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Operational Analysis

Analyst: Pavel Mlaker
Agency/Co.: UL FGG
Date Performed: 06/12/2012
Analysis Time Period:
Freeway/Dir of Travel: A1 Kozarje-Malence
Weaving Location: glavna smer deteljice Z-V
Jurisdiction:
Analysis Year:
Description: Predhodna določitev prometne zmogljivosti

Inputs

Freeway free-flow speed, SFF	120	km/h
Weaving number of lanes, N	4	
Weaving segment length, L	200	m
Terrain type	Level	
Grade		%
Length		km
Weaving type	A	
Volume ratio, VR	0.28	
Weaving ratio, R	0.43	

Conversion to pc/h Under Base Conditions

	Non-Weaving		Weaving		
	V	V	V	V	
	A-C	B-D	A-D	B-C	
Volume, V	3600	10	800	600	veh/h
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	
Peak 15-min volume, v15	1000	3	222	167	v
Trucks and buses	1	1	5	5	%
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	0.995	0.995	0.976	0.976	
Driver population factor, fP	1.00	1.00	1.00	1.00	
Flow rate, v	4020	11	911	683	pc/h

Weaving and Non-Weaving Speeds

	Weaving	Non-Weaving
a (Exhibit 24-6)	0.15	0.00
b (Exhibit 24-6)	2.20	4.00
c (Exhibit 24-6)	0.97	1.30
d (Exhibit 24-6)	0.80	0.75
Weaving intensity factor, Wi	1.64	0.91
Weaving and non-weaving speeds, Si	63.41	78.55
Number of lanes required for		

unconstrained operation, Nw (Exhibit 24-7)	1.32
Maximum number of lanes, Nw (max) (Exhibit 24-7)	1.40
Type of operation is	Unconstrained

Weaving Segment Speed, Density, Level of Service and Capacity

Weaving segment speed, S	73.57	km/h
Weaving segment density, D	19.11	pc/km/ln
Level of service, LOS	D	
Capacity of base condition, cb	7093	pc/h
Capacity as a 15-minute flow rate, c	7058	pc/h
Capacity as a full-hour volume, ch	6352	pc/h

Limitations on Weaving Segments

	Analyzed	If Max Exceeded	See Note
Weaving flow rate, Vw	1594	2800	a
Average flow rate (pc/h/ln)	1406	2400	b
Volume ratio, VR	0.28	0.35	c
Weaving ratio, R	0.43	N/A	d
Weaving length (m)	200	750	e

Notes:

- Weaving segments longer than 750 m. are treated as isolated merge and diverge areas using the procedures of Chapter 25, "Ramps and Ramp Junctions".
- Capacity constrained by basic freeway capacity.
- Capacity occurs under constrained operating conditions.
- Three-lane Type A segments do not operate well at volume ratios greater than 0.45. Poor operations and some local queuing are expected in such cases.
- Four-lane Type A segments do not operate well at volume ratios greater than 0.35. Poor operations and some local queuing are expected in such cases.
- Capacity constrained by maximum allowable weaving flow rate: 2,800 pc/h (Type A), 4,000 (Type B), 3,500 (Type C).
- Five-lane Type A segments do not operate well at volume ratios greater than 0.20. Poor operations and some local queuing are expected in such cases.
- Type B weaving segments do not operate well at volume ratios greater than 0.80. Poor operations and some local queuing are expected in such cases.
- Type C weaving segments do not operate well at volume ratios greater than 0.50. Poor operations and some local queuing are expected in such cases.