

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 307 to 308 EB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | A.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 4              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 2025ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 2559           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 3319     |
| V <sub>RF</sub>   | 989            | 0.97 | 10        | 0      | 2.5   | 2.0                      | 0.870           | 0.95           | 1234     |
| V <sub>FR</sub>   | 191            | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 213      |
| V <sub>RR</sub>   | 91             | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 3319     |
| V <sub>NW</sub>   | 3421           |      |           |        |   |                          |                 | V =            | 4868     |
| V <sub>W</sub>  | 1447           |      |           |        |   |                          |                 |                |          |
| VR  | 0.297          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | 1447 lc/h                |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | 2021 lc/h                |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | 1032 lc/h                |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | 3053 lc/h                |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      | 0.312                    |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 4868 pc/h      |      |           |        | Weaving intensity factor, W                     | 0.312                    |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 6419 veh/h     |      |           |        | Weaving segment speed, S                        | 54.6 mph                 |                 |                |          |
| Weaving segment v/c ratio   | 0.603          |      |           |        | Average weaving speed, S <sub>W</sub>           | 56.9 mph                 |                 |                |          |
| Weaving segment density, D  | 22.3 pc/mi/ln  |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | 53.7 mph                 |                 |                |          |
| Level of Service, LOS   | C              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 5554 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 307 to 308 EB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | P.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 4              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 2025ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 3370           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 4370     |
| V <sub>RF</sub>   | 725            | 0.97 | 10        | 0      | 2.5   | 2.0                      | 0.870           | 0.95           | 905      |
| V <sub>FR</sub>   | 211            | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 236      |
| V <sub>RR</sub>   | 110            | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 4370     |
| V <sub>NW</sub>   | 4493           |      |           |        |   |                          |                 | V =            | 5634     |
| V <sub>W</sub>  | 1141           |      |           |        |   |                          |                 |                |          |
| VR  | 0.203          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | 1141 lc/h                |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | 1715 lc/h                |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | 1799 lc/h                |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | 3514 lc/h                |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      | 0.349                    |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 5634 pc/h      |      |           |        | Weaving intensity factor, W                     | 0.349                    |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 7015 veh/h     |      |           |        | Weaving segment speed, S                        | 55.2 mph                 |                 |                |          |
| Weaving segment v/c ratio   | 0.638          |      |           |        | Average weaving speed, S <sub>W</sub>           | 55.8 mph                 |                 |                |          |
| Weaving segment density, D  | 25.5 pc/mi/ln  |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | 55.0 mph                 |                 |                |          |
| Level of Service, LOS   | C              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 4562 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |

| <b>BASIC FREEWAY SEGMENTS WORKSHEET</b>  |                             |  |  |
|--|-----------------------------|--|--|
| <b>General Information</b>   |                             | <b>Site Information</b>  |  |
| Analyst  | JRE                         | Highway/Direction of Travel <i>I-80 Westbound</i>  |  |
| Agency or Company  | AECOM                       | From/To <i>Between Ints. 302 and 303</i>   |  |
| Date Performed   | 9/11/2014                   | Jurisdiction   |  |
| Analysis Time Period   | A.M. Peak Hour              | Analysis Year <i>Alt D1 Ph II 2045</i>   |  |
| Project Description <i>Interstate 80 Reconstruction</i>  |                             |  |  |
| <input checked="" type="checkbox"/> Oper.(LOS) <input type="checkbox"/> Des.(N) <input type="checkbox"/> Planning Data |                             |  |  |
| <b>Flow Inputs</b>   |                             |  |  |
| Volume, V  | 2309                        | veh/h  | Peak-Hour Factor, PHF <i>0.97</i>  |
| AADT   |                             | veh/day  | %Trucks and Buses, P <sub>T</sub> <i>12</i>                                  |
| Peak-Hr Prop. of AADT, K   |                             |  | %RVs, P <sub>R</sub> <i>1</i>  |
| Peak-Hr Direction Prop, D  |                             |  | General Terrain: <i>Rolling</i>  |
| DDHV = AADT x K x D  |                             | veh/h  | Grade % Length <i>mi</i><br>Up/Down %  |
| <b>Calculate Flow Adjustments</b>  |                             |  |  |
| f <sub>p</sub>   | 0.95                        | E <sub>R</sub>   | 2.0  |
| E <sub>T</sub>   | 2.5                         | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <i>0.840</i> |  |
| <b>Speed Inputs</b>  |                             | <b>Calc Speed Adj and FFS</b>  |  |
| Lane Width   | 12.0                        | ft   |  |
| Rt-Side Lat. Clearance   | 6.0                         | ft   | f <sub>LW</sub> <i>0.0</i> mph   |
| Number of Lanes, N   | 2                           |  | f <sub>LC</sub> <i>0.0</i> mph   |
| Total Ramp Density, TRD  | 1.67                        | ramps/mi   | TRD Adjustment <i>5.0</i> mph  |
| FFS (measured)   |                             | mph  | FFS <i>70.4</i> mph  |
| Base free-flow Speed, BFFS   | 75.4                        | mph  |  |
| <b>LOS and Performance Measures</b>  |                             | <b>Design (N)</b>  |  |
| <u>Operational (LOS)</u>   |                             | <u>Design (N)</u>  |  |
| v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )   | 1491                        | pc/h/ln  | Design LOS   |
| S  | 69.0                        | mph  | v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> ) |
| D = v <sub>p</sub> / S   | 21.6                        | pc/mi/ln   | S  |
| LOS  | C                           |  | D = v <sub>p</sub> / S   |
|  |                             |  | Required Number of Lanes, N  |
| <b>Glossary</b>  |                             | <b>Factor Location</b>   |  |
| N - Number of lanes  | S - Speed                   | E <sub>R</sub> - Exhibits 11-10, 11-12   | f <sub>LW</sub> - Exhibit 11-8   |
| V - Hourly volume  | D - Density                 | E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13  | f <sub>LC</sub> - Exhibit 11-9   |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow speed       | f <sub>p</sub> - Page 11-18  | TRD - Page 11-11   |
| LOS - Level of service   | BFFS - Base free-flow speed | LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3  |  |
| DDHV - Directional design hour volume  |                             |  |  |

| <b>BASIC FREEWAY SEGMENTS WORKSHEET</b>                                      |                             |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
|--|-----------------------------|----------------------------------|---|--|--------------------------------|-----------------|-----|-----|-----------------|-----|-----|----------------|-----|-----|-----|------|-----|
| <b>General Information</b>   |                             |                                  | <b>Site Information</b>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Analyst  | JRE                         |                                  | Highway/Direction of Travel <i>I-80 Westbound</i>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Agency or Company  | AECOM                       |                                  | From/To <i>Between Ints. 302 and 303</i>  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Date Performed   | 9/11/2014                   |                                  | Jurisdiction  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Analysis Time Period   | P.M. Peak Hour              |                                  | Analysis Year <i>Alt D1 Ph II 2045</i>  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Project Description <i>Interstate 80 Reconstruction</i>                      |                             |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <input checked="" type="checkbox"/> Oper.(LOS)                               |                             | <input type="checkbox"/> Des.(N) |   | <input type="checkbox"/> Planning Data |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <b>Flow Inputs</b>   |                             |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Volume, V  | 4736                        | veh/h                            | Peak-Hour Factor, PHF   | 0.97                                   |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| AADT   |                             | veh/day                          | %Trucks and Buses, P <sub>T</sub>   | 13                                     |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Peak-Hr Prop. of AADT, K   |                             |                                  | %RVs, P <sub>R</sub>  | 1                                      |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Peak-Hr Direction Prop, D  |                             |                                  | General Terrain: <i>Rolling</i>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| DDHV = AADT x K x D  |                             | veh/h                            | Grade %   | Length                                 | mi                             |                 |     |     |                 |     |     |                |     |     |     |      |     |
|  |                             |                                  | Up/Down %   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <b>Calculate Flow Adjustments</b>  |                             |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| f <sub>p</sub>   | 0.95                        |                                  | E <sub>R</sub>  | 2.0                                    |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| E <sub>T</sub>   | 2.5                         |                                  | f <sub>HV</sub> = 1/[1+P <sub>T</sub> (E <sub>T</sub> - 1) + P <sub>R</sub> (E <sub>R</sub> - 1)] <b>0.830</b>  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <b>Speed Inputs</b>  |                             |                                  | <b>Calc Speed Adj and FFS</b>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Lane Width   | 12.0                        | ft                               | <table style="width:100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">f<sub>LW</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">f<sub>LC</sub></td> <td style="padding: 5px;">0.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">TRD Adjustment</td> <td style="padding: 5px;">5.0</td> <td style="padding: 5px;">mph</td> </tr> <tr> <td style="padding: 5px;">FFS</td> <td style="padding: 5px;">70.4</td> <td style="padding: 5px;">mph</td> </tr> </table> |  |                                | f <sub>LW</sub> | 0.0 | mph | f <sub>LC</sub> | 0.0 | mph | TRD Adjustment | 5.0 | mph | FFS | 70.4 | mph |
| f <sub>LW</sub>  | 0.0                         | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| f <sub>LC</sub>  | 0.0                         | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| TRD Adjustment   | 5.0                         | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| FFS  | 70.4                        | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Rt-Side Lat. Clearance   | 6.0                         | ft                               |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Number of Lanes, N   | 2                           |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Total Ramp Density, TRD  | 1.67                        | ramps/mi                         |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| FFS (measured)   |                             | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| Base free-flow Speed, BFFS   | 75.4                        | mph                              |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <b>LOS and Performance Measures</b>  |                             |                                  | <b>Design (N)</b>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <u>Operational (LOS)</u>   |                             |                                  | <u>Design (N)</u>   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> ) | 3097                        | pc/h/ln                          | Design LOS  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| S  | 28.3                        | mph                              | v <sub>p</sub> = (V or DDHV) / (PHF x N x f <sub>HV</sub> x f <sub>p</sub> )  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| D = v <sub>p</sub> / S   | 109.6                       | pc/mi/ln                         | S   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| LOS  | F                           |                                  | D = v <sub>p</sub> / S  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
|  |                             |                                  | Required Number of Lanes, N   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| <b>Glossary</b>  |                             |                                  | <b>Factor Location</b>  |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| N - Number of lanes  | S - Speed                   |                                  | E <sub>R</sub> - Exhibits 11-10, 11-12  |  | f <sub>LW</sub> - Exhibit 11-8 |                 |     |     |                 |     |     |                |     |     |     |      |     |
| V - Hourly volume  | D - Density                 |                                  | E <sub>T</sub> - Exhibits 11-10, 11-11, 11-13   |  | f <sub>LC</sub> - Exhibit 11-9 |                 |     |     |                 |     |     |                |     |     |     |      |     |
| v <sub>p</sub> - Flow rate   | FFS - Free-flow speed       |                                  | f <sub>p</sub> - Page 11-18   |  | TRD - Page 11-11               |                 |     |     |                 |     |     |                |     |     |     |      |     |
| LOS - Level of service   | BFFS - Base free-flow speed |                                  | LOS, S, FFS, v <sub>p</sub> - Exhibits 11-2, 11-3   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |
| DDHV - Directional design hour volume  |                             |                                  |   |  |                                |                 |     |     |                 |     |     |                |     |     |     |      |     |

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 304 to 303 WB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | A.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 2              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 1000ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 1926           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 2498     |
| V <sub>RF</sub>   | 32             | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 36       |
| V <sub>FR</sub>   | 68             | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 76       |
| V <sub>RR</sub>   | 142            | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 2498     |
| V <sub>NW</sub>   | 2657           |      |           |        |   |                          |                 | V =            | 2769     |
| V <sub>W</sub>  | 112            |      |           |        |   |                          |                 |                |          |
| VR  | 0.040          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | 112 lc/h                 |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | 203 lc/h                 |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | 704 lc/h                 |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | 907 lc/h                 |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      | 0.209                    |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 2769 pc/h      |      |           |        | Weaving intensity factor, W                     | 0.209                    |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 3576 veh/h     |      |           |        | Weaving segment speed, S                        | 62.5 mph                 |                 |                |          |
| Weaving segment v/c ratio   | 0.616          |      |           |        | Average weaving speed, S <sub>W</sub>           | 60.5 mph                 |                 |                |          |
| Weaving segment density, D  | 22.2 pc/mi/ln  |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | 62.5 mph                 |                 |                |          |
| Level of Service, LOS   | C              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 2971 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 304 to 303 WB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | P.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 2              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 1600ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 4233           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 5489     |
| V <sub>RF</sub>   | 73             | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 82       |
| V <sub>FR</sub>   | 57             | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 64       |
| V <sub>RR</sub>   | 196            | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 5489     |
| V <sub>NW</sub>   | 5708           |      |           |        |   |                          |                 | V =            | 5854     |
| V <sub>W</sub>  | 146            |      |           |        |   |                          |                 |                |          |
| VR  | 0.025          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | lc/h                     |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | lc/h                     |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | lc/h                     |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | lc/h                     |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      |                          |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 5854 pc/h      |      |           |        | Weaving intensity factor, W                     |                          |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 3666 veh/h     |      |           |        | Weaving segment speed, S                        | mph                      |                 |                |          |
| Weaving segment v/c ratio   | 1.269          |      |           |        | Average weaving speed, S <sub>W</sub>           | mph                      |                 |                |          |
| Weaving segment density, D  | pc/mi/ln       |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | mph                      |                 |                |          |
| Level of Service, LOS   | F              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 2826 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 307 to 308 EB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | A.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 4              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 2200ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 2198           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 2850     |
| V <sub>RF</sub>   | 329            | 0.97 | 10        | 0      | 2.5   | 2.0                      | 0.870           | 0.95           | 411      |
| V <sub>FR</sub>   | 569            | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 636      |
| V <sub>RR</sub>   | 65             | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 2850     |
| V <sub>NW</sub>   | 2923           |      |           |        |   |                          |                 | V =            | 3970     |
| V <sub>W</sub>  | 1047           |      |           |        |   |                          |                 |                |          |
| VR  | 0.264          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | 1047 lc/h                |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | 1649 lc/h                |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | 1024 lc/h                |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | 2673 lc/h                |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      | 0.264                    |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 3970 pc/h      |      |           |        | Weaving intensity factor, W                     | 0.264                    |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 6904 veh/h     |      |           |        | Weaving segment speed, S                        | 57.9 mph                 |                 |                |          |
| Weaving segment v/c ratio   | 0.457          |      |           |        | Average weaving speed, S <sub>W</sub>           | 58.5 mph                 |                 |                |          |
| Weaving segment density, D  | 17.1 pc/mi/ln  |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | 57.7 mph                 |                 |                |          |
| Level of Service, LOS   | B              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 5198 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |

Interstate 80 Reconstruction

| <b>FREEWAY WEAVING WORKSHEET</b>  |                |      |           |        |   |                          |                 |                |          |
|---|----------------|------|-----------|--------|---|--------------------------|-----------------|----------------|----------|
| <b>General Information</b>  |                |      |           |        | <b>Site Information</b>                         |                          |                 |                |          |
| Analyst   | JRE            |      |           |        | Freeway/Dir of Travel                           | Int. 308 to 307 WB Weave |                 |                |          |
| Agency/Company  | AECOM          |      |           |        | Weaving Segment Location                        |                          |                 |                |          |
| Date Performed  | 9/11/2014      |      |           |        | Analysis Year                                   | Alt D1 Ph II 2045        |                 |                |          |
| Analysis Time Period  | P.M. Peak Hour |      |           |        |   |                          |                 |                |          |
| Project Description <i>Interstate 80 Reconstruction</i>   |                |      |           |        |   |                          |                 |                |          |
| <b>Inputs</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving configuration   | One-Sided      |      |           |        | Segment type                                    | Freeway                  |                 |                |          |
| Weaving number of lanes, N  | 4              |      |           |        | Freeway minimum speed, S <sub>MIN</sub>         | 15                       |                 |                |          |
| Weaving segment length, L <sub>S</sub>  | 2200ft         |      |           |        | Freeway maximum capacity, C <sub>IFL</sub>      | 2400                     |                 |                |          |
| Freeway free-flow speed, FFS  | 70 mph         |      |           |        | Terrain type                                    | Rolling                  |                 |                |          |
| <b>Conversions to pc/h Under Base Conditions</b>  |                |      |           |        |   |                          |                 |                |          |
|   | V (veh/h)      | PHF  | Truck (%) | RV (%) | E <sub>T</sub>                                  | E <sub>R</sub>           | f <sub>HV</sub> | f <sub>p</sub> | v (pc/h) |
| V <sub>FF</sub>   | 4803           | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 6229     |
| V <sub>RF</sub>   | 373            | 0.97 | 2         | 0      | 2.5   | 2.0                      | 0.971           | 0.95           | 417      |
| V <sub>FR</sub>   | 1157           | 0.97 | 10        | 0      | 2.5   | 2.0                      | 0.870           | 0.95           | 1444     |
| V <sub>RR</sub>   | 132            | 0.97 | 13        | 0      | 2.5   | 2.0                      | 0.837           | 0.95           | 6229     |
| V <sub>NW</sub>   | 6377           |      |           |        |   |                          |                 | V =            | 8238     |
| V <sub>W</sub>  | 1861           |      |           |        |   |                          |                 |                |          |
| VR  | 0.226          |      |           |        |   |                          |                 |                |          |
| <b>Configuration Characteristics</b>  |                |      |           |        |   |                          |                 |                |          |
| Minimum maneuver lanes, N <sub>WL</sub>   | 2 lc           |      |           |        | Minimum weaving lane changes, LC <sub>MIN</sub> | 1861 lc/h                |                 |                |          |
| Interchange density, ID   | 1.70 int/mi    |      |           |        | Weaving lane changes, LC <sub>W</sub>           | 2463 lc/h                |                 |                |          |
| Minimum RF lane changes, LC <sub>RF</sub>   | 1 lc/pc        |      |           |        | Non-weaving lane changes, LC <sub>NW</sub>      | 3111 lc/h                |                 |                |          |
| Minimum FR lane changes, LC <sub>FR</sub>   | 1 lc/pc        |      |           |        | Total lane changes, LC <sub>ALL</sub>           | 5574 lc/h                |                 |                |          |
| Minimum RR lane changes, LC <sub>RR</sub>   | lc/pc          |      |           |        | Non-weaving vehicle index, I <sub>NW</sub>      | 0.471                    |                 |                |          |
| <b>Weaving Segment Speed, Density, Level of Service, and Capacity</b>   |                |      |           |        |   |                          |                 |                |          |
| Weaving segment flow rate, v  | 8238 pc/h      |      |           |        | Weaving intensity factor, W                     | 0.471                    |                 |                |          |
| Weaving segment capacity, c <sub>w</sub>  | 6999 veh/h     |      |           |        | Weaving segment speed, S                        | 47.9 mph                 |                 |                |          |
| Weaving segment v/c ratio   | 0.936          |      |           |        | Average weaving speed, S <sub>W</sub>           | 52.4 mph                 |                 |                |          |
| Weaving segment density, D  | 43.0 pc/mi/ln  |      |           |        | Average non-weaving speed, S <sub>NW</sub>      | 46.7 mph                 |                 |                |          |
| Level of Service, LOS   | E              |      |           |        | Maximum weaving length, L <sub>MAX</sub>        | 4803 ft                  |                 |                |          |
| <b>Notes</b>  |                |      |           |        |   |                          |                 |                |          |
| a. Weaving segments longer than the calculated maximum length should be treated as isolated merge and diverge areas using the procedures of Chapter 13, "Freeway Merge and Diverge Segments". |                |      |           |        |   |                          |                 |                |          |
| b. For volumes that exceed the weaving segment capacity, the level of service is "F".   |                |      |           |        |   |                          |                 |                |          |