CHAPTER 27 FREEWAY WEAVING: SUPPLEMENTAL

CONTENTS

1. INTRODUCTION27-1
2. EXAMPLE PROBLEMS27-2
Example Problem 1: LOS of a Major Weaving Segment27-2
Example Problem 2: LOS for a Ramp Weave27-7
Example Problem 3: LOS of a Two-Sided Weaving Segment27-11
Example Problem 4: Design of a Major Weaving Segment for a Desired LOS
Example Problem 5: Constructing a Service Volume Table for a Weaving Segment
Example Problem 6: LOS of an ML Access Segment with Cross- Weaving27-27
Example Problem 7: ML Access Segment with Downstream Off-Ramp27-32
3. ALTERNATIVE TOOL EXAMPLES FOR WEAVING SEGMENTS27-37
Determining the Weaving Segment Capacity27-38
Effect of Demand on Performance
Effect of Queue Backup from a Downstream Signal on the Exit Ramp27-40

LIST OF EXHIBITS

Exhibit 27-1 List of Example Problems for Weaving Segment Analysis27	7-2
Exhibit 27-2 Example Problem 1: Major Weaving Segment Data27	7-2
Exhibit 27-3 Example Problem 1: Determination of Configuration	
Variables27	7-4
Exhibit 27-4 Example Problem 1: Capacity of Entry and Exit Roadways27	7-5
Exhibit 27-5 Example Problem 2: Ramp-Weave Segment Data27	7-7
Exhibit 27-6 Example Problem 2: Configuration Characteristics	7-9
Exhibit 27-7 Example Problem 2: Capacity of Entry and Exit Legs27-	10
Exhibit 27-8 Example Problem 3: Two-Sided Weaving Segment Data27-	12
Exhibit 27-9 Example Problem 3: Configuration Characteristics27-	·14
Exhibit 27-10 Example Problem 3: Capacity of Entry and Exit Legs27-	.15
Exhibit 27-11 Example Problem 4: Major Weaving Segment Data27-	.17
Exhibit 27-12 Example Problem 4: Trial Design 127-	18
Exhibit 27-13 Example Problem 4: Trial Design 2	-20
Exhibit 27-14 Example Problem 5: Maximum Density Thresholds for LOS	22
A-D	.23
Exhibit 27-15 Example Problem 5: Service Flow Rates (pc/h) Under Ideal Conditions (SFI)	-25
Exhibit 27-16 Example Problem 5: Service Flow Rates (veh/h) Under Prevailing Conditions (<i>SF</i>)	.25
Exhibit 27-17 Example Problem 5: Service Volumes (veh/h) Under	
Prevailing Conditions (SV)27-	-26
Exhibit 27-18 Example Problem 5: Daily Service Volumes (veh/day) Under Prevailing Conditions (<i>DSV</i>)27-	-26
Exhibit 27-19 Example Problem 6: ML Access Segment with Cross-	
Weaving27-	-27
Exhibit 27-20 Example Problem 6: Hourly Flow Rates After PHF Is	
Applied27-	-29
Exhibit 27-21 Example Problem 6: Configuration Characteristics27-	-29
Exhibit 27-22 Example Problem 6: Capacity of Entry and Exit Legs27-	31
Exhibit 27-23 Example Problem 7: ML Access Segment Data27-	-32
Exhibit 27-24 Example Problem 7: Weaving Flows for Managed Lane Segment	33
Exhibit 27-25 Link–Node Structure for the Simulated Weaving Segment27-	
Exhibit 27-26 Input Data for Various Demand Levels (veh/h)	/ن
Exhibit 27-27 Determining the Capacity of a Weaving Segment by Simulation	-38
	-

Exhibit 27-28 Simulated Effect of Demand Volume on Weaving Segment	
Capacity and Speed	27-39
Exhibit 27-29 Exit Ramp Signal Operating Parameters	27-40
Exhibit 27-30 Deterioration of Weaving Segment Operation due to Queue Backup from a Traffic Signal	27-41
Exhibit 27-31 Effect of Demand on Weaving Segment Throughput with Exit Ramp Backup	27-41
Exhibit 27-32 Effect of Demand on Exit Ramp Throughput with Signal	
Queuing	27-42

