Design Element				Manual Section	Design Values (By Type of Area)		
					Suburban	Intermediate	Built-Up
Design Controls	Design Forecast Period			55-4.01	20 Years (1)	20 Years (1)	20 Years (1)
	*Design Speed (km/h) (2)			55-4.01	See Section 55-4.01	See Section 55-4.01	See Section 55-4.01
	Access Control			40-5.0	None	None	None
	Level of Service			40-2.0	Desirable: C; Minimum: D	Desirable: C; Minimum: D	Desirable: C; Minimum: D
	On-Street Parking			45-1.0	Optional (3)	Optional	Optional
Cross Section Elements	Travel Lane	*Width (4)		55-4.05	Curbed: Des: 3.3 m; Min: 3.0 m Uncurbed: Des: 3.3 m; Min: 3.0 m	Curbed: Des: 3.0 m; Min: 2.7 m Uncurbed: Des: 3.3 m; Min: 3.0 m	Curbed Des: 3.0 m Curbed Min: 2.7 m
		Typical Surface Type		Ch. 52	Asphalt / Concrete	Asphalt / Concrete	Asphalt / Concrete
	*Curb Offset (5)			55-4.05	Des: 0.6 m; Min: 0.3 m	Des: 0.6 m; Min: 0.3 m	Des: 0.6 m; Min: 0.3 m
	Shoulder	*Usable Width		55-4.05	Curbed Des: 1.2 m; Min. 0.3 m Uncurbed: Des: 1.2 m; Min. 0.6 m	Curbed Des: 1.2 m; Min. 0.3 m Uncurbed: Des: 1.2 m; Min. 0.6 m	Des: 1.2 m; Min: 0.6 m
		Typical Surface Type		Ch. 52	Asphalt / Concrete / Aggregate / Earth	Asphalt / Concrete / Aggregate / Earth	Asphalt / Concrete / Aggregate / Earth
	Cross Slope	*Travel Lane (6)		55-4.05	2%-3%	2%-3%	2%-3%
		Shoulder (7)		55-4.05	2%-3% Asphalt / Concrete; 6%-8% Aggregate; 8% Earth	2%-3% Asphalt / Concrete; 6%-8% Aggregate; 8% Earth	2%-3% asphalt / Concrete; 6%-8% Aggregate; 8% Earth
	Auxiliary Lane	Lane Width		55-4.05	Des: 3.3 m; Min: 3.0 m	Des: 3.3 m; Min: 2.7 m	Des: 3.0 m; Min: 2.7 m
		Curb Offset			Des: 0.3 m; Min: 0.0 m	Des: 0.3 m; Min: 0.0 m	Des: 0.3 m; Min: 0.0 m
		Shoulder Width			Des: 1.2 m; Min: 0.3 m	Des: 1.2 m; Min: 0.3 m	Des: 1.2 m; Min: 0.3 m
		Typical Surface Type		Ch. 52	Asphalt / Concrete / Aggregate / Earth	Asphalt / Concrete / Aggregate / Earth	Asphalt / Concrete / Aggregate / Earth
	Parking-Lane Width (3)			45-1.04	Des: 2.7 m; Min: 2.1 m	Des: 2.7 m; Min: 2.1 m	Des: 2.7 m; Min: 2.1 m
	Sidewalk Width (8)			55-4.05	1.2 m with 1.5-m Buffer (Des)	Des: 1.8 m; Min: 1.2 m	Des: 1.8 m; Min: 1.2 m
	Bicycle-Lane Width (9)			51-7.0	Curbed: 1.5 m Uncurbed: Shld. Width +1.2 m	Curbed: 1.5 m Uncurbed: Shld. Width +1.2 m	Curbed: 1.5 m
	Obstruction-Free Zone			55-5.02	See Section 55-5.02	See Section 55-5.02	See Section 55-5.02
	Typical Curbing Type (where used) (5)			55-4.05	Sloping / Vertical	Sloping / Vertical	Sloping / Vertical
	Side Slopes (Uncurbed)	Cut	Foreslope	55-4.05	2:1 or Flatter (10)	2:1 or Flatter (10)	N/A
			Ditch Width		(10)	(10)	N/A
			Backslope		2:1 or Flatter (10)	2:1 or Flatter (10)	N/A
		Fill			2:1 or Flatter (10)	2:1 or Flatter (10)	N/A
	Side Slopes (Curbed)	Cut (Backslope)		55-4.05	(11)	(11)	(11)
		Fill			2:1 or Flatter (10)	2:1 of Flatter (10)	2:1 or Flatter (10)

Des: Desirable; Min: Minimum.

* Controlling design criterion.

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREET, 3R PROJECT

Figure 55-3H

Design Element			Manual Section	Design Values (By Type of Area)					
				Suburban		Intermediate		Built-Up	
Bridges	New or Reconstructed Bridge	*Structural Capacity (11A)	Ch. 60	HL-93		HL-93		HL-93	
		*Clear Roadway Width	55-6.03	Curbed: Full Approach Curb-to-Curb Width Uncurbed: (12)					
	Existing Bridge to Remain in Place	*Structural Capacity (13)	Ch. 72	HS-15		HS-15		HS-15	
		*Clear Roadway Width	55-6.02	Existing Width (14)					
	*Vertical Clearance (Local Under)	New or Replaced Overpassing Bridge (15)	44-4.0	4.45 m		4.45 m		4.45 m	
		Existing Overpassing Bridge (16)		4.30 m		4.30 m		4.30 m	
	Vertical Clearance (Local over Railroad) (17)		Ch. 69	7.00 m					
Alignment Elements	Design Speed			40 km/h	50 km/h	60 km/h	70 km/h	80 km/h	90 km/h
	*Stopping Sight Distance		55-4.02	50 m	65 m	85 m	105 m	130 m	160 m
	Decision Sight Distance	Speed / Path / Direction Change	42-2.0	U: 160 m SU: 130 m	U: 195 m SU: 170 m	U: 235 m SU: 205 m	U: 275 m SU: 235 m	U: 315 m SU: 270 m	U: 360 m SU: 315 m
		Stop Maneuver		130 m	155 m	195 m	235 m	280 m	325 m
	Intersection Sight Distance, -3% to +3% (18)		55-4.06	P: 85 m SU: 110 m	P: 105 m SU: 135 m	P: 125 m SU: 160 m	P: 150 m SU: 185 m	P: 170 m SU: 235 m	P: 190 m SU: 280 m
	*Minimum Radius		55-4.03	See Section 55-4.03					
	*Superelevation Rate		55-4.03	See Section 55-4.03					
	*Horizontal Sight Distance		55-4.03	See Section 55-4.03					
	*Vertical Curvature (K-values)	Crest	55-4.04	See Section 55-4.04					
		Sag		See Section 55-4.04					
	*Maximum Grade	Level	55-4.04	In a residential area, the maximum grade should not exceed 15%. In an industrial or commercial area, the maximum grade should not exceed 8%.					
		Rolling							
	Minimum Grade		55-4.04	Curbed Des: 0.5%; Curbed Min: 0.3% Uncurbed: 0.0%					

U: Urban; SU: Suburban. Des: Desirable; Min: Minimum.

* Controlling design criterion. A deviation from such is a design exception, and is subject to approval. See Section 40-8.0.

This figure applies only to a federal-aid funded project.

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREET, 3R PROJECT

Figure 55-3H (Continued)

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREET, 3R PROJECT

Footnotes to Figure 55-3H

(1) Design Forecast Period. For a partial 3R project, the pavement should be designed for at least a 10-year design life.

(2) Design Speed. The minimum design speed should equal the anticipated posted speed limit after construction or the legal speed limit on a non-posted highway. This is 48 km/h (30 mph), but with an engineering study it may be raised to a maximum of 88 km/h (55 mph).

(3) On-Street Parking. In general, on-street parking is discouraged. However, if parking lanes are used, cross slopes are typically 1% steeper than that of the adjacent travel lane. In a residential area, a parallel parking lane from 2.1 to 2.4 m in width should be provided on one or both sides of the street. In a commercial or industrial area, parking-lane width should range from 2.4 to 3.3 m, and should usually be provided on both sides of the street. Where curb-and-gutter sections are used, the gutter-pan width may be considered as part of the parking-lane width. Where practical, the parking-lane width should be in addition to the gutter-pan width.

(4) Travel Lane (Width). A minimum 3.3-m travel lane should be used where truck volume exceeds 200 trucks per day. See Section 55-4.05.

(5) Curb Offset. A vertical-curb offset should be 0.6 m. Vertical curbs which are either continuous or introduced intermittently may be offset 0.3 m. A sloping-curb offset may be zero. For a curbed section, the curb offset is included in the paved-shoulder width. Vertical curbs may only be used with design speed lower than 80 km/h.

(6) Cross Slope (Travel Lane). Cross slopes of 1.5% are acceptable on an existing bridge to remain in place.

(7) Cross Slope (Shoulder). Value is for a tangent section. See Section 43-3.06 for shoulder cross slopes on a horizontal curve.

(8) Sidewalk Width. Value is for the installation of a new sidewalk. An existing sidewalk width of 0.9 m or greater (with or without a buffer) may be retained. A buffer strip of 1.2 m or wider is desirable.

(9) Bicycle-Lane Width. The width is in addition to the width of parking lane, if present. See Section 51-7.0 for additional details.

(10) Side Slopes. Section 55-4.05 provides additional information for side-slope criteria.

GEOMETRIC DESIGN CRITERIA FOR URBAN LOCAL STREET, 3R PROJECT

Footnotes to Figure 55-3H (Continued)

(11) Side Slope (Curbed) Cut. A shelf or sidewalk will be present immediately behind the curb before the toe of the backslope. The minimum width of a shelf desirably should be 1.8 m. Where a sidewalk is present, the toe of the backslope will be 0.3 m beyond the edge of sidewalk. See Section 45-3.0 for more information.

(11A) Structural Capacity (New or Reconstructed Bridge). HS-25 loading with Alternate Military Loading should be applied for each project with notice to proceed with design beginning September 1, 2004, through December 31, 2005. A bridge with an ADTT less than or equal to 1,000 may be designed for HS 25 or HS 20, whichever the LPA elects.

(12) Width (New or Reconstructed Bridge) Uncurbed. The following will apply:

Volume	Minimum Clear Width
0 < AADT < 400	Travelway + 0.6 m each side
400 ≤ AADT < 5000	Travelway + 0.9 m each side
AADT ≥ 5000	Approach Roadway Width (Travelway Plus Shoulders)

See Section 59-1.0 for more information on bridge width.

(13) Structural Capacity (Existing Bridge to Remain in Place). For a street with AADT ≤ 50, an HS-10 loading is acceptable.

(14) Width (Existing Bridge to Remain in Place). If the width of the existing bridge is less than the approach travelway width, the bridge should be widened to at least the travelway width.

(15) Vertical Clearance (Local Under Railroad). Value includes an additional 150-mm allowance for a future pavement overlay. Vertical clearance applies from usable edge to usable edge of shoulder.

(16) Vertical Clearance (Existing Bridge). See Section 55-6.02 for additional information on minimum allowable vertical clearance.

(17) Vertical Clearance (Local Over Railroad). See Chapter Sixty-nine for additional information on railroad clearance under a highway.

(18) Intersection Sight Distance. For left turn onto a 2-lane road, P = Passenger car; SU = single unit truck. See Figure 46-10G for value for a combination truck.