

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

Page

INTRODUCTION Dec. 2000 I-1

PART 1. GENERAL

CHAPTER 1A. GENERAL Dec. 2000

Section 1A.01 Purpose of Traffic Control Devices.....1A-1

Section 1A.02 Principles of Traffic Control Devices1A-1

Section 1A.03 Design of Traffic Control Devices1A-2

Section 1A.04 Placement and Operation of Traffic Control Devices.....1A-3

Section 1A.05 Maintenance of Traffic Control Devices.....1A-3

Section 1A.06 Uniformity of Traffic Control Devices1A-4

Section 1A.07 Responsibility for Traffic Control Devices1A-4

Section 1A.08 Authority for Placement of Traffic Control Devices1A-5

Section 1A.09 Engineering Study and Engineering Judgment.....1A-6

Section 1A.10 Interpretations, Experimentations, and Changes.....1A-6

Section 1A.11 Relation to Other Documents.....1A-10

Section 1A.12 Color Code1A-12

Section 1A.13 Definitions of Words and Phrases in this Manual.....1A-13

Section 1A.14 Abbreviations Used on Traffic Control Devices.....1A-23

PART 2. SIGNS

CHAPTER 2A. GENERAL Dec. 2000

Section 2A.01 Function and Purpose of Signs.....2A-1

Section 2A.02 Definitions2A-1

Section 2A.03 Standardization of Application.....2A-2

Section 2A.04 Excessive Use of Signs2A-2

Section 2A.05 Classification of Signs.....2A-3

Section 2A.06 Design of Signs2A-3

Section 2A.07 Changeable Message Signs2A-4

Section 2A.08 Retroreflectivity and Illumination.....2A-5

Section 2A.09 Minimum Retroreflectivity Levels.....2A-5

Section 2A.10 Shapes.....2A-5

Section 2A.11 Sign Colors2A-8

Section 2A.12 Dimensions2A-8

Section 2A.13 Symbols2A-10

Section 2A.14 Word Messages.....2A-10

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 2A.15	Sign Borders	2A-11
Section 2A.16	Standardization of Location	2A-11
Section 2A.17	Overhead Sign Installations	2A-20
Section 2A.18	Mounting Height	2A-21
Section 2A.19	Lateral Offset	2A-22
Section 2A.20	Position of Signs.....	2A-23
Section 2A.21	Orientation	2A-24
Section 2A.22	Posts and Mountings	2A-24
Section 2A.23	Maintenance	2A-24
Section 2A.24	Wrong-Way Traffic Control	2A-25

CHAPTER 2B. REGULATORY SIGNSDec. 2000

Section 2B.01	Application of Regulatory Signs	2B-1
Section 2B.02	Design of Regulatory Signs.....	2B-1
Section 2B.03	Size of Regulatory Signs	2B-1
Section 2B.04	STOP Sign (R1-1).....	2B-6
Section 2B.05	STOP Sign Applications	2B-8
Section 2B.06	STOP Sign Placement.....	2B-9
Section 2B.07	Multiway Stop Applications	2B-10
Section 2B.08	YIELD Sign (R1-2)	2B-11
Section 2B.09	YIELD Sign Applications.....	2B-12
Section 2B.10	YIELD Sign Placement	2B-12
Section 2B.11	Speed Limit Sign (R2-1)	2B-13
Section 2B.12	Truck Speed Limit Sign (R2-2).....	2B-14
Section 2B.13	Night Speed Limit Sign (R2-3)	2B-14
Section 2B.14	Minimum Speed Limit Sign (R2-4)	2B-14
Section 2B.15	Location of Speed Limit Signs	2B-16
Section 2B.16	Reduced Speed Ahead Signs (R2-5 Series).....	2B-16
Section 2B.17	Turn Prohibition Signs (R3-1 through R3-4)	2B-17
Section 2B.18	Intersection Lane Control Signs (R3-5 through R3-8).....	2B-18
Section 2B.19	Mandatory Movement Lane Control Signs (R3-5, R3-5a, and R3-7).....	2B-20
Section 2B.20	Optional Movement Lane Control Sign (R3-6)	2B-21
Section 2B.21	Advance Intersection Lane Control Signs (R3-8 Series)	2B-21
Section 2B.22	Two-Way Left Turn Only Signs (R3-9a, R3-9b).....	2B-22
Section 2B.23	Reversible Lane Control Signs (R3-9c through R3-9i).....	2B-22
Section 2B.24	DO NOT PASS Sign (R4-1).....	2B-28
Section 2B.25	PASS WITH CARE Sign (R4-2).....	2B-28
Section 2B.26	SLOWER TRAFFIC KEEP RIGHT Sign (R4-3).....	2B-28
Section 2B.27	Slow Moving Traffic Lane Signs (R4-5, R4-6)	2B-30
Section 2B.28	Keep Right and Keep Left Signs (R4-7, R4-8).....	2B-30

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 2B.29	DO NOT ENTER Sign (R5-1)2B-31
Section 2B.30	WRONG WAY Sign (R5-1a).....2B-31
Section 2B.31	Selective Exclusion Signs.....2B-34
Section 2B.32	ONE WAY Signs (R6-1, R6-2).....2B-35
Section 2B.33	Divided Highway Crossing Signs (R6-3, R6-3a).....2B-36
Section 2B.34	Parking, Standing, and Stopping Signs (R7 and R8 Series)2B-37
Section 2B.35	Design of Parking, Standing, and Stopping Signs2B-37
Section 2B.36	Placement of Parking, Stopping, and Standing Signs2B-41
Section 2B.37	Emergency Restriction Signs (R8-4, R8-7, R8-8).....2B-42
Section 2B.38	WALK ON LEFT FACING TRAFFIC and No Hitchhiking Signs (R9-1, R9-4, R9-4a)2B-42
Section 2B.39	Pedestrian Crossing Signs (R9-2, R9-3)2B-44
Section 2B.40	Traffic Signal Signs (R10-1 through R10-13).....2B-45
Section 2B.41	KEEP OFF MEDIAN Sign (R11-1).....2B-49
Section 2B.42	ROAD CLOSED Sign (R11-2) and LOCAL TRAFFIC ONLY Signs (R11-3 Series, R11-4)2B-49
Section 2B.43	Weight Limit Signs (R12-1 through R12-5)2B-50
Section 2B.44	Weigh Station Signs (R13 Series)2B-50
Section 2B.45	Truck Route Sign (R14-1)2B-52
Section 2B.46	Hazardous Cargo Signs (R14-2, R14-3).....2B-52
Section 2B.47	National Network Signs (R14-4, R14-5).....2B-52
Section 2B.48	Preferential Lane Signs (R3-10 through R3-17)2B-54
Section 2B.49	High-Occupancy Vehicle (HOV) Lanes2B-56
Section 2B.50	High-Occupancy Vehicle Sign Applications and Placement.....2B-58
Section 2B.51	Other Regulatory Signs2B-59

CHAPTER 2C. WARNING SIGNSDec. 2000

Section 2C.01	Function of Warning Signs2C-1
Section 2C.02	Application of Warning Signs2C-1
Section 2C.03	Design of Warning Signs2C-1
Section 2C.04	Size of Warning Signs2C-3
Section 2C.05	Placement of Warning Signs.....2C-3
Section 2C.06	Horizontal Alignment Signs (W1-1 through W1-5).....2C-8
Section 2C.07	Combination Horizontal Alignment/Advisory Speed Sign (W1-9)2C-8
Section 2C.08	Combination Horizontal Alignment/Intersection Sign (W1-10).....2C-10
Section 2C.09	One-Direction Large Arrow Sign (W1-6)2C-10
Section 2C.10	Chevron Alignment Sign (W1-8)2C-11
Section 2C.11	Hill Signs (W7-1, W7-1a, W7-1b)2C-12
Section 2C.12	Truck Escape Ramp Signs (W7-4 Series)2C-12
Section 2C.13	ROAD NARROWS Sign (W5-1).....2C-14
Section 2C.14	NARROW BRIDGE Sign (W5-2)2C-14
Section 2C.15	ONE LANE BRIDGE Sign (W5-3)2C-16

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 2C.16	Divided Highway (Road) Sign (W6-1)	2C-16
Section 2C.17	Divided Highway (Road) Ends Sign (W6-2)	2C-17
Section 2C.18	Double Arrow Sign (W12-1)	2C-17
Section 2C.19	DEAD END/NO OUTLET Signs (W14-1, W14-2)	2C-17
Section 2C.20	Low Clearance Signs (W12-2 and W12-2P)	2C-18
Section 2C.21	BUMP and DIP Signs (W8-1, W8-2)	2C-20
Section 2C.22	SPEED HUMP Sign (W17-1)	2C-20
Section 2C.23	PAVEMENT ENDS Sign (W8-3)	2C-20
Section 2C.24	Shoulder Signs (W8-4, W8-9, W8-9a, and W8-11)	2C-21
Section 2C.25	Slippery When Wet Sign (W8-5)	2C-22
Section 2C.26	Advance Traffic Control Signs (W3-1, W3-2, W3-3, W3-4)	2C-22
Section 2C.27	CROSS TRAFFIC DOES NOT STOP Plaque (W4-4P)	2C-23
Section 2C.28	Merge Sign (W4-1)	2C-24
Section 2C.29	Added Lane Sign (W4-3)	2C-25
Section 2C.30	Lane Ends Signs (W9-1, W9-2)	2C-25
Section 2C.31	Two-Way Traffic Sign (W6-3)	2C-26
Section 2C.32	NO PASSING ZONE Sign (W14-3)	2C-26
Section 2C.33	Advisory Exit, Ramp, and Curve Speed Signs (W13-2, W13-3, W13-5)	2C-26
Section 2C.34	Intersection Warning Signs (W2-1 through W2-6)	2C-28
Section 2C.35	Two-Direction Large Arrow Sign (W1-7)	2C-29
Section 2C.36	Motorized Traffic Signs (W8-6, W11-5, W11-8, W11-10)	2C-30
Section 2C.37	Crossing Signs (W11-1, W11-2, W11-3, W11-4, W16-7P)	2C-30
Section 2C.38	Playground Sign (W15-1)	2C-32
Section 2C.39	Use of Supplemental Plaques	2C-34
Section 2C.40	Design of Supplemental Plaques	2C-34
Section 2C.41	Distance Plaques (W16-2, W16-3, W16-4, W7-3a)	2C-34
Section 2C.42	Advisory Speed Plaque (W13-1)	2C-35
Section 2C.43	Supplemental Arrow Plaques (W16-5P, W16-6P)	2C-35
Section 2C.44	Hill-Related Plaques (W7-2 and W7-3)	2C-35
Section 2C.45	Advance Street Name Plaque (W16-8)	2C-36
Section 2C.46	DEAD END/NO OUTLET Plaques (W14-1P, W14-2P)	2C-36
Section 2C.47	SHARE THE ROAD Plaque (W16-1)	2C-36

CHAPTER 2D. GUIDE SIGNS — CONVENTIONAL ROADS Dec. 2000

Section 2D.01	Scope of Conventional Road Guide Sign Standards	2D-1
Section 2D.02	Application	2D-1
Section 2D.03	Color, Retroreflection, and Illumination	2D-1
Section 2D.04	Size of Signs	2D-1
Section 2D.05	Lettering Style	2D-2
Section 2D.06	Size of Lettering	2D-2
Section 2D.07	Amount of Legend	2D-3

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 2D.08	Arrows	2D-3
Section 2D.09	Numbered Highway Systems	2D-5
Section 2D.10	Route Signs and Auxiliary Signs	2D-6
Section 2D.11	Design of Route Signs.....	2D-6
Section 2D.12	Design of Route Sign Auxiliaries.....	2D-9
Section 2D.13	Junction Auxiliary Sign (M2-1)	2D-10
Section 2D.14	Combination Junction Sign (M2-2)	2D-10
Section 2D.15	Cardinal Direction Auxiliary Signs (M3-1 through M3-4).....	2D-12
Section 2D.16	Auxiliary Signs for Alternative Routes (M4 Series).....	2D-12
Section 2D.17	ALTERNATE Auxiliary Signs (M4-1, M4-1a).....	2D-12
Section 2D.18	BY-PASS Auxiliary Sign (M4-2)	2D-13
Section 2D.19	BUSINESS Auxiliary Sign (M4-3).....	2D-13
Section 2D.20	TRUCK Auxiliary Sign (M4-4)	2D-13
Section 2D.21	TO Auxiliary Sign (M4-5).....	2D-13
Section 2D.22	END Auxiliary Sign (M4-6).....	2D-14
Section 2D.23	TEMPORARY Auxiliary Sign (M4-7).....	2D-14
Section 2D.24	Temporary Detour and Auxiliary Signs	2D-14
Section 2D.25	Advance Turn Arrow Auxiliary Signs (M5-1, M5-2)	2D-15
Section 2D.26	Directional Arrow Auxiliary Signs (M6 Series)	2D-15
Section 2D.27	Route Sign Assemblies.....	2D-15
Section 2D.28	Junction Assembly.....	2D-17
Section 2D.29	Advance Route Turn Assembly.....	2D-21
Section 2D.30	Directional Assembly	2D-21
Section 2D.31	Confirming or Reassurance Assemblies.....	2D-23
Section 2D.32	Trailblazer Assembly	2D-23
Section 2D.33	Destination and Distance Signs.....	2D-24
Section 2D.34	Destination Signs.....	2D-24
Section 2D.35	Location of Destination Signs	2D-27
Section 2D.36	Distance Signs	2D-28
Section 2D.37	Location of Distance Signs	2D-28
Section 2D.38	Street Name Sign (D3)	2D-29
Section 2D.39	Parking Area Sign (D4-1).....	2D-31
Section 2D.40	PARK & RIDE Sign (D4-2).....	2D-32
Section 2D.41	Rest Area Signs (D5 Series).....	2D-33
Section 2D.42	Scenic Area Signs (D6 Series)	2D-33
Section 2D.43	Weigh Station Signing (D8 Series)	2D-35
Section 2D.44	General Service Signs (D9 Series).....	2D-35
Section 2D.45	Reference Posts (D10-1 through D10-3).....	2D-41
Section 2D.46	Traffic Signal Speed Sign (I1-1)	2D-43
Section 2D.47	General Information Signs (I Series)	2D-43
Section 2D.48	Signing of Named Highways	2D-46
Section 2D.49	Trail Signs	2D-48
Section 2D.50	Crossover Signs (D13 Series)	2D-48

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 2E. GUIDE SIGNS — FREEWAYS AND EXPRESSWAYS	Dec. 2000
Section 2E.01 Scope of Freeway and Expressway Guide Sign Standards	2E-1
Section 2E.02 Freeway and Expressway Signing Principles	2E-1
Section 2E.03 General	2E-2
Section 2E.04 Color of Guide Signs	2E-2
Section 2E.05 Retroreflectorization or Illumination	2E-3
Section 2E.06 Characteristics of Urban Signing	2E-3
Section 2E.07 Characteristics of Rural Signing	2E-4
Section 2E.08 Memorial Highway Signing	2E-5
Section 2E.09 Amount of Legend on Guide Signs	2E-5
Section 2E.10 Number of Signs at an Overhead Installation	2E-6
Section 2E.11 Sign Spreading and Pull-Through Signs	2E-6
Section 2E.12 Designation of Destinations	2E-8
Section 2E.13 Size and Style of Letters and Signs	2E-9
Section 2E.14 Interline and Edge Spacing	2E-17
Section 2E.15 Sign Borders	2E-18
Section 2E.16 Abbreviations	2E-18
Section 2E.17 Symbols	2E-19
Section 2E.18 Arrows for Interchange Guide Signs	2E-19
Section 2E.19 Diagrammatic Signs	2E-19
Section 2E.20 Signing for Interchange Lane Drops	2E-22
Section 2E.21 Changeable Message Signs	2E-30
Section 2E.22 Overhead Sign Installations	2E-31
Section 2E.23 Lateral Clearance	2E-31
Section 2E.24 Guide Sign Classification	2E-32
Section 2E.25 Route Signs and Trailblazer Assemblies	2E-33
Section 2E.26 Signs for Intersections at Grade	2E-35
Section 2E.27 Interchange Guide Signs	2E-35
Section 2E.28 Interchange Exit Numbering	2E-36
Section 2E.29 Interchange Classification	2E-41
Section 2E.30 Advance Guide Signs	2E-41
Section 2E.31 Next Exit Supplemental Signs	2E-43
Section 2E.32 Other Supplemental Guide Signs	2E-44
Section 2E.33 Exit Direction Signs	2E-45
Section 2E.34 Exit Gore Signs	2E-49
Section 2E.35 Post-Interchange Signs	2E-49
Section 2E.36 Distance Signs	2E-51
Section 2E.37 Interchange Sequence Signs	2E-52
Section 2E.38 Community Interchanges Identification Signs	2E-55
Section 2E.39 NEXT X EXITS Sign	2E-56
Section 2E.40 Signing by Type of Interchange	2E-56

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 2E.41	Freeway-to-Freeway Interchange2E-57
Section 2E.42	Cloverleaf Interchange.....2E-59
Section 2E.43	Cloverleaf Interchange with Collector-Distributor Roadways.....2E-59
Section 2E.44	Partial Cloverleaf Interchange2E-61
Section 2E.45	Diamond Interchange.....2E-61
Section 2E.46	Urban Diamond Interchange.....2E-64
Section 2E.47	Closely Spaced Interchanges2E-66
Section 2E.48	Minor Interchange.....2E-66
Section 2E.49	Approaches and Connecting Roadways2E-68
Section 2E.50	Wrong-Way Traffic Control at Interchange Ramps.....2E-68
Section 2E.51	General Service Signs.....2E-71
Section 2E.52	Rest and Scenic Area Signs2E-76
Section 2E.53	Tourist Information and Welcome Centers.....2E-77
Section 2E.54	Reference Posts.....2E-79
Section 2E.55	Miscellaneous Guide Signs.....2E-79
Section 2E.56	Radio Information Signing2E-80
Section 2E.57	Carpool Information Signing.....2E-81
Section 2E.58	Weigh Station Signing2E-82

CHAPTER 2F. SPECIFIC SERVICE SIGNSDec. 2000

Section 2F.01	Eligibility.....2F-1
Section 2F.02	Application.....2F-3
Section 2F.03	Logos and Logo Panels.....2F-6
Section 2F.04	Number and Size of Logos and Signs2F-6
Section 2F.05	Size of Lettering.....2F-7
Section 2F.06	Signs at Interchanges2F-7
Section 2F.07	Single-Exit Interchanges2F-8
Section 2F.08	Double-Exit Interchanges2F-8
Section 2F.09	Signs at Intersections2F-9
Section 2F.10	Signing Policy.....2F-10

CHAPTER 2G. TOURIST-ORIENTED DIRECTIONAL SIGNS ...Dec. 2000

Section 2G.01	Purpose and Application.....2G-1
Section 2G.02	Design.....2G-2
Section 2G.03	Style and Size of Lettering.....2G-3
Section 2G.04	Arrangement and Size of Signs.....2G-3
Section 2G.05	Advance Signs2G-6
Section 2G.06	Sign Locations2G-7
Section 2G.07	State Policy.....2G-7

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 2H.	RECREATIONAL AND CULTURAL INTEREST AREA SIGNS	Dec. 2000
Section 2H.01	Scope	2H-1
Section 2H.02	Application of Recreational and Cultural Interest Area Signs.....	2H-1
Section 2H.03	Regulatory and Warning Signs.....	2H-2
Section 2H.04	General Design Requirements for Recreational and Cultural Interest Area Symbol Signs.....	2H-2
Section 2H.05	Symbol Sign Sizes.....	2H-4
Section 2H.06	Use of Educational Plaques.....	2H-4
Section 2H.07	Use of Prohibitive Slash.....	2H-4
Section 2H.08	Placement of Recreational and Cultural Interest Area Symbol Signs	2H-6
Section 2H.09	Destination Guide Signs.....	2H-12
CHAPTER 2I.	EMERGENCY MANAGEMENT SIGNING	Dec. 2000
Section 2I.01	Emergency Management.....	2I-1
Section 2I.02	Design of Emergency Management Signs.....	2I-1
Section 2I.03	EVACUATION ROUTE Sign (EM-1)	2I-2
Section 2I.04	AREA CLOSED Sign (EM-2).....	2I-4
Section 2I.05	TRAFFIC CONTROL POINT Sign (EM-3)	2I-4
Section 2I.06	MAINTAIN TOP SAFE SPEED Sign (EM-4).....	2I-5
Section 2I.07	ROAD (AREA) USE PERMIT REQUIRED FOR THRU TRAFFIC Sign (EM-5).....	2I-5
Section 2I.08	Emergency Aid Center Signs (EM-6 Series).....	2I-6
Section 2I.09	Shelter Directional Signs (EM-7 Series)	2I-6
 PART 3. MARKINGS		
CHAPTER 3A.	GENERAL	Dec. 2000
Section 3A.01	Functions and Limitations.....	3A-1
Section 3A.02	Standardization of Application.....	3A-1
Section 3A.03	Materials	3A-2
Section 3A.04	Colors	3A-2
Section 3A.05	Colors of Longitudinal Pavement Markings	3A-3
Section 3A.06	Widths and Patterns of Longitudinal Pavement Markings	3A-3

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 3B. PAVEMENT AND CURB MARKINGS	Dec. 2000
Section 3B.01	Yellow Centerline and Left Edge Line Pavement Markings and Warrants.....3B-1
Section 3B.02	No-Passing Zone Pavement Markings and Warrants3B-6
Section 3B.03	Other Yellow Longitudinal Pavement Markings3B-11
Section 3B.04	White Lane Line and Right Edge Line Pavement Markings and Warrants3B-14
Section 3B.05	Other White Longitudinal Pavement Markings3B-15
Section 3B.06	Edge Line Pavement Markings3B-19
Section 3B.07	Warrants for Use of Edge Lines3B-21
Section 3B.08	Extensions Through Intersections or Interchanges3B-22
Section 3B.09	Lane Reduction Transition Markings3B-22
Section 3B.10	Approach Markings for Obstructions.....3B-26
Section 3B.11	Raised Pavement Markers3B-27
Section 3B.12	Raised Pavement Markers as Vehicle Positioning Guides with Other Longitudinal Markings3B-29
Section 3B.13	Raised Pavement Markers Supplementing Other Markings3B-30
Section 3B.14	Raised Pavement Markers Substituting for Pavement Markings.....3B-31
Section 3B.15	Transverse Markings3B-32
Section 3B.16	Stop and Yield Lines.....3B-32
Section 3B.17	Crosswalk Markings3B-34
Section 3B.18	Parking Space Markings3B-37
Section 3B.19	Pavement Word and Symbol Markings.....3B-37
Section 3B.20	Speed Measurement Markings3B-48
Section 3B.21	Curb Markings3B-48
Section 3B.22	Preferential Lane Word and Symbol Markings3B-49
Section 3B.23	Preferential Lane Longitudinal Markings for Motorized Vehicles ...3B-50
Section 3B.24	Markings for Roundabouts3B-55
Section 3B.25	Markings for Other Circular Intersections3B-56
Section 3B.26	Speed Hump Markings3B-56
Section 3B.27	Advance Speed Hump Markings.....3B-59
CHAPTER 3C. OBJECT MARKERS	Dec. 2000
Section 3C.01	Object Marker Design and Placement Height.....3C-1
Section 3C.02	Markings for Objects in the Roadway.....3C-3
Section 3C.03	Markings for Objects Adjacent to the Roadway3C-3
Section 3C.04	End-of-Roadway Markings3C-4

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 3D.	DELINEATORSDec. 2000
Section 3D.01	Delineators.....	3D-1
Section 3D.02	Delineator Design.....	3D-1
Section 3D.03	Delineator Application	3D-1
Section 3D.04	Delineator Placement and Spacing.....	3D-3
CHAPTER 3E.	COLORED PAVEMENTSDec. 2000
Section 3E.01	General.....	3E-1
CHAPTER 3F.	BARRICADES AND CHANNELIZING DEVICESDec. 2000
Section 3F.01	Barricades.....	3F-1
Section 3F.02	Channelizing Devices	3F-1
CHAPTER 3G.	ISLANDSDec. 2000
Section 3G.01	General	3G-1
Section 3G.02	Approach-End Treatment	3G-1
Section 3G.03	Island Marking Application.....	3G-2
Section 3G.04	Island Marking Colors.....	3G-2
Section 3G.05	Island Object Markers	3G-3
Section 3G.06	Island Delineators.....	3G-3
 PART 4. HIGHWAY TRAFFIC SIGNALS		
CHAPTER 4A.	GENERALDec. 2000
Section 4A.01	Types.....	4A-1
Section 4A.02	Definitions Relating to Highway Traffic Signals.....	4A-1
CHAPTER 4B.	TRAFFIC CONTROL SIGNALS — GENERAL ..	.Dec. 2000
Section 4B.01	General.....	4B-1
Section 4B.02	Basis of Installation or Removal of Traffic Control Signals.....	4B-1
Section 4B.03	Advantages and Disadvantages of Traffic Control Signals.....	4B-2
Section 4B.04	Alternatives to Traffic Control Signals	4B-3
Section 4B.05	Adequate Roadway Capacity	4B-4

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 4C.	TRAFFIC CONTROL SIGNAL NEEDS STUDIES	.Dec. 2000
Section 4C.01	Studies and Factors for Justifying Traffic Control Signals	4C-1
Section 4C.02	Warrant 1, Eight-Hour Vehicular Volume	4C-3
Section 4C.03	Warrant 2, Four-Hour Vehicular Volume.....	4C-6
Section 4C.04	Warrant 3, Peak Hour	4C-6
Section 4C.05	Warrant 4, Pedestrian Volume	4C-8
Section 4C.06	Warrant 5, School Crossing	4C-11
Section 4C.07	Warrant 6, Coordinated Signal System	4C-12
Section 4C.08	Warrant 7, Crash Experience	4C-12
Section 4C.09	Warrant 8, Roadway Network	4C-13
CHAPTER 4D.	TRAFFIC CONTROL SIGNAL FEATURESDec. 2000
Section 4D.01	General	4D-1
Section 4D.02	Responsibility for Operation and Maintenance.....	4D-2
Section 4D.03	Provisions for Pedestrians	4D-3
Section 4D.04	Meaning of Vehicular Signal Indications.....	4D-3
Section 4D.05	Application of Steady Signal Indications.....	4D-6
Section 4D.06	Application of Steady Signal Indications for Left Turns	4D-8
Section 4D.07	Application of Steady Signal Indications for Right Turns.....	4D-11
Section 4D.08	Prohibited Steady Signal Indications	4D-14
Section 4D.09	Unexpected Conflicts During Green or Yellow Intervals	4D-14
Section 4D.10	Yellow Change and Red Clearance Intervals.....	4D-15
Section 4D.11	Application of Flashing Signal Indications.....	4D-16
Section 4D.12	Flashing Operation of Traffic Control Signals.....	4D-17
Section 4D.13	Preemption and Priority Control of Traffic Control Signals.....	4D-19
Section 4D.14	Coordination of Traffic Control Signals	4D-21
Section 4D.15	Size, Number, and Location of Signal Faces by Approach	4D-22
Section 4D.16	Number and Arrangement of Signal Sections in Vehicular Traffic Control Signal Faces	4D-28
Section 4D.17	Visibility, Shielding, and Positioning of Signal Faces	4D-30
Section 4D.18	Design, Illumination, and Color of Signal Sections	4D-33
Section 4D.19	Lateral Placement of Signal Supports and Cabinets	4D-34
Section 4D.20	Temporary Traffic Control Signals	4D-35
Section 4D.21	Traffic Signal Signs, Auxiliary.....	4D-36
CHAPTER 4E.	PEDESTRIAN CONTROL FEATURESDec. 2000
Section 4E.01	Pedestrian Signal Heads	4E-1
Section 4E.02	Meaning of Pedestrian Signal Indications	4E-1
Section 4E.03	Application of Pedestrian Signal Heads	4E-2
Section 4E.04	Size, Design, and Illumination of Pedestrian Signal Indications	4E-2

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 4E.05	Location and Height of Pedestrian Signal Heads.....	4E-3
Section 4E.06	Accessible Pedestrian Signals.....	4E-5
Section 4E.07	Pedestrian Detectors	4E-8
Section 4E.08	Accessible Pedestrian Signal Detectors.....	4E-10
Section 4E.09	Pedestrian Intervals and Signal Phases.....	4E-12
CHAPTER 4F.	TRAFFIC CONTROL SIGNALS FOR EMERGENCY VEHICLE ACCESSDec. 2000
Section 4F.01	Applications of Emergency-Vehicle Traffic Control Signals	4F-1
Section 4F.02	Design of Emergency-Vehicle Traffic Control Signals	4F-1
Section 4F.03	Operation of Emergency-Vehicle Traffic Control Signals.....	4F-2
CHAPTER 4G.	TRAFFIC CONTROL SIGNALS FOR ONE-LANE, TWO-WAY FACILITIESDec. 2000
Section 4G.01	Application of Traffic Control Signals for One-Lane, Two-Way Facilities.....	4G-1
Section 4G.02	Design of Traffic Control Signals for One-Lane, Two-Way Facilities.....	4G-1
Section 4G.03	Operation of Traffic Control Signals for One-Lane, Two-Way Facilities.....	4G-2
CHAPTER 4H.	TRAFFIC CONTROL SIGNALS FOR FREEWAY ENTRANCE RAMPSDec. 2000
Section 4H.01	Application of Freeway Entrance Ramp Control Signals.....	4H-1
Section 4H.02	Design of Freeway Entrance Ramp Control Signals	4H-2
CHAPTER 4I.	TRAFFIC CONTROL FOR MOVABLE BRIDGES .Dec. 2000	
Section 4I.01	Application of Traffic Control for Movable Bridges	4I-1
Section 4I.02	Design and Location of Movable Bridge Signals and Gates	4I-2
Section 4I.03	Operation of Movable Bridge Signals and Gates	4I-4
CHAPTER 4J.	LANE-USE CONTROL SIGNALSDec. 2000
Section 4J.01	Application of Lane-Use Control Signals	4J-1
Section 4J.02	Meaning of Lane-Use Control Signal Indications.....	4J-2
Section 4J.03	Design of Lane-Use Control Signals.....	4J-3
Section 4J.04	Operation of Lane-Use Control Signals	4J-5

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 4K.	FLASHING BEACONSDec. 2000
Section 4K.01	General Design and Operation of Flashing Beacons	4K-1
Section 4K.02	Intersection Control Beacon.....	4K-1
Section 4K.03	Warning Beacon	4K-2
Section 4K.04	Speed Limit Sign Beacon.....	4K-3
Section 4K.05	Stop Beacon.....	4K-4
CHAPTER 4L.	IN-ROADWAY LIGHTSDec. 2000
Section 4L.01	Application of In-Roadway Lights	4L-1
Section 4L.02	In-Roadway Warning Lights at Crosswalks	4L-1
 PART 5. TRAFFIC CONTROL DEVICES FOR LOW-VOLUME ROADS		
CHAPTER 5A.	GENERALDec. 2000
Section 5A.01	Function.....	5A-1
Section 5A.02	Application	5A-2
Section 5A.03	Design.....	5A-2
Section 5A.04	Placement	5A-4
CHAPTER 5B.	REGULATORY SIGNSDec. 2000
Section 5B.01	Introduction.....	5B-1
Section 5B.02	STOP and YIELD Signs (R1-1 and R1-2)	5B-1
Section 5B.03	Speed Limit Signs (R2 Series)	5B-1
Section 5B.04	Traffic Movement and Prohibition Signs (R3, R4, R5, R6, R9, R10, R11, R12, R13, and R14 Series)	5B-3
Section 5B.05	Parking Signs (R8 Series).....	5B-3
Section 5B.06	Other Regulatory Signs	5B-3
CHAPTER 5C.	WARNING SIGNSDec. 2000
Section 5C.01	Introduction.....	5C-1
Section 5C.02	Horizontal Alignment Signs (W1-1 through W1-8).....	5C-1
Section 5C.03	Intersection Warning Signs (W2-1 through W2-5)	5C-1
Section 5C.04	Stop Ahead and Yield Ahead Signs (W3-1a, W3-2a)	5C-1
Section 5C.05	Narrow Bridge Sign (W5-2a).....	5C-4
Section 5C.06	ONE LANE BRIDGE Sign (W5-3)	5C-4

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 5C.07	Hill Sign (W7-1a).....	5C-4
Section 5C.08	PAVEMENT ENDS Sign (W8-3).....	5C-5
Section 5C.09	Motorized Traffic and Crossing Signs (W11 Series and W8-6)	5C-5
Section 5C.10	Advisory Speed Plaque (W13-1).....	5C-5
Section 5C.11	DEAD END and NO OUTLET Plaques and Signs (W14-1P, W14-2P, W14-1, and W14-2).....	5C-6
Section 5C.12	NO TRAFFIC SIGNS Sign (W16-2)	5C-6
Section 5C.13	Other Warning Signs.....	5C-6
CHAPTER 5D.	GUIDE SIGNSDec. 2000
Section 5D.01	Introduction	5D-1
CHAPTER 5E.	MARKINGSDec. 2000
Section 5E.01	Introduction.....	5E-1
Section 5E.02	Centerline Markings	5E-1
Section 5E.03	Edge Line Markings	5E-1
Section 5E.04	Delineators	5E-2
Section 5E.05	Object Markers	5E-2
Section 5E.06	Other Markings	5E-2
CHAPTER 5F.	TRAFFIC CONTROL FOR HIGHWAY-RAIL GRADE CROSSINGSDec. 2000
Section 5F.01	Introduction	5F-1
Section 5F.02	Highway-Rail Grade Crossing (Crossbuck) Sign (R15-1, R15-2).....	5F-1
Section 5F.03	Highway-Rail Grade Crossing Advance Warning Signs (W10 Series).....	5F-1
Section 5F.04	STOP and YIELD Signs	5F-3
Section 5F.05	Pavement Markings.....	5F-3
Section 5F.06	Other Traffic Control Devices	5F-3
CHAPTER 5G.	TEMPORARY TRAFFIC CONTROL ZONESDec. 2000
Section 5G.01	Introduction	5G-1
Section 5G.02	Applications.....	5G-3
Section 5G.03	Channelization Devices.....	5G-3
Section 5G.04	Markings.....	5G-3
Section 5G.05	Other Traffic Control Devices.....	5G-4

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

Page

PART 6. TEMPORARY TRAFFIC CONTROL

CHAPTER 6A. GENERALDec. 2000

Section 6A.01 General6A-1

CHAPTER 6B. FUNDAMENTAL PRINCIPLESDec. 2000

Section 6B.01 Fundamental Principles of Temporary Traffic Control6B-1

CHAPTER 6C. TEMPORARY TRAFFIC CONTROL ELEMENTS Dec. 2000

Section 6C.01 Temporary Traffic Control Plans6C-1

Section 6C.02 Temporary Traffic Control Zones.....6C-2

Section 6C.03 Components of Temporary Traffic Control Zones6C-3

Section 6C.04 Advance Warning Area.....6C-3

Section 6C.05 Transition Area6C-5

Section 6C.06 Activity Area.....6C-6

Section 6C.07 Termination Area6C-7

Section 6C.08 Tapers.....6C-9

Section 6C.09 Detours and Diversions.....6C-11

Section 6C.10 One-Lane, Two-Way Traffic Control.....6C-11

Section 6C.11 Flagger Method of One-Lane, Two-Way Traffic Control6C-13

Section 6C.12 Flag Transfer Method of One-Lane, Two-Way Traffic Control.....6C-13

Section 6C.13 Pilot Car Method of One-Lane, Two-Way Traffic Control6C-14

Section 6C.14 Temporary Traffic Control Signal Method of One-Lane, Two-Way Traffic Control6C-14

Section 6C.15 Stop or Yield Control Method of One-Lane, Two-Way Traffic Control6C-14

CHAPTER 6D. PEDESTRIAN AND WORKER SAFETYDec. 2000

Section 6D.01 Pedestrian Considerations6D-1

Section 6D.02 Worker Considerations6D-4

CHAPTER 6E. FLAGGER CONTROLDec. 2000

Section 6E.01 Qualifications for Flaggers6E-1

Section 6E.02 High-Visibility Clothing6E-1

Section 6E.03 Hand-Signaling Devices6E-2

Section 6E.04 Flagger Procedures6E-3

Section 6E.05 Flagger Stations6E-5

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 6F.	TEMPORARY TRAFFIC CONTROL	
	ZONE DEVICESDec. 2000
Section 6F.01	Types of Devices	6F-1
Section 6F.02	General Characteristics of Signs	6F-1
Section 6F.03	Sign Placement	6F-3
Section 6F.04	Sign Maintenance	6F-7
Section 6F.05	Regulatory Sign Authority	6F-7
Section 6F.06	Regulatory Sign Design	6F-7
Section 6F.07	Regulatory Sign Applications	6F-7
Section 6F.08	ROAD (STREET) CLOSED Sign (R11-2)	6F-11
Section 6F.09	Local Traffic Only Signs (R11-3a, R11-4)	6F-11
Section 6F.10	Weight Limit Signs (R12-1, R12-2, R12-5)	6F-12
Section 6F.11	STAY IN LANE Sign (R4-9)	6F-12
Section 6F.12	PEDESTRIAN CROSSWALK Sign (R9-8)	6F-12
Section 6F.13	SIDEWALK CLOSED Signs (R9-9, R9-10, R9-11, R9-11a)	6F-12
Section 6F.14	Special Regulatory Signs	6F-13
Section 6F.15	Warning Sign Function, Design, and Application	6F-13
Section 6F.16	Position of Advance Warning Signs	6F-21
Section 6F.17	ROAD (STREET) WORK Sign (W20-1)	6F-22
Section 6F.18	DETOUR Sign (W20-2)	6F-22
Section 6F.19	ROAD (STREET) CLOSED Sign (W20-3)	6F-23
Section 6F.20	ONE LANE ROAD Sign (W20-4)	6F-23
Section 6F.21	LANE(S) CLOSED Signs (W20-5, W20-5a)	6F-23
Section 6F.22	CENTER LANE CLOSED AHEAD Signs (W9-3, W9-3a)	6F-24
Section 6F.23	THRU TRAFFIC MERGE RIGHT (LEFT) Sign (W4-1a)	6F-24
Section 6F.24	Lane Reduction Sign (W4-2)	6F-24
Section 6F.25	ON RAMP Plaque (W13-4)	6F-24
Section 6F.26	RAMP NARROWS Sign (W5-4)	6F-24
Section 6F.27	SLOW TRAFFIC AHEAD Sign (W23-1)	6F-25
Section 6F.28	EXIT OPEN, EXIT CLOSED Signs (E5-2, E5-2a)	6F-25
Section 6F.29	Flagger Sign (W20-7, W20-7a)	6F-25
Section 6F.30	Two-Way Traffic Sign (W6-3)	6F-25
Section 6F.31	Workers Sign (W21-1, W21-1a)	6F-26
Section 6F.32	FRESH OIL (TAR) Sign (W21-2)	6F-26
Section 6F.33	ROAD MACHINERY AHEAD Sign (W21-3)	6F-26
Section 6F.34	SHOULDER WORK Signs (W21-5, W21-5a, W21-5b)	6F-26
Section 6F.35	SURVEY CREW Sign (W21-6)	6F-27
Section 6F.36	UTILITY WORK Sign (W21-7)	6F-27
Section 6F.37	Signs for Blasting Areas	6F-28
Section 6F.38	BLASTING ZONE AHEAD Sign (W22-1)	6F-28
Section 6F.39	TURN OFF 2-WAY RADIO AND PHONE Sign (W22-2)	6F-28
Section 6F.40	END BLASTING ZONE Sign (W22-3)	6F-29

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
Section 6F.41	SHOULDER DROP-OFF Sign (W8-9a).....	6F-29
Section 6F.42	UNEVEN LANES Sign (W8-11).....	6F-29
Section 6F.43	NO CENTER STRIPE Sign (W8-12).....	6F-29
Section 6F.44	Other Warning Signs.....	6F-29
Section 6F.45	Advisory Speed Plaque (W13-1).....	6F-30
Section 6F.46	Supplementary Distance Plaque (W7-3a).....	6F-30
Section 6F.47	Guide Signs.....	6F-31
Section 6F.48	ROAD WORK NEXT XX KM (MILES) Sign (G20-1).....	6F-32
Section 6F.49	END ROAD WORK Sign (G20-2a).....	6F-32
Section 6F.50	Detour Signs and Markers (M4-8, M4-8a, M4-8b, M4-9, and M4-10).....	6F-32
Section 6F.51	PILOT CAR FOLLOW ME Sign (G20-4).....	6F-33
Section 6F.52	Portable Changeable Message Signs.....	6F-33
Section 6F.53	Arrow Panels.....	6F-36
Section 6F.54	High-Level Warning Devices (Flag Trees).....	6F-40
Section 6F.55	Channelizing Devices.....	6F-41
Section 6F.56	Cones.....	6F-44
Section 6F.57	Tubular Markers.....	6F-45
Section 6F.58	Vertical Panels.....	6F-46
Section 6F.59	Drums.....	6F-47
Section 6F.60	Type I, II, or III Barricades.....	6F-48
Section 6F.61	Direction Indicator Barricades.....	6F-50
Section 6F.62	Temporary Traffic Barriers as Channelizing Devices.....	6F-51
Section 6F.63	Temporary Raised Islands.....	6F-51
Section 6F.64	Opposing Traffic Lane Divider.....	6F-52
Section 6F.65	Pavement Markings.....	6F-52
Section 6F.66	Temporary Pavement Markings.....	6F-53
Section 6F.67	Raised Pavement Markers.....	6F-54
Section 6F.68	Delineators.....	6F-55
Section 6F.69	Lighting Devices.....	6F-55
Section 6F.70	Floodlights.....	6F-56
Section 6F.71	Flashing Warning Beacons.....	6F-56
Section 6F.72	Warning Lights.....	6F-57
Section 6F.73	Steady-Burn Electric Lamps.....	6F-58
Section 6F.74	Temporary Traffic Control Signals.....	6F-59
Section 6F.75	Temporary Traffic Barriers.....	6F-61
Section 6F.76	Crash Cushions.....	6F-62
Section 6F.77	Vehicle-Arresting Systems.....	6F-63
Section 6F.78	Rumble Strips.....	6F-64
Section 6F.79	Screens.....	6F-64
Section 6F.80	Future and Experimental Devices.....	6F-65

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
CHAPTER 6G. TYPE OF TEMPORARY TRAFFIC CONTROL ZONE ACTIVITIES	Dec. 2000
Section 6G.01 Typical Applications	6G-1
Section 6G.02 Work Duration	6G-1
Section 6G.03 Location of Work	6G-5
Section 6G.04 Modifications To Fulfill Special Needs	6G-5
Section 6G.05 Work Outside of Shoulder	6G-7
Section 6G.06 Work on the Shoulder with No Encroachment	6G-8
Section 6G.07 Work on the Shoulder with Minor Encroachment	6G-10
Section 6G.08 Work Within the Median	6G-10
Section 6G.09 Work Within the Traveled Way of Two-Lane Highways	6G-10
Section 6G.10 Work Within the Traveled Way of Urban Streets	6G-11
Section 6G.11 Work Within the Traveled Way of Multilane, Nonaccess Controlled Highways	6G-12
Section 6G.12 Work Within the Traveled Way at an Intersection	6G-15
Section 6G.13 Work Within the Traveled Way of Expressways and Freeways	6G-17
Section 6G.14 Two-Lane, Two-Way Traffic on One Roadway of a Normally Divided Highway	6G-18
Section 6G.15 Crossovers	6G-18
Section 6G.16 Interchanges	6G-19
Section 6G.17 Movable Barriers	6G-19
Section 6G.18 Work in the Vicinity of Highway-Rail Grade Crossings	6G-20
Section 6G.19 Control of Traffic Through Incident Areas	6G-20
CHAPTER 6H. TYPICAL APPLICATIONS	Dec. 2000
Section 6H.01 Typical Applications	6H-1
 PART 7. TRAFFIC CONTROLS FOR SCHOOL AREAS	
CHAPTER 7A. GENERAL	Dec. 2000
Section 7A.01 Need for Standards	7A-1
Section 7A.02 School Routes and Established School Crossings	7A-3
Section 7A.03 School Crossing Control Criteria	7A-3
Section 7A.04 Scope	7A-4
Section 7A.05 Application of Standards	7A-4
Section 7A.06 Engineering Study Required	7A-4
Section 7A.07 Maintenance of Traffic Control Devices	7A-4
Section 7A.08 Placement Authority	7A-5

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 7A.09	Removal of Confusing Advertising.....7A-5
Section 7A.10	Meaning of Standard, Guidance, Option, and Support.....7A-5
CHAPTER 7B.	SIGNSDec. 2000
Section 7B.01	Size of School Signs.....7B-1
Section 7B.02	Illumination and Reflectorization.....7B-1
Section 7B.03	Position of Signs.....7B-1
Section 7B.04	Height of Signs7B-3
Section 7B.05	Installation of Signs7B-3
Section 7B.06	Lettering.....7B-3
Section 7B.07	Sign Color for School Warning Signs7B-3
Section 7B.08	School Advance Warning Sign (S1-1).....7B-4
Section 7B.09	School Crosswalk Warning Assembly (S1-1 with Diagonal Arrow) ..7B-4
Section 7B.10	SCHOOL BUS STOP AHEAD Sign (S3-1)7B-7
Section 7B.11	School Speed Limit Assembly (S4-1, S4-2, S4-3, S4-4, S5-1).....7B-7
Section 7B.12	School Reduced Speed Ahead Assembly7B-8
Section 7B.13	END SCHOOL ZONE Sign (S5-2).....7B-9
Section 7B.14	Parking and Stopping Signs (R7 and R8 Series).....7B-9
CHAPTER 7C.	MARKINGSDec. 2000
Section 7C.01	Functions and Limitations7C-1
Section 7C.02	Standardization of Application7C-1
Section 7C.03	Crosswalk Markings7C-1
Section 7C.04	Stop Line Markings7C-2
Section 7C.05	Curb Markings for Parking Regulations7C-2
Section 7C.06	Pavement Word and Symbol Markings.....7C-3
CHAPTER 7D.	SIGNALSDec. 2000
Section 7D.01	General7D-1
CHAPTER 7E.	CROSSING SUPERVISIONDec. 2000
Section 7E.01	Types of Crossing Supervision7E-1
Section 7E.02	Adult Guards.....7E-1
Section 7E.03	Qualifications of Adult Guards.....7E-1
Section 7E.04	Uniform of Adult Guards and Student Patrols7E-2
Section 7E.05	Operating Procedures for Adult Guards7E-2
Section 7E.06	Police Officers7E-2
Section 7E.07	Student Patrols7E-3

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 7E.08	Choice of Student Patrols7E-3
Section 7E.09	Operating Procedures for Student Patrols7E-3
CHAPTER 7F.	GRADE-SEPARATED CROSSINGSDec. 2000
Section 7F.01	Function.....7F-1
Section 7F.02	Types of Grade-Separated Crossings7F-1
Section 7F.03	Criteria for Use of Grade-Separated Crossings7F-1

PART 8. TRAFFIC CONTROLS FOR HIGHWAY-RAIL GRADE CROSSINGS

CHAPTER 8A.	GENERALDec. 2000
Section 8A.01	Introduction8A-1
Section 8A.02	Use of Standard Devices, Systems, and Practices8A-4
Section 8A.03	Uniform Provisions8A-4
Section 8A.04	Highway-Rail Grade Crossing Elimination8A-5
Section 8A.05	Temporary Traffic Control Zones8A-5
CHAPTER 8B.	SIGNS AND MARKINGSDec. 2000
Section 8B.01	Purpose8B-1
Section 8B.02	Highway-Rail Grade Crossing (Crossbuck) Signs (R15-1, R15-2)....8B-1
Section 8B.03	Highway-Rail Grade Crossing Advance Warning Signs (W10 Series)8B-3
Section 8B.04	EXEMPT Highway-Rail Grade Crossing Signs (R15-3, W10-1a)....8B-5
Section 8B.05	Turn Restrictions During Preemption.....8B-6
Section 8B.06	DO NOT STOP ON TRACKS Sign (R8-8).....8B-6
Section 8B.07	STOP or YIELD Signs at Highway-Rail Grade Crossings8B-7
Section 8B.08	TRACKS OUT OF SERVICE Sign (R8-9)8B-7
Section 8B.09	Emergency Notification Sign (I-13 or I-13a).....8B-8
Section 8B.10	TRAINS MAY EXCEED 130 km/h (80 MPH) Signs (W10-8, W10-8a).....8B-9
Section 8B.11	NO TRAIN HORN Sign (W10-9).....8B-9
Section 8B.12	NO SIGNAL Sign (W10-10).....8B-9
Section 8B.13	LOOK Sign (R15-8).....8B-9
Section 8B.14	Low Ground Clearance Highway-Rail Grade Crossing Sign (W10-5)8B-11
Section 8B.15	Storage Space Signs (W10-11, W10-11a, W10-11b)8B-11
Section 8B.16	Pavement Markings8B-12

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 8B.17	Stop Lines8B-15
Section 8B.18	Dynamic Envelope Delineation.....8B-15
CHAPTER 8C.	ILLUMINATIONDec. 2000
Section 8C.01	Illumination at Highway-Rail Grade Crossings8C-1
CHAPTER 8D.	FLASHING-LIGHT SIGNALS, GATES, AND TRAFFIC CONTROL SIGNALSDec. 2000
Section 8D.01	Introduction8D-1
Section 8D.02	Flashing-Light Signals, Post-Mounted.....8D-3
Section 8D.03	Flashing-Light Signals, Overhead Structures8D-4
Section 8D.04	Automatic Gates8D-5
Section 8D.05	Four-Quadrant Gate Systems8D-6
Section 8D.06	Train Detection8D-9
Section 8D.07	Traffic Control Signals at or Near Highway-Rail Grade Crossings8D-10
 PART 9. TRAFFIC CONTROLS FOR BICYCLE FACILITIES	
CHAPTER 9A.	GENERALDec. 2000
Section 9A.01	Requirements for Bicyclist Traffic Control Devices.....9A-1
Section 9A.02	Scope9A-1
Section 9A.03	Definitions Relating to Bicycles9A-1
Section 9A.04	Maintenance9A-2
Section 9A.05	Relation to Other Documents.....9A-2
Section 9A.06	Placement Authority9A-3
Section 9A.07	Meaning of Standard, Guidance, Option, and Support.....9A-3
Section 9A.08	Colors9A-3
CHAPTER 9B.	SIGNSDec. 2000
Section 9B.01	Application and Placement of Signs9B-1
Section 9B.02	Design of Bicycle Signs9B-2
Section 9B.03	STOP and YIELD Signs (R1-1, R1-2)9B-4
Section 9B.04	Bicycle Lane Signs (R3-16, R3-17)9B-4
Section 9B.05	BEGIN RIGHT TURN LANE YIELD TO BIKES Sign (R4-4)9B-6
Section 9B.06	NO MOTOR VEHICLES Sign (R5-3).....9B-6

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

	<u>Page</u>
Section 9B.07	Bicycle Prohibition Sign (R5-6).....9B-6
Section 9B.08	No Parking Bicycle Lane Signs (R7-9, R7-9a).....9B-7
Section 9B.09	Bicycle Regulatory Signs (R9-5, R9-6)9B-7
Section 9B.10	Shared-Use Path Restriction Sign (R9-7).....9B-7
Section 9B.11	Other Regulatory Signs9B-7
Section 9B.12	Turn or Curve Warning Signs (W1 Series)9B-8
Section 9B.13	Intersection Warning Signs (W2 Series)9B-8
Section 9B.14	Bicycle Surface Condition Warning Sign (W8-10).....9B-8
Section 9B.15	Bicycle Crossing Warning Sign (W11-1)9B-11
Section 9B.16	Other Bicycle Warning Signs9B-11
Section 9B.17	Bicycle Route Guide Signs (D11-1).....9B-12
Section 9B.18	Bicycle Route Markers (M1-8, M1-9)9B-12
Section 9B.19	Destination Arrow and Supplemental Plaque Signs for Bicycle Route Signs.....9B-16
Section 9B.20	Bicycle Parking Area Sign (D4-3)9B-17

CHAPTER 9C. MARKINGSDec. 2000

Section 9C.01	Functions of Markings.....9C-1
Section 9C.02	General Principles.....9C-1
Section 9C.03	Marking Patterns and Colors on Shared-Use Paths9C-3
Section 9C.04	Markings for Bicycle Lanes9C-3
Section 9C.05	Word Messages and Symbols Applied to the Pavement9C-5
Section 9C.06	Object Markers on Shared-Use Paths.....9C-5
Section 9C.07	Pavement Markings for Obstructions.....9C-10

CHAPTER 9D. SIGNALSDec. 2000

Section 9D.01	Application9D-1
Section 9D.02	Signal Operations for Bicycles.....9D-1

**PART 10. TRAFFIC CONTROLS FOR HIGHWAY-
LIGHT RAIL TRANSIT GRADE CROSSINGS**

CHAPTER 10A. GENERALDec. 2000

Section 10A.01	Introduction10A-1
Section 10A.02	Use of Standard Devices, Systems, and Practices10A-2
Section 10A.03	Uniform Provisions10A-2
Section 10A.04	Highway-Light Rail Transit Grade Crossing Elimination10A-3
Section 10A.05	Temporary Traffic Control Zones10A-3

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

TABLE OF CONTENTS

		<u>Page</u>
CHAPTER 10B.	HIGHWAY-LIGHT RAIL TRANSIT GRADE CROSSING CONTROL SYSTEMSDec. 2000
Section 10B.01	Introduction.....	10B-1
CHAPTER 10C.	SIGNS, ILLUMINATION, AND MARKINGSDec. 2000
Section 10C.01	Introduction.....	10C-1
Section 10C.02	LOOK Sign (R15-8).....	10C-1
Section 10C.03	STOP or YIELD Signs (R1-1, R1-2, W3-1a, W3-2a).....	10C-1
Section 10C.04	DO NOT STOP ON TRACKS Sign (R8-8).....	10C-2
Section 10C.05	STOP HERE ON RED Sign (R10-6).....	10C-2
Section 10C.06	Light Rail Transit-Activated Blank-Out Turn Prohibition Signs (R3-1a , R3-2a).....	10C-4
Section 10C.07	Divided Highway With Light Rail Transit Crossing Signs (R15-7 Series).....	10C-4
Section 10C.08	No Vehicles On Tracks Signs (R15-6, R15-6a).....	10C-5
Section 10C.09	Light Rail Transit Only Lane Signs (R15-4 Series).....	10C-5
Section 10C.10	Do Not Pass Light Rail Transit Signs (R15-5, R15-5a).....	10C-6
Section 10C.11	Highway-Rail Advance Warning Signs (W10 Series).....	10C-8
Section 10C.12	Light Rail Transit Approaching-Activated Blank-Out Warning Sign (W10-7).....	10C-9
Section 10C.13	Light Rail Station Sign (I-12).....	10C-9
Section 10C.14	Illumination at Highway-Light Rail Transit Crossings.....	10C-9
Section 10C.15	Dynamic Envelope Delineation Markings.....	10C-9
CHAPTER 10D.	HIGHWAY-LIGHT RAIL TRANSIT ACTIVE TRAFFIC CONTROL GRADE CROSSING SYSTEMSDec. 2000
Section 10D.01	Introduction	10D-1
Section 10D.02	Four-Quadrant Gate Systems	10D-2
Section 10D.03	Automatic Gates	10D-3
Section 10D.04	Flashing-Light Signals	10D-4
Section 10D.05	Traffic Control Signals	10D-5
Section 10D.06	Traffic Signal Preemption Turning Restrictions	10D-6
Section 10D.07	Use of Traffic Control Signals for Control of Light Rail Transit Vehicles at Grade Crossings.....	10D-7
Section 10D.08	Pedestrian and Bicycle Signals and Crossings.....	10D-9
APPENDIX A1.	CONGRESSIONAL LEGISLATIONDec. 2000
	Congressional Legislation	A1-1

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

		<u>Page</u>
 PART 1. GENERAL		
 CHAPTER 1A. GENERAL		
Figure 1A-1	Typical Process for Requesting and Conducting Experimentations for New Traffic Control Devices.....	1A-8
Figure 1A-2	Typical Process for Incorporating New Traffic Control Devices into the MUTCD	1A-11
 PART 2. SIGNS		
 CHAPTER 2A. GENERAL		
Figure 2A-1	Heights and Lateral Locations of Signs for Typical Installations.....	2A-12
Figure 2A-2	Typical Locations for Signs at Intersections	2A-13
Figure 2A-3	Typical ONE WAY Signing for Divided Highways with Medians Less Than 9 m (30 ft)	2A-14
Figure 2A-4	Typical ONE WAY Signing for Divided Highways with Medians Greater Than 9 m (30 ft)	2A-15
Figure 2A-5	Typical Locations of ONE WAY Signs	2A-16
Figure 2A-6	Typical Locations of ONE WAY Signs	2A-17
Figure 2A-7	Typical Application of Warning Signs	2A-18
 CHAPTER 2B. REGULATORY SIGNS		
Figure 2B-1	Location of Reversible Two-Way Left-Turn Signs	2B-25
Figure 2B-2	Typical Wrong-Way Signing for Divided Highways	2B-33
 CHAPTER 2D. GUIDE SIGNS — CONVENTIONAL ROADS		
Figure 2D-1	Arrows for Use on Guide Signs	2D-4
Figure 2D-2	Illustration of Directional Assemblies and Other Route Signs	2D-18
Figure 2D-3	Typical Weigh Station Signing	2D-36
 CHAPTER 2E. GUIDE SIGNS — FREEWAYS AND EXPRESSWAYS		
Figure 2E-1	Example of Guide Sign Spreading	2E-7
Figure 2E-2	Pull-Through Signs	2E-7
Figure 2E-3	Diagrammatic Sign for Single-Lane Left Exit	2E-21
Figure 2E-4	Diagrammatic Signs for Split with Dedicated Lanes	2E-23

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

		<u>Page</u>
Figure 2E-5	Diagrammatic Signs for Split with Optional Lane.....	2E-24
Figure 2E-6	Diagrammatic Signs for Two-Lane Exit with Optional Lane	2E-25
Figure 2E-7	Diagrammatic Signs for Two-Lane Exit with Optional Lane	2E-26
Figure 2E-8	EXIT ONLY on Left with Diagrammatic Sign for Left Lane Dropped at Interchange	2E-27
Figure 2E-9	EXIT ONLY Panels for Right Lane Dropped at an Interchange.....	2E-29
Figure 2E-10	Typical Interchange Numbering for Mainline and Circumferential Routes	2E-38
Figure 2E-11	Typical Interchange Numbering for Mainline, Loop, and Spur Routes	2E-39
Figure 2E-12	Typical Interchange Numbering If Routes Overlap	2E-40
Figure 2E-13	Typical Interchange Advance Guide Signs.....	2E-42
Figure 2E-14	Next Exit Supplemental Advance Guide Signs	2E-44
Figure 2E-15	Supplemental Guide Signs for Multiexit Interchanges	2E-46
Figure 2E-16	Supplemental Guide Sign for a Park and Ride Facility (Route without Exit Numbering).....	2E-46
Figure 2E-17	Supplemental Guide Sign for a Park and Ride Facility (Route with Exit Numbering).....	2E-47
Figure 2E-18	Interchange Exit Direction Sign	2E-47
Figure 2E-19	Exit Gore Signs.....	2E-50
Figure 2E-20	Post-Interchange Distance Sign.....	2E-51
Figure 2E-21	Signing of Closely Spaced Interchanges Using Interchange Sequence Signs	2E-53
Figure 2E-22	Interchange Sequence Sign.....	2E-54
Figure 2E-23	Community Interchanges Identification Sign.....	2E-54
Figure 2E-24	NEXT EXITS Sign	2E-54
Figure 2E-25	Typical Freeway-to-Freeway Interchange Guide Signs	2E-58
Figure 2E-26	Typical Guide Signs for Full Cloverleaf Interchange	2E-60
Figure 2E-27	Typical Partial Cloverleaf Interchange Guide Signs	2E-62
Figure 2E-28	Typical Diamond Interchange Guide Signs.....	2E-63
Figure 2E-29	Typical Urban Diamond Interchange Guide Signs.....	2E-65
Figure 2E-30	Typical Minor Interchange Guide Signs.....	2E-67
Figure 2E-31	Typical Regulatory Signing and Pavement Markings at Exit Ramp Termination to Deter Wrong-Way Entry.....	2E-69
Figure 2E-32	Typical Regulatory Signing and Pavement Markings at Entrance Ramp Terminal Where Design Does Not Clearly Indicate the Direction of Flow.....	2E-70
Figure 2E-33	Typical General Service Signs (without Exit Numbering).....	2E-72
Figure 2E-34	Typical General Service Signs (with Exit Numbering).....	2E-72
Figure 2E-35	Typical Next Services Sign.....	2E-72
Figure 2E-36	Typical Rest Area Gore Sign	2E-72

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

		<u>Page</u>
CHAPTER 2F. SPECIFIC SERVICE SIGNS		
Figure 2F-1	Typical Specific Service Signs.....	2F-4
Figure 2F-2	Typical Specific Service Sign Locations	2F-5
CHAPTER 2G. TOURIST-ORIENTED DIRECTIONAL SIGNS		
Figure 2G-1	Typical Tourist-Oriented Directional Signs	2G-4
Figure 2G-2	Typical Intersection Approach Signs and Advance Signs for Tourist-Oriented Directional Signs	2G-5
CHAPTER 2H. RECREATIONAL AND CULTURAL INTEREST AREA SIGNS		
Figure 2H-1	Typical Use of Educational Plaques, Prohibitory Slashes, and Arrows	2H-5
Figure 2H-2	Typical General Directional Guide Signs for Conventional Roads....	2H-7
Figure 2H-3	Height and Lateral Position of Signs Located Within Recreational and Cultural Interest Areas.....	2H-8
Figure 2H-4	Typical Symbol Signing Layout.....	2H-9
Figure 2H-5	Modifications to Existing Symbols.....	2H-10
Figure 2H-6	New Recreational and Cultural Interest Area Symbols	2H-11
 PART 3. MARKINGS		
CHAPTER 3B. PAVEMENT AND CURB MARKINGS		
Figure 3B-1	Typical Two-Lane, Two-Way Marking Applications	3B-2
Figure 3B-2	Typical Four-or-More Lane, Two-Way Marking Applications	3B-3
Figure 3B-3	Typical Three-Lane, Two-Way Marking Applications	3B-5
Figure 3B-4	Typical Three-Lane, Two-Way Marking for Changing Direction of the Center Lane	3B-7
Figure 3B-5	Method of Locating and Determining the Limits of No-Passing Zones at Curves.....	3B-10
Figure 3B-6	Typical Reversible Lane Marking Application	3B-12
Figure 3B-7	Typical Two-Way Left-Turn Lane Marking Applications.....	3B-13
Figure 3B-8	Typical Exit Ramp and Cloverleaf Ramp Markings	3B-16
Figure 3B-9	Typical Entrance Ramp Markings	3B-18

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

	<u>Page</u>
Figure 3B-10	Typical Lane Drop Markings at Exit Ramps.....3B-20
Figure 3B-11	Typical Pavement Marking Applications3B-23
Figure 3B-12	Typical Lane Reduction Transition Markings3B-25
Figure 3B-13	Typical Markings for Obstructions in the Roadway3B-28
Figure 3B-14	Typical Yield Line Layout for Streets and Highways3B-33
Figure 3B-15	Typical Types of Crosswalk Markings3B-36
Figure 3B-16	Typical Crosswalk Markings for Exclusive Pedestrian Phase That Permits Diagonal Crossing.....3B-36
Figure 3B-17	Typical Parking Space Markings.....3B-38
Figure 3B-18	International Symbol of Accessibility Parking Space Marking with Blue Background and White Border Options3B-39
Figure 3B-19	Typical Elongated Letters for Word Pavement Markings3B-39
Figure 3B-20	Typical Lane-Use, Lane Reduction, and Wrong-Way Arrows for Pavement Markings3B-40
Figure 3B-21	Typical Lane Use Control Word and Symbol Markings3B-43
Figure 3B-22	Typical Arrow Markings at Exit-Ramp Terminals to Deter Wrong-Way Entry.....3B-44
Figure 3B-23	Typical Arrow Markings at Entrance Ramp Terminals Where Design Does Not Clearly Indicate the Direction of Flow.....3B-45
Figure 3B-24	Typical Yield Ahead Triangle Symbols for Streets and Highways...3B-46
Figure 3B-25	Typical Markings for Preferential Lanes for Motorized Vehicles....3B-53
Figure 3B-26	Typical Markings for Roundabouts with One Lane3B-57
Figure 3B-27	Typical Markings for Roundabouts with Two Lanes3B-58
Figure 3B-28	Typical Pavement Markings for Speed Humps.....3B-60
Figure 3B-29	Typical Pavement Markings for Speed Tables or Speed Humps with Crosswalks3B-61
Figure 3B-30	Typical Advance Warning Markings for Speed Humps.....3B-62

CHAPTER 3D. DELINEATORS

Figure 3D-1	Typical Delineator Installation3D-5
-------------	---

PART 4. HIGHWAY TRAFFIC SIGNALS

CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES

Figure 4C-1	Warrant 2, Four-Hour Vehicular Volume.....4C-7
Figure 4C-2	Warrant 2, Four-Hour Vehicular Volume (70% Factor)4C-7
Figure 4C-3	Warrant 3, Peak Hour4C-9
Figure 4C-4	Warrant 3, Peak Hour (70% Factor).....4C-9

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

	<u>Page</u>
CHAPTER 4D. TRAFFIC CONTROL SIGNAL FEATURES	
Figure 4D-1	Maximum Mounting Height of Signal Faces Located Between 12 m (40 ft) and 16 m (53 ft) from Stop Line4D-25
Figure 4D-2	Horizontal Location of Signal Faces.....4D-26
Figure 4D-3	Typical Arrangements of Signal Lenses in Signal Faces4D-31
CHAPTER 4E. PEDESTRIAN CONTROL FEATURES	
Figure 4E-1	Typical Pedestrian Signal Indications.....4E-4
Figure 4E-2	Recommended Pushbutton Locations for Accessible Pedestrian Signals4E-11
CHAPTER 4J. LANE-USE CONTROL SIGNALS	
Figure 4J-1	Left-Turn Lane-Use Control Signals4J-3
 PART 6. TEMPORARY TRAFFIC CONTROL	
CHAPTER 6C. TEMPORARY TRAFFIC CONTROL ELEMENTS	
Figure 6C-1	Component Parts of a Temporary Traffic Control Zone6C-4
Figure 6C-2	Types of Tapers and Buffer Spaces6C-8
Figure 6C-3	Example of a One-Lane, Two-Way Traffic Taper6C-12
CHAPTER 6E. FLAGGER CONTROL	
Figure 6E-1	Use of Hand-Signaling Devices by Flaggers.....6E-4
CHAPTER 6F. TEMPORARY TRAFFIC CONTROL ZONE DEVICES	
Figure 6F-1	Height and Lateral Location of Signs — Typical Installations6F-4
Figure 6F-2	Methods of Mounting Signs Other Than on Posts6F-6
Figure 6F-3	Advance Warning Arrow Display Specifications6F-38
Figure 6F-4	Channelizing Devices6F-42

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

		<u>Page</u>
CHAPTER 6H. TYPICAL APPLICATIONS		
Figure 6H-1	Work Beyond the Shoulder (TA-1)	6H-7
Figure 6H-2	Blasting Zone (TA-2)	6H-9
Figure 6H-3	Work on Shoulders (TA-3)	6H-11
Figure 6H-4	Short Duration or Mobile Operation on Shoulder (TA-4)	6H-13
Figure 6H-5	Shoulder Closure on Freeway (TA-5)	6H-15
Figure 6H-6	Shoulder Work with Minor Encroachment (TA-6)	6H-17
Figure 6H-7	Road Closure with Diversion (TA-7)	6H-19
Figure 6H-8	Road Closure with Off-Site Detour (TA-8)	6H-21
Figure 6H-9	Overlapping Routes with Detour (TA-9)	6H-23
Figure 6H-10	Lane Closure on Two-Lane Road Using Flaggers (TA-10)	6H-25
Figure 6H-11	Lane Closure on Low-Volume Two-Lane Road (TA-11)	6H-27
Figure 6H-12	Lane Closure on Two-Lane Road Using Traffic Control Signals (TA-12)	6H-29
Figure 6H-13	Temporary Road Closure (TA-13)	6H-31
Figure 6H-14	Haul Road Crossing (TA-14)	6H-33
Figure 6H-15	Work in Center of Low-Volume Road (TA-15)	6H-35
Figure 6H-16	Surveying Along Centerline of Low-Volume Road (TA-16)	6H-37
Figure 6H-17	Mobile Operations on Two-Lane Road (TA-17)	6H-39
Figure 6H-18	Lane Closure on Minor Street (TA-18)	6H-41
Figure 6H-19	Detour for One Travel Direction (TA-19)	6H-43
Figure 6H-20	Detour for Closed Street (TA-20)	6H-45
Figure 6H-21	Lane Closure on Near Side of Intersection (TA-21)	6H-47
Figure 6H-22	Right Lane Closure on Far Side of Intersection (TA-22)	6H-49
Figure 6H-23	Left Lane Closure on Far Side of Intersection (TA-23)	6H-51
Figure 6H-24	Half Road Closure on Far Side of Intersection (TA-24)	6H-53
Figure 6H-25	Multiple Lane Closures at Intersection (TA-25)	6H-55
Figure 6H-26	Closure in Center of Intersection (TA-26)	6H-57
Figure 6H-27	Closure at Side of Intersection (TA-27)	6H-59
Figure 6H-28	Sidewalk Detour or Diversion (TA-28)	6H-61
Figure 6H-29	Crosswalk Closures and Pedestrian Detours (TA-29)	6H-63
Figure 6H-30	Interior Lane Closure on Multilane Street (TA-30)	6H-65
Figure 6H-31	Lane Closures on Street with Uneven Directional Volumes (TA-31)	6H-67
Figure 6H-32	Half Road Closure on Multilane, High-Speed Highway (TA-32)	6H-69
Figure 6H-33	Stationary Lane Closure on Divided Highway (TA-33)	6H-71
Figure 6H-34	Lane Closure with Temporary Traffic Barrier (TA-34)	6H-73
Figure 6H-35	Mobile Operation on Multilane Road (TA-35)	6H-75
Figure 6H-36	Lane Shift on Freeway (TA-36)	6H-77
Figure 6H-37	Double Lane Closure on Freeway (TA-37)	6H-79
Figure 6H-38	Interior Lane Closure on Freeway (TA-38)	6H-81
Figure 6H-39	Median Crossover on Freeway (TA-39)	6H-83

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

	<u>Page</u>
Figure 6H-40	Median Crossover for Entrance Ramp (TA-40).....6H-85
Figure 6H-41	Median Crossover for Exit Ramp (TA-41)6H-87
Figure 6H-42	Work in Vicinity of Exit Ramp (TA-42)6H-89
Figure 6H-43	Partial Exit Ramp Closure (TA-43).....6H-91
Figure 6H-44	Work in Vicinity of Entrance Ramp (TA-44).....6H-93
Figure 6H-45	Movable Barriers (TA-45).....6H-95
Figure 6H-46	Work in Vicinity of Highway-Rail Grade-Crossing (TA-46)6H-97

PART 7. TRAFFIC CONTROLS FOR SCHOOL AREAS

CHAPTER 7A. GENERAL

Figure 7A-1	Typical School Route Plan Map.....7A-2
-------------	--

CHAPTER 7B. SIGNS

Figure 7B-1	Typical Signing for School Area Traffic Control.....7B-6
-------------	--

CHAPTER 7C. MARKINGS

Figure 7C-1	Two-Lane Pavement Marking of "SCHOOL"7C-4
-------------	---

PART 8. TRAFFIC CONTROLS FOR HIGHWAY-RAIL GRADE CROSSINGS

CHAPTER 8A. GENERAL

Figure 8A-1	Train Dynamic Envelope Delineation.....8A-2
-------------	---

CHAPTER 8B. SIGNS AND MARKINGS

Figure 8B-1	Highway-Rail Grade Crossing (Crossbuck) Signs.....8B-2
Figure 8B-2	Typical Placement of Warning Signs and Pavement Markings at Highway-Rail Grade Crossings8B-13
Figure 8B-3	Typical Highway-Rail Grade Crossing Pavement Markings8B-14

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

	<u>Page</u>
Figure 8B-4	Typical Train Dynamic Envelope Delineation Pavement Markings8B-16

CHAPTER 8D. FLASHING LIGHT SIGNALS, GATES, AND TRAFFIC CONTROL SIGNALS

Figure 8D-1	Composite Drawing of Active Traffic Control Devices for Highway-Rail Grade Crossings Showing Clearances8D-2
Figure 8D-2	Typical Location Plan for Flashing-Light Signals and Four-Quadrant Gates8D-7

PART 9. TRAFFIC CONTROLS FOR BICYCLE FACILITIES

CHAPTER 9B. SIGNS

Figure 9B-1	Sign Placement on Shared-Use Paths.....9B-2
Figure 9B-2	Typical Signing for the Beginning and End of a Bicycle Route9B-14
Figure 9B-3	Typical Signs and Markings for Shared-Use Paths.....9B-15

CHAPTER 9C. MARKINGS

Figure 9C-1	Typical Intersection Pavement Markings — Designated Bicycle Lane with Left-Turn Area, Heavy Turn Volumes, Parking, One-Way Traffic, or Divided Highway9C-2
Figure 9C-2	Centerline Markings for Shared-Use Paths9C-4
Figure 9C-3	Typical Bicycle Lane Treatment at a Right Turn Only Lane9C-6
Figure 9C-4	Typical Bicycle Lane Treatment at Parking Lane Into a Right Turn Only Lane9C-7
Figure 9C-5	Typical Pavement Markings for Bicycle Lanes on a Two-Way Street9C-8
Figure 9C-6	Typical Optional Word and Symbol Pavement Markings for Bicycle Lanes9C-9
Figure 9C-7	Typical Obstruction Pavement Marking.....9C-10

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF FIGURES

Page

PART 10. TRAFFIC CONTROLS FOR HIGHWAY-LIGHT RAIL TRANSIT GRADE CROSSINGS

CHAPTER 10C. SIGNS, ILLUMINATION, AND MARKINGS

Figure 10C-1	Light Rail Transit Vehicle Dynamic Envelope.....	10C-10
Figure 10C-2	Typical Light Rail Transit Vehicle Dynamic Envelope Delineation Pavement Markings	10C-10
Figure 10C-3	Typical Light Rail Transit Car Dynamic Envelope Delineation Pavement Markings	10C-12
Figure 10C-4	Typical Light Rail Transit Vehicle Dynamic Envelope Delineation Contrasting Pavement Texture.....	10C-12

CHAPTER 10D. HIGHWAY-LIGHT RAIL TRANSIT ACTIVE TRAFFIC CONTROL GRADE CROSSING SYSTEMS

Figure 10D-1	Typical Light Rail Transit Signals.....	10D-8
Figure 10D-2	Typical Light Rail Transit Flashing-Light Signal Assembly for Pedestrian Crossings.....	10D-10
Figure 10D-3	Typical Pedestrian Gate Placement Behind the Sidewalk.....	10D-11
Figure 10D-4	Typical Pedestrian Gate Placement with Pedestrian Gate Arm	10D-11
Figure 10D-5	Typical Placement of Pedestrian Traffic Gates	10D-12
Figure 10D-6	Typical Swing Gates.....	10D-13
Figure 10D-7	Typical Pedestrian Barriers at an Offset Highway–Light Rail Transit Crossing.....	10D-13
Figure 10D-8	Typical Examples of Pedestrian Barrier Installation at an Offset Nonintersection Light Rail Transit Crossing	10D-14

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF TABLES

Page

INTRODUCTION

Table I-1 Evolution of the MUTCDI-2

PART 1. GENERAL

CHAPTER 1A. GENERAL

Table 1A-1 Acceptable Abbreviations.....1A-24
 Table 1A-2 Abbreviations That Are Acceptable Only with a Prompt Word1A-25
 Table 1A-3 Unacceptable Abbreviations.....1A-26

PART 2. SIGNS

CHAPTER 2A. GENERAL

Table 2A-1 Illumination of Sign Elements2A-6
 Table 2A-2 Retroreflection of Sign Elements2A-6
 Table 2A-3 Use of Sign Shapes.....2A-7
 Table 2A-4 Common Uses of Sign Colors.....2A-9

CHAPTER 2B. REGULATORY SIGNS

Table 2B-1 Regulatory Sign Sizes.....2B-2
 Table 2B-2 Meanings of Symbols and Legends on Reversible Lane Control Signs.....2B-26

CHAPTER 2C. WARNING SIGNS

Table 2C-1 Application of Warning Signs2C-2
 Table 2C-2 Warning Sign Sizes.....2C-4
 Table 2C-3 Minimum Size of Supplemental Warning Plaques.....2C-5
 Table 2C-4 Guidelines for Advance Placement of Warning Signs2C-6
 Table 2C-5 Horizontal Alignment Sign Usage.....2C-10

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF TABLES

		<u>Page</u>
CHAPTER 2E. GUIDE SIGNS — FREEWAYS AND EXPRESSWAYS		
Table 2E-1	Minimum Letter and Numeral Sizes for Expressway Guide Signs According to Interchange Classification	2E-10
Table 2E-2	Minimum Letter and Numeral Sizes for Expressway Guide Signs According to Sign Type	2E-12
Table 2E-3	Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Interchange Classification	2E-14
Table 2E-4	Minimum Letter and Numeral Sizes for Freeway Guide Signs According to Sign Type	2E-16
 CHAPTER 2H. RECREATIONAL AND CULTURAL INTEREST AREA SIGNS		
Table 2H-1	Category Chart for Symbols.....	2H-3
 PART 3. MARKINGS		
CHAPTER 3B. PAVEMENT AND CURB MARKINGS		
Table 3B-1	Minimum Passing Sight Distances.....	3B-9
Table 3B-2	Standard Edge Line Lane Markings for Preferential Lanes.....	3B-52
 CHAPTER 3D. DELINEATORS		
Table 3D-1	Approximate Spacing for Delineators on Horizontal Curves	3D-6
 PART 4. HIGHWAY TRAFFIC SIGNALS		
CHAPTER 4C. TRAFFIC CONTROL SIGNAL NEEDS STUDIES		
Table 4C-1	Warrant 1, Eight-Hour Vehicular Volume	4C-5
 CHAPTER 4D. TRAFFIC CONTROL SIGNAL FEATURES		
Table 4D-1	Minimum Sight Distance	4D-23

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

LIST OF TABLES

Page

**PART 5. TRAFFIC CONTROL DEVICES FOR
LOW-VOLUME ROADS**

CHAPTER 5A. GENERAL

Table 5A-1 Minimum Sign Sizes on Low-Volume Roads.....5A-3

PART 6. TEMPORARY TRAFFIC CONTROL

CHAPTER 6C. TRAFFIC CONTROL PLANS

Table 6C-1 Suggested Advance Warning Sign Spacing.....6C-5
Table 6C-2 Taper Length Criteria for Temporary Traffic Control Zones6C-10

CHAPTER 6E. FLAGGER CONTROL

Table 6E-1 Distance of Flagger Station in Advance of the Work Space6E-6

CHAPTER 6H. TYPICAL APPLICATIONS

Table 6H-1 Index to Typical Application Diagrams6H-2
Table 6H-2 Meaning of Symbols on Typical Application Diagrams6H-4
Table 6H-3 Meaning of Letter Codes on Typical Application Diagrams6H-5

PART 7. TRAFFIC CONTROLS FOR SCHOOL AREAS

CHAPTER 7B. SIGNS

Table 7B-1 Size of School Area Signs and Plaques.....7B-2

PART 9. TRAFFIC CONTROLS FOR BICYCLE FACILITIES

CHAPTER 9B. SIGNS

Table 9B-1 Sign Sizes for Shared-Use Paths9B-3

