.95</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T: 2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R: 0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td></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 = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)]</td>
<td>0.990</td>
</tr>
</tbody>
</table>

## Speed Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/MI</td>
<td></td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
<td></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>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
<td>1374 pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>21.1 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

## Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Number of lanes</td>
</tr>
<tr>
<td>V</td>
<td>Hourly volume</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>
</tbody>
</table>

## Factor Location

<table>
<thead>
<tr>
<th>Term</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R</td>
<td>Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>f_LW</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>
</tr>
</tbody>
</table>
# 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>
</tbody>
</table>

## Site Information

| Highway/Direction of Travel | I-10 Eastbound |
| From/To | East of Dillon Road |
| Jurisdiction | General Plan Buildout |

## Project Description

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

## Flow Inputs

| Volume, V | 2360 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

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

## 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 |

## 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>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = ( v_p / S )</td>
<td>19.3 pc/mi/ln</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

- **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 WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
</tr>
</thead>
<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 Avenue 50</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 General Plan Buildout</td>
</tr>
<tr>
<td>Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

- **Volume, V:** 2329 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** veh/day
- **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

<table>
<thead>
<tr>
<th><strong>Grade</strong></th>
<th><strong>Length</strong></th>
<th><strong>Up/Down %</strong></th>
</tr>
</thead>
</table>

### Calculate Flow Adjustments

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

<table>
<thead>
<tr>
<th><strong>Operational (LOS):</strong> $V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p)$</th>
<th><strong>Calc Speed Adj and FFS:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>$S = 65.0$ mph</td>
<td>$\frac{f_{BW}}{f_{LC}}$ mph</td>
</tr>
<tr>
<td>$D = \frac{V_p}{S}$ pc/mi/ln</td>
<td>$\frac{f_{BW}}{f_{LC}}$ pc/mi/ln</td>
</tr>
<tr>
<td><strong>LOS:</strong> C</td>
<td><strong>Design (N):</strong></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
- **$f_{BW}$:** 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 Frontage Road
- Jurisdiction: General Plan Buildout

#### Flow Inputs
- Volume, V: 2329 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D: veh/h

#### Flow Adjustments
- 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: 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}} 1238 pc/h/ln
  - $S = 65.0$ mph
  - $D = v_p / S = 19.0$ pc/mi/ln
  - LOS: C

#### Design (N)
- 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
# 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:** General Plan Buildout

### Flow Inputs
- **Volume, V:** 2329 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
- \( f_{HV} = \frac{1}{[1 + P_T(E_T - 1) + P_R(E_R - 1)]} \times 0.990 \)
- \( E_R \) = 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):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \times 1238 \) pc/h/ln
  - \( S \) = 65.0 mph
  - \( D = \frac{v_p}{S} \times 19.0 \) 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

---

**Design (N):**
- **Design LOS**
  - **LOS, S, FFS, \( v_p \):** Exhibits 11-2, 11-3
  - **TRD:** Page 11-11

---

**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

---

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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
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Cottonwood Springs Rd
- **Jurisdiction:** General Plan Buildout

### Site Information
- **Oper.(LOS):**
- **Des.(N):**
- **Planning Data:**

### Flow Inputs
- **Volume, V:** 2422 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
- **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:** \( \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} \)

### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 2 ramps/mi
- **Total Ramp Density, TRD:**
- **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):**
- **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
- **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 Cottonwood Springs Rd
- Jurisdiction: General Plan Buildout

#### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2470</td>
<td>veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td></td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
<td>veh/h</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

\[ f_p = 1.00 \]
\[ E_T = 1.5 \]
\[ f_{HV} = \frac{1}{1 + \frac{3}{2} E_T} \cdot \frac{1}{0.990} \]

#### 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>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>
</tr>
</tbody>
</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 = \frac{(V \text{ or DDHV})}{(\text{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 = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

#### Design (N)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design N</td>
<td></td>
</tr>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV})}{(\text{PHF} \times N \times f_{HV})} \times f_p )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></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
- 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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1/27/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>PM Peak Hour</td>
</tr>
<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 Westbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Paradise Valley</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout</td>
</tr>
<tr>
<td>Analysis Year</td>
<td></td>
</tr>
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</table>

<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>Peak-Hour Factor, PHF</td>
</tr>
<tr>
<td>%Trucks and Buses, P_T</td>
</tr>
<tr>
<td>%RVs, P_R</td>
</tr>
<tr>
<td>General Terrain:</td>
</tr>
<tr>
<td>Grade</td>
</tr>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Up/Down %</td>
</tr>
</tbody>
</table>

Calculate Flow Adjustments

\[
\begin{align*}
    E_R &= 1.2, \\
    f_H &= \frac{1}{1 + P_T (E_R - 1) + P_R (E_R - 1)^2} = 0.990 \\
\end{align*}
\]

### 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

<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 (N)</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
<tr>
<td>( v_p \text{ or } DDHV )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</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
- FFS - Free-flow speed
- BFFS - Base free-flow 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
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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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 Westbound
- **From/To:** East of Frontage Road
- **Jurisdiction:** General Plan Buildout
- **Analysis Year:**

#### Flow Inputs
- **Volume, V:** 2339 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:** mi
- **Up/Down:** %

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

#### 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

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

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

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1/27/2016
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>
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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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<td></td>
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</tr>
<tr>
<td>☑ Oper.(LOS)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Des.(N)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>□ Planning Data</td>
<td></td>
</tr>
</tbody>
</table>

## Flow Inputs

| Volume, V | 2339 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT | veh/day | %Trucks and Buses, P<sub>T</sub> | 2 |
| Peak-Hr Prop. of AADT, K | | %RVs, P<sub>R</sub> | 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

\[
f_\text{p} = 1.00 \\
E_\text{R} = 1.2 \\
f_{\text{HV}} = \frac{1}{1 + \text{P}_{\text{T}}(E_{\text{T}} - 1) + \text{P}_{\text{R}}(E_{\text{R}} - 1)} \approx 0.990
\]

## 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

| v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>) x f<sub>p</sub> | 1243 pc/h/ln |
| S | 65.0 mph |
| D = v<sub>p</sub> / S | 19.1 pc/mi/ln |
| LOS | C |

## Design (N)

| Design (N) |
| Design LOS |
| v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>) x f<sub>p</sub> | pc/h/ln |
| S | mph |
| D = v<sub>p</sub> / S | pc/mi/ln |
| Required Number of Lanes, N |

## Glossary

| N - Number of lanes | S - Speed |
| V - Hourly volume | D - Density |
| v<sub>p</sub> - Flow rate | FFS - Free-flow speed |
| LOS - Level of service | BFFS - Base free-flow speed |
| 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>T</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**

<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>
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<tr>
<td>Agency or Company</td>
<td>From/To East of Dillon Road</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year General Plan Buildout</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) Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V           | 2468 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  |

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

**Speed Inputs**

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

Calc Speed Adj and FFS

| Lane Width          | mph |
| Rt-Side Lat. Clearance | mph |
| Number of Lanes, N  | mph |
| Total Ramp Density, TRD | mph |
| FFS (measured)      | 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 = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
<td>pc/mi/ln</td>
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<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</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 speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
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</table>

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

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1/27/2016
## BASIC FREEWAY SEGMENETS WORKSHEET

### General Information

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<th>Analyt</th>
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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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**Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

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

### Site Information

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

| Jurisdiction | General Plan Buildout |

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>2592 veh/h</th>
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<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
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<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>General Terrain:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>% Length</td>
</tr>
<tr>
<td>Up/Down</td>
<td>%</td>
</tr>
</tbody>
</table>

### 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

<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>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Design (N)</th>
<th>Design Los</th>
</tr>
</thead>
<tbody>
<tr>
<td>(v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times 1378 \text{ pc/h/ln}}</td>
<td>(v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times x f_p ) pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D</td>
<td>(v_p / S ) pc/mi/ln</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Factor Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design (N)</td>
<td>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>Design Los</td>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>(v_p) - Hourly volume</td>
<td>f_{LW} - Exhibit 11-8</td>
</tr>
<tr>
<td>(D) - Density</td>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>(v_p) - Flow rate</td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td>LOS - Level of service</td>
<td>f_{p} - Page 11-18</td>
</tr>
<tr>
<td>BFFS - Free-flow speed</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Golf Center Parkway
- **Jurisdiction**: General Plan Buildout

#### Site Information
- **Analysis Year**: 2015

#### Flow Inputs
- **Volume, V**: 4692 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 + 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)**
- **Design (N)**
- **Design LOS**
- **Design (N)**
- **Required Number of Lanes, N**
- **LOS**

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **v_p**: Flow rate
- **S**: Speed
- **D = v_p / S**: pc/mi/ln
- **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 Jackson Street
- **Jurisdiction**: General Plan Buildout
- **Analysis Year**: General Plan Buildout

### Flow Inputs
- **Volume, V**: 4821 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} = 1 + f_p (E_R - 1) + P_T (E_T - 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}**: 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**: 63.7 mph
- **D = v_p / S**: pc/mi/ln
- **LOS**:

### 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**
- **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**

### 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

### 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>PM Peak Hour</td>
</tr>
</tbody>
</table>

### Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Westbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>From/To</td>
<td>East of Monroe Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout</td>
</tr>
</tbody>
</table>

### Project Description

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>6516 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>%RVs, P_R 0</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>

### Calculate Flow Adjustments

- \( f_P = 1.00 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + 0.1(E_R - 1)} \times 0.990 \)

### 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>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 Adj and FFS

| f_Lw | mph |
| f_Lc | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

### LOS and Performance Measures

### Glossary

- N - Number of lanes
- S - Speed
- V - Hourly volume
- D - Density
- \( \nu_p \) - 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, \( \nu_p \) - 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

**Site Information**
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: General Plan Buildout
- **Analysis Year**: 2015

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

#### Flow Inputs
- **Volume, V**: 6756 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: %
- **DDHV = AADT x K x D**: veh/h

**Calculate Flow Adjustments**
- **E<sub>R</sub> = 1.2**
- **E<sub>T</sub> = 1.5**
- **f<sub>HV</sub> = 1.00**
- **f<sub>TR</sub> = 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**: mph

**Calc Speed Adj and FFS**
- **f<sub>LW</sub>**: mph
- **f<sub>LC</sub>**: mph
- **TRD Adjustment**: mph
- **FFS**: mph

#### LOS and Performance Measures

**Operational (LOS)**
- **v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>)**: pc/h-ln
- **S**: 51.0 mph
- **D**: 47.0 pc/mi/ln

**Design (N)**
- **v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>)**: pc/h-ln
- **S**: mph
- **D**: pc/mi/ln
- **Required Number of Lanes, N**: pc/mi/ln

**Glossary**
- **N**: Number of lanes
- **S**: Speed
- **V**: Hourly volume
- **D**: Density
- **v<sub>p</sub>**: Flow rate
- **LOS**: Level of service
- **BDHV**: 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

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**BASIC FREeways 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 Washington Street
- Jurisdiction: General Plan Buildout
- Analysis Year: General Plan Buildout

**Flow Inputs**
- Volume, V: 7930 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**
- \[ f_p = 1.00 \]
- \[ E_R = 1.2 \]
- \[ E_T = 1.5 \]
- \[ f_{HV} = \frac{1}{1 + f_p (E_R - 1) + P_R (E_T - 1)} \times 0.990 \]

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

**LOS and Performance Measures**

**Operational (LOS)**
- \[ v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV}} \times f_p) \]
- \[ S = 36.8 \text{ mph} \]
- \[ D = \frac{v_p}{S} = 76.3 \text{ pc/ln} \]
- \[ \text{LOS} = \text{F} \]

**Design (N)**
- Design LOS
- \[ v_p = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV}} \times f_p) \]
- \[ S = \text{mph} \]
- \[ D = \frac{v_p}{S} = \text{pc/ln} \]
- 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
- E_T - Exhibits 11-10, 11-11, 11-13
- 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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
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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 Cook Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction General Plan Buildout</td>
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<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>PM Peak Hour</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td>Oper.(LOS)</td>
<td>Des.(N) Planning Data</td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>8364 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 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R 0</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>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
</tbody>
</table>
| f_{HV}    | 1.00* 

### 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 Lateral 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>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</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})</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>30.3 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>97.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
</tr>
<tr>
<td>Design (N)</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>D</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_{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 Monterey Avenue
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout

#### Flow Inputs
- **Volume, V:** 8305 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-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 = 1/(1+f_p*E_T)*E_R**

#### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lt. 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):**
  - \( v_p = \frac{(V \ or \ DDHV) \times (PHF \times N \times f_{HV})}{2943} \) pc/h/ln
  - \( S = 31.2 \) mph
  - \( D = \frac{v_p}{S} = 94.2 \) 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:**
  - \( v_p = \frac{(V \ or \ DDHV) \times (PHF \times N \times f_{HV})}{2943} \) pc/h/ln
  - \( S = 31.2 \) mph
  - \( D = \frac{v_p}{S} = 94.2 \) pc/mi/ln

### 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 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: West of Monterey Avenue
- Jurisdiction: 
- Analysis Year: General Plan Buildout

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

### Flow Inputs
- **Volume, V** = 7975 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** = 4
- **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

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

#### Operational (LOS)
- **v_p = (V or DDHV) / (PHF x N x f_{HV})** = pc/h/ln
- **S** = 57.6 mph
- **D = v_p / S** = pc/mi/ln
- **LOS**

#### 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

### 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**: West of Monterey Avenue
- ** Jurisdiction**: General Plan Buildout

#### Flow Inputs
- ** Volume, V**: 7333 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
- ** \( E_R \)**: 1.2
- ** \( f_{HV} = \frac{1}{1 + \Phi P_T (E_R - 1) + P_R (E_R - 1)} \)**: 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
- ** Operational (LOS)**
  - ** \( v_p \)**: (V or DDHV) / (PHF x N x \( f_{HV} \))
  - ** S**: 60.7 mph
  - ** D**: \( v_p / S \)
  - ** LOS**: D

#### Design (N)
- ** Design LOS**
  - ** \( v_p \)**: (V or DDHV) / (PHF x N x \( f_{HV} \))
  - ** 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

---

**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
### 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 Monterey Avenue
- Jurisdiction: General Plan Buildout

#### Flow Inputs
- Volume, V: 7781 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 + \frac{E_R - 1}{E_T} + \frac{P_R + P_T - 1}{100}} 

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

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

#### Design (N)
- Design LOS
- \( v_p = \frac{V}{PHF \times N \times f_{HV}} \)
- \( S \): mph
- \( D = \frac{v_p}{S} \): pc/mi

#### 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_{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

#### Factor Location

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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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 Cook Street</td>
</tr>
<tr>
<td>Date Performed: 9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period: PM Peak Hour</td>
<td>Analysis Year: General Plan Buildout</td>
</tr>
<tr>
<td>Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
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#### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>8351 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: 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R: 0</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
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#### Calculate Flow Adjustments

<table>
<thead>
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<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>(\frac{0.990}{1 + f_p \cdot E_T + P_R \cdot E_R} )</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>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>
</tr>
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</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></td>
</tr>
<tr>
<td>(v_p = \frac{(V \text{ or DDHV}) \cdot (PHF \cdot N \cdot f_{HV} \cdot 2959)}{x f_p} )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>30.5 mph</td>
</tr>
<tr>
<td>D = (v_p / S)</td>
<td>96.9 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
</tr>
</tbody>
</table>

#### 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 \text{ or DDHV}) \cdot (PHF \cdot N \cdot f_{HV} \cdot 2959)}{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/mi/ln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
</tr>
</tbody>
</table>

#### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Number of lanes</td>
</tr>
<tr>
<td>V</td>
<td>Hourly volume</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>S</td>
<td>Speed</td>
</tr>
<tr>
<td>D</td>
<td>Density</td>
</tr>
<tr>
<td>F</td>
<td></td>
</tr>
<tr>
<td>E_R</td>
<td></td>
</tr>
<tr>
<td>(f_{HW})</td>
<td>Exhibit 11-8</td>
</tr>
<tr>
<td>(f_{LC})</td>
<td>Exhibit 11-9</td>
</tr>
<tr>
<td>Page 11-18</td>
<td></td>
</tr>
<tr>
<td>LOS, S, FFS, V_p</td>
<td>Exhibits 11-2, 11-3</td>
</tr>
</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
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Washington Street
- **Jurisdiction**: General Plan Buildout
- **Analysis Year**: General Plan Buildout

## Site Information
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **Grade**: %
- **Length**: mi
- **Level**: General Terrain
- **Oper. (LOS)**: True
- **Des. (N)**: False
- **Planning Data**: False

## Flow Inputs
- **Volume, V**: 8044 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 1.00
- **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_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

## 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
- **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

## 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:** General Plan Buildout
- **Analysis Year:**

## Flow Inputs
- **Volume, V:** 6516 veh/h
- **Peak-Hr Prop. of AADT, K:** veh/day
- **Peak-Hr Direction Prop, D:** veh/h
- **Peak-Hr Prop. of AADT, K:** 2
- **Peak-Hr Direction Prop, D:** 0
- **AADT:** %Trucks and Buses, P_T
- **Peak-Hr Prop. of AADT, K:** General Terrain: Level
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D:** Grade % Length mi

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

## 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)**
  - \( v_p = \frac{V}{(PHF \times N \times fHV)} \) pc/h/ln
  - \( x f_p \)
  - \( S \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - \( LOS \) 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**
  - \( v_p = \frac{V}{(PHF \times N \times f_{HV})} \) pc/h/ln
  - \( x f_p \)
  - \( S \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - \( LOS \) pc/mi/ln

## 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 Monroe Street
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout

### Flow Inputs
- **Volume, V:** 6193 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
- **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 = \frac{1}{(1+f_p)-1} + \frac{E_T}{E_R} = 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:** 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 2195)}** pc/h/ln
- **S:** 56.0 mph
- **D:** 39.2 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:** required **LOS = \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 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
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Jackson Street

### Site Information
- **Jurisdiction**: General Plan Buildout
- **Analysis Year**:

### Flow Inputs
- **Volume, V**: 5801 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_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
- **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
- **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**
- **LOS - Level of service**
- **BFFS - Base free-flow speed**
- **DDHV - Directional design hour volume**

### Design (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**

### Footnotes
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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 Golf Center Parkway
- **Jurisdiction:** General Plan Buildout

## Flow Inputs
- **Volume, V:** 5353 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **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:** %
- **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
- **E_R:** 1.2

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

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

## LOS and Performance Measures
- **Operational (LOS):**
- **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_L - 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 FREYWAY WORKSHEET

#### BASIC FREYWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</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 State Route 86</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year General Plan Buildout</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**: 4184 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

#### Calculate Flow Adjustments

- **f_p**: 1.00
- **E_R**: 1.2
- **E_T**: 1.5
- **f_HV = 1/f_p x (E_R x f_HV) + P_R (E_T x f_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**: 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 \text{ or DDHV}) / (PHF \times N \times f_{HV}) )</td>
<td>( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) )</td>
</tr>
<tr>
<td>( S ): 55.4 mph</td>
<td>( S ): mph</td>
</tr>
<tr>
<td>( D = v_p / S ): 40.2 pc/mi/ln</td>
<td>( D = v_p / S ): pc/mi/ln</td>
</tr>
<tr>
<td>LOS ( E ):</td>
<td>Required Number of Lanes, N</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_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 Eastbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: General Plan Buildout

## Flow Inputs
- **Volume, V**: 3798 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h

## Calculate Flow Adjustments
- **f_p**: 1.00
- **E_r**: 1.2
- **E_t**: 1.5
- **f_hv**: \(1.00 \times (1 + P_r)\) (E_r - 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

## LOS and Performance Measures
- **Operational (LOS)**
  - \(v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{hv}} \times f_p\) mph
  - \(S\) mph
  - \(D = \frac{v_p}{S}\) pc/mi/ln
  - **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
- **E_t**: Exhibits 11-10, 11-11, 11-13
- **f_p**: Page 11-18
- **LOS, S, FFS, \(v_p\)**: Exhibits 11-2, 11-3

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## BASIC FREEWAY WORKSHEET

### 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>
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<td>Analyst</td>
<td>JT</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
</tr>
<tr>
<td>Date Performed</td>
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<tr>
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<td>Project Description</td>
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</tr>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Avenue 50</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
</tr>
<tr>
<td>General Plan Buildout</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V                | 3546 veh/h       |
| AADT                     | veh/day          |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, P<sub>T</sub> 2 |
| Peak-Hr Direction Prop, D| %RVs, P<sub>R</sub> 0 |
| DDHV = AADT x K x D     | veh/h            |

**Calculate Flow Adjustments**

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

### 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**

- \( f_{HW} \) 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 + DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>1885 pc/h/ln</td>
<td></td>
</tr>
<tr>
<td>S 61.7 mph</td>
<td></td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
<td></td>
</tr>
<tr>
<td>30.6 pc/mi/ln</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
<tr>
<td>D</td>
<td></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
- \( f_{HW} \) - 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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### 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**: General Plan Buildout
- **Analysis Year**: 2022

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

#### Flow Inputs
- **Volume, V**: 3546 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_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**: 2
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow speed, BFFS**: mph

#### Speed Adjustments
- **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**: 61.7 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

#### Design (N)
- **Design LOS**
  - **v_p**: pc/h/ln
  - **S**: mph
  - **D = v_p / S**: pc/mi/ln
  - **Required Number of Lanes, N**

#### Factor Location
- **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 Paradise Valley
- Jurisdiction: General Plan Buildout
- Analysis Year: General Plan Buildout

#### Flow Inputs
- Volume, V: 3546 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
- DDHV = AADT x K x D: veh/h
- Grade % Length mi

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

#### Design (N)
- 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

#### 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

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<th>JT</th>
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<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>
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</table>

**Site Information**

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<thead>
<tr>
<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 Cottonwood Springs Rd</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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**Flow Inputs**

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<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>3569</th>
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</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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, $P_R$ = 0</td>
</tr>
<tr>
<td>$DDHV = AADT \times K \times D$ (veh/h)</td>
<td>Grade % Length $mi$</td>
</tr>
</tbody>
</table>

**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 | 2 |
| Total Ramp Density, TRD (ramps/mi) |  |
| FFS (measured) (mph) | 65.0 |
| Base free-flow Speed, BFFS (mph) |  |

**Calc Speed Adj and FFS**

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

**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>$V_p = (V or DDHV) / (PHF \times N \times f_{HV}^{1897})$ (pc/h/ln)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$S$ (mph)</td>
<td>61.5</td>
</tr>
<tr>
<td>$D = V_p / S$ (pc/mi/ln)</td>
<td>30.8</td>
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<tr>
<td>LOS</td>
<td>$D$</td>
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</table>

**Design (N)**

<table>
<thead>
<tr>
<th>Design LOS</th>
<th>$V_p = (V or DDHV) / (PHF \times N \times f_{HV}^{1897})$ (pc/h/ln)</th>
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</thead>
<tbody>
<tr>
<td>$S$ (mph)</td>
<td>61.5</td>
</tr>
<tr>
<td>$D = V_p / S$ (pc/mi/ln)</td>
<td>30.8</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
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**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>
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</tr>
</tbody>
</table>

**Factor Location**

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<thead>
<tr>
<th>$E_R$ - Exhibits 11-10, 11-12</th>
<th>$f_{LV}$ - Exhibit 11-8</th>
</tr>
</thead>
<tbody>
<tr>
<td>$E_p$ - 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
APPENDIX H-II

YEAR 2035 WITH PROJECT TRAFFIC CONDITIONS
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

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<th>Analyst</th>
<th>JT</th>
<th>Agency or Company</th>
<th>LLG</th>
<th>Date Performed</th>
<th>9/22/2015</th>
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<th>AM Peak Hour</th>
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### Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel I-10 Westbound</th>
<th>East of Cottonwood Springs Rd</th>
<th>Jurisdiction</th>
<th>General Plan Buildout + Proj</th>
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</table>

### Project Description

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3024</th>
<th>veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
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</thead>
<tbody>
<tr>
<td>AADT</td>
<td></td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td></td>
<td>%RVs, P_R</td>
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</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td></td>
<td>General Terrain:</td>
<td>Level</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
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<td>veh/h</td>
<td>Grade</td>
<td>% Length mi</td>
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</table>

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>f_p</th>
<th>1.00</th>
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</thead>
<tbody>
<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>

### 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</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Calc Speed Adj and FFS</th>
</tr>
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<tbody>
<tr>
<td>f_{LW}</td>
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<tr>
<td>f_{LC}</td>
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<tr>
<td>TRD Adjustment</td>
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<tr>
<td>FFS</td>
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</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
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<tbody>
<tr>
<td>v_p = (V or DDHV) /(PHF x N x f_{HV})</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</td>
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<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
</tr>
<tr>
<td>Required Number of Lanes, N</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

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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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Paradise Valley
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**: 

### Site Information

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

### Flow Inputs

<table>
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<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3135</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></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>
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<td>General Terrain, Level</td>
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<tr>
<td>Grade</td>
<td></td>
</tr>
<tr>
<td>Length, mi</td>
<td></td>
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<tr>
<td>Up/Down %</td>
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### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
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<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_HV</td>
<td>0.990</td>
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### Speed Inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</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>2</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
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<tr>
<td>FFS (measured)</td>
<td>65.0</td>
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<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Description</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>1667 pc/h/in</td>
</tr>
<tr>
<td>S</td>
<td>64.0</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>26.1</td>
</tr>
<tr>
<td>LOS</td>
<td>D</td>
</tr>
</tbody>
</table>

### Design (N)

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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/in</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/in</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</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>

### Factor Location

<table>
<thead>
<tr>
<th>Description</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_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>
<td></td>
</tr>
</tbody>
</table>

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file:///C:/Users/tucker/AppData/Local/Temp/f2kB684.tmp
### BASIC FREEWAY SEGMENTS WORKSHEET

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

#### Flow Inputs
- **Volume, V**: 4054 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

#### Calculate Flow Adjustments
- **\( f_p \)**: 1.00
- **\( E_T \)**: 1.5
- \( f_{HV} = \frac{1}{1 + \frac{P_T}{P_R}} \times \frac{1}{1 - \frac{E_T}{E_R}} \) = 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
- **\( f_{LW} \)**: mph
- **\( f_{LC} \)**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - **\( v_p = \frac{(V \text{ or } DDHV) \times f_{HV}}{(PHF \times N \times f_p)} \)**: pc/h/ln
  - **S**: 56.9 mph
  - **D = \frac{v_p}{S}**: pc/mi/ln
  - **LOS**: E

#### 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
  - **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
- **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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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information
- **Analyst**: JT
- **Date Performed**: 9/22/2015
- **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 Avenue 50

## Flow Inputs
- **Volume, V**: 4054 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} = 0.990 \)

## Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 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)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S = 56.9 \text{ mph} \)
  - \( D = v_p / S \)
  - **LOS**:

### Design (N)
- **Design LOS**
- **Design (N)**
- **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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## 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>
</tbody>
</table>

### Site Information

| Highway/Direction of Travel | I-10 Westbound |
| From/To | East of Dillon Road |
| Jurisdiction | General Plan Buildout + Proj |
| Project Description | 2-10-3136-2 Paradise Valley Specific Plan, Riverside County |

### Flow Inputs

| Volume, V | 3812 | veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, P<sub>T</sub> | 2 |
| Peak-Hr Direction Prop, D | %RVs, P<sub>R</sub> | 0 |
| DDHV = AADT x K x D | veh/h |

### Calculate Flow Adjustments

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

### 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 |

### 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>S</td>
<td>59.4</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>34.1</td>
</tr>
<tr>
<td>LOS</td>
<td>D</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<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

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1/27/2016
### Basics Freeway Segments Worksheet

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
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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</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>General Plan Buildout + Proj</td>
</tr>
<tr>
<td></td>
<td>Oper.(LOS)</td>
</tr>
<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

- **Volume, V** 3879 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

**Speed Inputs**

- **Lane Width** ft
- **Number of Lanes, N** 2
- **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 $f_{HV}$)** 2062 pc/h/in
  - **$S$** 58.8 mph
  - **$D = v_p / S$** 35.1 pc/mi/in
  - **$LOS$**

**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_T - Exhibits 11-10, 11-11, 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>
</tr>
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<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>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 Golf Center Parkway |
| Jurisdiction | General Plan Buildout + Proj |

## Flow Inputs

| Volume, V | 6370 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 |

## Calculate Flow Adjustments

$$ f_p = 1.00 \quad E_R = 1.2 $$

$$ E_T = 1.5 \quad f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990 $$

## Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 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 |

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})}$</td>
<td>Design LOS</td>
</tr>
<tr>
<td>$x_{f_p}$</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = $v_p / S$</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</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 | $f_{LV}$ - 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**: AM Peak Hour

#### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Project Description

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>6517 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>6517 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></td>
</tr>
</tbody>
</table>

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

### Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = 1 + f_p (E_T - 1) + \frac{P_R (E_R - 1)}{100} = 0.990 \)

### 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 Calc Speed Adj and FFS

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

### LOS and Performance Measures

#### Operational (LOS)

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

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## BASIC FREeway WORKSHEET

### BASIC FREeway SEGMENTS WORKSHEET

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<td>Analyst</td>
<td>JT</td>
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<td>LLG</td>
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<td>9/22/2015</td>
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<tr>
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<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>
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<tr>
<td>Highway/Direction of Travel</td>
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<tr>
<td>From/To</td>
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<td>Analysis Year</td>
<td>General Plan Buildout +</td>
</tr>
<tr>
<td>Planning Data</td>
<td>Proj</td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V (veh/h) | AADT (veh/day) | Peak-Hour Factor, PHF (0.95) | %Trucks and Buses, P_T (2) | Peak-Hr Prop. of AADT, K | %RVs, P_R (0) | Peak-Hr Direction Prop, D | General Terrain: | DDHV = AADT x K x D (veh/h) | Grade | % Length | mi |
|------------------|----------------|-------------------------------|-----------------------------|---------------------------|------------------------|-----------------|------------------------|-----------------|-----------------------------|-----|-----------|----|
| 8079             |                |                               |                             |                           |                        |                 |                        |                 |                             |     |           |    |

### Calculate Flow Adjustments

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

### Speed Inputs

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

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_LW</th>
<th>f_LC</th>
<th>f_HV</th>
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<tbody>
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<td></td>
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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 = (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 = 34.6 mph</td>
<td>S = mph</td>
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<tr>
<td>D = v_p / S</td>
<td>D = v_p / S</td>
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<tr>
<td>LOS</td>
<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>
<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>
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</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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## 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:** General Plan Buildout + Proj

### Flow Inputs
- **Volume, V:** 8415 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **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:** %
- **Length:** mi
- **Up/Down %:**

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

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

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

### Design (N)
- **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_{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 East of Washington Street
- **From/To:** General Plan Buildout Proj

#### Flow Inputs
- **Volume, V:** 9649 veh/h
- **AADT:** 1,000 veh/day
- **Peak-Hr Prop. of AADT, K:** 1.00
- **Peak-Hr Direction Prop, D:** 0.95
- **DDHV = AADT x K x D:** 0.990
- **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
- **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

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

#### LOS and Performance Measures
- **LOS:** Design (N)
- **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**
- **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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**GENERAL INFORMATION**

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<tr>
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<td>LLG</td>
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**SITE INFORMATION**

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<tr>
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<tr>
<td>From/To</td>
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<td>Jurisdiction</td>
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<td>Analysis Year</td>
<td>General Plan Buildout + Proj</td>
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**FLOW INPUTS**

| Volume, V | 11073 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
- \( f_{HV} = \frac{1}{1 + P_T(1 - E_T) + P_R(1 - E_R)} \) = 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**

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

**LOS AND PERFORMANCE MEASURES**

**DESIGN (N)**

| Design (N) | Design LOS |
| Design NLOs | Design LOS |
| Design LOS | Design NLOs |
| \( V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}^{3924}) \text{ pc/h/ln} \) | \( V_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}^{3924}) \text{ pc/h/ln} \) |
| S | mph |
| D = \( V_p / S \) | pc/mi/ln |
| LOS | F |
| 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 | \( f_{LW} \) - 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>Date Performed</td>
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<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>

- **Flow Inputs**
  - Volume, V: 10210 veh/h
  - AADT: 10210 veh/day
  - Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_T 0.95
  - Peak-Hr Direction Prop, D: %RVs, P_R 2
  - DDHV = AADT x K x D: veh/h

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

- **Speed Inputs**
  - Lane Width: 1.5 ft
  - Rt-Side Lat. Clearance: 3 ft
  - Number of Lanes, N: 7
  - Total Ramp Density, TRD: ramps/mi
  - FFS (measured): 65.0 mph
  - Base free-flow Speed, BFFS: mph

- **LOS and Performance Measures**
  - Operational (LOS): 3618 pc/h/ln
  - Design (N): 65.0 mph

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

- **Glossary**
  - 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 WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

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<td>AM 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>
<th>Calculate Flow Adjustments</th>
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<tbody>
<tr>
<td>Volume, V</td>
<td>![Formula](V = 10126 veh/h)</td>
</tr>
<tr>
<td>AADT</td>
<td>![Formula](V = 10126 veh/day)</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>![Formula](K = Peak-Hr Prop. of AADT, K)</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>![Formula](D = Peak-Hr Direction Prop, D)</td>
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<td>DDHV = AADT x K x D</td>
<td>![Formula](DDHV = AADT x K x D)</td>
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<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</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>
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<tr>
<td>Number of Lanes, N</td>
<td>4</td>
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<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
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<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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<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 \text{ or } DDHV) / (PHF x N x f_{HV} \times f_p) )</td>
<td>( f_{LV} ) pc/h/ln</td>
</tr>
<tr>
<td>( S )</td>
<td>( f_{LC} ) mph</td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td>( f_p ) pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>( f_{TRD} )</td>
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**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
- \( E_{TRD} \) - 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
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<td>Analyst</td>
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<td>Jurisdiction</td>
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<td>Analysis Time Period</td>
<td>Analysis Year</td>
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<th>Flow Inputs</th>
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<tr>
<td>Volume, (V)</td>
<td>Peak-Hour Factor, PHF</td>
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<tr>
<td>AADT</td>
<td>%Trucks and Buses, (P_T)</td>
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<td>Peak-Hr Prop. of AADT, (K)</td>
<td>%RVs, (P_R)</td>
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<tr>
<td>Peak-Hr Direction Prop, (D)</td>
<td>General Terrain: Level</td>
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<tr>
<td>DDHV = AADT (x) (K) (x) (D)</td>
<td>Grade % Length mi</td>
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<th>Calculate Flow Adjustments</th>
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<td>(f_0)</td>
<td>(E_R)</td>
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<tr>
<td>(E_T)</td>
<td>(f_{HV} = 1/(1+P_T(E_T - 1) + P_R(E_R - 1))) 0.990</td>
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<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
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<tbody>
<tr>
<td>Lane Width</td>
<td>(f_{LW})</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>(f_{LC})</td>
</tr>
<tr>
<td>Number of Lanes, (N)</td>
<td>TRD Adjustment</td>
</tr>
<tr>
<td>Total Ramp Density, (TRD)</td>
<td>TRD Adjustment</td>
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<tr>
<td>FFS (measured)</td>
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<td>Base free-flow Speed, BFFS</td>
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<th>LOS and Performance Measures</th>
<th>Design (N)</th>
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<tr>
<td>Operational (LOS)</td>
<td>Design LOS</td>
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<tr>
<td>(v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) x f_p)</td>
<td>(v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) x f_p)</td>
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<tr>
<td>(S)</td>
<td>(D = v_p / S)</td>
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<td>(D = v_p / S)</td>
<td>(\text{Required Number of Lanes, } N)</td>
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<th>Glossary</th>
<th>Factor Location</th>
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<tr>
<td>(N) - Number of lanes</td>
<td>(E_R) - Exhibits 11-10, 11-12</td>
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<tr>
<td>(V) - Hourly volume</td>
<td>(f_{LW}) - Exhibit 11-8</td>
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<tr>
<td>(v_p) - Flow rate</td>
<td>(E_T) - Exhibits 11-10, 11-11, 11-13</td>
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<tr>
<td>LOS - Level of service</td>
<td>(f_p) - Page 11-18</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td>LOS, S, FFS, (v_p) - Exhibits 11-2, 11-3</td>
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HCS 2010™ Version 6.70  Generated: 10/19/2015 4:31 PM
# 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 Eastbound
- **From/To:** East of Monterey Avenue
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout + Proj
- **Oper.(LOS):**
- **Des.(N):**
- **Planning Data:**

## 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:** 5905 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-Hr Flow Adjustment:**
  - \( f_p = 1.00 \)
  - \( E_T = 1.5 \)
  - \( f_{HV} = 1 + (1 + p_T(E_T - 1) + p_R(E_R - 1)) < 0.990 \)

## Calculate Flow Adjustments

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

## Speed Adj and FFS

## LOS and Performance Measures

## Design (N)
- **Design LOS:**
- **Design 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_{LVW}:** 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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10/19/2015
## BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

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<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Cook Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout + Proj</td>
</tr>
<tr>
<td>Analysis Year</td>
<td></td>
</tr>
</tbody>
</table>

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

### Flow Inputs

- Volume, V: 5533 veh/h
- AADT: 1961 veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D: 32.4 veh/h
- Peak-Hour Factor, PHF: 0.95
- %Trucks and Buses, PT: 2
- %RVs, PR: 0
- General Terrain: Level
- Grade: % Length: mi
- Up/Down %: 1.5

### Calculate Flow Adjustments

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

### Speed Inputs

- Lane Width: 32.4 ft
- Rt-Side Lat. Clearance: 60.5 ft
- Number of Lanes, N: 3
- Total Ramp Density, TRD: 65.0 ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow speed, BFFS: mph

### Speed Adjustments

- $f_{LW}$ mph
- $f_{LC}$ mph
- TRD Adjustment mph
- FFS 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
- $S$: 60.5 mph
- $D = \frac{v_p}{S}$ pc/mi/ln
- LOS: D

### 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
- $v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p)$ pc/h/ln
- S mph
- D 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
- $f_{LC}$: 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**: East of Washington Street
- **Jurisdiction**: 
- **Analysis Year**: General Plan Buildout + Proj

### Flow Inputs
- **Volume, V**: 5454 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 2
- **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**: % Length mi
  - **Up/Down %**: 

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **f_HV**: 1.0 + 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**: 3
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow speed, BFFS**: mph

### Speed Adjustment and FFS
- **f_LW**: mph
- **f_HC**: 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
  - **LOS**: 

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

### Factor Location
- **E_R**: Exhibits 11-10, 11-12
- **f_LW**: Exhibit 11-8
- **E_R**: Exhibits 11-10, 11-1', 11-13
- **f_HC**: 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**: East of Jefferson Street
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**:

### Flow Inputs
- **Volume, V**: 5029 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_R** = 1.2
- **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**: 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
  - \( S = 62.9 \text{ mph} \)
  - \( D = \frac{V_p}{S} \) pc/mi/ln
  - \( LOS \) D

### 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**

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>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>

- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Monroe Street
- Jurisdiction
- Analysis Year: General Plan Buildout + Proj
- Oper.(LOS) ✔ Des.(N) □ Planning Data

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>4907 veh/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></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</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Symbol</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} = \frac{1}{1+[P_T(P_T-1)+P_R(P_R-1)]}</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></td>
</tr>
</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LV}</td>
<td>mph</td>
</tr>
<tr>
<td>f_{LC}</td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
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</table>

### LOS and Performance Measures

**Operational (LOS)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{PV})</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>63.4 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

**Design (N)**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>D = 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
- 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_{PV} = Exhibit 11-8
- f_{LV} = Exhibit 11-9
- f_{LC} = Exhibit 11-9
- TRD - Page 11-18
- 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>
</tr>
</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 Jackson Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction Proj</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year General Plan Buildout + Proj</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td></td>
<td>Oper.(LOS) Des.(N) Planning Data</td>
</tr>
</tbody>
</table>

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4133 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
<td>Grade % Length mi</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

## Calculate Flow Adjustments

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

## 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>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 flow-speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

## Speed Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_LW</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<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>
</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>S</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>pc/mi/ln</td>
</tr>
</tbody>
</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 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,</td>
<td>11-3</td>
</tr>
</tbody>
</table>

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10/19/2015
**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 Golf Center Parkway
- Jurisdiction: General Plan Buildout + Proj
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

**Flow Inputs**

- Volume, V: 4187 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**

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

**Speed Inputs**

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

**Operational (LOS)**

- $v_p = \frac{V or DDHV}{PHF x N x f_{HV}}$
- $S = \frac{1484 pc/h/ln}{64.9 mph}$
- $D = \frac{v_p}{S}$
- LOS = C

**Design (N)**

- Design LOS
- Design $v_p = \frac{V or DDHV}{PHF x N x f_{HV}}$
- $S = \frac{pc/h/ln}{mph}$
- $D = \frac{v_p}{S}$
- 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
- $E_T$ - 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
- **Highway/Direction of Travel I-10 Eastbound**
- **From/To:** East of State Route 86
- **Jurisdiction:** General Plan Buildout + Proj
- **Analysis Year:**

## Flow Inputs
- **Volume, V:** 3117 veh/h
- **AADT:** ve/h/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D:** ve/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} = 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

## 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} x f_p)** pc/h/ln
  - **S:** 64.1 mph
  - **D = v_p / S:** 25.9 pc/mi/ln
  - **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

## 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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*HCS 2010™ Version 6.70 Generated: 10/19/2015 4:34 PM*
BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
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<tbody>
<tr>
<td>Analyst</td>
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<td>LLG</td>
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<td>AM Peak Hour</td>
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<tr>
<td>Highways/Direction</td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
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<tr>
<td>From/To</td>
<td>East of Dillon Road</td>
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<td>Jurisdiction</td>
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<td>Analysis Year</td>
<td>General Plan Buildout + Proj</td>
</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  | 3083 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)} 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 |

Calc Speed Adj and FFS

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

LOS and Performance Measures

Operational (LOS)

\[ v_p = \frac{(V \text{ or DDHV}) \times \text{PHF} \times N \times f_{HV}}{x f_p} \]

\[ S = 64.2 \text{ mph} \]

\[ D = \frac{v_p}{S} = 25.5 \text{ pc/mi/ln} \]

Design (N)

Design LOS

\[ v_p = \frac{(V \text{ or DDHV}) \times \text{PHF} \times N \times f_{HV}}{x f_p} \]

\[ S \]

\[ D = \frac{v_p}{S} \]

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
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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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 Eastbound
- **From/To**: East of Avenue 50
- **Jurisdiction**: General Plan Buildout +
- **Analysis Year**:

#### Flow Inputs
- **Volume, V**: 3429 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, PT**: 2
- **%RVs, PR**: 0
- **General Terrain**: Level
- **Grade**, **% Length**, **mi**:
- **Up/Down %**:

#### Calculate Flow Adjustments
- **fp**: 1.00
- **ET**: 1.5
- **ER**: 1.2
- **fHV = (1 + pT(fT - 1) + pR(fR - 1))**: 0.990

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

#### Speed Adjustments
- **Calc Speed Adj and FFS**

<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>

#### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Np = (V or DDHV) / (PHF x N x fHV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Design (N)</th>
<th>Np = (V or DDHV) / (PHF x N x fHV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

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

---

**Factor Location**

- **ER**: Exhibits 11-10, 11-12
- **fp**: Page 11-13
- **LOD, S, FFS, v**: 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 Frontage Road
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**: 

## Flow Inputs
- **Volume, V**: 3429 veh/h
- **AADT**: veh/day
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **%RVs, P_R**: 0
- **Peak-Hr Prop. of AADT, K**: 
- **Peak-Hr Direction Prop, D**: veh/h
- **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**: 2
- **Total Ramp Density, TRD**: ramps/ Mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

## Speed and Performance Measures
- **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)
  - **S**: 62.5 mph
  - **D = v_p / S**: 29.2 pc/mi/ln
  - **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
- **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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<td>LLG</td>
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<tr>
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<td>From/To Jurisdiction</td>
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<td>General Plan Buildout +</td>
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<tr>
<td>Des.(N)</td>
<td>☐</td>
</tr>
<tr>
<td>Planning Data</td>
<td>☐</td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V | 2492 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, P_T | 0.95 |
| Peak-Hr Direction Prop, D | %RVs, P_R | 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} = 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 |
| 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>Design LOS</td>
</tr>
<tr>
<td>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>pc/mi/ln</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

| 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 Cottonwood Springs Rd
- **Jurisdiction**: General Plan Buildout + Proj

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

## Flow Inputs
- **Volume, V**: 2487 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 0.95
- **Peak-Hr Direction Prop, D**: veh/h

## Flow Inputs
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, \( P_T \)**: 2
- **%RVs, \( P_R \)**: 0
- **General Terrain**: Level
- **Grade**: Up/Down %

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

## 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

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

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

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

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

## 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**
- **TRD - Page 11-11**
- **LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3**
<table>
<thead>
<tr>
<th>General Information</th>
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<td>LLG</td>
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<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 | 2545 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 | Grade % | Length mi |
| | Up/Down % | |

**Calculate Flow Adjustments**

\[ f_p = 1.00 \]
\[ E_T = 1.5 \]
\[ f_{HV} = \frac{1}{1+0.5(E_T - 1) + 0.5(E_R - 1)\times0.990} \]

**Speed Inputs**

| Lane Width | ft | f_LW | mph |
| Rt-Side Lat. Clearance | ft | f_LC | mph |
| Number of Lanes, N | 2 | | |
| 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 = \frac{(V \times DDHV)}{(PHF \times N \times f_{HV})} \times f_p ]</td>
<td>Design LOS</td>
</tr>
<tr>
<td>pc/h/ln</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>20.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</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_I - 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
- **Analyze:** 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 Paradise Valley
- **Jurisdiction:** General Plan Buildout + Proj

### Flow Inputs
- **Volume, V:** 2525 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **Peak-Hr Direction Prop. D:** %
- **DDHV = AADT x K x D:** veh/h
- **%Trucks and Buses, P_T:** 0.95
- **%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:** = \( \frac{1}{(1+P_T(E_T - 1) + P_R(E_R - 1))} \times 0.990 \)

### Speed Inputs
- **Lane Width:** ft
- **Rt-Side Lat. Clearance:** ft
- **Number of Lanes, N:** 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):**
  - \( v_p = \frac{(V \text{ or DDHV}) \times f_{HV}}{N \times f_p} \times 1342 \)
  - pc/h/ln
  - S: 65.0 mph
  - D = \( \frac{v_p}{S} \)
  - pc/mi/ln
  - LOS: C

### 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
- 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
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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

### General Information
- **Analyt:** 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:** General Plan Buildout + Proj
- **Analysis Year:**

### Flow Inputs
- **Volume, V:** 3479 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
- **fP:** 1.00
- **ET:** 1.5
- **fHV = \frac{1}{\left(\frac{fP}{1+fP(E_R-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
- **fLW:** mph
- **fLC:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures
- **Operational (LOS):**
  \[ v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \]
  \[ x_{fP} \]
- **S:** 62.1 mph
- **D = v_p / S:** 29.8 pc/mi
- **LOS:**

### Design (N)
- **Design 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
- **fLW:** Exhibit 11-8
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **fLC:** Exhibit 11-9
- **fP:** 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:** Oper.(LOS) 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Site Information
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Avenue 50
- **Jurisdiction:** General Plan Buildout + Proj

#### Project Description
- **Des.(N)**
- **Planning Data**

### Flow Inputs
- **Volume, V:** 3479 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
- **Grade:**
- **% Length:**
- **Up/Down %**

#### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_R:** 1.2
- **E_T:** 1.5
- **f_HV = 1/(1+P_T(E_R-1)+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
- **Base free-flow Speed:** 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)** 1849 pc/h/in
- **x f_p:**
- **S:** 62.1 mph
- **D = v_p / S:** 29.8 pc/mi/in
- **LOS:**

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

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## BASIC FREEWAY 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 Dillon Road
- **Jurisdiction**:
- **Analysis Year**: General Plan Buildout + Proj
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs
- **Volume, V**: 3217 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_T**: 1.5
- **f_{HV} = 1/[1 + P_r(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
- **FFS**: 65.0 mph

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

### Design (N)
- **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
- **BFFS**: Base free-flow speed
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

### 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

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## BASIC FREeways 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:** General Plan Buildout + Proj

### Flow Inputs
- **Volume, V:** 3145 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
- \( f_{HV} = \frac{1}{1 + (E_R - 1) + P_R(E_R - 1)} \) 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

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

### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S = \frac{64.0 \text{ mph}}{26.1} \)
  - \( D = \frac{v_p}{S} \)
- **LOS:**
  - \( L = D \)

### Design (N)
- **Design (N):**
- **Design LOS:**
  - \( \frac{v_p}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S \)
  - \( D = \frac{v_p}{S} \)
- **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**
- **BDFS - Base free-flow speed**

### 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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# BASIC FREEWAY 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>PM Peak Hour</td>
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## SITE INFORMATION

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Westbound</th>
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</thead>
<tbody>
<tr>
<td>From/To</td>
<td>East of Golf Center</td>
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<tr>
<td>Jurisdiction</td>
<td>Parkway</td>
</tr>
<tr>
<td>General Plan Buildout + Proj</td>
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</tr>
</tbody>
</table>

## PROJECT INFORMATION

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

## FLOW INPUTS

| Volume, V | 5244 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 |

### Calculate Flow Adjustments

- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_HV = \frac{1}{1+P_T(E_T-1)+P_R(E_R-1)} \times 0.990 \)

## SPEED INPUTS

| Lane Width | ft |
| Rr-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 (N)

- Design LOS
- 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
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LW} \) - 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 Westbound
- From/To: East of Jackson Street
- Jurisdiction: General Plan Buildout + Proj
- Analysis Year: 

### Flow Inputs
- **Volume, V**: 5145 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
- **Up/Down %**:

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **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
- **Base free-flow Speed**: mph

### Calc Speed Adj and FFS

### 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
- **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
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Monroe Street
- **Jurisdiction:**
- **Analysis Year:** General Plan Buildout + Proj

## Site Information

## Flow Inputs
- **Volume, V:** 6840 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **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:** %
- **Length:** mi
- **Up/Down %**

## Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **f_{HV} = \left[\frac{1}{E_{T}} \cdot (1 + P_T \cdot E_{T}) + P_R \cdot (E_{R} - 1)\right]:** 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_{LW}**
- **f_{LC}**

## LOS and Performance Measures
- **Operational (LOS):**
  \[ V_p = \frac{(V \text{ or } DDHV) \times f_{HV}}{(PHF \times N \times f_p)} \]
  \[ S = \frac{50.1 \text{ mph}}{48.4 \text{ pc/mi/ln}} \]
  \[ D = \frac{V_p}{S} \]
  \[ LOS = F \]

## Design (N)
- **Design LOS**
  \[ V_p = \frac{(V \text{ or } DDHV) \times f_{HV}}{(PHF \times N \times f_p)} \]
  \[ S = \frac{50.1 \text{ mph}}{48.4 \text{ pc/mi/ln}} \]
  \[ D = \frac{V_p}{S} \]
  \[ Required \ Number \ of \ Lanes, N \]

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

## 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
- **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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<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>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Westbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Jefferson Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout</td>
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<td>Analysis Year</td>
<td>Proj</td>
</tr>
<tr>
<td>□ Oper.(LOS)</td>
<td>□ Des.(N)</td>
</tr>
</tbody>
</table>

#### Flow Inputs

| Volume, V | 6917 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, PT | 0.95 |
| Peak-Hr Direction Prop, D | %RVs, PR | 2 |
| DDHV = AADT x K x D | veh/h |

#### 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 | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 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 x f_p)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>D = V_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></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 |
| f_p | Page 11-18 |
| E_R | Exhibits 11-10, 11-12 |
| f_LW | Exhibit 11-8 |
| E_L | Exhibits 11-10, 11-11, 11-13 |
| f_LC | Exhibit 11-9 |
| f_TRD | Page 11-18 |
| 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 Westbound
- **From/To:** East of Washington Street
- **Jurisdiction:**
- **Analysis Year:**
- **General Plan Buildout Type:**

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

#### Flow Inputs
- **Volume, V:** 8091 veh/h
- **AADT:** veh/day
- **Peak-Hour Factor, PHF:** 0.95
- **% Trucks and Buses, PT:** 2
- **% RVs, PR:** 0
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:** veh/h
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi
- **Up/Down %**

#### Calculate Flow Adjustments
- **f_R:** 1.00
- **E_R:** 1.2
- **f_T:** 1.5
- **f_HV = \sqrt{[1 + \frac{\text{PT}(E - 1)}{1 + \frac{\text{PR}(E - 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

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

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

#### Glossary
- **N:** Number of lanes
- **S:** Speed
- **D:** Density
- **v:** 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, 11-1*, 11-13
- **f_LC:** Exhibit 11-9
- **v:** Page 11-18
- **TRD:** Page 11-11
- **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 Westbound
- **From/To**: East of Cook Street
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**:

## Flow Inputs
- **Volume, V**: 8492 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, 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 + 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
- **f_{LW}**: mph
- **f_{LC}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

## LOS and Performance Measures
- **LOS**:
- **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_{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 Monterey Avenue
- **Jurisdiction**: General Plan Buildout + Proj
- **Analysis Year**

### Flow Inputs
- **Volume, V**: 8368 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
- **E_R**: 1.2
- **fHV = 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

### Speed Adjust 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
- **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_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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HCS 2010™ Version 8.70 Generated: 10/19/2015 4:43 PM
# BASIC FREEWAY SEGMENTS WORKSHEET

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<th>Site Information</th>
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<tr>
<td>Analyst J</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
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<tr>
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<td>Jurisdiction</td>
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<td>Analysis Time Period PM Peak Hour</td>
<td>Analysis Year General Plan Buildout + Proj</td>
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<th>Flow Inputs</th>
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<tr>
<td>Volume, V 8038 veh/h</td>
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<td>AADT veh/day</td>
<td>%Trucks and Buses, P_T 2</td>
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<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R 0</td>
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<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</td>
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<td>Up/Down %</td>
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<th>Calculate Flow Adjustments</th>
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<tbody>
<tr>
<td>f_p 1.00</td>
<td>E_R 1.2</td>
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<tr>
<td>E_T 1.5</td>
<td>f_HV = 1/[1+P_T(F_T-1)+P_R(F_R-1)] 0.990</td>
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<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
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<tr>
<td>Lane Width ft</td>
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</tr>
<tr>
<td>Rt-Side Lat. Clearance ft</td>
<td></td>
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<tr>
<td>Number of Lanes, N 4</td>
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<td>Total Ramp Density, TRD ramps/mi</td>
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<tr>
<td>FFS (measured) 65.0 mph</td>
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<tr>
<td>Base free-flow Speed, BFFS</td>
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<tr>
<td>Operational (LOS)</td>
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<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
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<tr>
<td>x f_p</td>
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<tr>
<td>S 57.3 mph</td>
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<tr>
<td>D = v_p / S</td>
<td></td>
</tr>
<tr>
<td>LOS E</td>
<td></td>
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<td>LOS and Performance Measures</td>
<td>Design (N)</td>
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<td>Operational (LOS)</td>
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<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
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<tr>
<td>x f_p</td>
<td></td>
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<tr>
<td>S 57.3 mph</td>
<td></td>
</tr>
<tr>
<td>D = v_p / S</td>
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<td>LOS E</td>
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<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
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<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_LC - Exhibit 11-9</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td>f_p - Page 11-18</td>
</tr>
</tbody>
</table>

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HCS 2010™ Version 6.70 Generated: 10/19/2015 4:43 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**: West of Monterey Avenue
- **Jurisdiction**: Analysis Year
- **General Plan Buildout + Proj**:

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

### Flow Inputs
- **Volume, V**: 7398 veh/h
- **AADT**: veh/day
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2%
- **%RVs, P_R**: 0%
- **Peak-Hr Prop. of AADT, K**:
- **Peak-Hr Direction Prop, D**: veh/h
- **General Terrain**: Level
- **Grade % Length mi**:
- **Up/Down %**:

### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **f_HV = μ(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_LW**
- **f LC**
- **FFS**: 65.0 mph

### LOS and Performance Measures
- **Operational (LOS)**
- **L = (V or DDHV) / (PHF x N x f_HV)** pc/h/ln
- **x f_p)**
- **S**: 60.5 mph
- **D = L / S**: 32.5 pc/mi/ln
- **LOS**: D

### Design (N)
- **Design (N)**
- **Design LOS**
- **v_p = (V or DDHV) / (PHF x N x f_HV)** pc/h/ln
- **x f_p)**
- **S**: mph
- **D = L / 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
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3
- **TRD**: Page 11-11

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*HCS 2010™ Version 6.70 Generated: 10/19/2015 4:45 PM*
## BASIC FREEWAY SECTIONS WORKSHEET

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<td>Analyst</td>
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<tr>
<td>Agency or Company</td>
<td>From/To</td>
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<td>Date Performed</td>
<td>Jurisdiction</td>
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<td>General Plan Buildout + Proj</td>
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<tr>
<th><strong>Project Description</strong></th>
<th><strong>Oper.(LOS)</strong> □</th>
<th><strong>Des.(N)</strong> □</th>
<th><strong>Planning Data</strong> □</th>
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<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>7846 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
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</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P&lt;sub&gt;T&lt;/sub&gt;</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td>%RVs, P&lt;sub&gt;R&lt;/sub&gt;</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>veh/h</td>
<td>Grade % Length mi</td>
<td>Up/Down %</td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>f&lt;sub&gt;LW&lt;/sub&gt;</th>
<th>mph</th>
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</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td>f&lt;sub&gt;LC&lt;/sub&gt;</td>
<td>mph</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>3</td>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/ mi</td>
<td>FFS</td>
<td>65.0</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0</td>
<td>mph</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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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 \text{ or DDHV}) / (PHF \times N \times f_{HV}) \times f_p )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>( v_p = (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>mph</td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</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<sub>p</sub> - 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>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>
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<tr>
<td>Agency or Company</td>
<td>From/To: East of Cook Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction: General Plan Buildout</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year: Proj</td>
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<tr>
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<td>Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td></td>
<td>oper.(LOS) Des.(N) Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V | 8484 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT      | 1veh/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 |
| 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+P_T(F_T - 1) + P_R(F_R - 1)) | 0.990 |

**Speed Inputs**

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

**Calc Speed Adj and FFS**

<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
<th>Design (N)</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} x f_p)</td>
<td>Design LOS</td>
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<tr>
<td>S</td>
<td>28.4 mph</td>
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<tr>
<td>D = v_p / S</td>
<td>106.0 pc/mi</td>
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<tr>
<td>LOS</td>
<td>F</td>
</tr>
<tr>
<td>Design (N)</td>
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</tbody>
</table>

**Glossary**

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

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10/19/2015
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<td>LLG</td>
</tr>
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<td>9/22/2015</td>
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<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
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<tr>
<td>From/To</td>
<td>East of Washington Street</td>
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<tr>
<td>Jurisdiction</td>
<td>General Plan Buildout + Proj</td>
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</table>

### Flow Inputs

| Volume, V (veh/h) | 8211 |
| 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 | |

### Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| f_{HV} = 1/[1+PT(ET-1)+PR(ER-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) (mph) | 65.0 |
| Base free-flow Speed, BFFS (mph) | |

### Calc Speed Adj and FFS

| f_{lw} | mph |
| f_{lc} | mph |
| TRD Adjustment (mph) | |
| FFS (mph) | 65.0 |

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
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<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
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<tr>
<td>x f_p</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS</td>
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### Design (N)

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<tr>
<td>x f_p</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</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 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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10/19/2015
BASIC FREEWAY SEGMENTS WORKSHEET

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<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
</tr>
<tr>
<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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[✓] Oper.(LOS)  [ ] Des.(N)  [ ] Planning Data

### Flow Inputs

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<tr>
<th>Volume, V</th>
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<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, PT</td>
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<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, PR</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>Level</td>
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</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade</td>
<td>% Length</td>
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<td></td>
<td>Up/Down %</td>
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### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>f_p</th>
<th>1.00</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R</td>
<td>1.2</td>
</tr>
<tr>
<td>f_{HV} = 1{f_p + (E_R - 1) + (P_R - 1)}</td>
<td>0.990</td>
</tr>
</tbody>
</table>

### 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>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 Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{LW}</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>V_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = V_p / S</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
</tr>
<tr>
<td>V_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = V_p / S</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
</tr>
</tbody>
</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 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_{L} - 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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HCS 2010™ Version 6.70 Generated: 10/19/2015 4:46 PM

file://C:/Users/besa/AppData/Local/Temp/f2kA5D8.tmp 10/19/2015
**BASIC FREEWAY WORKSHEET**

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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 Monroe Street</td>
</tr>
<tr>
<td>Date Performed: 9/22/2015</td>
<td>Jurisdiction:</td>
</tr>
<tr>
<td>Analysis Time Period: PM Peak Hour</td>
<td>Analysis Year: General Plan Buildout +</td>
</tr>
</tbody>
</table>

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

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

**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>
<th>%RVs, P_R</th>
</tr>
</thead>
<tbody>
<tr>
<td>6529</td>
<td></td>
<td></td>
<td>0.95</td>
<td>2</td>
</tr>
</tbody>
</table>

**Peak-Hr Prop. of AADT, K**

<table>
<thead>
<tr>
<th>Peak-Hr Direction Prop, D</th>
<th>Grade</th>
<th>% Length</th>
<th>mi</th>
<th>Up/Down %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Calculate Flow Adjustments**

<table>
<thead>
<tr>
<th>f_p</th>
<th>E_R</th>
<th>f_HV</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.00</td>
<td>1.2</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_LW</th>
<th>f_C</th>
<th>TRD Adjustment</th>
<th>FFS</th>
<th>TRD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>65.0</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>x f_p</td>
<td></td>
</tr>
<tr>
<td>x f_LW</td>
<td></td>
</tr>
<tr>
<td>F (mph)</td>
<td></td>
</tr>
<tr>
<td>D = v_p / S</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Required Number of Lanes, N</th>
</tr>
</thead>
<tbody>
<tr>
<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
- 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_C - Exhibit 11-9
- P_T - 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>
</tr>
</thead>
<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>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td></td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
</tr>
<tr>
<td>Analysis Year</td>
<td></td>
</tr>
<tr>
<td>General Plan Buildout</td>
<td>Proj</td>
</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 \( \text{veh/h} \) 6137
- AADT \( \text{veh/day} \)
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- \( \text{DDHV} = \text{AADT} \times K \times D \) \( \text{veh/h} \)
- 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

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

### 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 Inputs

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

### LOS and Performance Measures

- \( V_p = (\text{V or DDHV}) / (\text{PHF} \times N \times f_{HV} \times f_p) \)
- \( S = 56.5 \) mph
- \( D = V_p / S \)
- \( LOS = E \)

### 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

- \( E_T \) - 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>
</tr>
</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 Golf Center</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>General Plan Buildout + Proj</td>
</tr>
<tr>
<td>Project Description</td>
<td>Oper.(LOS)</td>
</tr>
<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
<tr>
<td>Volume, V</td>
<td>5926 veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>Peak-Hour Factor, PHF 0.95</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R 0</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>General Terrain: Level</td>
</tr>
<tr>
<td></td>
<td>Grade % Length mi</td>
</tr>
<tr>
<td></td>
<td>Up/Down %</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

\[ f_p = 1.00 \]
\[ E_R = 1.2 \]
\[ f_{HV} = \frac{1}{1 + P_T E_R \cdot 1 + P_R E_R \cdot 1} 0.990 \]

#### 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>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>
</tbody>
</table>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>TRD Adjustment</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFS</td>
<td>65.0 mph</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 = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV}) \times f_p} )</td>
<td>(</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>pc/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</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 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
- \( f_{LVW} \) - 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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file:///C:/Users/besa/AppData/Local/Temp/f2k7A52.tmp 10/19/2015
BASIC FREEWAY SEGMENTS WORKSHEET

General Information

<table>
<thead>
<tr>
<th>Analyst</th>
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</tr>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<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>
<tr>
<td>Oper.(LOS)</td>
<td></td>
</tr>
</tbody>
</table>

Flow Inputs

| Volume, V | 4757 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

| fp | 1.00 |
| ET | 1.5 |
| ER | 1.2 |
| 1/fHV = 1/[1+PT(ET-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

| fLW | mph |
| fLC | mph |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

LOS and Performance Measures

| Operational (LOS) | | Design (N) |
| v_p = (V or DDHV) / (PHF x N x fHV x fp) | 2529 pc/h/ln |
| S | 46.9 mph |
| D = v_p / S | 53.9 pc/mi/ln |
| LOS | F |
| Design LOS | |
| v_p = (V or DDHV) / (PHF x N x fHV x fp) | 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_L | 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><strong>General Information</strong></th>
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<tr>
<td>Analyst</td>
<td>JT</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>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: General Plan Buildout + Proj
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

## Flow Inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>4575 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>
</tbody>
</table>

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Description</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>
</tbody>
</table>

### Speed Inputs

<table>
<thead>
<tr>
<th>Description</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>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Description</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>49.9 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>48.7 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>F</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
- **f_{LC}**: Exhibit 11-9
- **TRD**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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<table>
<thead>
<tr>
<th>H-108</th>
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</table>

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

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V veh/h</td>
<td>4729</td>
</tr>
<tr>
<td>AADT veh/day</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K %RVs, PR</td>
<td>0</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D veh/h</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Symbol</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>
</tbody>
</table>

### Speed Inputs

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

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LW mph</td>
<td></td>
</tr>
<tr>
<td>f_LC mph</td>
<td></td>
</tr>
<tr>
<td>FFS Adjustment</td>
<td></td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</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></td>
</tr>
<tr>
<td>x f_p</td>
<td>2514 pc/h/ln</td>
</tr>
<tr>
<td>S mph</td>
<td>47.4</td>
</tr>
<tr>
<td>D = v_p / S pc/mi/ln</td>
<td>53.0</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
</tr>
</tbody>
</table>

### Glossary

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

### Factor Location

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R - Exhibits 11-10, 11-12</td>
<td></td>
</tr>
<tr>
<td>E_L - Exhibits 11-10, 11-11, 11-13</td>
<td></td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td></td>
</tr>
<tr>
<td>TRD - Page 11-11</td>
<td></td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2</td>
<td></td>
</tr>
</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 Frontage Road
- Jurisdiction: General Plan Buildout
- Analysis Year: Proj

### Flow Inputs
- Volume, V: 4729 veh/h
- AADT: 2373 veh/day
- Peak-Hr Prop. of AADT, K: 0.85
- Peak-Hr Direction Prop, D: 0.85
- DDHV = AADT x K x D: 1298 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 = 1/[1 + P_T(1 - E_T) + P_R(1 - E_R)]: 0.990

### Speed Inputs
- Lane Width: 4 ft
- Rt-Side Lat. Clearance: 4 ft
- Number of Lanes, N: 2 ramps/mi
- Total Ramp Density, TRD: 65.0 mph
- 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
- 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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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

#### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Paradise Valley
- **Jurisdiction**: General Plan Buildout +
- **Analysis Year**: Proj

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

#### Flow Inputs
- **Volume, V**: 3731 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
- **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 + 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

#### 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_{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 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**: General Plan Buildout + Proj
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs
| Volume, V | 3644 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 |

### Calculate Flow Adjustments
- \[ f_p = 1.00 \]
- \[ E_R = 1.2 \]
- \[ f_{HV} = \frac{1 + f_PT (E_R - 1) + f_PR (E_R - 1)}{0.990} \]

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

### Calc Speed Adj and FFS
- \[ f_{LV} \]
- \[ f_{LC} \]

### LOS and Performance Measures
- **Operational (LOS)**
  - \[ v_p = \frac{(V or DDHV) \times (PHF \times N \times f_{HV})}{1937} \] pc/h/ln
  - \[ S = 60.9 \] mph pc/mi/ln
  - \[ D = \frac{v_p}{S} \] pc/mi/ln

### Design (N)
- **Design LOS**
  - \[ v_p = \frac{(V or DDHV) \times (PHF \times N \times f_{HV})}{1937} \] pc/h/ln
  - \[ S \] mph pc/mi/ln
  - \[ D = \frac{v_p}{S} \]
  - **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

### 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
APPENDIX H-III

YEAR 2035 WITH PROJECT WITH IMPROVEMENTS
TRAFFIC CONDITIONS
### Basic Freeway Segments Worksheet

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
</tbody>
</table>

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

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4054 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade</td>
<td>%</td>
</tr>
</tbody>
</table>

### 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 |
| Rte-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 = (V or DDHV) / (PHF x N x f_HV)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x f_p</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S = 65.0 mph</td>
<td></td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

### Glossary

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

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file:///C:/Users/tucker/AppData/Local/Temp/f2k56ED.tmp  1/27/2016
## BASIC FREEWAY SECTIONS 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 Avenue 50  
**Jurisdiction:** [Mitigation]  
**Analysis Year:** General Plan Buildout + Proj

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

### Flow Inputs

| Volume, V | 4054 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

\[
f_p = 1.00 \
E_R = 1.2 \
f_HV = \frac{1}{[1+P_T(E_R - 1) + P_R(E_R - 1)]} = 0.990
\]

### Speed Inputs

| Lane Width | ft | Speed Inputs | Calc Speed Adj and FFS |
| Rt-Side Lat. Clearance | ft | \( f_{w} \) | mph |
| Number of Lanes, N | 3 | \( f_{LC} \) | 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

**Operational (LOS)**

\[
v_p = \frac{(V \text{ or } DDHV) \times f_{HV}}{PHF \times N \times f_T} \times f_p = 1437 \text{ pc/h/ln} \
S = 65.0 \text{ mph} \
D = v_p / S = 22.1 \text{ pc/mi/ln} \
LOS = C
\]

**Design (N)**

Design LOS

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

**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_{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 SECTIONS WORKSHEET

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

#### Site Information

#### Flow Inputs
- **Volume, V**: 3879 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
- $f_p = 1.00$
- $E_T = 1.5$
- $f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1)] = 0.990$

#### 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)**
- **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_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 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

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: [Mitigation]
- **General Plan Buildout + Proj:**

### Flow Inputs
- **Volume, V**: 6517 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
- **Peak-Hour Factor, PHF**: 0.95

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

### Design (N)
- **Operational (LOS)**
- **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
- **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 Monroe Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj

## Flow Inputs
- **Volume, V:** 8079 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = 1\left[1+\frac{f_p}{E_T}\left(E_T - 1\right) + \frac{E_T(E_R - 1)}{E_T}\right] \) 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:** mph

## Calc Speed Adj and FFS
- \( f_{LVW} \)
- \( f_{LC} \)
- TRD Adjustment
- FFS

## LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
  - \( S = \frac{57.1}{mph} \)
  - \( D = \frac{v_p}{S} \)
  - \( LOS = \frac{pc/ln}{mph} \)

## Design (N)
- **Design (N):**
- **Design LOS:**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
  - \( S = \frac{57.1}{mph} \)
  - \( D = \frac{v_p}{S} \)

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

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10/20/2015
# 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 Jefferson Street
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

## Flow Inputs
- Volume, V: 8415 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

## Calculate Flow Adjustments
- \( f_p \) = 1.00
- \( E_R \) = 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 = 4
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

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

## LOS and Performance Measures
- Operational (LOS)
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
- \( x f_p \) = 2237 pc/h/ln
- \( S = 55.1 \) mph
- \( D = v_p / S = 40.6 \) pc/mi/ln

## Design (N)
- Design 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
- FFS - Free-flow speed
- BFFS - Base free-flow 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
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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file:///C:/Users/tucker/AppData/Local/Temp/f2kB67A.tmp

10/20/2015
### General Information  |
| Analyst       | JT       | Jurisdiction               | General Plan Buildout + Proj |
| Agency or Company | LLG     | From/To                      | East of Washington Street  |
| Date Performed | 9/22/2015 | [Mitigation]                |                             |
| Analysis Time Period | AM Peak Hour | Analysis Year                      |                             |
| Project Description | 2-10-3136-2 Paradise Valley Specific Plan, Riverside County |                             |                             |

### Site Information  |

- Highway/Direction of Travel: I-10 Westbound
- Land Use: [Mitigation]

### 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>
</tr>
</thead>
<tbody>
<tr>
<td>9649</td>
<td></td>
<td>0.95</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K %RVs, P_R</td>
<td>0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
<td>Grade %</td>
<td>Length mi</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Up/Down %</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments  |

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

### Speed Inputs  |

<table>
<thead>
<tr>
<th>Lane Width (ft)</th>
<th>Rt-Side Lat. Clearance (ft)</th>
<th>( f_{lw} ) (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD (ramps/mi)</td>
<td>TRD Adjustment (mph)</td>
<td></td>
</tr>
<tr>
<td>FFS (measured) (mph)</td>
<td>65.0</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS (mph)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### LOS and Performance Measures  |

- \( v_p = \frac{(V \text{ or DDHV}) \times f_{HV}}{(PHF \times N \times f_{HV})} \) pc/h/ln
- \( S \) = 45.8 mph
- \( D = \frac{v_p}{S} \) pc/mi/ln

### Design (N)  |

- Design Operational (LOS) (pc/h/ln)
- Design LOS
- 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

- 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
- \( f_{E_T} \) - 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: 10/20/2015 12:30 PM
## 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 Cook Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>[Mitigation]</td>
</tr>
<tr>
<td>Analysis Year</td>
<td>General Plan Buildout + Proj</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

### Site Information

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>11073 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>%RVs, P_R = 0</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 Grade % Length mi</td>
</tr>
</tbody>
</table>

### 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

<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>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>
</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>( f_{LW} )</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LC} )</td>
<td>mph</td>
</tr>
</tbody>
</table>

### Speed and Performance Measures

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
</tr>
<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 )</td>
</tr>
<tr>
<td>LOS</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
- \( f_{LW} \) - 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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H-120

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10/20/2015
### BASIC FREEWAY SEGMENTS WORKSHEET

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

#### Site Information
- **Oper.(LOS):** ✓
- **Des.(N):**
- **Planning Data:**

#### Flow Inputs
- **Volume, V:** 10210 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
- **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:** 4
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph
- **f_{1,w}:** mph
- **f_{LC}:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS):**
  \[ v_p = \frac{(V \text{ or DDHV})}{PHF \times N \times f_{HV}} \]
  \[ x_{f_p} = \frac{2714}{S} \text{ pc/h/ln} \]
  \[ D = \frac{v_p}{S} \text{ pc/ln} \]
  \[ D = \frac{v_p}{S} \text{ pc/ln} \]
  \[ D = \frac{v_p}{S} \text{ pc/ln} \]

#### Design (N)
- **Design LOS**
- **Design (N)**
- **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_{LC}:** Exhibit 11-8
- **f_{1,w}:** Exhibit 11-9
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **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**: 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**: [Mitigation]
- **Analysis Year**: General Plan Buildout + Proj

## Flow Inputs
- **Volume, V**: 10126 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_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**: 5
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

## LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \)
  - \( f_{HV} = 2153 \text{ pc/h/ln} \times f_p \)
  - \( S = 57.0 \text{ mph} \)
  - \( D = v_p / S = 37.8 \text{ pc/mi/ln} \)
  - \( E = \)

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

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

## 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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10/20/2015
### BASIC FREEWAY WORKSHEET

#### 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>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>
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<td></td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
<tr>
<td></td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
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<tr>
<td></td>
<td>From/To East of Monterey Avenue</td>
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<tr>
<td></td>
<td>Jurisdiction [Mitigation]</td>
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<td></td>
<td>Analysis Year General Plan Buildout + Proj</td>
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<table>
<thead>
<tr>
<th>Project Description</th>
<th>Oper.(LOS)</th>
<th>Des.(N)</th>
<th>Planning Data</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Flow Inputs

| Volume, V           | 5905 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

\[ f_p = \frac{1}{1 + \frac{P_T}{P_R}} \]

\[ E_R = 1.2 \]

\[ f_{HV} = 1 + \frac{P_T}{P_R} \]

#### 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>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>
</tbody>
</table>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Speed</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>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p )</td>
<td>N</td>
</tr>
<tr>
<td>( f_{HV} )</td>
<td>D</td>
</tr>
<tr>
<td>( S )</td>
<td>S</td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td>C</td>
</tr>
<tr>
<td>( LOS )</td>
<td>Required Number of Lanes, N</td>
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#### 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_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

#### Factor Location

- HCS 2010™ Version 6.70
- Generated: 10/20/2015 12:31 PM

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10/20/2015
# 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 Cook Street
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

## Flow Inputs
- Volume, V: 5533 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
- $f_p = 1.00$
- $f_V = \frac{1}{(1 + P_{TR}(E_T - 1) + P_{PR}(ER - 1))} = 0.990$

## 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
- $f_{LV}$: 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
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

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10/20/2015
## 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:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj

### Flow Inputs
- **Volume, V:** 5454 veh/h
- **AADT:** 1450 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/(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
- **Operational (LOS):**
  - **v_p = (V or DDHV) / (PHF x N x f_{HV})** pc/h/ln
  - **S:** 65.0 mph
  - **D = v_p / S:** 22.3 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

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

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

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

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## Site Information

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<td>Analysis Year</td>
<td>General Plan Buildout + Proj</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

- **Volume, V:** 5029 veh/h
- **AADT:** 1.5 veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D:** 1.00 veh/h

### Peak-Hour Factor, PHF

- **PHF:** 0.95
- **Trucks and Buses, P_T:** 2
- **%RVs, P_R:** 0

### 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:** 4
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph

### Base free-flow Speed, BFFS

- **mph:**

\[ f_{LV} \]

\[ f_{LC} \]

### Calc Speed Adj and FFS

- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
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<tbody>
<tr>
<td>[ v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p ]</td>
<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>
<td>S</td>
</tr>
<tr>
<td>D = \frac{v_p}{S} = 20.6 pc/mi/ln</td>
<td>D = \frac{v_p}{S} = pc/mi/ln</td>
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<tr>
<td>LOS C</td>
<td>Required Number of Lanes, N</td>
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</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_{LVW} - 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 Monroe Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: General Plan Buildout + Proj

#### Flow Inputs
- **Volume, V**: 4907 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %RVs, P_R = 0
- **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
- **Grade**: % Length
- **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))]**

#### 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**
- **Calc Speed Adj and FFS**

#### Design (N)
- **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

#### Factor Location
- **E_R - Exhibits 11-10, 11-12**
- **f_p - Page 11-18**
- **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>
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</tbody>
</table>

### Site Information

| Highway/Direction of Travel | I-10 Eastbound |
| From/To | East of Jackson Street |
| Jurisdiction | [Mitigation] |
| Analysis Year | General Plan Buildout + Proj |

### Project Description

- 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- ✚ Oper. (LOS) / Des. (N) / Planning Data

### Flow Inputs

| Volume, V | 4133 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, \( P_R \) = 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D | veh/h |

### Calculate Flow Adjustments

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

### Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 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

| \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \times f_p \) | 1099 pc/h/ln |
| S | 65.0 mph |
| D = \( v_p / S \) | 16.9 pc/mi/ln |
| LOS | B |

### Design (N)

| Design (N) |
| Design LOS |

### 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 |

### Required Number of Lanes, N

| Required Number of Lanes, N | pc/mi/ln |

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10/20/2015
## 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 Eastbound
- From/To: East of Golf Center Parkway
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

### Site Information
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Golf Center Parkway
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

### Flow Inputs
- Volume, V: 4187 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
- Up/Down %

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

### Speed Inputs
- Lane Width: ft
- Rt-Side Lnt. 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)

### 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**

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<td>3117 veh/h</td>
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<td>%Trucks and Buses, P_T</td>
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<td>Peak-Hr Direction Prop, D</td>
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<td>Total Ramp Density, TRD</td>
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<td>x f_p)</td>
<td>pc/h/ln</td>
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<td>pc/mi/ln</td>
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<td>BFFS - Base free-flow speed</td>
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<td>DDHV - Directional design hour volume</td>
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10/20/2015
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<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
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**Project Description** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Site Information

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<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
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<tr>
<td>From/To</td>
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### Flow Inputs

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<td>veh/day</td>
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<td>%Trucks and Buses, P_T</td>
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<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
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<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
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**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
- \( f_{HV} = \frac{1}{1+(P_T(1-E_R)^{-1}) + P_R(1-E_R^{-1})}} \) = 0.990

### Speed Inputs

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<tr>
<th>Lane Width</th>
<th>ft</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side I at 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>

### 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>( S \times f_p )</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>16.8 pc/mi/ln</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>Required Number of Lanes, N</td>
</tr>
</tbody>
</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 speed</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
- \( f_{LV} \) - 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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10/20/2015
### 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 Avenue 50
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

### Flow Inputs
- Volume, V: 3429 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

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

### 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 Inputs
- 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)
- \( V_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
- \( S = \frac{1215}{18.7} \) pc/h/ln
- \( D = \frac{V_p}{S} \) pc/mi/ln
- \( LOS = \frac{C}{11.3} \)

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

### Factor Location
- \( E_R \) - 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 Frontage Road
- Jurisdiction: [Mitigation]
- General Plan Buildout + Proj
- Analysis Year

#### Flow Inputs
- Volume, V: 3429 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
- \( f_p = 1.00 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1+P_T(E_T + 1) + P_R(E_R + 1)} = 0.990 \)

#### 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
- \( f_{HV} \)
- \( f_{LC} \)
- TRD Adjustment
- FFS

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

#### Design (N)
- Design LOS
- Design FFS
- Design (N)
- 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_T - Exhibits 11-10, 11-11
- E_R - Exhibits 11-10, 11-12
- 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 Westbound
- From/To: East of Frontage Road
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

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

### Flow Inputs
- Volume, V: 3479 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{[1+P_T(E_T-1) + P_R(E_R-1)]} \)

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

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

### Design (N)
- Design LOS
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \)
  - S: mph
  - D = \( \frac{v_p}{S} \) 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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# 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 Avenue 50
- **Jurisdiction**: [Mitigation]
- **General Plan Buildout**: Project

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

## Flow Inputs
- **Volume, V**: 3479 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

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

### Design (N)
- **Design LOS**
- **$v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV})$**: 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
- **$f_{LV}$**: 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 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 State Route 86
- Jurisdiction: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

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

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

### Flow Inputs
- Volume, V: 3145 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
\[
\begin{align*}
f_p & = 1.00 \\
E_R & = 1.2 \\
E_T & = 1.5
\end{align*}
\]

- \( f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \) 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

### LOS and Performance Measures
- Design (N)
- Design LOS
- 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_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**: 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 Jackson Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: General Plan Buildout + Proj

#### Flow Inputs
- **Volume, V**: 5145 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %RVs, PR
- **Peak-Hr Direction Prop, D**: General Terrain: Level
- **DDHV = AADT x K x D**: veh/h

#### Calculate Flow Adjustments
- **$f_p$**: 1.00
- **$E_T$**: 1.5
- **$f_{HV} = \frac{1}{1 + \left( f_p E_T - 1 \right)} + \left( P_R E_R - 1 \right)$**: 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)**
- **$v_p = \frac{(V or DDHV)}{(PHF \times N \times f_{HV})}$**: pc/h/ln
- **S**: 65.0 mph
- **D = $v_p / S$**: pc/mi/ln
- **LOS**

#### Design (N)
- **Design LOS**
- **$v_p = \frac{(V or DDHV)}{(PHF \times N \times f_{HV})}$**: 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**
- **$f_{LV}$ - 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**
### 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:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj

### Flow Inputs
- **Volume, V:** 6840 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %Trucks and Buses, P_T 2
- **Peak-Hr Direction Prop, D:** General Terrain: Level
- **DDHV = AADT x K x D:** veh/h
- **Peak-Hour Factor, PHF:** 0.95
- **%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:** 4
- **Total Ramp Density, TRD:** ramps/MI
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

### LOS and Performance Measures
- **LOS:** Design (N)
- **Operational (LOS):** Design LOS
- **v_p = (V or DDHV) / (PHF x N x f_{HV})**: pc/h/ln
- **S:** 62.5 mph
- **D:** 29.1 pc/mi/ln
- **LOS:** D

### Glossary
- N - Number of lanes
- V - Hourly volume
- f_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_{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
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analysis Time Period**: PM Peak Hour
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: [Mitigation]
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Site Information
- **Analysis Year**: General Plan Buildout + Proj
- **Oper.(LOS)**: ✔️
- **Des.(N)**: ☐
- **Planning Data**: ☐

## Flow Inputs
- **Volume, V**: 6917 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
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} \) = 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_{LVW}**
- **f_{LC}**
- **TRD Adjustment**
- **FFS**

## LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = (V \text{ or } DDHV) \div (PHF \times N \times f_{HV}) \times f_p \)
  - \( x = 1838 \text{ pc/h/ln} \)
  - \( S = 62.3 \text{ mph} \)
  - \( D = v_p / S \)

## Design (N)
- **Design LOS**
  - \( v_p = (V \text{ or } DDHV) \div (PHF \times N \times f_{HV}) \times f_p \)
  - \( x = 4 \text{ pc/h/ln} \)
  - \( D = v_p / S \)

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

## Factor Location
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_p**: Page 11-18
- **LOS**: S, FFS, \( v_p \): Exhibits 11-2, 11-3

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10/20/2015
**BASIC FREEWAY SEGMENTS WORKSHEET**

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<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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 Washington Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction [Mitigation]</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year General Plan Buildout + Proj</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** 8091 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
- \( E_R \) 1.2
- \( E_T \) 1.5
- \( f_{HV} = \frac{1}{1 + P_T(E_T \cdot 1) + P_R(E_R \cdot 1)} \) 0.990

### Speed Inputs

- **Lane Width** ft
- **Rt-Side Lat. Clearance** ft
- **Number of Lanes, N** 4 ramps/mi
- **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

### Design (N)

### Operational (LOS)

\[
V_p = \frac{(V \text{ or DDHV}) \times (\text{PHF} \times N \times f_{HV} \times f_p)}{2151} \quad \text{pc/h/ln}
\]

\[
S = 57.0 \quad \text{mph}
\]

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

### Glossary

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

### Factor Location

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_{iw} \) - 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
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Cook Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj

### Site Information
- **Oper.(LOS):**
- **Des.(N):**
- **Planning Data:**

### Flow Inputs
- **Volume, V:** 8492 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
- **Grade:** %
- **Length:** mi

### 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

### Calc Speed Adj and FFS
- **Calc. Speed Adj:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures
- **Operational (LOS):**
- **Design (N):**
  - **Design LOS:**
  - **Design 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
- **LOS:** Base free-flow speed

### Factor Location
- **E_R:** Exhibits 11-10, 11-12
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_{HV}:** Page 11-18
- **BFFS:** 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:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs
- **Volume, V:** 8368 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
- **%General Terrain:** Level
- **Grade:** % Length mi
- **Up/Down %**

### Calculate Flow Adjustments
- **$f_p$**
- **$E_R$**
- **$E_T$**
- **$f_{TRV}$**

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

### LOS and Performance Measures
- **Operational (LOS)**
  - $v_p = (V or DDHV) / (PHF x N x f_{TRV})$
  - $f_{fv}$ pc/h/ln
  - $S$ mph
  - $D = v_p / S$ pc/mi/ln
  - 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

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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 Westbound
- **From/To**: West of Monterey Avenue
- **Jurisdiction**: [Mitigation]
- **General Plan Buildout + Proj**
- **Analysis Year**

#### Flow Inputs
- **Volume, V**: 8038 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, P<sub>T</sub> 2
- **Peak-Hr Direction Prop, D**: %RVs, P<sub>R</sub> 0
- **DDHV = AADT x K x D**: veh/h

#### Calculate Flow Adjustments
- **f<sub>p</sub>**: 1.00
- **E<sub>R</sub>**: 1.2
- **f<sub>HV</sub> = 1/[1+P<sub>T</sub>(E<sub>R</sub> - 1) + P<sub>R</sub>(E<sub>R</sub> - 1)]**: 0.990

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 5
- **Total Ramp Density, TRD**: ramps/mi
- **FFS (measured)**: 65.0 mph
- **Base free-flow Speed, BFFS**: mph

#### Calc Speed Adj and FFS
- **f<sub>iW</sub>**: mph
- **f<sub>LC</sub>**: mph
- **FFS Adjustment**: mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - **v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>)**: 1709 pc/h/ln
  - **S**: 63.6 mph
  - **D = v<sub>p</sub> / S**: 26.9 pc/mi/ln
  - **LOS**: D

#### Design (N)
- **Design (N)**
- **Design LOS**
  - **v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>)**: pc/h/ln
  - **S**: mph
  - **D = v<sub>p</sub> / S**: pc/mi/ln
  - **Required Number of Lanes, N**

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v<sub>p</sub>**: 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>T</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**

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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: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

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

**Flow Inputs**
- Volume, V: 7846 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D

**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 Lateral 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)
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \) pc/h/ln
  - S: 58.3 mph
  - D = \( v_p / S \) pc/mi/ln

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

**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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10/20/2015
### 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: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

### Flow Inputs
- Volume, V: 8484 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: 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(1-E_R-1)+P_R(E_R-1))\cdot 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 Inputs
- \(f_{lw}\): mph
- \(f_{lc}\): mph
- TRD Adjustment: mph
- FFS: 65.0 mph

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

### 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

### 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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**BASIC FREEWAY SEGMENTS WORKSHEET**

**General Information** | **Site 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 Eastbound
From/To | East of Washington Street
Jurisdiction | [Mitigation]
General Plan Buildout | Proj

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

**Flow Inputs**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>8211 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>

**Calculate Flow Adjustments**

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

**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 mph
- Required Number of Lanes, N

**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>2182 pc/h/ln</td>
<td></td>
</tr>
<tr>
<td>56.3 mph</td>
<td></td>
</tr>
<tr>
<td>38.7 pc/mi/ln</td>
<td></td>
</tr>
<tr>
<td>E</td>
<td></td>
</tr>
</tbody>
</table>

**Design (N)**

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

**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:** PM Peak Hour

### Site Information
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** General Plan Buildout + Proj

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

### Flow Inputs
- **Volume, V:** 6683 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop, D:**
- **DDHV = AADT x K x D:** veh/h

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

### E_T
- **f_{LV}**
- **f_{LC}**

### E_R
- **TRD Adjustment**
- **FFS**

### LOS and Performance Measures
- **v_p = (V or DDHV) / (PHF x N x f_{HV})**
- **S:** 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
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **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

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
<td>From/To</td>
<td>East of Monroe Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
<td>Jurisdiction</td>
<td>[Mitigation]</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
<td>Analysis Year</td>
<td>General Plan Buildout + Proj</td>
</tr>
</tbody>
</table>

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

#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>6529 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade % Length mi Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

#### 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>
<tr>
<td>f_{HV} = 1/(1 + P_T (E_T - 1) + P_R (E_R - 1))</td>
<td>0.990</td>
</tr>
</tbody>
</table>

#### 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>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>
</tbody>
</table>

#### LOS and Performance Measures

<table>
<thead>
<tr>
<th>f_LW</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_LC</td>
<td>mph</td>
</tr>
<tr>
<td>f_{HV}</td>
<td>mph</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
</tbody>
</table>

#### Design (N)

<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>x f_p</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>63.4 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>D</td>
</tr>
</tbody>
</table>

#### 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_{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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10/20/2015
### 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 Jackson Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: General Plan Buildout + Proj

#### Flow Inputs
- **Volume, V**: 6137 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$$^1$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$$^0$
### 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: [Mitigation]
- Analysis Year: General Plan Buildout + Proj

#### Flow Inputs
- Volume, V: 5926 veh/h
- 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1 + \frac{P_T}{E_T} \cdot (E_T - 1)} \) or \( 0.990 \)

#### 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
- \( f_{LW} \)
- \( f_{LC} \)
- 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: 64.6 mph
  - D = \( v_p / S \)
  - LOS: C

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

#### Factor Location
- E_R - Exhibits 11-10, 11-12
- f_p - Page 11-18
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3
- E_T - Exhibits 11-10, 11-11, 11-13
- f_LW - Exhibit 11-8
- f_LC - Exhibit 11-9
- 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
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of State Route 86
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: General Plan Buildout + Proj

#### Site Information
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs
- **Volume, V**: 4757 veh/h
- **Peak-Hr Prop. of AADT, K**: %RVs, \( P_R \)
- **Peak-Hr Direction Prop, D**: % Length
- **DDHV = AADT x K x D**: veh/h
- **AADT**: veh/day
- **Peak-Hr Factor, PHF**: 0.95
- **%Trucks and Buses, \( P_T \)**: 2
- **General Terrain**: Level
- **Grade %**: Up/Down %

#### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1+f_T(ER \cdot 1) + P_R(ER \cdot 1)} \)

#### Speed Inputs
- **Lane Width**: ft
- **Rt-Side Lt. 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
- **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
- 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
- \( E_T \) - 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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### General Information

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<th>Analyst</th>
<th>JT</th>
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<td>LLG</td>
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### Site Information

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<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
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<tr>
<td>From/To</td>
<td>East of Dillon Road</td>
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<tr>
<td>Jurisdiction</td>
<td>[Mitigation]</td>
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<td>Analysis Year</td>
<td>General Plan Buildout + Proj</td>
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<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
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</table>

### Flow Inputs

- **Volume, V**: 4575 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**: \( \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990 \)
- **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

- **Operational (LOS)**
  - \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \times f_p) \)
  - \( S = 64.3 \text{ mph} \)
  - \( D = v_p / S = 25.2 \text{ pc/mi/ln} \)
  - LOS = C

### Design (N)

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

### Glossary

<table>
<thead>
<tr>
<th>N - Number of lanes</th>
<th>S - Speed</th>
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<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 speed</td>
<td>BFFS - Base-free-flow speed</td>
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<tr>
<td>DDHV - Directional design hour volume</td>
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### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits</th>
<th>f_Lw - Exhibit 11-8</th>
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<tbody>
<tr>
<td>E_T - Exhibits</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 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 Avenue 50
- Jurisdiction: [Mitigation]
- General Plan Buildout + Proj

### Flow Inputs
- Volume, V: 4729 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %R Vs, $P_R = 0$
- 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, $P_T = 2$

### Calculate Flow Adjustments
- $f_p = 1.00$
- $E_R = 1.2$
- $f_{IV} = 1/[(1 + P_T(E_T - 1) + P_R(E_R - 1))] = 0.990$

### 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
- Operational (LOS)
  - $v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{IV})}$: pc/h/ln
  - $x_{fp}$: mph
  - $S$: mph
  - $D = \frac{v_p}{S}$: pc/mi/ln
  - LOS: $D$

- Design (N)
  - Design LOS
  - $v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{IV})}$: 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
- S - Speed
- D - Density
- BFFS - Base free-flow 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
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

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10/20/2015
# BASIC FREEWAY SEGMENTS WORKSHEET

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<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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| Site Information |

| Highway/Direction of Travel | I-10 Eastbound |
| From/To                     | East of Frontage Road |
| Jurisdiction                | [Mitigation]       |
| Analysis Year               | General Plan Buildout + Proj |
| Project Description         | 2-10-3136-2 Paradise Valley Specific Plan, Riverside County |

## Flow Inputs

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<th>Description</th>
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<td>Volume, V</td>
<td>4729 veh/h</td>
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<td>AADT</td>
<td>veh/day</td>
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<td>%Trucks and Buses, PT 2</td>
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<td>DDHV = AADT x K x D</td>
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### Calculate Flow Adjustments

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<td>FP</td>
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### Speed Inputs

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<td>ft</td>
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<td>Number of Lanes, N</td>
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<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
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<tr>
<td>FFS (measured)</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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<td>Operational (LOS)</td>
<td>v_p = (V or DDHV) / (PHF x N x f_HV x f_p)</td>
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<td></td>
<td>1676 pc/h/ln</td>
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<td></td>
<td>63.9 mph</td>
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<tr>
<td></td>
<td>D = v_p / S 26.2 pc/mi/ln</td>
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<tr>
<td>LOS</td>
<td>D</td>
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## Glossary

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<th>Description</th>
<th>Value</th>
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<tr>
<td>N - Number of lanes</td>
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<td>V - Hourly volume</td>
<td>D - Density</td>
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<td>v_p - Flow rate</td>
<td>FFS - Free-flow speed</td>
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<td>BFFS - Base free-flow speed</td>
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<td>DDHV - Directional design hour volume</td>
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<th>Value</th>
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<td>E_R - Exhibits 11-10, 11-12</td>
<td>f_LW - Exhibit 11-8</td>
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<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
<td>f_LC - Exhibit 11-9</td>
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<td>f_p - Page 11-18</td>
<td>TRD - Page 11-11</td>
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<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2,</td>
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<td>11-3</td>
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APPENDIX H-IV

YEAR 2040 TRAFFIC CONDITIONS
## BASIC FREEWAY WORKSHEET

### General Information

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<td>AM Peak Hour</td>
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### Site Information

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<td>From/To</td>
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<td>Year 2040 Without Project</td>
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### Flow Inputs

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<td>AADT (veh/day)</td>
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<td>Peak-Hr Prop. of AADT, K (%)</td>
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<td>Peak-Hr Direction Prop, D</td>
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<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
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| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, P_T | 2    |
| %RVs, P_R | 0    |

### Calculate Flow Adjustments

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

### Speed Inputs

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

### Calc Speed Adj and FFS

| \( f_{LW} \) | mph |
| \( f_{LC} \) | mph |

| TRD Adjustment (mph) |      |
| FFS (mph) | 65.0 |

### LOS and Performance Measures

| Operational (LOS) \( v_p \) = \( (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \times f_p \) (pc/h/ln) | 1833 |
| S (mph) | 62.3 |
| \( D = v_p / S \) (pc/mi/ln) | 29.4 |
| LOS \( D \) |       |

### Design (N)

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

### 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

| E_R - Exhibits 11-10, 11-12 | f_{LW} - Exhibit 11-8 |
| E_L - 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
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Paradise Valley
- **Jurisdiction:**
- **Analysis Year:** Year 2040 Without Project

### Site Information
- **Oper.(LOS):**
- **Des.(N):**
- **Planning Data:**

### Flow Inputs
- **Volume, V:** 3460 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 %:**
- **Length mi:**
- **Up/Down %:**

### Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</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>E_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:** 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:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

### LOS and Performance Measures
- **v_p = (V or DDHV) / (PHF x N x f_{HV})**
- **x f_p:**
- **S:** 62.3 mph
- **D = v_p / S:** 29.5 pc/mi
- **LOS:** D

### Design (N)
- **Design LOS**
- **Design (N)**
- **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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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

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<tr>
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<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>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

- Highway/Direction of Travel I-10 Westbound
- From/To East of Frontage Road
- Jurisdiction
- Analysis Year Year 2040 Without Project
- Oper.(LOS) ✓
- Des.(N) □
- Planning Data □

### Flow Inputs

- **Volume, V**: 3460 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \) 0.95
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \) 0
- **DDHV = AADT \times K \times 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**: 2 ramps/mi
- **Total Ramp Density, TRD**: mph
- **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)**
  - \( v_p = (V \text{ or DDHV}) / (\text{PHF} \times N \times f_{HV}) \times f_p \)
  - \( S \) = 62.3 mph
  - \( D = v_p / S \) = 29.5 pc/mi/ln
  - **LOS**

### Design (N)

- **Design LOS**
  - \( v_p = (V \text{ or DDHV}) / (\text{PHF} \times N \times f_{HV}) \times f_p \)
  - \( S \) = 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
- **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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1/26/2016
## BASIC FREeways WORKsHEET

### General Information

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<tbody>
<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>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 Avenue 50 |
| Jurisdiction | Year 2040 Without Project |

### Flow Inputs

| Volume, V | 3460 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %Trucks and Buses, \( P_T \) = 0.95 |
| Peak-Hr Direction Prop, D | %RVs, \( P_R \) = 0 |
| DDHV = AADT x K x D | veh/h |

### Calculate Flow Adjustments

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

### Speed Inputs

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 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) |
| \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) | Design LOS |
| 1839 pc/h/ln | \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) |
| 62.3 mph | mph |
| \( D = \frac{v_p}{S} \) | \( D = \frac{v_p}{S} \) |
| 29.5 pc/mi/ln | pc/mi/ln |
| 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
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### Factor Location

| 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 |
### 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 Westbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: Year 2040 Without Project

#### Flow Inputs
- **Volume, V**: 3626 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **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 % Length mi**: Up/Down %

#### Calculate Flow Adjustments
- **f_p**: 1.00
- **E_R**: 1.2
- **E_T**: 1.5
- \( f_{HV} = \frac{1}{1 + p_T(E_R - 1) + p_R(E_R - 1)} \): 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_{LC}**: mph
- **f_{HW}**: mph
- **TRD Adjustment**: mph
- **FFS**: 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_{p} \): 1928 pc/h/ln
  - \( S \): 61.0 mph
  - \( D = \frac{v_p}{S} \): 31.6 pc/mi/ln
  - **LOS**: D

#### Design (N)
- **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

#### 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
**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>AM Peak Hour</td>
</tr>
<tr>
<td>Highway/Direction of Travel l-10 Westbound</td>
<td>From/To East of State Route 86</td>
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<tr>
<td>Jurisdiction</td>
<td>Year 2040 Without Project</td>
</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 | 3934 veh/h | Peak-Hour Factor, PHF | 0.95 |
| AADT      | veh/day    | %Trucks and Buses, P_r | 2    |
| Peak-Hr Prop. of AADT, K | %RVs, P_r | 0 |
| Peak-Hr Direction Prop, D | Grade % Length mi |
| 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 + E_F(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_HC | 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)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x f_p</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>58.2 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>E</td>
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</table>

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
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<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>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>f_LW - Exhibit 11-8</td>
<td></td>
</tr>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
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</tr>
<tr>
<td>f_HC - Exhibit 11-9</td>
<td></td>
</tr>
<tr>
<td>f_p - Page 11-18</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>
<tr>
<td><strong>General Information</strong></td>
<td><strong>Site Information</strong></td>
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<tr>
<td>Analyst</td>
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<td>Date Performed</td>
<td>Jurisdiction</td>
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<td>Analysis Year</td>
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<td>Oper.(LOS)</td>
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<td></td>
<td>Des.(N)</td>
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<td>Planning Data</td>
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<table>
<thead>
<tr>
<th><strong>Flow Inputs</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V (veh/h)</td>
<td>6770</td>
</tr>
<tr>
<td>AADT (veh/day)</td>
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</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K (Pv)</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D (PD)</td>
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</tr>
<tr>
<td>DDHV = AADT x K x D (veh/h)</td>
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</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, PT</td>
<td>2</td>
</tr>
<tr>
<td>%RVs, PR</td>
<td>0</td>
</tr>
<tr>
<td>General Terrain: Level</td>
<td></td>
</tr>
<tr>
<td>Grade %</td>
<td></td>
</tr>
<tr>
<td>Length mi</td>
<td></td>
</tr>
<tr>
<td>Up/Down %</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Calculate Flow Adjustments</strong></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>FHV</td>
<td></td>
</tr>
<tr>
<td>f_HV = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1))</td>
<td>0.990</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Speed Inputs</strong></th>
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<tbody>
<tr>
<td>Lane Width</td>
<td>ft</td>
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<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>mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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<th><strong>Calc Speed Adj and FFS</strong></th>
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<tbody>
<tr>
<td>f_lw</td>
<td>mph</td>
</tr>
<tr>
<td>f lc</td>
<td>mph</td>
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<tr>
<td>TRD Adjustment</td>
<td>mph</td>
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<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D</td>
<td>pc/mi/ln</td>
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<tr>
<td>LOS</td>
<td>Required Number of Lanes N</td>
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<th>Factor Location</th>
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<tr>
<td>Number of lanes, N</td>
<td>E_R - Exhibits 11-10, 11-12 f_lw - Exhibit 11-8</td>
</tr>
<tr>
<td>Hourly volume, D</td>
<td>E_T - Exhibits 11-10, 11-11, 11-13 f_lc - Exhibit 11-9</td>
</tr>
<tr>
<td>Flow rate, v_p</td>
<td>Page 11-18</td>
</tr>
<tr>
<td>Level of service, LOS</td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>Directional design hour volume</td>
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</table>

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file:///C:/Users/tucker/AppData/Local/Temp/f2k5656.tmp
1/26/2016
### 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
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Jackson Street
- Jurisdiction: Year 2040 Without Project

#### Site Information
- Planning Data

#### Flow Inputs
- Volume, V: 7129 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %R Vs, \( P_R \)
- Peak-Hr Direction Prop, D: General Terrain: Level
- DDHV = AADT x K x D: veh/h

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

#### 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

#### 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
- Design LOS: pc/h/ln
- Required Number of Lanes, N: pc/mi/ln

#### Design (N)
- Design LOS: pc/h/ln
- Design LOS: 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
- \( E_{L} \) - 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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1/26/2016
# 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 Monroe Street
- **Jurisdiction**: Year 2040 Without Project

## Flow Inputs
- **Volume, V**: 8785 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/day
- **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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{hv} = \frac{1}{1 + f_P (E_T - 1) + P_R (E_R - 1)} \)
- \( E_R = 1.2 \)

## 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
- **Calc Speed Adj**:
- **FFS Adjustments**:

## LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{hv})} \times f_p \)
  - \( S = 23.4 \) mph
  - \( D = \frac{v_p}{S} \)
  - \( LOS = F \)

## Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{hv})} \times f_p \)
  - \( S \)
  - \( D = \frac{v_p}{S} \)
  - \( LOS, S, FFS, v_p \)

## 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

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## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</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 Jefferson Street</td>
</tr>
<tr>
<td>Date Performed 9/22/2015</td>
<td>Jurisdiction</td>
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<td>Analysis Time Period AM Peak Hour</td>
<td>Analysis Year Year 2040 Without Project</td>
</tr>
<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

| Volume, V | 9270 veh/h |
| AADT veh/day | %Trucks and Buses, PHF 0.95 |
| Peak-Hr Prop. of AADT, K | %RVs, PR 0 |
| Peak-Hr Direction Prop, D veh/h | General Terrain: Level |
| DDHV = AADT x K x D | Grade % Length mi |

#### Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| f_HV = 1/[f_p x (E_T x 1) + P_R (E_R x 1)] 0.990 |

### Speed Inputs

| Lane Width ft | f_LW mph |
| Rt-Side Lat. Clearance ft | f_LC mph |
| Number of Lanes, N 3 | TRD Adjustment |
| 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 or DDHV) / (PHF x N x f_HV x f_p) | pc/h/ln |
| S = 14.6 mph | |
| D = v_p / S 224.8 pc/mi/ln | |
| LOS F | |

| Design (N) |
| Design LOS |
| v_p = (V or DDHV) / (PHF x N x f_HV x f_p) | pc/h/ln |
| S = 14.6 mph | |
| D = v_p / S 224.8 pc/mi/ln | |
| 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 | |
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
</thead>
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<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>
</tbody>
</table>

#### Site Information

- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Washington Street
- Jurisdiction: Year 2040 Without Project
- 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>10624 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>
</tbody>
</table>

#### Calculate Flow Adjustments

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

\[ f_{HV} = \frac{1}{1 + p_T (E_T - 1) + p_R (E_R - 1)} \cdot 0.990 \]

#### 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>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>TRD Adjustment</td>
<td>mph</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>Formula</th>
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</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>( v_p = (V \text{ or } \text{DDHV}) / (PHF \times N \times f_{HV}) \times f_p )</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>( F )</td>
<td></td>
</tr>
</tbody>
</table>

#### Design (N)

<table>
<thead>
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<th>Parameter</th>
<th>Calculation</th>
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<tr>
<td>Design LOS</td>
<td>Design (N)</td>
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<tr>
<td>( v_p = (V \text{ or } \text{DDHV}) / (PHF \times N \times f_{HV}) \times f_p )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>FFS</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>Design LOS</td>
<td>mph</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
- \( f_{LV} \) - 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 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 Cook Street
- **Jurisdiction**: Year 2040 Without Project

### Flow Inputs

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

### Calculate Flow Adjustments

<table>
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<th>Value</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} = \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} )</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>
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</tbody>
</table>

### Speed Adjustments and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LV} )</td>
<td></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>
</tr>
</tbody>
</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 = \frac{(V or DDHV) \times (PHF \times N \times f_{HV})}{4288} )</td>
<td>pc/h/in</td>
</tr>
<tr>
<td>( x f_p )</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>pc/mi/in</td>
</tr>
<tr>
<td>LOS</td>
<td>F</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
## 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 Monterey Avenue
- **Jurisdiction**: Year 2040 Without Project

### Flow Inputs
- **Volume, V**: 11255 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} = 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

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

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

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

### 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

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1/26/2016
**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:** West of Monterey Avenue
- **Jurisdiction:** Analysis Year
- **Year 2040 Without Project**

### Flow Inputs

- **Volume, V:** 11164 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **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:** %
- **Length:** mi
- **Up/Down %**

### Calculate Flow Adjustments

- **f_p:** 1.00
- **E_R:** 1.2
- **f_HV = \frac{1}{1 + E_R (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 (N):**

  - **Operational (LOS):**
    
  - **Design LOS:**

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

  - **v_p = \frac{(V or DDHV)}{(PHF x N x f_{HV})}:** pc/h/ln
  - **x f_p:** pc/h/ln
  - **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**

---

**Glossary**

- **S - Speed**
- **D - Density**
- **FFS - Free-flow speed**
- **BFFS - Base free-flow speed**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

---

**Glossary**

- **E_R - Exhibits 11-10, 11-12**
- **E_T - Exhibits 11-10, 11-11, 11-13**
- **f_p - Page 11-18**
- **f_{HW} - Exhibit 11-8**
- **f_{LC} - Exhibit 11-9**
- **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:** West of Monterey Avenue
- **Jurisdiction:**
- **Analysis Year:** Year 2040 Without Project

## Flow Inputs
- **Volume, V:** 5998 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

## Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **E_R:** 1.2
- **f_HV = \frac{1}{1 + (E_T - 1) - (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:** 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) \times f_{HV}}{N \times f_p}:** pc/h/ln
- **S:** 64.5 mph
- **D = \frac{v_p}{S}:** 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**
- **S - Speed**
- **D - Density**
- **FFS - Free-flow speed**
- **BFFS - Base free-flow speed**

## Design (N)
- **Design LOS**
- **Design (N)**
- **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**
### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</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</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td></td>
<td>Year 2040 Without Project</td>
</tr>
</tbody>
</table>

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

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

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>Peak-Hour Factor, PHF</th>
<th>%Trucks and Buses, P_T</th>
</tr>
</thead>
<tbody>
<tr>
<td>6350</td>
<td>0.95</td>
<td>2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>AADT (veh/day)</th>
<th>%RVs, P_R</th>
<th>General Terrain, Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
<td>Level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peak-Hr Prop. of AADT, K</th>
<th>% Grade</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>mi</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DDHV = AADT x K x D (veh/h)</th>
<th>Up/Down %</th>
</tr>
</thead>
</table>

### Calculate Flow Adjustments

- \( f_p \) = 1.00
- \( E_R \) = 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>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>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>mph</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LW} )</td>
<td>( E_R )</td>
</tr>
<tr>
<td>( f_{LC} )</td>
<td>TRD Adjustment</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \) pc/h/ln
- \( S = \frac{54.8}{41.1} \) mph
- \( D = \frac{v_p}{S} \) pc/mi/ln

### Design (N)

- Design LOS
- Design (N)
- 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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1/26/2016
# BASIC FREEWAY 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>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 Cook Street |
| Jurisdiction | Year 2040 Without Project |

## Flow Inputs

| Volume, V | 5931 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 |

## Calculate Flow Adjustments

| $f_p$ | 1.00 |
| $E_T$ | 1.5 |

$$f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990$$

## 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

<table>
<thead>
<tr>
<th>Calc. Speed (mph)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

## LOS and Performance Measures

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

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1/26/2016
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
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</tr>
</thead>
<tbody>
<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>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 Washington Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Year 2040 Without Project</td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>5879</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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 (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 |
| Grade | % |
| Length | mi |
| Up/Down | % |

### Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |

| f_HV = \frac{1}{1 + (E_T \cdot \frac{(E_R - 1)}{P_R})} | 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>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>

### 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>Design (N)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
</table>

| v_p = (V or DDHV) / (PHF x N x f_HV) x f_p | pc/h/ln |
| S | 58.4 mph |
| D = v_p / S | pc/mi/ln |
| LOS | E |

### 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

- ER - Exhibits 11-10, 11-12
- f_LW - Exhibit 11-8
- ET - 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 Jefferson Street
- **Jurisdiction:** Year 2040 Without Project

#### Flow Inputs
- **Volume, \( V \):** 5417 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, \( K \):** %
- **Peak-Hr Direction Prop, \( D \):** veh/h

#### Calculate Flow Adjustments
- **\( f_p \):** 1.00
- **\( E_T \):** 1.5
- **\( f_{HV} \):** 0.95

#### 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
- **\( S \):** mph
- **\( D \):** 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
- **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>
</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>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

## Site Information
| Highways/Direction of Travel | I-10 Eastbound |
| From/To | East of Monroe Street |
| Jurisdiction | Year 2040 Without Project |

## Flow Inputs
| Volume, V | 5124 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 |
| DDHV = AADT x K x D | veh/h | Grade | % |
| | | Length | mi |

## Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| f_HV = 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) |
| 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 |
| S | 62.5 mph |
| D = v_p / S | 29.0 pc/mi/ln |
| LOS | D |

## 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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1/26/2016
# 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 Eastbound
- **From/To:** East of Jackson Street
- **Jurisdiction:**
- **Analysis Year:** Year 2040 Without Project

## Flow Inputs
- **Volume, V:** 4316 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( E_R = 1.2 \)
- \( f_{HV} = \frac{1}{1 + p_T (E_T / 1) + p_R (E_R / 1) / 0.990} \)

## 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

## LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \)
  - \( x f_p \)
  - \( S = 64.8 \text{ mph} \)
  - \( D = v_p / S \)
  - \( LOS \)

## Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **v_p:** Flow rate
- **LOS:** Level of service
- **DDHV:** Directional design hour volume
- **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_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 Golf Center Parkway
- **Jurisdiction:**
- **Analysis Year:** Year 2040 Without Project

#### Flow Inputs
- **Volume, V:** 4147 veh/h
- **AADT:**
- **Peak-Hr Prop. of AADT, K:**
- **Peak-Hr Direction Prop. D:**
- **DDHV = AADT x K x D**

#### Calculate Flow Adjustments
- **f_p:** 1.00
- **E_T:** 1.5
- **FHV**

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

#### Calc Speed Adj and FFS
- **Calc Speed**
- **Calc Speed Adj**
- **FFS**

#### 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
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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1/26/2016
## 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 State Route 86
- Jurisdiction: Year 2040 Without Project
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs
- Volume, V: 2589 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
- \( f_{HV} = 1/(1 + P_T(E_T - 1) + P_R(E_R - 1)) \):
  - 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
- \( f_{LW} \):
- \( f_{LC} \):
- TRD Adjustment: mph
- FFS: 65.0 mph

### LOS and Performance Measures
- Operational (LOS)
  - \( v_p = (\text{V or DDHV}) / (\text{PHF} \times N \times f_{HV}) \) pc/h/ln
  - S = 65.0 mph
  - D = \( v_p / S \) pc/mi/ln
  - 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
- \( E_T \) - 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
# 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 Dillon Road
- Jurisdiction: Year 2040 Without Project

### Flow Inputs
- Volume, V: 2311 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
- \( f_{HV} = \frac{1}{\frac{1}{1+E_T(E_T-1)} + P_R(E_R-1); 0.990} \)

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

### Calc Speed Adj and FFS
- \( f_{W} \) = mph
- \( f_{C} \) = mph
- TRD Adjustment = mph
- FFS = mph

### LOS and Performance Measures
- Operational (LOS)
  - \( v_p = \frac{(V \text{ or DDHV}) / (PHF \times N \times f_{HV})}{f_p} \):
  - \( v_p = \frac{(V \text{ or DDHV}) / (PHF \times N \times f_{HV})}{f_p} \):
  - \( S = 56.0 \text{ mph} \):
  - \( D = \frac{v_p}{S} \):
  - \( LOS = C \):

### Design (N)
- Design LOS
- Design (N)
- 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
- \( f_{W} \) - 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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HCS 2010™ Version 6.70 Generated: 1/26/2016 3:57 PM
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information

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<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
</tr>
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<tbody>
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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>AM Peak Hour</td>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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#### Site Information

<table>
<thead>
<tr>
<th>Highways/Direction of Travel</th>
<th>I-10 Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>From/To</td>
<td>East of Avenue 50</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
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<td>Analysis Year</td>
<td>Year 2040 Without Project</td>
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#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, $V$ (veh/h)</th>
<th>2273</th>
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<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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 (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 |
| Grade | % |
| Length | mi |
| Up/Down % |      |

#### Calculate Flow Adjustments

$$ f_p = 1.00 $$
$$ E_T = 1.5 $$
$$ f_{HV} = \frac{1}{1+1.85(E_T-1)+0.99(P_R(P_T-1))} $$

#### 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>

#### Calc Speed Adj and FFS

| $f_{LV}$ | mph |
| $f_{LC}$ | mph |

#### LOS and Performance Measures

| $v_p = (V or DDHV) / (PHF x N x f_{HV}) \times f_p$ | 1208 pc/h/ln |
| $S$ = 65.0 mph |
| $D = \frac{v_p}{S}$ | 18.6 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 |
| $f_{LV}$ - 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>
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<td>Agency or Company</td>
<td>LLG</td>
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<td>9/22/2015</td>
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<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>
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## Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Eastbound</th>
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<tbody>
<tr>
<td>From/To</td>
<td>East of Frontage Road</td>
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<tr>
<td>Jurisdiction</td>
<td>Year 2040 Without Project</td>
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## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>2273</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></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>
</tbody>
</table>

| 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} = 1/f_p(E_T - 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>

### Calc Speed Adj and FFS

| f_{LW} | mph |
| f_{LC} | mph |

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

## LOS and Performance Measures

### Operational (LOS)

<table>
<thead>
<tr>
<th>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</th>
<th>1208 pc/h/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>S = v_p / S</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
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</tbody>
</table>

### Design (N)

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

<table>
<thead>
<tr>
<th>v_p = (V or DDHV) / (PHF x N x f_{HV}) x f_p</th>
<th>pc/h/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LW} - Exhibit 11-10, 11-12</td>
<td>mph</td>
</tr>
<tr>
<td>f_{LC} - Exhibit 11-9</td>
<td></td>
</tr>
<tr>
<td>f_p - Page 11-18</td>
<td></td>
</tr>
<tr>
<td>TRD - Page 11-11</td>
<td></td>
</tr>
</tbody>
</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 speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
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### Factor Location

<table>
<thead>
<tr>
<th>E_R - Exhibits 11-10, 11-12</th>
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</thead>
<tbody>
<tr>
<td>f_{LW} - Exhibit 11-8</td>
</tr>
</tbody>
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<table>
<thead>
<tr>
<th>E_T - Exhibits 11-10, 11-11, 11-13</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>f_p - Page 11-18</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRD - Page 11-11</td>
</tr>
</tbody>
</table>

| LOS, S, FFS, v_p - Exhibits 11-2, 11-3 |
### 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: Year 2040 Without Project

### Flow Inputs
- Volume, V: 2273 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
- \( f_{HV} = \frac{1}{1+E_T(E_T-1)+P_R(E_R-1)\cdot 0.990} \)

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 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)
- \( v_p = \frac{V \text{ or } DDHV}{PHF \times N \times f_{HV}} \times f_p \): 1208 pc/h/ln
- \( S \): 65.0 mph
- \( D = \frac{v_p}{S} \): 18.6 pc/mi/ln
- LOS: C

### 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
- \( E_T \) - 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
### 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: Rd
- Jurisdiction: East of Cottonwood Springs Rd
- Analysis Year: Year 2040 Without Project

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

### Flow Inputs
- Volume, V: 2388 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %RVs, P_R: 0
- Peak-Hr Direction Prop, D: General Terrain: Level
- DDHV = AADT x K x D: veh/h

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

### Design (N)
- Design LOS
- Design (N)
- 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
- \( E_H \) - 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
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information

<table>
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<tr>
<th>Analyst</th>
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<td>PM Peak Hour</td>
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<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Westbound East of Cottonwood Springs Rd</td>
</tr>
<tr>
<td>From/To Jurisdiction</td>
<td>Year 2040 Without Project</td>
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</table>

### Site Information

| High-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, \( V \) | 2969 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

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

### 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 |

### Calc Speed Adj and FFS

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

### LOS and Performance Measures

| Operational (LOS) | \( V_p = \frac{V \times DDHV}{PHF \times N \times f_{HV}} \times f_p \) | pc/h/ln |
| \( S \) | 64.6 mph |
| \( D = \frac{V_p}{S} \) | 24.4 pc/mi/ln |
| LOS | |

### 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 |
| 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 |
### BASIC FREEWAY WORKSHEET

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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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</table>

#### SITE INFORMATION

| Highway/Direction of Travel | I-10 Westbound |
| From/To | East of Paradise Valley |
| Jurisdiction | Year 2040 Without Project |

#### PROJECT DESCRIPTION

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

#### FLOW INPUTS

- **Volume, V** 2807 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 |
| P_T | 2 |

#### %TRUCKS AND BUSES, P_T

| P_T | 2 |

#### %RVs, P_R

| P_R | 0 |

#### General Terrain

- **Level**
- **Up/Down %**

#### Cálculo de Ajustes de Flujo

| f_p | 1.00 |
| E_T | 1.5 |
| E_R | 1.2 |
| f_HV | 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

#### CÁLCULO DE VELOCIDAD ADJUNTA Y FFS

- **f_LW** mph
- **f_LC** mph
- **f_HV** pc/h/ln
- **f_p** pc/h/ln
- **S** mph
- **D = v_p / S** pc/mi/ln

#### LOS AND PERFORMANCE MEASURES

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
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<tbody>
<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>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>64.9 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
<tr>
<td>Design LOS</td>
<td>Required Number of Lanes N</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_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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### 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 Frontage Road
- Jurisdiction: Year 2040 Without Project

#### Site Information
- Tentative Operational (LOS)
- Design Year: Year 2040 Without Project

#### Flow Inputs
- Volume, V
  - 2807 veh/h
- AADT
  - 1750 veh/day
- Peak-Hr Prop. of AADT, K
  - 0.60
- General Terrain: Level
- General Terrain: Level
- %Trucks and Buses
  - 2%
- %RVs, PR
  - 0
- Grade
  - %
- Up/Down
  - %
- Length
  - mi

#### Calculate Flow Adjustments
- \( f_p = 1.00 \)
- \( f_T = 1.5 \)
- \( E_R = 1.2 \)
- \( E_{HV} = 0.990 \)

#### 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
- TRD Adjustment
  - mph
- FFS
  - 65.0 mph

#### LOS and Performance Measures
- Operational (LOS)
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
  - 1492 pc/h/in
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \)
  - 1492 pc/h/in
  - S
  - 64.9 mph
  - \( S \)
    - 64.9 mph
  - D = \( \frac{v_p}{S} \)
    - 23.0 pc/mi/in
  - LOS
    - C
  - D = \( \frac{v_p}{S} \)
    - 23.0 pc/mi/in
  - LOS
    - C

#### 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
- \( E_R \) - Exhibits 11-10, 11-11, 11-13
- \( f_{LW} \) - 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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**H-185**

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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 Westbound
- **From/To:** East of Avenue 50
- **Jurisdiction:** 
- **Analysis Year:** Year 2040 Without Project
- **Project Description:** 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

## Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value/Unit</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>2807 veh/h</td>
<td></td>
</tr>
<tr>
<td>AADT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td></td>
</tr>
<tr>
<td>Lane Width</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
<td></td>
</tr>
<tr>
<td>Calculated Flow Adjustments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$f_p$</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>$E_T$</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>$f_{HV}$</td>
<td>$1/(1+P_T(E_T - 1) + P_n(E_R - 1)) \times 0.990$</td>
<td></td>
</tr>
</tbody>
</table>

## Speed Inputs

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

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value/Unit</th>
<th>Calculation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>Vp = (V or DDHV) / (PHF x N x fHV) x fp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1492 pc/h/ln</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$S = v_p / S$</td>
<td>64.9 mph</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$D = v_p / S$</td>
<td>23.0 pc/mi/ln</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<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

- **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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1/26/2016
### 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
- Oper.(LOS): ✓
- Des.(N): 
- Planning Data: 

#### Site Information
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Dillon Road
- Jurisdiction: 
- Year 2040 Without Project

#### Flow Inputs
- Volume, V: 2968 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, 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
- \( f_{HV} = \frac{1}{1 + p_{T}(E_T - 1) + p_{R}(E_R - 1)} \): 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

#### LOS and Performance Measures
- \( v_p = \frac{(V \text{ or DDHV}) \times f_{HV}}{(PHF \times N \times f_r) \times f_p} \): 1578 pc/h/ln
- \( S \): 64.6 mph
- \( D = v_p / S \): 24.4 pc/mi/ln
- LOS: C
- 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
- 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
- f_LW - Exhibit 11-8
- f_LC - Exhibit 11-9
- TRD - Page 11-11

#### Factor Location
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### BASIC FREeways 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: Year 2040 Without Project

#### Flow Inputs
- Volume, V: 3119 veh/h, Peak-Hour Factor, PHF: 0.95
- AADT: 967 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
- DDHV = AADT x K x D: veh/h, Grade, % Length: mi

<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} = \frac{1}{1+P_R(E_T-1) + P_T(E_R-1))0.990} )</td>
</tr>
</tbody>
</table>

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

#### LOS and Performance Measures
- Operational (LOS)
- \( v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{x \times f_p} \)
- \( S = \frac{64.1 \text{ mph}}{25.9 \text{ pc/mi/ln}} \)
- LOS

#### Design (N)
- Design LOS
- Design (N)
- 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
- \( f_{LW} \) - Exhibit 11-8
- \( f_{LC} \) - Exhibit 11-9
- TRD - Page 11-11

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### BASIC FREEWAY WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>
<tr>
<td></td>
<td>Highway/Direction of Travel I-10 Westbound East of Golf Center Parkwy</td>
</tr>
<tr>
<td></td>
<td>From/To</td>
</tr>
<tr>
<td></td>
<td>Jurisdiction</td>
</tr>
<tr>
<td></td>
<td>Analysis Year</td>
</tr>
<tr>
<td></td>
<td>Year 2040 Without Project</td>
</tr>
</tbody>
</table>

#### Flow Inputs

- **Volume, V**: 5392 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 0
- **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**: %
- **Length**: mi
- **Up/Down %**:

#### Calculate Flow Adjustments

\[
f_p = 1.00 \\
E_T = 1.5 \\
f_{HV} = \frac{1}{1 + 1.5(1 - 0.95)} = 0.990
\]

#### 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)

\[
\begin{align*}
v_p &= \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \\
S &= 65.0 \text{ mph} \\
D &= \frac{v_p}{S} \\
LOS &= C
\end{align*}
\]

#### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</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_LW**: Exhibit 11-8
- **E_I**: Exhibits 11-10, 11-11, 11-13
- **f_LC**: Exhibit 11-9
- **f_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits '1-2, 11-3

**Notes**: 

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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 Westbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: Year 2040 Without Project

## Flow Inputs
- **Volume, V**: 5485 veh/h
- **AADT**
- **Peak-Hr Prop. of AADT, K**
- **Peak-Hr Direction Prop, D**

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

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

## Calc Speed Adj and FFS
- **Calc Speed = FFS**
- **FFS Adjustment**

## LOS and Performance Measures
- **Operational (LOS)**
- \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} \times f_p) \)
- \( S = \frac{60.8 \text{ mph}}{32.0 \text{ pc/mi/ln}} \)

## 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

## Factor Location
- \( E_R - \text{Exhibits 11-10, 11-12} \)
- \( f_{LW} - \text{Exhibit 11-8} \)
- \( E_T - \text{Exhibits 11-10, 11-11, 11-13} \)
- \( f_{LC} - \text{Exhibit 11-9} \)
- \( f_P - \text{Page 11-18} \)
- \( E_T - \text{Exhibits 11-10, 11-11, 11-13} \)
- \( f_P - \text{Page 11-18} \)
- \( TRD - \text{Page 11-11} \)
- \( LOS, S, FFS, v_p - \text{Exhibits 11-2, 11-3} \)
## 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 Monroe Street
- Jurisdiction: Year 2040 Without Project
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

### Flow Inputs
- Volume, V: 7273 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
- \( f_{HV} = \frac{1}{\left(1 + P_T(1 - 1) + P_R(1 - 1)\right)/0.990} \)
- \( E_R \): 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): mph
- Base free-flow Speed, BFFS: mph

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

### LOS and Performance Measures
- \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \): pc/h/ln
- \( S \): mph
- \( U = v_p / S \): pc/mi/ln
- LOS: F

### 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
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### 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

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1/26/2016
### 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 Westbound
- From/To: East of Jefferson Street
- Jurisdiction: Year 2040 Without Project

#### Flow Inputs
- Volume, V: 7528 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_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
- BFFS: mph

#### Calc Speed Adj and FFS
- f_{LW}: mph
- f_{LC}: mph
- 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
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

#### Design (N)
- Design LOS
- 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
## 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 Washington Street
- **Jurisdiction**: Year 2040 Without Project

### 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**: 8740 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
- **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

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

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{3097} \) pc/h/ln
  - \( S = 24.2 \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln

### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{3097} \) 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
- **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

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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 Westbound
- From/To: East of Cook Street
- Jurisdiction: Year 2040 Without Project

#### Flow Inputs
- Volume, V: 9143 veh/h
- AADT: 9143 veh/day
- Peak-Hr Prop. of AADT, K:
- Peak-Hr Direction Prop, D:
- DDHV = AADT x K x D: 9143 veh/h

#### Calculate Flow Adjustments
- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{f_p + E_T}{1 + f_p E_T} \) = 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)
- \( v_p = \frac{V \text{ or } DDHV}{(PHF \times N \times f_{HV})} \) = 3240 pc/h/ln
- \( S \) = 17.0 mph
- \( D = v_p / S \) = 190.7 pc/mi/ln

#### Design (N)
- Design (N)
- Design LOS
- \( v_p = \frac{V \text{ or } DDHV}{(PHF \times N \times f_{HV})} \) = 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

#### 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
- TRD - Page 11-11
### BASIC FREEWAY WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
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<tbody>
<tr>
<td>Analyst</td>
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</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>
<tr>
<td></td>
<td>Oper.(LOS)</td>
</tr>
<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V         | 9032 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 |

### 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 | 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 x N x f_{HV})} )</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

### Design (N)

| Design (N) |
| Design LOS |
| \( v_p = \frac{(V \text{ or DDHV})}{(PHF x N x f_{HV})} \) |
| S |
| D |
| 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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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

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<td>Highway/Direction of Travel I-10 Westbound</td>
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<td>Agency or Company</td>
<td>From/To</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>Year 2040 Without Project</td>
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<td></td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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</table>

<table>
<thead>
<tr>
<th>Flow Inputs</th>
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<tbody>
<tr>
<td>Volume, V</td>
<td>8634 veh/h</td>
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<tr>
<td>AADT</td>
<td>veh/day</td>
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<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: Grade % Length mi Up/Down %</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>fHV = 1/(1+(P_E - 1) + P_R(RE - 1)): 0.990</td>
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</tr>
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<table>
<thead>
<tr>
<th>Speed Inputs</th>
<th>Calc Speed Adj and FFS</th>
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</thead>
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<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>
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</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
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<tr>
<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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</tr>
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<table>
<thead>
<tr>
<th>LOS and Performance Measures</th>
<th>Design (N)</th>
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</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x fHV)</td>
<td>2295 pc/h/ln</td>
</tr>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>53.6 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>42.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>E</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Glossary</th>
<th>Factor Location</th>
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<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>
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<tr>
<td>DDHV - Directional design hour volume</td>
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<table>
<thead>
<tr>
<th>Operational (LOS)</th>
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</thead>
<tbody>
<tr>
<td>Design LOS</td>
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</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x fHV)</td>
<td>2295 pc/h/ln</td>
</tr>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>53.6 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>42.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>E</td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Design LOS</th>
<th></th>
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<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x fHV)</td>
<td>2295 pc/h/ln</td>
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<tr>
<td>x f_p</td>
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</tr>
<tr>
<td>S</td>
<td>53.6 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>42.8 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>E</td>
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</table>

<table>
<thead>
<tr>
<th>Design (N)</th>
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<tbody>
<tr>
<td>Required Number of Lanes, N</td>
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</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: 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: Year 2040 Without Project

### Oper.(LOS)
- Project Description: Oper.(LOS)
- Des.(N): 
- Planning Data: 

### Flow Inputs
- Volume, V: 8299 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: veh/h

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

### 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

### LOS and Performance Measures
- $v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})}$
- $S$: 55.8 mph
- $D = v_p / S$: 39.5 pc/mi/ln
- $LOS$: E

### 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
- 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
- TRD - Page 11-11
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

### 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

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1/26/2016
## 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
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Monterey Avenue
- Jurisdiction: Year 2040 Without Project

### Site Information
- Analysis Year: Year 2040 Without Project

### Flow Inputs
- Volume, V: 8851 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
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1)} + P_T (E_T - 1) \times 0.990 \)

### Speed Inputs
- Lane Width
- Rt-Side Lat. Clearance
- 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
- FFS

### 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
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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### 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: Year 2040 Without Project

### Flow Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Volume, V</td>
<td>9513 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>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>veh/h</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

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

### Speed Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</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>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td></td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

- \( v_p = \frac{(V \text{ or } DDHV) \times (PHF \times N \times f_{HV})}{3371} \text{ pc/h/ln} \)
- \( S = 9.9 \text{ mph} \)
- \( D = v_p / S \)
- \( F = \text{ LOS} \)

### 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

### Design (N)
- Design LOS
- Design FFS
- Required Number of Lanes, N
### 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 Washington Street
- Jurisdiction: Year 2040 Without 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>9206</th>
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<tr>
<td>AADT (veh/day)</td>
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<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
</tr>
</tbody>
</table>

| DDHV = AADT x K x D (veh/h) |      |

- Peak-Hour Factor, PHF (0.95)
- %Trucks and Buses, P_r (2)
- %RVs, P_r (0)
- General Terrain: Level
- Grade: % Length: mi

---

**Calculate Flow Adjustments**

- \( E_r = 1.2 \)
- \( f_{HV} = 0.990 \)
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)

**Speed Inputs**

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

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

**Calc Speed Adj and FFS**

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

**LOS and Performance Measures**

| \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \) (3262 pc/h/ln) |   |
| \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \) (3262 pc/h/ln) |   |
| \( S = 15.8 \text{ mph} \) |   |
| \( D = v_p / S \) (206.0 pc/mi/ln) |   |

| LOS |   |
| \( F \) |   |

**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 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 Eastbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:**
- **Analysis Year:** Year 2040 Without Project

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

## Flow Inputs
- **Volume, V:** 7495 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
- **f_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):**
  - \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S = \frac{v_p}{2656} \) pc/h/ln
  - \( D = v_p / S \) pc/mi/ln
  - **LOS:**
- **Design (N):**
  - 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**
- **LOS, S, FFS, v_p - Exhibits 11-2,**
- **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**
- **f_LW - Exhibit 11-8**
- **f_LC - Exhibit 11-9**

## Factor Location

---

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

### Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Monroe Street
- **Jurisdiction**: Level
- **Analysis Year**: Year 2040 Without Project

### Flow Inputs
- **Volume, V**: 7175 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, PP**: 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
- \[ f_{HV} = \frac{1}{1 + P_R \cdot E_R - 1} + P_P \cdot E_P - 1 \cdot 0.990 \]

### 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

### LOS and Performance Measures
- **Operational (LOS)**
  - \[ v_p = \frac{V \text{ or DDHV}}{(PHF \times N \times f_{HV}} \times f_p \]
  - \[ S = \frac{46.5}{mph} \]
  - \[ D = \frac{v_p}{S} \]
  - \[ LOS = F \]

### Design (N)
- **Design LOS**
- **Design 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
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_p**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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1/26/2016
### 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 Jackson Street
- Jurisdiction: Year 2040 Without Project

#### Flow Inputs
- Volume, V: 6745 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
- $f_p = 1.00$
- $E_T = 1.5$
- $E_R = 1.2$
- $f_{HV} = 1 + \frac{P_T}{(E_T - 1)} + \frac{P_R}{(E_R - 1)} \cdot 0.990$

#### Speed Inputs
- Lane Width: ft
- Rt-Size 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
- 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
- $v_p$ - Exhibits 11-2, 11-3
- $f_{LW}$ - Exhibit 11-8
- $f_{LC}$ - Exhibit 11-9
- TRD - Page 11-11
### BASIC FREEWAY SECTIONS WORKSHEET

<table>
<thead>
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<th>General Information</th>
<th>Site Information</th>
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<tbody>
<tr>
<td>Analyst</td>
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</tr>
<tr>
<td>Agency or Company</td>
<td>From/To East of Golf Center Parkwy</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 Year 2040 Without Project</td>
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<tr>
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<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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<tr>
<td>Oper.(LOS) ✔</td>
<td>Des.(N)</td>
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<tr>
<td>Planning Data</td>
<td></td>
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</table>

#### Flow Inputs

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<thead>
<tr>
<th>Volume, V</th>
<th>6261 veh/h</th>
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</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. AADT</td>
<td>K</td>
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<tr>
<td>Peak-Hr Direction Prop.</td>
<td>D</td>
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<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
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<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>
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<td>Level</td>
</tr>
<tr>
<td>Grade % Length mi</td>
<td>Up/Down %</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

\[ f_p = 1.00 \]

\[ E_T = 1.5 \]

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

#### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
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<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
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<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>
</tr>
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</table>

#### Calc Speed Adj and FFS

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

#### LOS and Performance Measures

| v_p = (V or DDHV) / (PHF x N x f_{HV}) | pc/h/ln |
| S = 55.5 mph | pc/h/ln |
| D = v_p / S | pc/mi/ln |
| LOS E | |

#### Design (N)

<table>
<thead>
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<th>Design (N)</th>
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<tbody>
<tr>
<td>Design LOS</td>
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</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
- BFFS - Base free-flow speed
- FFS - Free-flow speed

#### 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

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# Basic Freeway Segments Worksheet

## General Information

<table>
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<tr>
<th>Analyst</th>
<th>JT</th>
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<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>
<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 State Route 86 | Jurisdiction | Analysis Year | Year 2040 Without Project |

### Oper.(LOS) Des.(N) Planning Data

## Flow Inputs

| Volume, V | 5033 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

\[
f_p = 1.00 \quad E_R = 1.2 \quad f_{HV} = \frac{1}{f_1 + f_2 + f_3} = 0.990
\]

## Speed Inputs

| Lane Width | ft | Calc Speed Adj and FFS |
| Rl-Side Lat. Clearance | ft | \( f_{w} \) |
| Number of Lanes, N | 2 | \( f_{LC} \) |
| Total Ramp Density, TRD | ramps/MI | TRD Adjustment |
| FFS (measured) | 65.0 mph | FFS |
| Base free-flow Speed, BFFS | mph | |

## LOS and Performance Measures

| Operational (LOS) | Design (N) |
| \( v_p \) = \( \frac{V \text{ or } DDHV}{PHF \times N \times f_{HV}} \) | \( v_p \) = \( \frac{V \text{ or } DDHV}{PHF \times N \times f_{HV}} \) |
| \( x_{f_p} \) | \( x_{f_p} \) |
| S | 41.9 mph |
| D = \( v_p / S \) | 63.8 pc/mi/ln |
| LOS | F |

## 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 |

## Factor Location

| E_R - Exhibits 11-10, 11-12 | \( f_{w} \) - Exhibit 11-8 |
| E_I - 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 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 Eastbound
- From/To: East of Dillon Road
- Jurisdiction: Year 2040 Without Project

### Site Information
- Analysis Year: Year 2040 Without Project

### Flow Inputs
- Volume, V: 4551 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
- General Terrain: Level
- Grade: 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: 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)
- \( v_p = (V \text{ or DDHV}) / (\text{PHF} \times N \times f_{HV}) \times f_p \): pc/h/ln
- \( S \): mph
- \( D = v_p / S \): pc/mi/ln
- LOS: F

### Design (N)
- Design LOS
- Design (N)
- 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
- TRD - Page 11-11
- f_{LW} - Exhibit 11-8
- f_{LC} - Exhibit 11-9
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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1/26/2016
**BASIC FREeways SEGMENTS WORKSHEET**

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<td>Analyst</td>
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<tr>
<td>Agency or Company</td>
<td>LLG</td>
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<td>Date Performed</td>
<td>9/22/2015</td>
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<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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<tr>
<td></td>
<td>Oper.(LOS)</td>
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<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V         | 4236 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 | Grade | % | Length | mi |

**Calculate Flow Adjustments**

| f_p               | 1.00 |
| f_T               | 1.5  |
| E_R               | 1.2  |
| f_HV = 1/[1+P_T(E_R - 1) + P_R(E_R - 1)) x 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>
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<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
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<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV x f_p)</td>
<td>Design (N)</td>
</tr>
<tr>
<td></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>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>E</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 |
| 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>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
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### Flow Inputs

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

### 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

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

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LV}</td>
<td></td>
</tr>
<tr>
<td>f_{LC}</td>
<td></td>
</tr>
<tr>
<td>TRD Adjustment mph</td>
<td></td>
</tr>
<tr>
<td>FFS</td>
<td>65.0</td>
</tr>
</tbody>
</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>Design (N)</td>
<td></td>
</tr>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

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

### Factor Location

- E_R - Exhibits 11-10, 11-12
- E_T - Exhibits 11-10, 11-11, 11-13
- f_{LV} - Exhibit 11-8
- f_{LC} - Exhibit 11-9
- 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>
</tr>
</thead>
<tbody>
<tr>
<td>Analyst</td>
<td>Highly/Direction of Travel I-10 Eastbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To East of Paradise Valley</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction Year 2040 Without Project</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>PM Peak Hour</td>
</tr>
</tbody>
</table>

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

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

#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4236 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
<td>0</td>
<td></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>veh/h</td>
<td>Grade  %</td>
<td>Length mi</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

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

#### Speed Inputs

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

#### LOS and Performance Measures

\[
S = 54.7 \text{ mph} \quad D = \frac{v_p}{S} \quad \text{ LOS } = E
\]

#### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
</tr>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) 2252 pc/h/ln</td>
</tr>
<tr>
<td>S = 54.7 mph</td>
</tr>
<tr>
<td>D = v_p / S 41.2 pc/mi/ln</td>
</tr>
<tr>
<td>LOS E</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p) 2252 pc/h/ln</td>
</tr>
<tr>
<td>S = 54.7 mph</td>
</tr>
<tr>
<td>D = v_p / S 41.2 pc/mi/ln</td>
</tr>
<tr>
<td>LOS E</td>
</tr>
</tbody>
</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 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
### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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 Cottonwood Springs Rd</td>
</tr>
<tr>
<td>Date Performed: 9/22/2015</td>
<td>Jurisdiction: Year 2040 Without Project</td>
</tr>
<tr>
<td>Analysis Time Period: PM Peak Hour</td>
<td>Analysis Year:</td>
</tr>
<tr>
<td>Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
</table>

#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V: 4264 veh/h</th>
<th>Peak-Hour Factor, PHF: 0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT veh/day</td>
<td>%Trucks and Buses, P_T: 2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R: 0</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</td>
</tr>
<tr>
<td></td>
<td>Up/Down %</td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

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

#### 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>

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{LW}</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LC}</td>
<td>mph</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>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 = \frac{54.3}{mph} ]</td>
<td></td>
</tr>
<tr>
<td>[ D = \frac{41.7}{pc/\text{mi}/\text{ln}} ]</td>
<td>Required Number of Lanes, N</td>
</tr>
</tbody>
</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 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,</td>
<td></td>
</tr>
<tr>
<td>11-3</td>
<td></td>
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</tbody>
</table>

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1/26/2016
APPENDIX H-V

YEAR 2040 WITH PROJECT TRAFFIC CONDITIONS
### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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 Cottonwood Springs Rd</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year Year 2040 With Project</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
</tr>
</tbody>
</table>

#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3518 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P_T</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P_R</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>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>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

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

#### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td>f_LW, mph</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
<td>TRD Adjustment, mph</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</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 = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p]</td>
<td>[v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \times f_p]</td>
</tr>
<tr>
<td>1870 pc/h/ln</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>61.9 mph</td>
<td>mph</td>
</tr>
<tr>
<td>30.2 pc/mi/ln</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>D</td>
<td>Required Number of Lanes, N</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_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**: 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**: Year 2040 With Project

### Flow Inputs
- **Volume, V**: 3632 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
- **$f_p$**: 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**: 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)**
  - $v_p = (V or DDHV) / (PHF x N x f_HV)$
  - $S = 61.0$ mph
  - $D = \frac{v_p}{S}$
  - $LOS = \frac{D}{\text{pc}/\text{mi}}$

### Design (N)
- **Design LOS**
  - $v_p = (V or DDHV) / (PHF x N x f_HV)$
  - $S = \text{mph}$
  - $D = \frac{v_p}{S}$
  - $LOS = \frac{D}{\text{pc}/\text{mi}}$
  - 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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1/26/2016
### 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 Frontage Road
- **Jurisdiction:** Year 2040 With Project

#### Flow Inputs
- **Volume, V:** 4551 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
- $f_p = 1.00$
- $E_R = 1.2$
- $f_{HV} = \frac{1}{1+P_T(E_R - 1) + P_R(E_R - 1)} \times 0.990$

#### 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):**
  - $v_p = \frac{(V \text{ or DDHV}) \times f_{HV}}{(PHF x N x f_p)}$
  - $S = \frac{v_p}{x_{f_p}}$
  - $D = \frac{v_p}{S}$
  - $LOS = \frac{F}{S}$

#### 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
- **E_T:** Exhibits 11-10, 11-11, 11-13
- **f_p:** Page 11-18
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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1/26/2016
### 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

<table>
<thead>
<tr>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway/Direction of Travel: I-10 Westbound</td>
</tr>
<tr>
<td>From/To: East of Avenue 50</td>
</tr>
<tr>
<td>Jurisdiction:</td>
</tr>
<tr>
<td>Analysis Year: Year 2040 With Project</td>
</tr>
</tbody>
</table>

#### Flow Inputs
- Volume, V: 4551 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
- \( f_H = \frac{1}{1+P_T(E_T-1) + P_R(E_R-1)} \) 0.990

#### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 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)
  - \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times \frac{f_{HV}}{f_p})} \): pc/h/ln
  - S: mph
  - \( D = \frac{v_p}{S} \): pc/mi/ln
  - LOS: F

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
</tr>
<tr>
<td>Design (N)</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
- 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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1/26/2016
# 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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Dillon Road
- **Jurisdiction**: Year 2040 With Project
- **Planning Data**: ✔ Oper.(LOS)
- **Design (N)**:  
  - **Volume, V**: 4343 veh/h
  - **AADT**: veh/day
  - **Peak-Hour Factor, PHF**: 0.95
  - **%Trucks and Buses, P_T**: 2
  - **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
  - **Operational (LOS)**:  
    - **v_p = (V or DDHV) / (PHF x N x f_HV)**
    - **x f_p**
    - **S = v_p / S**: mph
    - **LOS = E**
  - **Design LOS**:  
    - **v_p = (V or DDHV) / (PHF x N x f_HV)**
    - **x f_p**
    - **S = mph**
    - **LOS = E**
  - **Required Number of Lanes, N**

## Flow Inputs
- **Volume, V**: 4343 veh/h
- **AADT**: veh/day
- **Peak-Hour Factor, PHF**: 0.95
- **%Trucks and Buses, P_T**: 2
- **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

## 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

## 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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1/26/2016
## 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 State Route 86
- **Jurisdiction**: Year 2040 With Project

### Flow Inputs
| Volume, V | 4464 veh/h | Peak-Hour Factor, PHF | 0.95 | %Trucks and Buses, P_T | 2 |
| AADT | veh/day | %RVS, P_R | 0 |
| Peak-Hr Prop. of AADT, K | | General Terrain: | Level |
| Peak-Hr Direction Prop, D | veh/h | Grade | % | Length | mi |
| DDHV = AADT x K x D | | Up/Down % |

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

### 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
- **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)**
  - \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \)
  - \( S = 51.6 \text{ mph} \)
  - \( D = v_p / S = 46.0 \text{ pc/mi} \)
  - **LOS**: F

### Design (N)
- **Design LOS**
- **Design (N)**
- **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_{LW}**: Exhibit 11-8
- **f_{LC}**: Exhibit 11-9
- **f_{p}**: Page 11-18
- **TRD**: Page 11-11

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# 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>
<td>9/22/2015</td>
</tr>
<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 Golf Center Parkway |
| Jurisdiction | Year 2040 With Project |

### Oper.(LOS) (A)/Des.(N) (B)/Planning Data (C)

<table>
<thead>
<tr>
<th>Oper.(LOS)</th>
<th>Des.(N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>✅</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V | 7300 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 |
| Grade | % |
| Length | mi |

### Calculate Flow Adjustments

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

### 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

\[ v_p = \frac{(V \lor DDHV)}{(PHF x N \times f_{HV} \times f_p)} \]
\[ S = 60.9 \text{ mph} \]
\[ D = \frac{v_p}{S} \]
\[ D = 31.9 \text{ pc/mi/ln} \]

### 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

| Exhibit | 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: East of Jackson Street
- Jurisdiction: Year 2040 With Project

#### Flow Inputs
- Volume, V: 7442 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
- \( f_{HV} = \frac{1}{1+P_T (E_T - 1)} \times P_R (E_R - 1) \times 0.990 \)

#### 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

#### 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
- S - Speed
- D - Density

### Design (N)
- Design LOS
- 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

### Factor Location
- E_R - Exhibit 11-8
- E_T - Exhibit 11-9
- 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 Monroe Street
- Jurisdiction: Year 2040 With Project

<table>
<thead>
<tr>
<th>Flow Inputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, ( V )</td>
<td>9098 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 ( \times ) ( K ) ( \times ) ( D )</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

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

## 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)
- \( v_p = \frac{(V \ or \ DDHV) \ \times \ f_{HV}}{x \times f_p} \) pc/h/ln
- \( S \) | 17.8 mph |
- \( D = \frac{v_p}{S} \) pc/mi/ln
- LOS | F |

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

### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: Year 2040 With Project

### Flow Inputs
- **Volume, V**: 9428 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
  - **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 Lt. 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**

### 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_{LW}** - Exhibit 11-8
- **f_{LC}** - Exhibit 11-9
- **TRD** - 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

#### Site Information
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Washington Street
- **Jurisdiction**: Year 2040 With Project

#### Flow Inputs
- **Volume, V**: 10782 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h

#### Calculate Flow Adjustments
- **f_0**: 1.00
- **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**: (V or DDHV) / (PHF x N x f_HV)
  - **S**: mph
  - **LOS**: F

#### 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 10-12, 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 Cook Street
- **Jurisdiction:** Year 2040 With Project
- **Oper. (LOS):**
- **Des. (N):**
- **Planning Data:**

#### Flow Inputs
| Volume, V | 12227 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 | veh/h | General Terrain: Level |
| DDHV = AADT x K x D | | Grade % Length mi |
|           | Up/Down %   |                         |

#### Calculate Flow Adjustments
- \( f_p \) = 1.00
- \( E_T \) = 1.5
- \( E_R \) = 1.2
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1) + P_R (E_R - 1)} \) (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
<table>
<thead>
<tr>
<th></th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LV} )</td>
<td></td>
</tr>
<tr>
<td>( f_{LC} )</td>
<td></td>
</tr>
<tr>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td><strong>FFS</strong></td>
<td>65.0</td>
</tr>
</tbody>
</table>

#### LOS and Performance Measures

#### Design (N)
- **Operational (LOS):**
  \[ v_p = \frac{(V or DDHV)}{(PHF \times N \times f_{HV})} \times \frac{1}{4333} \text{ pc/h/ln} \]
- **LOS:**
  \[ D = \frac{v_p}{S} \text{ pc/mi/ln} \]

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

#### 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 Monterey Avenue
- Jurisdiction
- Year 2040 With Project

### Oper.(LOS) Des.(N) Planning Data

### Flow Inputs
- Volume, V: 11320 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: 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
- Rt-Side Lat. Clearance
- 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

### Design (N)
- Design LOS
- Design (N)
- 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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1/26/2016
## 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

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

### SITE INFORMATION

Highway/Direction of Travel: I-10 Westbound
From/To: West of Monterey Avenue
Jurisdiction: Year 2040 With Project

### FLOW INPUTS

| Volume, V | 11229 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, PR = 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |

#### Calculate Flow Adjustments

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

### 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

- Operational (LOS): pc/h/in
  \[ v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} 2985 \]
  \[ S = 29.4 \text{ mph} \]
  \[ D = \frac{v_p}{S} = 101.6 \text{ pc/mi/in} \]
- LOS: F

### 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
- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_T \) - 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>
</tr>
</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</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
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<tr>
<td></td>
<td>Year 2040 With Project</td>
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</table>

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

☑ Oper.(LOS)       ☐ Des.(N)       ☐ Planning Data

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>6059 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>%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>

| 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 |
| 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 | 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

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)</td>
</tr>
<tr>
<td>S = \frac{v_p}{d}</td>
</tr>
<tr>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS</td>
</tr>
</tbody>
</table>

### Design (N)

| 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 |
| 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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1/26/2016
## BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

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<tr>
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<th><strong>Site Information</strong></th>
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<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>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>
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<tr>
<td>Jurisdiction</td>
<td>East of Monterey Avenue</td>
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</table>

<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_p</td>
</tr>
<tr>
<td>E_T</td>
</tr>
<tr>
<td>E_R</td>
</tr>
<tr>
<td>f_{HV} = \frac{1}{1+\frac{1}{E_T-1}+\frac{1}{P_R(E_R-1)};0.990}</td>
</tr>
</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>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_w</td>
</tr>
<tr>
<td>f_{LC}</td>
</tr>
<tr>
<td>TRD Adjustment</td>
</tr>
<tr>
<td>FFS</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_p = \frac{(V \text{ or DDHV}) / (PHF x N x f_{HV}) \times f_p}{2272}</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
</tr>
<tr>
<td>LOS</td>
</tr>
<tr>
<td>Design (N)</td>
</tr>
<tr>
<td>v_p = \frac{(V \text{ or DDHV}) / (PHF x N x f_{HV}) \times f_p}{2272}</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
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<tr>
<td>Required Number of Lanes, N</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</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
</tr>
<tr>
<td>S - Speed</td>
</tr>
<tr>
<td>D - Density</td>
</tr>
<tr>
<td>FFS - Free-flow speed</td>
</tr>
<tr>
<td>BFFS - Base free-flow speed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Factor Location</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>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p - Exhibits 11-2, 11-3</td>
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1/26/2016
# 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 Eastbound
- **From/To**: East of Cook Street
- **Jurisdiction**: Analysis Year
- **Year 2040 With Project**: Planning Data

## Flow Inputs
- **Volume, V**: 6055 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
- $f_p = 1.00$
- $E_R = 1.2$
- $f_{HV} = 1/[1 + P_T (E_T - 1) + P_R (E_R - 1)] = 0.990$

## 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

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

## LOS and Performance Measures
- **LOS**: 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**: $f_{LW}$ - 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 Washington Street
- Jurisdiction: Year 2040 With Project
- Analysis Year: 2040 With Project

#### Flow Inputs
- Volume, V: 6035 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 = 1/1 + P_r(E_r - 1) + P_p(E_p - 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)
  - \( v_p = \frac{(V \text{ or } \text{DDHV})}{(\text{PHF} \times N \times f_{HV})^{2139}} \text{ pc/h/ln} \)
  - \( S = 57.3 \text{ mph} \)
  - \( D = \frac{v_p}{S} = 37.4 \text{ pc/mi/ln} \)

#### Design (N)
- Design LOS
  - \( v_p = \frac{(V \text{ or } \text{DDHV})}{(\text{PHF} \times N \times f_{HV})^{2139}} \text{ pc/h/ln} \)
  - \( S = \text{ mph} \)
  - \( D = \frac{v_p}{S} = \text{ pc/mi/ln} \)
  - 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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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

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<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>East of Jefferson Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
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<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td></td>
<td>Year 2040 With Project</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>Operat. (N)</td>
<td>Des. (N)</td>
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<tr>
<td>Planning Data</td>
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### Flow Inputs

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<thead>
<tr>
<th>Volume, V</th>
<th>5573 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>2 %Trucks and Buses, P_T</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>

### 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>
<tr>
<td>f_{HV} = (1 + P_T \cdot E_T) / (1 + P_T \cdot E_T)</td>
<td>0.990</td>
</tr>
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### 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>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>
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</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{LW}</th>
<th>mph</th>
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</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>v_p = (V or DDHV) / (PHF x N x f_{HV})</th>
<th>pc/h/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>x f_p</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>60.3 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>32.7 pc/mi/ln</td>
</tr>
<tr>
<td>LOS D</td>
<td></td>
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</tbody>
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### Design (N)

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

### Glossary

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

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1/26/2016
## 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>
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<td>9/22/2015</td>
</tr>
<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

<table>
<thead>
<tr>
<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 Monroe Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
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<tr>
<td>Analysis Year</td>
<td>Year 2040 With Project</td>
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</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>5437 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>%Trucks and Buses, P_T</td>
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### Calculate Flow Adjustments

<table>
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<td>f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)]/0.990</td>
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### Speed Inputs

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<th>Lane Width</th>
<th>ft</th>
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<td>Rt-Side Lat. Clearance</td>
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<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
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<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
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</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_LW</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
</tr>
<tr>
<td>S = v_p / S</td>
</tr>
<tr>
<td>LOS = D</td>
</tr>
</tbody>
</table>

### Design (N)

<table>
<thead>
<tr>
<th>Design LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_{HV})</td>
</tr>
<tr>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS = D</td>
</tr>
</tbody>
</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 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>
</tr>
</thead>
<tbody>
<tr>
<td>f_{LW} - Exhibit 11-8</td>
</tr>
<tr>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<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,</td>
</tr>
<tr>
<td>11-3</td>
</tr>
</tbody>
</table>

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1/26/2016
# 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 Jackson Street
- Jurisdiction: Year 2040 With Project

## Flow Inputs
| Volume, V | 4629 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 |
| DDHV = AADT x K x D | veh/h | Grade % Length mi | |

## 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 3
- Total Ramp Density, TRD ramps/mi
- FFS (measured) mph
- Base free-flow Speed, BFFS mph

## LOS and Performance Measures
- \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \)
- \( S = 64.2 \text{ mph} \)
- \( D = v_p / S = 25.6 \text{ pc/mi/ln} \)
- \( LOS = C \)

## 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 Number of Lanes, N

## 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
### 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

### Flow Inputs
- **Volume, V**: 4680 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %RVs, PF
- **Peak-Hr Direction Prop, D**: General Terrain: Level
- **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

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \)
  - \( 1659 \text{ pc/h/ln} \)
  - \( S = 64.0 \text{ mph} \)
  - \( D = v_p / S \)
  - \( 25.9 \text{ pc/mi/ln} \)
  - **LOS**: C

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

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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JT
- **Agency or Company**: LLG
- **Date Performed**: 9/22/2015
- **Analyst Time Period**: AM Peak Hour
- **Project Description**: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of State Route 86
- **Jurisdiction**: Year 2040 With Project

#### Site Information

<table>
<thead>
<tr>
<th><strong>Flow Inputs</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3123 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><strong>Calculate Flow Adjustments</strong></td>
<td>E_R = 1.2</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/(1 + P_T(E_R - 1) + P_R(E_R - 1))</td>
<td>0.990</td>
</tr>
</tbody>
</table>

#### 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 |

#### Design (N)

| Design (N) |  |
| Design LOS |  |
| Design LOS | pc/h/ln |
| D = v_p / S | 25.9 pc/ml/ln |
| LOS | C |

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

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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  
**Part:** Oper.(LOS)  
**Analysis Year:** Year 2040 With Project

#### Site Information

**Highway/Direction of Travel:** I-10 Eastbound  
**From/To:** East of Dillon Road  
**Jurisdiction:**  
**Year:**  

#### Flow Inputs

| Volume, V | 3034 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 |
| DDHV = AADT x K x D | veh/h | Grade | % |
|  |  | Length | mi |
|  |  | Up/Down | % |

#### Calculate Flow Adjustments

|  |  | E_R | 1.2 |
|  |  | fHV = 1/(1+P_T(E_T-1)+P_R(E_R-1))/0.990 |

#### Speed Inputs

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

#### LOS and Performance Measures

| Operational (LOS) | Design (N) |
| v_p = (V or DDHV) / (PHF x N x fHV) | Design LOS |
| 1613 pc/h/ln | v_p = (V or DDHV) / (PHF x N x fHV) | pc/h/ln |
| x f_p | x f_p | |
| S | 64.4 mph | S | mph |
| D = v_p / S | 25.1 pc/ln | D = v_p / S | pc/ln |
| LOS | C | 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
### Basic Freeway 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>
</tbody>
</table>

#### Site Information

| Highway/Direction of Travel | I-10 Eastbound |
| From/To                     | East of Avenue 50 |
| Jurisdiction                |                  |
| Analysis Year               | Year 2040 With Project |

#### Project Description

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

#### Flow Inputs

| Volume, V | 3373 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

\[ f_P = 1.00 \quad \text{and} \quad E_R = 1.2 \]

\[ f_{HV} = \frac{1}{1+P_T(E_R - 1) + P_R(E_R - 1)} \]

#### Speed Inputs

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

#### Speed Adjustments

| f_LW | mph |
| f_LC | mph |

#### TRD Adjustment

| TRD Adjustment | mph |

#### LOS and Performance Measures

\[ v_p = \frac{(V \text{ or DDHV})}{(\text{PHF} \times N \times f_{HV})} \]

| S | 62.8 mph |
| D | 28.5 pc/mi/ln |
| LOS | D = \frac{v_p}{S} |

#### Design (N)

| Design LOS | Design (N) |
| 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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_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
# BASIC FREeways 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 Frontage Road  
**Jurisdiction:**  
**Analysis Year:** Year 2040 With Project  
**Planning Data:**

## Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>3373</td>
<td>veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. AADT, K</td>
<td></td>
<td>%Trucks and Buses, PT 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>%RVs, PR 0</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

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

## Speed Inputs

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

## Calc Speed Adj and FFS

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

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p (V or DDHV) / (PHF x N x f_HV x f_p)</td>
<td>1793</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>v_p / S</td>
<td>62.8</td>
<td>mph</td>
</tr>
<tr>
<td>D / S</td>
<td>28.5</td>
<td>pc/ml/ln</td>
</tr>
</tbody>
</table>

## Design (N)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>v_p (V or DDHV) / (PHF x N x f_HV x f_p)</td>
<td></td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td></td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td></td>
<td>pc/ml/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
<td>Required Number of Lanes, N</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  
- **BFFS:** Base free-flow speed 
- **FFS:** Free-flow speed

## Factor Location

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_R</td>
<td>Exhibits 11-10, 11-12</td>
<td>f_LW - Exhibit 11-8</td>
</tr>
<tr>
<td>E_T</td>
<td>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></td>
<td>TRD - Page 11-11</td>
</tr>
<tr>
<td>LOS, S, FFS, v_p : Exhibits 11-2, 11-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
# Basic Freeway Worksheet

## General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>J1</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>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 Paradise Valley</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>Year 2040 With Project</td>
</tr>
</tbody>
</table>

## Flow Inputs

| Volume, V | 2436 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

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

## 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

| Operational (LOS) |  $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV} x f_P)$ | 1295 pc/h/in |
|                   | $S = v_p / S$ | 65.0 mph |
|                   | $D = v_p / S$ | 19.9 pc/mi/ln |
|                   | LOS | C |

## Design (N)

| Design (N) | Design LOS |
| 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 |

## 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

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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
- Highway/Direction of Travel: I-10 Eastbound
- From/To: Rd
- Jurisdiction: Year 2040 With Project

**Site Information**
- Highways: East of Cottonwood Springs

**Flow Inputs**
- Volume, V: 2453 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
- \( f_{HV} = \frac{1}{\frac{1}{f_p} + P_T (E_T - 1) + P_R (E_R - 1)} \) = 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

**LOS and Performance Measures**
- \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \)
- \( 1304 \) pc/h/ln
- \( S = 65.0 \) mph
- \( D = v_p / S \)
- \( 20.1 \) 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
- 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 Segments Worksheet

#### General Information
- **Analyst:** JY
- **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

#### Flow Inputs
- **Volume, V:** 3044 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-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
- **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:** 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}**
- **f_{hv}**
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

#### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{V \text{ or } DDHV}{(PHF \times N \times f_{hw})} \text{ pc/h/ln} \)
  - \( S = \frac{v_p}{D} \text{ mph} \)
  - \( D = \frac{v_p}{S} \text{ pc/mi/ln} \)
  - **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**
- **S - Speed**
- **D - Density**
- **FFS - Free-flow speed**
- **BFFS - Base free-flow speed**
- **LOS, S, FFS, v_p - Exhibits 11-2, 11-3**

#### Factor Location
- **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**
- **TRD - Page 11-18**

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1/26/2016
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<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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<tbody>
<tr>
<td>Analyst: JT</td>
<td>Highway/Direct of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company: LLG</td>
<td>From/To: East of Paradise Valley</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: Year 2040 With Project</td>
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<tr>
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<td>☐ Des.(N)</td>
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<th><strong>Flow Inputs</strong></th>
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<tbody>
<tr>
<td>Volume, V</td>
<td>AADT</td>
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<tr>
<td>2993 veh/h</td>
<td>veh/day</td>
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<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: Level</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Calculate Flow Adjustments</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>f_p</td>
<td>E_R</td>
</tr>
<tr>
<td>1.00</td>
<td>1.2</td>
</tr>
<tr>
<td>E_T</td>
<td>f_{HV} = 1/[1+P_T(E_T - 1) + P_R(E_R - 1):0.990</td>
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<tr>
<td>1.5</td>
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<tr>
<th><strong>Speed Inputs</strong></th>
<th><strong>Calc Speed Adj and FFS</strong></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>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>
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<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
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<table>
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<tr>
<th><strong>LOS and Performance Measures</strong></th>
<th><strong>Design (N)</strong></th>
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<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>Design LOS</td>
</tr>
<tr>
<td>x f_p</td>
<td>1591 pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>64.5 mph</td>
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<tr>
<td>D = v_p / S</td>
<td>24.7 pc/mi/ln</td>
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<tr>
<td>LOS</td>
<td>C</td>
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<thead>
<tr>
<th><strong>Glossary</strong></th>
<th><strong>Factor Location</strong></th>
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<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>E_R - Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td></td>
<td>f_{LV} - Exhibit 11-8</td>
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<tr>
<td></td>
<td>E_T - Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td></td>
<td>f_{LC} - Exhibit 11-9</td>
</tr>
<tr>
<td></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>
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## BASIC FREEWAY SEGMENTS WORKSHEET

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<th>General Information</th>
<th>Site Information</th>
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<tr>
<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 Frontage Road</td>
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<td>Jurisdiction</td>
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<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Project Description</td>
<td>Year 2040 With Project</td>
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</table>

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

### Flow Inputs

- **Volume, V**: 3947 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**
  - $f_p = 1.00$  
  - $E_T = 1.5$  
  - $f_{HV} = \frac{1}{1+P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990$  

### 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

### LOS and Performance Measures

- **Operational (LOS)**
  - $v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})}$  
  - $2098 \text{ pc/h/ln}$  
  - $S = 58.1 \text{ mph}$  
  - $D = v_p / S$  
  - $36.1 \text{ pc/mi/ln}$

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

### 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  
- **TRD**: Page 11-18  
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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1/26/2016
## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- **Analyst:** J1
- **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 Avenue 50
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project

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

### Flow Inputs
- **Volume, V:** 3947 veh/h
- **AADT:** veh/day
- **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
- \[ f_p = 1.00 \]
- \[ E_T = 1.5 \]
- \[ f_{HV} = \frac{1}{f_p + 1 + E_T} + \frac{P_R}{1 + E_T}; 0.990 \]

### 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:** mph

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

### LOS and Performance Measures
- **Operational (LOS):**
  - \[ v_p = \frac{(V \text{ or DDHV}) \times f_{HV}}{(PHF \times N \times f_p)} 2098 \text{ pc/h/ln} \]
  - \[ S = 58.1 \text{ mph} \]
  - \[ D = v_p / S \]
  - **LOS:**

### Design (N)
- **Design (N):**
  - **Design LOS:**
  - **E_0:** 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

### 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_{LW}:** Exhibit 11-8
- **f_{LC}:** Exhibit 11-9
- **f_p:** Page 11-18
- **LOS, S, FFS, v_p:** Exhibits 11-2, 11-3

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1/26/2016
**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
- **Highway/Direction of Travel:** I-10 Westbound
- **From/To:** East of Dillon Road
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project

### Site Information
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

### Flow Inputs
- **Volume, V:** 3717 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)]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
- **Calc Speed Adj and FFS**
  - **f_{lw}**
  - **f_{LC}**
  - **TRD Adjustment**
  - **FFS**

### LOS and Performance Measures
- **v_p = (V or DDHV) / (PHF x N x f_{HV})**
- **S:** 60.3 mph
- **D = v_p / S:** 32.8 pc/mi/in
- **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

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# BASIC FREEWAY SEGMENTS WORKSHEET

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<td>LLG</td>
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## Site Information

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<td>From/To</td>
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<td>Jurisdiction</td>
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<tr>
<td>Analysis Year</td>
<td>Year 2040 With Project</td>
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## Flow Inputs

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<th>Volume, V</th>
<th>3672 veh/h</th>
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<tr>
<td>AADT</td>
<td>veh/day</td>
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<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%Trucks and Buses, P_T</td>
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<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, P_R</td>
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<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>
</tr>
<tr>
<td>%RVs, P_R</td>
<td>0</td>
</tr>
<tr>
<td>General Terrain</td>
<td>Level</td>
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<td>Grade</td>
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</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

## Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| fHV | 1/(1+P_T(E_T - 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>

## 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 fHV)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S</td>
<td>60.7 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>32.2 pc/mi/ln</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
- PHF - Peak-Hour Factor
- %Trucks and Buses
- %RVs
- General Terrain
- Grade
- Length
- Up/Down %
- f_p - Page 11-18
- 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
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JF
- **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**: Analysis Year: Year 2040 With Project

#### Flow Inputs
- **Volume, V**: 5944 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %
- **Peak-Hr Direction Prop, D**: veh/h

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

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

#### Design (N)
- **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

---

**Factor Location**
- **ER**: Exhibits 11-10, 11-12
- **ET**: Exhibits 11-10, 11-11, 11-13
- **LP**: Page 11-18
- **LOS, S, FFS, v_p**: Exhibits 11-2, 11-3

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1/26/2016
## 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 Westbound
- **From/To**: East of Jackson Street
- **Jurisdiction**: 
- **Analysis Year**: Year 2040 With Project

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>5809 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>
</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:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>miles</td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

- **f_p**: 1.00
- **f_T**: 1.5
- **E_R**: 1.2
- **f_HV** = \(\frac{1}{1+\frac{P_T}{E_R - 1}} + \frac{P_R}{E_R - 1}0.990\)

### 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>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>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>
</tr>
</tbody>
</table>

### LOS and Performance Measures

### Design (N)

<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} x f_p)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>58.8 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td></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_{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 Monroe Street
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project
- **Project:** Oper.(LOS)
- **Des.(N):**
- **Planning Data:**

### FLOW INPUTS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>7597 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>
</tbody>
</table>

### FLOW ADJUSTMENTS
\[
E_R = 1.2 \\
E_T = 1.5 \\
f_{HV} = 1/[1 + P_T (E_T - 1) + P_R (E_R - 1)] \times 0.990
\]

### 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</td>
<td>mph</td>
</tr>
<tr>
<td>BFFS</td>
<td></td>
</tr>
</tbody>
</table>

### LOS AND PERFORMANCE MEASURES
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td>( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p ) pc/h/ln</td>
</tr>
<tr>
<td>v_p</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>S</td>
<td>41.3 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>65.1 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>F</td>
</tr>
</tbody>
</table>

### DESIGN (N)
- **Design LOS**
- **Design (N)**
- **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
- **TRD:** Page 11-11

### FACTOR LOCATION
- **E_R:** Exhibits 11-10, 11-12
- **f_{LW}:** Exhibit 11-8
- **E_T:** Exhibits 11-11, 11-13
- **f_{LC}:** Exhibit 11-9

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1/26/2016
## BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</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 Jefferson Street</td>
</tr>
<tr>
<td>Date Performed 9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period PM Peak Hour</td>
<td>Analysis Year Year 2040 With Project</td>
</tr>
<tr>
<td>Project Description 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
</table>

### Flow Inputs

| Volume, V | 7689 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

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

### 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_c | 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}) \times (PHF \times N \times f_{HV})}{2725} \text{ pc/h/ln} ]</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
</tr>
<tr>
<td>LOS</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

### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
</tr>
<tr>
<td>v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{2725} \text{ pc/h/ln}</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = \frac{v_p}{S}</td>
</tr>
<tr>
<td>LOS</td>
</tr>
<tr>
<td>Required Number of Lanes, N</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_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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1/26/2016
### Basic Freeway Segments Worksheet

#### General Information
- **Analyst:** J.I.
- **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 Washington Street
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project

#### Flow Inputs
- **Volume, V:** 8901 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:**
- **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:**
- **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):**
  - \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV}} \times f_p \) pc/h/in
  - \( S = 21.4 \) mph
  - \( D = \frac{v_p}{S} \) pc/mi/ln
  - LOS

#### Design (N)
- **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
- **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 WORKSHEET

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

#### Site Information
- Highway/Direction: I-10 Westbound
- From/To: East of Cook Street
- Jurisdiction: Riverside County
- Year: 2040 With Project

#### Project Description
- Project Code: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- Oper.(LOS): ✓
- Des.(N): □
- Planning Data: □

#### Flow Inputs
- Volume, V: 9271 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
- \( f_{HV} = \frac{1}{1 + \frac{E_T}{E_R}} + \frac{E_R}{E_T} \cdot 0.990 \)

#### 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

#### 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
- \( f_{LW} \) - 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: J1
- 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 Monterey Avenue
- Jurisdiction
- Analysis Year: Year 2040 With Project

#### Flow Inputs
- Volume, V: 9095 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}{f_p(f_{LC} + E_T)}

#### 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, BFSS: 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
- 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
- v_p - Exhibit 11-2, 11-3
- E_T - Exhibits 11-10, 11-12
- E_R - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- TRD - Page 11-11

---

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1/26/2016
# 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 Westbound
- **From/To:** West of Monterey Avenue
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project

## Flow Inputs
- **Volume, V:** 8697 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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1 + P_T (E_T - 1)} + P_R (E_T - 1) \times 0.990 \)

## 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

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

## LOS and Performance Measures
- **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

## 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

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### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst:** JI
- **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:**
- **Analysis Year:** Year 2040 With Project

#### Flow Inputs
- **Volume, V:** 8364 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **Peak-Hr Direction Prop, D:** veh/h
- **Peak-Hr Prop. of AADT, K:** %RVs, P<sub>R</sub>
- **Peak-Hr Direction Prop, D:** %
- **General Terrain:** Level
- **Grade:** %
- **Length:** mi
- **Up/Down %:**

#### Calculate Flow Adjustments

\[
\begin{align*}
E_R & = 1.2 \\
f_p & = 1.00 \\
f_T & = 1.5 \\
f_{HV} &= \frac{1}{1 + (2.5 - 1)(1 - 0.05)} \\
& = 0.990
\end{align*}
\]

#### 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):**
  \[
  v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}}
  \]
- **Design (N):**
  \[
  v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}}
  \]

#### Glossary
- **N:** Number of lanes
- **V:** Hourly volume
- **v<sub>p</sub>:** 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<sub>R</sub> - Exhibits 11-10, 11-12**
- **f<sub>LW</sub> - Exhibit 11-8**
- **E<sub>T</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
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

<table>
<thead>
<tr>
<th>Site Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
</tbody>
</table>
| From/To | East of Monterey Avenue
| Jurisdiction |  |
| Analysis Year | Year 2040 With Project |

#### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>8916 veh/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></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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</td>
<td>Level</td>
</tr>
<tr>
<td>Grade % Length mi</td>
<td></td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

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

#### Speed Inputs

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

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calc Speed Adj and FFS</td>
<td></td>
</tr>
<tr>
<td>Lane Width</td>
<td>ft</td>
</tr>
<tr>
<td>Rtl-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></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
</tr>
</tbody>
</table>

#### LOS and Performance Measures

#### Design (N)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operational (LOS)</td>
<td></td>
</tr>
<tr>
<td>Design (N)</td>
<td></td>
</tr>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>Required Number of Lanes</td>
<td>N</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>
</tr>
</tbody>
</table>

#### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<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>
</tbody>
</table>

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file:///C:/Users/tucker/AppData/Local/Temp/f2k60E1.tmp
1/26/2016
### 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

<table>
<thead>
<tr>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway/Direction of Travel: I-10 Eastbound</td>
</tr>
<tr>
<td>From/To: East of Cook Street</td>
</tr>
<tr>
<td>Jurisdiction:</td>
</tr>
<tr>
<td>Analysis Year: Year 2040 With Project</td>
</tr>
</tbody>
</table>

#### Flow Inputs

- **Volume, V**: 9646 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
- **$f_{HV} = 1/[1 + P_T(E_T - 1) + P_R(E_R - 1)/0.990]$**

#### 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)**: $v_p = \frac{V \text{ or } DDHV}{PHF \times N \times f_{HV}}$ pc/h/ln
- **$v_p$**: pc/h/ln
- **S**: 7.3 mph
- **D = $v_p / S$**: pc/mi/ln
- **LOS**: F

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

#### Factor Location

- **$E_R$**: Exhibits 11-10, 11-12
- **$f_{TW}$**: 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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### General Information | Site 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 Eastbound  
From/To | East of Washington Street  
Jurisdiction | Year 2040 With Project  
Planning Data |  

### Flow Inputs

| Volume, V | 9373 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 |
| DDHV = AADT x K x D | veh/h | Grade | % |
| | | Length | mi |
| | | Up/Down % | |

### 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) | 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

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \text{apped} ) )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>( x f_p )</td>
<td>( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV} \text{apped} ) )</td>
</tr>
<tr>
<td>S</td>
<td>mph</td>
</tr>
<tr>
<td>D</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</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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### BASIC FREEWAY WORKSHEET

### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst:** JI
- **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 Eastbound
- **From/To:** East of Jefferson Street
- **Jurisdiction:**
- **Analysis Year:** Year 2040 With Project
- **Oper.(LOS):** ✔
- **Des.(N):**
- **Planning Data:**

#### Site Information

#### Flow Inputs
- **Volume, V:** 7662 veh/h
- **AADT:** veh/day
- **Peak-Hour 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(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}:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

#### LOS and Performance Measures

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

<table>
<thead>
<tr>
<th>( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) )</th>
<th>pc/h/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>f_{p} x ( 2715 \times 40.5 )</td>
<td>mph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>( D = v_p / S )</th>
<th>pc/mi/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>67.1 ( F )</td>
<td>mph</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</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_{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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**H-257**

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1/26/2016
# 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 Monroe Street
- **Jurisdiction:** Riverside County
- **Analysis Year:** Year 2040 With Project

**Flow Inputs**
- **Volume, V:** 7511 veh/h
- **AADT:** 3136 veh/day
- **Peak-Hr Prop. of AADT, K:**
  - %Trucks and Buses, \( P_T \): 2
  - %RVs, \( P_R \): 0
- **Peak-Hr Direction Prop, D:**
  - General Terrain: Level
  - Grade: %
  - Length: mi
  - Up/Down %

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

**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**
- **Calc Speed:** mph
- **TRD Adjustment:** mph
- **FFS:** 65.0 mph

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

**Required Number of Lanes, N**
- **Operational (LOS):**
  - 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

**Factor Location**
- **\( f_{HV} \):** Exhibit 12-3
- **\( f_{PW} \):** Exhibit 11-8
- **\( f_{LC} \):** Exhibit 11-9
- **TRD:** Page 11-11
- **LOS:** Exhibit 11-2
### Basic Freeway Segments Worksheet

#### General Information
- Analyst: JI
- 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: Year 2040 With Project

#### Flow Inputs
- Volume, V: 7081 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K:
  - %Trucks and Buses, P_T: 2
  - %RVs, P_R: 0
- Peak-Hr Direction Prop, D: General Terrain: Level
- DDHV = AADT x K x D: veh/h

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

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

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

#### 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

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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 Golf Center Parkway
- Jurisdiction
- Analysis Year: Year 2040 With Project
- Oper (LOS) / Des (N) / Planning Data

### Flow Inputs
- Volume, V: 6834 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
- FFS Adjustment
- FFS

### LOS and Performance Measures
- Operational (LOS)
- \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \)
- \( S \): 50.2 mph
- \( D = v_p / S \): 48.3 pc/mi/ln
- LOS: F

### Design (N)
- Design LOS
- \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV}} \times f_p \)
- S: mph
- D: 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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3
- f_{LV} - Exhibit 11-8
- f_{LC} - Exhibit 11-9
- 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: PM Peak Hour
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of State Route 86
- Jurisdiction: Analysis Year
- Year 2040 With Project

### Site Information
- Oper.(LOS) [✓]
- Des.(N) [ ]
- Planning Data [ ]

### Flow Inputs
- Volume, V: 5607 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 %
- Peak-Hour Factor, PHF: 0.95
- E_R: 1.2

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

### Speed Inputs
- Lane Width: ft
- Rt-Side Lateral 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): \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p \)
- \( v_p = 29.6 \text{ mph} \)
- \( D = \frac{v_p}{S} \times F \)
- \( D = 100.9 \text{ pc/mi/ln} \)

### Design (N)
- Design LOS
- Design (N)
- 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
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

### Factor Location
- HCS 2010™ Version 6.70
- Generated: 1/26/2016 4:20 PM
# 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>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**

<table>
<thead>
<tr>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highway/Direction of Travel</td>
</tr>
<tr>
<td>From/To</td>
</tr>
<tr>
<td>Jurisdiction</td>
</tr>
</tbody>
</table>

## Flow Inputs

| Volume, V | 5328 veh/h |
| Peak-Hour Factor, PHF | 0.95 |
| AADT | veh/day |
| %Trucks and Buses, P_T | 2 |
| Peak-Hr Prop. of AADT, K | 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D |veh/h |
| 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_w | 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}) \times x f_{HV}}{x f_p} )</td>
</tr>
<tr>
<td>S</td>
</tr>
<tr>
<td>D = v_p / S</td>
</tr>
<tr>
<td>LOS</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_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 Avenue 50
- Jurisdiction: Year 2040 With Project

## Flow Inputs
- Volume, V: 5419 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
- \( E_R \): 1.2
- \( E_T \): 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: 2
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: mph

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

## LOS and Performance Measures
- Design (N)
- Operational (LOS)
- Design 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
- S - Speed
- FFS - Free-flow Speed
- BFFS - Base Free-flow Speed
- \( v_p \): pc/h/in
- \( v_p \): pc/h/in
- \( S \): mph
- \( D = v_p / S \): pc/mi/in
- LOS: F
- 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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>
<tr>
<td>Highw/Director of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Frontage Road</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td></td>
</tr>
<tr>
<td>Analysis Year</td>
<td>Year 2040 With Project</td>
</tr>
</tbody>
</table>

#### Flow Inputs

| Volume, V, Veh/h            | 5419                                         |
| 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

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

#### Speed Inputs

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

#### Calc Speed Adj and FFS

| f_LW | mph |
| f_C | 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 \ or \ DDHV)}{(PHF \ x \ N \ x \ f_{HV})} \times f_p )</td>
<td>D = ( \frac{v_p}{S} )</td>
</tr>
<tr>
<td>S, 33.9, mph</td>
<td>D = ( \frac{v_p}{S} ), pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>Required Number of Lanes, N</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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- f_LW - Exhibit 11-8
- f_C - Exhibit 11-9
- 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>
</tr>
</thead>
<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>
<tr>
<td></td>
<td>Highway/Direction of Travel I-10 Eastbound From/To East of Paradise Valley Jurisdiction Year 2040 With Project</td>
</tr>
<tr>
<td></td>
<td>Oper.(LOS)</td>
</tr>
<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
</tbody>
</table>

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4421 veh/h</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT</td>
<td>K</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop.</td>
<td>D</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
<tr>
<td></td>
<td></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:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

## Calculate Flow Adjustments

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

## 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>

## Calc Speed Adj and FFS

<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>

## LOS and Performance Measures

\[
\begin{align*}
\nu_p & = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \\
S & = \frac{\nu_p}{2350} pc/h/ln \\
D & = S \times f_p pc/mi/ln \\
LOS & = F
\end{align*}
\]

## Design (N)

Design LOS

\[
\begin{align*}
\nu_p & = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \\
S & = \frac{\nu_p}{2350} pc/h/ln \\
D & = S \times f_p pc/mi/ln \\
LOS & = F
\end{align*}
\]

## Glossary

- **N**: Number of lanes
- **V**: Hourly volume
- **D**: Density
- **\( \nu_p \)**: Flow rate
- **LOS**: Level of service
- **DDHV**: Directional design hour volume
- **S**: Speed
- **f_{HW}**: Exhibit 11-10, 11-12
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11

## Factor Location

- **E_R**: Exhibits 11-10, 11-12
- **f_{HW}**: Exhibit 11-8
- **f_{LC}**: Exhibit 11-9
- **f_p**: Page 11-18
- **TRD**: Page 11-11
- **LOS, S, FFS, \( \nu_p \)**: Exhibits 11-2, 11-3
# 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 Eastbound
- **From/To**: East of Cottonwood Springs Rd
- **Jurisdiction**: Year 2040 With Project

### Oper.(LOS)
- **Flow Inputs**
  - **Volume, V**: 4339 veh/h
  - **AADT**: veh/day
  - **Peak-Hr Prop. of AADT, K**: %Trucks and Buses
  - **Peak-Hr Direction Prop, D**: %RVs, %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)} = 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_{fW}**: mph
- **f_{fC}**: 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/in
  - **S**: mph
  - **D = v_p / S**: pc/mi/in
  - **LOS**: E

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

---

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APPENDIX H-VI

YEAR 2040 WITH PROJECT WITH IMPROVEMENTS
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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Frontage Road
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

#### Site Information
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs
- **Volume, V**: 4551 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 = 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

#### 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
- **D = V_p / S**: pc/mi/ln
- **LOS**: C
- **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**

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# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

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<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 Avenue 50</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction [Mitigation]</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year Year 2040 With Project</td>
</tr>
</tbody>
</table>

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

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4551 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, P₁</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, P₂</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h Up/Down</td>
<td>%Length</td>
<td></td>
</tr>
</tbody>
</table>

Calculate Flow Adjustments

<table>
<thead>
<tr>
<th>f_p</th>
<th>1.00</th>
<th>E_R</th>
<th>1.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>E_T</td>
<td>1.5</td>
<td>f_{hv}</td>
<td>1.0</td>
</tr>
</tbody>
</table>

| f_{hv} = \frac{1}{1 + \frac{E_T}{E_R} (f_p - 1) + \frac{P_p}{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>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>

## Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>f_{lw}</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

## LOS and Performance Measures

Operational (LOS)

<table>
<thead>
<tr>
<th>v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{hv})}</th>
<th>1613 pc/h/ln</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>64.4 mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>25.1 pc/MI/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

## Design (N)

- Design (N) 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
- 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
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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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
- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Dillon Road
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project

## FLOW INPUTS
- Volume, V: 4343 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_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
- FFS (measured): 65.0 mph
- Base free-flow Speed, BFFS: 

## LOS AND PERFORMANCE MEASURES
- Operational (LOS): v_p = (V or DDHV) / (PHF x N x f_{HV})
- S: 64.7 mph
- D = v_p / S: 23.8 pc/mi

## DESIGN (N)
- Design (N)
- Design LOS
- v_p = (V or DDHV) / (PHF x N x f_{HV})
- S: mph
- D = v_p / S: pc/mi
- 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
- S - Speed
- FFS - Free-flow speed
- BFFS - Base free-flow speed

## FACTOR LOCATION
- 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
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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1/26/2016
**General Information**  
**Site Information**

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<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
<th>Highway/Direction of Travel I-10 Westbound</th>
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<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
<td>From/To</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td>Year 2040 With Project</td>
</tr>
</tbody>
</table>

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

**Flow Inputs**

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>4464 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, $P_T$</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, $P_R$</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain:</td>
<td>Level</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up/Down</td>
<td>%</td>
</tr>
</tbody>
</table>

**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>

| $f_{HV} = \frac{1}{1 + [P_T(E_T - 1) + P_R(E_R - 1)]/0.990}$ |

**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>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>

**Calc Speed Adj and FFS**

<table>
<thead>
<tr>
<th>$f_{LW}$</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<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>
</tr>
</tbody>
</table>

**LOS and Performance Measures**

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

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

**Factor Location**

- $E_R$ - Exhibits 11-10, 11-12, 11-3  
- $f_{LW}$ - Exhibit 11-8
- $E_T$ - Exhibits 11-10, 11-11, 11-13, 11-18  
- $f_{LC}$ - 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>
<th>Agency or Company</th>
<th>LLG</th>
<th>Date Performed</th>
<th>9/22/2015</th>
<th>Analysis Time Period</th>
<th>AM Peak Hour</th>
</tr>
</thead>
</table>

## Site Information

<table>
<thead>
<tr>
<th>Highway/Direction of Travel</th>
<th>I-10 Westbound</th>
<th>From/To</th>
<th>East of Jackson Street</th>
<th>Jurisdiction</th>
<th>[Mitigation]</th>
<th>Analysis Year</th>
<th>Year 2040 With Project</th>
</tr>
</thead>
</table>

## Project Description

- 2-10-3136-2 Paradise Valley Specific Plan, Riverside County
- ✅ Oper.(LOS)  
- ❌ Des.(N)  
- ❌ Planning Data

## Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V (veh/h)</th>
<th>7442</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT (veh/day)</td>
<td></td>
<td>%Trucks and Buses, ( P_T )</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td>%RVs, ( P_R )</td>
<td>0</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>General Terrain:</td>
<td>Level</td>
</tr>
<tr>
<td>DDHV = AADT \times K \times D (veh/h)</td>
<td></td>
<td>Grade</td>
<td>% Length</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

## Calculate Flow Adjustments

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

## Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width (ft)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance (ft)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, ( N )</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD (ramps/mi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>FFS (measured), mph</td>
<td>65.0</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \times f_p )</td>
<td>1978 pc/h/ln</td>
<td>60.3 mph</td>
</tr>
<tr>
<td>( S )</td>
<td></td>
<td>32.8 pc/mi/ln</td>
</tr>
<tr>
<td>( D = \frac{v_p}{S} )</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Design (N)

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

## 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
- 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 Westbound
- From/To: East of Monroe Street
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project
- Project Description: 2-10-3136-2 Paradise Valley Specific Plan, Riverside County

#### Flow Inputs
| Volume, V | 9098 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

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

#### 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 Adjustments and FFS
| Design (N) |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

#### LOS and Performance Measures
| Operational (LOS) |
| \( v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{2418} \) pc/h/ln |
| S | 50.3 mph |
| D = \( \frac{v_p}{S} \) | 48.1 pc/mi/ln |
| LOS | F |

#### 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_{p} - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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

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1/26/2016
### General Information

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<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>AM Peak Hour</td>
</tr>
<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 Jefferson Street |
| Jurisdiction                | [Mitigation]           |
| Analysis Year               | Year 2040 With Project |

### Flow Inputs

| Volume, V (veh/h) | 9428 |
| AADT (veh/day)   |      |
| Peak-Hr Prop. of AADT, K (%Trucks and Buses, P_f) | 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 |      |

### 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 |

### Calc Speed Adj and FFS

| f_LW (mph) |      |
| f_LC (mph) |      |
| TRD Adjustment (mph) |      |
| FFS (mph) | 65.0 |

### LOS and Performance Measures

| v_p = (V or DDHV) / (PHF x N x f_HV) | 2506 pc/h/ln |
| S | 47.7 mph |
| D = v_p / S | 52.6 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
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### 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
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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1/26/2016
## BASIC FREEWAY WORKSHEET

### BASIL FREEWAY SEGMENTS WORKSHEET

<table>
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<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
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<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>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>Jurisdiction</td>
<td>[Mitigation]</td>
</tr>
<tr>
<td>Year 2040 With Project</td>
<td></td>
</tr>
</tbody>
</table>

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

### Flow Inputs

- **Volume, V**: 10782 veh/h  
- **AADT**: veh/day  
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, $P_T = \frac{2}{10}$  
- **Peak-Hr Direction Prop, D**: %RVs, $P_R = 0$  
- **DDHV = AADT x K x D**: veh/h

### Calculate Flow Adjustments

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

### Speed Inputs

- **Lane Width**: ft  
- **Rt-Side Lat. Clearance**: ft  
- **Number of Lanes, N**: 4  
- **Total Ramp Density, TRD**: ramps/mi  
- **FFS (measured)**: mph  
- **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

- $v_p = \frac{V}{(PHF x N x f_{HV})}$ pc/h/in  
- $S = \frac{34.5}{mph}$  
- $D = \frac{v_p}{S}$ pc/mi/in  
- LOS $F$

### Design (N)

- **Operational (LOS)**  
- $v_p = \frac{V}{(PHF x N x f_{HV})}$ pc/h/in  
- **Design LOS**

### 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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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- **Analyst**: JI
- **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 Cook Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

### Flow Inputs
- **Volume, V**: 12227 veh/h
- **AADT**: 12227 veh/day
- **Peak-Hr Prop. of AADT, K**: 0
- **Peak-Hr Direction Prop, D**: 1
- **DDHV = AADT x K x D**: 0
- **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
- \( f_p = 1.00 \)
- \( E_T = 1.5 \)
- \( f_{HV} = \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990 \)

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

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

### LOS and Performance Measures
- **Operational (LOS)**
  - \( v_p = \frac{V \text{ or } DDHV}{(PHF \times N \times f_{HV})} \times f_p \)
  - \( S = \frac{16.5}{\text{mph}} \)
  - \( D = \frac{v_p}{S} \times 197.3 \text{ pc/mi/ln} \)
  - \( LOS = F \)

### 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

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

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1/26/2016
## 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 Monterey Avenue
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** Year 2040 With Project

### Flow Inputs
- **Volume, V:** 11320 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/(1+P_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:** 4
- **Total Ramp Density, TRD:** ramps/mi
- **FFS (measured):** 65.0 mph
- **Base free-flow Speed, BFFS:** mph

### LOS and Performance Measures
- **Operational (LOS):**
  - \( v_p = \frac{(V \text{ or DDHV}) - (PHF x N x f_{HV})}{f_p} \) pc/h/ln
  - \( S = \frac{28.3}{mph} \)
  - \( D = \frac{v_p}{S} \) pc/mi/ln

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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Westbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
</tr>
</tbody>
</table>

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

- Oper.(LOS) ✔
- Des.(N) ☐
- Planning Data ☐

### Flow Inputs

- **Volume, V**: 11229 veh/h
- **AADT**: 2 veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, \( P_T \) = 2
- **Peak-Hr Direction Prop, D**: %RVs, \( P_R \) = 0

<table>
<thead>
<tr>
<th>Grade</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>%</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down</td>
<td>%</td>
</tr>
</tbody>
</table>

**Calculate Flow Adjustments**

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

**E_R** = 1.2

### Speed Inputs

- **Lane Width**: ft
- **Rt-Side Lat. Clearance**: ft
- **Number of Lanes, N**: 5
- **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**
  - \( f_{LV} \)
  - \( f_{LC} \)
- **FFS Adjustments**
  - TRD Adjustment: mph
  - FFS: 65.0 mph

### LOS and Performance Measures

**Operational (LOS)**

\[
\begin{align*}
 v_p & = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{2388} \text{ pc/h/ln} \\
 S & = 51.2 \text{ mph} \\
 D & = \frac{v_p}{S} \text{ pc/mi/ln} \\
 LOS & = \text{F}
\end{align*}
\]

**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
- **FFS**: Free-flow speed
- **BFFS**: Base free-flow 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

**LOS, S, FFS, \( v_p \)**: Exhibits 11-2, 11-3

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1/26/2016
### 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 Eastbound
- **From/To**: West of Monterey Avenue
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

#### Flow Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>6059 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>
</tbody>
</table>

#### Calculate Flow Adjustments
- \( f_p \) = 1.00
- \( E_R \) = 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>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>5</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></td>
</tr>
</tbody>
</table>

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

#### 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>Design (N)</td>
<td></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

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

### 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: 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: [Mitigation]
- Analysis Year: Year 2040 With Project

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

### Flow Inputs
- Volume, V: 6411 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K
- Peak-Hr Direction Prop, D
- DDHV = AADT x K x D
- 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
- \( f_{HV} = \frac{1}{1 + \frac{P_T}{E_R - 1} + \frac{P_R}{E_R - 1}} \): 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)
- \( v_p = \frac{V \text{ or } DDHV}{PHF \times N \times f_{hv}} \): pc/h/ln
- \( S \): mph
- \( D = v_p / S \): pc/mi/ln
- LOS

### Design (N)
- 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
- TRD - Page 11-11
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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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 Cook Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** Year 2040 With Project

#### Flow Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V (veh/h)</td>
<td>6055</td>
</tr>
<tr>
<td>AADT (veh/day)</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D (veh/h)</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade % Length mi</td>
<td></td>
</tr>
</tbody>
</table>

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

#### 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>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>
</tbody>
</table>

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

#### 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 = \frac{V \times DDHV}{PHF \times N \times f_{HV}} )</td>
<td>1609 pc/h/ln</td>
</tr>
<tr>
<td>( S )</td>
<td>64.4 mph</td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td>25.0 pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

#### 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>mph</td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></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
- \( E_R \cdot \) Exhibits 11-10, 11-12
- \( f_{LW} \cdot \) Exhibit 11-8
- \( E_T \cdot \) Exhibits 11-10, 11-11, 11-13
- \( f_{LC} \cdot \) Exhibit 11-9
- \( f_p \cdot \) 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>
<th>Highway/Direction of Travel I-10 Eastbound</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agency or Company</td>
<td>LLG</td>
<td>From/To East of Washington Street</td>
</tr>
<tr>
<td>Date Performed</td>
<td>9/22/2015</td>
<td>Jurisdiction</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>AM Peak Hour</td>
<td>Analysis Year</td>
</tr>
<tr>
<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
</table>

#### Site Information

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

#### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>6035 veh/h</th>
<th>Peak-Hour Factor, PHF</th>
<th>0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT</td>
<td>veh/day</td>
<td>%Trucks and Buses, ( P_T )</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td>%RVs, ( P_R )</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>General Terrain: Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

#### Calculate Flow Adjustments

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

#### Speed Inputs

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>( f_{LW} )</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td>( f_{LC} )</td>
<td>mph</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
<td>TRD Adjustment</td>
<td>mph</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
<td>FFS</td>
<td>65.0 mph</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td>mph</td>
<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>S</td>
<td>mph</td>
</tr>
<tr>
<td>D = ( v_p / S )</td>
<td>pc/mi/ln</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

#### Glossary

<table>
<thead>
<tr>
<th>N</th>
<th>Number of lanes</th>
</tr>
</thead>
<tbody>
<tr>
<td>V</td>
<td>Hourly volume</td>
</tr>
<tr>
<td>v_p</td>
<td>Flow rate</td>
</tr>
<tr>
<td>LOS</td>
<td>Level of service speed</td>
</tr>
<tr>
<td>DDHV</td>
<td>Directional design hour volume</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
## 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>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 Jefferson Street</td>
</tr>
<tr>
<td>Jurisdiction</td>
<td>[Mitigation]</td>
</tr>
<tr>
<td>Analysis Year</td>
<td>Year 2040 With Project</td>
</tr>
</tbody>
</table>

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>5573 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>%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

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

### 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>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>
</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>( f_{LV} )</th>
<th>mph</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f_{LC} )</td>
<td>mph</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

| \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \) | 1481 pc/h/ln |
| \( S \) | 64.9 mph |
| \( D = v_p / S \) | 22.8 pc/mi/ln |
| LOS | C |

### Design (N)

| Design LOS | \( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) \) pc/h/ln |
| TRD Adjustment | mph |
| Design (N) | 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
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **f_p**: Page 11-18
- **LOS, S, FFS, \( v_p \)**: Exhibits 11-2, 11-3

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### Basic Freeway Worksheet

#### General Information
- **Analyst**: J1
- **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 Monroe Street
- **Jurisdiction**: [Mitigation]
- **Year**: 2040 With Project

#### Flow Inputs
| Volume, V | 5437 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, P<sub>R</sub> | 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level |
| DDHV = AADT x K x D | veh/h |

#### Calculate Flow Adjustments
- **E<sub>R</sub>** = 1.2
- **E<sub>T</sub>** = 1.5
- **f<sub>HV</sub>** = \( \frac{1}{1 + P_T(E_T - 1) + P_R(E_R - 1)} \times 0.990 \)

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

#### LOS and Performance Measures
- **Operational (LOS)**: 1445 pc/h/ln
- **D = v<sub>p</sub> / S**: 22.2 pc/mi/ln
- **LOS**: C

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v<sub>p</sub>**: 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<sub>R</sub>**: Exhibits 11-10, 11-12
- **f<sub>LW</sub>**: Exhibit 11-8
- **E<sub>T</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,
## 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 Eastbound
- **From/To:** East of Jackson Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** Year 2040 With Project

### Site Information
- **Oper.(LOS):** ✔
- **Des.(N):** □
- **Planning Data:** □

### Flow Inputs

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>4629</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></td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

### Calculate Flow Adjustments

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

### 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>4</td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0</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</td>
</tr>
</tbody>
</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = \frac{(V \text{ or DDHV}) \times f_p}{(PHF \times N \times f_{HV})} \times 1230 )</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>( S = 65.0 ) mph</td>
<td></td>
</tr>
<tr>
<td>( D = v_p / S )</td>
<td></td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
</tbody>
</table>

### Design (N)

<table>
<thead>
<tr>
<th>Design (N)</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></td>
</tr>
</tbody>
</table>

### Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>Number of lanes</td>
</tr>
<tr>
<td>V</td>
<td>Hourly volume</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>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Speed</td>
</tr>
<tr>
<td>D</td>
<td>Density</td>
</tr>
<tr>
<td>FFS</td>
<td>Free-flow speed</td>
</tr>
<tr>
<td>BFFS</td>
<td>Base free-flow speed</td>
</tr>
</tbody>
</table>

### 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></td>
</tr>
<tr>
<td>( f_{lw} ) - Exhibit 11-8</td>
<td></td>
</tr>
<tr>
<td>( E_T ) - Exhibits 11-10, 11-11, 11-13</td>
<td></td>
</tr>
<tr>
<td>( f_{lc} ) - Exhibit 11-9</td>
<td></td>
</tr>
<tr>
<td>( f_p ) - Page 11-18</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>

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1/26/2016
# 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
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Golf Center
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

## Site Information

<table>
<thead>
<tr>
<th>Site Information</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<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:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down %</td>
<td></td>
</tr>
</tbody>
</table>

## Flow Inputs
- **Volume, V**: 4680 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: 1.00
- **Peak-Hr Direction Prop, D**: 1.5
- **DDHV = AADT x K x D**: veh/h

## Calculate Flow Adjustments
- $f_p = 1.00$
- $E_T = 1.5$
- $f_{HV} = 0.990$
- $E_R = 1.2$

## 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

## Calc Speed Adj and FFS
- $f_{LT}$
- $f_{LC}$

## LOS and Performance Measures
- **Operational (LOS)**
  - $v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV})$
  - 1244 pc/h/ln
  - $S$: 65.0 mph
  - $D = v_p / S$
  - 19.1 pc/mi/ln
  - LOS: C

## Design (N)
- **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
- $f_{LR}$: Exhibits 11-10, 11-12
- $f_{LT}$: Exhibits 11-10, 11-11, 11-13
- $f_p$: Page 11-18
- LOS, S, FFS, $v_p$: Exhibits 11-2, 11-3

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## BASIC FREEWAY SEGMENTS WORKSHEET

### General Information
- Analyst: JI
- 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 Eastbound
- From/To: East of State Route 86
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project
- Oper.(LOS): ☑
- Des.(N): ☐
- Planning Data: ☐

### Flow Inputs
- **Volume, V** 3123 veh/h
- **AADT** veh/day
- **Peak-Hr Prop. of AADT, K**
- **Peak-Hr Direction Prop, D** veh/h

### Calculate Flow Adjustments
- **f_p** 1.00
- **E_r** 1.2
- **E_T** 1.5
- \( f_{HV} = \frac{1 + \left( f_{T} \cdot E_{T} \right) + \left( E_{R} \cdot f_{T} \right)}{0.99} \)

### 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** 65.0 mph
- **D = \frac{v_p}{S}** 17.0 pc/mi/in
- **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

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

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

- Highway/Direction of Travel: I-10 Eastbound
- From/To: East of Dillon Road
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project
- Oper.(LOS): Yes

### Flow Inputs

<table>
<thead>
<tr>
<th>Volume, V</th>
<th>3034 veh/h</th>
<th>Peak-Hour Factor, PHF: 0.95</th>
</tr>
</thead>
<tbody>
<tr>
<td>AADT Ve/day</td>
<td></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></td>
<td>Grade % Length mi</td>
</tr>
</tbody>
</table>

**Calculate Flow Adjustments**

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

### Speed Inputs

- Lane Width: ft
- Rt-Side Lt. 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
- \( f_{LC} \) 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
- \( S = 65.0 \) mph
- \( D = \frac{v_p}{S} \) pc/mi/ln
- \( LOS = B \)

### Design (N)

- Design (N)
- Design LOS
- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \) 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
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFFS - Base free-flow speed

**Factor Location**

- \( E_R \) - Exhibits 11-10, 11-12
- \( f_w \) - 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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1/26/2016
# 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
  - **Oper. (LOS)**: [ ]
  - **Des. (N)**: [ ]
  - **Planning Data**: [ ]

## Site Information
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Avenue 50
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

## Flow Inputs
- **Volume, V**: 3373 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/day
- **Peak-Hour Factor, PHF**: PHF
- **%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 = (V or DDHV) / (PHF x N x f_HV)**: 1195 pc/h/ln
  - **S**: 65.0 mph
  - **D**: 18.4 pc/mi/ln
  - **LOS**: C

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

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</th>
</tr>
</thead>
<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>Jurisdiction</td>
<td>[Mitigation]</td>
</tr>
<tr>
<td>Analysis Year</td>
<td>Year 2040 With Project</td>
</tr>
<tr>
<td>Highway/Direction of Travel</td>
<td>I-10 Eastbound</td>
</tr>
<tr>
<td>From/To</td>
<td>East of Frontage Road</td>
</tr>
</tbody>
</table>

#### Flow Inputs

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V veh/h</td>
<td>3373</td>
</tr>
<tr>
<td>AADT veh/day</td>
<td>Peak-Hour Factor, PHF 0.95</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K %RVs, P_R</td>
<td>2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D General Terrain:</td>
<td>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

<table>
<thead>
<tr>
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<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>f_HV = 1/(1 + P_r(E_T - 1) + P_r(E_T - 1):0.990</td>
<td></td>
</tr>
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</table>

#### Speed Inputs

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

#### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Description</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 mph</td>
<td></td>
</tr>
<tr>
<td>FFS mph</td>
<td>65.0</td>
</tr>
</tbody>
</table>

#### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Description</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) pc/h/ln</td>
<td>1195</td>
</tr>
<tr>
<td>S mph</td>
<td>65.0</td>
</tr>
<tr>
<td>D = v_p / S pc/mi/ln</td>
<td>18.4</td>
</tr>
<tr>
<td>LOS</td>
<td>C</td>
</tr>
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#### Design (N)

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

#### Glossary

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</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>

#### Factor Location

<table>
<thead>
<tr>
<th>Description</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_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>
<td></td>
</tr>
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## 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>
</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 Eastbound |
| From/To                     | East of Paradise Valley |
| Jurisdiction                | [Mitigation] |
| Analysis Year               | Year 2040 With Project |

### Flow Inputs

| Volume, V                 | 2436 veh/h |
| AADT veh/day              | Peak-Hour Factor, PHF 0.95 |
| Peak-Hr Prop. of AADT, K  | %Trucks and Buses, PT 2 |
| Peak-Hr Direction Prop, D | %RVs, P_R 0 |
| DDHV = AADT x K x D veh/h | General Terrain: Level |

### 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 | f_LW | mph |
| Number of Lanes 3 | 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 | |

### 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) 863 pc/h/ln</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S = 65.0 mi/h</td>
<td></td>
</tr>
<tr>
<td>D = v_p / S 13.3 pc/mi/ln</td>
<td></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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3

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1/26/2016
### 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 Eastbound
- From/To: East of Cottonwood Springs Rd
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project

#### Flow Inputs
- Volume, V: 2453 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Rvs, P<sub>R</sub> 0
- Peak-Hr Direction Prop, D: General Terrain: Level
- DDHV = AADT x K x D: veh/h

#### 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>( f_{HV} = \frac{1}{[1 + P_T (E_T - 1) + P_R (E_R - 1)]} )</td>
<td>0.990</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

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

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

#### Design (N)
- 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

#### Factor Location
- 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

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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 Westbound
- **From/To**: East of Frontage Road
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

## Flow Inputs
- **Volume, V**: 3947 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
- $f_p = 1.00$
- $E_T = 1.5$
- $E_R = 1.2$
- $f_{HV} = \frac{1}{1+(E_T - 1) + P_R(E_R - 1)} \cdot 0.990$

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

## Design (N)
- **Design LOS**:
- **Design (N)**
- **Design LOS**
- $v_p = \frac{(V \text{ or DDHV}) \times (PHF \times N \times f_{HV})}{f_p}$: 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
- **Page 11-18**: TRD - Page 11-11
- **LOS, S, FFS, $v_p$**: Exhibits 11-2, 11-3

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1/26/2016
### 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>
</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**: 3947 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, $P_T = 0.95$
- **Peak-Hr Direction Prop, D**: %RVs, $P_R = 0$
- **DDHV = AADT x K x D**: veh/h

Calculate Flow Adjustments

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

### 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

Calculate Speed Adj and FFS

- $f_{lw}$ mph
- $f_{lc}$ mph
- TRD Adjustment mph
- FFS 65.0 mph

### LOS and Performance Measures

**Operational (LOS)**

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

**Design (N)**

- Design LOS
- Design LOS
- 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**

<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>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>material</td>
<td>PHR</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:</td>
<td>Level</td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down</td>
<td>%</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V | 3717 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**

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

**Speed Inputs**

| Lane Width | ft |
| Rt-Side Lat. Clearance | ft |
| Number of Lanes, N | 3 |
| Total Ramp Density, TRD | ramps/mi |
| FFS (measured) | 65.0 mph |
| Base free-flow Speed, | 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 = (V or DDHV) / (PHF x N x f_{HV} x f_p) | |
| 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 |
| LOS - Level of service | BFFS - Base free-flow speed |
| DDHV - Directional design hour volume | |

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1/26/2016
# BASIC FREEWAY SEGMENTS WORKSHEET

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<th>JT</th>
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<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>
<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 State Route 86 |
| Jursdiction                | [Mitigation] |
| Analysis Year              | Year 2040 With Project |

## Flow Inputs

| Volume, V        | 3672 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 |

## Calculate Flow Adjustments

\[
f_p = 1.00 \quad E_R = 1.2
\]

\[
f_T = 1.5 \quad f_{HV} = \frac{1}{1 + (P_T - 1) + P_R (E_R - 1) / 0.990}\]

## 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 |

## LOS and Performance Measures

| Operational (LOS) | 1301 pc/h/ln |
| \( v_p \) = (V or DDHV) / (PHF x N x \( f_{HV} \)) | |
| S = \( v_p \) / S | 65.0 mph |
| D = v_p / S | 20.0 pc/mi/ln |
| LOS | C |

## Design (N)

| Design LOS | Design (N) |
| TRD Adjustment | mph |
| FFS | 65.0 mph |

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

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1/26/2016
### 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 Westbound
- From/To: East of Jackson Street
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project

#### Flow Inputs
- Volume, V: 5809 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_T: 0.95
- Peak-Hr Direction Prop, D: %RVs, P_R: 2
- DDHV = AADT x K x D: veh/h
- Grade: %
- Length: mi

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

#### Calc Speed Adj and FFS
- Design LOS: Design (N)
- TRD Adjustment:
- FFS:
- Required Number of Lanes, N:

#### LOS and Performance Measures
- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \): pc/h/ln
- \( x_{f_p} \):
- \( S \): mph
- \( D = \frac{v_p}{S} \): 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
- S - Speed
- D - Density
- FFS - Free-flow speed
- BFSS - Base free-flow speed
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

---

**Factor Location**

- \( f_{LW} \) - Exhibit 11-8
- \( f_{LC} \) - Exhibit 11-9
- \( f_p \) - Page 11-18
- TRD - Page 11-11

---

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1/26/2016
# BASIC FREEWAY WORKSHEET

## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th><strong>General Information</strong></th>
<th><strong>Site Information</strong></th>
</tr>
</thead>
<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>

- Highway/Direction of Travel: I-10 Westbound
- From/To: East of Monroe Street
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project
- Oper.(LOS) checkbox checked

## Flow Inputs

- Volume, V: 7597 veh/h
- AADT: 7597 veh/day
- Peak-Hr Prop. of AADT, K: 0.2
- Peak-Hr Direction Prop, D: 95 veh/h
- General Terrain: Level
- Grade: %
- % Length: mi
- % Up/Down: %

## Calculate Flow Adjustments

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

## Speed Inputs

- Lane Width: 12 ft
- Rt-Side Lat. Clearance: 6 ft
- Number of Lanes, N: 4
- Total Ramp Density, TRD: 65.0 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

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>( x_{f_p} )</td>
<td>( v_p = (V \text{ or } DDHV) / (PHF \times N \times f_{HV}) )</td>
</tr>
<tr>
<td>S</td>
<td>x_{f_p}</td>
</tr>
<tr>
<td>D = ( v_p / S )</td>
<td>S</td>
</tr>
<tr>
<td>LOS</td>
<td>D</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
- E_T - Exhibits 11-10, 11-11, 11-13
- \( f_{LV} \) - 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
### 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
- **Highway/Direction of Travel**: I-10 Westbound
- **From/To**: East of Jefferson Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

#### Site Information
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs
- **Volume, V**: 7689 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<sub>p</sub>**: 1.00
- **E<sub>R</sub>**: 1.2
- **f<sub>HV</sub> = 1/[1+E<sub>R</sub>(E<sub>T</sub>-1)+E<sub>R</sub>(E<sub>T</sub>-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<sub>q</sub>**: mph
- **f<sub>c</sub>**: mph
- **TRD**: mph
- **FFS**: mph

#### LOS and Performance Measures
- **Operational (LOS)**
- **v<sub>p</sub> = (V or DDHV) / (PHF x N x f<sub>HV</sub>)**: pc/h/ln
- **x<sub>f</sub>**: pc/h/ln
- **S**: mph
- **D = v<sub>p</sub> / S**: pc/mi/ln

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

#### Glossary
- **N**: Number of lanes
- **V**: Hourly volume
- **v<sub>p</sub>**: 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<sub>R</sub>**: Exhibits 11-10, 11-12
- **f<sub>q</sub>**: Exhibit 11-8
- **E<sub>T</sub>**: Exhibits 11-10, 11-11, 11-13
- **f<sub>c</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

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# BASIC FREEWAY SEGMENTS WORKSHEET

## General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>J1</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>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 |
| To | East of Washington Street |
| Jurisdiction | [Mitigation] |
| Analysis Year | Year 2040 With Project |

## Flow Inputs

| Volume, V | 8901 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, \( P_R \) = 0 |
| Peak-Hr Direction Prop, D | General Terrain: Level Up/Down % |

### Calculate Flow Adjustments

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

## 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

### Operational (LOS)

\[
v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV})} \quad S = 51.8 \text{ mph} \quad D = v_p / S \quad LOS F
\]

### Design (N)

Design LOS

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

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
- **E_T**: Exhibits 11-10, 11-11, 11-13
- **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: 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: [Mitigation]
- Analysis Year: Year 2040 With Project

<table>
<thead>
<tr>
<th>Flow Inputs</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>9271 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>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
</tbody>
</table>

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

**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, BFS: mph |

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

**LOS and Performance Measures**
- Operational (LOS): |
- \( v_p = \frac{(V \text{ or DDHV})}{(PHF \times N \times f_{HV})} \) |
- \( x_{f_p} \) |
- S: 48.9 mph |
- D = \( v_p / S \) |
- 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 |
- FFS - Free-flow speed |
- BFFS - Base free-flow speed |
- \( f_LW \) - Exhibit 11-10, 11-12 |
- \( f_{LC} \) - Exhibit 11-9 |
- \( f_p \) - Page 11-18 |
- TRD - Page 11-11 |
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3 |

---

**Factor Location**
- \( E_R \) - Exhibits 11-10, 11-12 |
- \( f_{LV} \) - Exhibit 11-8 |
- \( f_{LC} \) - Exhibit 11-9 |
- \( f_p \) - Page 11-18 |

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**General Information** | **Site 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

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

**Flow Inputs**

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<thead>
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<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>9095 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, PT = 2</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td>%RVs, PR = 0</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td>veh/h</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
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<tr>
<td>General Terrain:</td>
<td>Level</td>
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<tr>
<td>Grade</td>
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<tr>
<td>Length</td>
<td>mi</td>
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**Calculate Flow Adjustments**

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<th>Value</th>
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<tbody>
<tr>
<td>f_p</td>
<td>1.00</td>
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<tr>
<td>E_T</td>
<td>1.5</td>
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<table>
<thead>
<tr>
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<th>Formula</th>
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<tbody>
<tr>
<td>f_HV</td>
<td>( \frac{1}{1 + \frac{P_T}{2}} )</td>
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</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>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>
</tbody>
</table>

**Calc Speed Adj and FFS**

<table>
<thead>
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<th>Parameter</th>
<th>Value</th>
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<tbody>
<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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</tbody>
</table>

**LOS and Performance Measures**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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<tbody>
<tr>
<td>Operational (LOS)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>Design (LOS)</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>Design LOS</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td>pc/mi/ln</td>
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</tbody>
</table>

**Glossary**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Definition</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>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>S</td>
<td>Speed</td>
</tr>
<tr>
<td>D</td>
<td>Density</td>
</tr>
<tr>
<td>F</td>
<td>Free-flow speed</td>
</tr>
<tr>
<td>BFFS</td>
<td>Base free-flow speed</td>
</tr>
<tr>
<td>E_T</td>
<td>Exhibits 11-10, 11-11, 11-13</td>
</tr>
<tr>
<td>f_p</td>
<td>Page 11-18</td>
</tr>
<tr>
<td>TRD</td>
<td>Page 11-11</td>
</tr>
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**Factor Location**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Location</th>
</tr>
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<tbody>
<tr>
<td>E_R</td>
<td>Exhibits 11-10, 11-12</td>
</tr>
<tr>
<td>f_LW</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>LOS, S, FFS, v_p</td>
<td>Exhibits 11-2, 11-3</td>
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1/26/2016
## BASIC FREEWAY WORKSHEET

### General Information

<table>
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<th>Analyst</th>
<th>JT</th>
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<td>Agency or Company</td>
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<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>
</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                      | West of Monterey Avenue |
| Jurisdiction                  | [Mitigation] |
| Analysis Year                  | Year 2040 With Project |

### Flow Inputs

| Volume, V (veh/h)  | 8697             |
| 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  |

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

### Speed Inputs

| Lane Width (ft) |                   |
| Rt-Side Lat. Clearance (ft) |                   |
| Number of Lanes, N | 5 |
| Total Ramp Density, TRD (ramps/mi) |                  |
| FFS (measured) (mph) | 65.0 |

### LOS and Performance Measures

| Operational (LOS) |                      |
|                  |                      |

\[ v_p = \frac{V \times (V or DDHV) \times f_p}{PHF \times N \times f_{HV}} \]

\[ S = v_p / S \]

\[ D = v_p / S \]

| 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

- \( E_T \) - Exhibits 11-10, 11-11, 11-13
- \( f_p \) - Page 11-18
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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1/26/2016
### 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 Eastbound
- From/To: West of Monterey Avenue
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project
- Oper.(LOS): Yes
- Des.(N): No
- Planning Data: No

### Flow Inputs
- Volume, V: 8364 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %
- Peak-Hr Direction Prop, D: veh/h
- General Terrain: Level
- Grade: %
- Length: mi
- Up/Down: %

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

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 5
- 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)
- $v_p = \frac{(V \text{ or DDHV}) \times (\text{PHF} \times N \times f_{HV})}{x f_p}$: pc/h/ln
- S: 63.0 mph
- D = $v_p / S$: pc/mi/ln
- LOS: D

### Design (N)
- Design LOS
- $v_p = \frac{(V \text{ or DDHV}) \times (\text{PHF} \times N \times f_{HV})}{x f_p}$: 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
- $E_T$ - 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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file:///C:/Users/tucker/AppData/Local/Temp/f2kF718.tmp

1/26/2016
### General Information

<table>
<thead>
<tr>
<th>Analyst</th>
<th>JT</th>
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<tbody>
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<td>Agency or Company</td>
<td>LLG</td>
</tr>
<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 Eastbound |
| From/To | East of Monterey Avenue |
| Jurisdiction | [Mitigation] |
| Analysis Year | Year 2040 With Project |

### Flow Inputs

| Volume, V | 8916 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 |
| Peak-Hour Factor, PHF | 0.95 |
| Grade | % Length |

### Calculate Flow Adjustments

| f_p | 1.00 |
| E_T | 1.5 |
| f_HV | 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 | 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 f_p) | 2370 pc/h/ln |
| S | 51.7 mph |
| D = v_p / S | 45.9 pc/mi/ln |
| LOS | F |

### Design (N)

| 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 |
| 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_T - 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 '1-2, 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
- **Highway/Direction of Travel**: I-10 Eastbound
- **From/To**: East of Cook Street
- **Jurisdiction**: [Mitigation]
- **Analysis Year**: Year 2040 With Project

#### Site Information
- **Oper.(LOS)**
- **Des.(N)**
- **Planning Data**

#### Flow Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V veh/h</td>
<td>9646</td>
</tr>
<tr>
<td>AADT veh/day</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D veh/h</td>
<td></td>
</tr>
<tr>
<td>DDHV = AADT x K x D veh/h</td>
<td></td>
</tr>
<tr>
<td>Peak-Hour Factor, PHF</td>
<td>0.95</td>
</tr>
<tr>
<td>%Trucks and Buses, PT</td>
<td>2</td>
</tr>
<tr>
<td>%RVs, PR</td>
<td>0</td>
</tr>
<tr>
<td>General Terrain: Level</td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>%</td>
</tr>
<tr>
<td>Length</td>
<td>mi</td>
</tr>
<tr>
<td>Up/Down</td>
<td>%</td>
</tr>
</tbody>
</table>

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

#### Speed Inputs
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width ft</td>
<td></td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance ft</td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
</tr>
<tr>
<td>Total Ramp Density, TRD ramps/mi</td>
<td></td>
</tr>
<tr>
<td>FFS (measured) mph</td>
<td>65.0</td>
</tr>
<tr>
<td>Base free-flow Speed, mph</td>
<td></td>
</tr>
<tr>
<td>( f_{lw} )</td>
<td></td>
</tr>
<tr>
<td>( f_{lc} )</td>
<td></td>
</tr>
</tbody>
</table>

#### Calc Speed Adj and FFS
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>TRD Adjustment mph</td>
<td></td>
</tr>
<tr>
<td>FFS mph</td>
<td>65.0</td>
</tr>
</tbody>
</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 = \frac{\left( V \text{ or } DDHV \right)}{\left( \text{PHF} \times N \times f_{HV} \right)} \text{ pc/h/ln} )</td>
<td>2564</td>
</tr>
<tr>
<td>( S ) mph</td>
<td>45.8</td>
</tr>
<tr>
<td>( D = \frac{v_p}{S} ) pc/mi/ln</td>
<td>56.0</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
</tr>
</tbody>
</table>

#### Design (N)
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>Design LOS</td>
<td></td>
</tr>
<tr>
<td>( v_p = \frac{\left( V \text{ or } DDHV \right)}{\left( \text{PHF} \times N \times f_{HV} \right)} \text{ pc/h/ln} )</td>
<td></td>
</tr>
<tr>
<td>( S ) mph</td>
<td></td>
</tr>
<tr>
<td>( D = \frac{v_p}{S} ) pc/mi/ln</td>
<td></td>
</tr>
<tr>
<td>Required Number of Lanes, N</td>
<td></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
- \( f_{lw} \) - 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**: J1
- **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 Washington Street
- **Jurisdiction**: [Mitigation]
- **Year 2040 With Project**: Analysis Year

### Flow Inputs
- **Volume, V**: 9373 veh/h
- **AADT**: veh/day
- **Peak-Hr Prop. of AADT, K**: %Trucks and Buses, P<sub>T</sub>
- **Peak-Hr Direction Prop, D**: %RVs, P<sub>R</sub>
- **DDHV = AADT x K x D**: veh/h
- **Peak-Hour Factor, PHF**: 0.95
- **%General Terrain: Level**: Up/Down %

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

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

### Calc Speed Adj and FFS
- **Calc Speed 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**: 48.1 mph
  - **D = v_p / S**: 51.8 pc/mi/ln
- **LOS**: F

### Design (N)
- **Design LOS**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \)
  - **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<sub>R</sub>**: Exhibits 11-10, 11-12
- **f<sub>LW</sub>**: Exhibit 11-8
- **E<sub>T</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_p**: Exhibits 11-2, 11-3

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## BASIC FREEWAY SEGMENTS WORKSHEET

<table>
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<tr>
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<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>
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<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>

### Flow Inputs

| Volume, V | 7662 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 |

### Calculate Flow Adjustments

| f_p | 1.00 | E_R | 1.2 |
| E_T | 1.5 | f_HV = 1/(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_w | mph |
| f_c | 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)</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x f_p</td>
<td>pc/h/in</td>
</tr>
<tr>
<td>S</td>
<td>59.3</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>34.4</td>
</tr>
<tr>
<td>LOS</td>
<td>D</td>
</tr>
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</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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- f_w - Exhibit 11-8
- f_c - Exhibit 11-9
- TRD - Page 11-11
- LOS, S, FFS, v_p - Exhibits 11-2, 11-3
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<th>General Information</th>
<th>Site Information</th>
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</thead>
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<tr>
<td>Analyst</td>
<td>Highway/Direction of Travel I-10 Eastbound</td>
</tr>
<tr>
<td>Agency or Company</td>
<td>From/To</td>
</tr>
<tr>
<td>Date Performed</td>
<td>Jurisdiction [Mitigation]</td>
</tr>
<tr>
<td>Analysis Time Period</td>
<td>Analysis Year</td>
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<td>Project Description</td>
<td>2-10-3136-2 Paradise Valley Specific Plan,</td>
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<td></td>
<td>Riverside County</td>
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<td></td>
<td>Oper.(LOS)</td>
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<tr>
<td></td>
<td>Des.(N)</td>
</tr>
<tr>
<td></td>
<td>Planning Data</td>
</tr>
</tbody>
</table>

**Flow Inputs**

| Volume, V | 7511 | 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**

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

**Speed Inputs**

<table>
<thead>
<tr>
<th>Lane Width</th>
<th>ft</th>
<th>Calc Speed Adj and FFS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td>ft</td>
<td></td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td>ramps/mi</td>
<td>TRD Adjustment</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0 mph</td>
<td></td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<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 \text{ or DDHV}) \div (PHF \times N \times f_{HV} \times f_p) )</td>
<td>Design LOS</td>
</tr>
<tr>
<td>S = 60.0 mph</td>
<td>pc/h/ln</td>
</tr>
<tr>
<td>D = ( \frac{v_p}{S} )</td>
<td>33.3 pc/mi/ln</td>
</tr>
<tr>
<td>LOS D</td>
<td>Required Number of Lanes, N</td>
</tr>
</tbody>
</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 speed</td>
</tr>
<tr>
<td>DDHV - Directional design hour volume</td>
<td></td>
</tr>
</tbody>
</table>

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

### SITE INFORMATION
- **Highway/Direction of Travel:** I-10 Eastbound
- **From/To:** East of Jackson Street
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** Year 2040 With Project

### FLOW INPUTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Volume, V</td>
<td>7081</td>
<td>veh/h</td>
</tr>
<tr>
<td>AADT</td>
<td></td>
<td>veh/day</td>
</tr>
<tr>
<td>Peak-Hr Prop. of AADT, K</td>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Peak-Hr Direction Prop, D</td>
<td></td>
<td>veh/h</td>
</tr>
<tr>
<td>DDHV = AADT x K x D</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Peak-Hour Factor, PHF
- PHF = 0.95

### %Trucks and Buses, P_T
- P_T = 2

### %RVs, P_R
- P_R = 0

### General Terrain:
- Level

### Calculate Flow Adjustments

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

### SPEED INPUTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lane Width</td>
<td></td>
<td>ft</td>
</tr>
<tr>
<td>Rt-Side Lat. Clearance</td>
<td></td>
<td>ft</td>
</tr>
<tr>
<td>Number of Lanes, N</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Total Ramp Density, TRD</td>
<td></td>
<td>ramps/mi</td>
</tr>
<tr>
<td>FFS (measured)</td>
<td>65.0</td>
<td>mph</td>
</tr>
<tr>
<td>Base free-flow Speed, BFFS</td>
<td></td>
<td>mph</td>
</tr>
</tbody>
</table>

### Calc Speed Adj and FFS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</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>
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<td>mph</td>
</tr>
<tr>
<td>FFS</td>
<td>65.0</td>
<td>mph</td>
</tr>
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</table>

### LOS and Performance Measures

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>v_p = (V or DDHV) / (PHF x N x f_HV)</td>
<td>1882</td>
<td>pc/h/in</td>
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<tr>
<td>x f_p</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>61.7</td>
<td>mph</td>
</tr>
<tr>
<td>D = v_p / S</td>
<td>30.5</td>
<td>pc/mi/in</td>
</tr>
<tr>
<td>LOS</td>
<td></td>
<td></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
- E_T - Exhibits 11-10, 11-11, 11-13
- f_p - Page 11-18
- TRD - Page 11-11

### Factor Location
- 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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### 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: East of Golf Center
- To: Parkway
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project

### Flow Inputs
- Volume, V: 6834 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/day

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

### Speed Inputs
- Lane Width: ft
- Rt-Side Lat. Clearance: ft
- Number of Lanes, N: 4
- Total Ramp Density, TRD: ramps/mi
- FFS (measured): mph
- 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
- \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \times f_p \): pc/h/ln
- \( S \): mph
- \( D = v_p / S \): pc/MI/ln
- 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
- FFS - Free-flow speed
- BFFS - Base free-flow speed

### Factor Location
- \( E_R \) - Exhibits 11-10, 11-12
- \( E_L \) - 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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file:///C:/Users/tucker/AppData/Local/Temp/f2k1E18.tmp
# BASIC FREEWAY SEGMENTS WORKSHEET

<table>
<thead>
<tr>
<th>General Information</th>
<th>Site Information</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 State Route 66</td>
</tr>
<tr>
<td>Date Performed 9/22/2015</td>
<td>Jurisdiction [Mitigation]</td>
</tr>
<tr>
<td>Analysis Time Period PM Peak Hour</td>
<td>Analysis Year Year 2040 With Project</td>
</tr>
<tr>
<td>Project Description 2-10-3136-2 Paradise Valley Specific Plan, Riverside County</td>
<td></td>
</tr>
</tbody>
</table>

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

## Flow Inputs

| Volume, V | 5607 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 |
| DDHV = AADT x K x D                  | Grade % Length mi |

## Calculate Flow Adjustments

- $f_p = 1.00$
- $E_R = 1.2$
- $f_{HV} = 1/(1 + P_T(E_R - 1) + P_R(E_R - 1)/0.990)$

## Speed Inputs

| Lane Width | ft                    | Calc Speed Adj and FFS |
| Rt-Side Lat. Clearance | ft                    |                          |
| Number of Lanes, N 3     |                       | f_w mph |
| Total Ramp Density, TRD ramps/mi | TRD Adjustment mph |
| FFS (measured) 65.0 mph |                         |
| BFFS | mph |

## LOS and Performance Measures

<table>
<thead>
<tr>
<th>Operational (LOS)</th>
<th>Design (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$v_p = (V or DDHV) / (PHF x N x f_{HV})$</td>
<td>Design LOS</td>
</tr>
<tr>
<td>x $f_p$</td>
<td>$v_p = (V or DDHV) / (PHF x N x f_{HV})$</td>
</tr>
<tr>
<td>S 60.1 mph</td>
<td>$S$ mph</td>
</tr>
<tr>
<td>D = $v_p / S$ 33.1 pc/mi/ln</td>
<td>$D = v_p / S$ pc/mi/ln</td>
</tr>
<tr>
<td>LOS D</td>
<td>Required Number of Lanes, N</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
- E_T - Exhibits 11-10, 11-11, 11-13
- $f_p$ - Page 11-18
- TRD - Page 11-11
- LOS, S, FFS, $v_p$ - Exhibits 11-2, 11-3

## Factor Location

- $E_R$ - Exhibit 11-8
- $E_T$ - Exhibit 11-9
- $f_p$ - Exhibit 11-18
- TRD - Page 11-11

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1/26/2016
### BASIC FREEWAY SEGMENTS WORKSHEET

#### General Information
- Analyst: JI
- 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 Eastbound
- From/To: East of Dillon Road
- Jurisdiction: [Mitigation]
- Analysis Year: Year 2040 With Project

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

#### Flow Inputs
- Volume, V: 5328 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
- \( f_{LV} \): mph
- \( f_{LC} \): mph
- TRD Adjustment: mph
- FFS: 65.0 mph

#### LOS and Performance Measures
- 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

#### 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
- BFFS - Base free-flow speed
- LOS, S, FFS, \( v_p \) - Exhibits 11-2, 11-3

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1/26/2016
## BASICS FREEWAY WORKSHEET

### General Information
- Analyst: JI
- 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 Avenue 50
- Jurisdiction: [Mitigation]
- Year 2040 With Project

### Flow Inputs
- Volume, V: 5419 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %Trucks and Buses, P_t
- Peak-Hr Direction Prop, D: General Terrain: Level
- DDHV = AADT x K x D: veh/h

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

### 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
- \( f_{wW} \):
- \( f_{LC} \):
- TRD Adjustment:
- FFS:

### LOS and Performance Measures
- Operational (LOS)
  - \( v_p = \frac{(V \text{ or } DDHV) \times N \times f_{HV}}{1920} \) pc/h/ln
  - S:
  - D = \( \frac{v_p}{S} \)
  - LOS:

### Design (N)
- Design (N)
- Design LOS
- \( v_p = \frac{(V \text{ or } DDHV) \times N \times f_{HV}}{1920} \) pc/h/ln
- S:
- D = \( \frac{v_p}{S} \)
- 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
- \( f_{wW} \) - 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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### General Information

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

### Site Information

| Highw/Direction of Travel | I-10 Eastbound |
| From/To | East of Frontage Road |
| Jurisdiction | [Mitigation] |
| Analysis Year | Year 2040 With Project |

### Flow Inputs

| Volume, V | 5419 veh/h |
| AADT | veh/day |
| Peak-Hr Prop. of AADT, K | %RVs, P_R |
| Peak-Hr Direction Prop, D | Grade |
| DDHV = AADT x K x D | Grade |

| Peak-Hour Factor, PHF | 0.95 |
| %Trucks and Buses, P_T | 2 |
| General Terrain | Level |

#### Calculate Flow Adjustments

\[
f_p = 1.00 \quad E_R = 1.2 \\
E_T = 1.5 \quad f_{HV} = 1/[1+P_E(E_E - 1) + P_R(E_R - 1)] = 0.990 |

#### Speed Inputs

| Lane Width | 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) |
| \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \) | Design LOS |
| \( S = 61.2 \text{ mph} \) | \( v_p = (V \text{ or DDHV}) / (PHF \times N \times f_{HV}) \times f_p \) |
| \( D = v_p / S \) | \( S \) |
| 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_{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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1/26/2016
## 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 Paradise Valley
- **Jurisdiction:** [Mitigation]
- **Analysis Year:** Year 2040 With Project

### Flow Inputs
- **Volume, V:** 4421 veh/h
- **AADT:** veh/day
- **Peak-Hr Prop. of AADT, K:** %
- **Peak-Hr Direction Prop, D:** veh/h
- **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

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

### 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

### LOS and Performance Measures
- **LOS Operational (LOS):**
  - \( v_p = \frac{(V \text{ or } DDHV)}{(PHF \times N \times f_{HV} \times f_p)} \)
  - 1567 pc/h/ln
- **S:** 64.6 mph
- **D:** 24.3 pc/mi/ln
- **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

### 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
- **TRD:** Page 11-11
- **LOS, S, FFS:** Exhibits 11-2, 11-3

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1/26/2016
### 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: [Mitigation]
- Analysis Year: Year 2040 With Project

### Flow Inputs
- Volume, V: 4339 veh/h
- AADT: veh/day
- Peak-Hr Prop. of AADT, K: %RVs, P_R: 0
- Peak-Hr Direction Prop, D: General Terrain: Level
- 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}{E_T} + \frac{P_R}{E_R}} = 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

### LOS and Performance Measures
- Operational (LOS): v_p = (V or DDHV) / (PHF x N x f_{HV} x f_p)
- S: 64.7 mph
- D = v_p / S: 23.8 pc/mi/ln
- LOS: C

### Design (N)
- 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
- BFFS - Base free-flow speed

### Factor Location
- E_R - Exhibits 11-10, 11-12
- E_T - Exhibits 11-10, 11-11, 11-13
- f_{HW} - 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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