

**Texas Department of Transportation
Technical Provisions**

SH 183 Managed Lanes Project

**Attachment 11-1
Roadway Design Criteria**

TABLE 1: Geometric Design Criteria

	Mainlanes	Managed Lanes	Frontage Roads	Ramps (Managed Lanes Ingress/Egress)	Ramps (Freeway)	Direct Connectors (DC)/ Collector Distributors (CD)	Turnarounds	Crossing Streets
General								
Roadway Classification	Urban Freeway or Tollway	Urban Freeway or Tollway	Low Speed Urban Street	Urban Freeway or Tollway	Freeway	Urban Freeway or Tollway	Low Speed Urban Street	Low Speed Urban Street
Design Speed (mph)	70 / 60 ^A / 50 ^B	70 / 60 ^A / 50 ^B	40 / 35 ^A	70 / 60 ^A / 50 ^B	45 / 40 ^A / 25 ^J	50 (DC) / 40 (CD)	15	40 / 35 ^C
Stopping Sight Distance (ft)	730 / 570 / 425	730 / 570 / 425	305 / 250	730 / 570 / 425	360 / 305 / 155	425 (DC) / 305 (CD)	80	305 / 250
Horizontal Alignment								
Max. Superelevation (%)	6	6	4	6	6	6	4	N/A
Min. Radius of Curvature (ft)	2050 / 1340 / 835	2050 / 1340 / 835	490 / 345	2050 / 1340 / 835	660 / 510 / 185	835 (DC) / 510 (CD)	45	490 / 345
Vertical Alignment								
Minimum Grade (%)	0.35 ^K	0.35 ^K	0.5 ^K	0.35	0.5 / 0.35 ^I	0.5	0.35	0.5
Maximum Grade (%)	3 / 3 / 4	3 / 3 / 4	7	3 / 3 / 6	6	6	4	7
Crest (Min. K-Value)	247 / 151 / 84	247 / 151 / 84	44 / 29	247 / 151 / 84	61 / 44 / 12	84 (DC) / 44 (CD)	3	44 / 29
Sag (Min. K-Value)	181 / 136 / 96	181 / 136 / 96	64 / 49	181 / 136 / 96	79 / 64 / 26	96 (DC) / 64 (CD)	10	64 / 49
Cross Section								
Lane Width (ft) ^Q	12	12	11	12	14	14 (DC) / 12 (CD)	14	12
Min. Inside Shoulder (ft) ^{P,Q}	10	2 ^D	None ^F	4	2 (Uncurbed) 2 (Curbed)	4 ^{G(DC)}	2	N/A
Min. Outside Shoulder (ft) ^{P,Q}	10	10 ^{D,E}	4 ^F	4	8 (Uncurbed) 6 (Curbed)	8 ^{G(DC)}	6	N/A
Cross Slope (%)	2.0 ^C	2.0 ^C	2.0	2.0 ^C	2.0	2.0	2.0	2.0
Clear Zone (from edge of travel lane) (ft)	30	30	10 (Uncurbed) 5 (Curbed) ^H	16	16	N/A (DC) / 10 ^H (CD)	N/A	(See Attachment 11-1, Table 2) ^H
Side Slopes within Clear Zone	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)	6:1 Usual (4:1 Max.)
Side Slopes outside Clear Zone	3:1 Max.	3:1 Max.	3:1 Max.	3:1 Max.	3:1 Max.	3:1 Max.	3:1 Max.	3:1 Max.
Vertical Clearance								
Roadway (ft) ^R	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
Railroad (ft)	23	23	23	23	23	23	23	23
Electrified Light Rail (ft)	26	26	26	26	26	26	26	26
Under Overhead Signs (ft)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Pedestrian Facilities (ft)	17.5	17.5	17.5	17.5	17.5	17.5	17.5	17.5
Other								
Design Vehicles	WB-62	WB-62	WB-62	WB-62	WB-62	WB-62	WB-62	See Attachment 11-1, Table 2

TABLE 1: Geometric Design Criteria

	Mainlanes	Managed Lanes	Frontage Roads	Ramps (Managed Lanes Ingress/Egress)	Ramps (Freeway)	Direct Connectors (DC)/ Collector Distributors (CD)	Turnarounds	Crossing Streets
Min. Driveway Radius Return (ft)	N/A	N/A	30 (Commercial) ^{L,N} 25 (Commercial) ^{M,N,O} 15 (Residential) ^O	N/A	N/A	N/A	N/A	30 (Commercial) ^{L,N} 25 (Commercial) ^{M,N,O} 15 (Residential) ^O

- Notes:**
- A. Design criteria apply to Interim improvements.
 - B. Design criteria allowed only in Interim Areas where the Footnote A values are not met, as depicted on the Draft Schematics. Lower values may be allowed for applicable items in the RID Exhibit 11-1 Roadway Design Deviations.
 - C. Steeper cross slopes, as required by the *TxDOT Roadway Design Manual*, shall apply. Lines joining two different cross slopes shall be placed along or within one foot of the edge of traveled lanes.
 - D. Developer shall coordinate with Governmental Entities during final design to ensure adequate enforcement zones are provided.
 - E. Developer shall provide a minimum 14 feet immediately downstream from each tolling gantry to allow for enforcement areas in accordance with AASHTO Guide for HOV Facilities, unless otherwise approved by TxDOT.
 - F. Developer shall include curb on newly constructed and reconstructed frontage road sections as needed to match existing frontage road section.
 - G. To mitigate restrictions on the design imposed by site distance, it is acceptable to position the wider shoulder on the inside of the curve.
 - H. The face of the new bridge columns shall be located 6 feet or more from the face of curb.
 - I. Design criteria applicable to ramps connecting to mainlanes.
 - J. Design criteria apply to loop ramps.
 - K. Lower values allowed for widening of existing roadways and pavement rehabilitation-only sections, as well as, when matching existing or widened at-grade and bridge profiles with lower values.
 - L. Design criteria apply to driveways with one entry and one exit lane and driveways serving at least (600) total vehicles per day and (4) SU-type vehicles per day.
 - M. Design criteria apply to all other driveways not listed in Note L.
 - N. Where restricted by available ROW or border width, the maximum values attainable must be used with an absolute minimum of 15 feet. The design vehicle must be accommodated.
 - O. Where restricted by available ROW or border width, driveways less than 24 feet in throat width and less than (600) total vehicles per day and (4) SU-type vehicles per day may use flare/apron type driveway per applicable TxDOT District Standards.
 - P. Deviation ranges for this criteria noted in RID Exhibit 11-1 Roadway Design Deviations shall be applied to meet or exceed the design in the Draft Schematic.
 - Q. Existing widths may remain in areas of existing pavement where no change in lane configuration is proposed
 - R. Deviations for this criteria noted in RID Exhibit 11-1 Roadway Design Deviations are based on the best available information. Developer shall maintain existing vertical clearance that is physically available at those locations.

TABLE 2: Crossing Street Functional Classification and Additional Design Criteria

Intersecting Street	Jurisdiction	Functional Classification/ Roadway Classification	Design Speed (mph)	Position (Over/ Under)	Design Vehicle	EBWB Turn-around	WBEB Turn-around	Southbound			Turn Lanes	Northbound			Clear Zone for Thru Lanes	Pedestrian Rail Protection/ Barrier (Y/N)
								Sidewalk	Curb & Gutter	Thru Lanes		Thru Lanes	Curb & Gutter	Sidewalk		
FM 157 (Industrial Blvd.)	TxDOT, Bedford, Euless	Arterial Urban	45	Under	WB-62	Y	Y	Y ⁴	Y	3	1	3	Y	Y ⁴	3' from Curb Face	N
Ector Dr.	Euless	Collector Urban	40	Under	WB-62	Y	Y	Y ⁴	Y	2	1	2	Y	Y ⁴	3' from Curb Face	N
Main St.	Euless	Arterial Urban	40	Over	WB-62	Y	Y	Y ⁴	Y	2	1	2	Y	Y ⁴	3' from Curb Face	Y
Esters Rd.	Irving	Arterial Urban	35	Over	WB-62	Y	Y	Y ⁴	Y	2	2	2	Y	Y ⁴	3' from Curb Face	N
Story Rd.	Irving	Arterial Urban	40	Under	WB-62	Y	Y	Y ⁴	Y	North of SH 183: 3 South of SH 183: 2	1 / 2 ³	North of SH 183: 3 South of SH 183: 2	Y	Y ⁴	3' from Curb Face	N
Macarthur Blvd.	Irving	Arterial Urban	40	Under	WB-62	Y	Y	Y ⁴	Curb, no gutter	North of SH 183: 3 South of SH 183: 2 / 3 ³	2	North of SH 183: 3 South of SH 183: 2 / 3 ³	Curb, no gutter	Y ⁴	3' from Curb Face	N
O'Connor Rd.	Irving	Arterial Urban	40	Under	WB-62	Y	Y	Y ⁴	Y	2	2	2	Y	Y ⁴	3' from Curb Face	N
Carl Rd.	Irving	Collector Urban	40	Under	WB-62	Y	Y	Y ⁴	Curb, no gutter	2	2	2	Curb, no gutter	Y ⁴	3' from Curb Face	N
Maryland Dr.	Irving	Collector Urban	40	N/A	WB-62	N	N	Y ⁴ South of SH 183 EB FR	Curb, no gutter	2	N/A	2	Curb, no gutter	Y ⁴ South of SH 183 EB FR	3' from Curb Face	N
Spur 482	Irving	Arterial Urban	40	Over	WB-62	N	N	N	N	N/A	N/A	2	N	N	10'	N
Grauwylor Rd.	Irving	Collector Urban	40	N/A	WB-62	N	N	Y ⁴	Y	N/A / 2 ³	N/A	N/A / 2 ³	Y	Y ⁴	3' from Curb Face	N
Regency Dr.	Irving	Collector Urban	40	N/A	WB-62	N	N	Y ⁴	Curb, no gutter	1	N/A	1	Curb, no gutter	Y ⁴	3' from Curb Face	N
Regal Row	Dallas	Arterial Urban	40	Under	WB-62	N	Y	Y ⁴	Curb, no gutter	3	1	3	Curb, no gutter	Y ⁴	3' from Curb Face	N

Notes:

1. Crossing streets not requiring sidewalks shall be designed and constructed to accommodate sidewalk construction in the future.
2. Sidewalks shall be designed in accordance with applicable standards and Section 20.3.2.
3. Applies to corresponding Scope Component 1 or 2.
4. The extent of required sidewalk shall correspond to the extent of improvements along the crossing street.