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Operational Analysis

Analyst: NJ
 Agency/Co.: Florence & Hutcheson
 Date Performed: 4/14/2011
 Analysis Time Period: PM
 Freeway/Dir of Travel: I-385 CD SB
 Weaving Location: I-85 to Woodruff
 Analysis Year: 2035
 Description: I-85/I-385 Alternate 4A

Inputs

| | |
|--------------------------------|---------------------------------|
| Segment Type | C-D Roadway/ Multilane Highways |
| Weaving configuration | One-Sided |
| Number of lanes, N | 3 ln |
| Weaving segment length, LS | 1335 ft |
| Freeway free-flow speed, FFS | 55 mi/h |
| Minimum segment speed, SMIN | 15 mi/h |
| Freeway maximum capacity, cIFL | 2250 pc/h/ln |
| Terrain type | Level |
| Grade | 0.00 % |
| Length | 0.00 mi |

Conversion to pc/h Under Base Conditions

| | Volume Components | | | | |
|----------------------------------|-------------------|-------|-------|-------|-------|
| | VFF | VRF | VFR | VRR | |
| Volume, V | 825 | 1145 | 1659 | 427 | veh/h |
| Peak hour factor, PHF | 0.90 | 0.90 | 0.90 | 0.90 | |
| Peak 15-min volume, v15 | 229 | 318 | 461 | 119 | |
| Trucks and buses | 18 | 18 | 18 | 18 | % |
| Recreational vehicles | 0 | 0 | 0 | 0 | % |
| Trucks and buses PCE, ET | 1.5 | 1.5 | 1.5 | 1.5 | |
| Recreational vehicle PCE, ER | 1.2 | 1.2 | 1.2 | 1.2 | |
| Heavy vehicle adjustment, fHV | 0.917 | 0.917 | 0.917 | 0.917 | |
| Driver population adjustment, fP | 1.00 | 1.00 | 1.00 | 1.00 | |
| Flow rate, v | 999 | 1387 | 2009 | 517 | pc/h |
| Volume ratio, VR | 0.691 | | | | |

Configuration Characteristics

| | | |
|-------------------------------------|------|--------|
| Number of maneuver lanes, NWL | 3 | ln |
| Interchange density, ID | 0.00 | int/mi |
| Minimum RF lane changes, LCRF | 1 | lc/pc |
| Minimum FR lane changes, LCFR | 1 | lc/pc |
| Minimum RR lane changes, LCRR | | lc/pc |
| Minimum weaving lane changes, LCMIN | 3396 | lc/h |
| Weaving lane changes, LCW | 3509 | lc/h |
| Non-weaving vehicle index, INW | 0 | |
| Non-weaving lane change, LCNW | 458 | lc/h |
| Total lane changes, LCALL | 3967 | lc/h |

Weaving and Non-Weaving Speeds

| | |
|-----------------------------|-------|
| Weaving intensity factor, W | 0.534 |
|-----------------------------|-------|

| | | |
|--------------------------------|------|------|
| Average weaving speed, SW | 41.1 | mi/h |
| Average non-weaving speed, SNW | 22.7 | mi/h |

| | | |
|---|-------|----------|
| _____Weaving Segment Speed, Density, Level of Service and Capacity_____ | | |
| Weaving segment speed, S | 32.9 | mi/h |
| Weaving segment density, D | 49.8 | pc/mi/ln |
| Level of service, LOS | E | |
| Weaving segment v/c ratio | 0.970 | |
| Weaving segment flow rate, v | 4912 | pc/h |
| Weaving segment capacity, cW | 4644 | veh/h |

| | | | | |
|---|--|--|--|--|
| _____Limitations on Weaving Segments_____ | | | | |
| If limit reached, see note. | | | | |

| | Minimum | Maximum | Actual | Note |
|--|---------|---------|----------|------|
| Weaving length (ft) | 300 | 8582 | 1335 | a,b |
| | | Maximum | Analyzed | |
| Density-based capacity, cIWL (pc/h/ln) | | 2250 | 1696 | c |
| | | Maximum | Analyzed | |
| v/c ratio | | 1.00 | 0.970 | d |

Notes:

- In weaving segments shorter than 300 ft, weaving vehicles are assumed to make only necessary lane changes.
- 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."
- The density-based capacity exceeds the capacity of a basic freeway segment, under equivalent ideal conditions.
- Volumes exceed the weaving segment capacity. The level of service is F.
